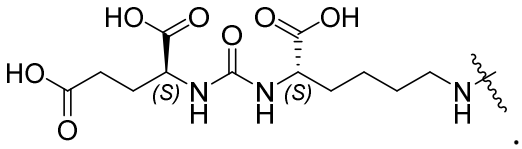
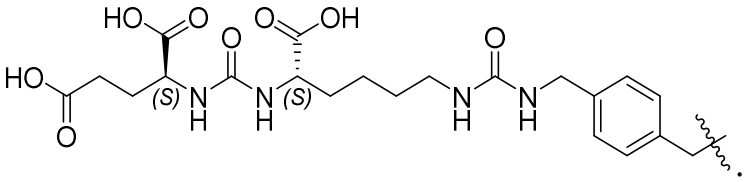
Claims

1. A conjugate compound or a pharmaceutically acceptable salt thereof, comprising a payload and two targeting molecules, wherein the two targeting molecules are a synergistic molecule moiety and a prostate-specific membrane antigen ligand moiety, respectively, wherein the synergistic molecule binds to a molecule selected from the group consisting of FOLR1, TRPV6, SSTR2 and GNRHR.

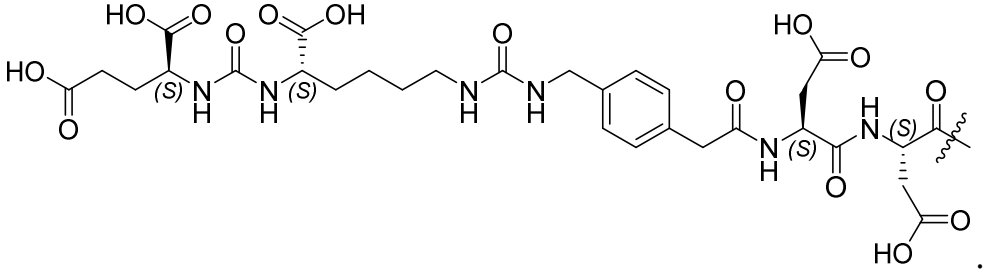
2. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 1, wherein the prostate-specific membrane antigen ligand has the following structure:



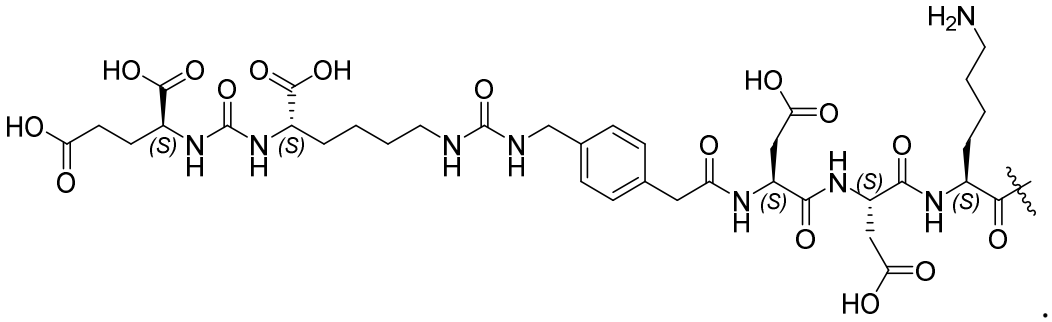
3. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 1, wherein the prostate-specific membrane antigen ligand has the following structure:



4. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 1, wherein the prostate-specific membrane antigen ligand has the following structure:

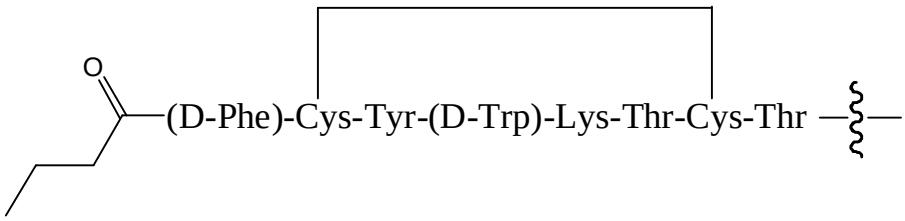


5. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 1, wherein the prostate-specific membrane antigen ligand has the following structure:



.

6. A conjugate compound or a pharmaceutically acceptable salt thereof, comprising a payload and two targeting molecules, wherein the two targeting molecules are a synergistic molecule moiety and a ligand moiety represented by formula (I), respectively, wherein the synergistic molecule binds to FOLR1:



(I).

7. A conjugate compound or a pharmaceutically acceptable salt thereof, comprising a payload and two targeting molecules, wherein the two targeting molecules are a synergistic molecule moiety and P10, respectively, wherein the synergistic molecule binds to FOLR1, and the payload is camptothecin or any derivative thereof.

~~8. The conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims 1-7, wherein the two targeting molecules are different.~~

~~9. The conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims 1-8, wherein the synergistic molecule is a cell-interacting molecule.~~

~~10. The conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims 1-9, wherein the two targeting molecules are cell-interacting molecules that interact with different cell molecules.~~

~~11. The conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims 1-10, wherein the synergistic molecule is an endocytosis molecule capable of mediating endocytosis.~~

~~12. The conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims 1-11, wherein the synergistic molecule binds to a molecule selected from the group consisting of FOLR1, TRPV6, FOLH1 (PMSA), GNRHR, Her2, Trop2, Her3, NECTIN4, LRP1, GLUT1, EGFR1, AXL, CA9, CD44, Claudin18.2, APN, DLL3, CEACAM5, FZD10, TFRC, MET, IGFR1, SSTR2, CCKBR, LFA1, ICAM, GPR87, GM-CSF, GM-CSFR, TIM3, TLR family, CD40, CD40L, OX40, OX40L, GITRL, GITR, 4-BBL, 4-1BB, CD70, CD27, ICOSL, ICOS, HHLA2, CD28, CD86/80, CD28, MHCII antigen, TCR, CTLA-4, CD155, CD122, CD113, IGIT, PD-L1, PD1, Galectin-9, TIM-3, HVEM, BTLA, CD160, VISTA, B7-H4, B7-H3, phosphatidylserine, HHLA2, LAG3, Galectin-3, LILRB4, SIGLEC15, NKG2A, NKG2D, SLAMF7, KIR2DL1, KIR2DL2, KIR2DL3, FGFR1, FGFR2, FGFR4, NeuGcGM3 and CXCR4.~~

~~13. The conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims 1-12, wherein the synergistic molecule binds to a molecule selected from the group consisting of FOLR1, TRPV6, FOLH1 (PMSA), SSTR2 and GNRHR.~~

~~14. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 1, wherein the synergistic molecule binds to a molecule selected from the group consisting of FOLR1, TRPV6, SSTR2 and GNRHR.~~

~~15. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 6, wherein the synergistic molecule binds to a molecule selected from the group consisting of FOLR1, TRPV6, FOLH1 (PMSA) and GNRHR.~~

~~16~~8. The conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims ~~1-15~~1-6, wherein the synergistic molecule is a folate or an analogue thereof.

~~17~~9. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~16~~8, wherein the analogue of a folate is selected from the group consisting of 5-methyltetrahydrofolate, 5-formyltetrahydrofolate, methotrexate, and 5,10-methylenetetrahydrofolate.

~~18~~10. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 1 or 6, comprising one, two, three, four or more payloads.

~~19~~11. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 1 or 6, wherein the payload is selected from the group consisting of a small molecule compound, a nucleotide, a peptide, and a protein.

~~20~~12. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~19~~11, wherein the payload is a small molecule compound.

~~21~~13. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~20~~12, wherein the small molecule compound is selected

from the group consisting of camptothecin and any derivative thereof, auristatin and any derivative thereof, maytansine and any derivative thereof, a radionuclide complex, a cyclooxygenase-2 inhibitor, paclitaxel and any derivative thereof, epothilone and any derivative thereof, bleomycin and any derivative thereof, dactinomycin and any derivative thereof, plicamycin and any derivative thereof, and mitomycin C.

~~22~~14. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~21~~13, wherein the small molecule compound is camptothecin or any derivative thereof, auristatin or any derivative thereof, a radionuclide complex or a cyclooxygenase-2 inhibitor.

~~23~~15. The conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims ~~1–22~~1-14, wherein the payload is linked to at least one of the targeting molecules via a linker.

~~24~~16. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~23~~15, wherein the linker is a peptide linker, a disulphide linker, a pH-dependent linker or a combination of the above-mentioned linkers.

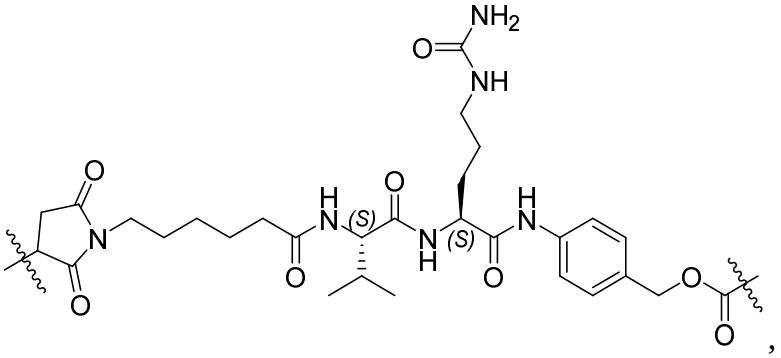
~~25~~17. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~24~~16, wherein the peptide linker is cleavable under a certain physiological environment by protease cleavage or reduction.

~~26~~18. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~24–~~16 or ~~25~~17, wherein the peptide linker is selected from the group consisting of cysteine, lysine, lysine-lysine, valine-citrulline, phenylalanine-lysine, valine-lysine, cysteine-lysine, cysteine-glutamic acid, aspartic acid-aspartic acid, and aspartic acid-aspartic acid-lysine, and optionally, the carboxylic acid in the above-mentioned amino acids is amidated.

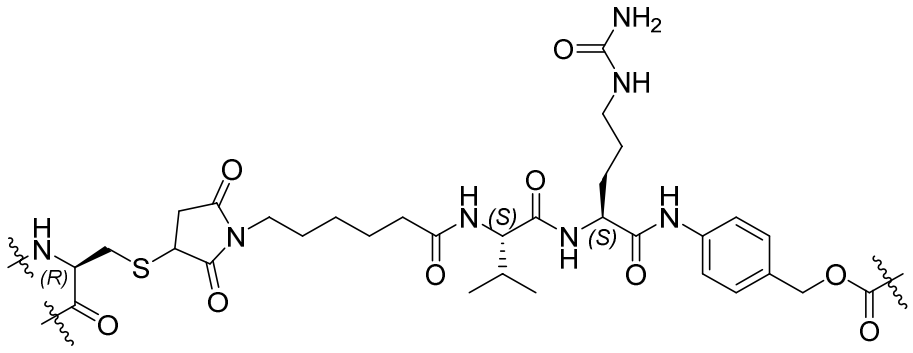
~~27~~19. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~24~~16, wherein the disulphide linker is selected from the group consisting of DMDS, MDS, DSDM and NDMDS.

~~28~~20. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~24~~16, wherein the pH-dependent linker is a cis-aconitic anhydride.

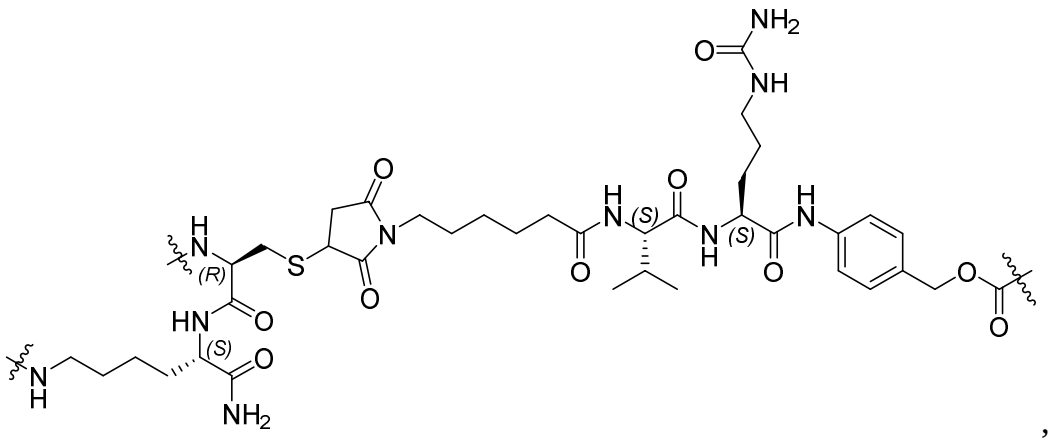
~~29~~21. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~23~~15, wherein the linker has the following structures:



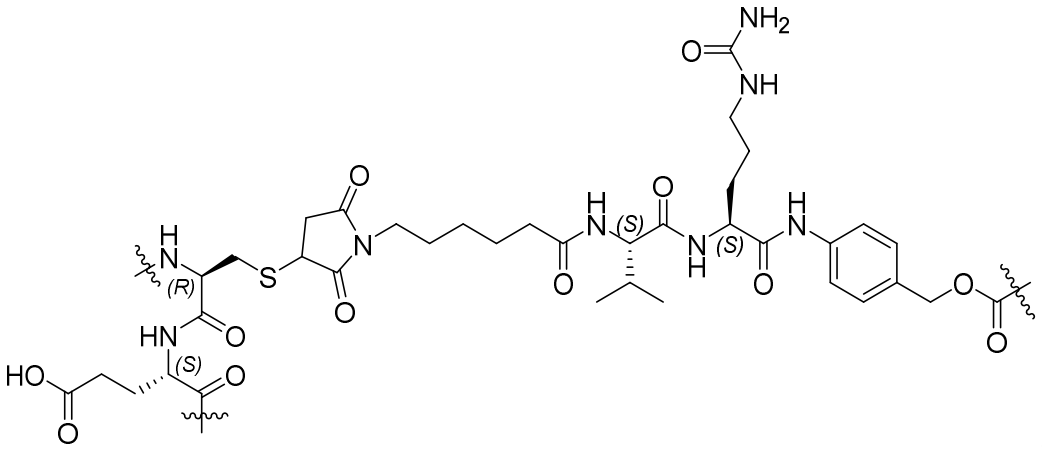
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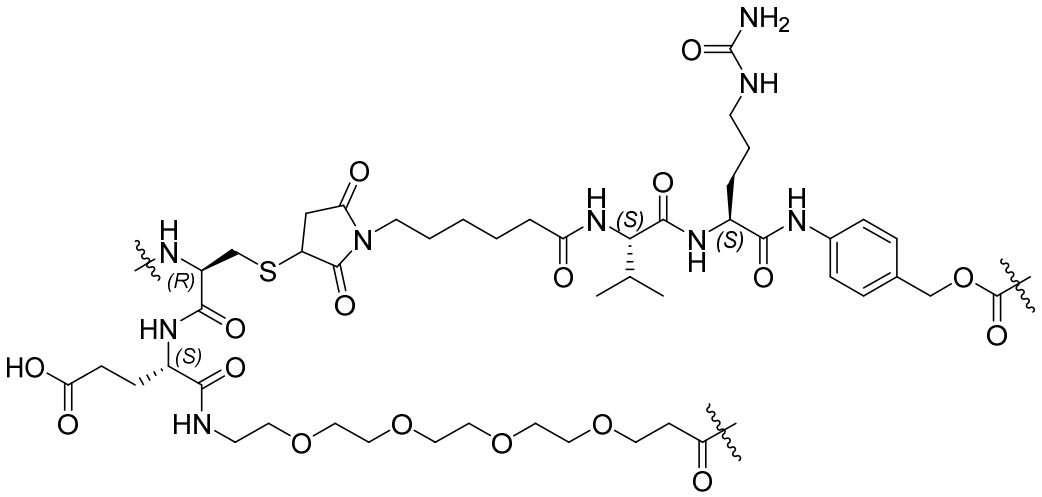
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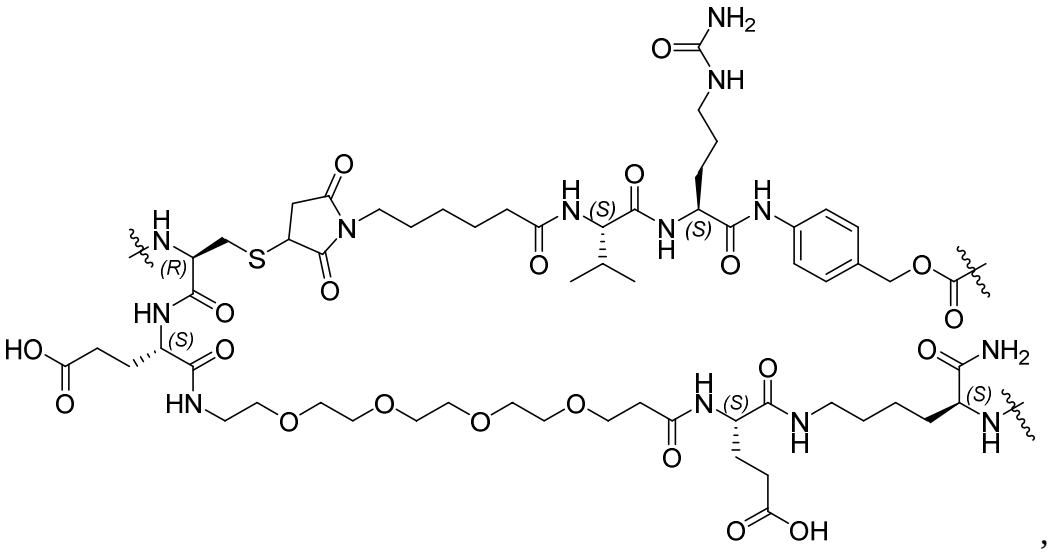
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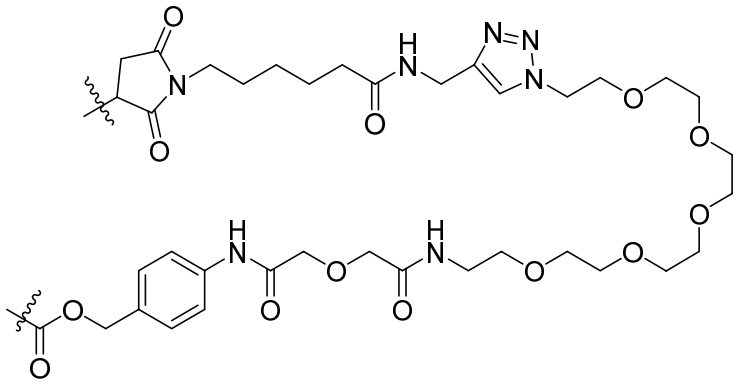
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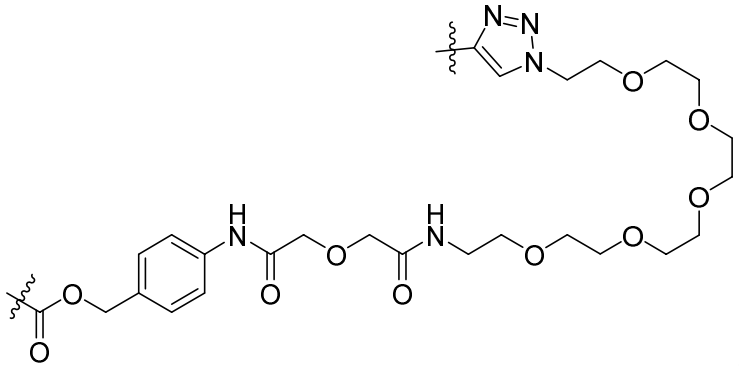
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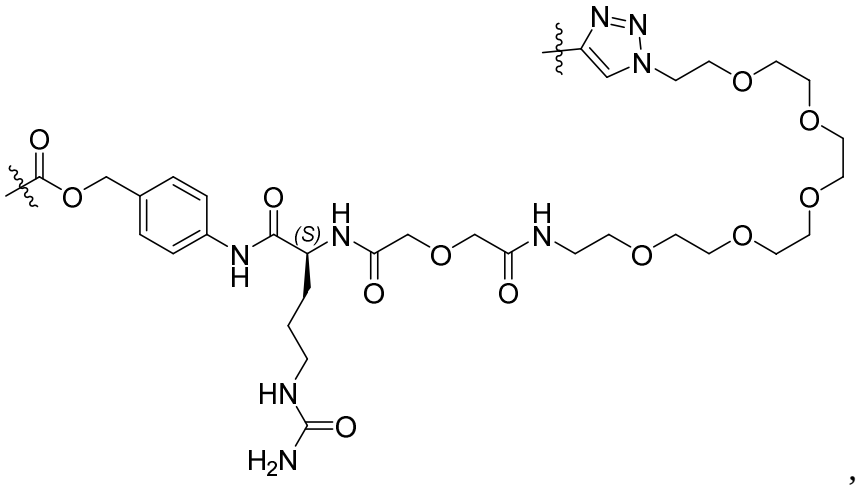
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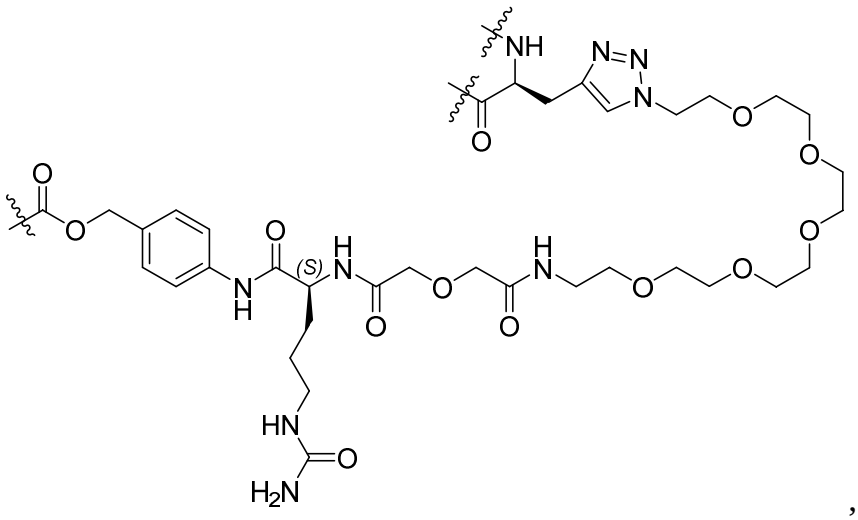
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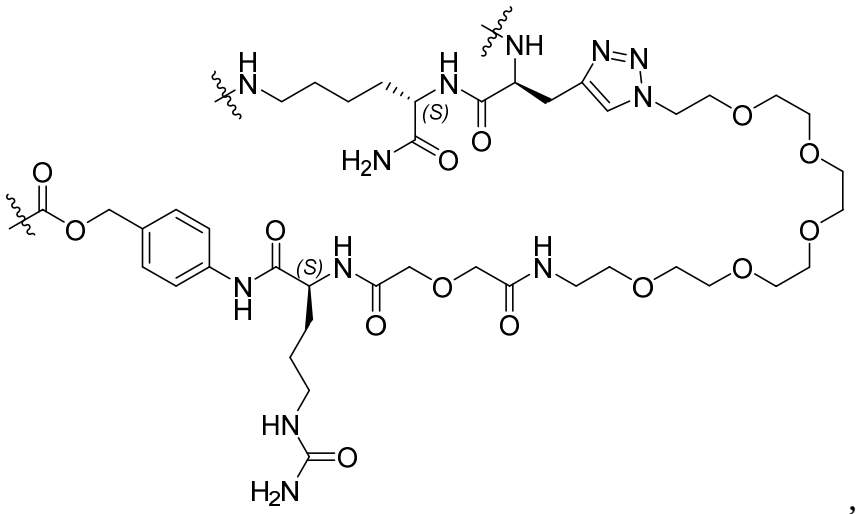
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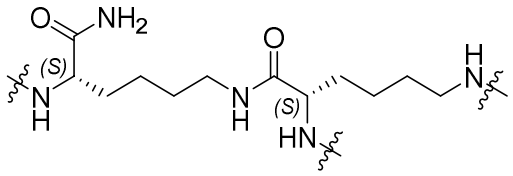
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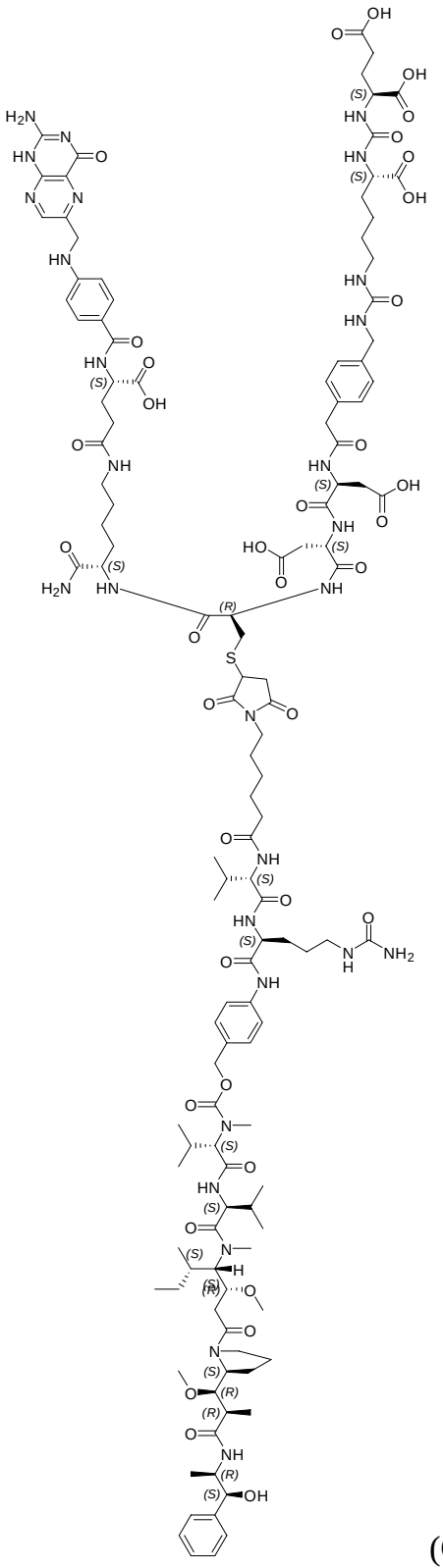
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or the linker is a combination of the above-mentioned structures and a peptide linker.

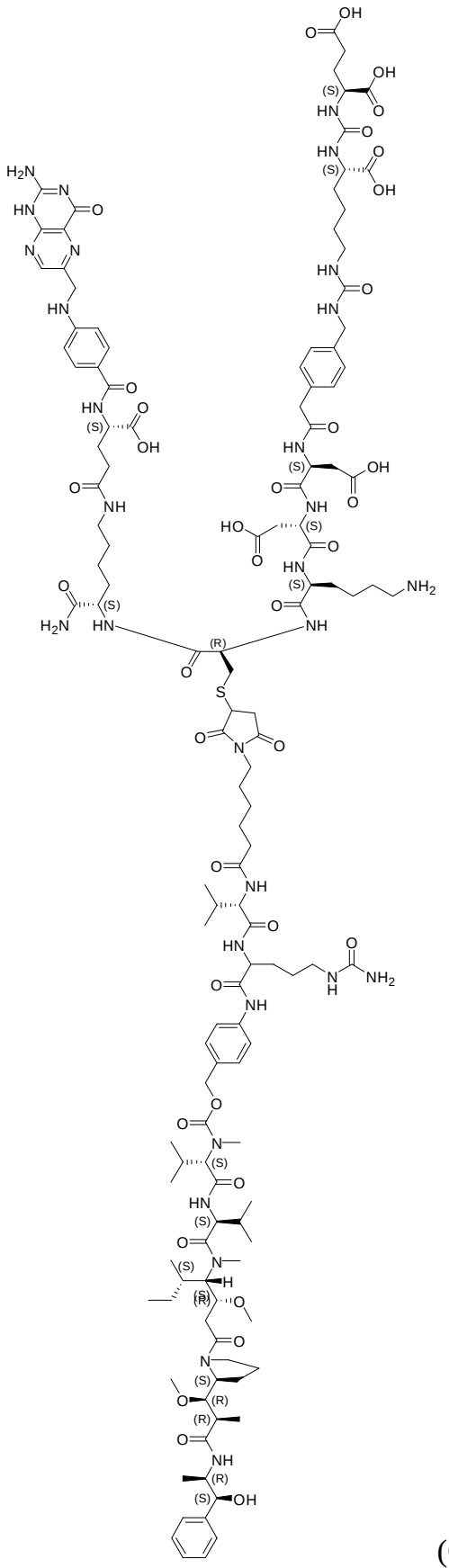
~~30~~22. The conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims ~~1-29~~1-21, wherein the two targeting molecules are linked to each other via a spacer.

~~31~~23. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim ~~30~~22, wherein the spacer comprises the amino acid sequence selected from the group consisting of SEQ ID NOs: 1-14, Arg-Arg, Ala-Ser-Asn, Ala-Ala-Ala, Ser-Ser-Arg, Pro-Arg and Pro-Leu-Gly.

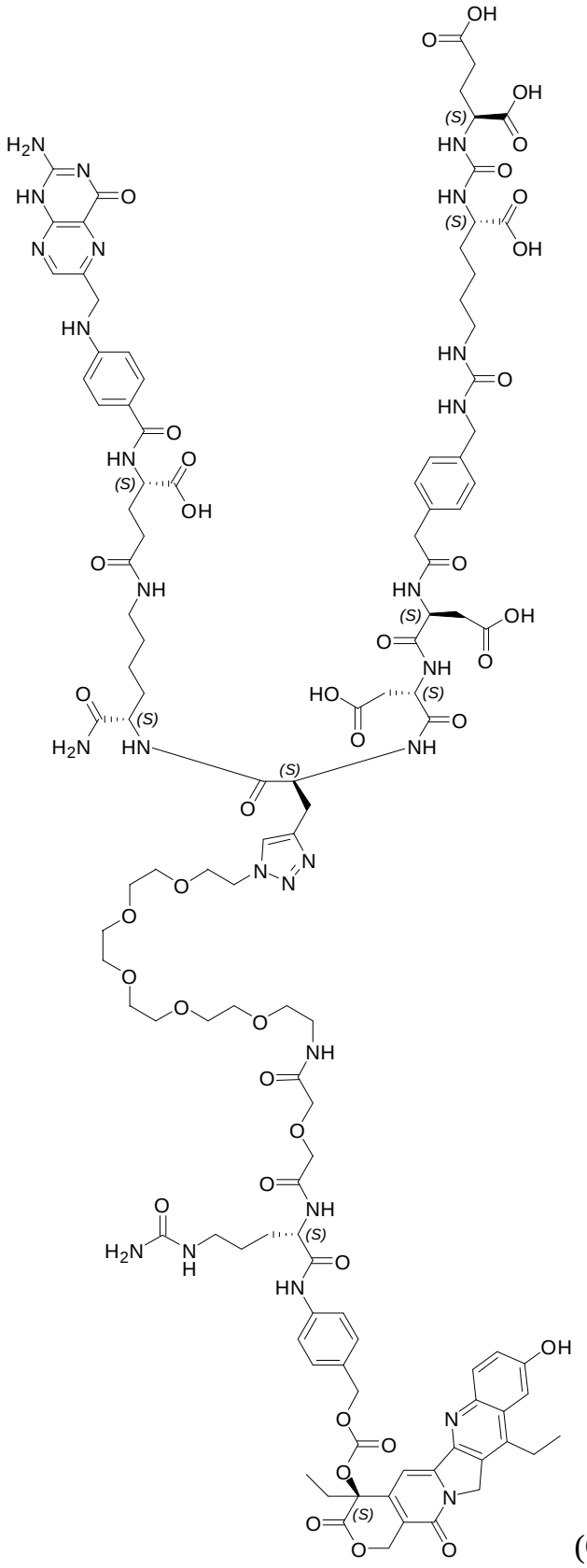
~~32~~24. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 1, wherein the conjugate compound is selected from the group consisting of the following compounds:



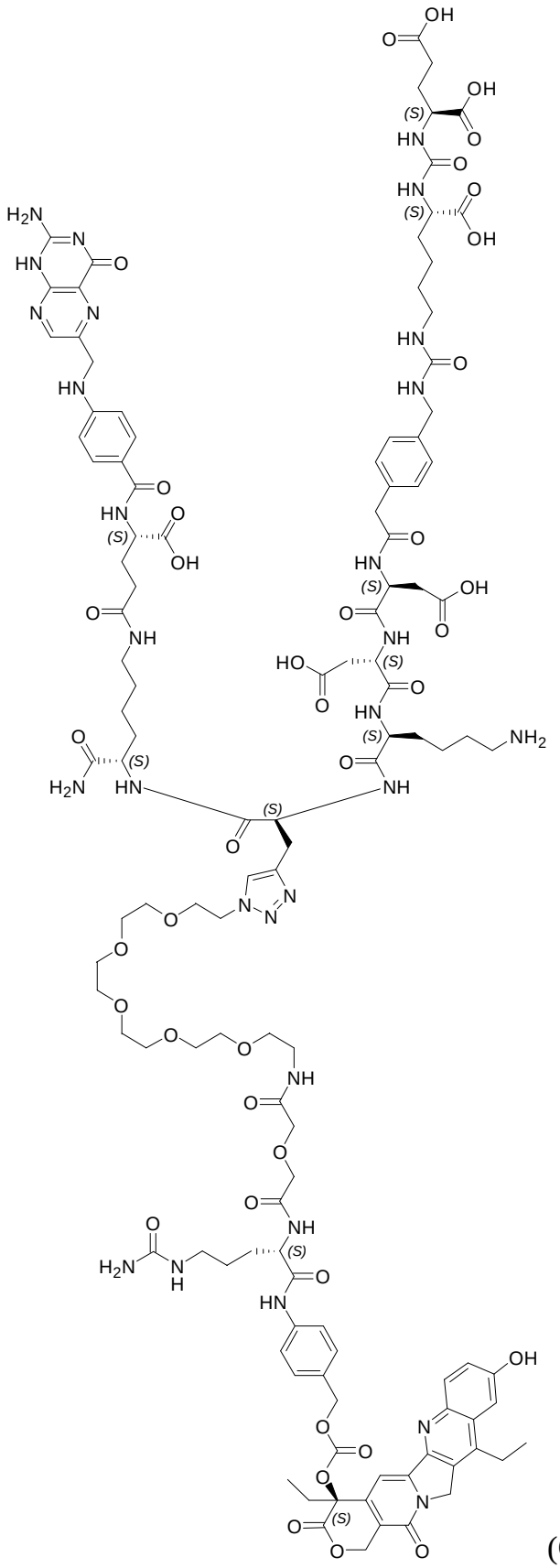
(CB-20B),



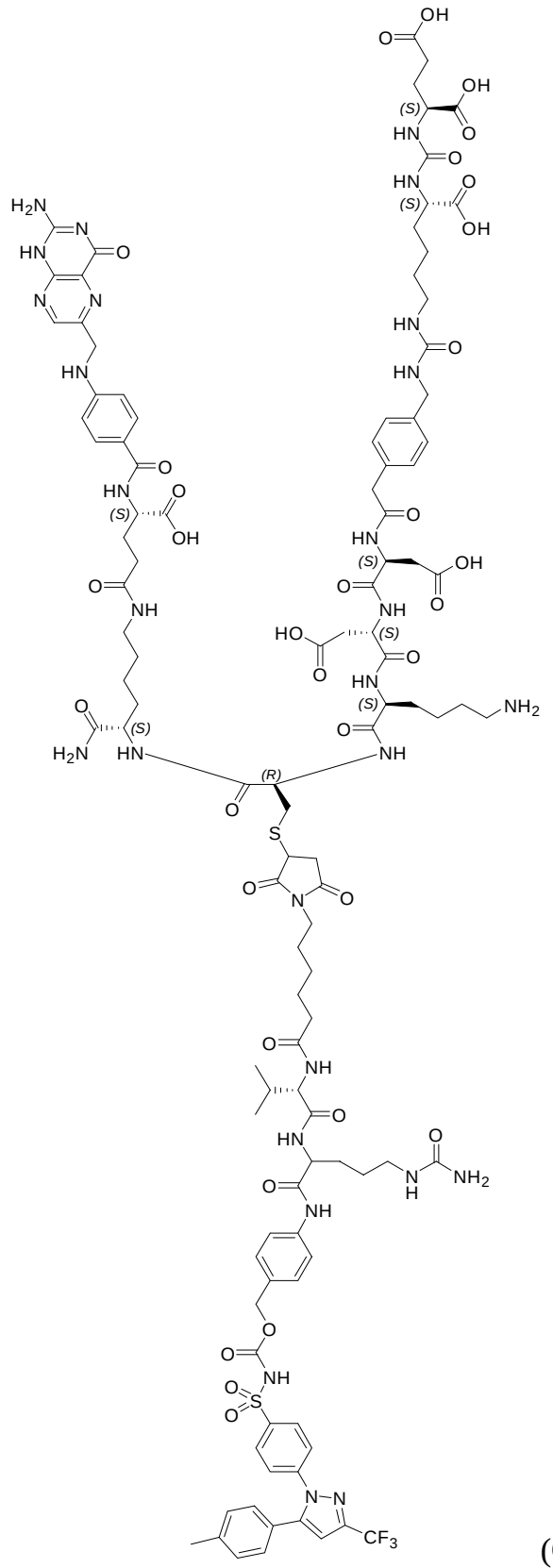
(CB-20BK),



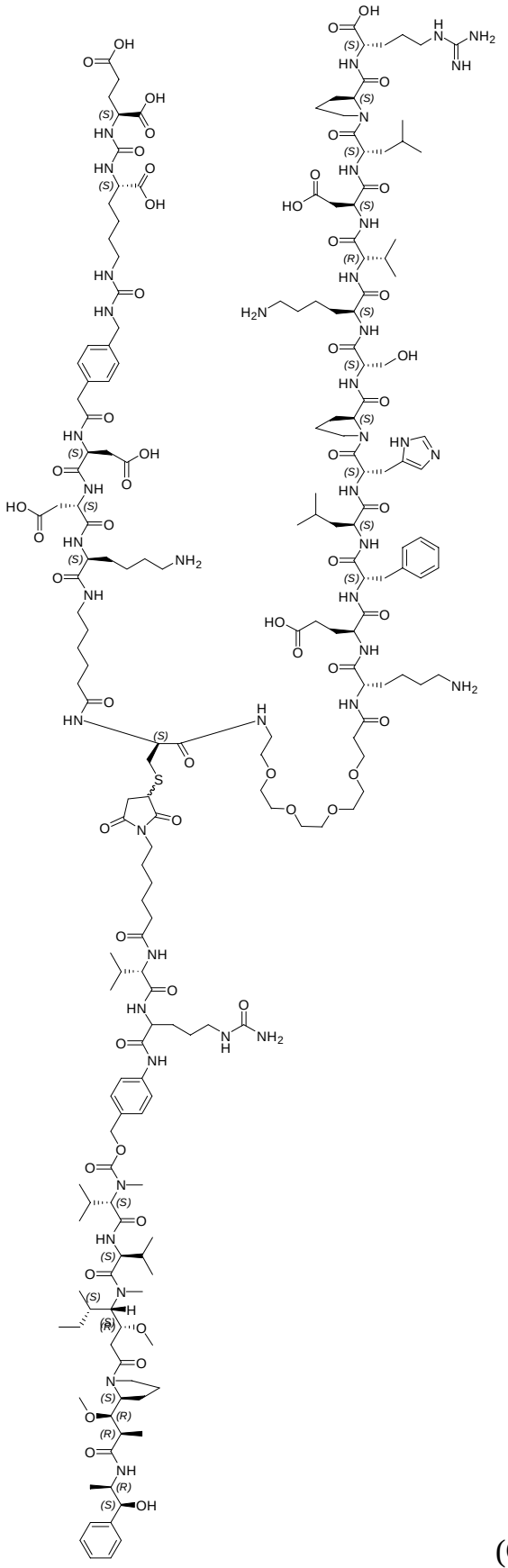
(CB-60S),



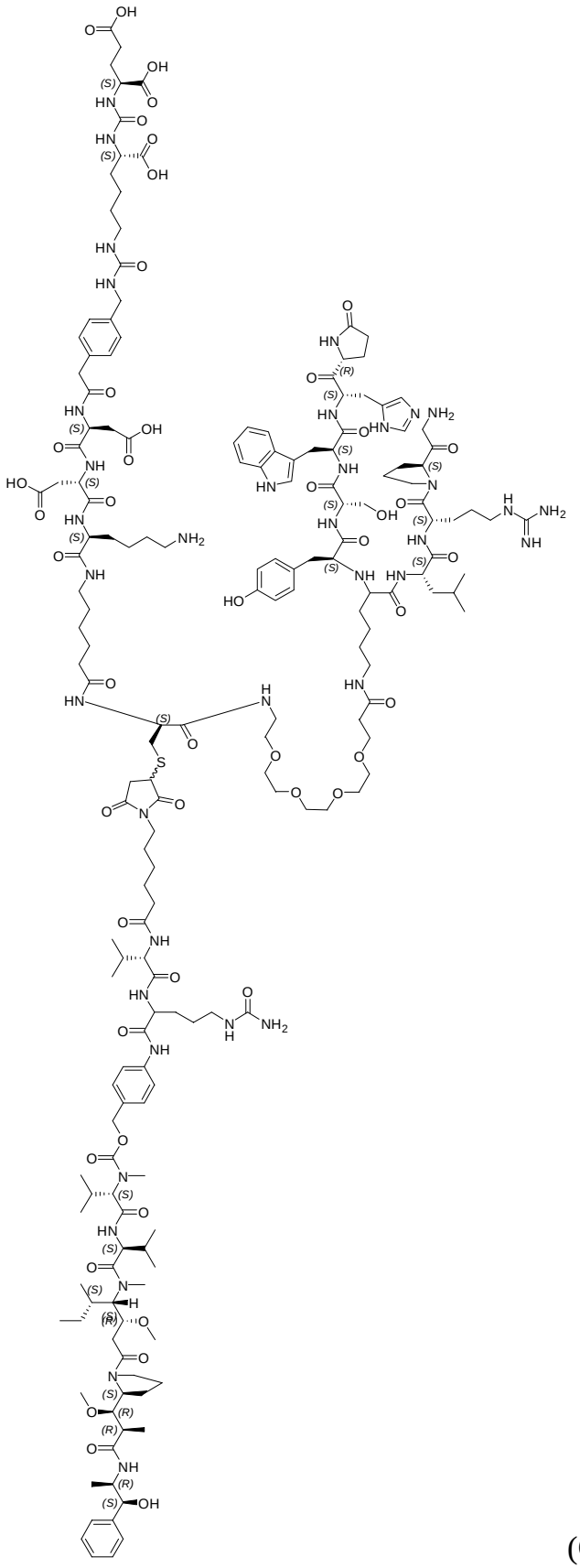
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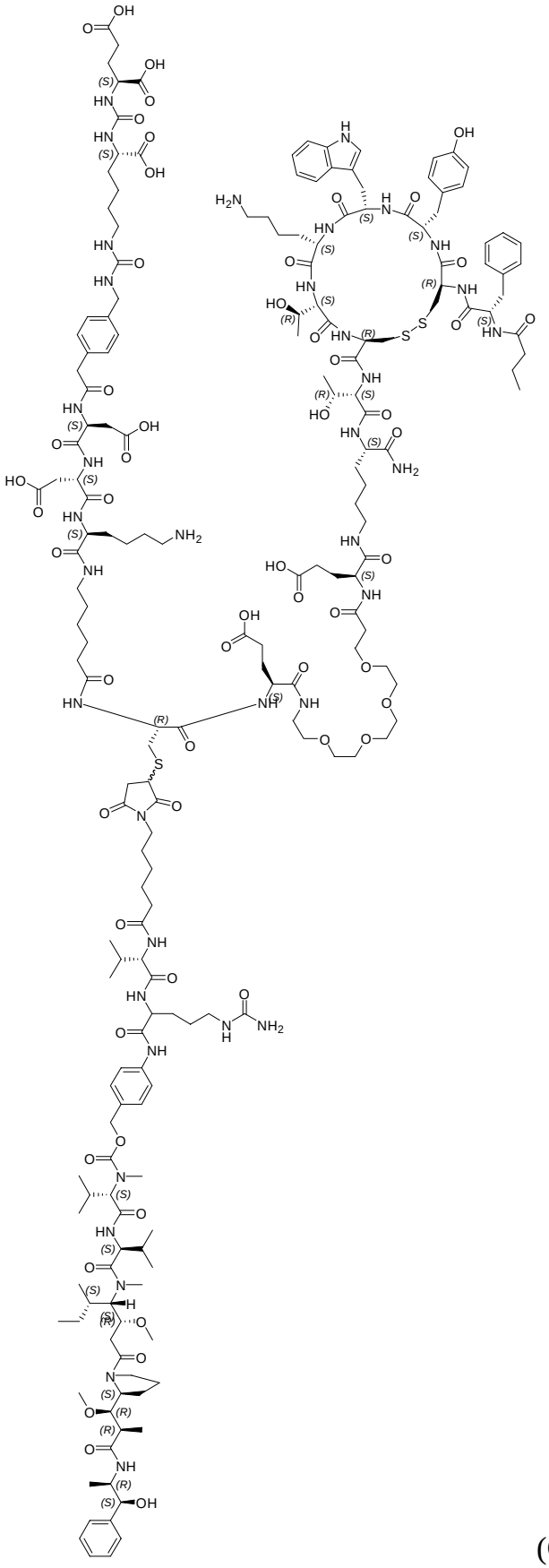
(CB-20C),



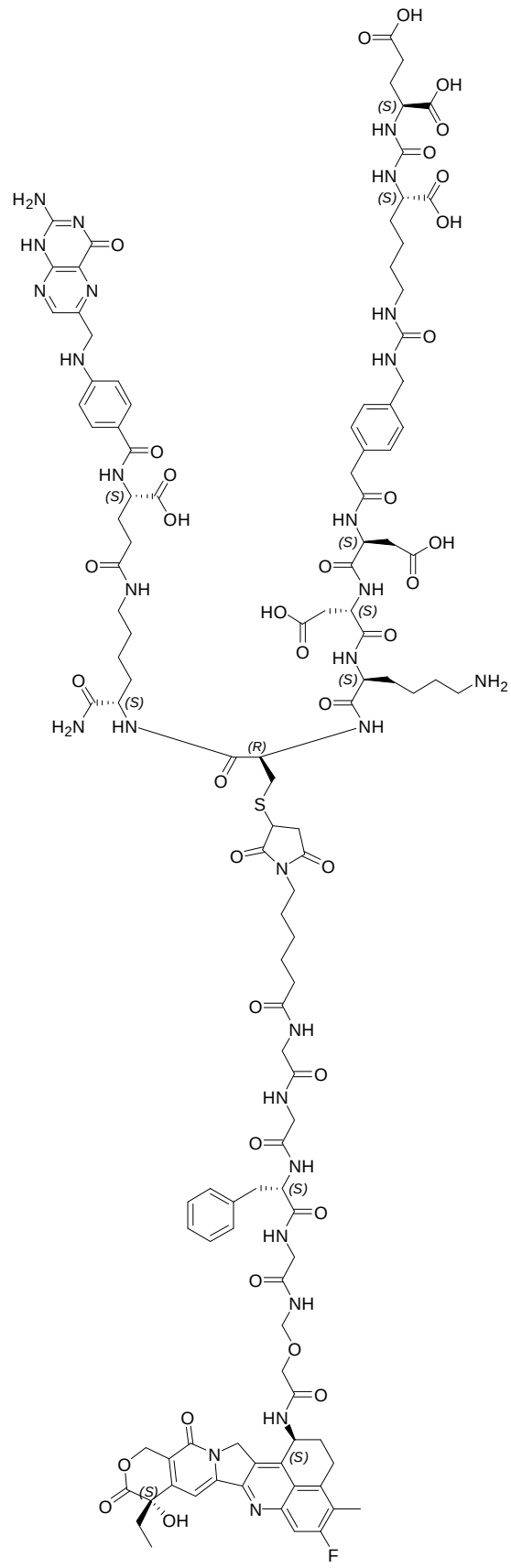
(CB-1020),



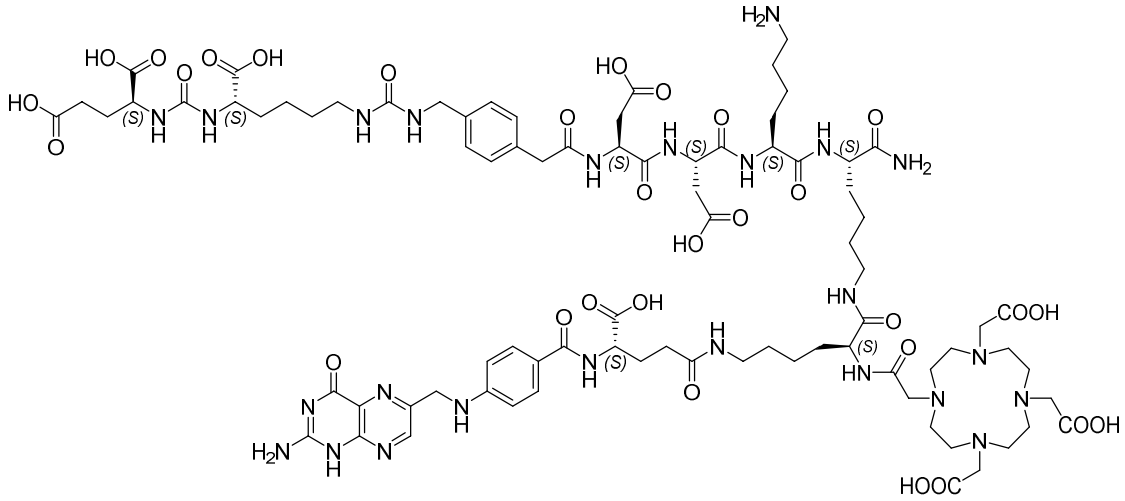
(CB-1320),



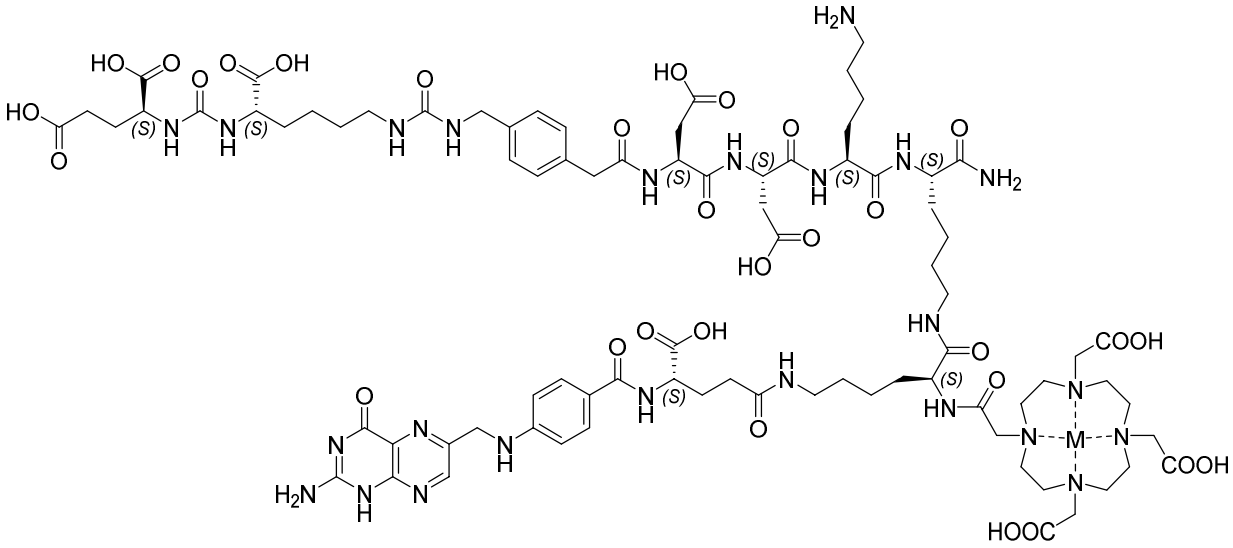
(CB-1820),



(CR19428),

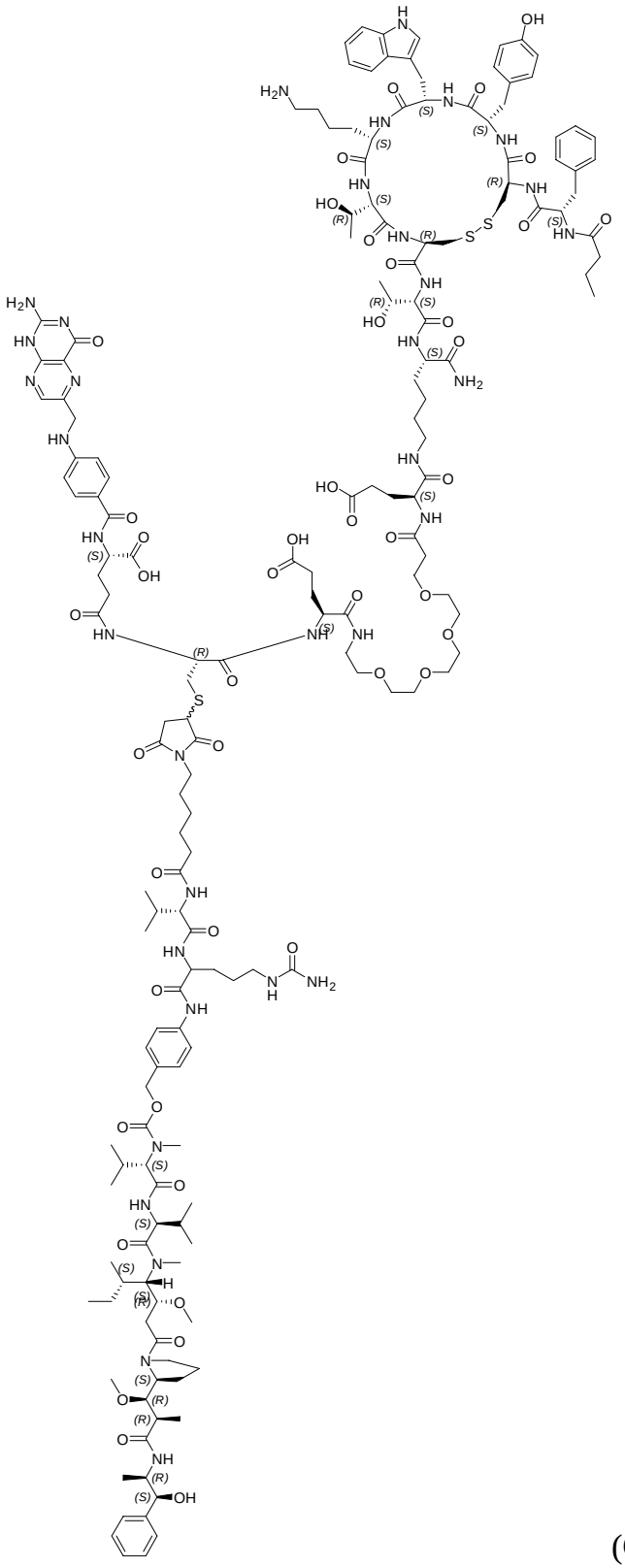


(20R-SM09) and

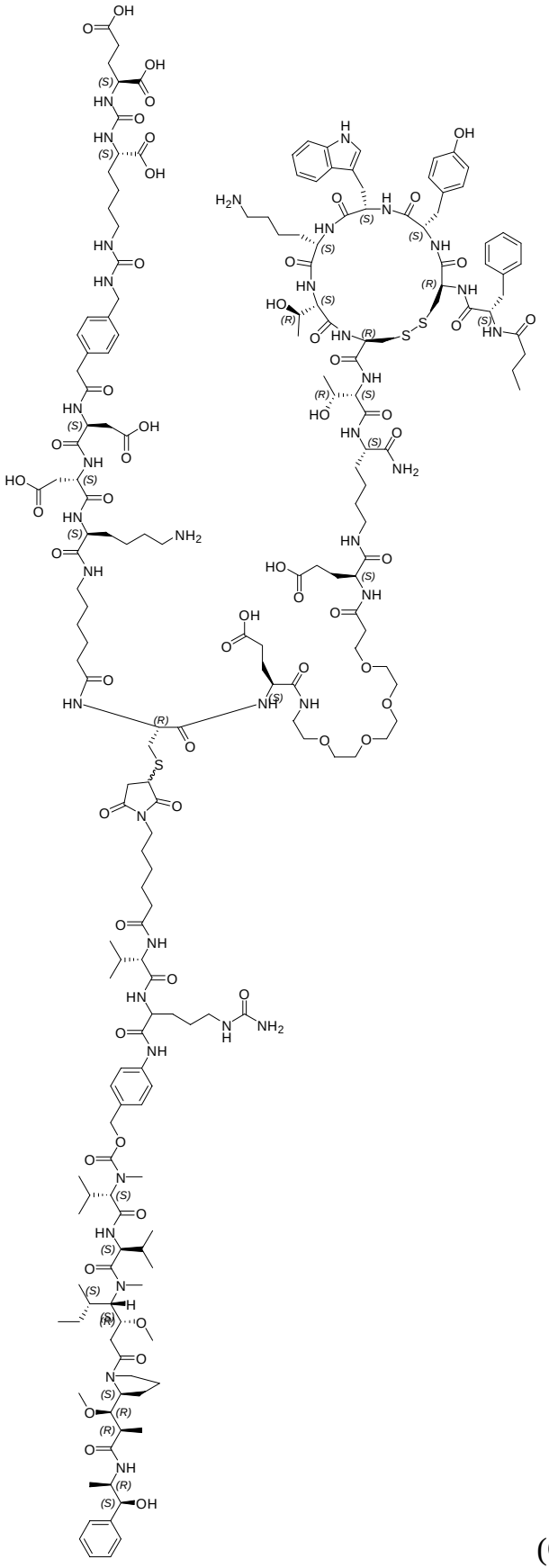


(CB-20R), wherein M is a radionuclide.

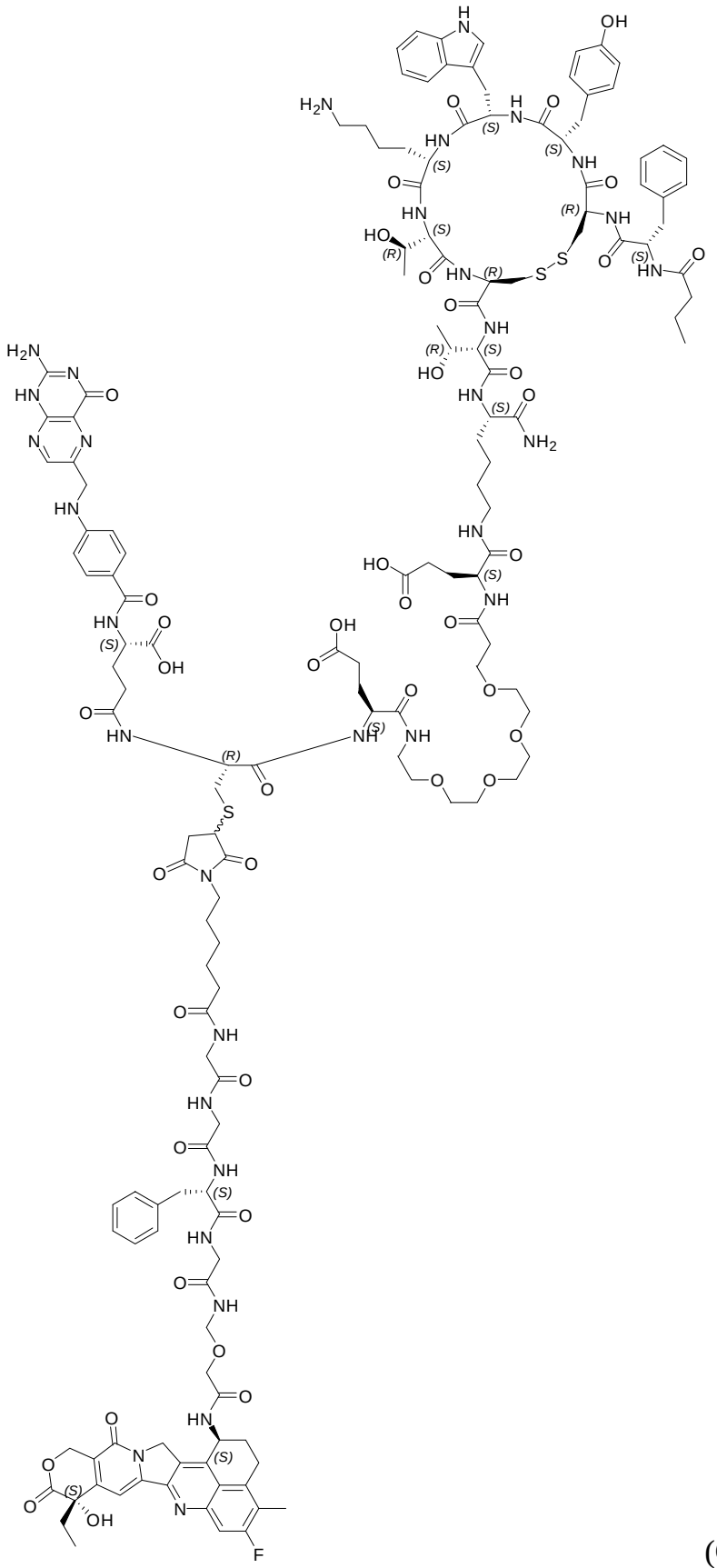
~~33~~25. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 6, wherein the conjugate compound is:



(CB-18G),

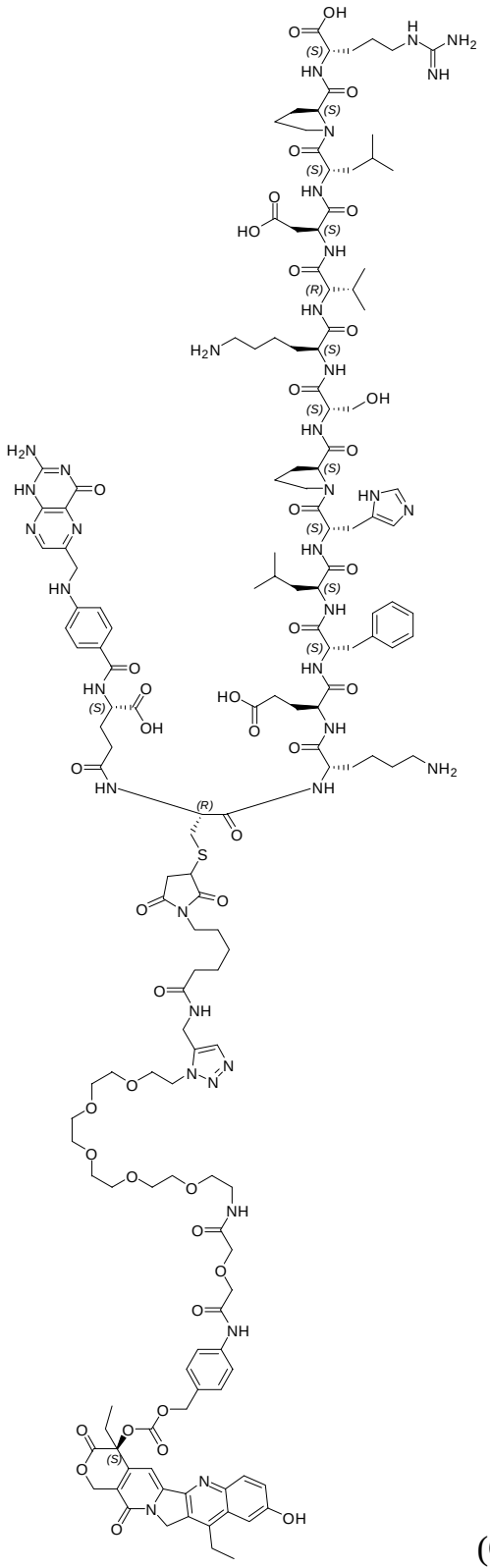


(CB-1820) or

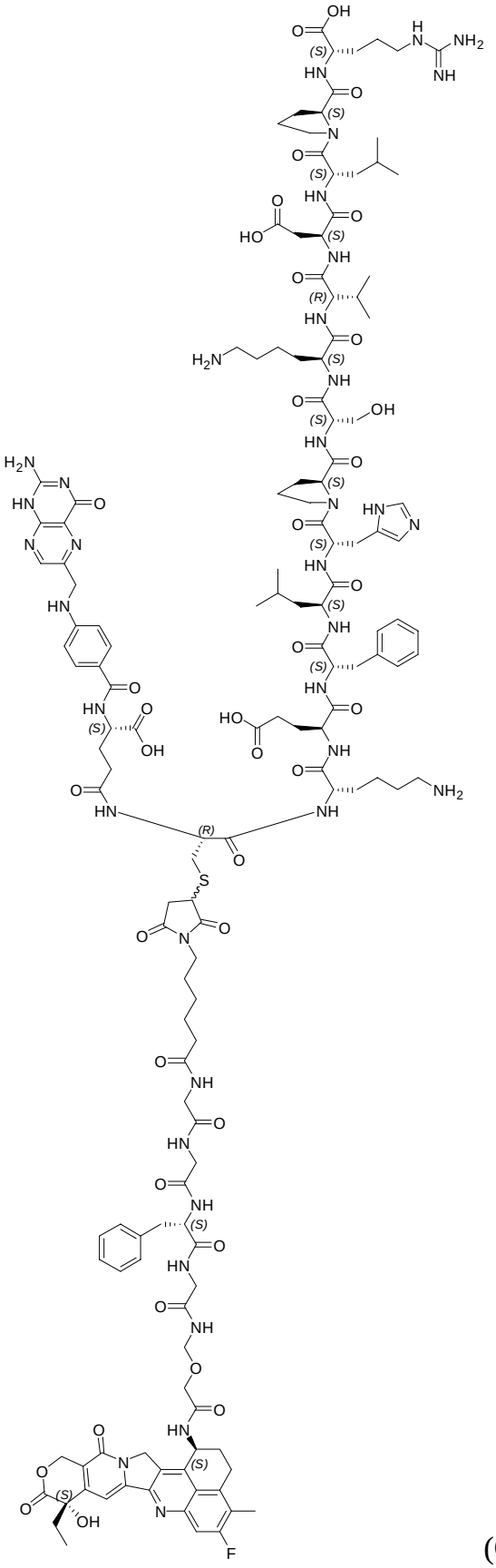


(CR19426).

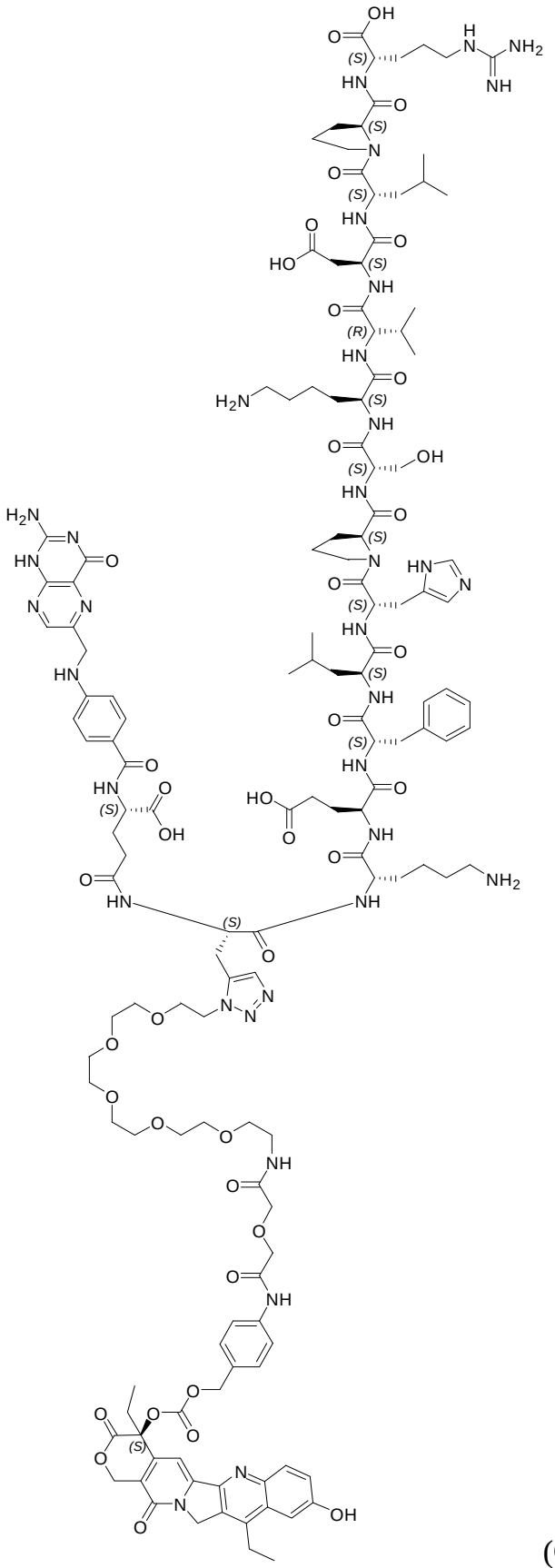
~~34~~26. The conjugate compound or the pharmaceutically acceptable salt thereof according to claim 7, wherein the conjugate compound is



(CB-10S),



(CR19425) or



(CB-50S).

~~35~~27. A pharmaceutical composition comprising the conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims ~~1-34~~1-26, and a pharmaceutically acceptable carrier.

~~36~~28. The pharmaceutical composition according to claim ~~35~~26~~,~~ wherein the composition is ~~administered~~ for intravenous~~ly~~, subcutaneous~~ly~~, oral~~ly~~, intramuscular~~ly~~ or intraventricular~~ly~~ administration.

~~37~~29. ~~A method for delivering a payload to a subject in need thereof, comprising administering to the subject a therapeutically effective amount~~ Use of the conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims ~~1-34~~1-26, or the pharmaceutical composition according to claim ~~35~~ 27 or ~~36~~28 in the manufacture of an agent for delivering the payload to a subject in need thereof.

~~38~~30. ~~A method for treating a disease in a subject, comprising administering to the subject a therapeutically effective amount~~ Use of the conjugate compound or the pharmaceutically acceptable salt thereof according to any one of claims ~~1-34~~1-26, or the pharmaceutical composition according to claim ~~35~~ 27 or ~~36~~28 in the manufacture of a medicament for treating a disease in a subject.

~~39~~31. The ~~method~~ use according to claim ~~38~~30, wherein the disease is selected from the group consisting of a cancer, an immunological disease, a cardiovascular disease, a metabolic disease, and a neurological disease.

~~40~~32. The use~~method~~ according to claim ~~39~~31, wherein the cancer is selected from the group consisting of prostatic cancer, breast cancer, lung cancer, renal cancer, leukaemia, ovarian cancer, gastric cancer, uterine cancer, endometrial carcinoma, liver cancer, colon cancer, thyroid cancer, pancreatic cancer, colorectal cancer, oesophageal cancer, testicular cancer, skin cancer, lymphoma, and multiple myeloma.

~~41~~33. The use~~method~~ according to claim ~~39~~31, wherein the immunological disease is an autoimmune disease.

~~42~~34. The use~~method~~ according to claim ~~41~~33, wherein the autoimmune disease is selected from the group consisting of connective tissue disease, systemic sclerosis, rheumatoid arthritis, and systemic lupus erythematosus.

~~43~~35. The use~~method~~ according to claim ~~39~~31, wherein the cardiovascular disease is selected from the group consisting of angina, myocardial infarction, stroke, heart attack, hypertensive heart disease, rheumatic heart disease, cardiomyopathy, arrhythmia, and congenital heart disease.

~~44~~36. The use~~method~~ according to claim ~~39~~31, wherein the metabolic disease is selected from the group consisting of diabetes, gout, obesity, hypoglycaemia, hyperglycaemia, and dyslipidaemia.

~~45~~37. The use~~method~~ according to claim ~~39~~31, wherein the neurological disease is selected from the group consisting of Alzheimer's disease, Parkinson's disease, Huntington's disease, head injury, multiple sclerosis, vertigo, coma, and epilepsy.

~~46~~38. The use~~method~~ according to any one of claims ~~38-45~~ 30-37, ~~wherein the method~~ further ~~comprises~~ comprising administering one or more therapeutic agents in combination with the conjugate compound or the pharmaceutically acceptable salt thereof, or the pharmaceutical composition.