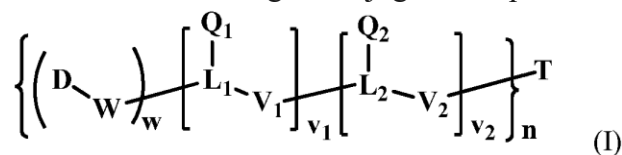


CLAIMS

What is claimed is:

1. A side chain-linked conjugate compound of the Formula (I):



Wherein

- “—” represents a single bond;—

n is 1 to 30;—

T is a cell-binding agent/or molecule, selected from the group consisting of comprising an antibody, a single chain antibody, an antibody fragment that binds to a target cell, a monoclonal antibody, a single chain monoclonal antibody, a monoclonal antibody fragment that binds to the target cell, a chimeric antibody, a chimeric antibody fragment that binds to the target cell, ~~a domain antibody, a do-main antibody fragment that binds to the target cell, an adnectin that mimics antibody, a DARPin, a lymphokine, a hormone, a vitamin, a growth factor, a colony stimulating factor, a nutrient transport molecule, (a transferrin), a and/or a cell-binding peptide,~~ protein, or an small molecule attached on albumin-attached molecule, a polymer, a dendrimer, a liposome, a nanoparticle, a vesicle, or on a (viral) capsid;—

L₁ and L₂ are; the same or different; and are independently ~~selected from~~ O, NH, N, S, P, NNH, NHNH, N(R₃), N(R₁₂), N(R₁₂)-N(R₁₂'), CH, CO, C(O)-NH, C(O)-O, NHC(O)-NH, NHC(O)-O, ~~polyethyleneoxy unit of formula (OCH₂CH₂)_pOR₁₂, or (OCH₂CH(CH₃))_pOR₁₂, or NH(CH₂CH₂O)_pR₁₂, or NH(CH₂CH(CH₃)O)_pR₁₂, or N[(CH₂CH₂O)_pR₁₂], or [(CH₂CH₂O)_pR₁₂], or (OCH₂CH₂)_pCOOR₁₂, or CH₂CH₂(OCH₂CH₂)_pCOOR₁₂, wherein p and p' are independently an integer selected from 0 to about 1000, or combination thereof; C₁-C₈ of alkyl; C₂-C₈ of heteroalkyl, alkylcycloalkyl, heterocycloalkyl; C₃-C₈ of aryl, Ar-alkyl, heterocyclic, carbocyclic, cycloalkyl, heteroalkylcycloalkyl, alkylcarbonyl, heteroaryl; or (Aa)_r, wherein r=1-12 (one to 12-amino acid units)-, which is ~~composed from~~ a natural or un-natural amino acids, ~~or the same or different sequences of dipeptide, tripeptide, tetrapeptide, pentapeptide, hexapeptide, heptapeptide, octapeptide, nonapeptide, decapeptide, undecapeptide~~~~

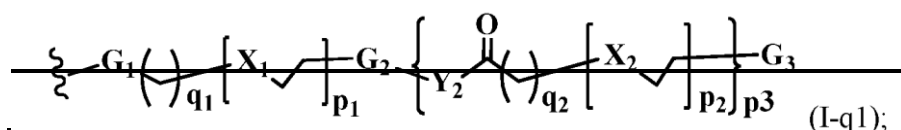
or dodecapeptide unit;

W is a stretcher unit having C₁-C₁₈C₈, normally comprising a self-immolative spacer, a peptidyl unit, a hydrazone, a disulfide, a thioether, an ester, or an amide bond;-

w is 1 or 2 or 3;

V₁ and V₂ are independently a spacer unit and selected from comprising O, NH, S, C₁-C₈ alkyl, C₂-C₈ heteroalkyl, alkenyl, or alkynyl, C₃-C₈ aryl, heterocyclic, carbocyclic, cycloalkyl, alkylcycloalkyl, heterocycloalkyl, heteroaralkyl, heteroalkylcycloalkyl, or alkylcarbonyl, or (Aa)_r, r=1-12 (one to 12 amino acid units)-, which is composed from a natural or unnatural amino acid, or the same or different sequences of dipeptide, tripeptide, tetrapeptide, pentapeptide, hexapeptide, heptapeptide, octapeptide, nonapeptide, decapeptide, undecapeptide or dodecapeptide unit; or (CH₂CH₂O)_p, p is 0-1000100; and v₁ and v₂ are independently 0, 1 or 2, but v₁ and v₂ are not 0 at the same time; when v₁ or v₂ is 0, it means one of the side chain Q₁ or Q₂ fragment is absent;

Q₁ and Q₂ are independently represented by Formula (I-q1):



wherein  is the site linked to L₁ or L₂;-

G₁ and G₂ are independently OC(O), NHC(O), C(O), CH₂, NH, OC(O)NH, NHC(O)NH, O, S, B, P(O)(OH), NHP(O)(OH), NHP(O)(OH)NH, CH₂P(O)(OH)NH, OP(O)(OH)O, CH₂P(O)(OH)O, NHS(O)₂, NHS(O)₂NH, CH₂S(O)₂NH, OS(O)₂O, CH₂S(O)₂O, Ar, ArCH₂, ArO, ArNH, ArS, ArNR₁, or (Aa)_{q1};-

G₃ is OH, SH, OR₁₂, SR₁₂, OC(O)R₁₂, NHC(O)R₁₂, C(O)R₁₂, CH₃, NH₂, NR₁₂, ⁺NH(R₁₂), ⁺N(R₁₂)(R₁₂), C(O)OH, C(O)N₂, NHC(O)NH₂, BH₂, BR₁₂R₁₂, P(O)(OH)₂, NHP(O)(OH)₂, NHP(O)(NH₂)₂, S(O)₂(OH), (CH₂)_{q1}C(O)OH, (CH₂)_{q1}P(O)(OH)₂, C(O)(CH₂)_{q1}C(O)OH, OC(O)(CH₂)_{q1}C(O)OH, NHC(O)(CH₂)_{q1}C(O)OH, CO(CH₂)_{q1}P(O)(OH)₂, NHC(O)O(CH₂)_{q1}C(O)OH, OC(O)NH(CH₂)_{q1}C(O)OH, NHCO(CH₂)_{q1}P(O)(OH)₂, NHC(O)(NH)(CH₂)_{q1}C(O)OH, CONH(CH₂)_{q1}P(O)(OH)₂, NHS(O)₂(CH₂)_{q1}C(O)OH, CO(CH₂)_{q1}S(O)₂(OH), NHS(O)₂NH(CH₂)_{q1}C(O)OH, OS(O)₂NH

~~(CH₂)_{q1}C(O)OH, NHCO(CH₂)_{q1}S(O)₂(OH), NHP(O)(OH)(NH)(CH₂)_{q1}C(O)OH, CONH(CH₂)_{q1}S(O)(OH), OP(O)(OH)₂(CH₂)_{q1}P(O)(NH)₂, NHS(O)₂(OH), NHS(O)₂NH₂, CH₂S(O)₂NH₂, OS(O)₂OH, OS(O)₂OR₄, CH₂S(O)₂OR₄₂, Ar, ArR₄₂, ArOH, ArNH₂, ArSH, ArNHR₄₂, or (Aa)_{q1}; (Aa)_{q1} is a peptide containing the same or different sequence of natural or unnatural amino acids;~~

~~X₄ and X₂ are independently O, CH₂, S, S(O), NHNH, NH, N(R₄₂), ⁺NH(R₄₂), ⁺N(R₄₂)(R₄₂), C(O), OC(O), OC(O)O, OC(O)NH, or NHC(O)NH; Y₂ is O, NH, NR₄₂, CH₂, S, NHNH, Ar; R₄₂, R₄₂, R₄₃ and R₄₃ are independently H, or C₄~C₈ alkyl; C₂~C₈ heteroalkyl, or heterocyclic; C₂~C₈ aryl, Ar-alkyl, cycloalkyl, alkylcycloalkyl, heterocycloalkyl, heteroalkylcycloalkyl, carbocyclic, or alkylcarbonyl;~~

Y₂ is O, NH, NR₁, CH₂, S, NHNH, or Ar;

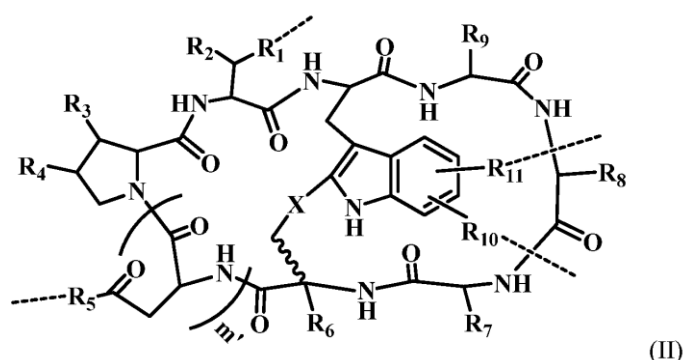
p₁, p₂ and p₃ are independently 0–100 but are not 0 at the same time;

q₁ and q₂ are independently 0–24;

~~Alternatively Q₁ and Q₂ are independently a C₂–C₁₀₀ polycarboxylic acid; a C₂–C₁₀₀ polyalkylamine; a C₆–C₁₀₀ oligosaccharide or polysaccharide; a C₆–C₁₀₀ zwitterionic betaines or zwitterionic poly-(sulfobetaine)s that consists of a quaternary ammonium cation and a sulfonate anion; a C₆–C₁₀₀ biodegradable polymer composed of poly-(lactic/glycolic acid) (PLGA)-, poly-(acrylates)-, chitosan, copolymer of N-(2-hydroxypropyl) methacrylamide, poly-[2-(methacryloyloxy)-ethyl phosphorylcholine] (PMPC)-, poly-L-glutamic acid, poly-(lactide-co-glycolide) (PLG)-, poly-(lactide-co-glycolide)-, poly-(ethylene glycol) (PEG)-, poly-(propylene glycol) (PPG)-, poly-(lactide-co-glycolide)-, poly-(ethylene glycol)-modified conjugated peptides, poly-(ethylene glycol)-containing an amino acid or peptides, poly-(ethylene glycol)-modified conjugated lipids, poly-(ethylene glycol)-modified conjugated alkylcarboxylic acid, poly-(ethylene glycol)-modified conjugated alkylamine, poly-(lactide-co-glycolide, hyaluronic acid (HA) (glycosaminoglycan)-, heparin/heparan sulfate (HSGAGs)-, chondroitin sulfate/dermatan sulfate (CSGAGs)-, poly-(ethylene glycol)-modified conjugated alkylsulfate, poly-(ethylene glycol)-modified conjugated alkylphosphate, or poly-(ethylene glycol)-modified conjugated alkyl quaternary ammonium;~~

~~Alternatively~~, any one or more of W, Q-1, Q-2, L-1, L-2, V-1, or V-2, can be independently absent but Q-1, and Q-2 are not absent at the same time;

D is an amanita toxin having the following formula (II)-:



or an isotope of a chemical element, or a pharmaceutically acceptable salt, hydrates, or hydrated salt; ~~or a polymorphic crystalline structure;~~ or an optical isomer, racemate, diastereomer or enantiomer thereof,

wherein ----- is a linkage site that links to W independently;

a single bond on aromatic (~~indole~~) ring means it links any one of carbon position of the aromatic ring;

~~~~ represents an optional single bond or an absent bond;

R<sub>1</sub> and R<sub>2</sub> are independently ~~selected from~~ H, OH, CH<sub>2</sub>OH, CH(OH)CH<sub>2</sub>OH, CH(CH<sub>3</sub>)CH<sub>2</sub>OH, CH(OH)CH<sub>3</sub>, C<sub>1</sub>-C<sub>8</sub> alkyl, -OR<sub>12</sub> (ether), C<sub>2</sub>-C<sub>8</sub> alkenyl, alkynyl, heteroalkyl, -OCOR<sub>12</sub> (ester), -OC(=O)OR<sub>12</sub>-(carbonate), -OC(=O)NHR<sub>12</sub> (carbamate); C<sub>3</sub>-C<sub>8</sub> aryl, heterocyclic, carbocyclic, cycloalkyl, heterocycloalkyl, heteroaralkyl, or alkylcarbonyl;-

R<sub>3</sub> and R<sub>4</sub> are independently ~~selected from~~ H, OH, -OR<sub>12</sub> (ether), -OCOR<sub>12</sub> -(ester), -OCOCH<sub>3</sub> (acetate), -OCOOR<sub>12</sub> (carbonate), -OC(=O)NHR<sub>12</sub> (carbamate), -OP(O)(OR<sub>12</sub>)(OR<sub>12</sub>') (phosphate), OP(O)(NHR<sub>12</sub>)(NHR<sub>12</sub>') (phosphamide), O-SO<sub>3</sub><sup>-</sup>, or O-glycoside;

R<sub>5</sub> is ~~selected from~~ H, OH, NH<sub>2</sub>, NHOH, NHNH<sub>2</sub>, -OR<sub>12</sub>, -NHR<sub>12</sub>, NHNHR<sub>12</sub>, -NR<sub>12</sub>R<sub>12</sub>', or N-(H)-(R<sub>12</sub>)-R<sub>13</sub>CO-(Aa)<sub>p</sub>, (an amino acid or peptide, wherein Aa is an amino acid or a polypeptide, p represents 0-6);

R<sub>6</sub> is ~~selected from~~ H, OH, CH<sub>2</sub>OH, CH(OH)-CH<sub>2</sub>OH, CH-(CH<sub>2</sub>OH)<sub>2</sub>, CH-(CH<sub>3</sub>)-OH, CH<sub>2</sub>CH<sub>2</sub>OH, PrOH, BuOH, C<sub>1</sub>~C<sub>8</sub> alkyl, -OR<sub>12</sub> (ether)-, C<sub>2</sub>~C<sub>8</sub> alkenyl, alkynyl, heteroalkyl,

–OCOR<sub>12</sub> (ester)-; C<sub>3</sub>~C<sub>8</sub> aryl, heterocyclic, or carbocyclic;

R-7, R-8 and R-9 are independently ~~selected from~~ H, OH, CH<sub>3</sub>, CH-(CH<sub>3</sub>)<sub>2</sub>, CH-(CH<sub>3</sub>)-CH<sub>2</sub>CH<sub>3</sub>, CH<sub>2</sub>OH, CH-(OH)-CH<sub>2</sub>OH, CH<sub>2</sub>CH-(OH) CH<sub>2</sub>OH, CH-(CH<sub>2</sub>OH)<sub>2</sub>, CH<sub>2</sub>C-(OH)-(CH<sub>2</sub>OH)<sub>2</sub>, CH<sub>2</sub>C-(OH)-(CH<sub>3</sub>)-(CH<sub>2</sub>OH)-, CH<sub>2</sub>C-(OH)-(CH-(CH<sub>3</sub>)<sub>2</sub>)-(CH<sub>2</sub>OH)-, CH<sub>2</sub>CH<sub>2</sub>OH, PrOH, BuOH, CH<sub>2</sub>COOH, CH<sub>2</sub>CH<sub>2</sub>COOH, CH-(OH)-COOH, CH<sub>2</sub>CONH<sub>2</sub>, CH<sub>2</sub>CH<sub>2</sub>CONH<sub>2</sub>, CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>, CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>NHC(=NH)-NH<sub>2</sub>, C<sub>1</sub>~C<sub>8</sub> alkyl, CH<sub>2</sub>Ar, CH<sub>2</sub>SH, CH<sub>2</sub>SR<sub>12</sub>, CH<sub>2</sub>SSR<sub>12</sub>, CH<sub>2</sub>SSAr, CH<sub>2</sub>CH<sub>2</sub>SCH<sub>3</sub>, –OR<sub>12</sub>(ether), C<sub>2</sub>~C<sub>8</sub> alkenyl, alkynyl, heteroalkyl, –OCOR<sub>12</sub> (ester)-; C<sub>3</sub>~C<sub>8</sub> aryl, het-erocyclic, or carbocyclic;–

R<sub>10</sub> and R<sub>11</sub> are independently ~~selected from~~ H, NH<sub>2</sub>, OH, SH, NO<sub>2</sub>, halogen, -NHOH, –N<sub>3</sub> (azido)-; -CN (cyano)-; C<sub>1</sub>~C<sub>8</sub> alkyl, ~~C<sub>2</sub>~C<sub>8</sub> alkenyl, alkynyl, heteroalkyl~~; C<sub>3</sub>~C<sub>8</sub> aryl, heterocyclic, ~~or carbocyclic~~; –OR<sub>12</sub> (ether)-, –OCOR<sub>12</sub> (ester)-, –OCOCH<sub>3</sub> (acetate)-, –OC-(O)-OR<sub>12</sub> (carbonate)-, –OC-(O)-CH-(R<sub>12</sub>) NHAa (Aa is an amino acid group), –NR<sub>12</sub>R<sub>12</sub>' (amine)-, –NR<sub>12</sub>COR<sub>12</sub>' (amine)-, –R<sub>12</sub>NHCOR<sub>12</sub>' (alkylamide), –R<sub>12</sub>NHR<sub>12</sub>' (amine), –NHR<sub>12</sub>NHR<sub>12</sub>' (amine)-; –R<sub>12</sub>NCO-NR<sub>12</sub>'(urea)-, –R<sub>12</sub>NCOOR<sub>12</sub>' (carbamate)-, –OCONR<sub>12</sub>R<sub>12</sub>' (carbamate)-; –NR<sub>12</sub> (C=NH) NR<sub>12</sub>'-R<sub>12</sub>' (guani-dinum)-; –R<sub>12</sub>NHCO-(Aa)<sub>p</sub>, –R<sub>12</sub>NHR<sub>12</sub>'-CO-(Aa)<sub>p</sub>, –NR<sub>12</sub>CO-(Aa)<sub>p</sub>, (an amino acid or peptide, wherein Aa is an amino acid or a polypeptide, p represents 0-6)-; –N-(R<sub>12</sub>)-CONR<sub>12</sub>'-R<sub>12</sub>' (urea)-; –OCSNHR<sub>12</sub> (thiocarbamate)-; –R<sub>12</sub>SH (thiol)-; –R<sub>12</sub>SR<sub>12</sub>' (sulfide)-; –R<sub>12</sub>SSR<sub>12</sub>' (disulfide)-; –S-(O)-R<sub>12</sub> (sulfoxide)-; –S-(O<sub>2</sub>)-R<sub>12</sub> (sulfone)-; –SO<sub>3</sub>, HSO<sub>3</sub>, HSO<sub>2</sub>, or a salt of HSO<sub>3</sub><sup>-</sup>, SO<sub>3</sub><sup>-2</sup> or HSO<sub>2</sub><sup>-</sup> (sulphite)-; –OSO<sub>3</sub><sup>-</sup>; –N-(R<sub>12</sub>)-SOOR<sub>12</sub>' (sulfonamide)-; ~~H<sub>2</sub>S<sub>2</sub>O<sub>5</sub> or a salt of S<sub>2</sub>O<sub>5</sub><sup>-2</sup> (metabisulfite); PO<sub>3</sub>SH<sub>3</sub>, PO<sub>2</sub>S<sub>2</sub>H<sub>2</sub>, POS<sub>3</sub>H<sub>2</sub>, PS<sub>4</sub>H<sub>2</sub> or a salt of PO<sub>3</sub>S<sup>-3</sup>, PO<sub>2</sub>S<sub>2</sub><sup>-3</sup>, POS<sub>3</sub><sup>-3</sup>, PS<sub>4</sub><sup>-3</sup> (mono-, di-, tri-, and tetra-thiophosphate); (R<sub>12</sub>O)<sub>2</sub>POSR<sub>12</sub>' (thiophosphate ester); –HS<sub>2</sub>O<sub>3</sub> or a salt of S<sub>2</sub>O<sub>3</sub><sup>-2</sup> (thiosulfate); HS<sub>2</sub>O<sub>4</sub> or a salt of S<sub>2</sub>O<sub>4</sub><sup>-2</sup> (dithionite); (P(=S)(OR<sub>12</sub>)(S)(OH) or a salt formed with a cation (phosphorodithioate); –N-(R<sub>12</sub>)-OR<sub>12</sub>' (hydroxylamine-derivative); R<sub>12</sub>C(=O)-NOH or a salt formed with a cation (hydroxamic acid); (HOCH<sub>2</sub>SO<sub>2</sub><sup>-</sup>, or its salts (formaldehyde sulfoxylate)-; –N-(R<sub>12</sub>)-COR<sub>12</sub>' (amide)-; R<sub>12</sub>R<sub>12</sub>'-R<sub>12</sub>'-NPO<sub>3</sub>H (trialkylphosphor-amidate or phosphoramidic acid)-; ~~or ArAr'Ar''NPO<sub>3</sub>H~~~~

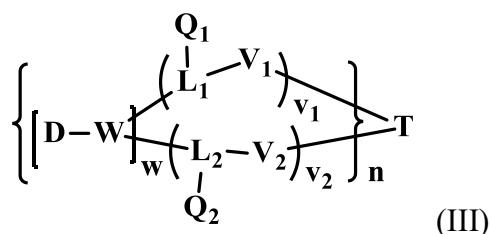
(~~triarylphosphonium~~); OP(O)-(OM<sub>1</sub>)-(OM<sub>2</sub>)-, OCH<sub>2</sub>OP(O)-(OM<sub>1</sub>)-(OM<sub>2</sub>)-, OSO<sub>3</sub>M<sub>1</sub>; O-glycoside (glucoside, galactoside, mannoside, glucuronoside, alloside, fructoside, ~~etc~~), NH-glycoside, S-glycoside or CH<sub>2</sub>-glycoside; M<sub>1</sub> and M<sub>2</sub> are independently H, Na, K, Ca, Mg, NH<sub>4</sub>, NR<sub>1</sub>' R<sub>2</sub>' or R<sub>3</sub>'-; wherein R<sub>1</sub>', R<sub>2</sub>' and R<sub>3</sub>' are independently H, C<sub>1</sub>~<sub>8</sub> alkyl; Ar, Ar', and Ar'' are C<sub>3</sub>-C<sub>8</sub> aryl or heteroaromatic group;

—wherein R<sub>12</sub>, R<sub>12</sub>', and R<sub>12</sub>'' are independently ~~selected from~~ H, C<sub>1</sub>~ C<sub>8</sub> alkyl; ~~C<sub>2</sub>-C<sub>8</sub> of heteroalkyl, alkylcycloalkyl, heterocycloalkyl; C<sub>3</sub>-C<sub>8</sub> of aryl, Ar alkyl, heterocyclic, carbocyclic, cycloalkyl, heteroalkylcycloalkyl, alkylcarbonyl, heteroaryl; or 1-8 carbon atoms of esters, ether, or amide; or polyethyleneoxy unit of formula (OCH<sub>2</sub>CH<sub>2</sub>)-<sub>p</sub> or (OCH<sub>2</sub>CH(CH<sub>3</sub>))-<sub>p</sub>, wherein p is an integer from 0 to about 1000, or combination above thereof, or absent;~~

X is S, O, NH, ~~SO~~, ~~SO<sub>2</sub>~~, or CH<sub>2</sub>;

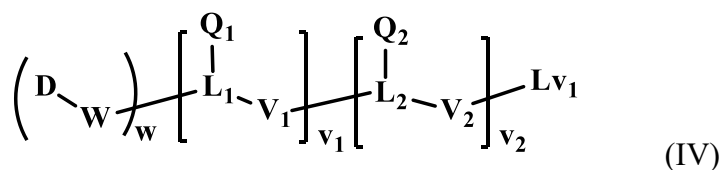
m' is 0 or 1.

2. A side chain-linkaged conjugate compound of the Formula (III):



wherein D, W, w, L<sub>1</sub>, L<sub>2</sub>, Q<sub>1</sub>, Q<sub>2</sub>, V<sub>1</sub>, V<sub>2</sub>, v<sub>1</sub>, v<sub>2</sub>, n, and T are as defined ~~the same as in~~ claim 1.

3. A side chain-linkage compound of Formula (IV)-, which can readily react to a cell-binding molecule T to form a conjugate of Formula (I) as defined in claim 1:-

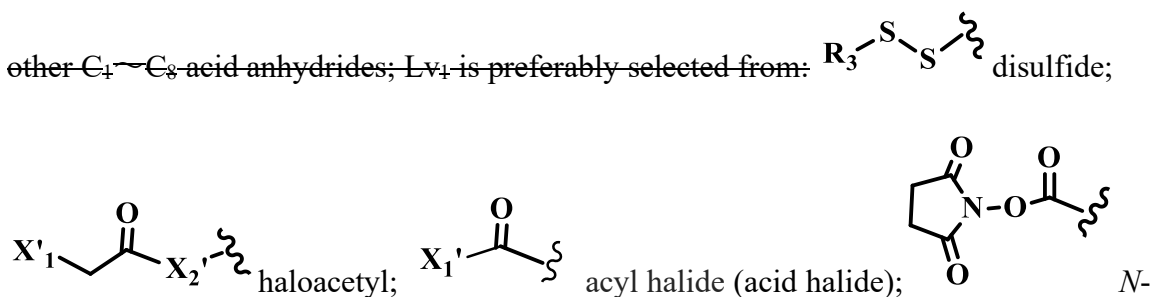
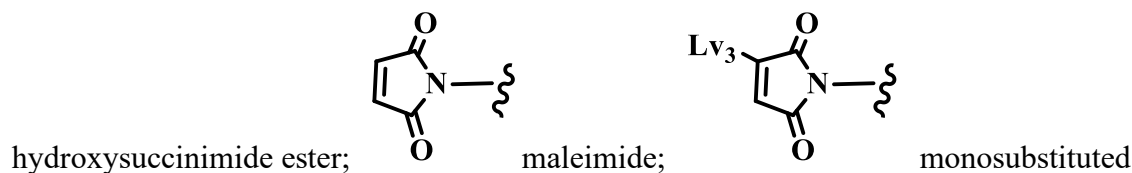
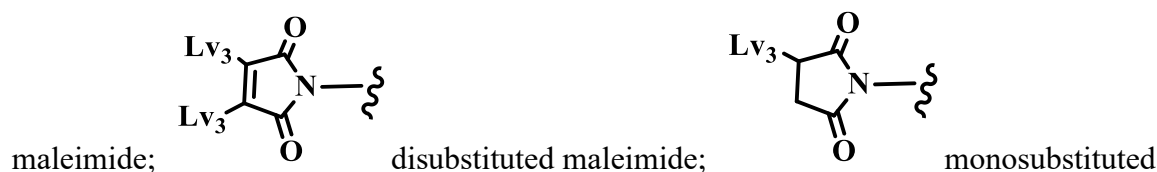


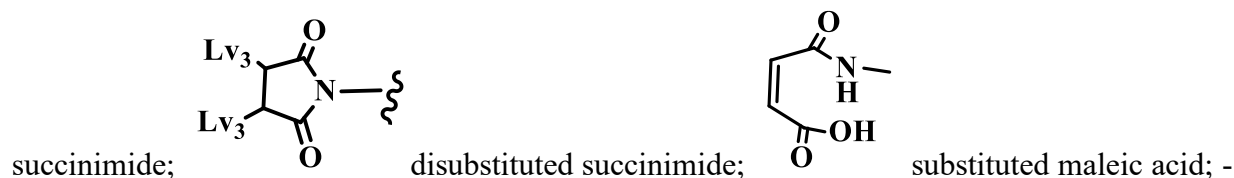
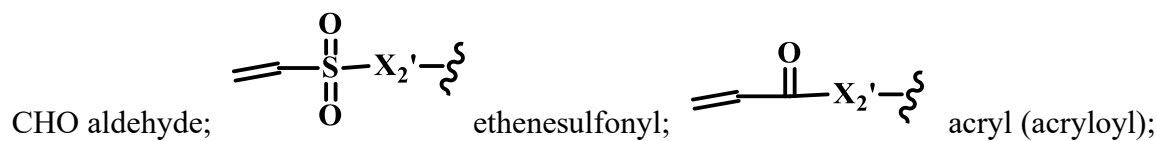
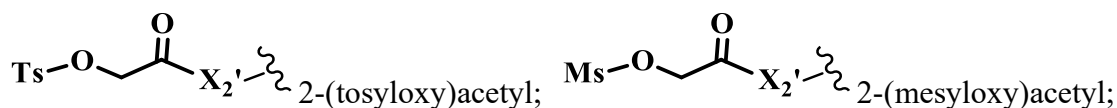
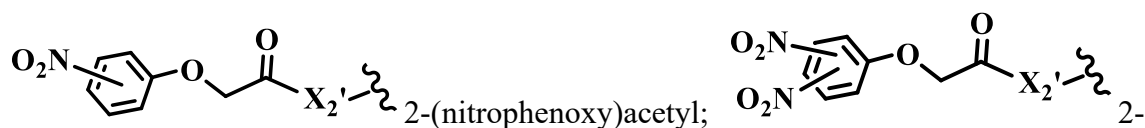
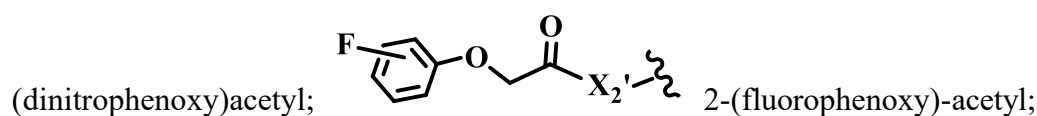
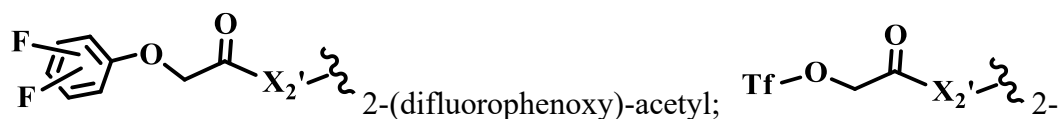
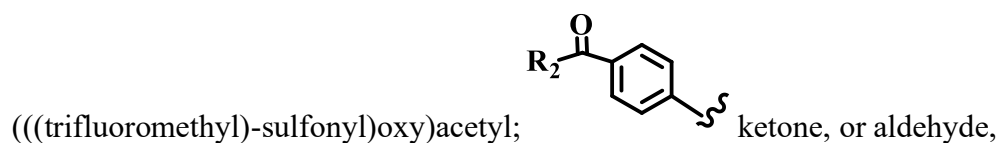
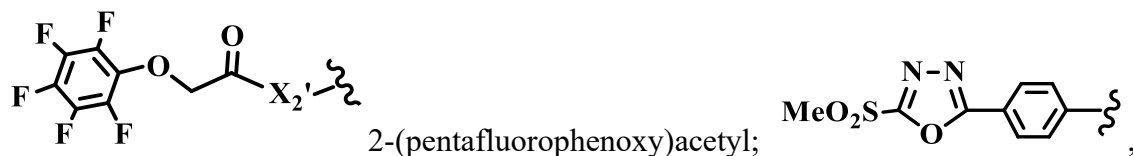
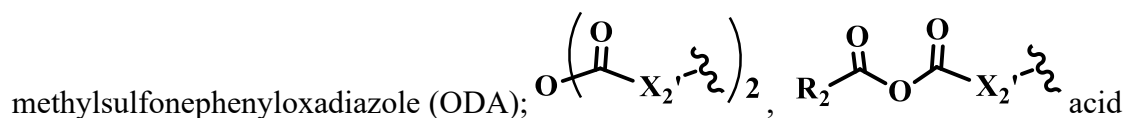
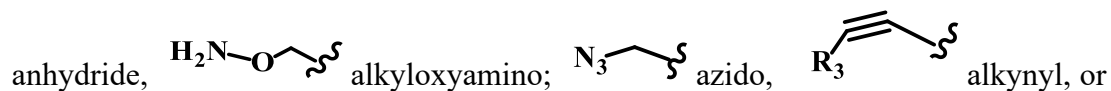
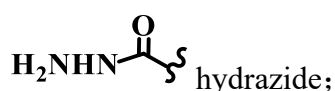
wherein D, W, w, L<sub>1</sub>, L<sub>2</sub>, Q<sub>1</sub>, Q<sub>2</sub>, V<sub>1</sub>, V<sub>2</sub>, v<sub>1</sub>, v<sub>2</sub>, and n, are as defined ~~the same as in~~ claim

1;

LV<sub>1</sub> is a reacting group that can be reacted with a thiol, amine, carboxylic acid, selenol, phenol or hydroxyl group on a cell-binding molecule, wherein LV<sub>1</sub> is selected from OH; F; Cl; Br; I; nitrophenol; N-hydroxysuccinimide (NHS); phenol; dinitrophenol; pentafluorophenol; tetrafluorophenol; difluoro-phenol; mono-fluorophenol; pentachlorophenol; triflate; imidazole; dichlorophenol; tetrachlorophenol; 1-hydroxybenzotriazole; tosylate; mesylate; 2-ethyl-5-phenylisoxazolium-3'-sulfonate, anhydrides formed its self, or formed with the other anhydride, e.g. (acetyl anhydride, or formyl anhydride); or an in-intermediate molecule generated with a condensation reagent for peptide coupling reactions, or for Mitsunobu reactions. The condensation reagents are selected from: EDC (N-(3-Dimethylaminopropyl)-N'-ethylcarbodiimide), DCC (Dicyclohexyl carbodiimide), N, N'-Diisopropylcarbodiimide (DIC), N-Cyclohexyl-N'-(2-morpholino-ethyl)-carbodiimide metho-p-toluenesulfonate (CMC, or CME-CDI), 1, 1'-Carbonyldiimidazole (CDI), TBTU (O-(Benzotriazol-1-yl)-N, N, N', N'-tetramethyluronium tetrafluoroborate), N, N, N', N'-Tetramethyl-O-(1H-benzotriazol-1-yl)-uronium hexafluoro-phosphate (HBTU), (Benzotriazol-1-yloxy) tris (dimethylamino)-phosphonium hexafluorophosphate (BOP), (Benzotriazol-1-yloxy) tripyrrolidinophosphonium hexafluorophosphate (PyBOP), Diethyl cyanophosphonate (DEPC), Chloro-N, N, N', N'-tetramethylformamidiniumhexafluorophosphate, 1-[Bis (dimethyl-amino) methylene]-1H-1, 2, 3-triazolo [4,5-b] pyridinium 3-oxid hexafluorophosphate (HATU), 1-[(Dimethylamino)-(morpholino)-methylene]-1H-[1, 2, 3] triazolo [4, 5-b] pyridine-1-ium 3-oxide hexafluorophosphate (HDMA), 2-Chloro-1, 3-dimethyl-imidazolidinium hexafluorophosphate (CIP), Chlorotripyrrolidino-phosphonium hexafluorophosphate (PyCloP), Fluoro-N, N, N', N'-bis-(tetra-methylene)-formamidinium hexafluorophosphate (BTFFH), N, N, N', N'-Tetramethyl-S-(1-oxido-2-pyridyl)-thiuronium hexafluorophosphate, O-(2-Oxo-1(2H) pyridyl)-N, N, N', N'-tetramethyluronium tetrafluoroborate (TPTU), S-(1-Oxido-2-pyridyl)-N, N, N', N'-tetramethylthiuronium tetrafluoroborate, O-[(Ethoxycarbonyl)-cyanomethylenamino]-N, N, N', N'-tetramethyluronium hexafluorophosphate (HOTU), (1-Cyano-2-ethoxy-2-oxoethylidenaminooxy)-dimethylamino-morpholino-carbenium hexafluorophosphate (CO-MU),

~~O-(Benzotriazol-1-yl)-N,N,N',N'-bis(tetramethylene)-uronium hexafluorophosphate~~  
~~(HBPyU), N-Benzyl-N'-cyclohexyl carbodiimide (with, or without polymer bound),~~  
~~Dipyrrolidino-(N-succinimidyl-oxo)-carbenium hexafluoro-phosphate (HSPyU),~~  
~~Chlorodipyrrolidinocarbenium hexafluorophosphate (PyClU), 2-Chloro-1,3-dimethylimidazoli-~~  
~~dinium tetrafluoroborate (CIB), (Ben-zotriazol-1-yloxy)-dipiperidino-carbenium-~~  
~~hexafluorophosphate (HBPIP), O-(6-Chlorobenzotriazol-1-yl)-N,N,N',N'-~~  
~~tetramethyluronium tetrafluoroborate (TCTU), Bromotris(dimethylamino)-phosphonium-~~  
~~hexafluorophosphate (BroP), Propylphosphonic anhydride (PPACA,  $\text{P}(\text{OPr})_3$ ), 2-Morpholinoethyl-~~  
~~isocyanide (MEI), N,N,N',N'-Tetramethyl-O-(N-succinimidyl)-uronium hexafluoro-phosphate~~  
~~(HSTU), 2-Bromo-1-ethyl-pyridinium tetrafluoroborate (BEP), O-[(Ethoxycarbonyl)-cyano-~~  
~~methylenamino]-N,N,N',N'-tetra-methyluronium tetrafluoroborate (TOTU), 4-(4,6-~~  
~~Dimethoxy-1,3,5-triazin-2-yl)-4-methylmorpholiniumchloride (MMTM, DMTMM), N,N,N',~~  
~~N'-Tetramethyl-O-(N-succinimidyl)-uronium tetrafluoroborate (TSTU), O-(3,4-Dihydro-4-oxo-~~  
~~1,2,3-benzotriazin-3-yl)-N,N,N',N'-tetramethyluronium tetrafluoro-borate (TDBTU), 1,1'-~~  
~~(Azodicarbonyl)-dipiperidine (ADD), Di-(4-chlorobenzyl)-azodi-carboxylate (DCAD), Di-~~  
~~tert-butyl azodicarboxylate (DBAD), Diisopropyl azodicarboxylate (DIAD), Diethyl-~~  
~~azodicarboxylate (DEAD); Lv<sub>4</sub> is also an anhydride, formed by acid themselves or formed with-~~  
~~other C<sub>4</sub>~C<sub>8</sub>-acid anhydrides; Lv<sub>4</sub> is preferably selected from:~~

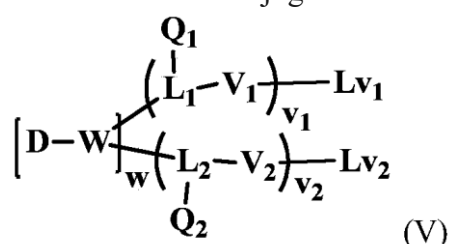




wherein  $X_1'$  is F, Cl, Br, I or  $Lv_3$ ;  $X_2'$  is O, NH,  $N(R_1)$ , or  $CH_2$ ;  $R_3$  is independently H, aromatic, heteroaromatic, or aromatic group wherein one or several H atoms are replaced independently by  $-R_1$ , -halogen,  $-OR_1$ ,  $-SR_1$ ,  $-NR_1R_2$ ,  $-NO_2$ ,  $-S(O)-R_1$ ,  $-S(O)_2R_1$ , or  $-COOR_1$ ;  $Lv_3$  is a leaving group ~~selected from~~ comprising F, Cl, Br, I, nitrophenol; N-hydroxysuccinimide

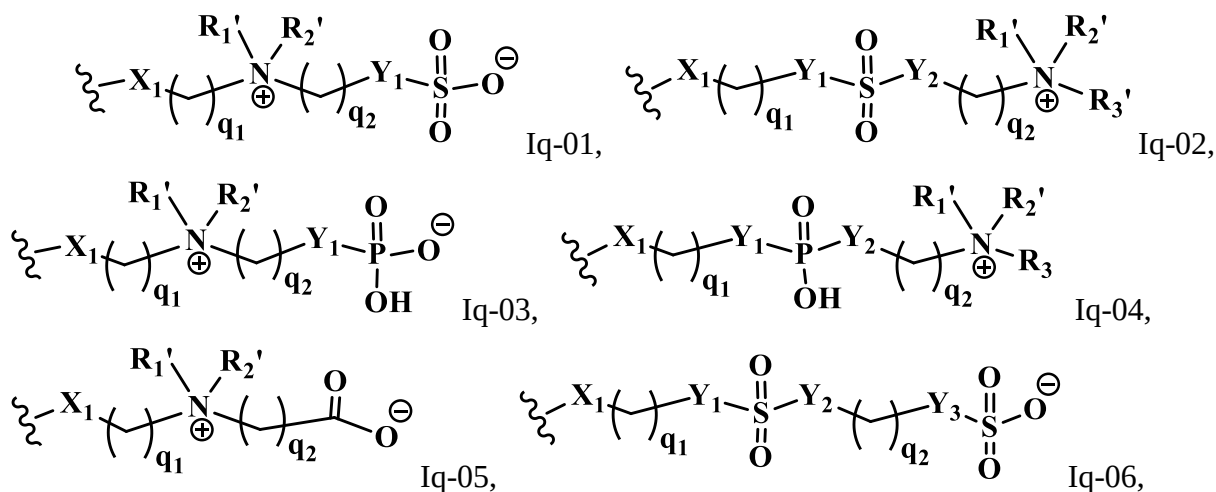
(NHS)-; phenol; dinitrophenol; pentafluorophenol; tetrafluorophenol; difluoro-phenol; monofluorophenol; pentachlorophenol; triflate; imidazole; dichlorophenol; tetrachlorophenol; 1-hydroxybenzotriazole; tosylate; mesylate; 2-ethyl-5-phenylisoxazolium-3'-sulfonate, anhydrides formed its self, or ~~formed with the other anhydride: - acetyl anhydride, or~~ formyl anhydride; or an inter-mediate molecule generated with a condensation reagent for peptide coupling reactions or for Mitsunobu reactions.

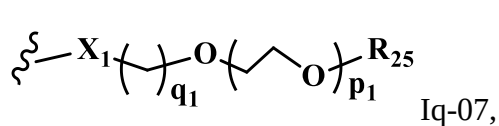
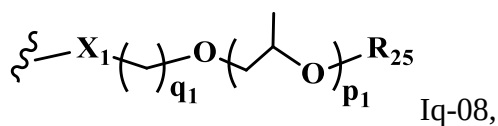
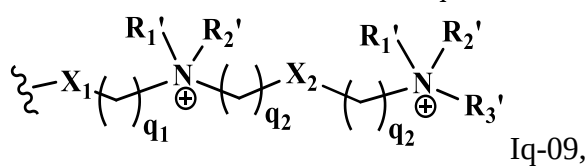
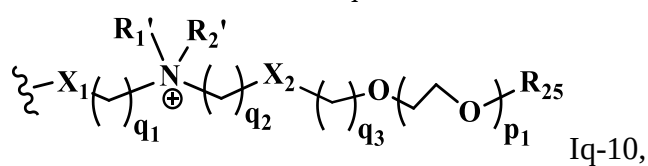
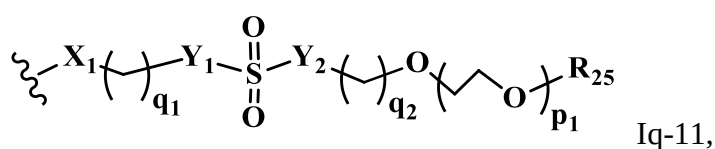
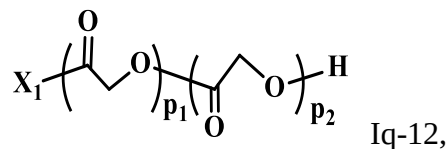
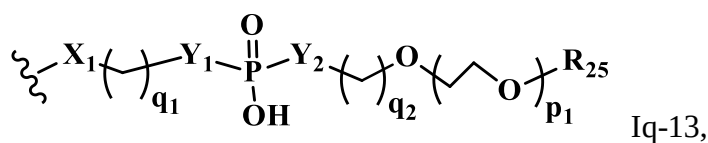
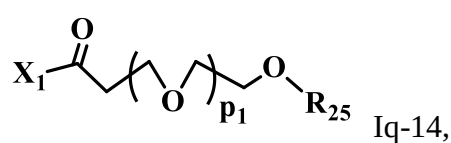
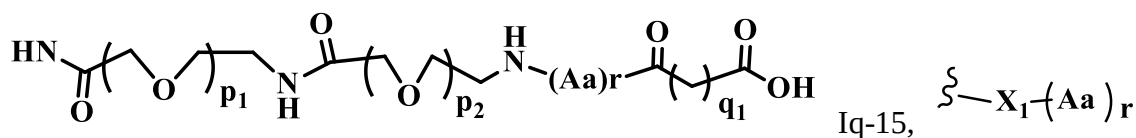
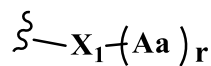
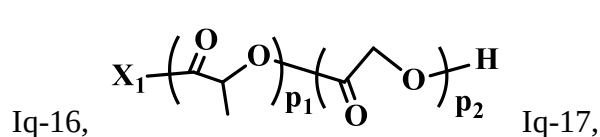
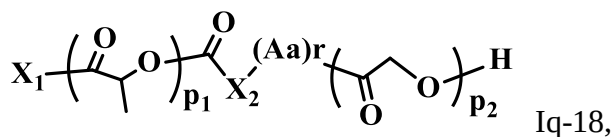
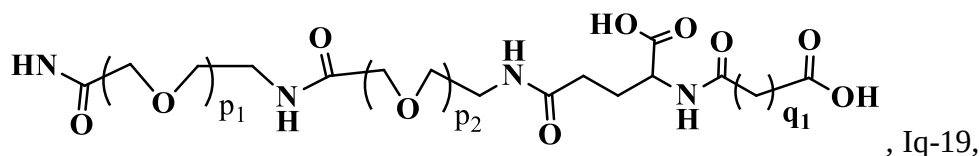
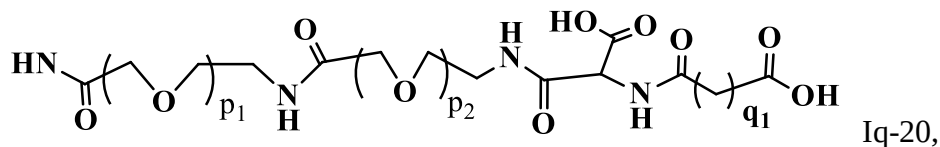
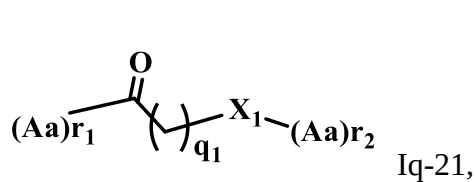
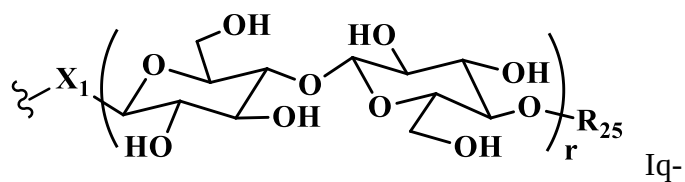
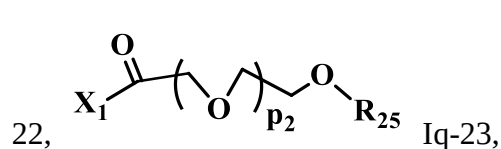
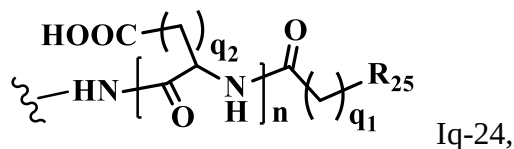
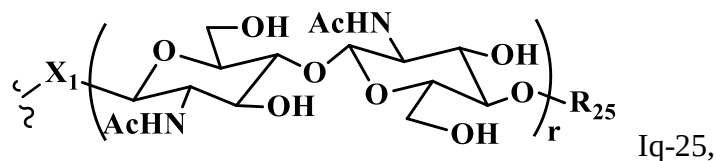
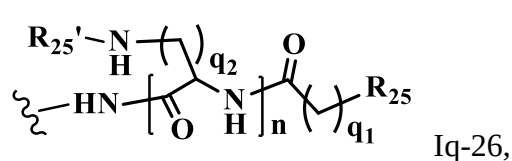
4. A side chain-linkage compound of Formula (V), which can readily react to a cell-binding molecule T to form a conjugate of Formula (III) as defined in claim 2:

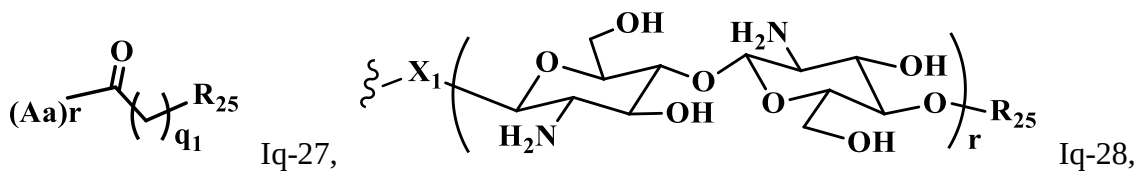
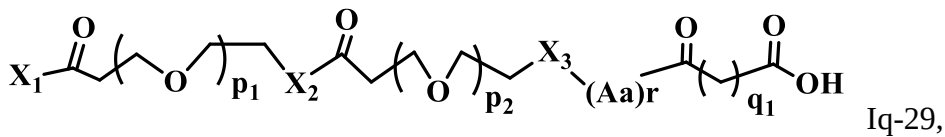
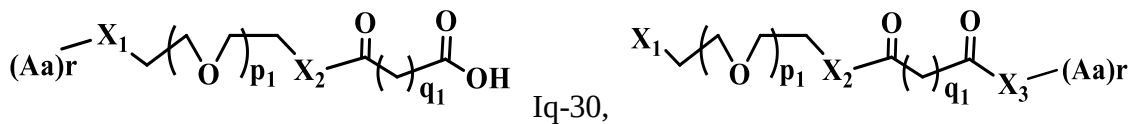
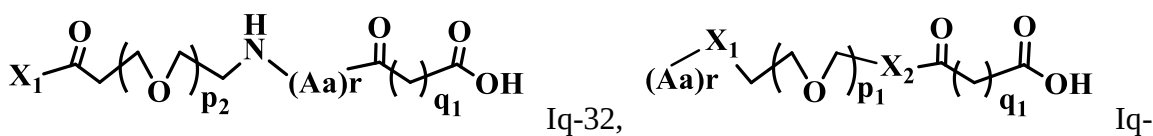
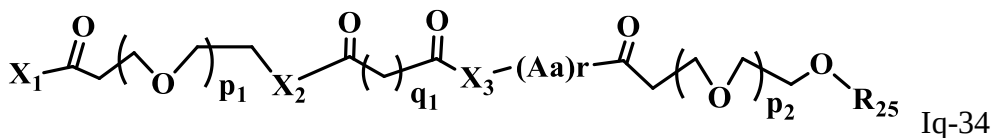
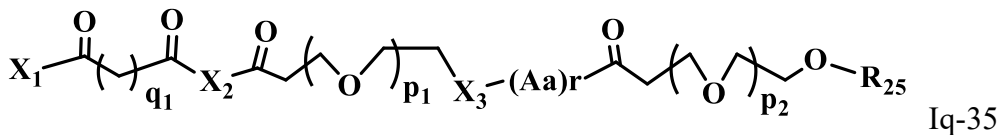


wherein D, W, w, L<sub>1</sub>, L<sub>2</sub>, Q<sub>1</sub>, Q<sub>2</sub>, V<sub>1</sub>, V<sub>2</sub>, v<sub>1</sub>, v<sub>2</sub>, and n, are as defined the same as in Claim 1; wherein Lv<sub>-1</sub> and Lv<sub>-2</sub> have independently the same definition of Lv<sub>-1</sub> in Formula (IV) of Claim 3 and both Lv<sub>-1</sub> and Lv<sub>-2</sub> can be the same or different in Formula (V)-.

5. A side chain-linkage compound according to any one of claims 1 to 4, wherein T the side chains Q<sub>-1</sub> and Q<sub>-2</sub> ~~according to Claim 1, 2, 3 or 4~~ are independently ~~selected from one of~~ Iq-01 to Iq-35:







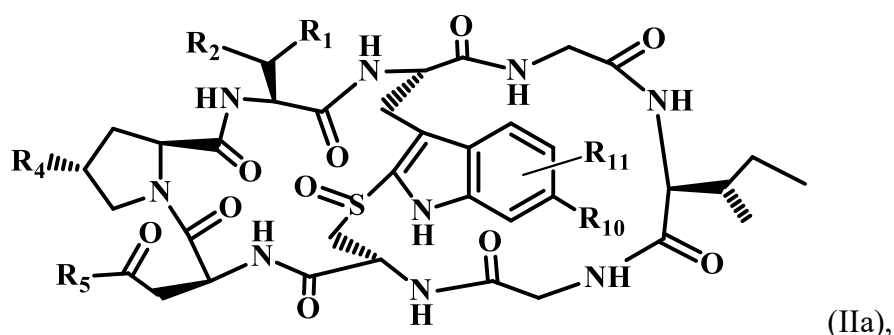
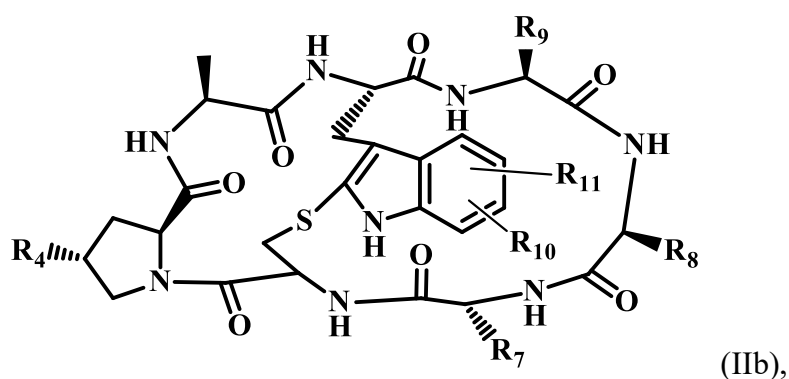
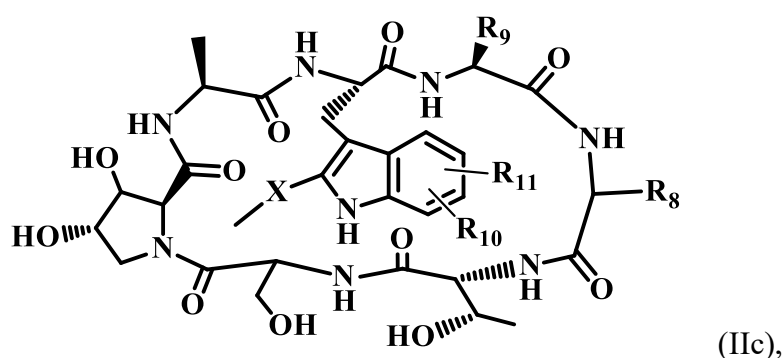
wherein R<sub>25</sub> and R<sub>25'</sub> are independently ~~selected from~~-H; HC-(O)-, CH<sub>3</sub>C-(O)-, CH<sub>3</sub>C-(NH)-, NH-(C<sub>1</sub>-C<sub>18</sub>)-alkyl, C-(O)-NH-(C<sub>1</sub>-C<sub>18</sub>)-alkyl, C-(O)-~~—~~(C<sub>1</sub>-C<sub>18</sub>)-alkyl, C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>1</sub>-C<sub>18</sub> alkyl, alkyl-Y<sub>-1</sub>-SO<sub>3</sub>H, C<sub>1</sub>-C<sub>18</sub>-alkyl-Y<sub>-1</sub>-PO<sub>3</sub>H<sub>2</sub>, C<sub>1</sub>-C<sub>18</sub>-alkyl-Y<sub>-1</sub>-CO<sub>2</sub>H, C<sub>1</sub>-C<sub>18</sub>-alkyl-Y<sub>-1</sub>-N<sup>+</sup>R<sub>12</sub>R<sub>13</sub>R<sub>13'</sub>R<sub>14</sub>, C<sub>1</sub>-C<sub>18</sub>-alkyl-Y<sub>-1</sub>-CONH<sub>2</sub>, C<sub>2</sub>-C<sub>18</sub>-alkylene, C<sub>2</sub>-C<sub>18</sub> ester, C<sub>2</sub>-C<sub>18</sub> ether, C<sub>2</sub>-C<sub>18</sub> amine, C<sub>2</sub>-C<sub>18</sub> alkyl carboxylamide, C<sub>3</sub>-C<sub>18</sub> ~~A~~aryl, C<sub>3</sub>-C<sub>18</sub> cyclic alkyl, C<sub>3</sub>-C<sub>18</sub> heterocyclic, a peptide of 1~24 amino acids; C<sub>2</sub>-C<sub>18</sub> lipid, a C<sub>2</sub>-C<sub>18</sub> fatty acid or a C<sub>2</sub>-C<sub>18</sub> fatty ammonium lipid;

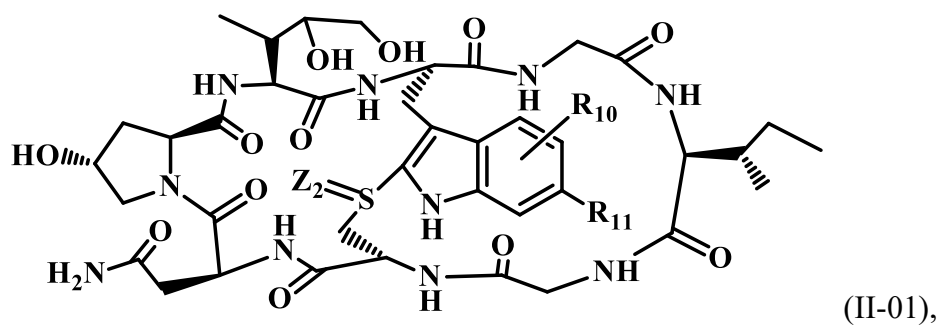
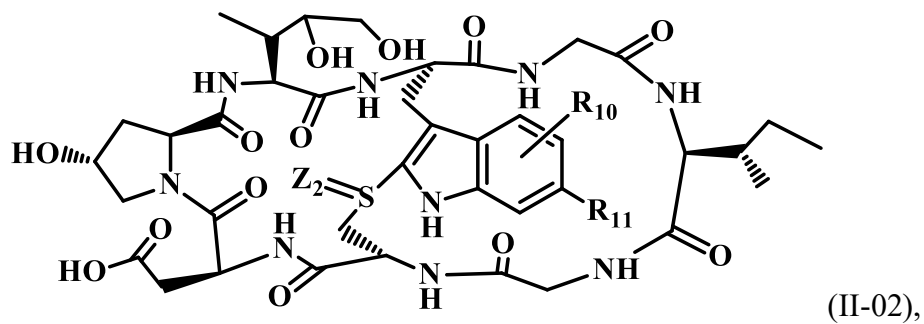
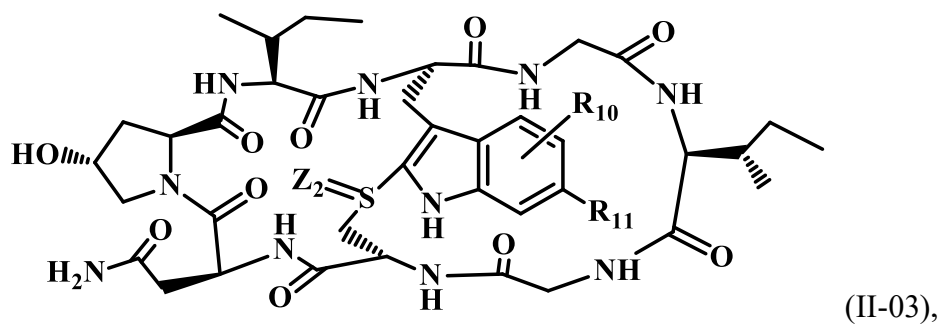
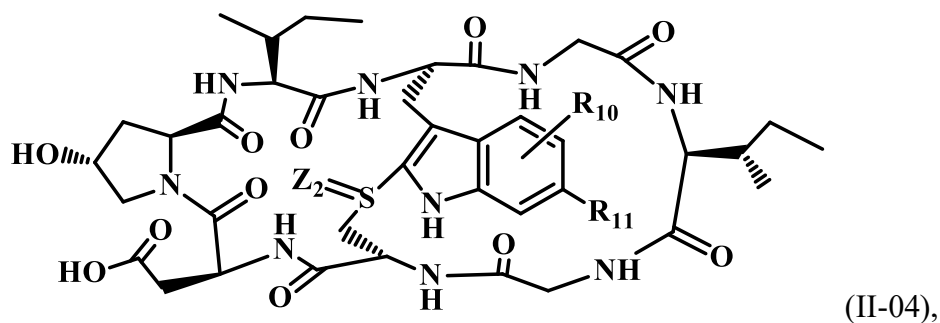
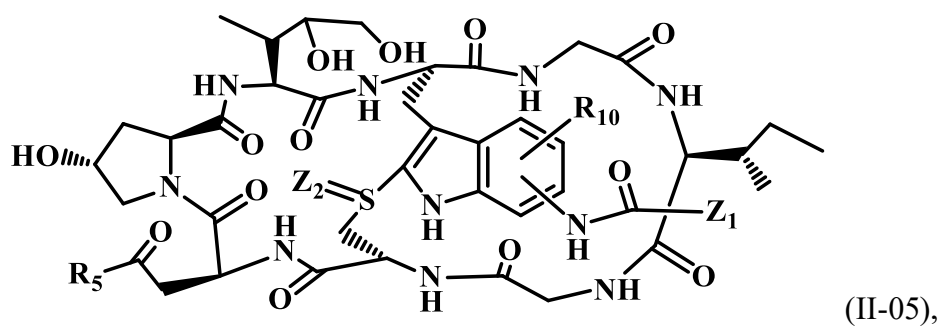
X<sub>1</sub> and X<sub>2</sub> are independently ~~selected from~~-NH, N-(R<sub>-12'</sub>)-, O, CH<sub>2</sub>, S, C-(O)-, S-(O)-, S-(O<sub>2</sub>)-, P-(O)-(OH)-, NHNH, CH=CH, Ar or (Aa)-q<sub>1</sub>, q<sub>1</sub> = 0-24 (0-24 amino acids, q<sub>1</sub>=0 means absent)-;

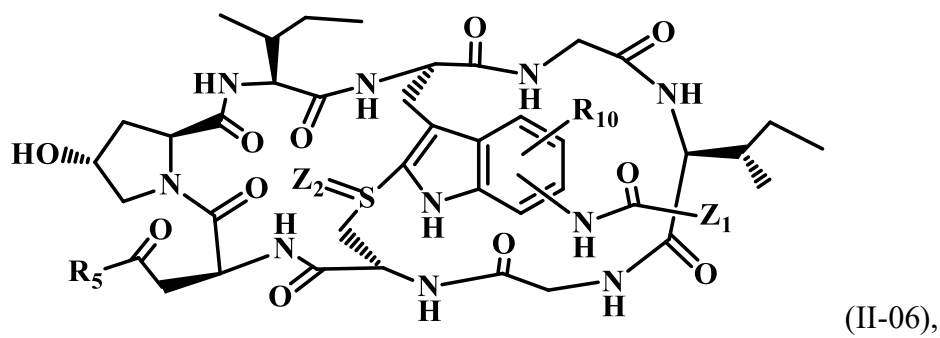
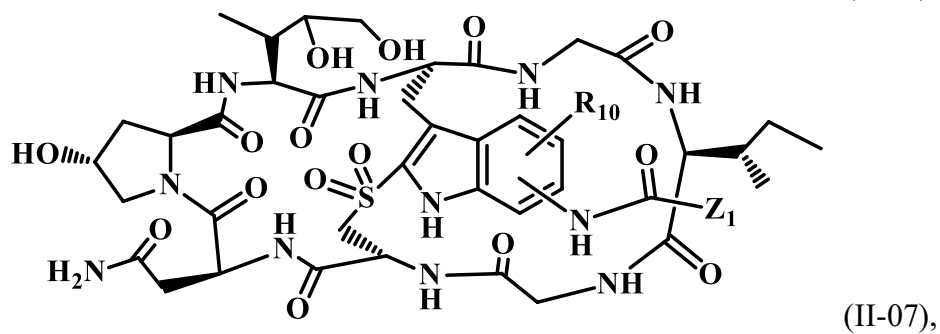
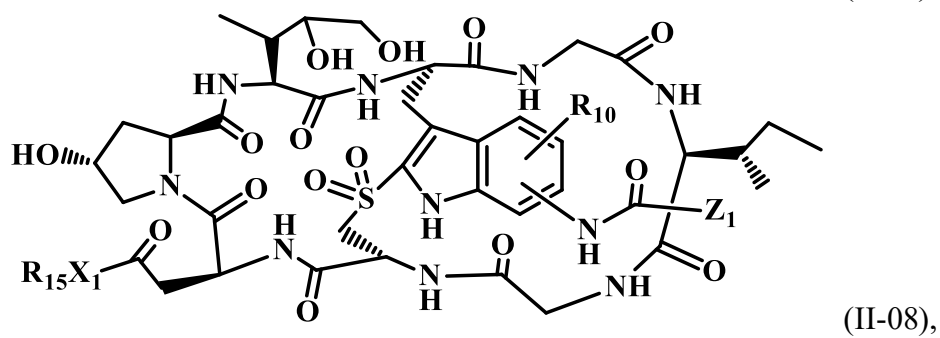
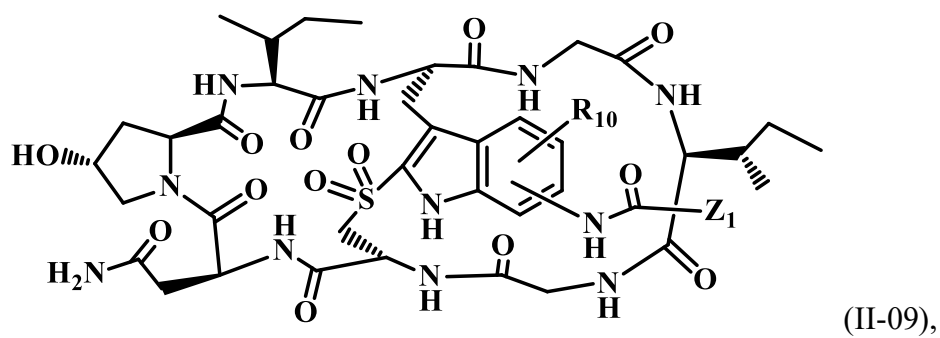
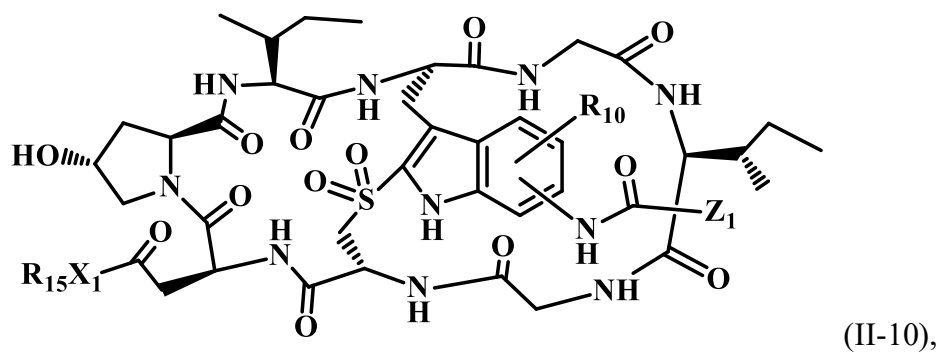
X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, Y<sub>1</sub>, Y<sub>2</sub> and Y<sub>3</sub> are independently ~~selected from~~-NH, N-(R<sub>-12'</sub>)-, O, C-(O)-, CH<sub>2</sub>, S, S-(O)-, NHNH, C-(O)-, OC-(O)-, OC-(O)-O, OC-(O)-NH, NHC-(O)-NH, Ar or ~~Ar or~~ (Aa)-q<sub>1</sub>, X<sub>-1</sub>, X<sub>-2</sub>, X<sub>-3</sub>, X<sub>-4</sub>, Y<sub>-1</sub>, Y<sub>-2</sub> and Y<sub>-3</sub> can be independently absent; p<sub>1</sub>, p<sub>2</sub> and p<sub>3</sub> are independently 0 -100

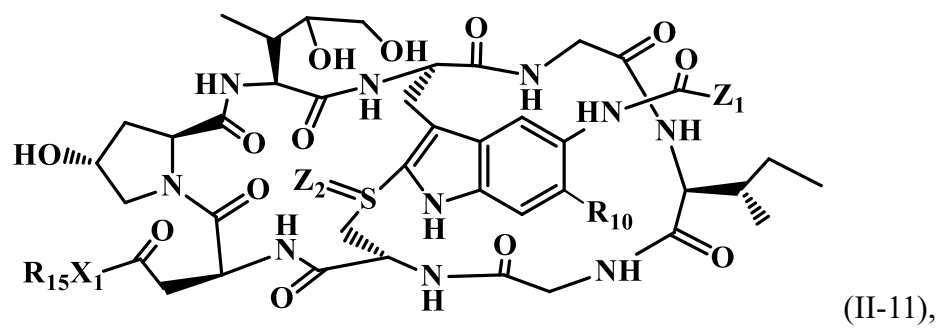
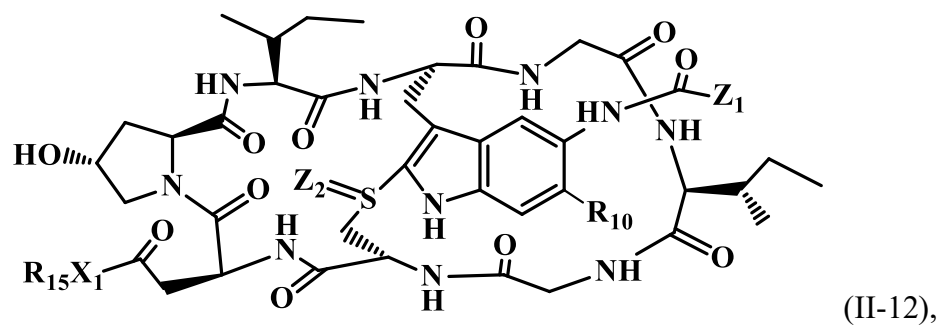
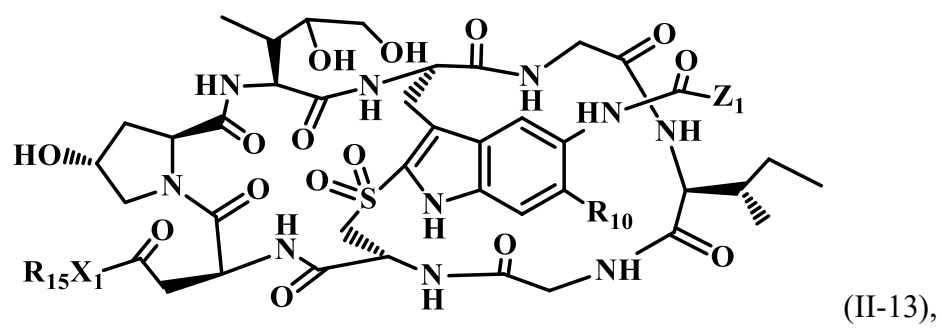
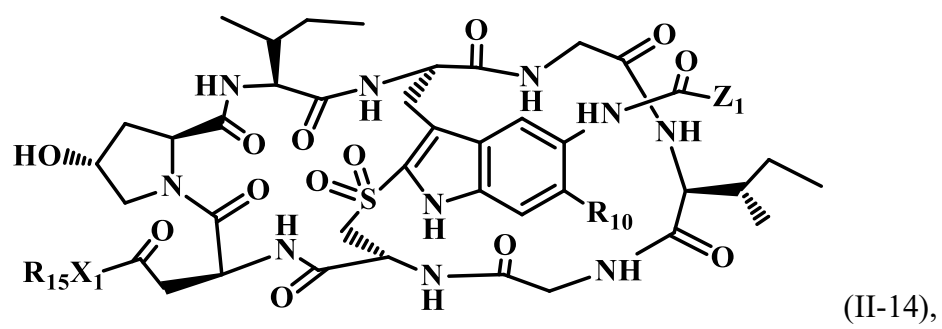
but are not 0 at the same time;  $q_1$ ,  $q_2$  and  $q_3$  are independently 0 -24;  $R_{12}$ ,  $R_{13}$ ,  $R_{13}'$  and  $R_{14}'$  are independently selected from H and/or  $C_1$ - $C_6$  alkyl; Aa is natural or unnatural amino acid; Ar or (Aa)- $q_1$ , is the same or different sequence of peptides;  $q_1=0$  means (Aa)  $q_1$  absent.

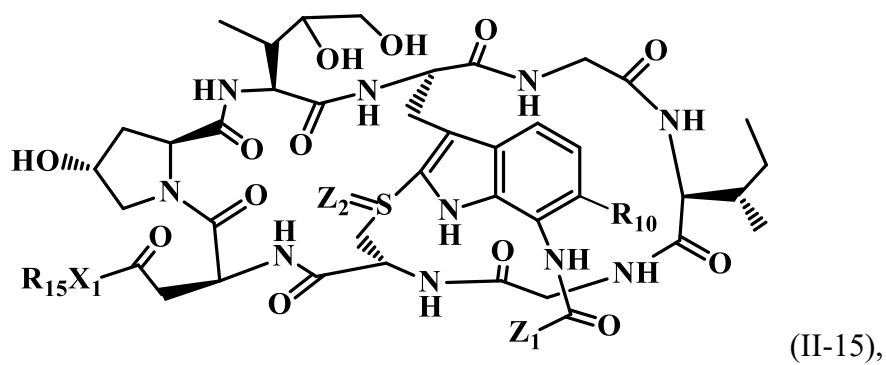
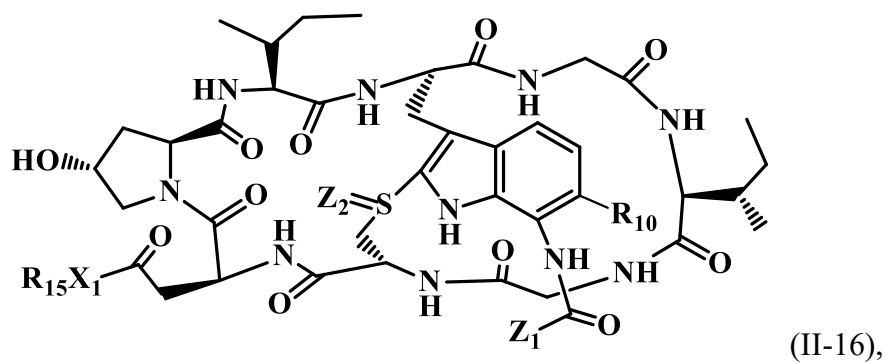
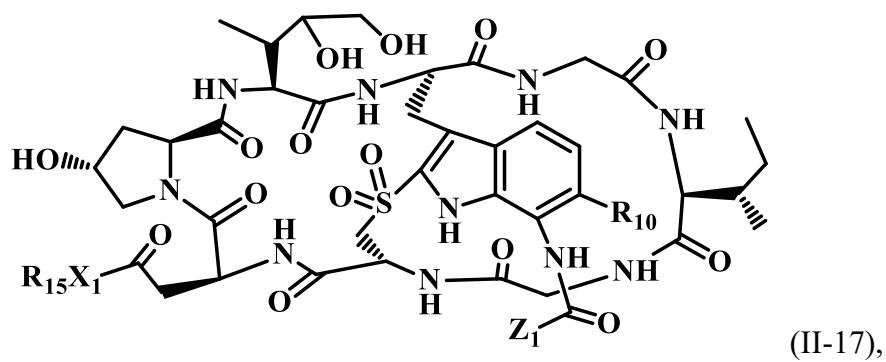
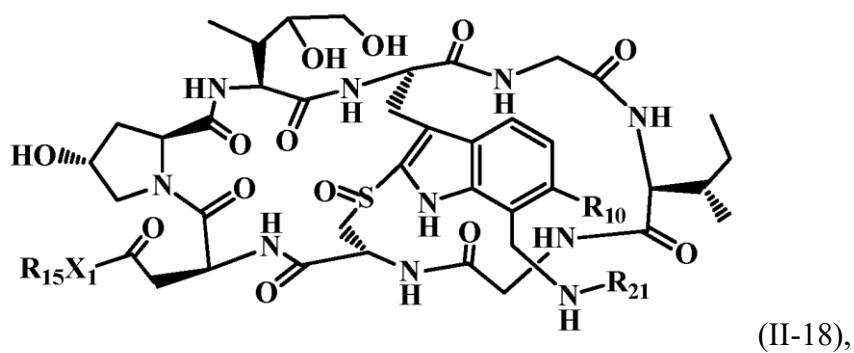
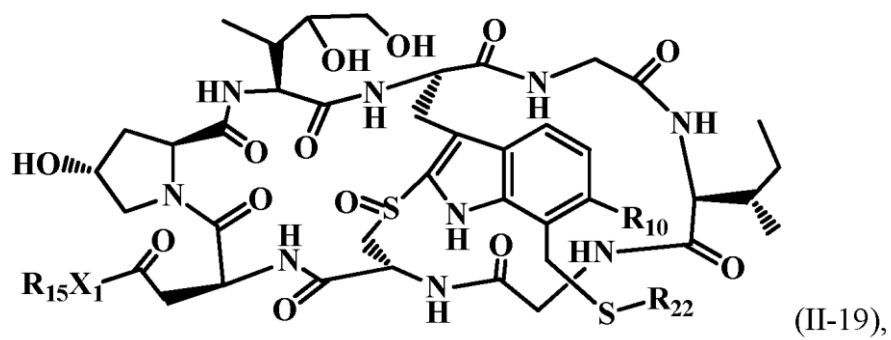
6. A side chain-linkage compound according to any one of claims 1 to 4, wherein~~The D (amanita toxin structure)~~ according to Claim 1, 2, 3 or 4 is selected from IIa, IIb, IIc, II-01, II-02, II-03, II-04, II-05, II-06, II-07, II-08, II-09, II-10, II-11, II-12, II-13, II-14, II-15, II-16, II-17, II-18, II-19, II-20, II-21, II-22, II-23, II-24, II-25, or II-26:

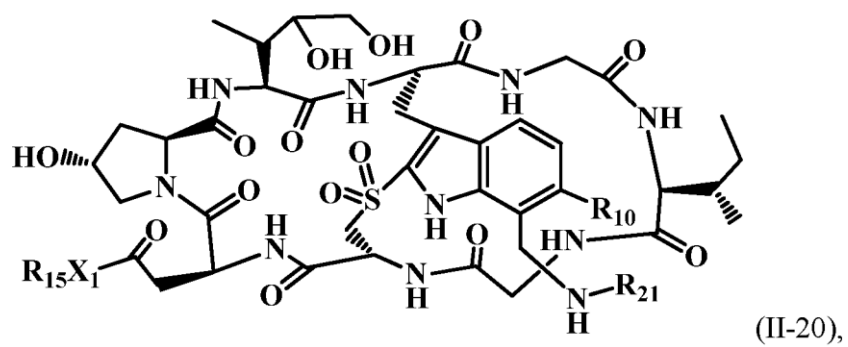
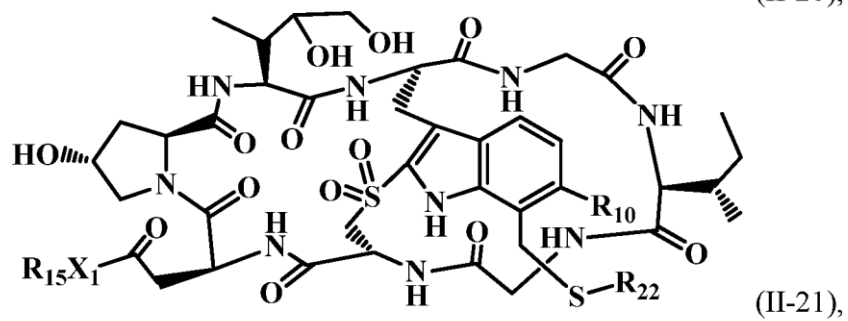
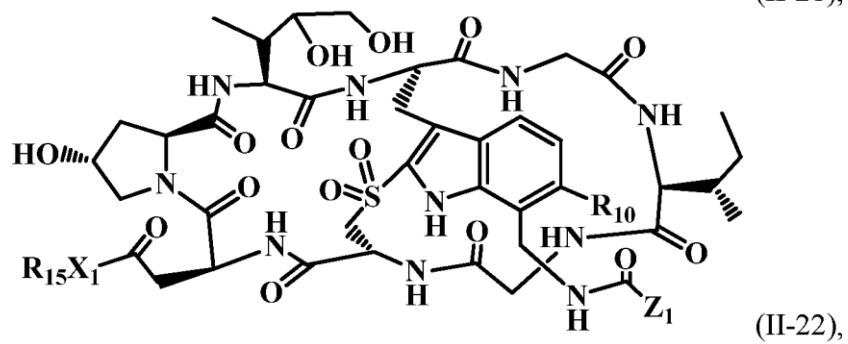
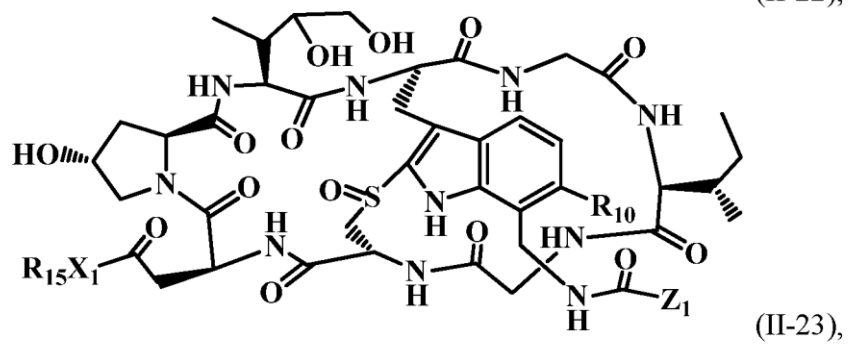
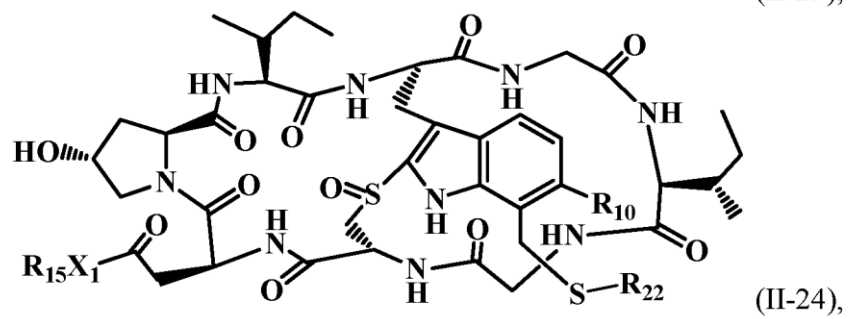


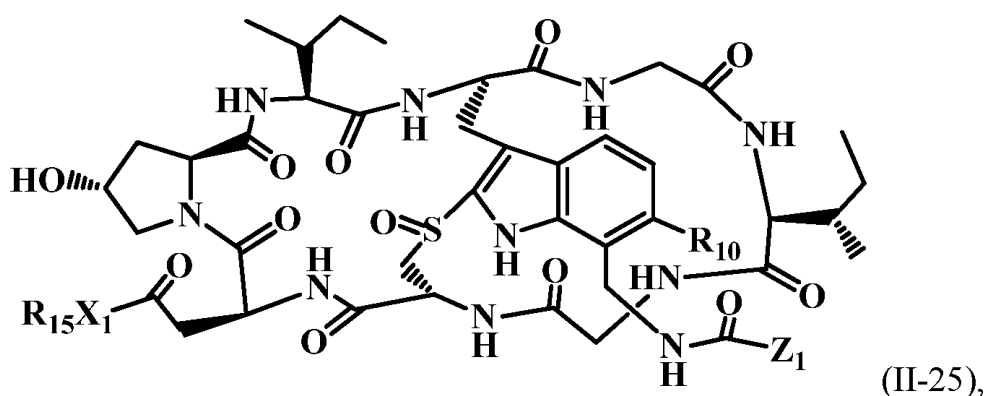
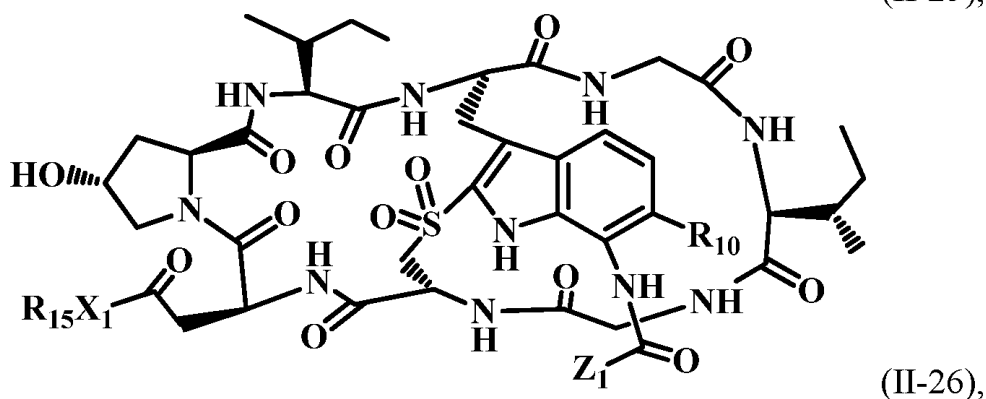












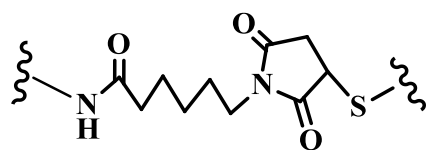
or

an isotope of one or more chemical elements, or pharmaceutically acceptable salts, hydrates, or hydrated salts; or the polymorphic crystalline structures of these compounds; or the optical isomers, racemates, diastereomers or enantiomers; wherein  $Z_2$  is an oxygen or lone pair of electrons;  $R_{15}$  is H;  $NHR_{12}$ ,  $OR_{12}$ ,  $C_1-C_8$  of linear or branched alkyl or heteroalkyl;  $C_2-C_8$  of linear or branched alkenyl, alkynyl, alkylcycloalkyl, heterocycloalkyl;  $C_3-C_8$  linear or branched of aryl, Ar-alkyl, heterocyclic, carbocyclic, cycloalkyl, heteroalkylcycloalkyl, alkylcarbonyl, heteroaryl; carbonate ( $-R_1C(O)OR_{12}$ ), carbamate ( $-R_{12}C(O)NR_{12}R_{13}$ ); or  $C_1-C_8$  1-8 carbon atoms of carboxylate, esters, ether, or amide; or a peptide of 1~8 amino acids; or

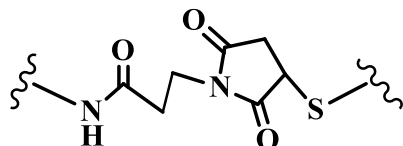
polyethyleneoxy unit of formula  $(OCH_2CH_2)_p$  or  $(OCH_2CH(CH_3))_p$ , wherein  $p$  is an integer from 0 to ~~about~~ 1000;  $Z_1$  is H, O, S, NH, NHNH,  $R_{12}$ , or absent;  $R_{21}$  is  $COR_{12}$ ,  $NHCOR_{12}$ ,  $COOR_{12}$ ,  $CONHR_{12}$ ,  $R_{12}$ ,  $R_{12}NH$ ;  $R_{22}$  is  $R_{12}$ ,  $SR_{12}$ ,  $SCH(CH_3)R_{12}$ ,  $SC(CH_3)_2R_{12}$ ,  $X$  is O, S, NH, NHNH, or  $CH_2$ ,  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{10}$ ,  $R_{11}$ ,  $R_{12}$ ,  $R_{12}'$ ,  $R_{13}$ , and  $X_1$  are defined the same above.

7. A side chain-linkage compound according to any one of claims 1 to 4, wherein W, L-1, L-2, V-1,

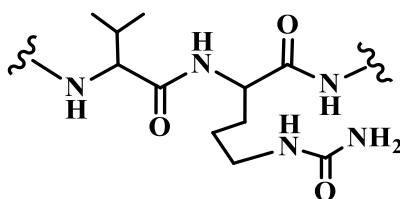
and V<sub>2</sub> according to Claim 1, 2, 3, or 4 may independently comprise contain one or more linker components of the following structures:



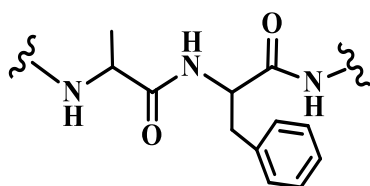
6-maleimidocaproyl (MC),



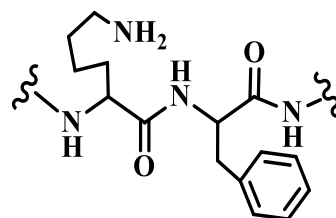
maleimido propanoyl (MP),



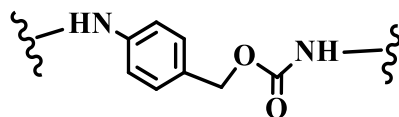
valine-citrulline (val-cit),



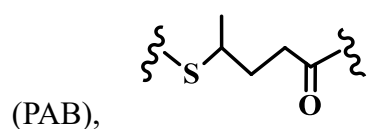
alanine-phenylalanine (ala-phe),



lysine-phenylalanine (lys-phe),

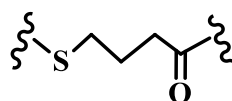


p-aminobenzylloxycarbonyl

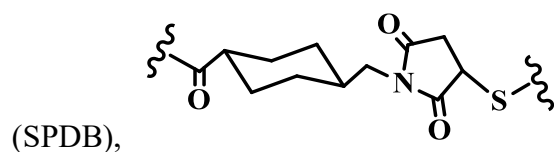


(PAB),

4-thio-pentanoate (SPP),

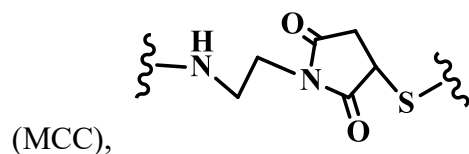


4-thio-butylate



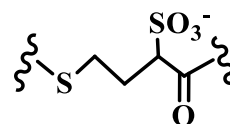
(SPDB),

4-(N-maleimidomethyl)cyclo-hexane-1-carboxylate



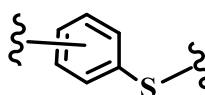
(MCC),

maleimidoethyl (ME),

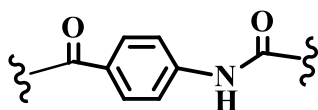


4-thio-2-

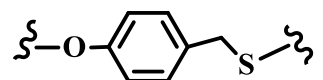
hydroxysulfonyl-butylate (2-Sulfo-SPDB),

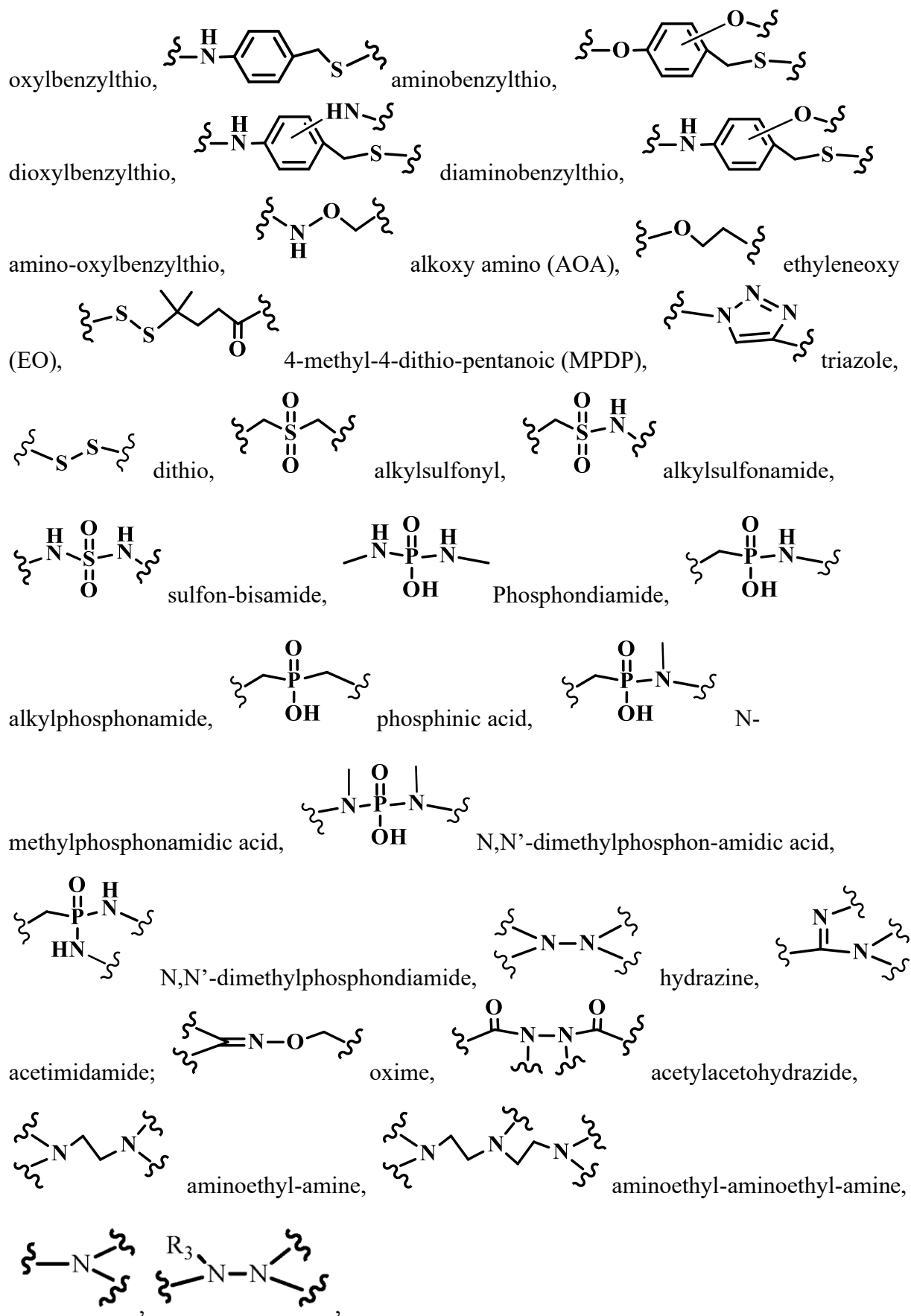


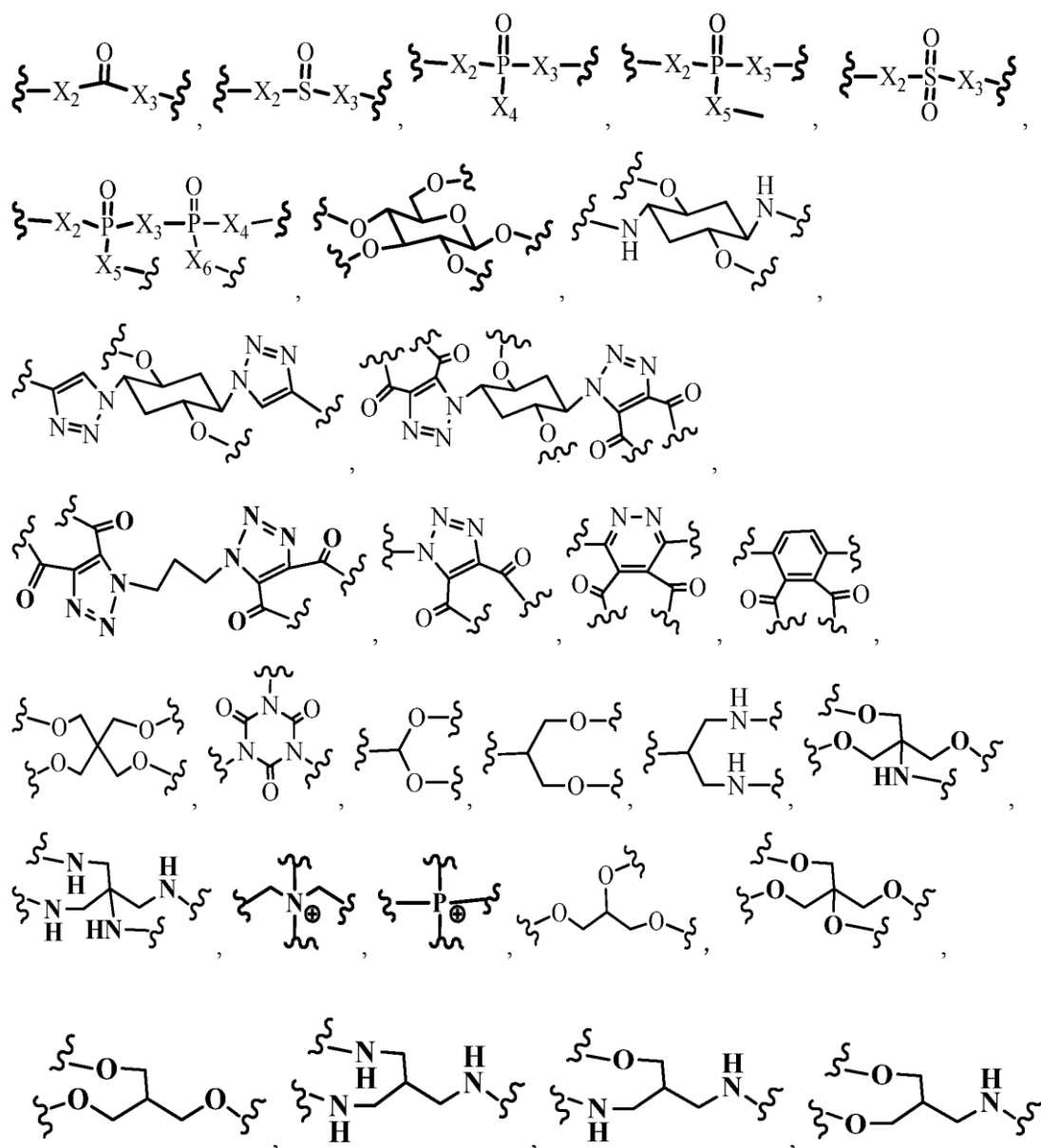
aryl-thiol (PySS),



(4-acetyl)aminobenzoate (SIAB),



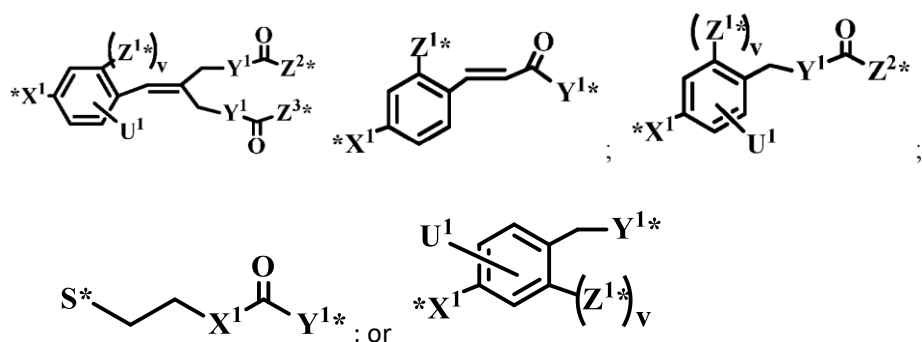




or L-or D-, natural or unnatural peptides containing 1-20 the same or different amino acids;  
 wherein  $\zeta$  is the site of linkage; X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub>, or X<sub>6</sub>, are independently selected from: NH;  
 NHNH; N-(R<sub>12</sub>); N-(R<sub>12</sub>)-N-(R<sub>12</sub>); O; S; C<sub>1</sub>-C<sub>6</sub> of alkyl; C<sub>2</sub>-C<sub>6</sub> of heteroalkyl, alkylcycloalkyl,  
 heterocycloalkyl; C<sub>3</sub>-C<sub>8</sub> of aryl, Ar-alkyl, heterocyclic, carbocyclic, cycloalkyl,  
 heteroalkylcycloalkyl, alkylcarbonyl, heteroaryl; CH<sub>2</sub>OR<sub>12</sub>, CH<sub>2</sub>SR<sub>12</sub>, CH<sub>2</sub>NHR<sub>12</sub>, or a peptide  
of 1~8 amino acids; wherein R<sub>12</sub> and R<sub>12</sub>' are independently H; C<sub>1</sub>-C<sub>8</sub> of alkyl; C<sub>2</sub>-C<sub>8</sub> of hetero-  
 alkyl, alkylcycloalkyl, heterocycloalkyl; C<sub>3</sub>-C<sub>8</sub> of aryl, Ar-alkyl, heterocyclic, carbo-cyclic,  
 cycloalkyl, heteroalkylcycloalkyl, alkylcarbonyl, heteroaryl; or 1-8 carbon atoms of esters, ether,  
 or amide; or polyethyleneoxy unit of formula (OCH<sub>2</sub>CH<sub>2</sub>)<sub>p</sub> or (OCH<sub>2</sub>CH(CH<sub>3</sub>))<sub>p</sub>, wherein p is

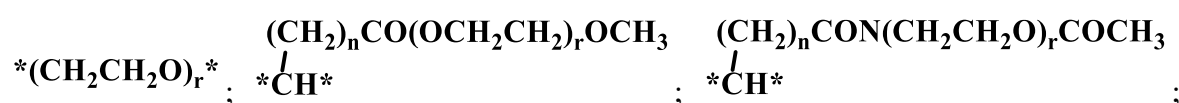
an integer from 0 to ~~about~~ 1000, or combination above thereof.

8. A side chain-linkage compound according to any one of claims 1 to 4, wherein W, L-1, L-2, V-1, and V-2 according to Claim 1, 2, 3, or 4 may independently contain~~comprise~~: (A): a self-immolative component, peptidic units, a hydrazone bond, a disulfide, an ester, an ox-ime, an amide, or a thioether bond-; ~~The self-immolative unit includes aromatic compounds that are electronically similar to the~~comprises para-aminobenzyl-carbamoyl (PAB) groups, ~~2-aminoimidazol-5-methanol derivatives, heterocyclic PAB analogs, beta-glucuronide, and ortho or para-aminobenzylacetals; or one of the following structures:~~

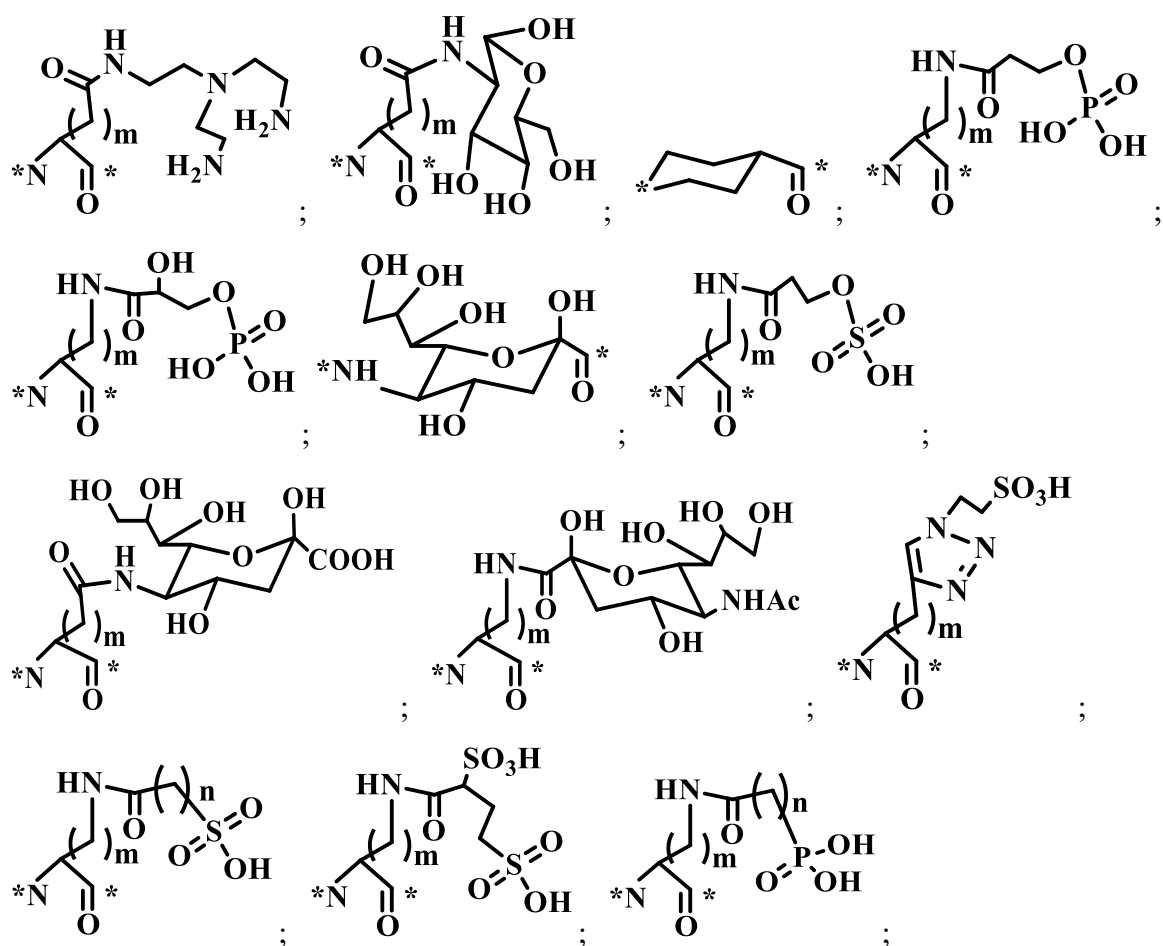


wherein the (\*) atom is the point of attachment of another component; X-<sup>1</sup>, Y-<sup>1</sup>, Z-<sup>2</sup> and Z-<sup>3</sup> are independently NH, O, or S; Z-<sup>1</sup> is independently H, NHR-<sub>1</sub>, OR-<sub>1</sub>, SR-<sub>1</sub>, COX-<sub>1</sub>R-<sub>1</sub>, wherein X-<sub>1</sub> and R-<sub>1</sub> are defined above; v is 0 or 1; U-<sup>1</sup> is independently H, OH, C-<sub>1</sub>~C-<sub>6</sub> alkyl, (OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>, F, Cl, Br, I, OR-<sub>5</sub>, SR-<sub>5</sub>, NR-<sub>5</sub>R-<sub>5</sub>', N=NR-<sub>5</sub>, N=R-<sub>5</sub>, NR-<sub>5</sub>R-<sub>5</sub>', NO-<sub>2</sub>, SOR-<sub>5</sub>R-<sub>5</sub>', SO-<sub>2</sub>R-<sub>5</sub>, SO-<sub>3</sub>R-<sub>5</sub>, OSO-<sub>3</sub>R-<sub>5</sub>, PR-<sub>5</sub>R-<sub>5</sub>', POR-<sub>5</sub>R-<sub>5</sub>', PO-<sub>2</sub>R-<sub>5</sub>R-<sub>5</sub>', OPO-(OR-<sub>5</sub>)-(OR-<sub>5</sub>')-, or OCH<sub>2</sub>PO-(OR-<sub>5</sub>)-(OR-<sub>5</sub>')-, wherein R-<sub>5</sub> and R-<sub>5</sub>' are independently ~~selected from~~ H, C-<sub>1</sub>~C-<sub>8</sub> alkyl; C-<sub>2</sub>~C-<sub>8</sub> alkenyl, alkynyl, heteroalkyl, or amino acid; C-<sub>3</sub>~C-<sub>8</sub> aryl, heterocyclic, carbocyclic, cycloalkyl, heterocycloalkyl, heteroaralkyl, alkylcarbonyl, or glycoside; or pharmaceutical cation salts;

(B): a non-self-immolative linker component containing one of the following structures:







wherein the (\*) atom is the point of attachment of additional spacer or releasable linkers, the cyto-toxic agents, and/or the binding molecules;  $\text{X}^{-1}$ ,  $\text{Y}^{-1}$ ,  $\text{U}^{-1}$ ,  $\text{R}^{-5}$ ,  $\text{R}^{-5'}$  are defined as above;  $r$  is  $0 \sim 100$ ;  $m$  and  $n$  are  $0 \sim 20$  independently;

(C): a releasable component that at least one bond that can be broken under physiological conditions: a pH-labile, acid-labile, base-labile, oxidatively labile, metabolically labile,

biochemically labile or enzyme-labile bond, which having one of the following structures: -

$(\text{CR}_{15}\text{R}_{16})_m(\text{Aa})_r(\text{CR}_{17}\text{R}_{18})_n(\text{OCH}_2\text{CH}_2)_{t-r}$ ,  $(\text{CR}_{15}\text{R}_{16})_m(\text{CR}_{17}\text{R}_{18})_n(\text{Aa})_r(\text{OCH}_2\text{CH}_2)_{t-r}$ ,

$(\text{Aa})_r(\text{CR}_{15}\text{R}_{16})_m(\text{CR}_{17}\text{R}_{18})_n(\text{OCH}_2\text{CH}_2)_{t-r}$ ,  $-(\text{CR}_{15}\text{R}_{16})_m(\text{CR}_{17}\text{R}_{18})_n(\text{OCH}_2\text{CH}_2)_{t-r}(\text{Aa})_{t-r}$ , --

$(\text{CR}_{15}\text{R}_{16})_m(\text{CR}_{17}=\text{CR}_{18})(\text{CR}_{19}\text{R}_{20})_n(\text{Aa})_{t-r}(\text{OCH}_2\text{C}_2)_{t-r}$ ,

$(\text{CR}_{15}\text{R}_{16})_m(\text{NR}_{11}\text{CO})(\text{Aa})_{t-r}(\text{CR}_{19}\text{R}_{20})_n(\text{OCH}_2\text{CH}_2)_{t-r}$ ,  $(\text{CR}_{15}\text{R}_{16})_m(\text{Aa})_{t-r}(\text{NR}_{21}\text{CO})-$

$(\text{CR}_{19}\text{R}_{20})_n(\text{OCH}_2\text{CH}_2)_{t-r}$ ,  $-(\text{CR}_{15}\text{R}_{16})_m(\text{OCO})(\text{Aa})_{t-r}(\text{CR}_{19}\text{R}_{20})_n(\text{OCH}_2\text{CH}_2)_{t-r}$ ,

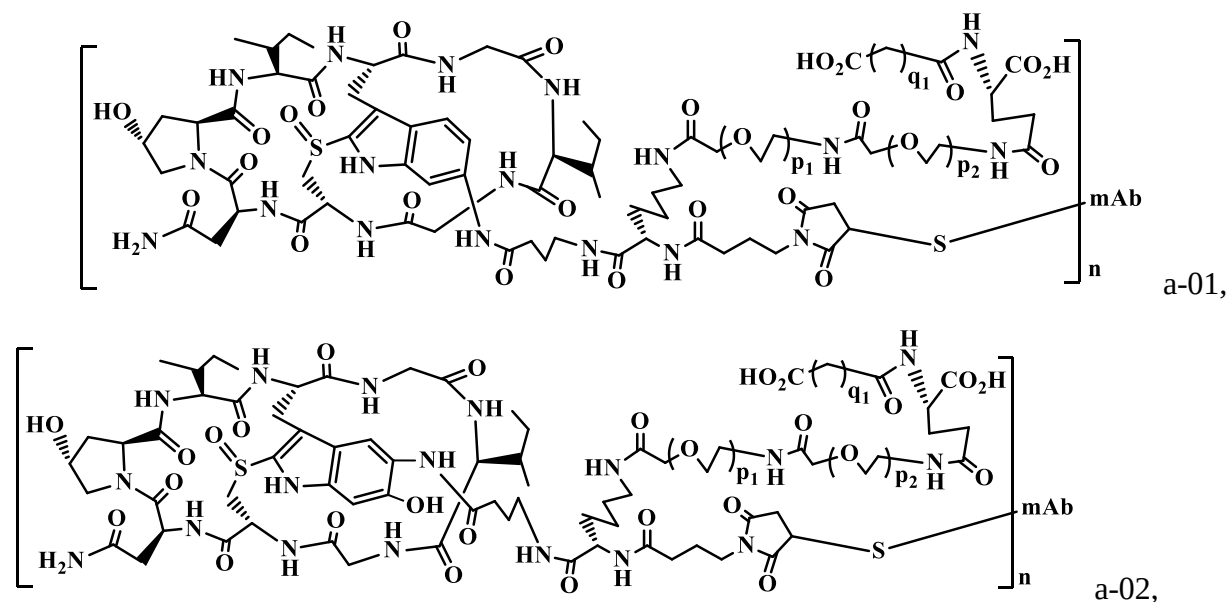
$(\text{CR}_{15}\text{R}_{16})_m(\text{OCNR}_{17})(\text{Aa})_{t-r}(\text{CR}_{19}\text{R}_{20})_n(\text{OCH}_2\text{CH}_2)_{t-r}$ ,  $(\text{CR}_{15}\text{R}_{16})_m-$

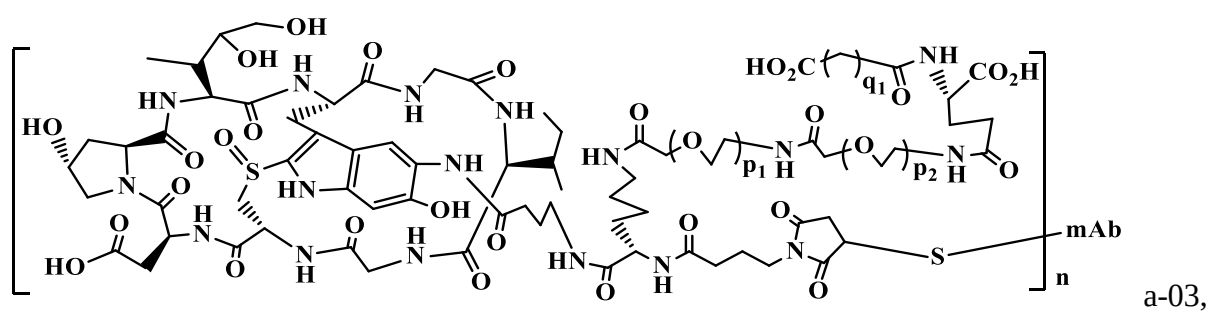
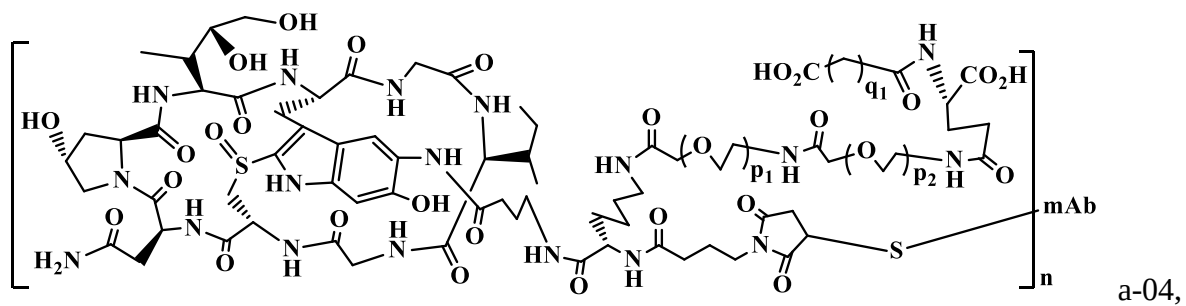
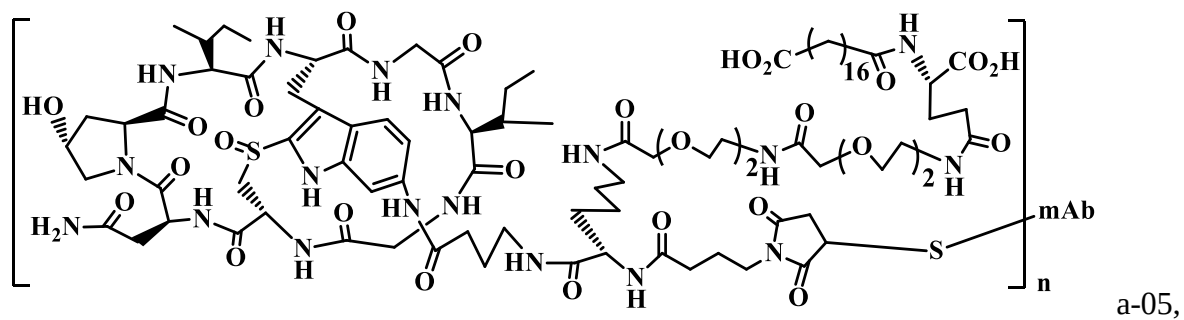
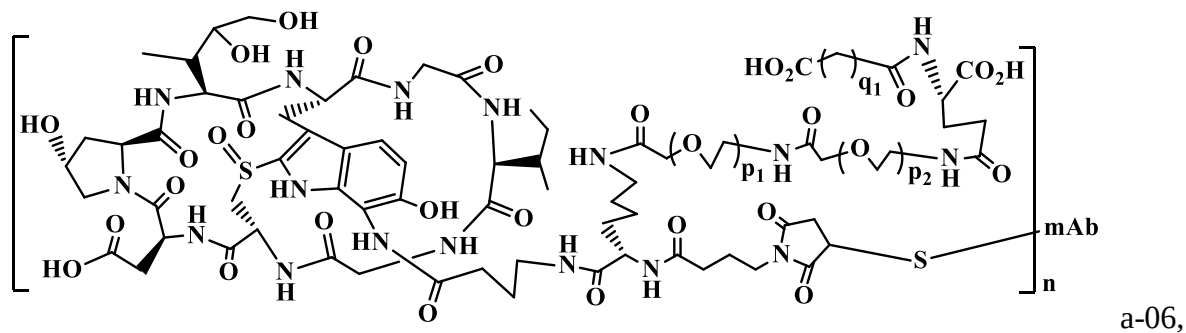
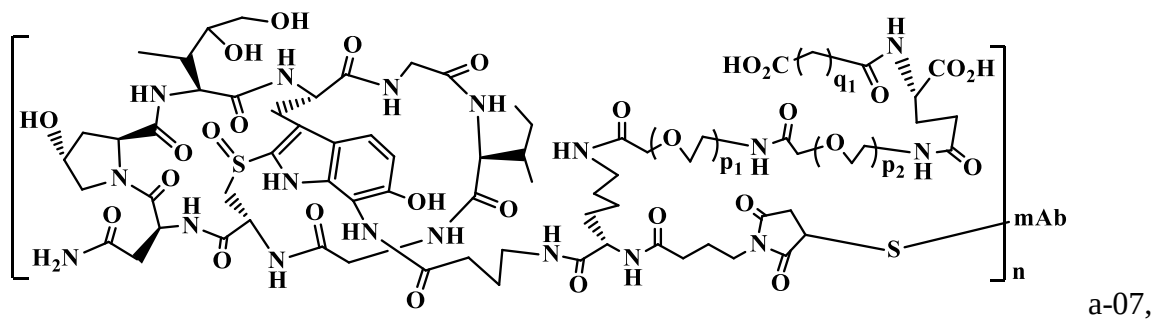
$(\text{CO})(\text{Aa})_{t-r}(\text{CR}_{19}\text{R}_{20})_n(\text{OCH}_2\text{CH}_2)_{t-r}$ ,  $(\text{CR}_{15}\text{R}_{16})_m(\text{NR}_{21}\text{CO})(\text{Aa})_{t-r}(\text{CR}_{19}\text{R}_{20})_n(\text{OCH}_2\text{CH}_2)_{t-r}$ ,

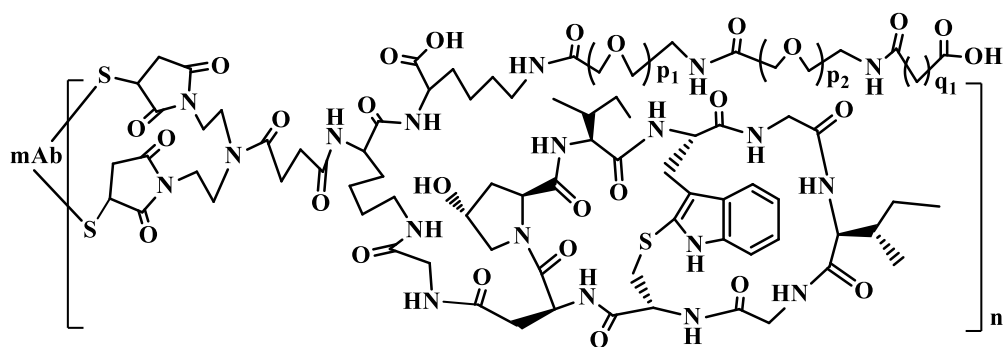
$(\text{CR}_{15}\text{R}_{16})_m\text{-(OCO)(Aa)-t-(CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-}$   
 $\text{-(CR}_{15}\text{R}_{16})_m\text{-(OCNR}_{17})(\text{Aa})_t\text{-(CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-}$   
 $(\text{CR}_{15}\text{R}_{16})_m\text{-(CO)(Aa)-t-(CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-(CR}_{15}\text{R}_{16})_m\text{-phenyl-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-}$   
 $(\text{CR}_{15}\text{R}_{16})_m\text{-furyl-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-(CR}_{15}\text{R}_{16})_m\text{-oxazolyl-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-}$   
 $(\text{CR}_{15}\text{R}_{16})_m\text{-thiazolyl-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-(CR}_{15}\text{R}_{16})_m\text{-thienyl-CO(CR}_{17}\text{R}_{18})_n\text{,-(CR}_{15}\text{R}_{16})_m\text{-}$   
 $\text{imidazolyl-CO-(CR}_{17}\text{R}_{18})_n\text{,-(CR}_{15}\text{R}_{16})_m\text{-morpholino-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-(CR}_{15}\text{R}_{16})_m\text{-}$   
 $\text{piperazino-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-(CR}_{15}\text{R}_{16})_m\text{-N-methylpiperazin-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-}$   
 $(\text{CR}_{15}\text{R}_{16})_m\text{-(Aa)-phenyl,-(CR}_{15}\text{R}_{16})_m\text{-(Aa)-furyl,-(CR}_{15}\text{R}_{16})_m\text{-oxazolyl-(Aa)-t,-}$   
 $(\text{CR}_{15}\text{R}_{16})_m\text{-thiazolyl(Aa)-t,-(CR}_{15}\text{R}_{16})_m\text{-thienyl-(Aa)-t,-(CR}_{15}\text{R}_{16})_m\text{-imidazolyl(Aa)-t,-}$   
 $(\text{CR}_{15}\text{R}_{16})_m\text{-morpholino-(Aa)-t,-(CR}_{15}\text{R}_{16})_m\text{-piperazino-(Aa)-t,-(CR}_{15}\text{R}_{16})_m\text{-N-}$   
 $\text{methylpiperazino-(Aa)-t,-K(CR}_{15}\text{R}_{16})_m\text{-(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-}$   
 $\text{K(CR}_{15}\text{R}_{16})_m\text{-(CR}_{17}\text{R}_{18})_n\text{-(Aa)-t-(OCH}_2\text{CH}_2)_r\text{,-K(Aa)-t-(CR}_{15}\text{R}_{16})_m\text{-(CR}_{17}\text{R}_{18})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-}$   
 $\text{K(CR}_{15}\text{R}_{16})_m\text{-(CR}_{17}\text{R}_{18})_n\text{-(OCH}_2\text{CH}_2)_r\text{-(Aa)-t,-}$   
 $\text{K(CR}_{15}\text{R}_{16})_m\text{-(CR}_{17}=\text{CR}_{18})(\text{CR}_{19}\text{R}_{20})_n\text{-(Aa)-t-(OCH}_2\text{CH}_2)_r\text{,-K(CR}_{15}\text{R}_{16})_m\text{-(NR}_{11}\text{CO)(Aa)-t-}$   
 $(\text{CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-K(CR}_{15}\text{R}_{16})_m\text{-(Aa)-t-(NR}_{21}\text{CO)(CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-}$   
 $\text{K(CR}_{15}\text{R}_{16})_m\text{-(OCO)(Aa)-t-(CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-}$   
 $\text{K(CR}_{15}\text{R}_{16})_m\text{-(OCNR}_{17})(\text{Aa)-t-(CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-K(CR}_{15}\text{R}_{16})_m\text{-(CO)(Aa)-t-}$   
 $(\text{CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-K(CR}_{15}\text{R}_{16})_m\text{-(NR}_{21}\text{CO)(Aa)-t-(CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-}$   
 $\text{K(CR}_{15}\text{R}_{16})_m\text{-(OCO)(Aa)-t-(CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-K(CR}_{15}\text{R}_{16})_m\text{-(OCNR}_{17})(\text{Aa)-t-}$   
 $(\text{CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-K-(CR}_{15}\text{R}_{16})_m\text{-(CO)(Aa)-t-(CR}_{19}\text{R}_{20})_n\text{-(OCH}_2\text{CH}_2)_r\text{,-}$   
 $\text{K(CR}_{15}\text{R}_{16})_m\text{-phenyl-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-K-(CR}_{15}\text{R}_{16})_m\text{-furyl-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-}$   
 $\text{K(CR}_{15}\text{R}_{16})_m\text{-oxazolyl-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-K-(CR}_{15}\text{R}_{16})_m\text{-thiazolyl-CO-}$   
 $(\text{Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-K-(CR}_{15}\text{R}_{16})_m\text{-thienyl-CO(CR}_{17}\text{R}_{18})_n\text{,-K(CR}_{15}\text{R}_{16})_m\text{-imidazolyl-CO-}$   
 $(\text{CR}_{17}\text{R}_{18})_n\text{,-K-(CR}_{15}\text{R}_{16})_m\text{-morpholino-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-K-(CR}_{15}\text{R}_{16})_m\text{-piperazino-}$   
 $\text{CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-K-(CR}_{15}\text{R}_{16})_m\text{-N-methylpiperazin-CO(Aa)-t-(CR}_{17}\text{R}_{18})_n\text{,-K-}$   
 $(\text{CR}_{15}\text{R}_{16})_m\text{-(Aa)-phenyl,-K-(CR}_{15}\text{R}_{16})_m\text{-(Aa)-furyl,-K-(CR}_{15}\text{R}_{16})_m\text{-oxazolyl-(Aa)-t,-K-}$   
 $(\text{CR}_{15}\text{R}_{16})_m\text{-thiazolyl(Aa)-t,-K-(CR}_{15}\text{R}_{16})_m\text{-thienyl-(Aa)-t,-K-(CR}_{15}\text{R}_{16})_m\text{-}$   
 $\text{imidazolyl(Aa)-t,-K-(CR}_{15}\text{R}_{16})_m\text{-morpholino(Aa)-t,-K-(CR}_{15}\text{R}_{16})_m\text{-piperazino(Aa)-tG,-K-}$

(CR<sub>5</sub>R<sub>6</sub>)<sub>m</sub>-N-methyl-piperazino-(Aa)<sub>r</sub>; wherein m, Aa, m, n, R<sub>13</sub>, R<sub>14</sub>, and R<sub>15</sub> are ~~described~~  
~~above~~ as defined in claim 1; t and r here are 0–100 independently; R<sub>16</sub>, R<sub>17</sub>, R<sub>18</sub>, R<sub>19</sub>, and  
R<sub>20</sub> are inde-pendently chosen from H; halide; C<sub>1</sub>~C<sub>8</sub> ~~of~~ alkyl or heteroalkkyl, C<sub>2</sub>~C<sub>8</sub> ~~of~~  
aryl, alkenyl, alkynyl, ether, ester, amine or amide, C<sub>3</sub>~C<sub>8</sub> ~~of~~ aryl, which ~~optionally~~ is  
substituted by one or more halide, CN, NR<sub>12</sub>R<sub>12'</sub>, CF<sub>3</sub>, OR<sub>12</sub>, Aryl, heterocycle, S(O)-R<sub>12</sub>,  
SO<sub>2</sub>R<sub>12</sub>, -CO<sub>2</sub>H, -SO<sub>3</sub>H, -OR<sub>12</sub>, -CO<sub>2</sub>R<sub>12</sub>, -CONR<sub>12</sub>, -PO<sub>2</sub>R<sub>12</sub>R<sub>13</sub>, -PO<sub>3</sub>H or P(O)-  
R<sub>12</sub>R<sub>12'</sub>-R<sub>13</sub>; K is NR<sub>12</sub>, -SS-, -C(=O)-, -C(=O)-NH-, -C(=O)-O-, -C=NH-O-, -C=N-NH-, -C-  
(=O)-NH-NH-, O, S, Se, B, ~~Het~~ (heterocyclic or heteroaromatic ring having C<sub>3</sub>-C<sub>12</sub>); or  
peptides containing the same or different ~~12-20~~ 12-20 amino acids.

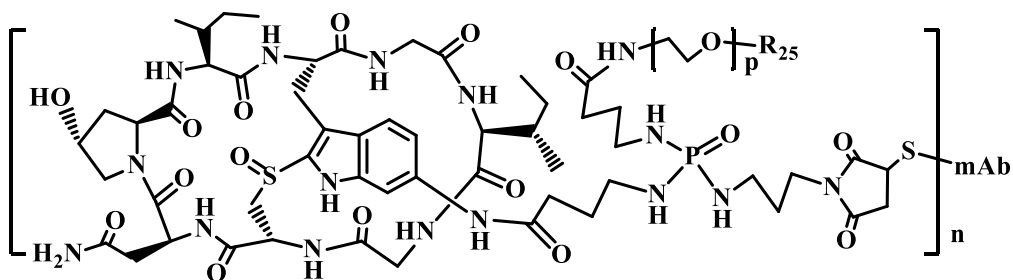
9. The conjugate compound of Formula (I) according to ~~C~~ claim 1 having the following structures  
of a-01 to a-40, 78a-c, 91, 95, 97, 114, 117, 126, 132, 146, 154, 167, 179, 181, 197, 198, 206,  
247, 250, 258, 260, 262 below:



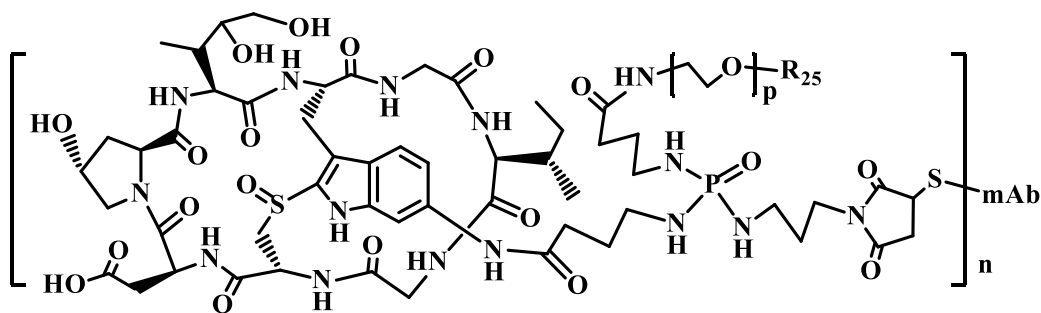




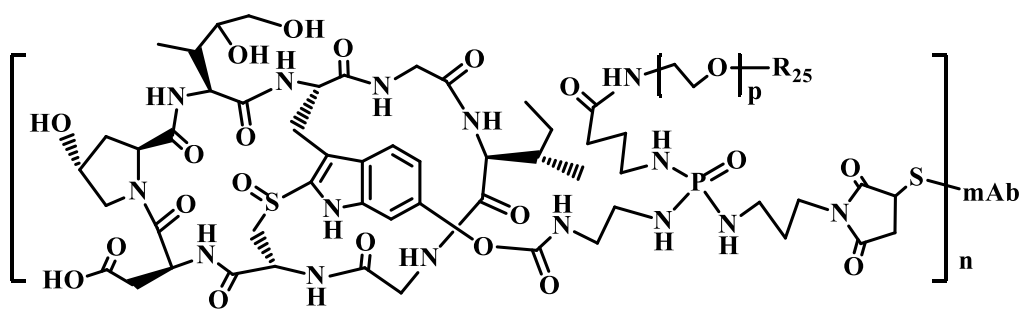
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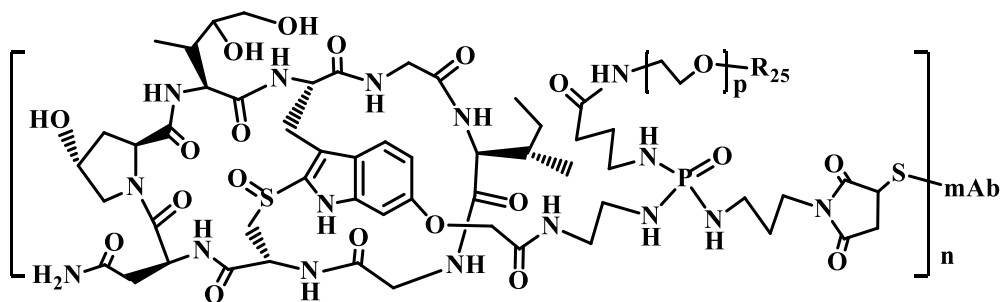
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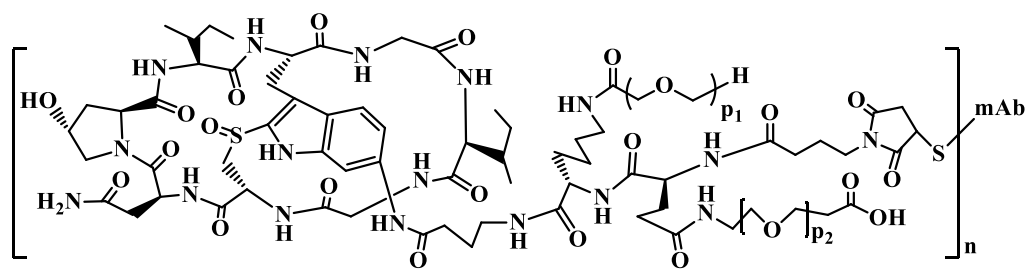
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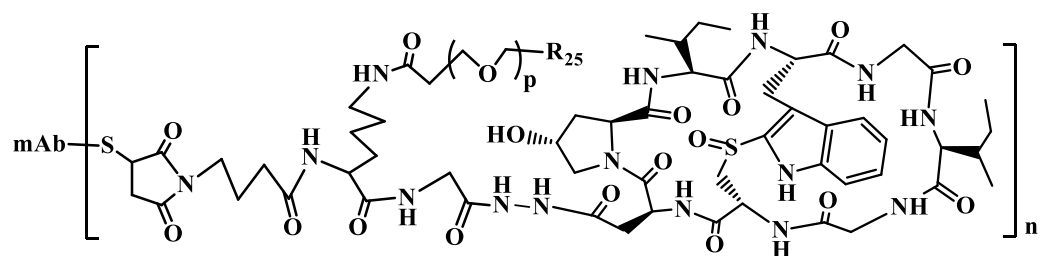
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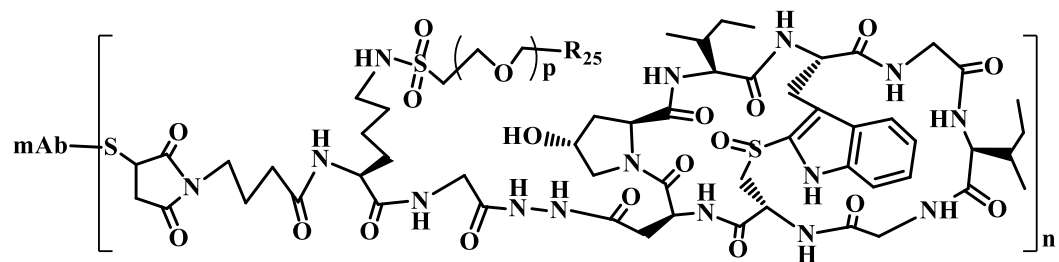
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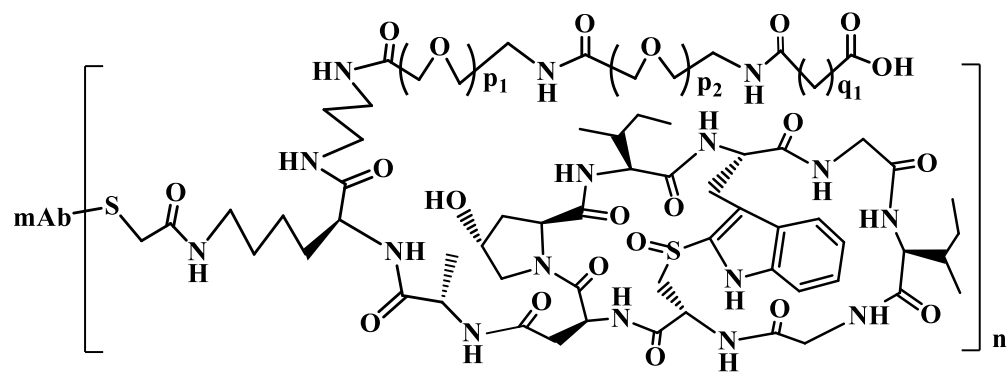
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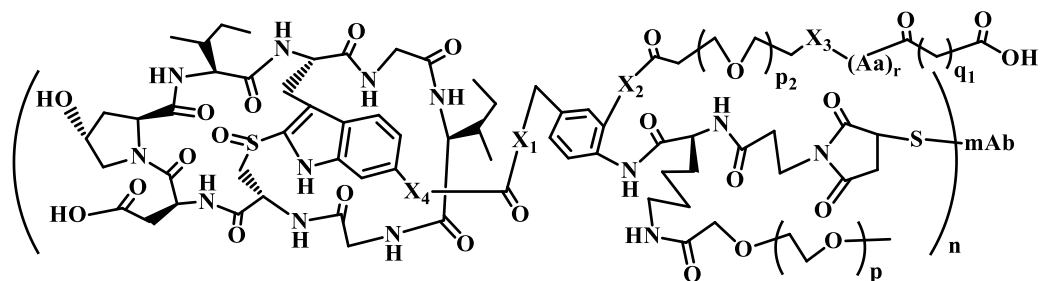
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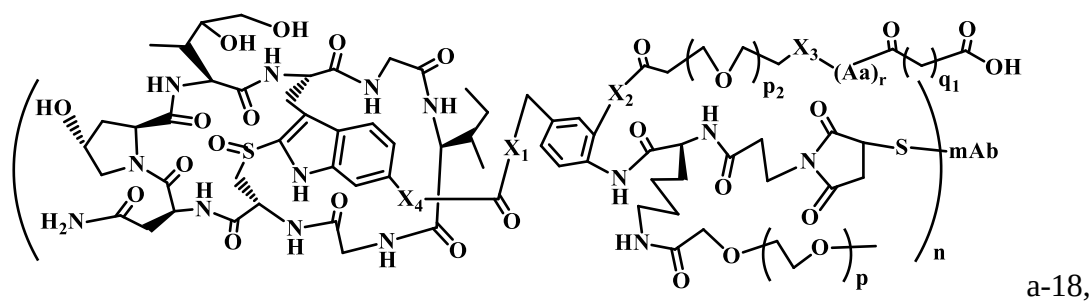
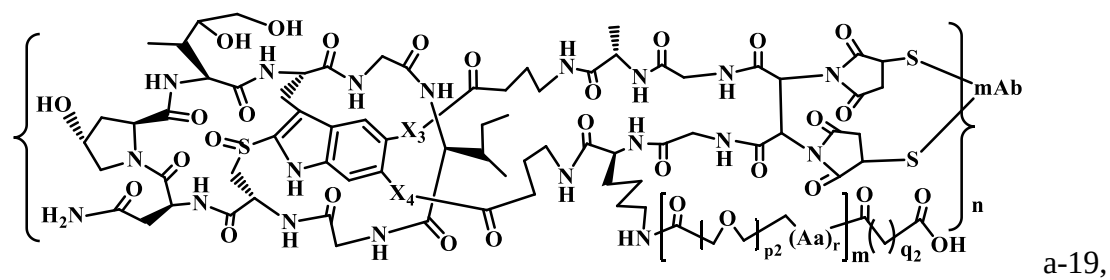
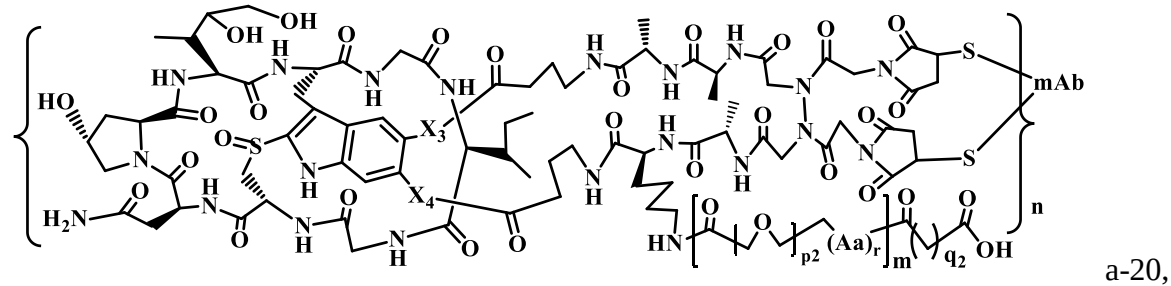
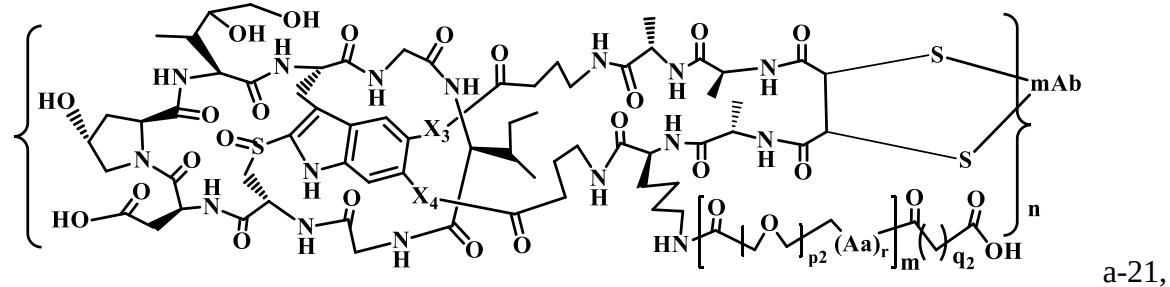
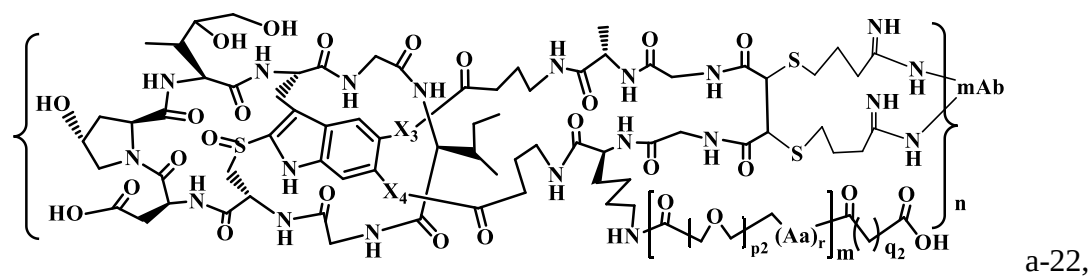
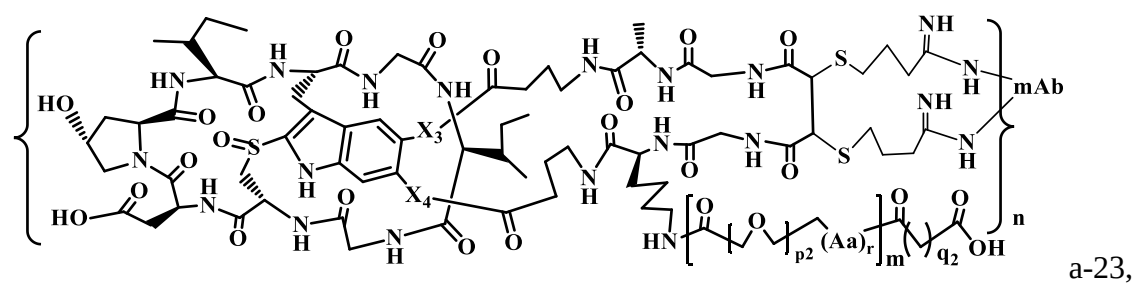
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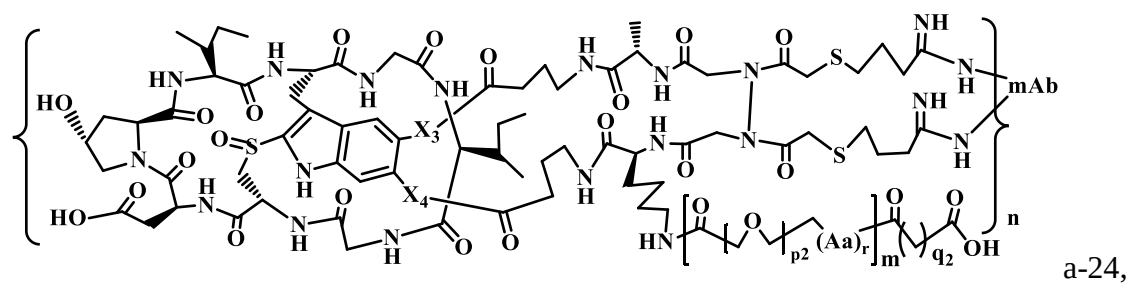
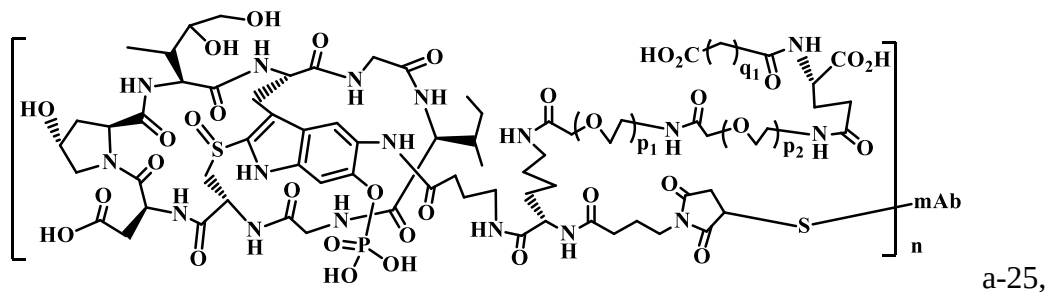
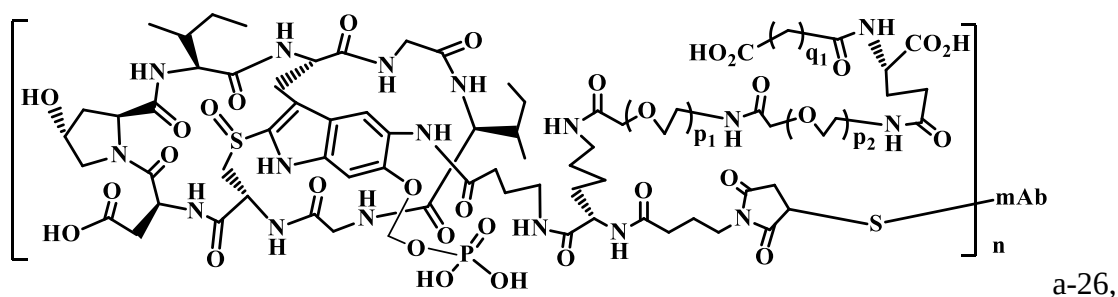
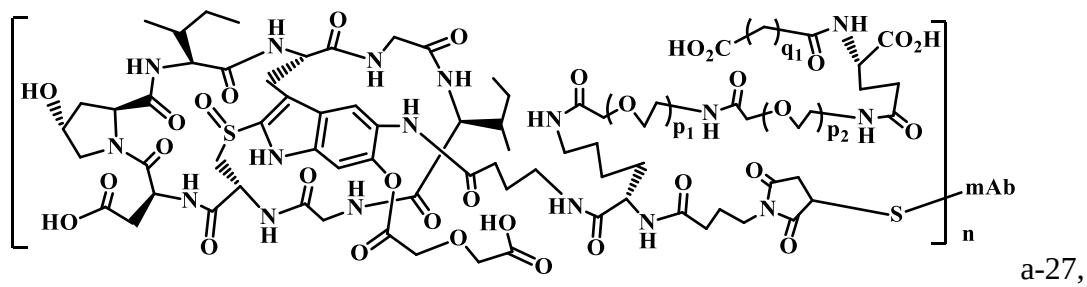
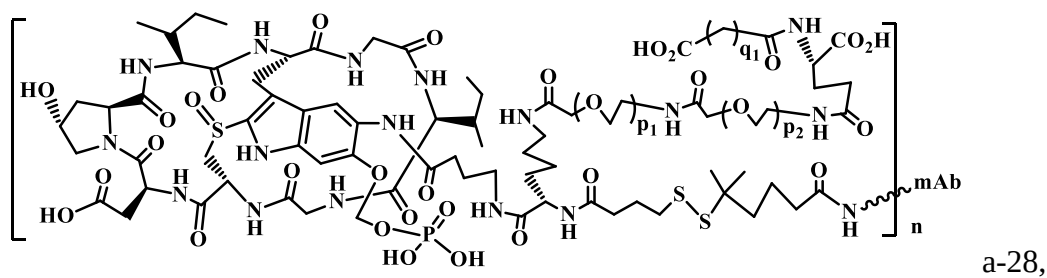
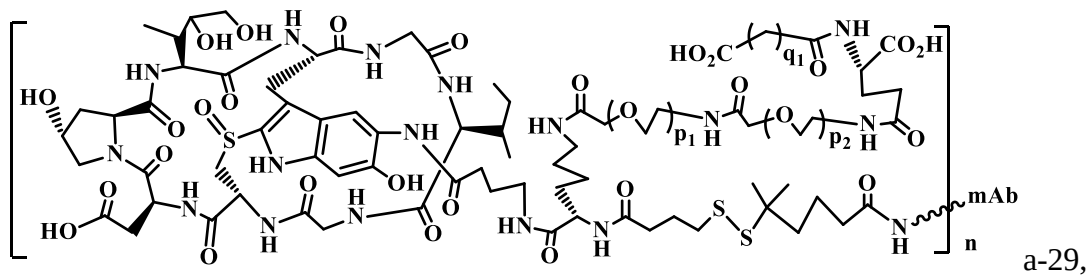


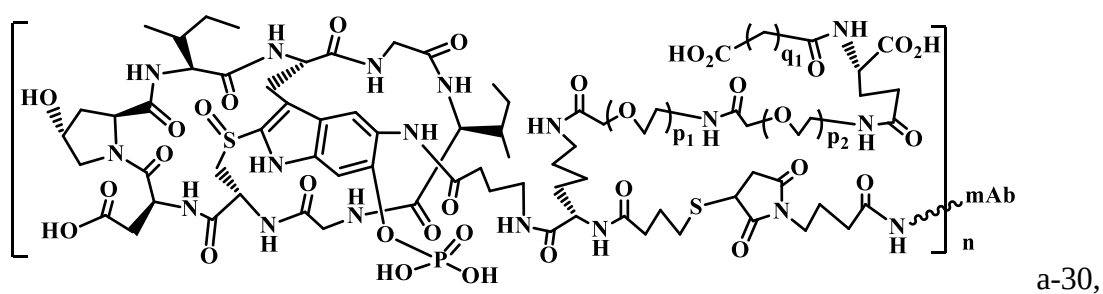
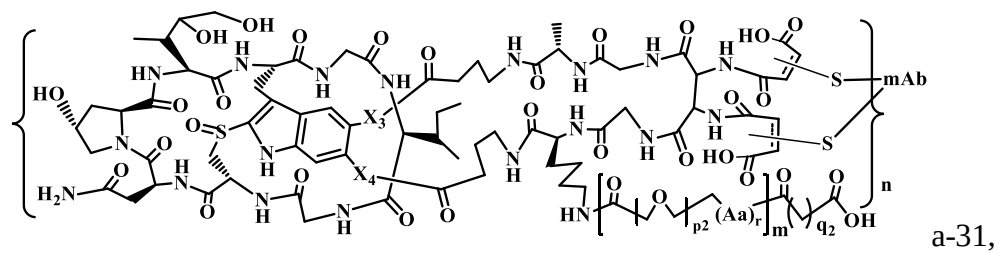
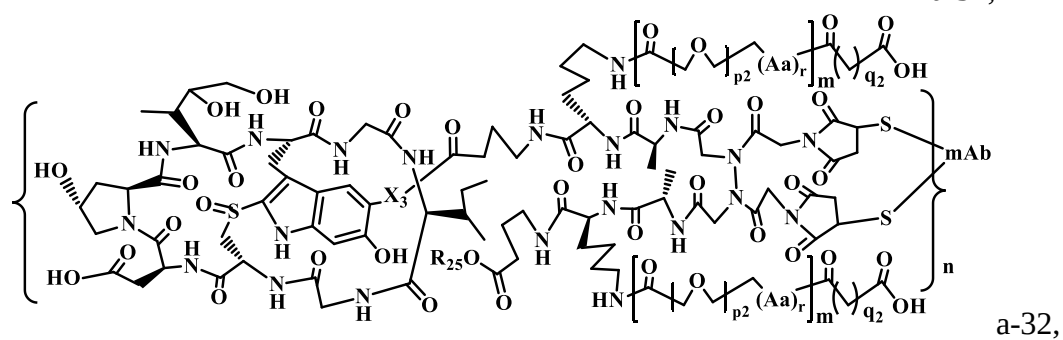
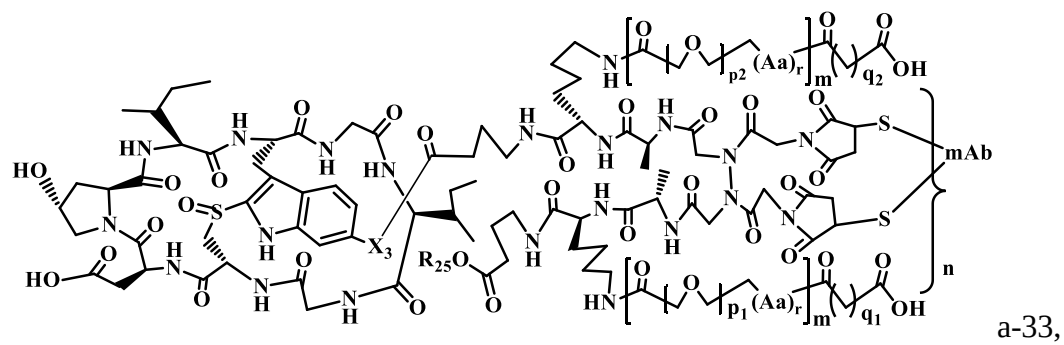
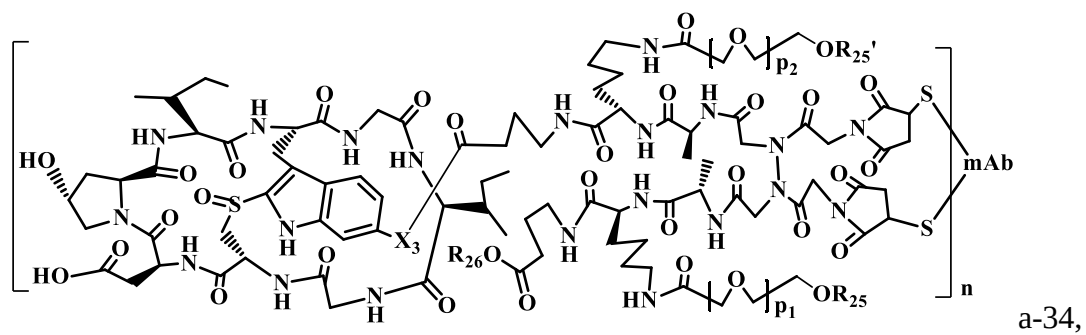
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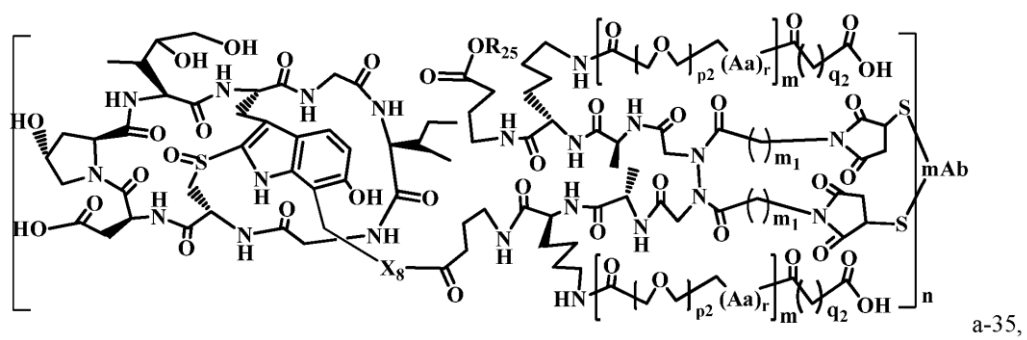
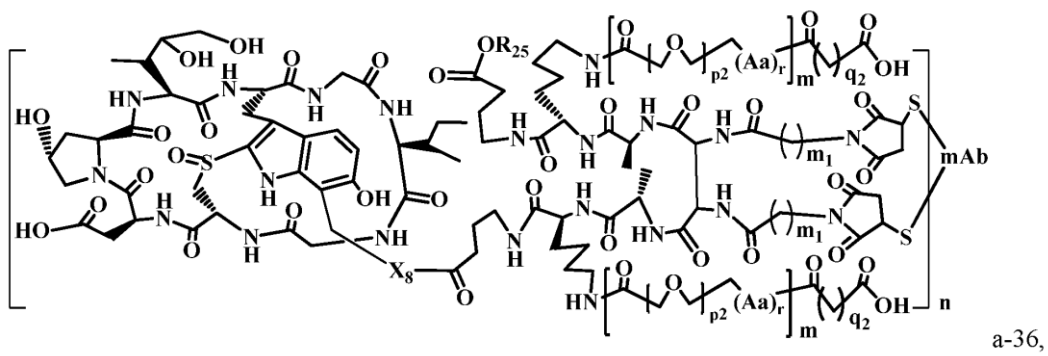


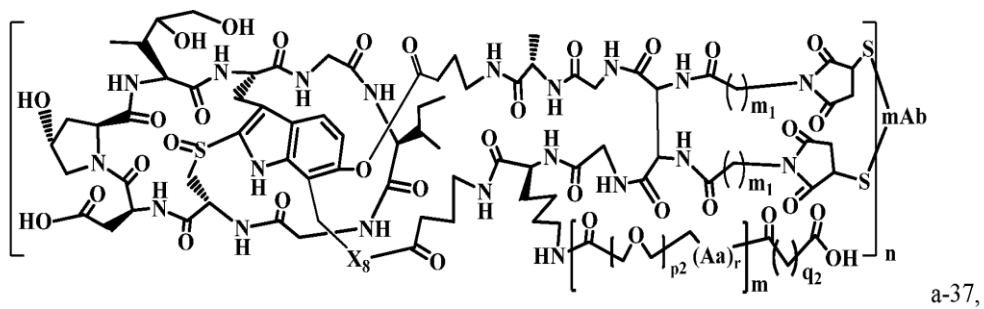
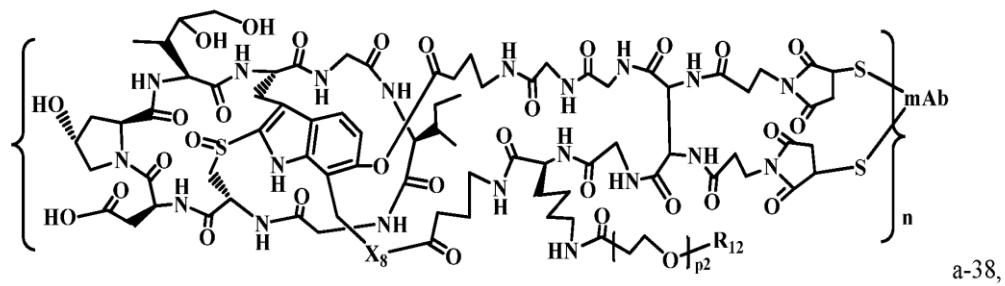
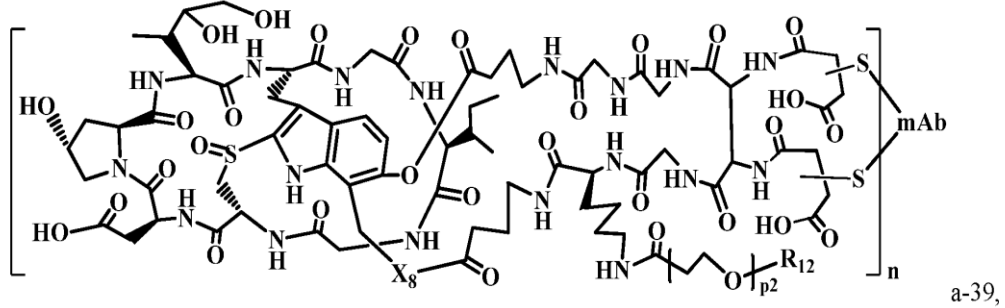
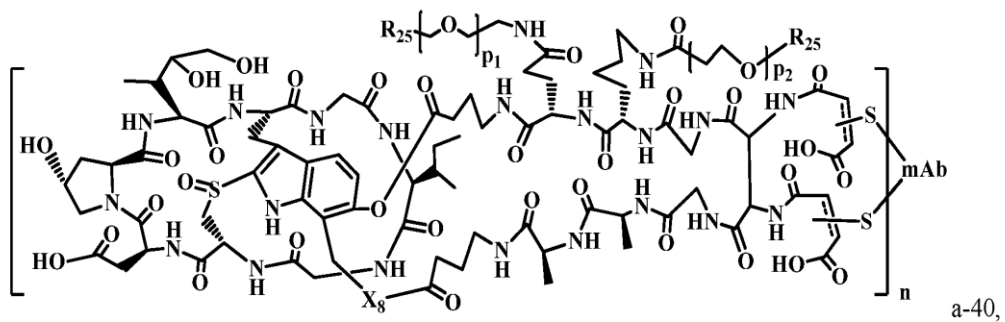
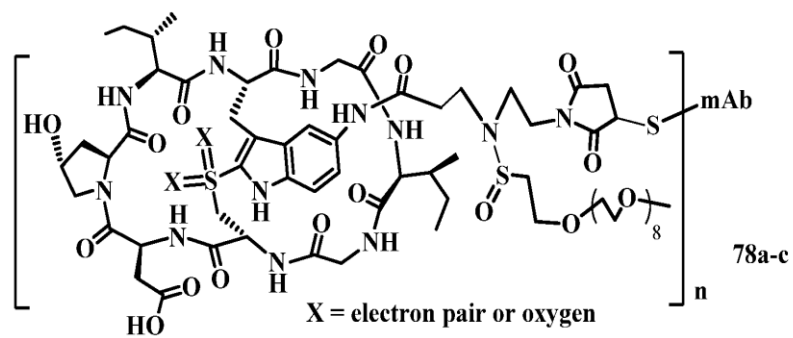
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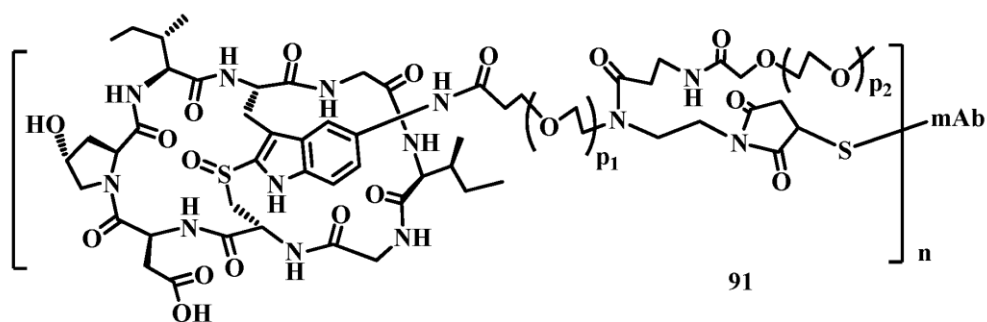
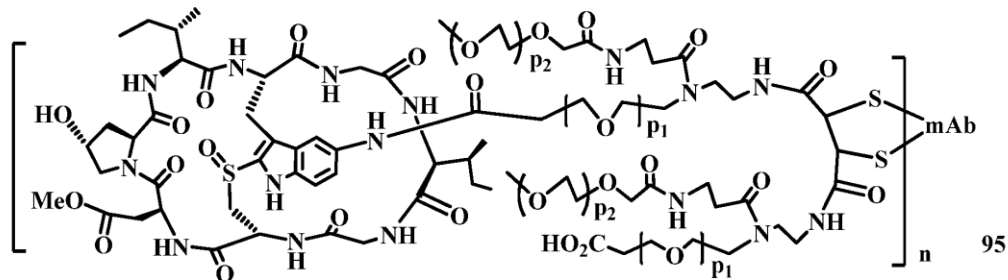
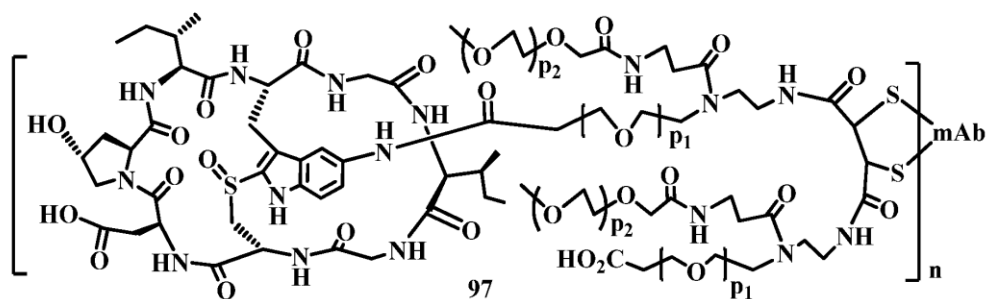
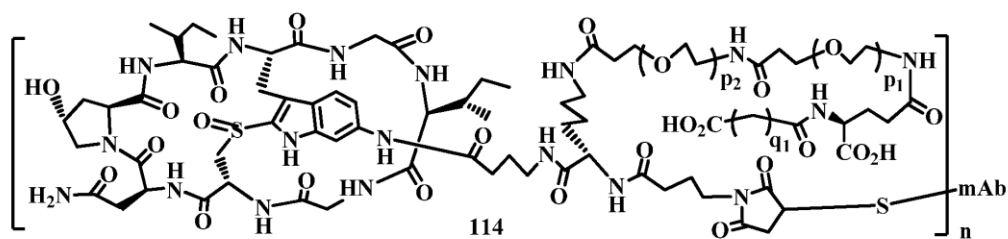
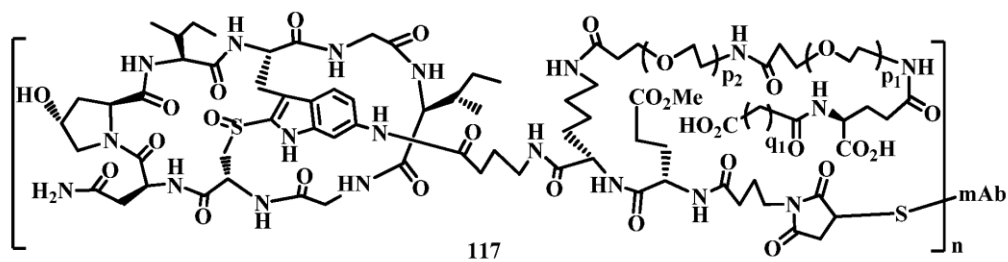


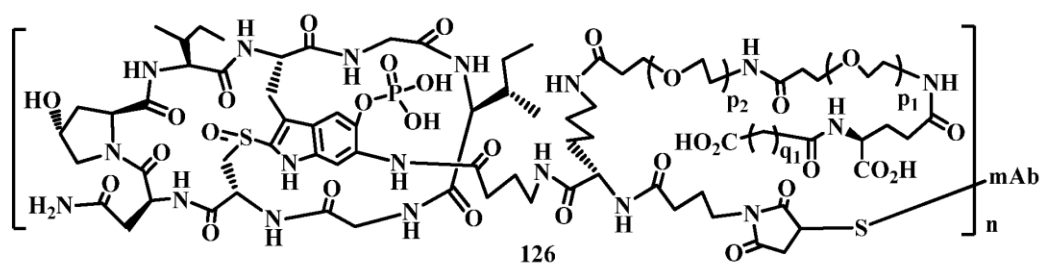
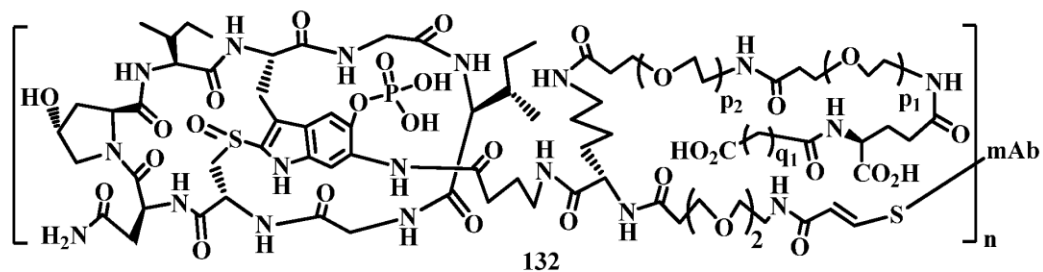
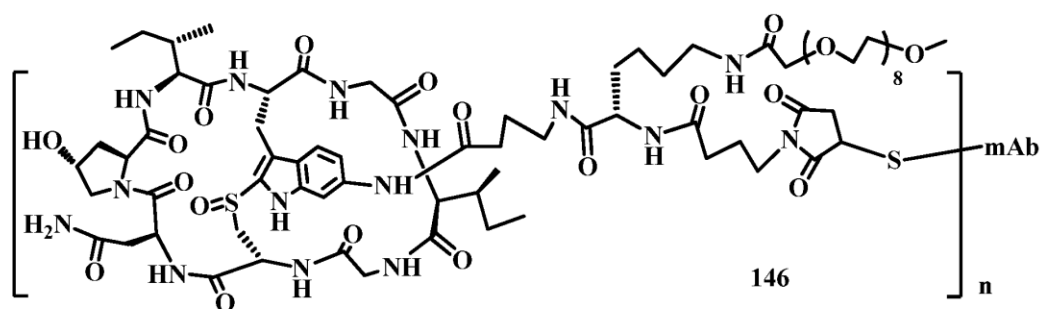
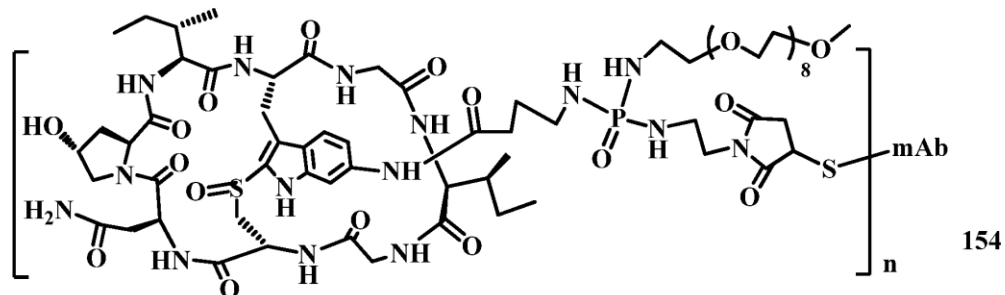
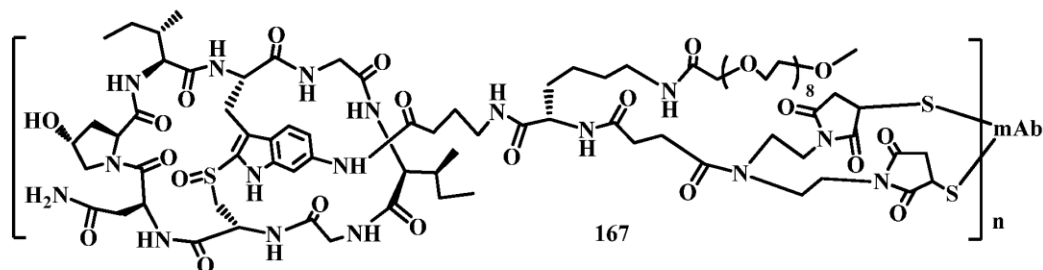


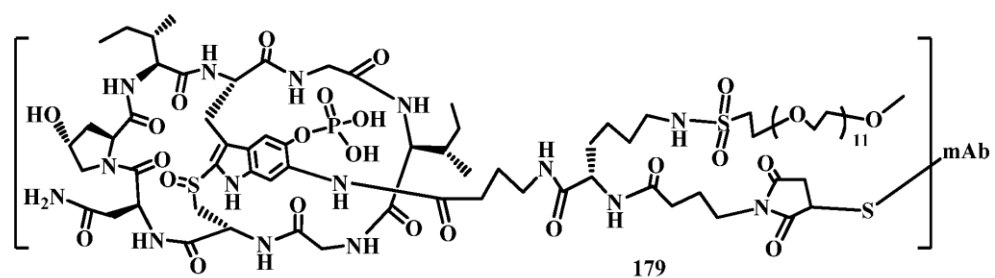
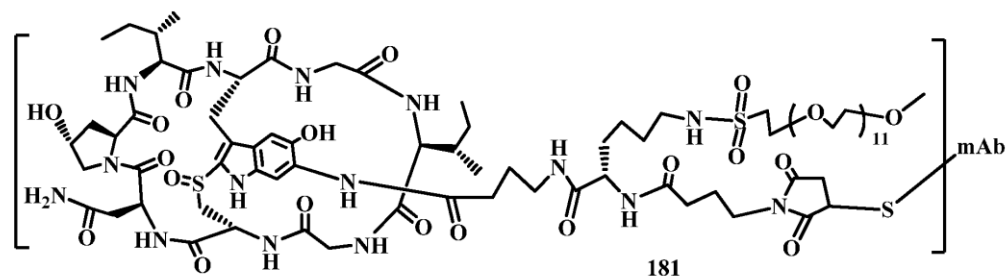
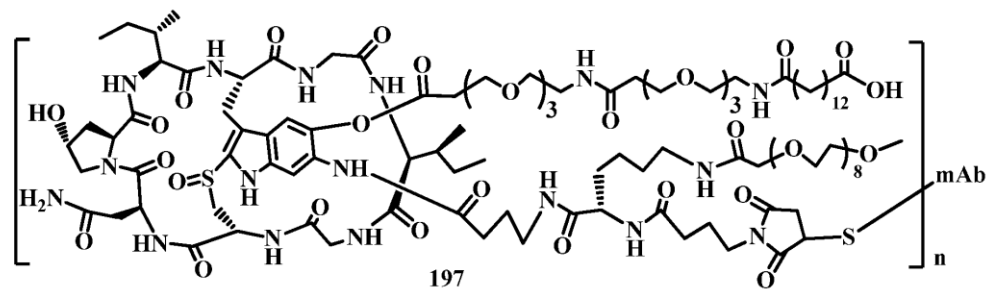
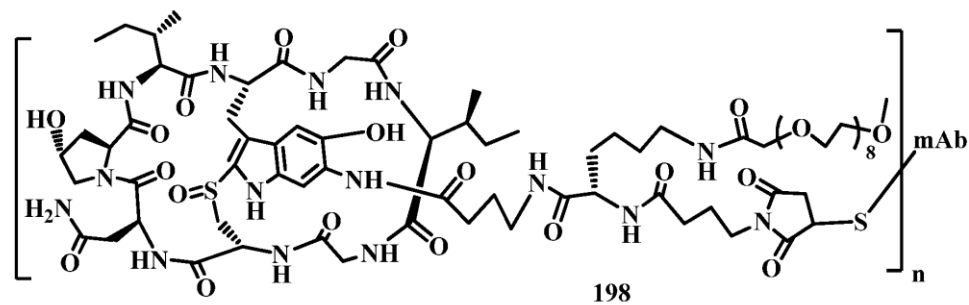
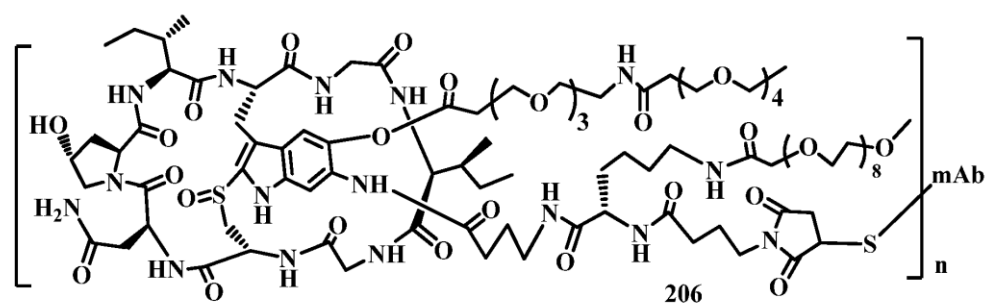


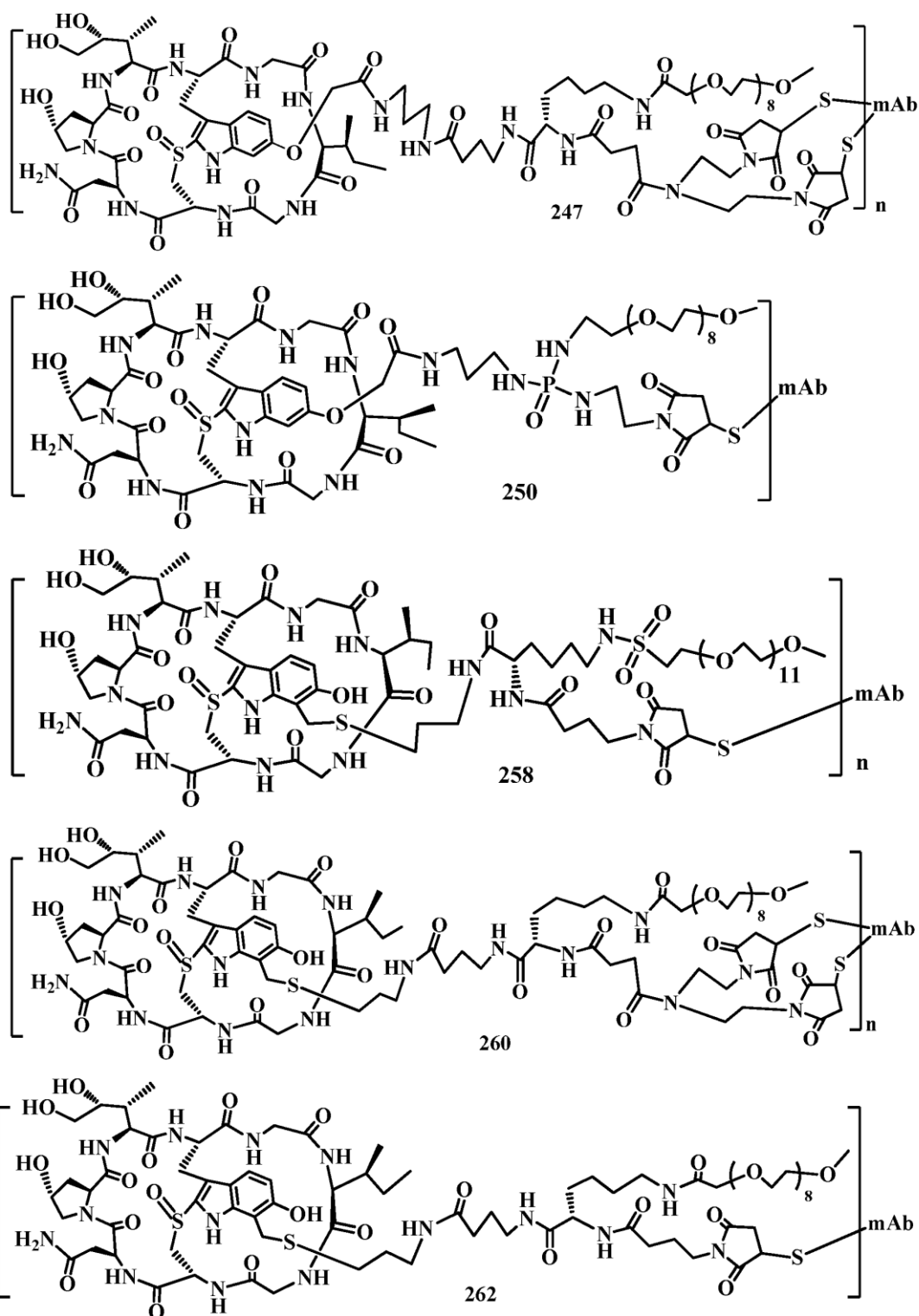








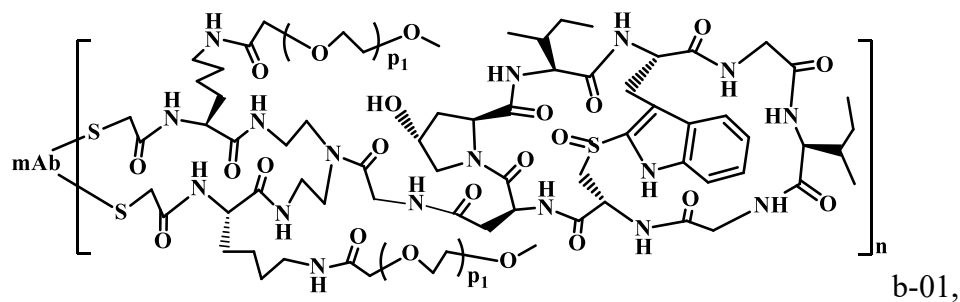
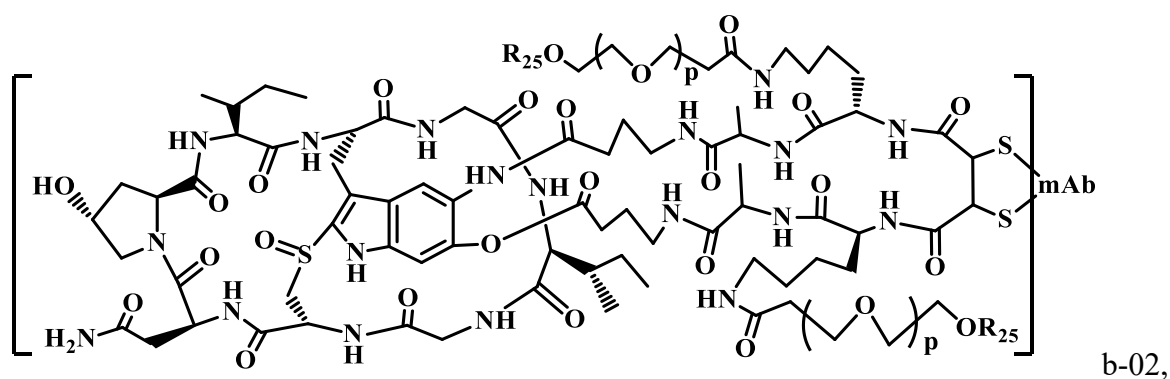
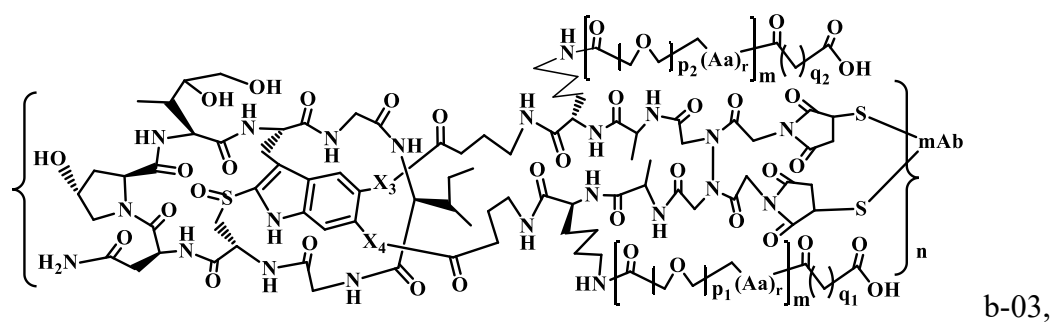
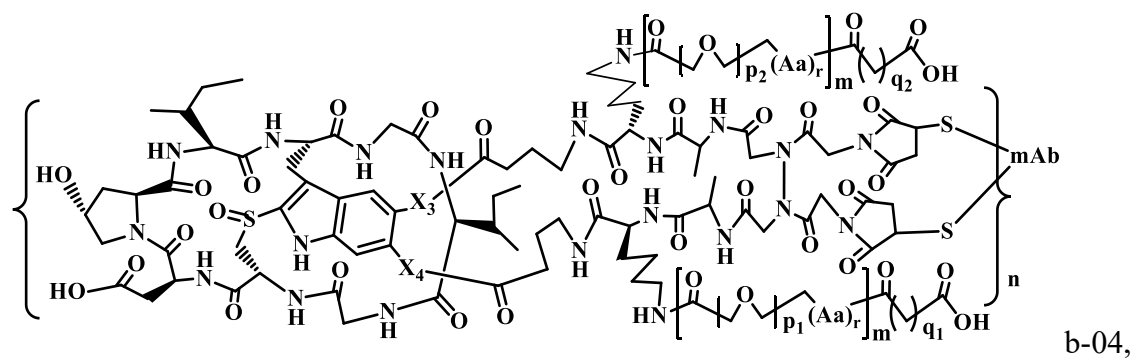


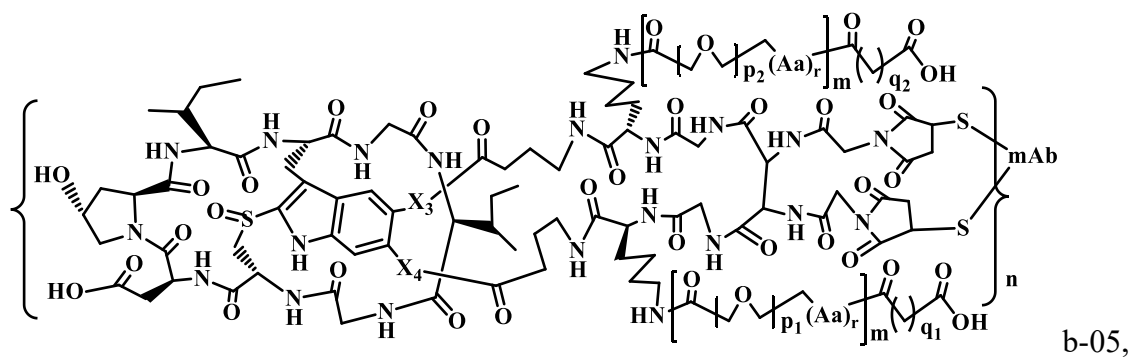
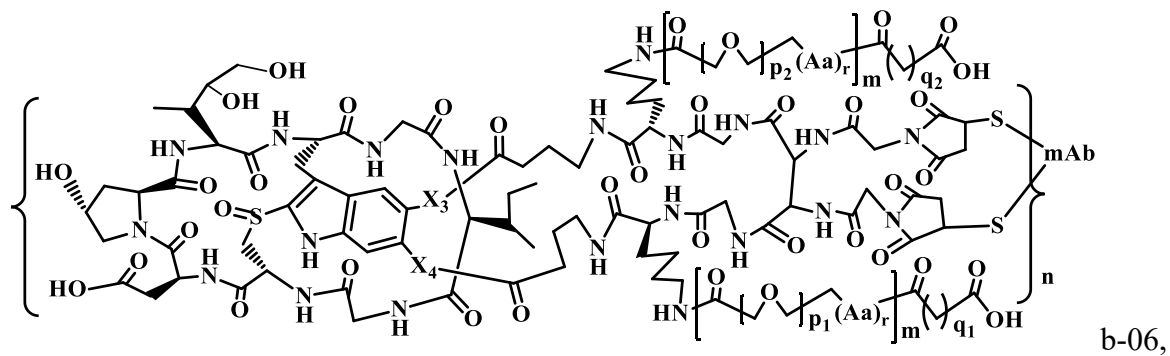
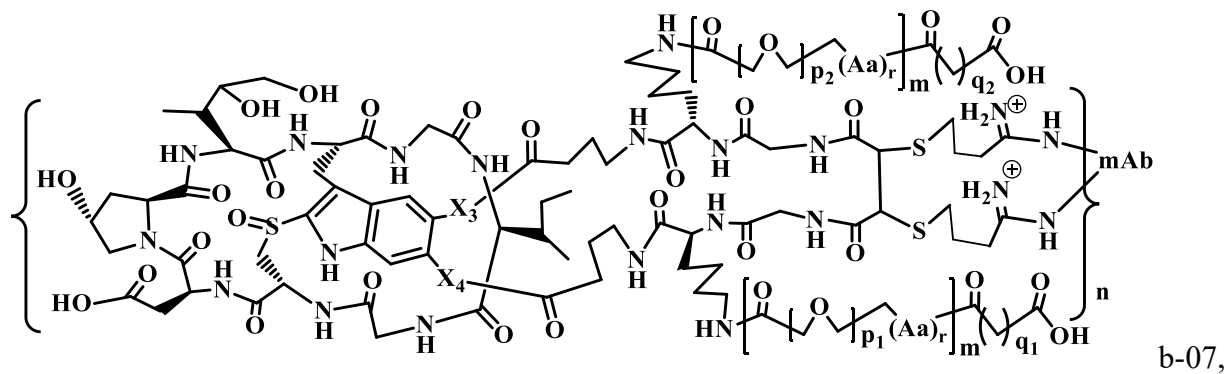
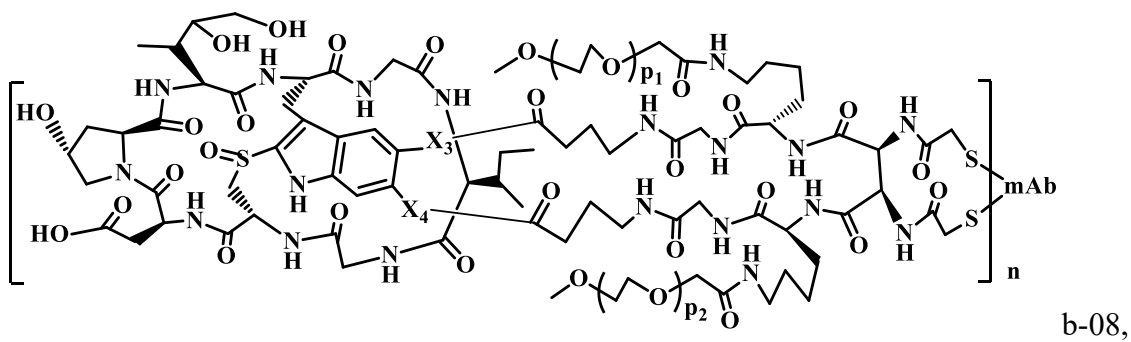
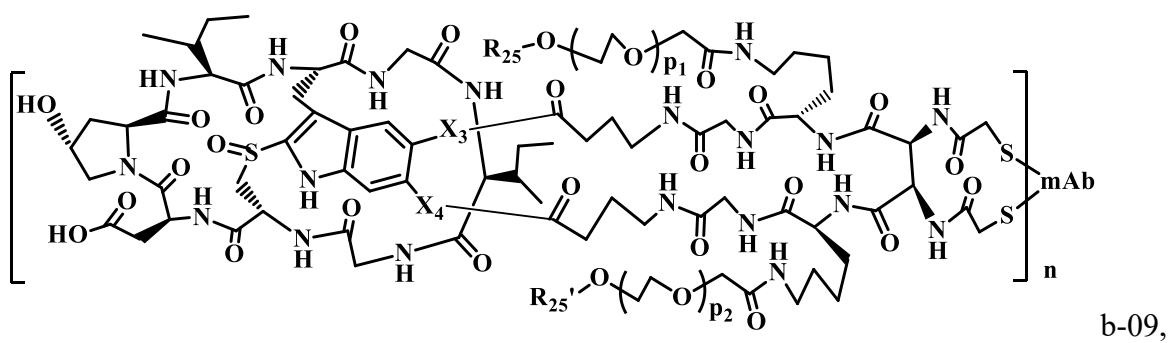


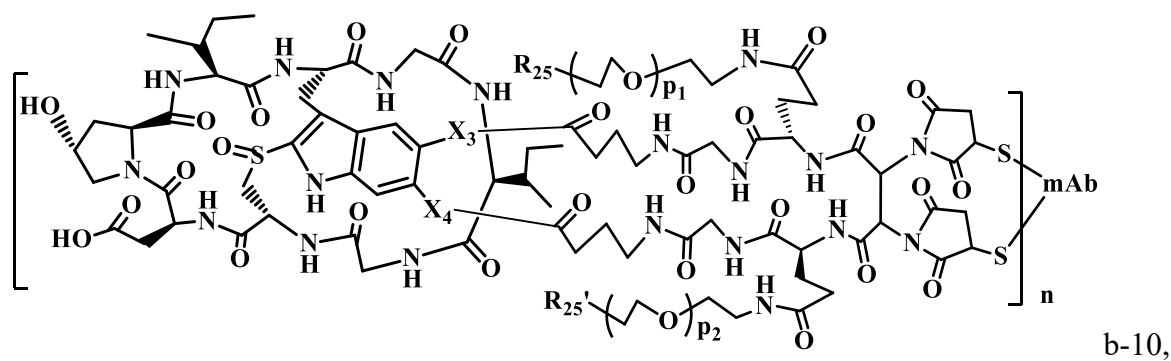
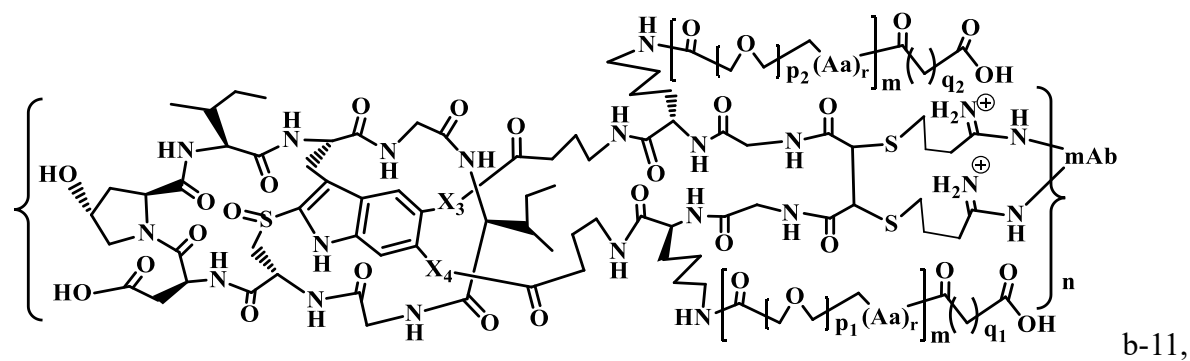
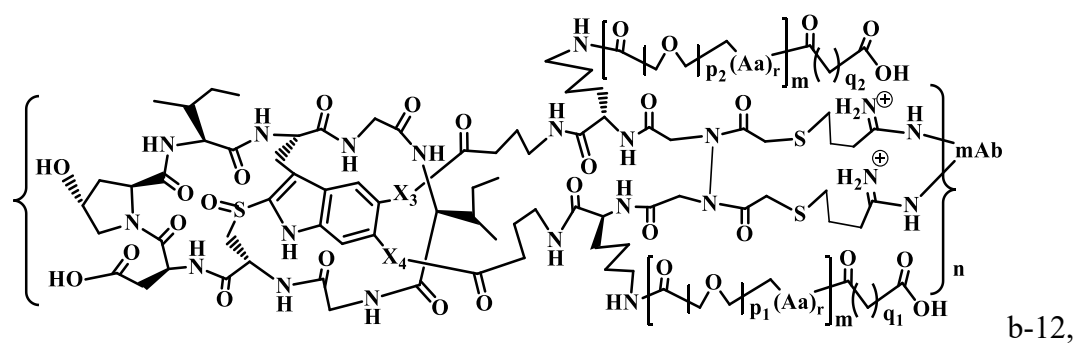
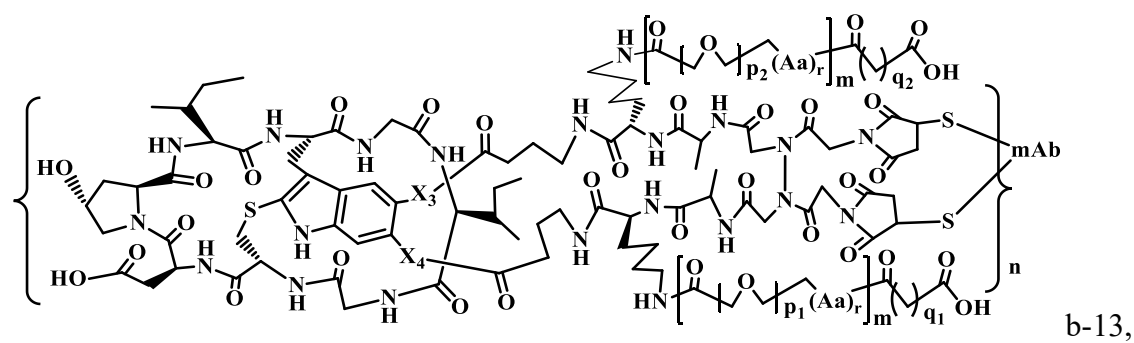
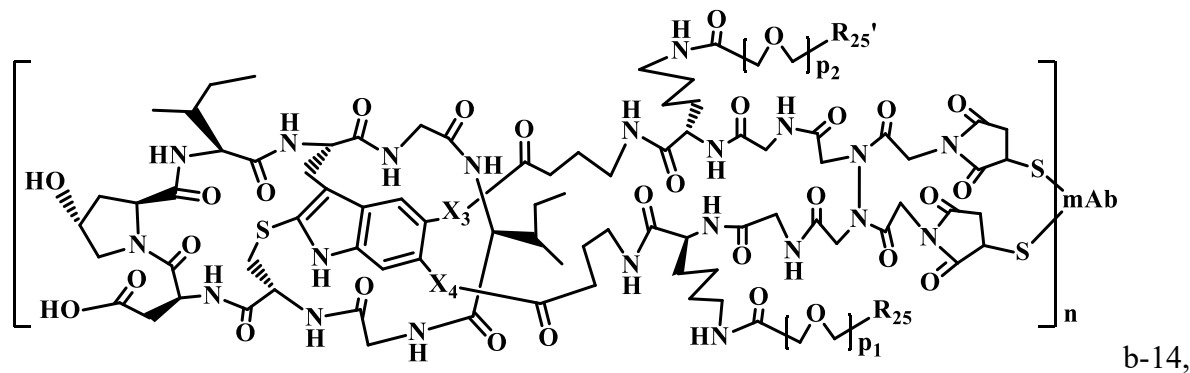
or one or more isotope of chemical elements, pharmaceutically acceptable salts, hydrates, or hydrated salts; or the polymorphic crystalline structures of these compounds; or the optical isomers, racemates, diastereomers or enantiomers; wherein  $X_{-8}$  is O, S, NH, NHHN, NHR- $_{12}$ , SR- $_{12}$ , SSR- $_{12}$ , SSCH-(CH $_3$ )-R- $_{12}$ , SSC-(CH $_3$ )- $_2$ R- $_{12}$ , or R- $_{12}$ ;  $m_{-1}$  is 0-20;  $X_{-1}$ ,  $X_{-2}$ ,  $X_{-3}$ ,  $X_{-4}$ ,  $X_{-5}$ ,  $p_{-1}$ ,  $p_{-2}$ ,  $q_{-1}$ ,  $q_{-2}$ ,  $m$ ,  $n$ , R- $_{25}$ , (Aa) $_x$  and  $mAb$  are as defined in claim 1 described the same above; Aa-

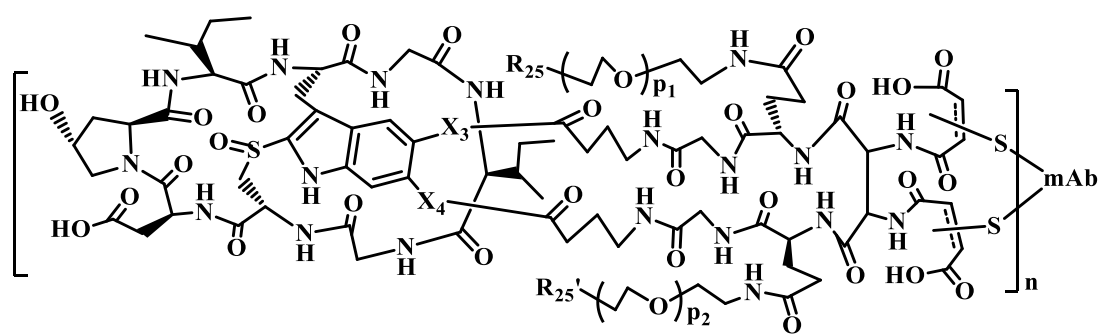
is natural or unnatural amino acid;  $r$  is 0-100;  $(Aa)_r$  is a peptide containing the same or different sequence of amino acids when  $r \geq 2$ ;  $r = 0$  means  $(Aa)_r$  absent.

10. The conjugate compound of Formula (III) according to Claim 2 having the following structures of b-01 to b-22, 216, 221, 240 below:

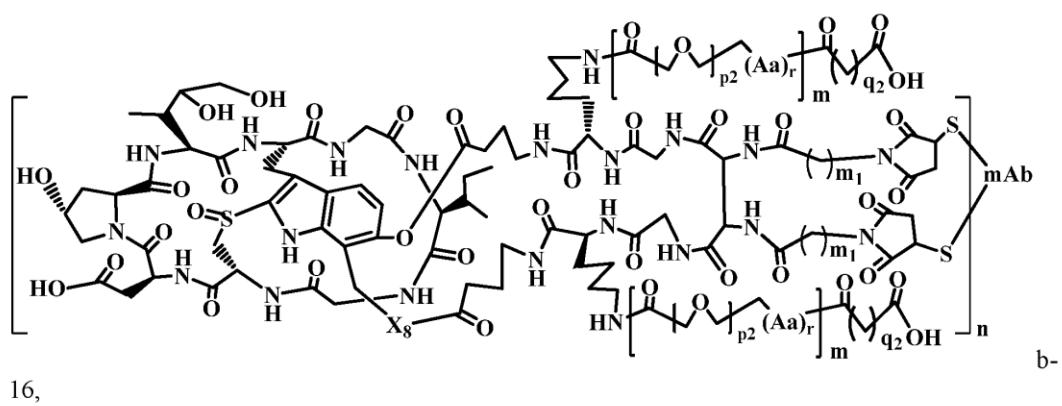




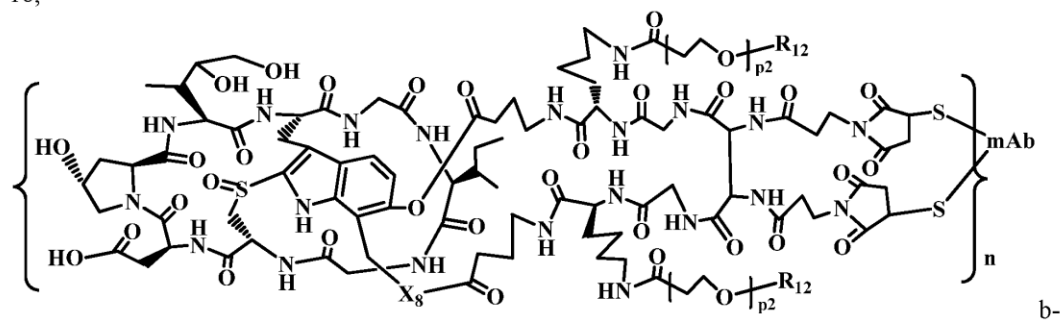




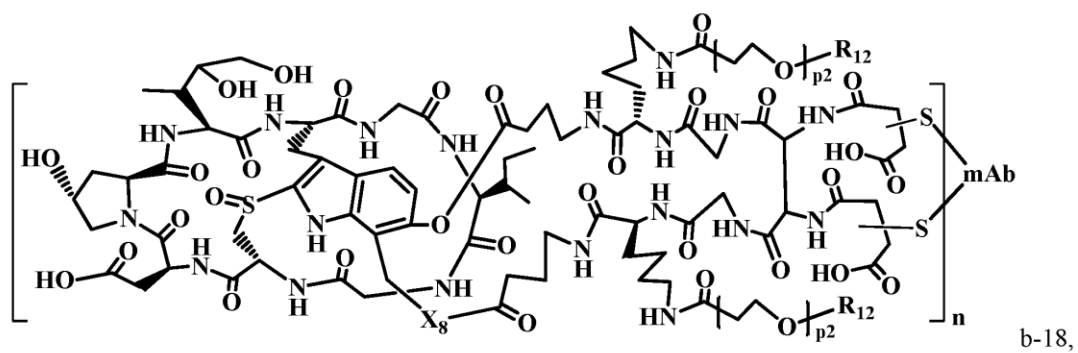
b-15,



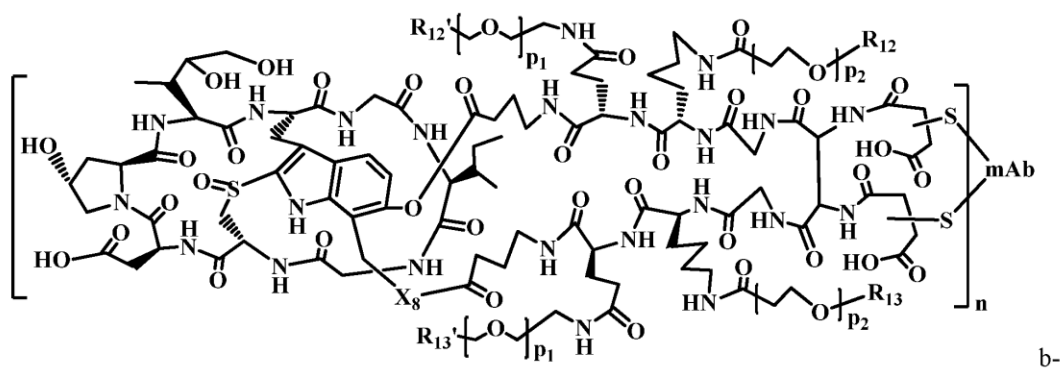
16,



17,

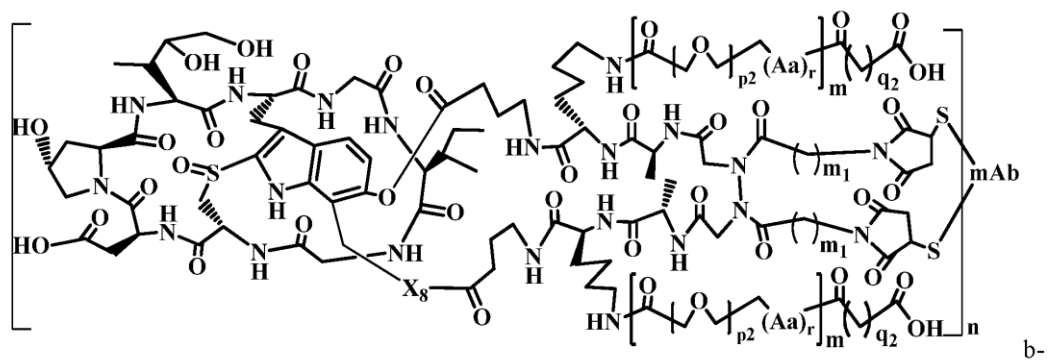
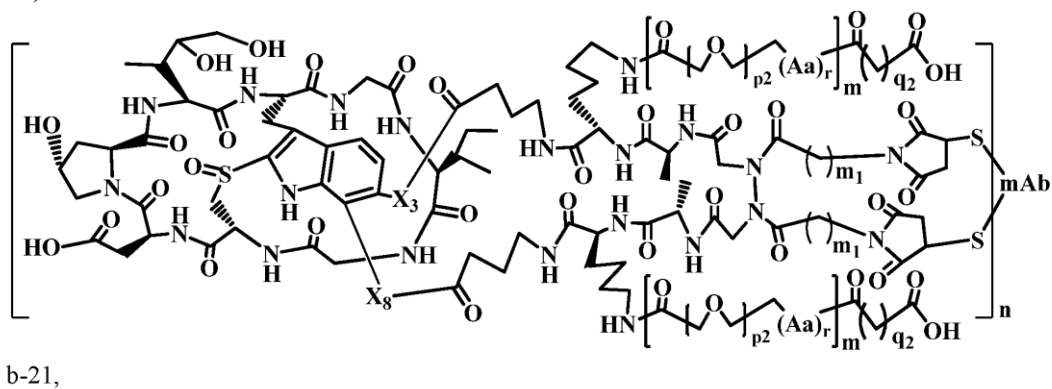
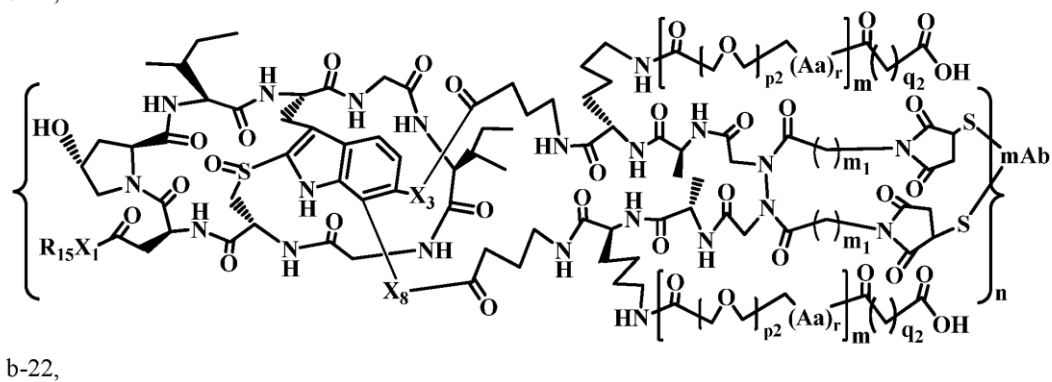
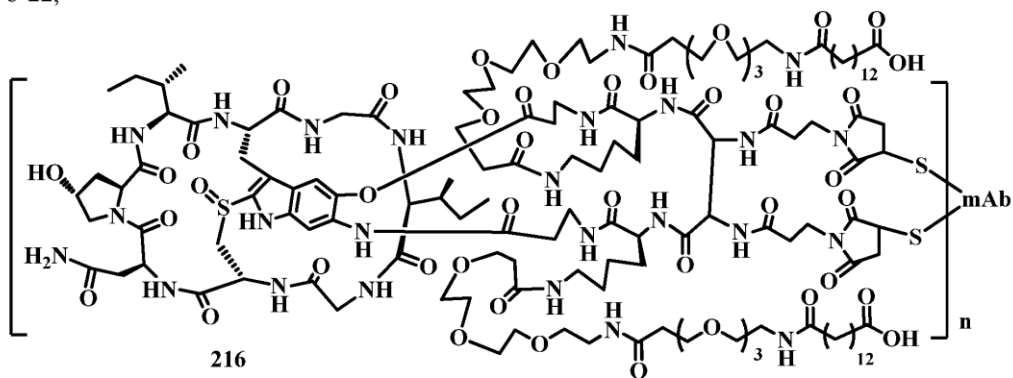


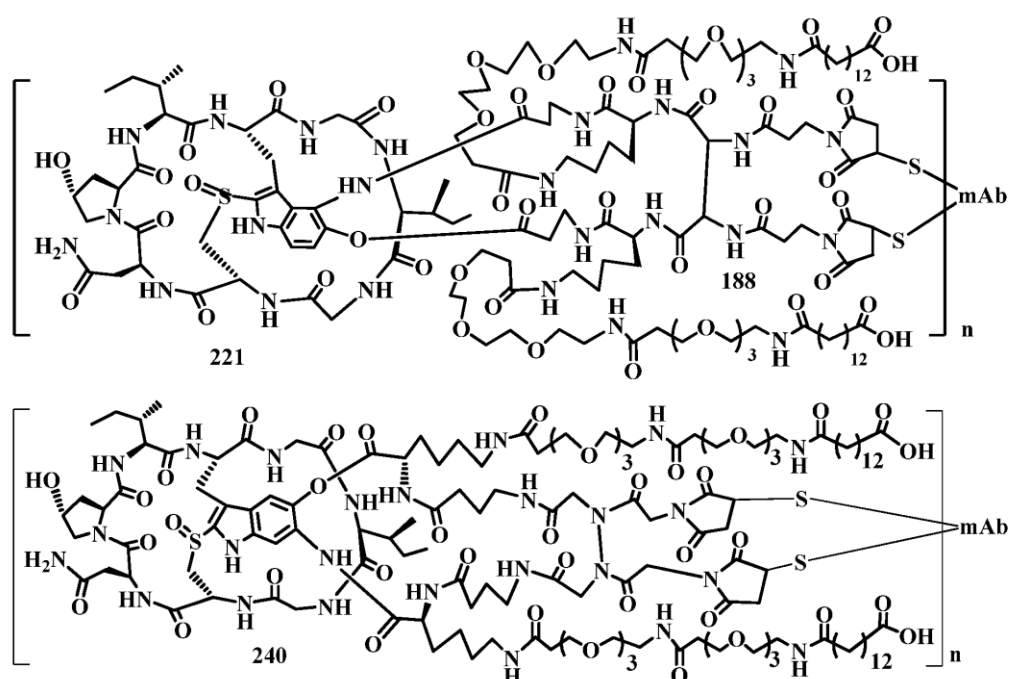
b-18,



b-

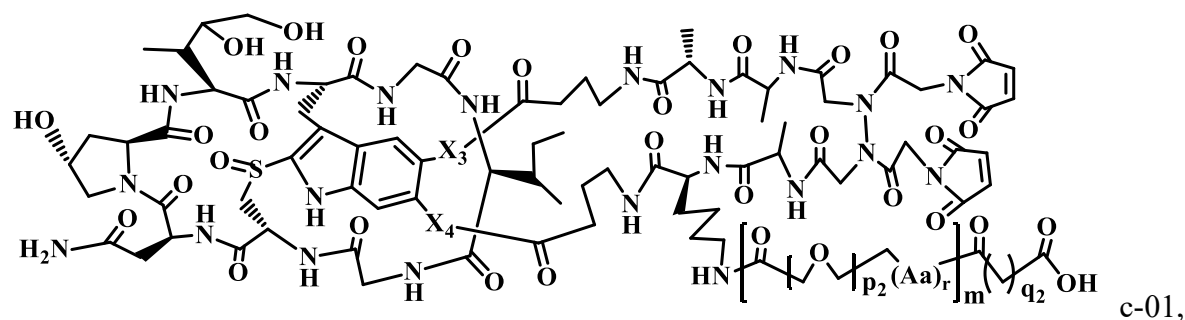
19,

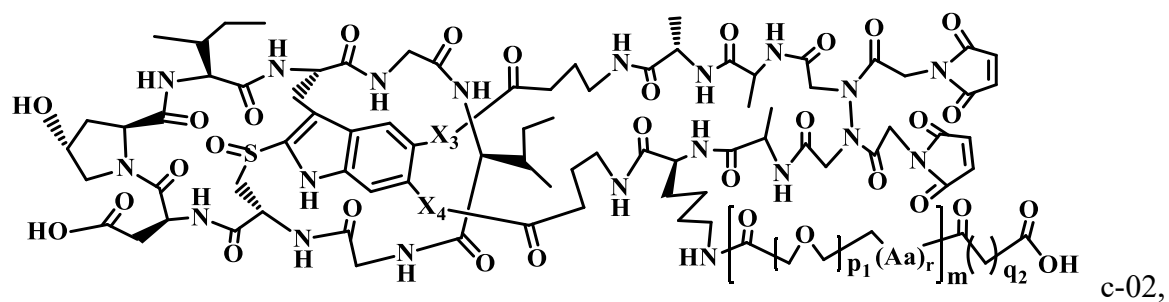
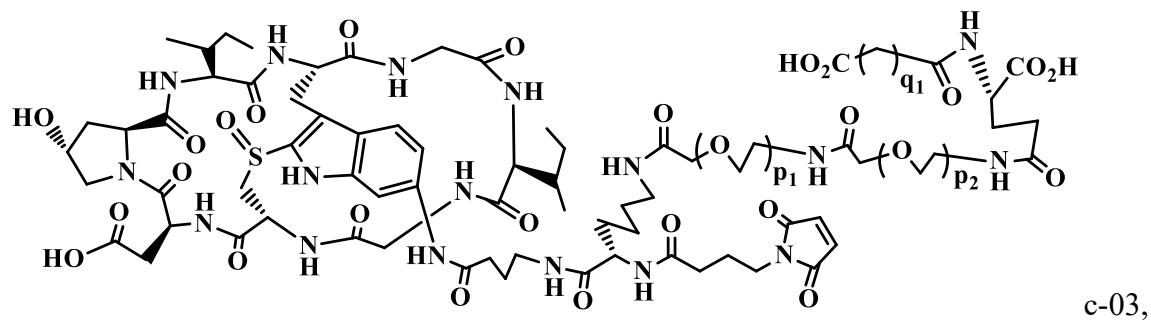
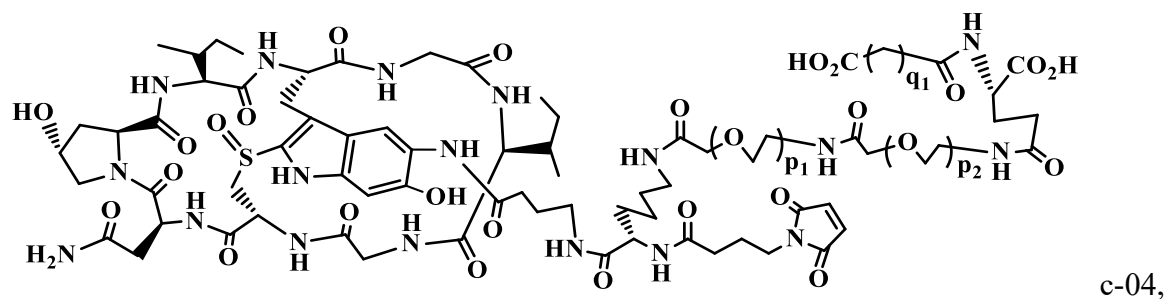
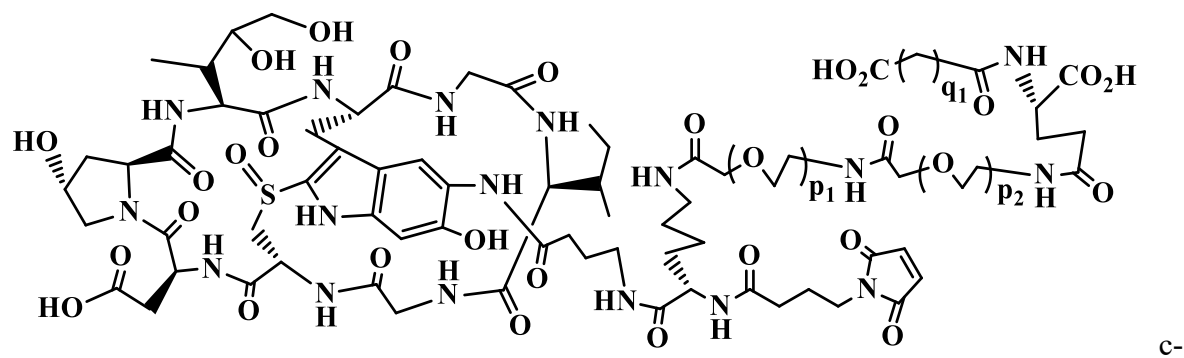




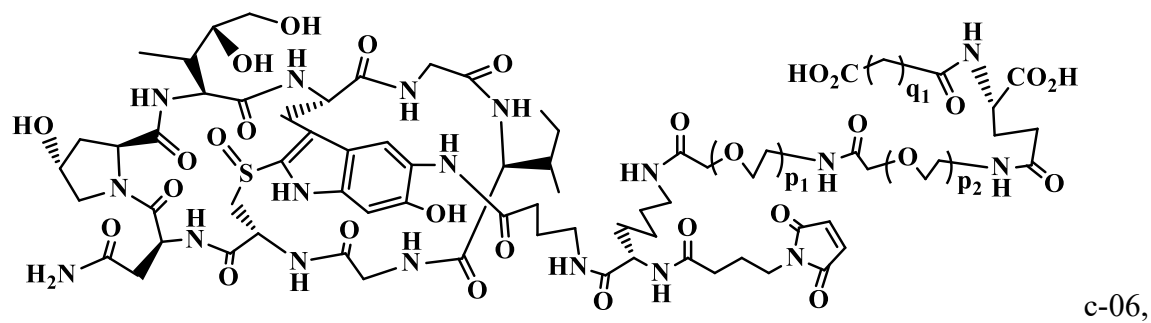
or one or more isotope of chemical elements, or their pharmaceutically acceptable salts, hydrates, or hydrated salts; or the polymorphic crystalline structures of these compounds; or their optical isomers, racemates, diastereomers or enantiomers; wherein X-8 is O, S, NH, NHNH, NHR-12, SR-12, SSR-12, SSCH-(CH<sub>3</sub>)-R-12, SSC (CH<sub>3</sub>)<sub>2</sub>R-12, or R-12; X-1, X-2, X-3, X-4, X-5, R-12, R-12', R-13, R-13', R-25, R-25', p-1, p-2, q-1, q-2, m, m-1, n, (Aa)<sub>r</sub> and mAb are ~~described the same~~ above as defined in claim 1; ~~Aa is natural or unnatural amino acid; r is 0-12; (Aa)<sub>r</sub> is a peptide containing the same or different sequence of amino acids when r > 2; r = 0 means (Aa)<sub>r</sub> absent.~~

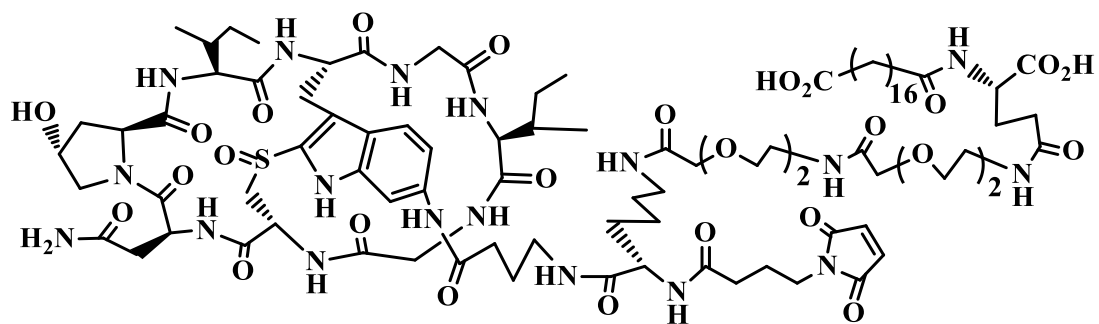
11. The compound of Formula (IV) according to ~~claim~~ claim 3 having the following structures c-01 to c-40, 71, 76, 77, 90, 94, 96, 113, 116, 126, 131, 145, 153, 166, 178, 180, 195, 196, 205, 246, 249, 257, 259, 261 below:



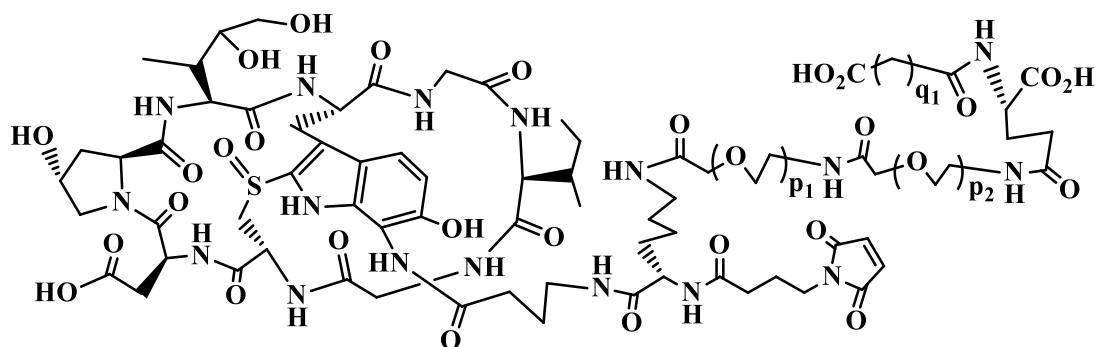


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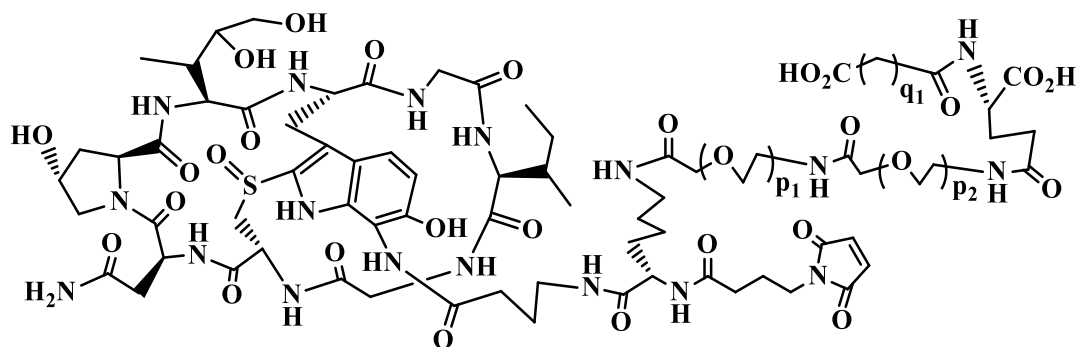




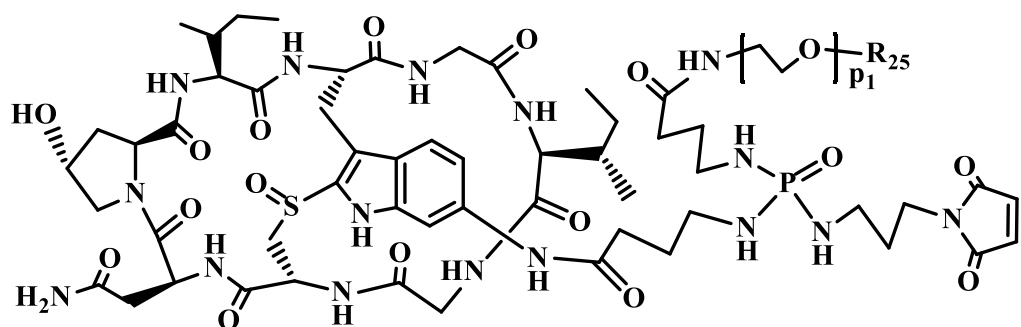
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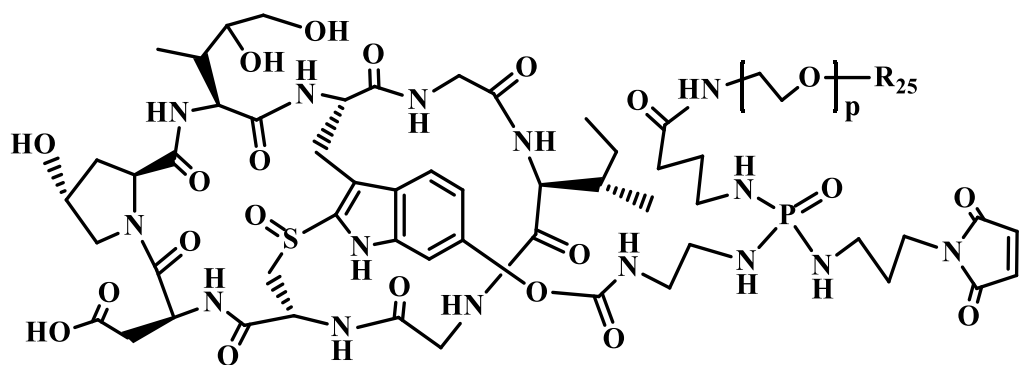
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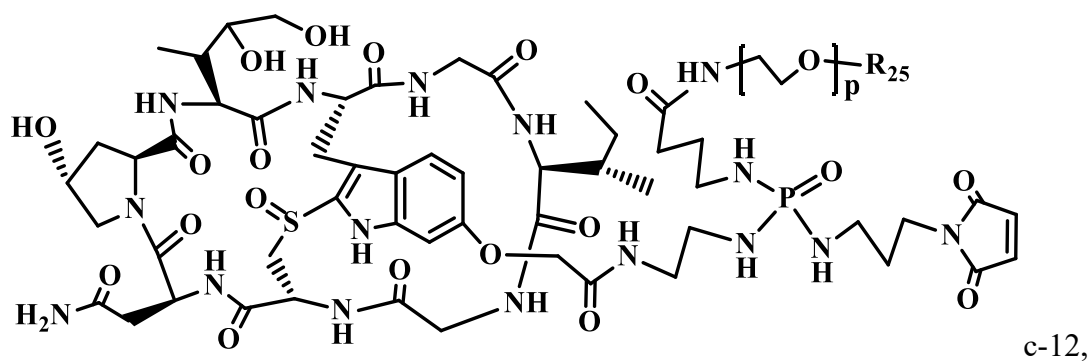
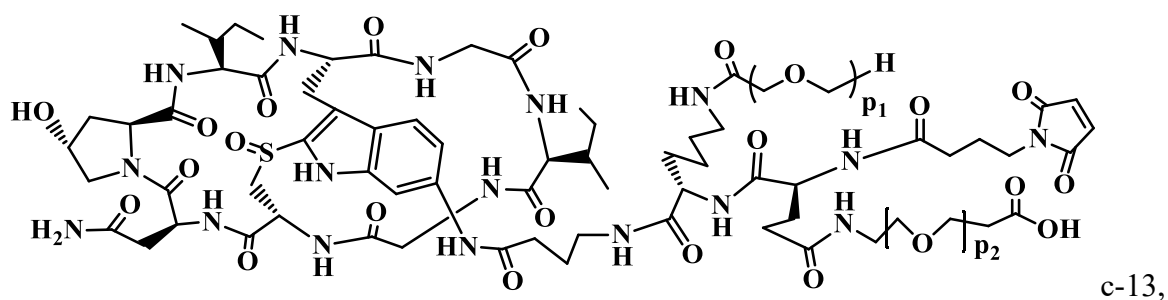
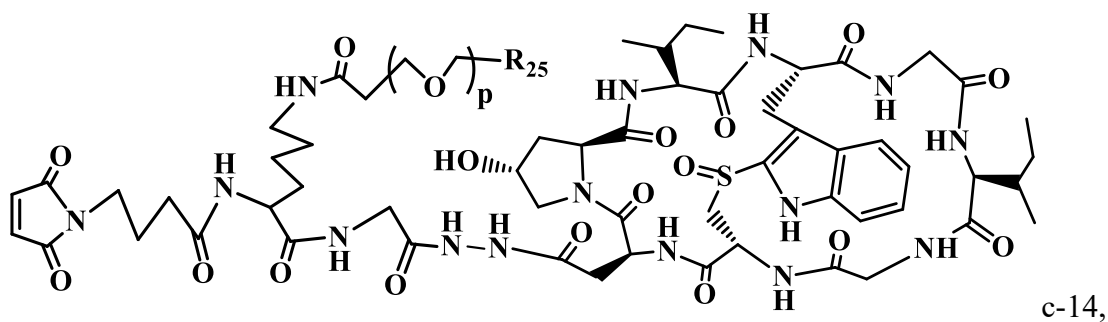
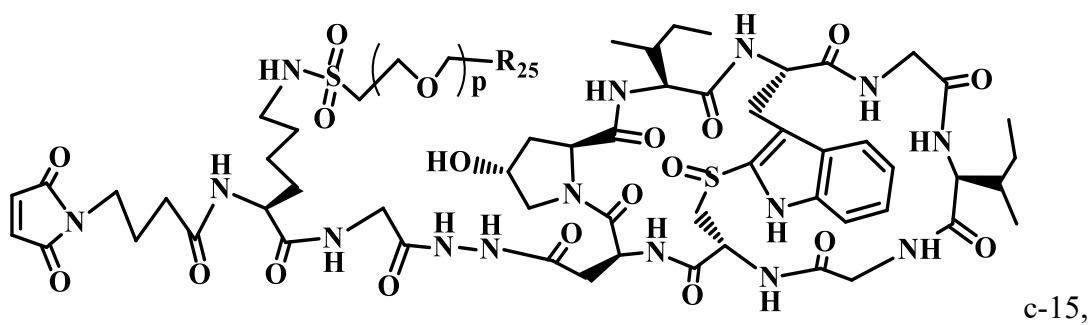
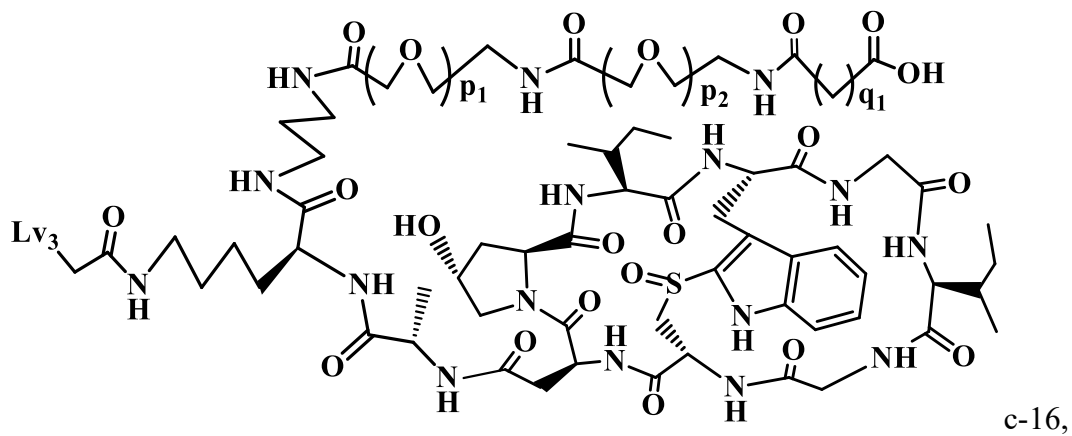
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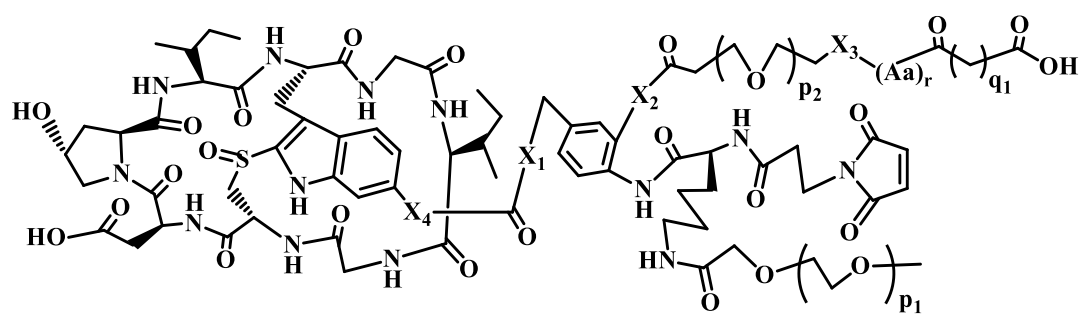
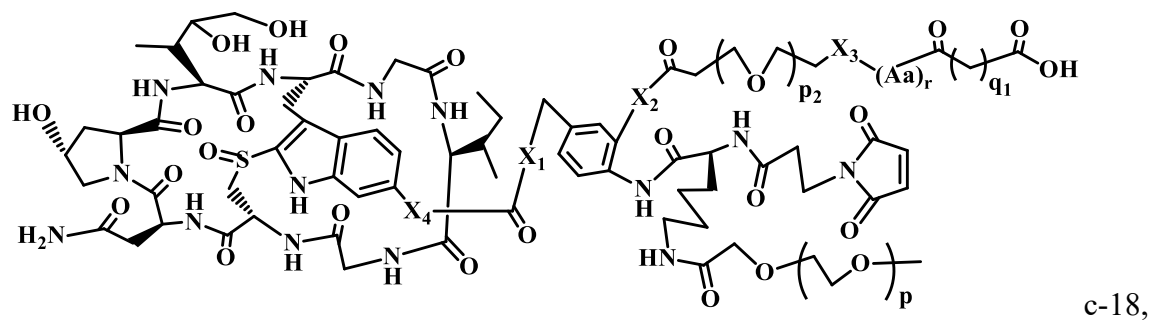
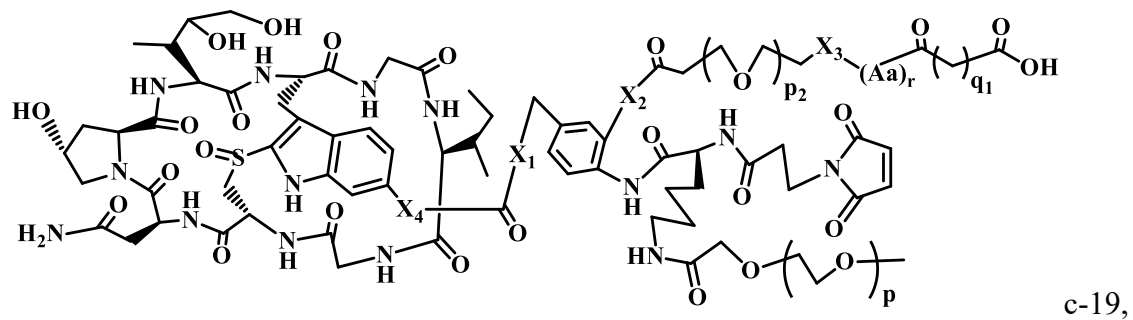
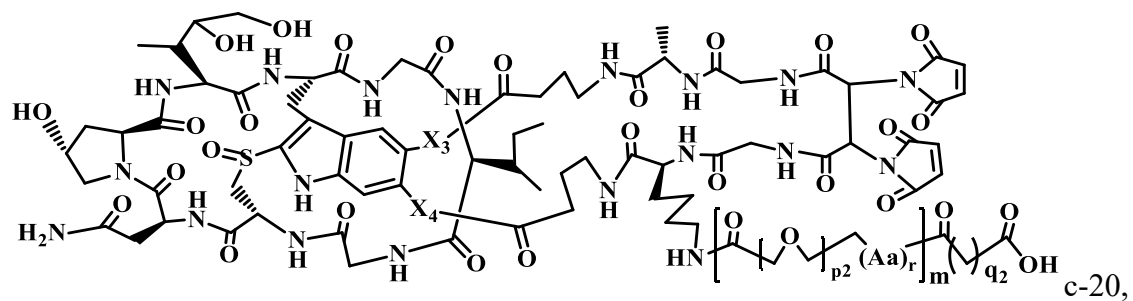
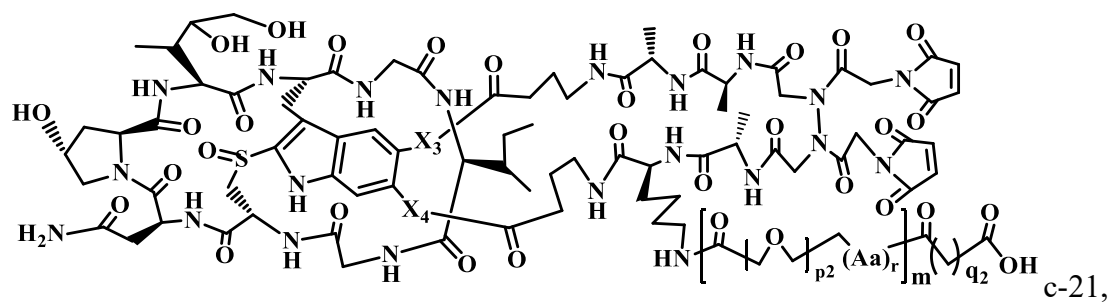


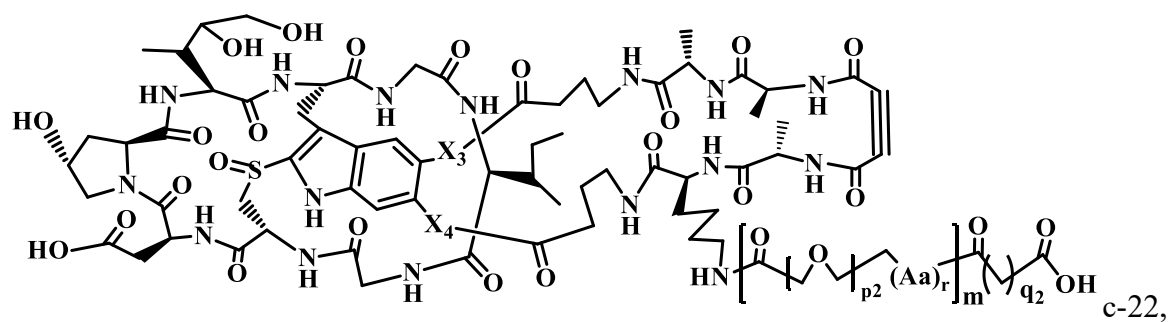
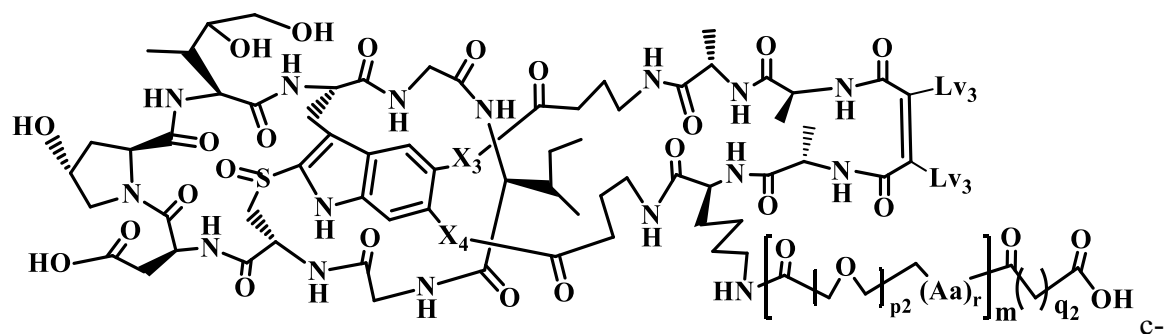
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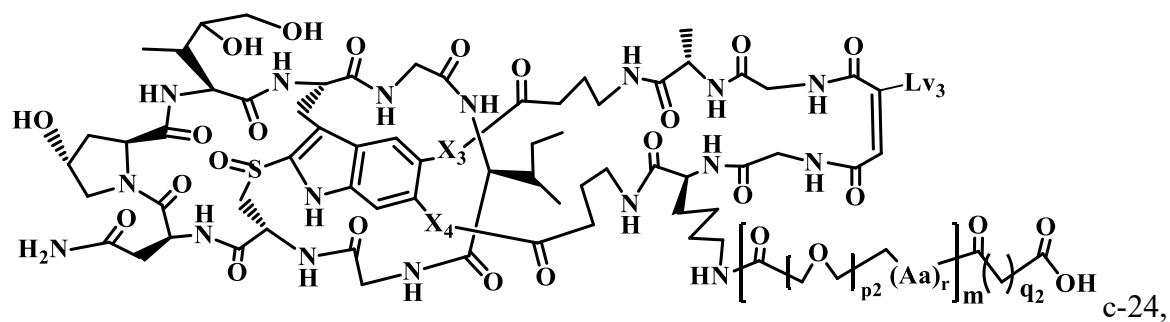
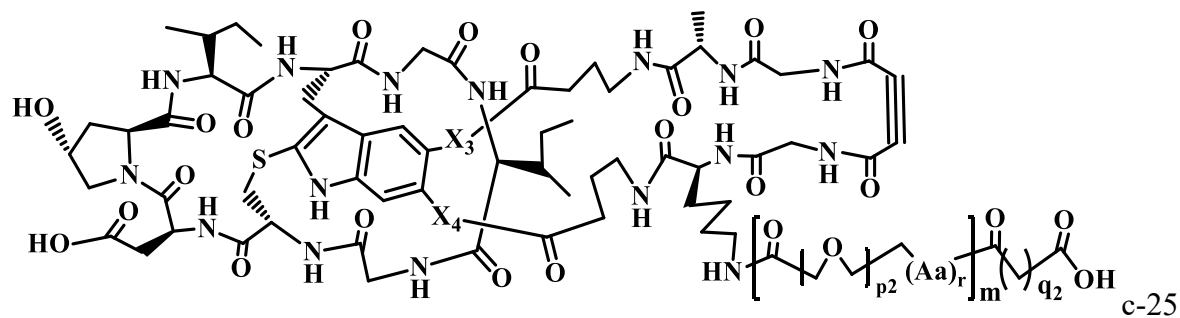
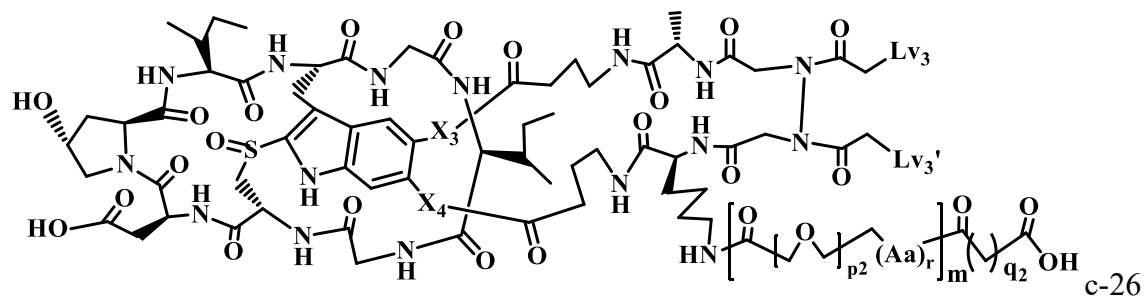
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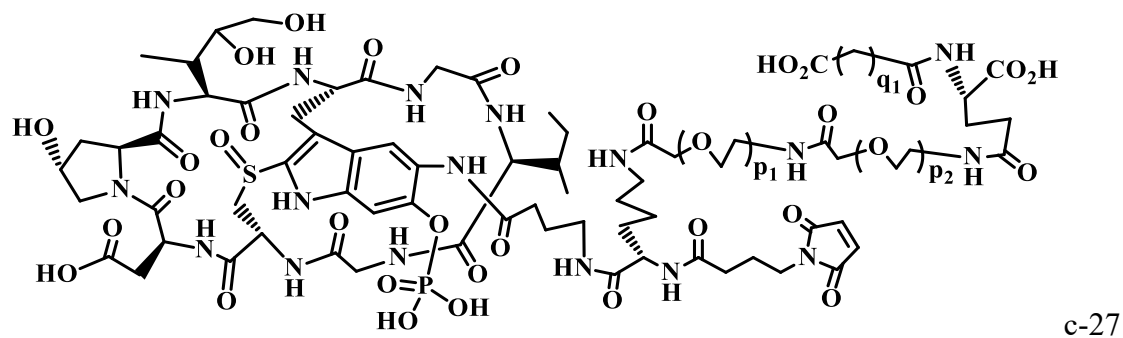
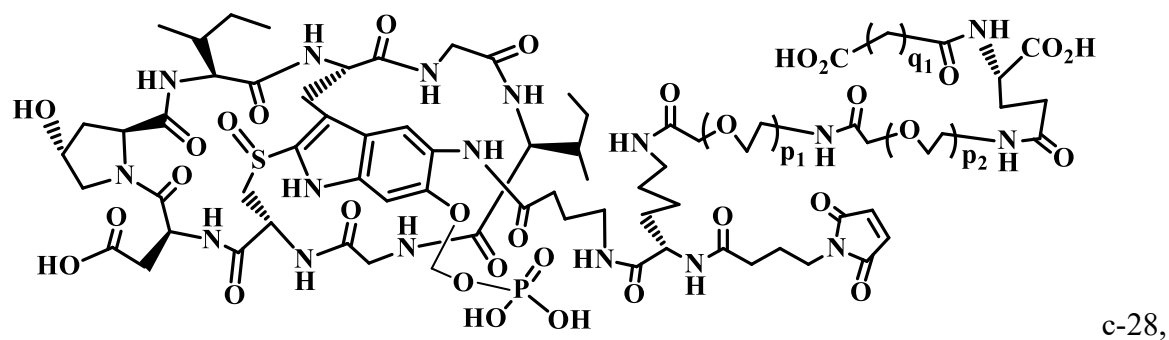
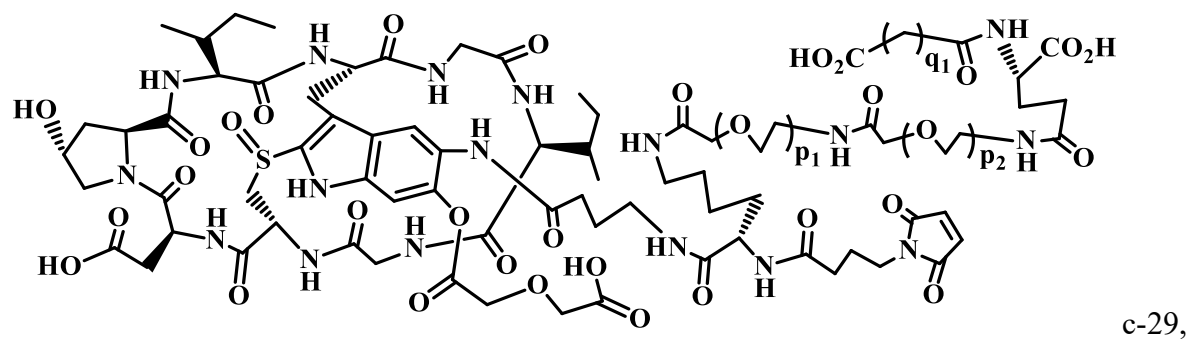
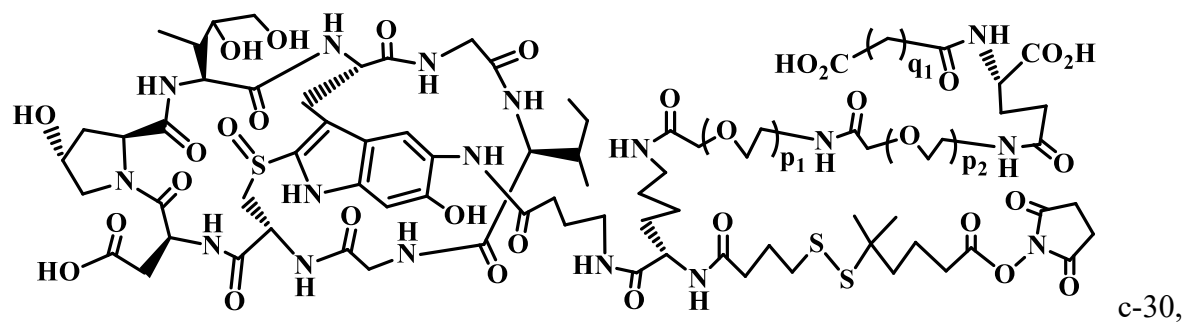
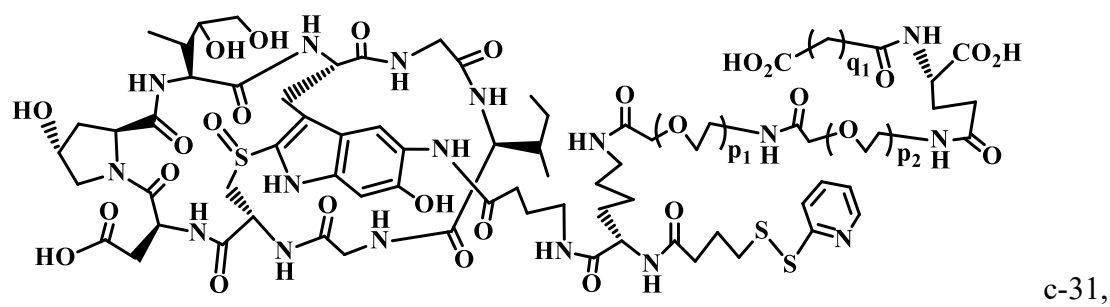


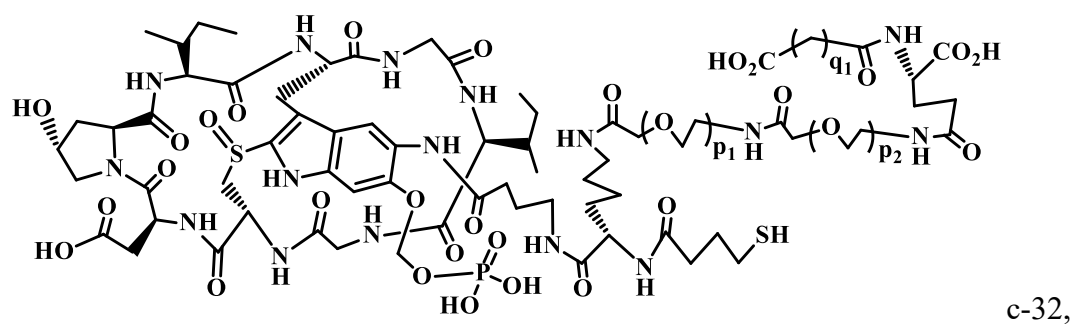
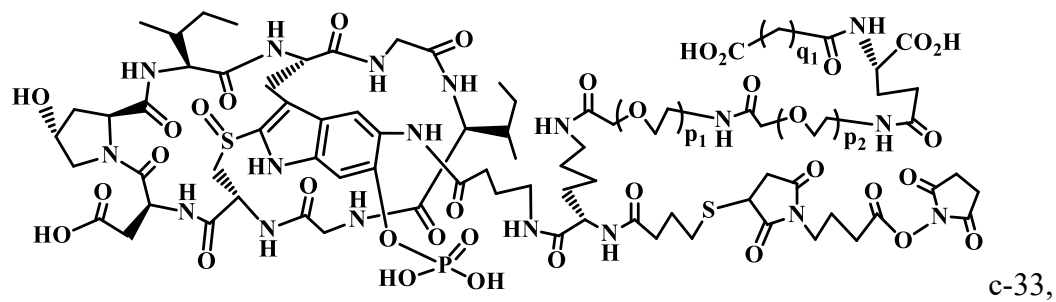
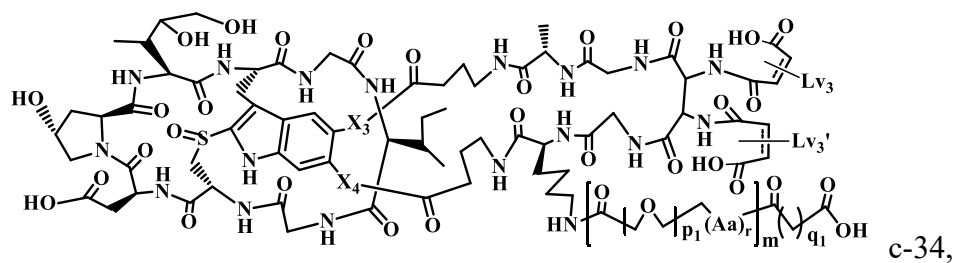
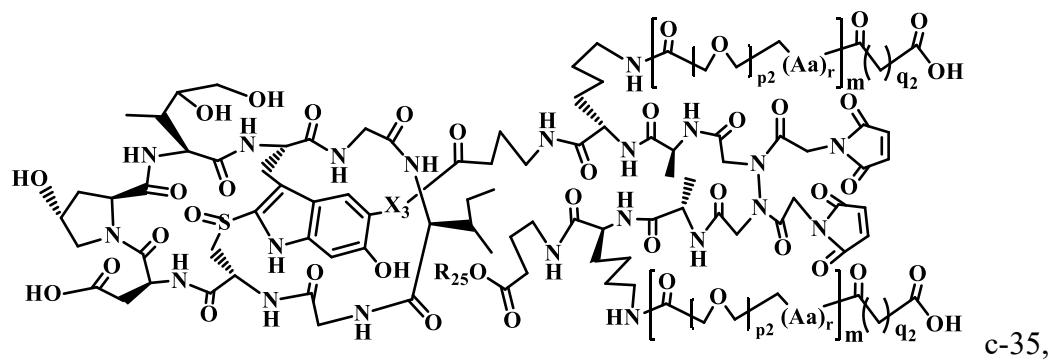
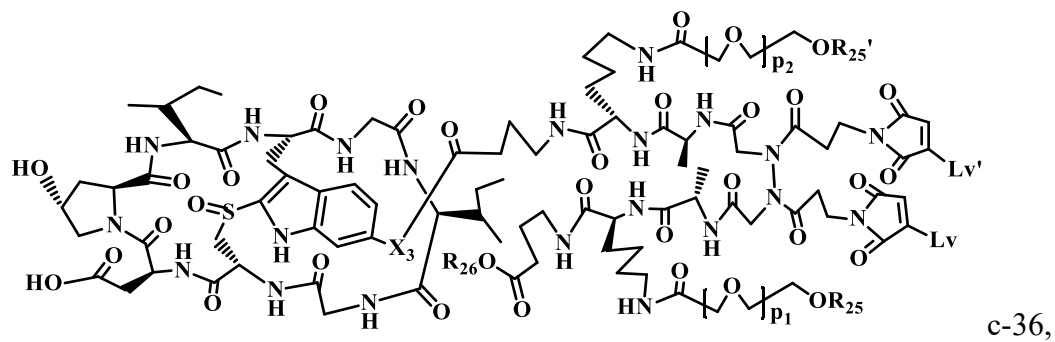


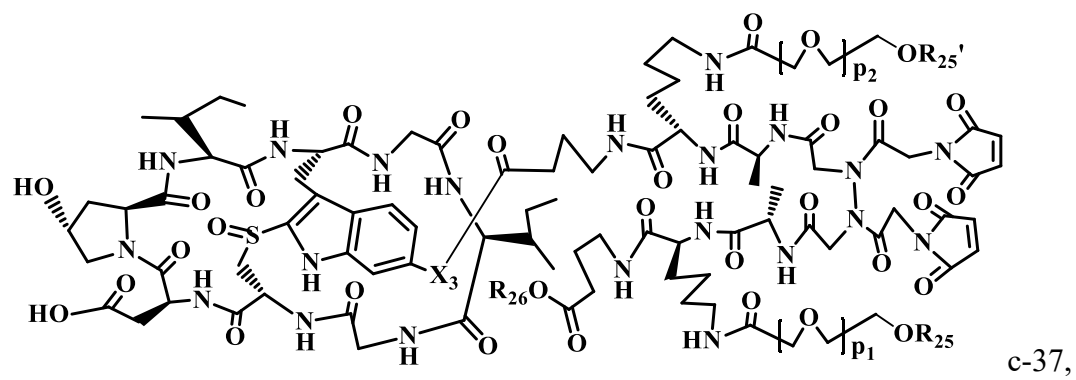
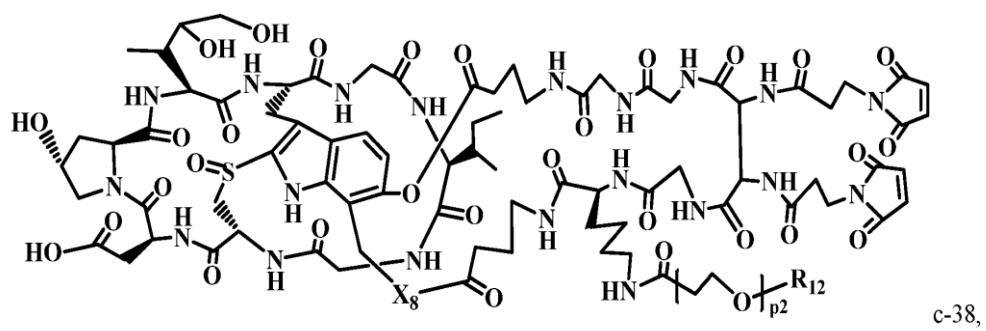


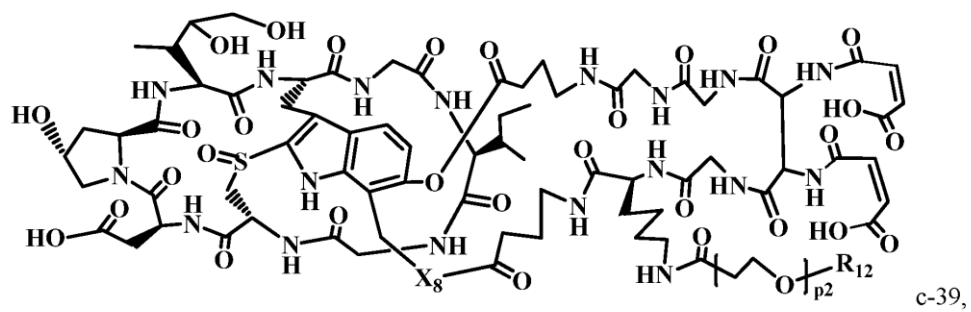
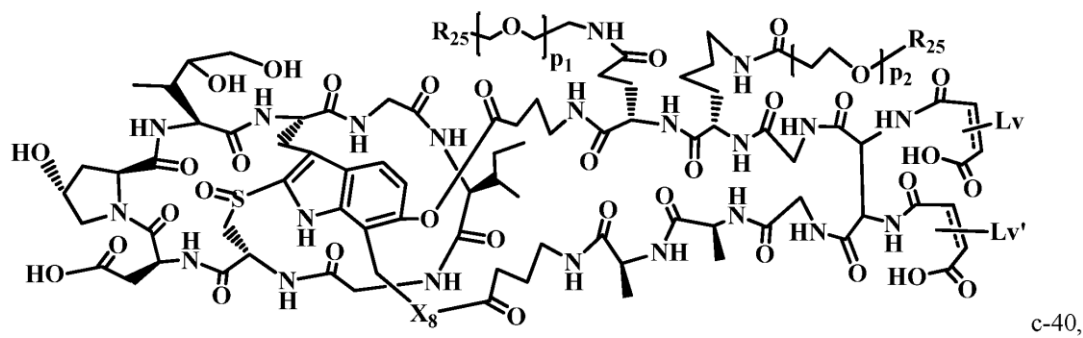
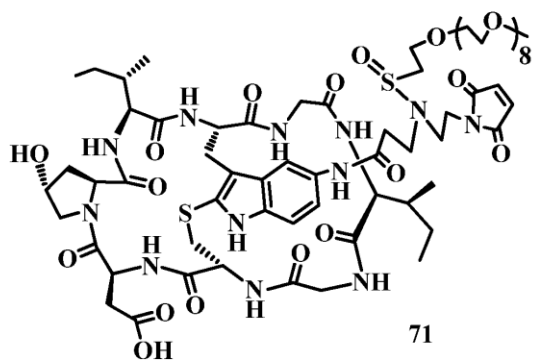
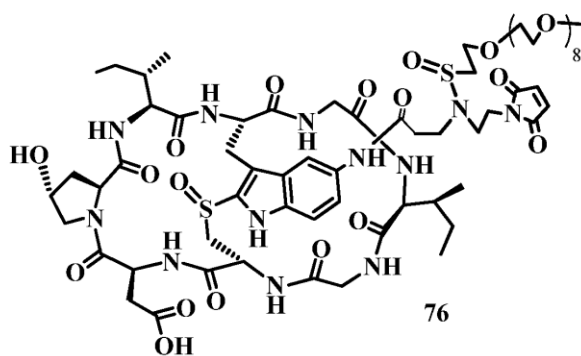
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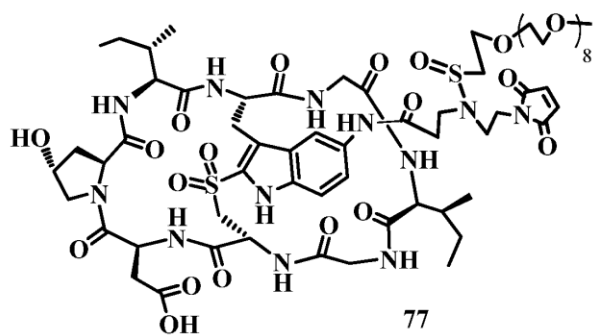
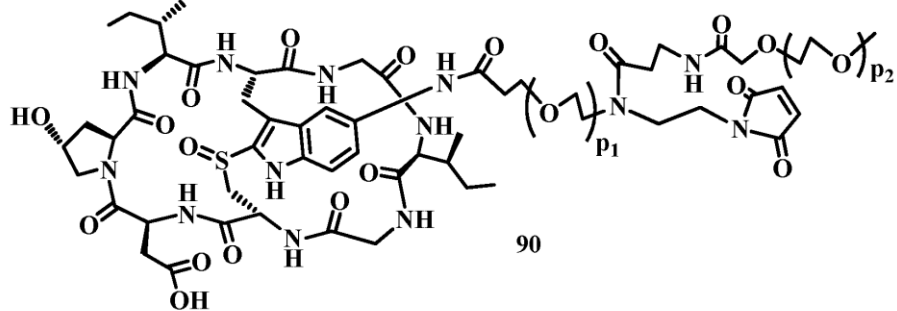
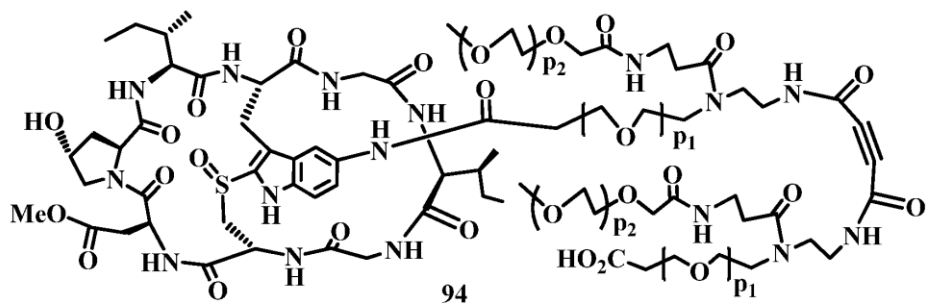
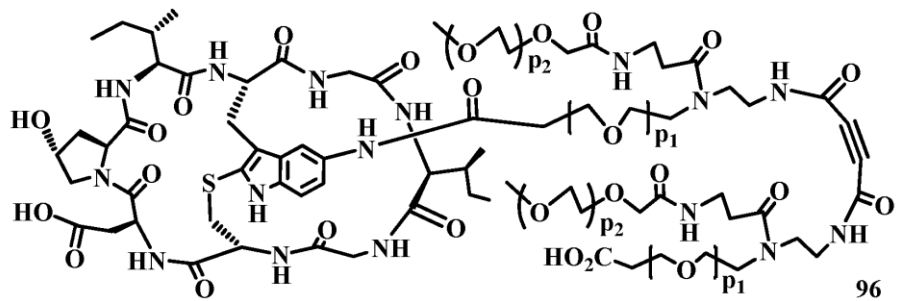
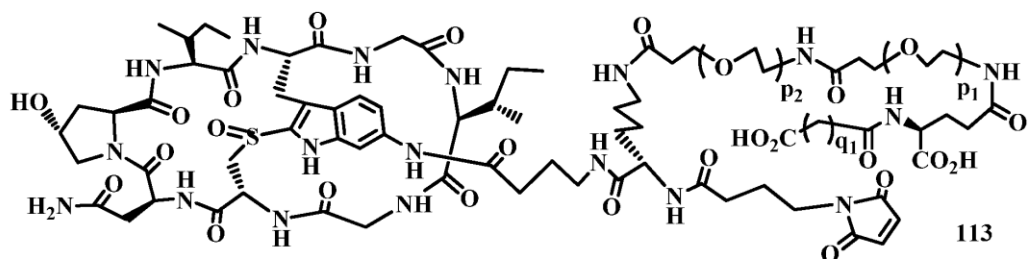


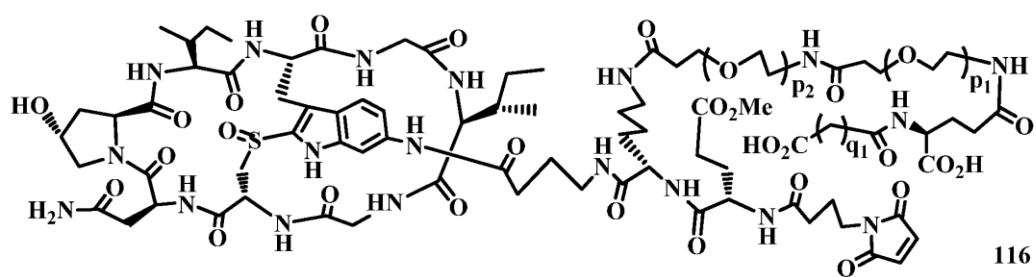
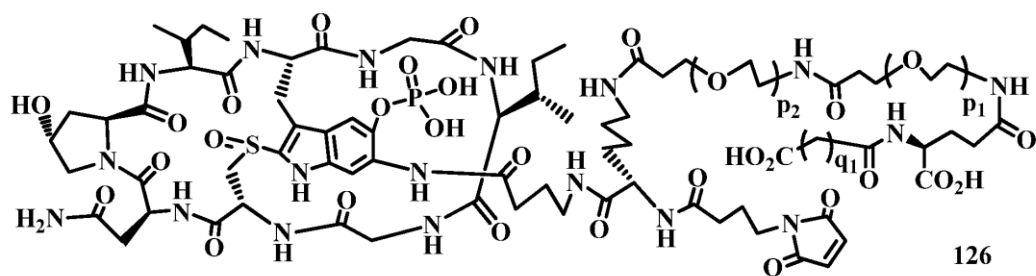
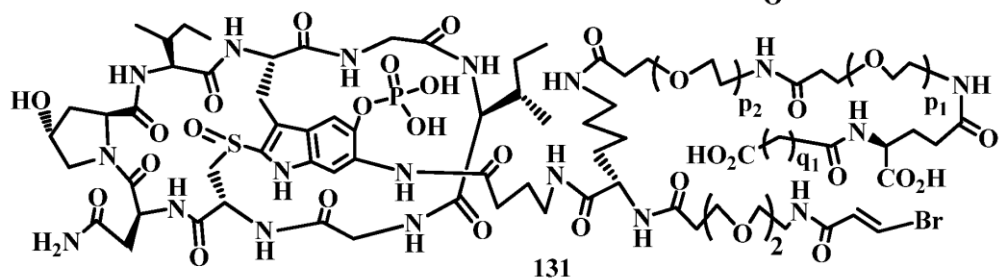
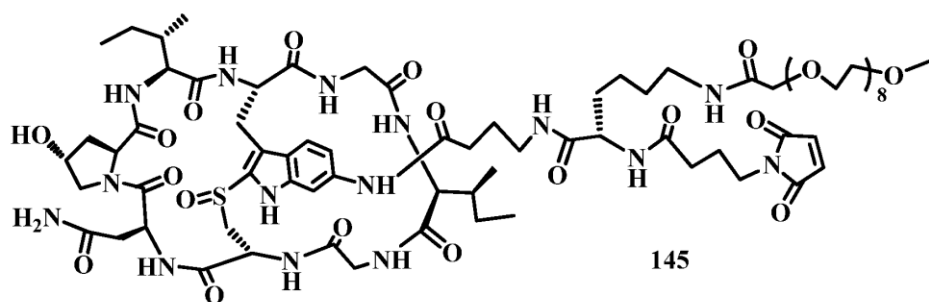
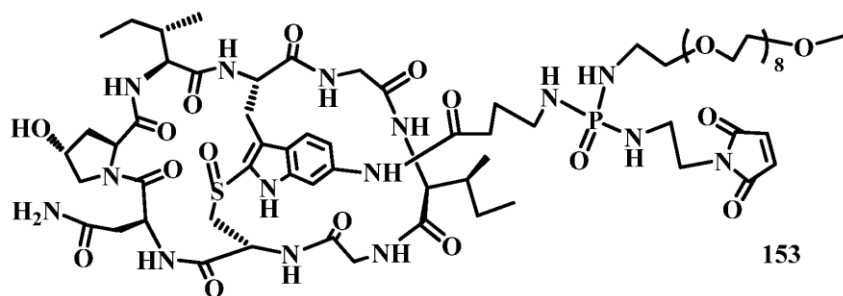


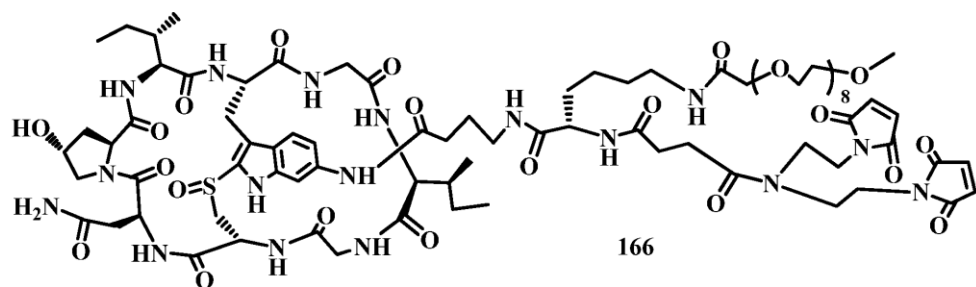
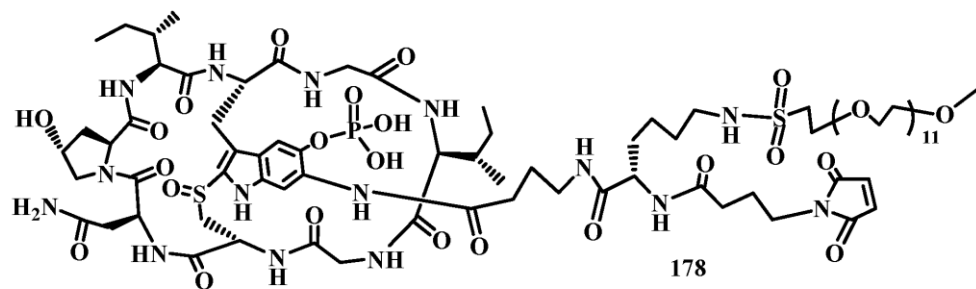
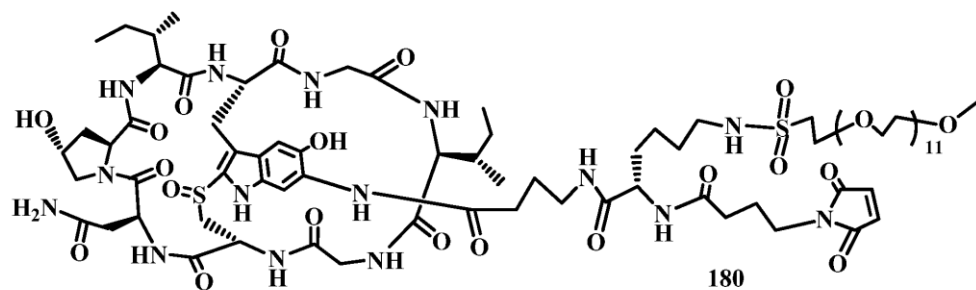
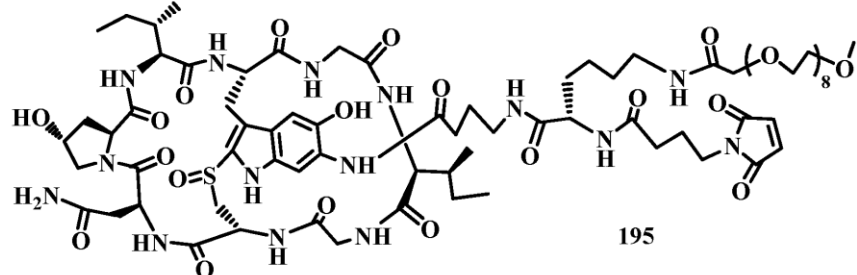
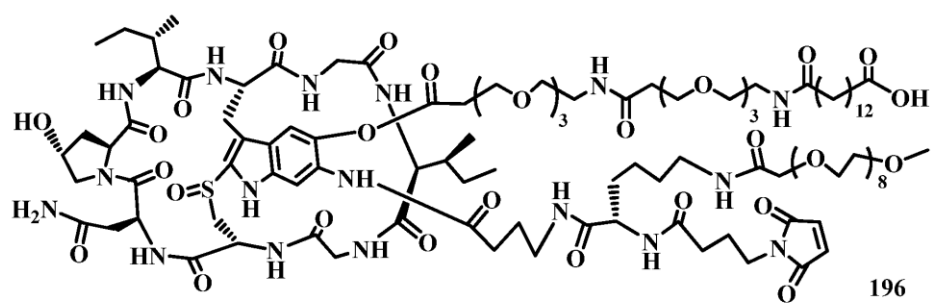


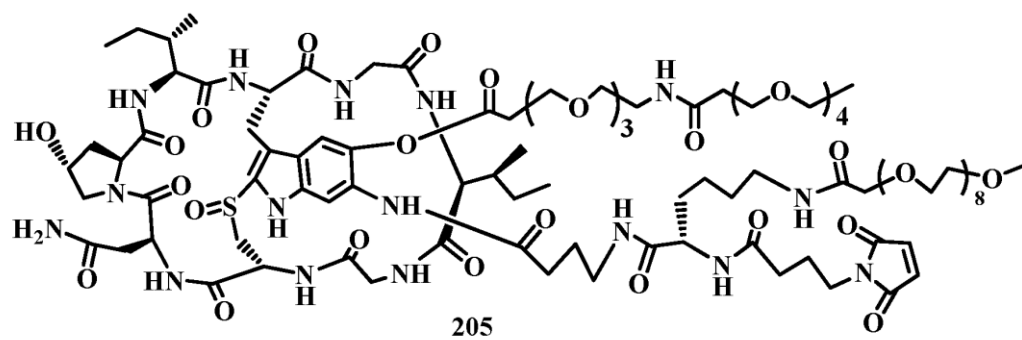
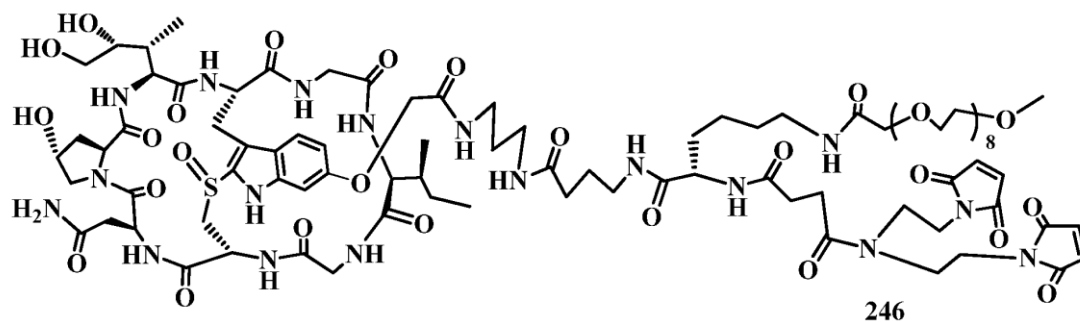
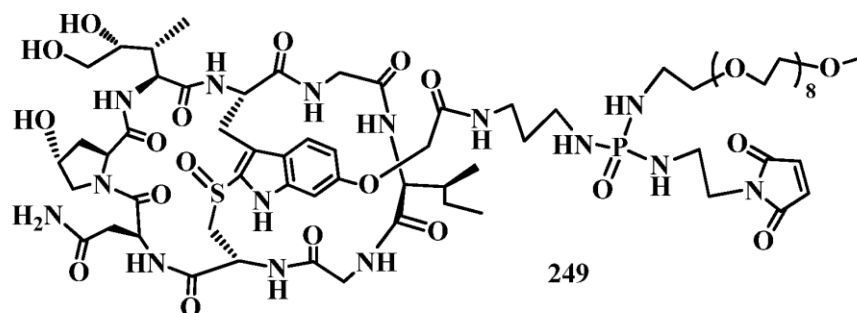
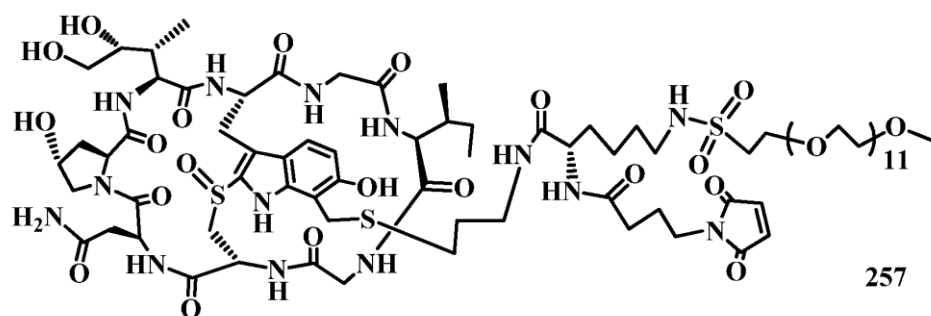
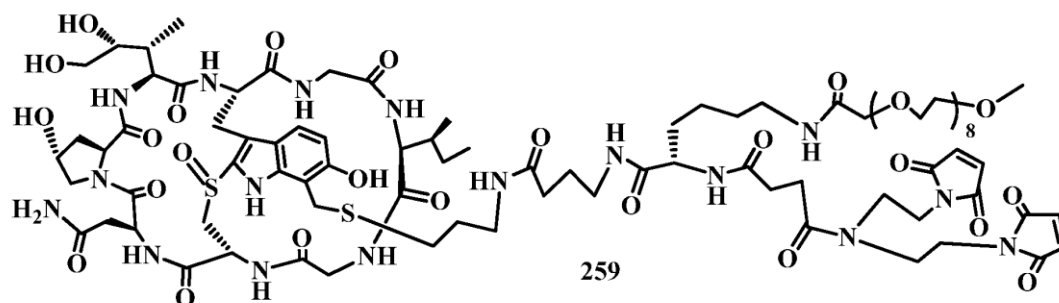


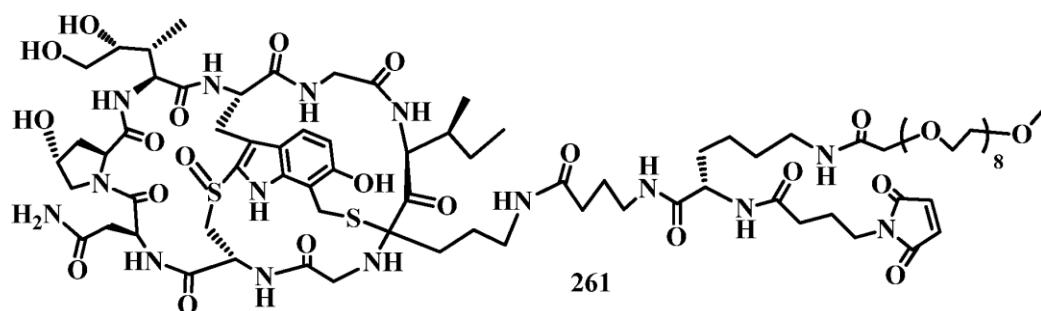






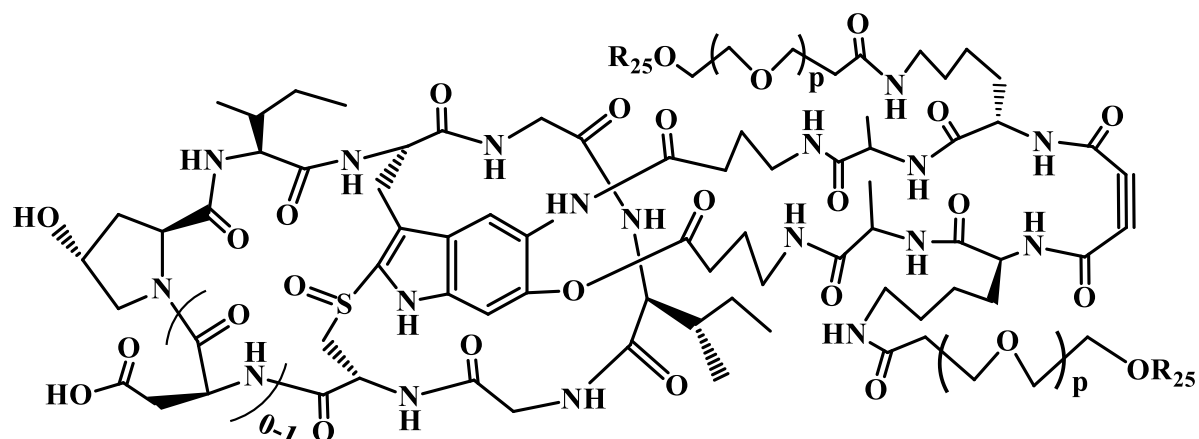




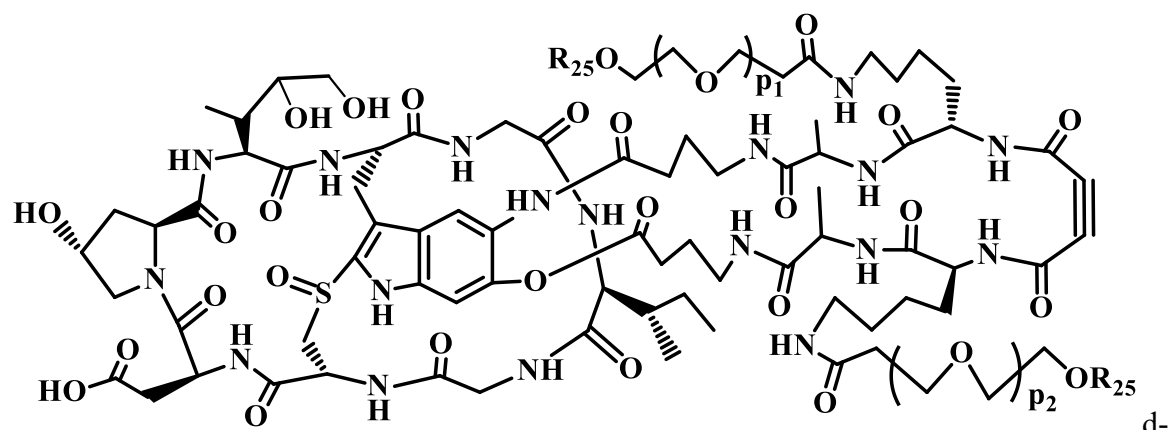


Or one or more isotope of chemical elements, pharmaceutically acceptable salts, hydrates, or hydrated salts; or the polymorphic crystalline structures of these compounds; or the optical isomers, racemates, diastereomers or enantiomers; wherein X-1, X-2, X-3, X-4, X-5, X-8, Z-2, Z-3, p-1, p-2, p-3, q-1, q-2, Lv-3, m, n, R-12, R-12', R-25, R-25', (Aa)<sub>r</sub> and mAb are as defined in claim 1 ~~described the same above.~~

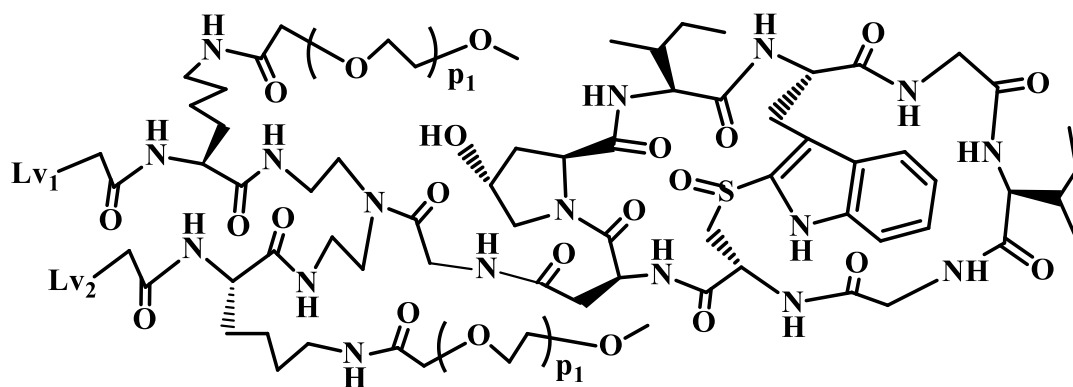
12. The compound of Formula (V) according to ~~C~~claim 4 having the following structures of d-01 to d-25, 215, 220, 239 below:



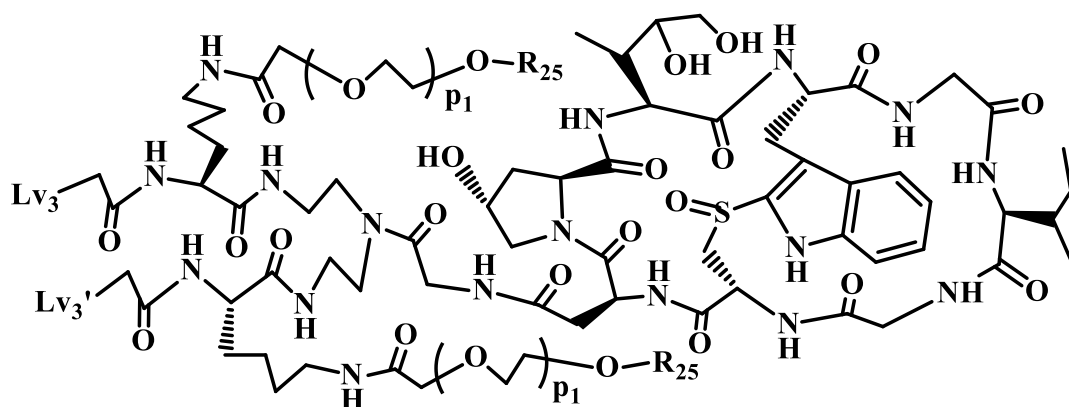
d-01,



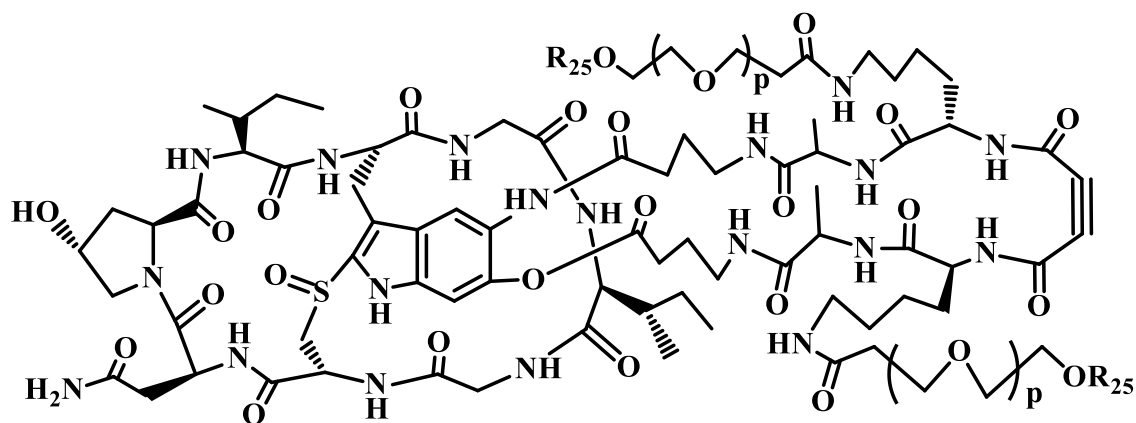
02,



d-03,

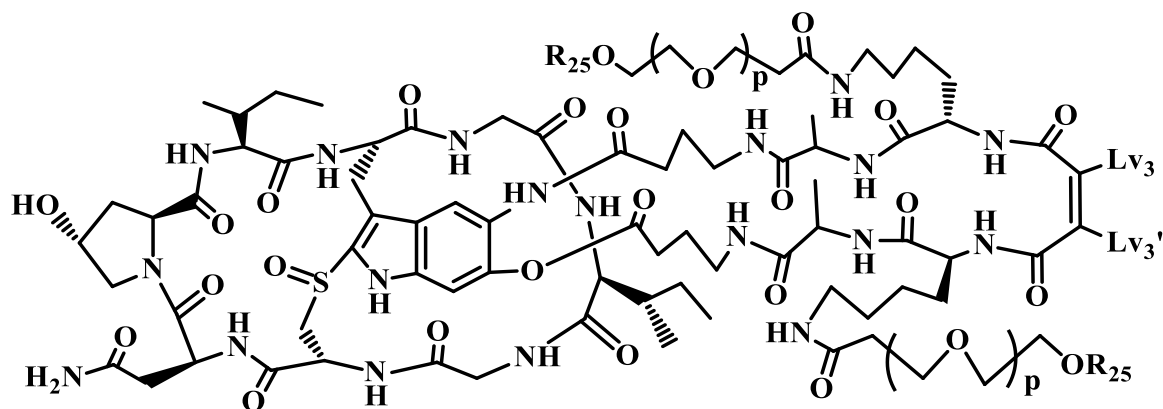


d-04,

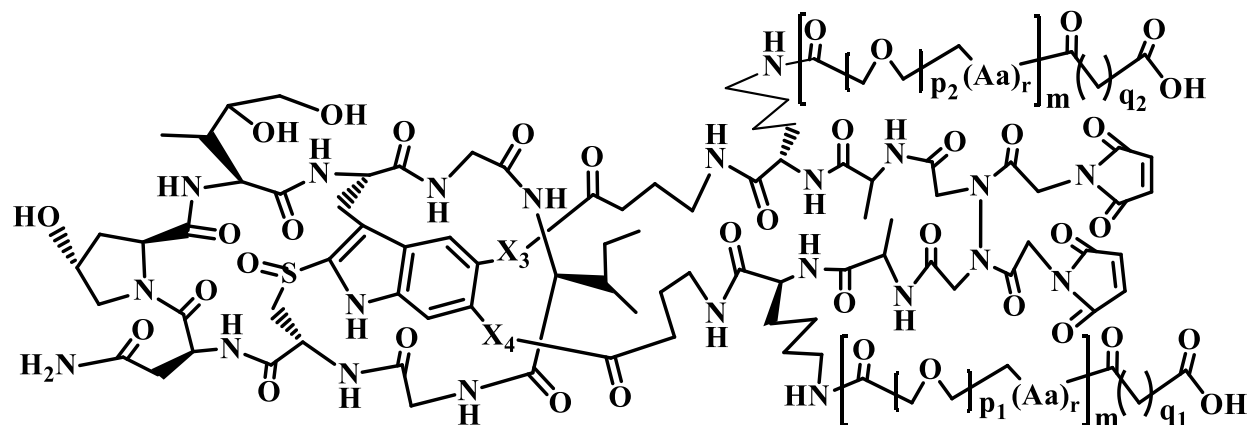


d-

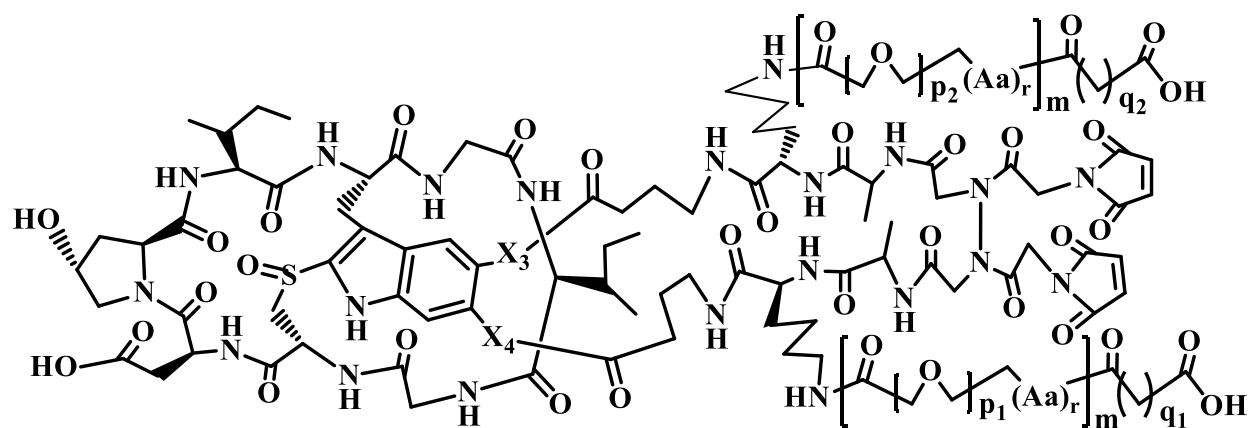
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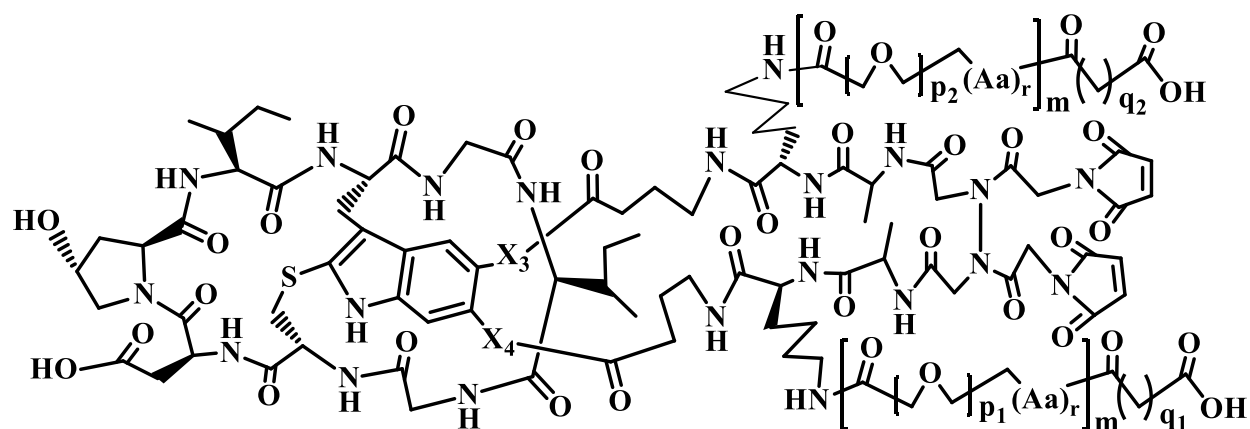
d-06,



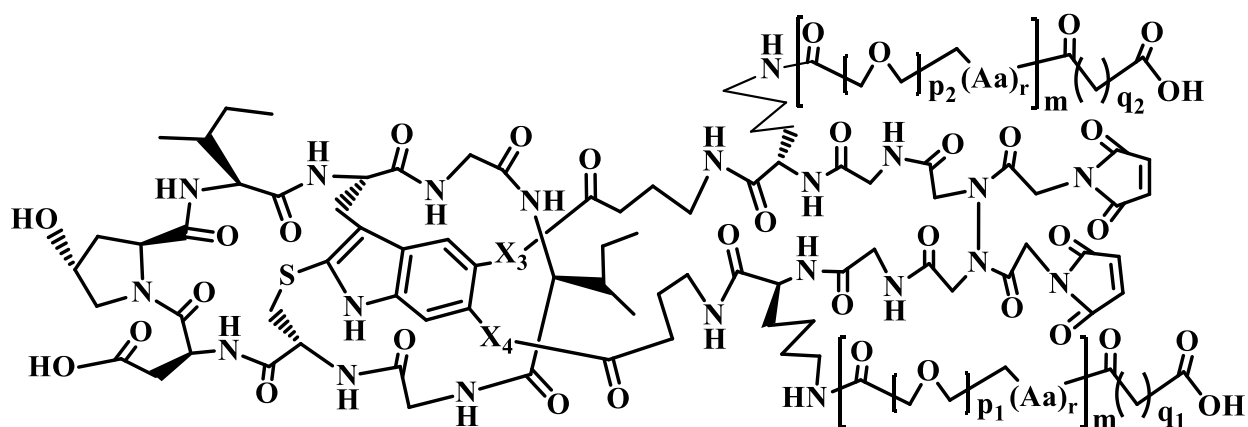
d-07,



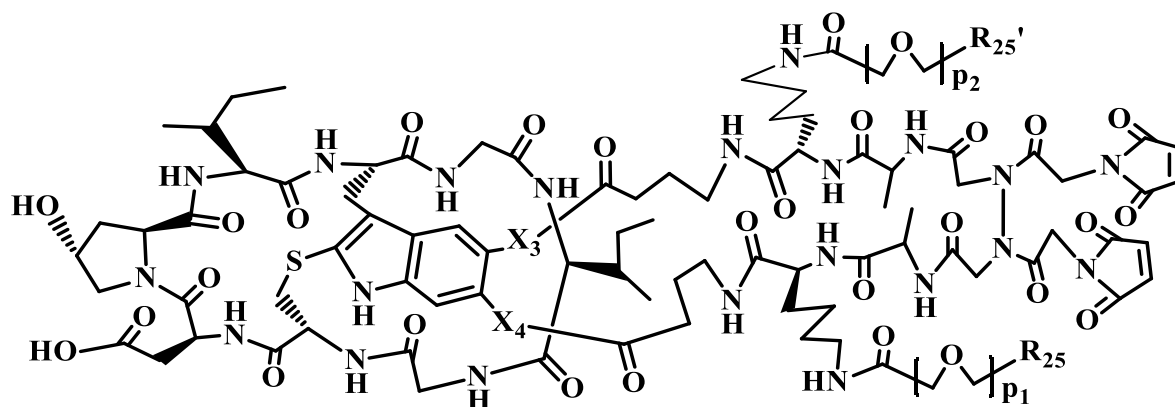
d-08,



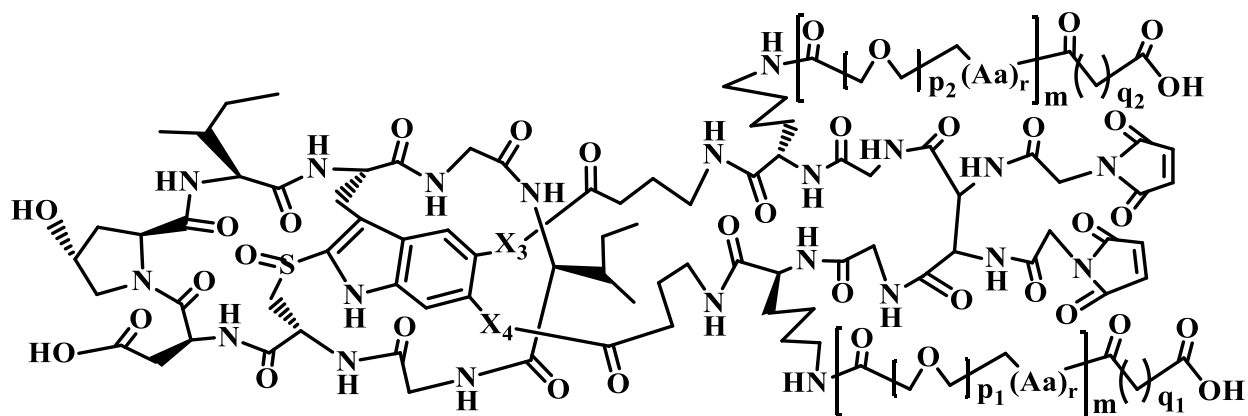
d-09,



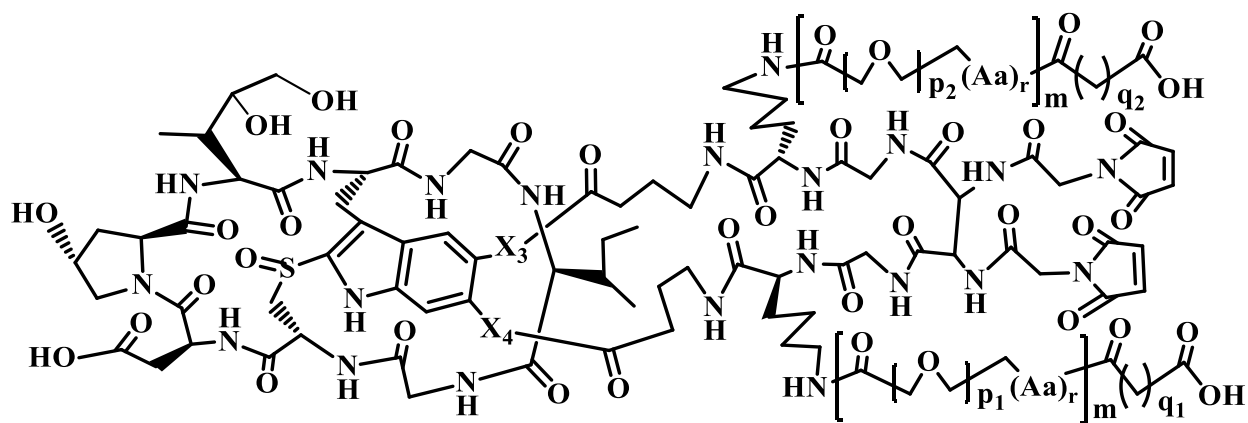
d-10,



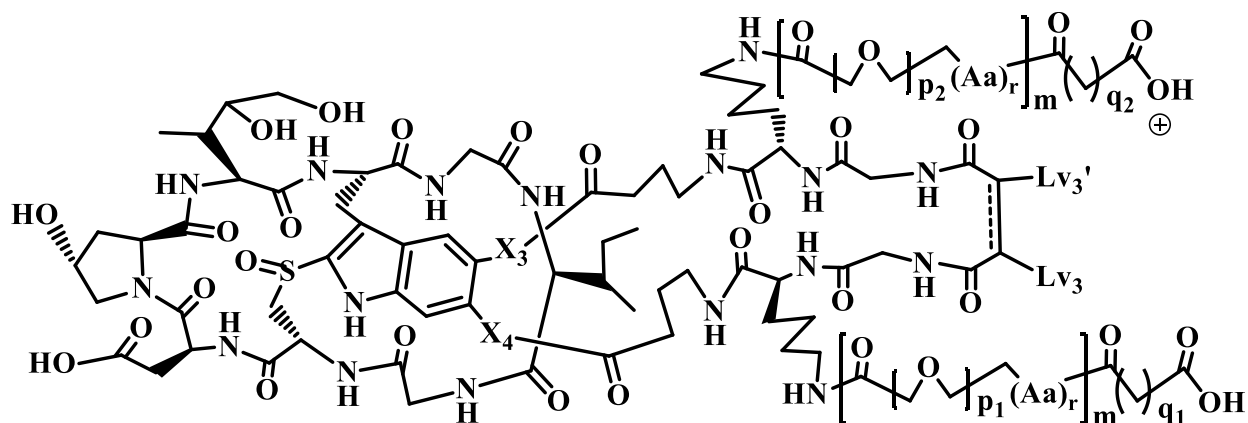
d-11,



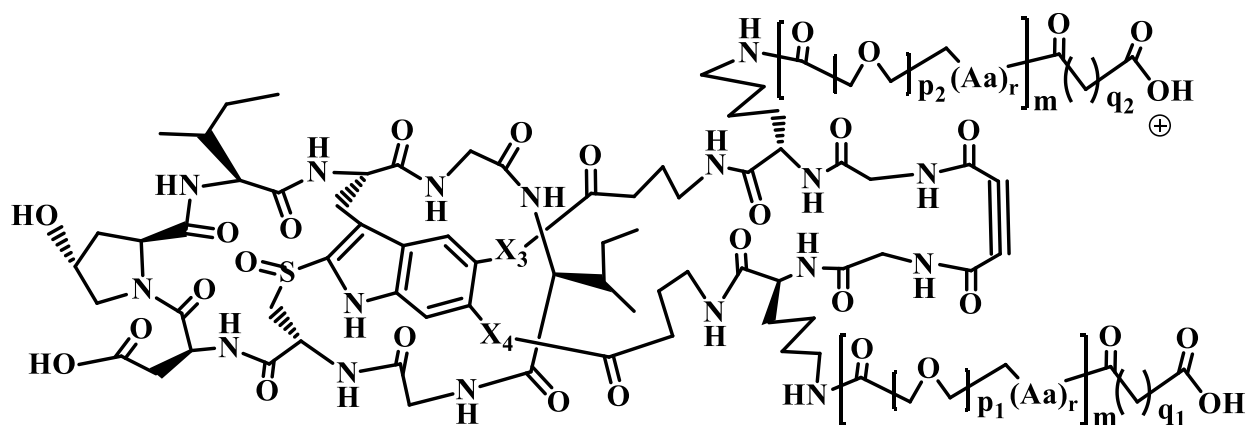
d-12,



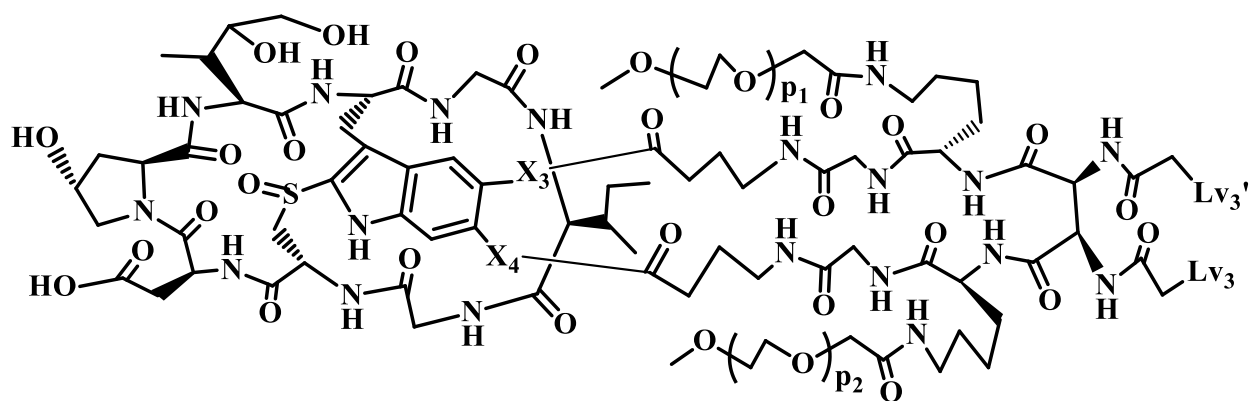
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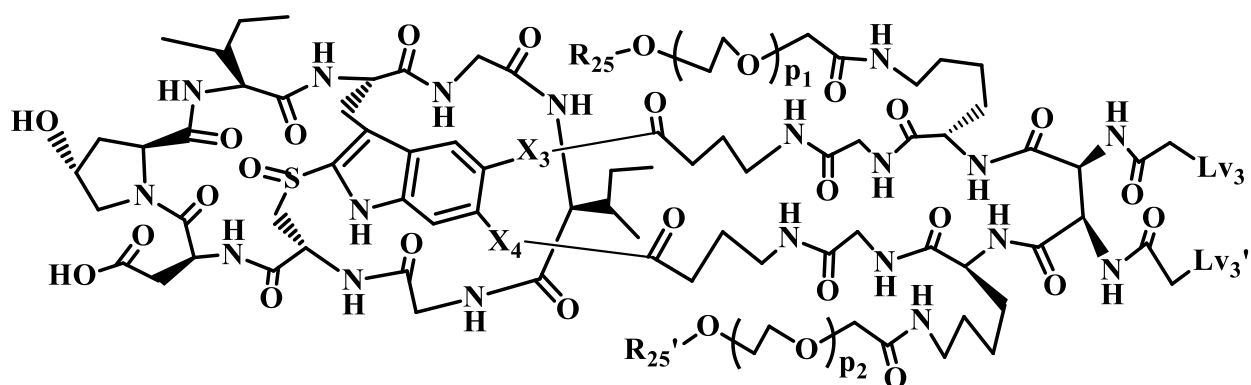
d-14,



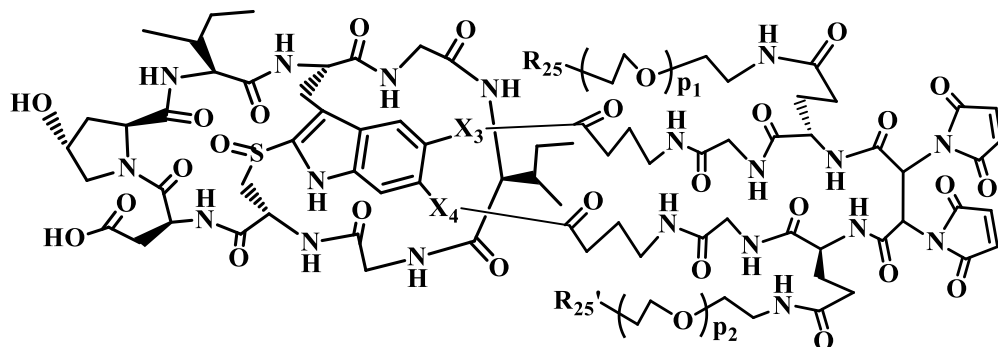
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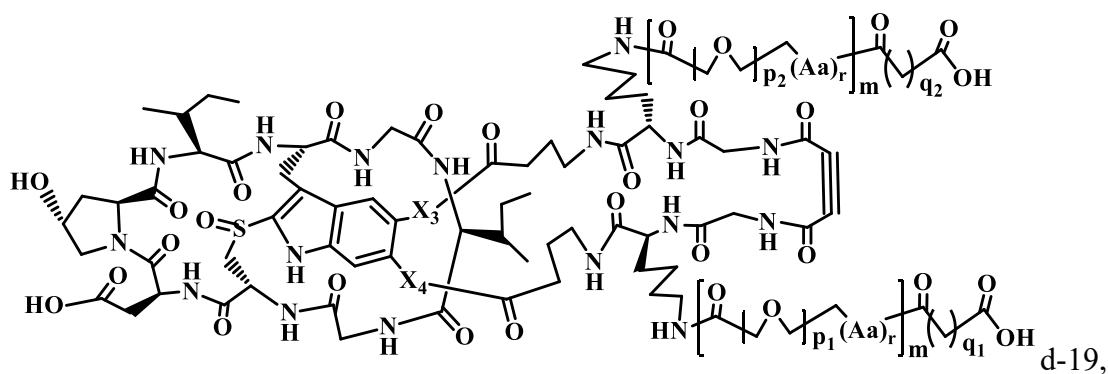
d-16,



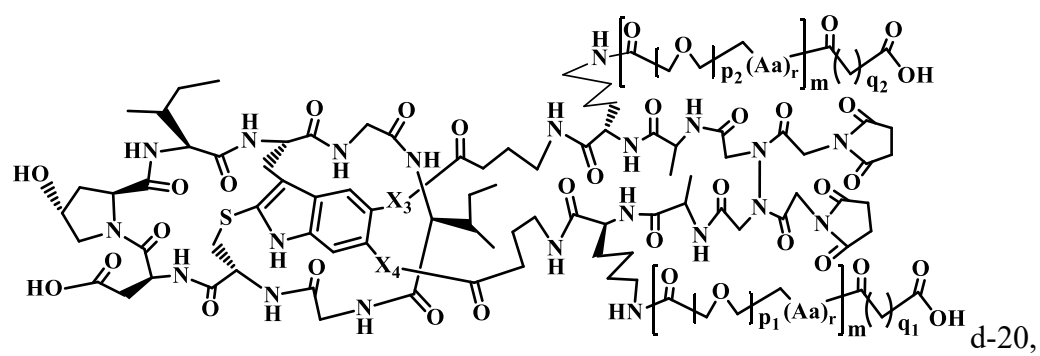
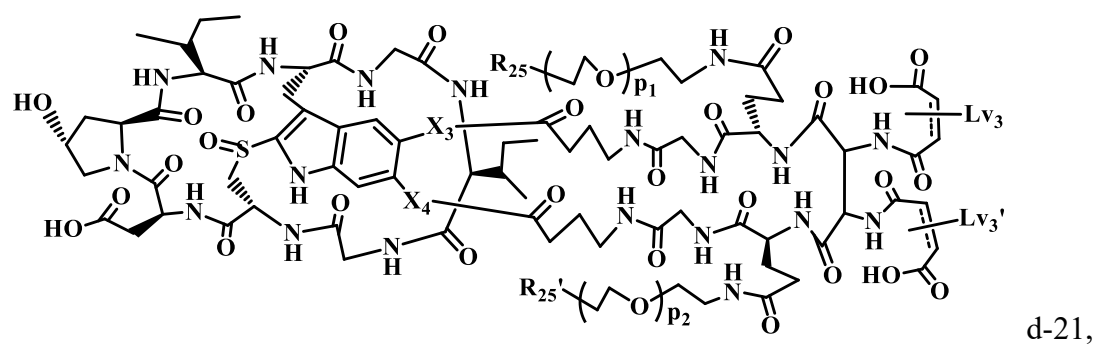
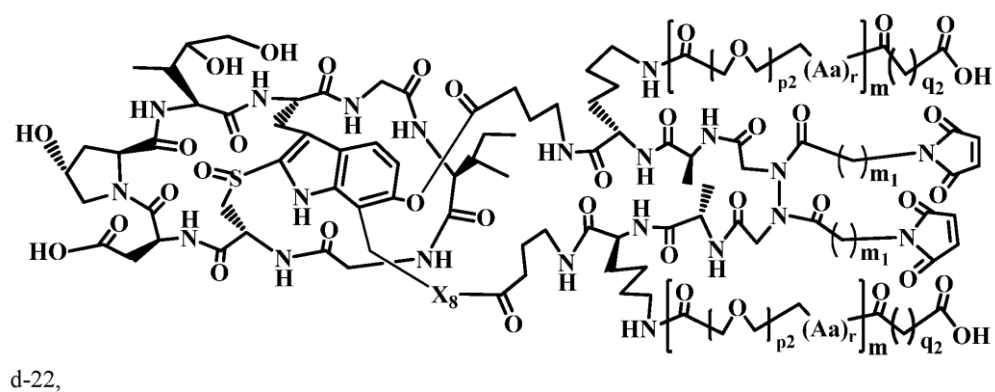
d-17,

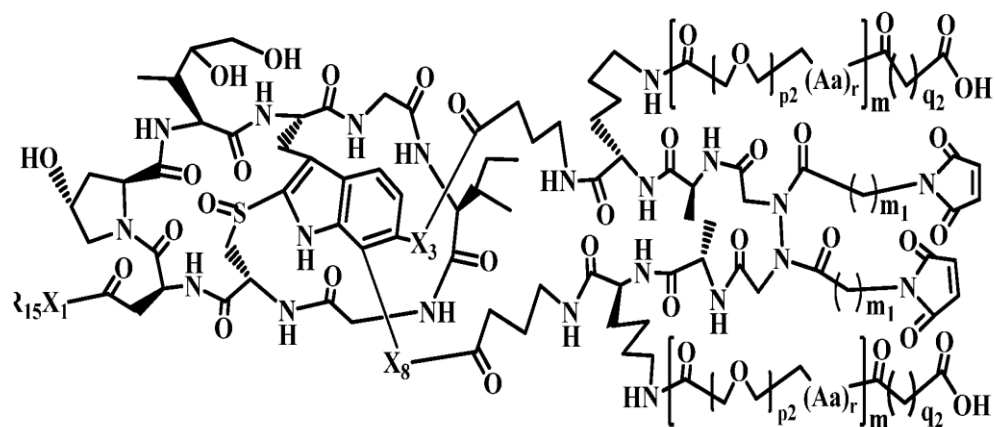


d-18,

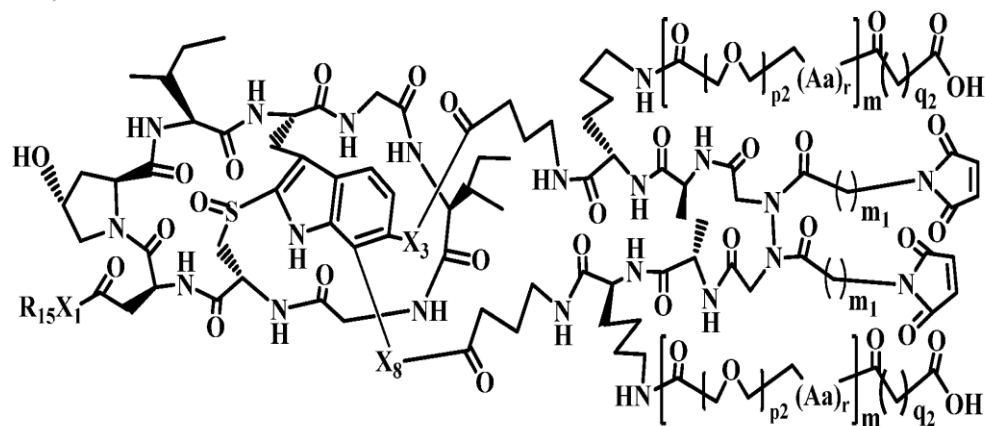


d-19,

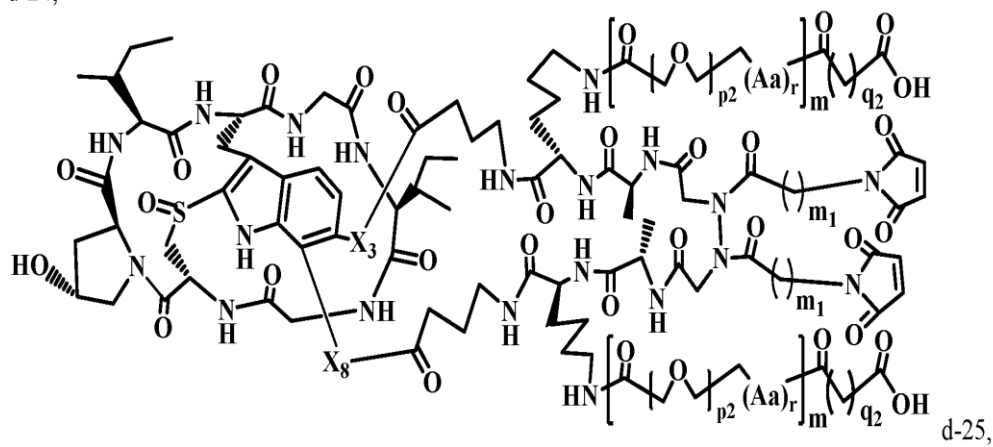




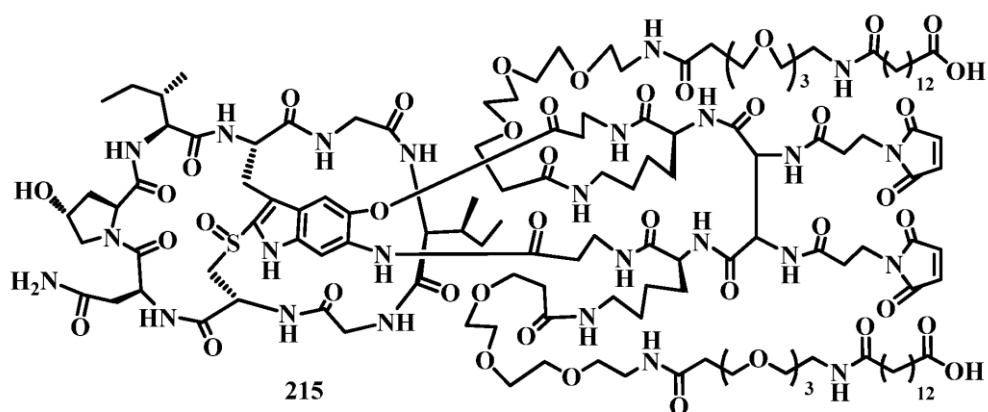
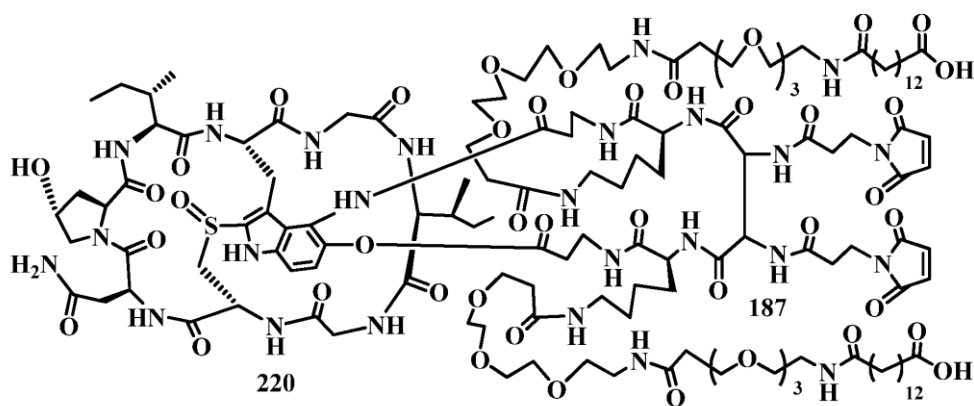
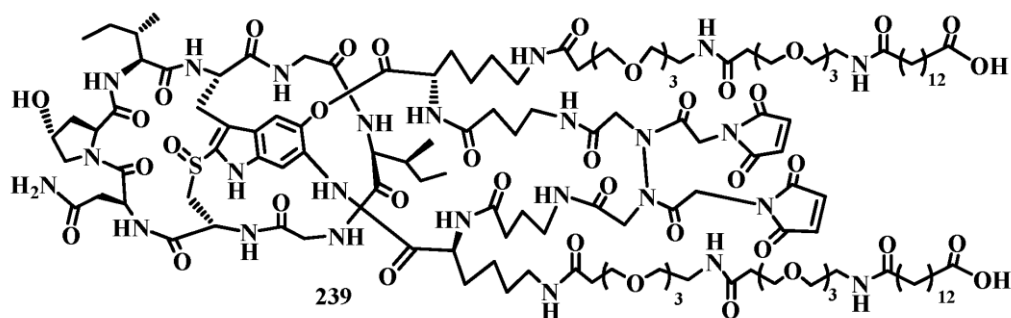
d-23,



d-24,



d-25,



or one or more isotope of chemical elements, pharmaceutically acceptable salts, hydrates, or hydrated salts; or the polymorphic crystalline structures of these compounds; or the optical isomers, racemates, diastereomers or enantiomers; wherein X-1, X-2, X-3, X-4, X-5, X-8, Z-2, Z-3, p-1, p-2, p-3, q-1, q-2, Lv-1, Lv-2, Lv-3, Lv-3', m, n, R-12, R-12', R-15, R-25, R-25', (Aa)<sub>x</sub> and mAb are as defined in claim 1 described the same above.

13. The compound according to claim 1, 2, 9, or 10, wherein ~~T~~the cell binding agent<sup>4</sup> or molecule according to claim 1, 2, 9, or 10, is selected fromcomprises:-

(A)÷ the group consisting of an antibody, a protein, probody, nanobody, a vitamin (including folate)-, ~~peptides, a polymeric micelle, a liposome,~~ a lipoprotein-based drug carrier, a nano-particle drug carrier, a dendrimer, and a molecule or a particle said above coating or linking with a cell-binding ligand, or a combination of said above thereof;

(B)÷ an antibody-like protein, a full-length antibody, ~~a~~-(polyclonal antibody, a monoclonal antibody, an antibody dimer, an antibody multimer)-, a multispecific antibody (~~selected from, comprising~~ a bispecific antibody, trispecific antibody, or tetraspecific antibody); a single chain antibody, an antibody fragment that binds to the target cell, a monoclonal antibody, a single chain monoclonal antibody, a monoclonal antibody fragment that binds the target cell, a chimeric antibody, a chimeric antibody fragment that binds to the target cell, a domain antibody, a domain antibody fragment that binds to the target cell, a resurfaced antibody, a resurfaced single chain antibody, or a resurfaced antibody fragment that binds to the target cell, a humanized antibody or a resurfaced antibody, a humanized single chain antibody, or a human-ized antibody fragment that binds to the target cell, anti-idiotypic (anti-Id) antibodies, ~~CDR's,~~ diabody, triabody, tetrabody, miniantibody, a probody, a probody fragment, small immune proteins (SIP), ~~a lymphokine, a hormone, a vitamin, a growth factor, a colony stimulating factor, a nutrient-transport molecule, large molecular weight proteins, fusion proteins, kinase inhibitors, gene-targeting agents, nanoparticles or polymers modified with antibodies or large molecular weight proteins;~~

(C)÷ a cell-binding ligand or receptor agonist ~~selected from:~~comprising ~~F~~folate derivatives;

~~G~~glutamic acid urea derivatives; ~~S~~somatostatin and its analogs (~~, selected from the group consisting of~~ octreotide (~~S~~san-dostatin)-~~and,~~ lanreotide (Somatuline)-); ~~an~~ Aaromatic sulfonamides; ~~a~~ Ppituitary adenylate cyclase activating peptides (PACAP) (PAC1)-; ~~a~~

~~V~~vasoactive intestinal peptides (VIP/PACAP) (VPAC1, VPAC2)-; a

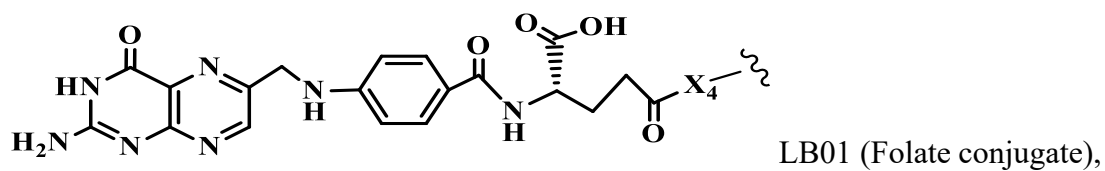
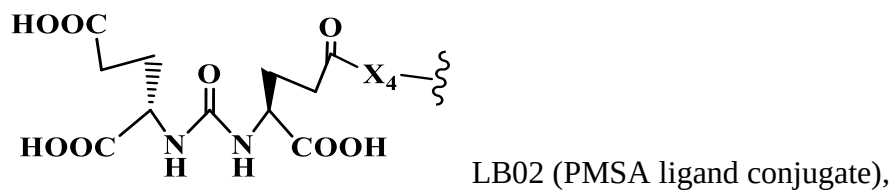
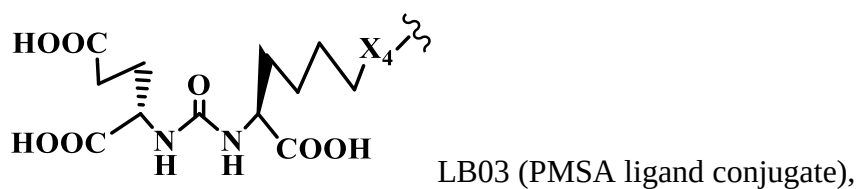
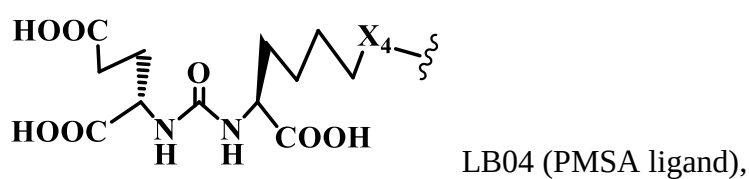
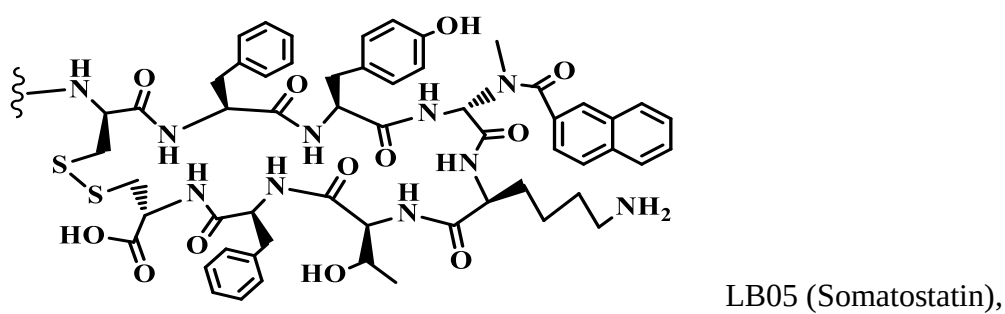
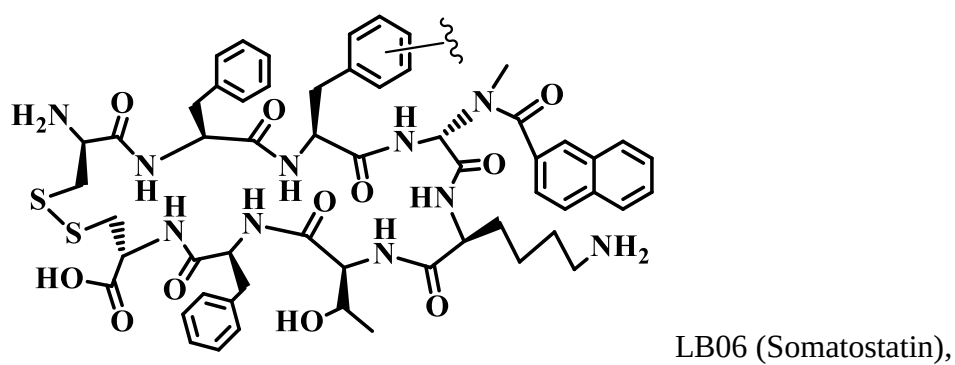
~~M~~melano-cyte-stimulating hormones ( $\alpha$ -MSH)-; a ~~C~~cholecystokinins (CCK)-/gastrin receptor agonists; a ~~B~~bombesins

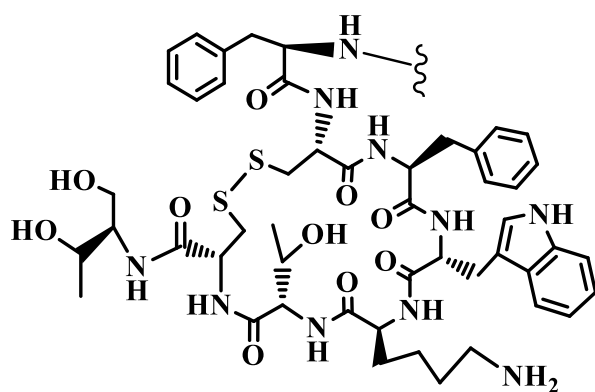
(~~selected from the group consisting~~comprising ~~of~~ Pyr-Gln-Arg-Leu-Gly-Asn-Gln-Trp-Ala-Val-

Gly-His-Leu-Met-NH<sub>2</sub>)/gastrin-releasing peptide (GRP)-; a Nneurotensin receptor ligands (NTR1, NTR2, NTR3)-; a Substance P (NK1 receptor) ligands; a Neuropeptide Y (Y1–Y6)-; a Homing P~~ptides~~ include comprising RGD (Arg-Gly-Asp)-, or NGR (Asn-Gly-Arg)-, thea dimeric and multimeric cyclic RGD peptides (~~selected from~~comprising cRGDfV)-, TAASGVRSMH and/or LTLRWVGLMS (Chondroitin sulfate proteoglycan NG2 receptor ligands) and/or F3 peptides; a Cell P~~enetrating~~ P~~ptides~~ (CPPs)-; a Pptide H~~ormones~~—~~selected from the group consisting of~~ comprising a luteinizing hormone-releasing hormone (LHRH) agonists and/or antagonists, and/or a gonadotropin-releasing hormone (GnRH) agonist, acts by targeting follicle stimulating hormone (FSH) and luteinizing hormone (LH)-, as well as testosterone production, ~~selected from the group consisting of~~ comprising buserelin (Pyr-His-Trp-Ser-Tyr-D-Ser(OtBu)-Leu-Arg-Pro-NHEt), Gonadorelin(Pyr-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH<sub>2</sub>), Goserelin (Pyr-His-Trp-Ser-Tyr-D-Ser-(OtBu)—Leu-Arg-Pro-AzGly-NH<sub>2</sub>), Histrelin (Pyr-His-Trp-Ser-Tyr-D-His-(N-benzyl)—Leu-Arg-Pro-NHEt), leuprolide (Pyr-His-Trp-Ser-Tyr-D-Leu-Leu-Arg-Pro-NHEt), Nafarelin(Pyr-His-Trp-Ser-Tyr-2Nal-Leu-Arg-Pro-Gly-NH<sub>2</sub>), Triptorelin(Pyr-His-Trp-Ser-Tyr-D-Trp-Leu-Arg-Pro-Gly-NH<sub>2</sub>), Nafarelin, Deslorelin, Abarelix (Ac-D-2Nal-D-4-chloroPhe-D-3-(3-pyridyl)Ala-Ser-(N-Me)Tyr-D-Asn-Leu-isopropylLys-Pro-DAla-NH<sub>2</sub>), Cetorelix(Ac-D-2Nal-D-4-chloroPhe-D-3-(3-pyridyl) Ala-Ser-Tyr-D-Cit-Leu-Arg-Pro-D-Ala-NH<sub>2</sub>), Degarelix (Ac-D-2Nal-D-4-chloroPhe-D-3-(3-pyridyl) Ala-Ser-4-aminoPhe-(L-hydroxyrotyl) -D-4-aminoPhe (carbamoyl) -Leu-isopropylLys-Pro-D-Ala-NH<sub>2</sub>)-, and Ganirelix (Ac-D-2Nal-D-4-chloroPhe-D-3- (3-pyridyl) Ala-Ser-Tyr-D- (N<sub>9</sub>, N<sub>10</sub>-diethyl) - homoArg-Leu- (N<sub>9</sub>, N<sub>10</sub>-diethyl) -homoArg-Pro-D-Ala-NH<sub>2</sub>)-; a Pattern R~~ecognition~~ R~~ecceptor~~ (PRRs)-, ~~selected from the group consisting of~~ comprising a Toll-like receptors' (TLRs) ligands, a C-type lectins and/or N~~odlike~~ R~~ecceptors~~' (NLRs) ligands; a Calcitonin receptor agonists; an integrin receptors' and/or their receptor subtypes' (~~selected from the group consisting of~~comprising  $\alpha$ -v $\beta$ -1,  $\alpha$ -v $\beta$ -3,  $\alpha$ -v $\beta$ -5,  $\alpha$ -v $\beta$ -6,  $\alpha$ -6 $\beta$ -4,  $\alpha$ -7 $\beta$ -1,  $\alpha$ -L $\beta$ -2,  $\alpha$ -III $\beta$ -3} agonists (~~selected from the group consisting of~~comprising GRGDSPK, cyclo (RGDfV) (L1), and its derives [cyclo(-N-(Me)-R-GDfV)-, cyclo(R-Sar-DfV)-, cyclo(RG-N-(Me)-D-fV)-, cyclo(RGD-N-(Me)-f-V)-, cyclo(RGDf-N-(Me)-V)-] or (Cilengitide)-]; a Nanobody (a ~~derivative~~ of VHH

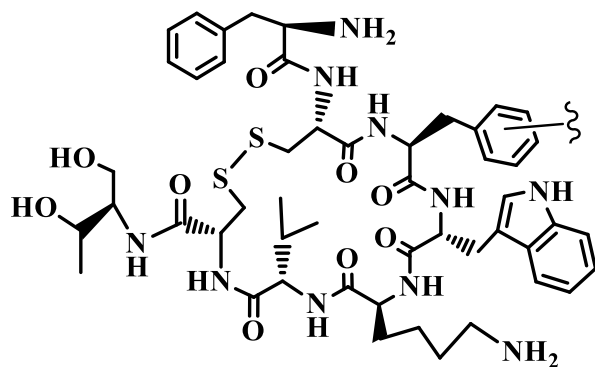
(camelid Ig)-; ~~a D~~domain antibody-ies (~~dAb, a derivative of VH or VL domain~~); ~~a B~~bispecific T cell ~~E~~ngager (BiTE, a bispecific diabody)-; ~~a~~Dual Affinity ReTargeting (DART, a bispecific diabody)-; Tetravalent tandem antibodies (TandAb, a dimerized bispecific diabody)-; Anticalin-  
(~~a derivative of Lipocalins~~); Adnectins (10th FN3 (Fibron-ectin) ); Designed Ankyrin Repeat Proteins (DARPin)s-; Avimers; EGF receptors, or VEGF receptors' agonists;

(D)÷ A ~~small~~ molecule of cell-binding molecule/or ligand or a cell receptor agonist ~~selected from the following: comprising~~ LB01 (Folate)-, LB02 (PMSA ligand)-, LB03 (PMSA ligand)-, LB04 (PMSA ligand)-, LB05 (Somatostatin)-, LB06 (Somatostatin)-, LB07 (Octreotide, ~~a Somatostatin analog~~)-, LB08 (Lanreotide, ~~a Somatostatin analog~~)-, LB09 (Vapreotide (Sanvar), ~~a Somatostatin analog~~)-, LB10 (CAIX ligand)-, LB11 (CAIX ligand)-, LB12 (Gastrin releasing peptide receptor (GRPr)-, MBA)-, LB13 (luteinizing hormone-releasing hormone (LH-RH) ligand ~~and/or~~ GnRH)-, LB14 (luteinizing hormone-releasing hormone (LH-RH) and GnRH ligand)-, LB15 (GnRH antagonist, Abarelix)-, LB16 (~~cobalamin, vitamin B12 analog~~)-, LB17 (~~cobalamin, vitamin B12 analog~~)-, LB18 (for  $\alpha_v\beta_3$  integrin receptor, cyclic RGD pentapeptide)-, LB19 (hetero-bivalent peptide ligand for VEGF receptor)-, LB20 (Neuromedin B)-, LB21 (bombesin for a G-protein coupled receptor)-, LB22 (TLR <sub>2</sub> for a Toll-like receptor)-, LB23 (for an androgen receptor)-, LB24 (Cilengitide/cyclo (-RGDfV-) for an  $\alpha_v$  integrin receptor, LB23 (Fludrocortisone)-, LB25 (~~Rifabu tin analog~~)-, LB26 (~~Rifabutin analog~~)-, LB27 (~~Rifabutin analog~~)-, LB28 (Fludrocortisone)-, LB29 (Dexa-methasone)-, LB30 (fluticasone propionate)-, LB31 (Beclometasone dipropionate)-, LB32 (Triamcinolone acetonide)-, LB33 (Prednisone)-, LB34 (Prednisolone)-, LB35 (Methylprednisolone)-, LB36 (Betame-thasone)-, LB37 (~~Irinotecan analog~~)-, LB38 (~~Crizotinib analog~~)-, LB39 (~~Bortezomib analog~~)-, LB40 (~~Car filzomib analog~~)-, LB41 (~~Carfilzomib analog~~)-, LB42 (~~Leuprolide analog~~)-, LB43 (~~Triptorelin analog~~)-, LB44 (Clindamycin)-, LB45 (~~Liraglutide analog~~)-, LB46 (~~Semaglutide analog~~)-, LB47 (~~Retapamulin analog~~)-, LB48 (~~Indibulin analog~~)-, LB49 (~~Vinblastine analog~~)-, LB50 (~~Lixisenatide analog~~)-, LB51 (~~Osi mertinib analog~~)-, LB52 (~~anucleoside analog~~)-, LB53 (~~Erlotinib analog~~) or LB54 (~~Lapatinib analog~~) which are shown in the following structures:

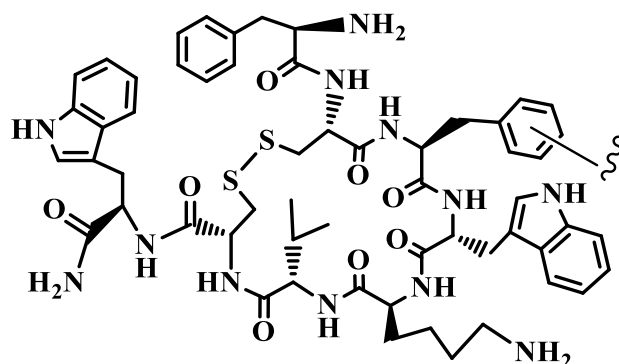




LB07 (Octreotide, a Somatostatin analog),

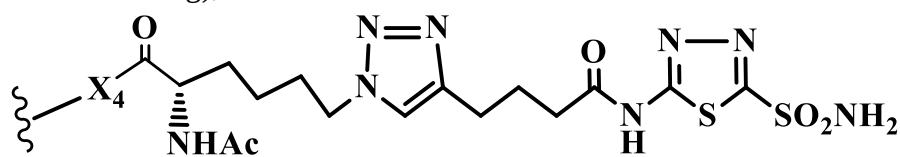


LB08 (Lanreotide, a Somatostatin analog),



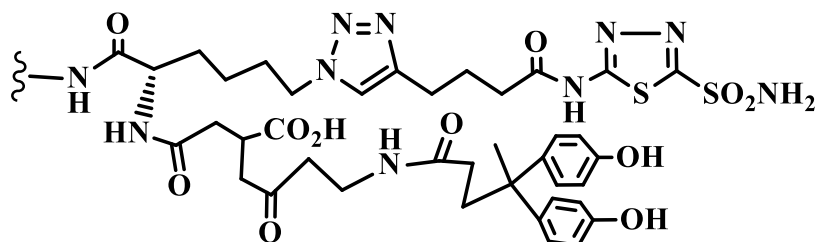
LB09 (Vapreotide (Sanvar), a-

Somatostatin analog),

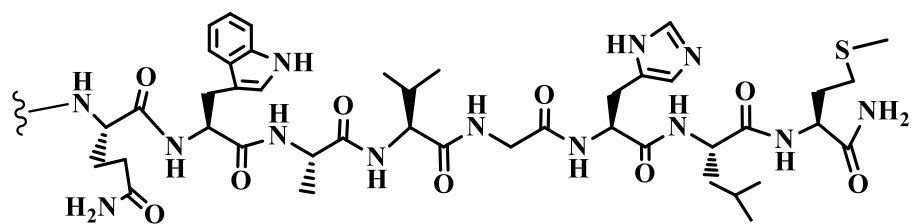


LB10 (CAIX

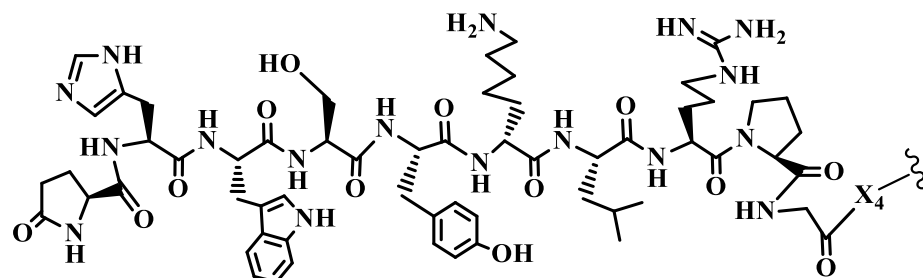
ligand),



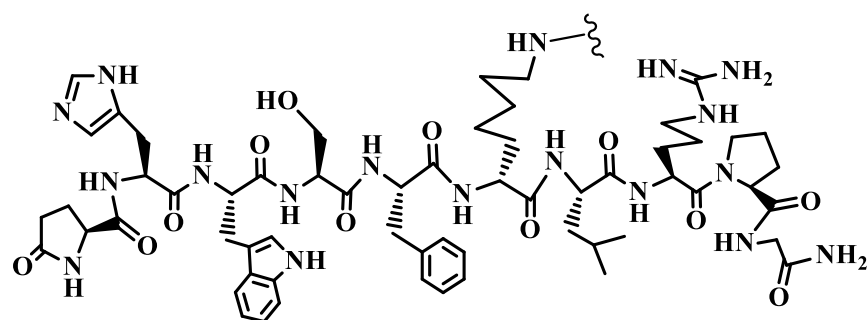
LB11 (CAIX ligand),



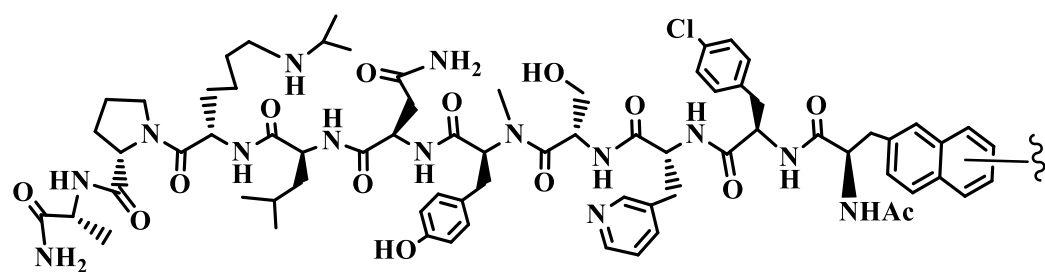
LB12 (Gastrin releasing peptide receptor (GRPr), MBA),



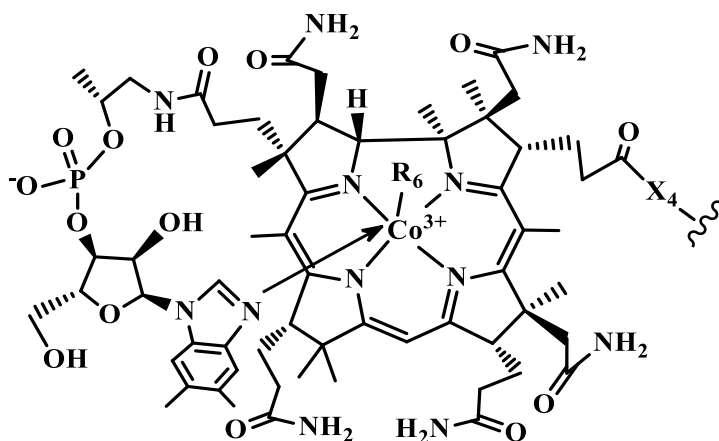
LB13 (luteinizing hormone-releasing hormone (LH-RH) ligand and GnRH),



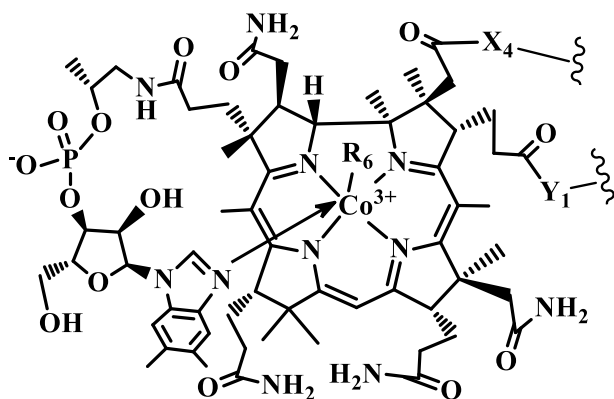
LB14 (luteinizing hormone-releasing hormone (LH-RH) and GnRH ligand),



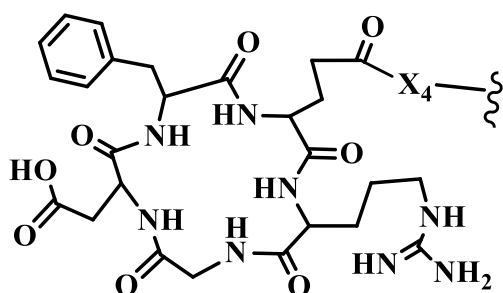
LB15 (GnRH antagonist, Abarelix),



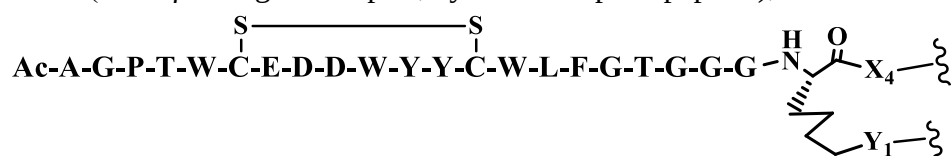
LB16 (cobalamin, vitamin B12 analog),



LB17 (cobalamin, vitamin B12 analog),



LB18 (for  $\alpha_v\beta_3$  integrin receptor, cyclic RGD pentapeptide),



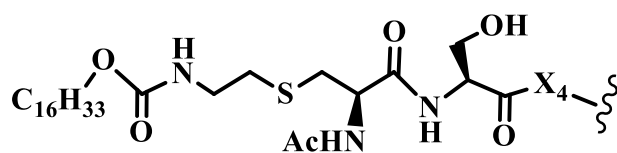
LB19 (hetero-bivalent peptide ligand conjugate for VEGF receptor),



LB20 (Neuromedin B),

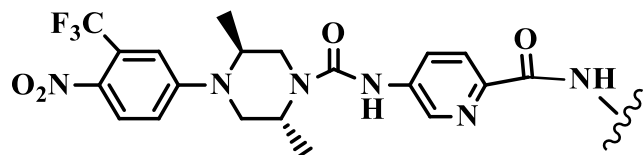


LB21 (bombesin conjugate for a G-protein coupled receptor),

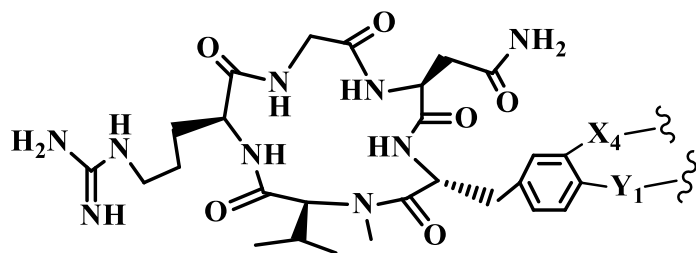


LB22 (TLR<sub>2</sub> conjugate for a Toll-like

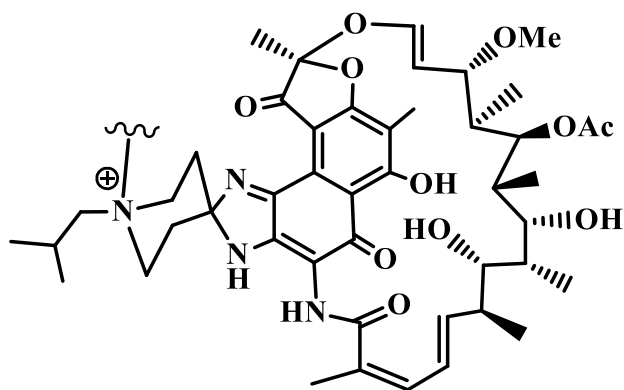
receptor),



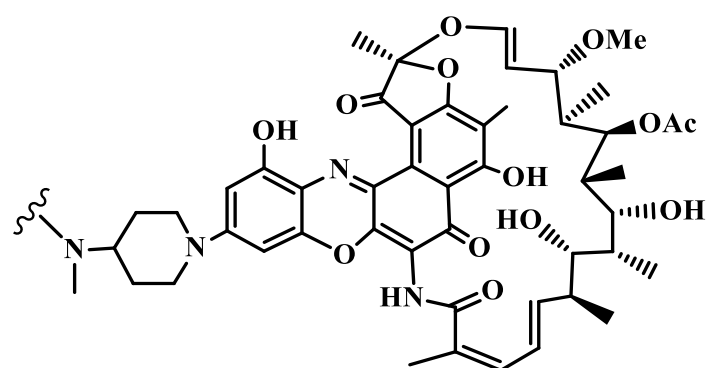
LB23 (an androgen receptor),



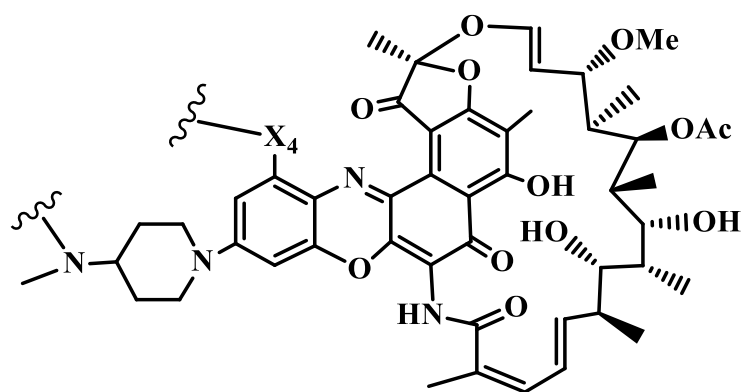
LB24 (Cilengitide/cyclo(-RGDfV-) conjugate for an  $\alpha_v$  integrin receptor)



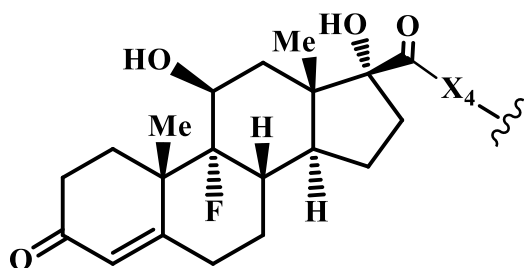
LB25 (Rifabutin analog),



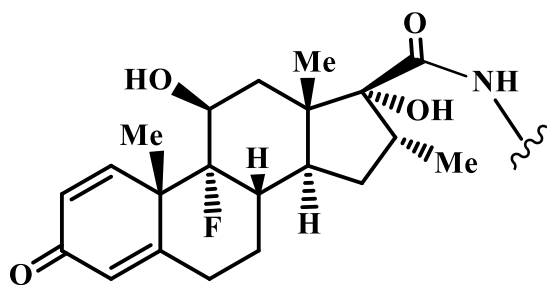
LB26 (Rifabutin analog),



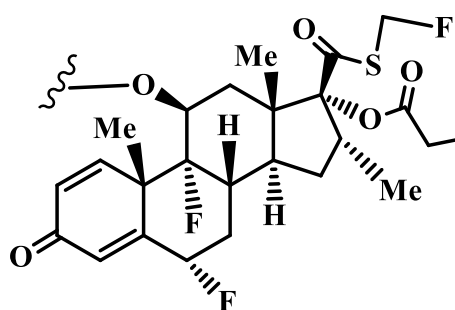
LB27 (Rifabutin analog),



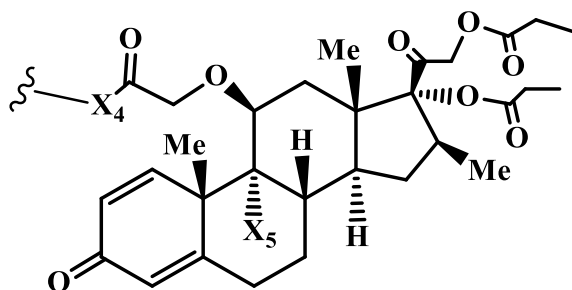
LB28 (Fludrocortisone),



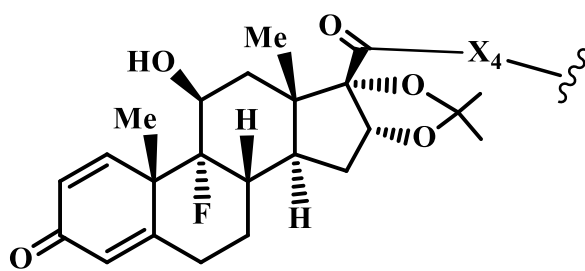
LB29 (Dexamethasone),



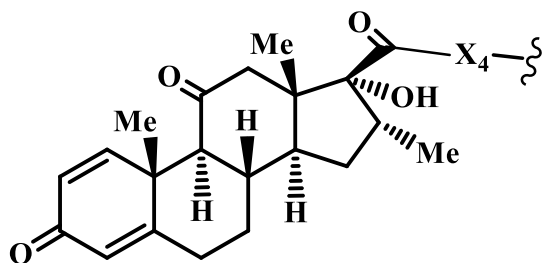
LB30 (fluticasone propionate),



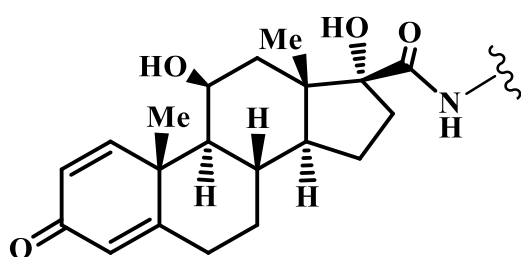
LB31 (Beclometasone dipropionate),



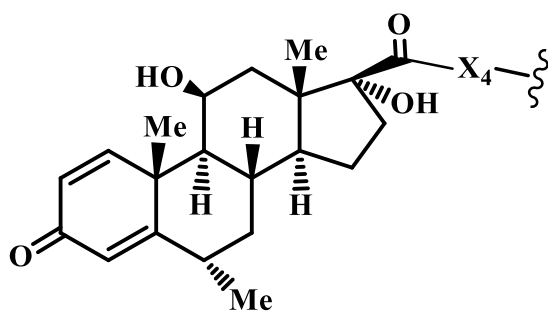
LB32 (Triamcinolone acetonide),



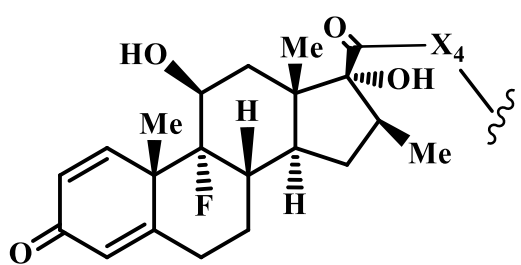
LB33 (Prednisone),



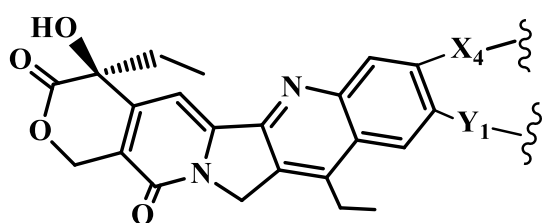
LB34 (Prednisolone),



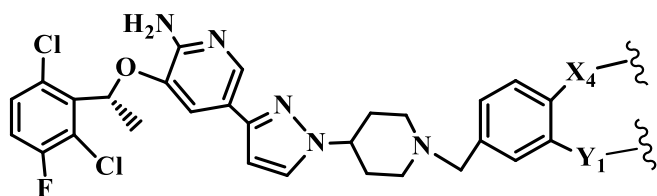
LB35 (Methylprednisolone),



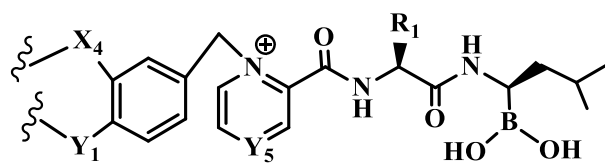
LB36 (Betamethasone),



LB37 (Irinotecan analog),

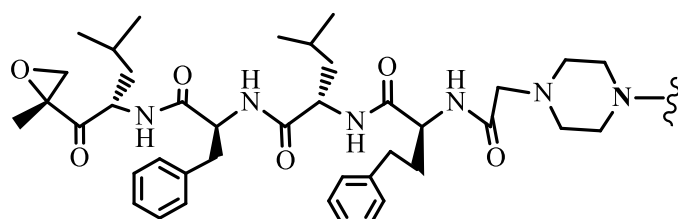


LB38 (~~Crizotinib analog~~),

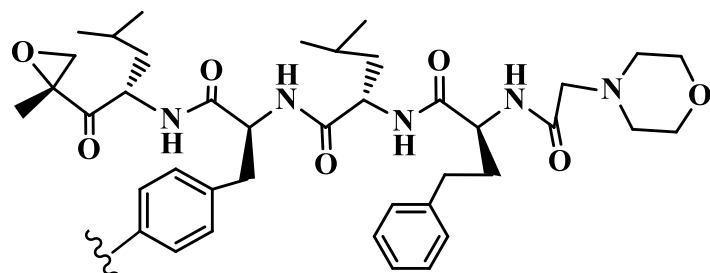


LB39 (~~Bortezomib analog~~), wherein Y<sub>5</sub>,

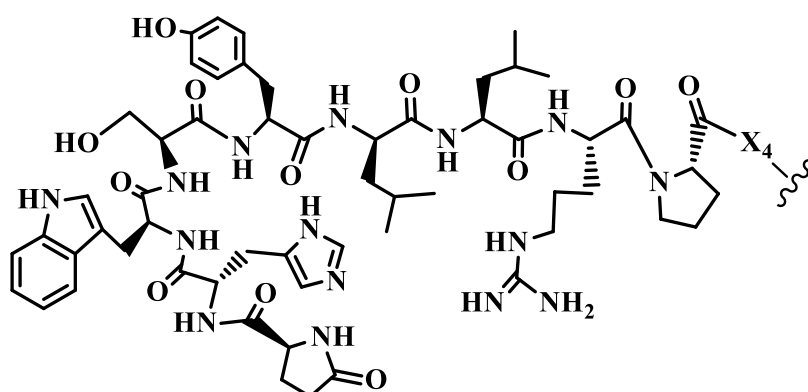
is N, CH, C(Cl), C(CH<sub>3</sub>), or C(COOR<sub>1</sub>); R<sub>1</sub> is H, C<sub>1</sub>-C<sub>6</sub> Alkyl, C<sub>3</sub>-C<sub>8</sub> Ar;



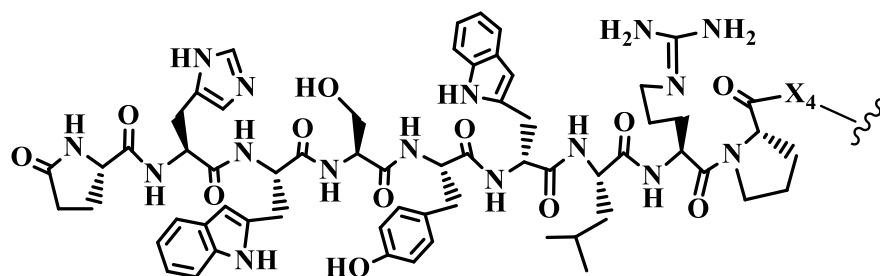
LB40 (~~Carfilzomib analog~~),



LB41 (~~Carfilzomib analog~~),

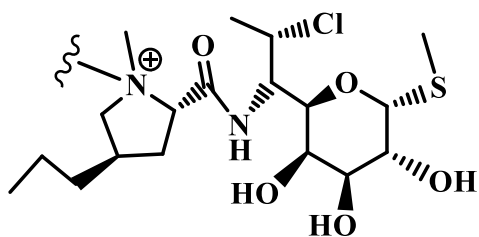


LB42 (~~Leuprolide analog~~),

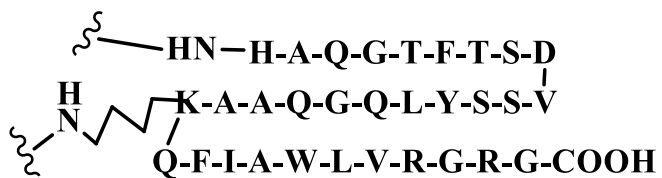


LB43 (~~Triptorelin~~

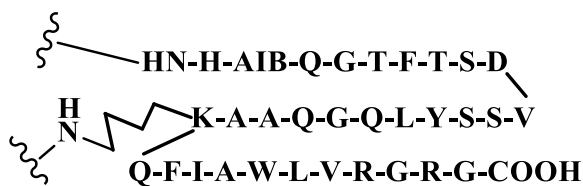
~~analog~~),



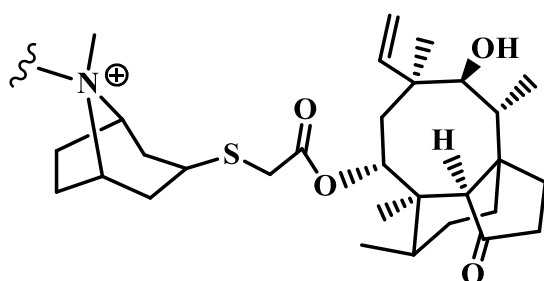
LB44 (Clindamycin),



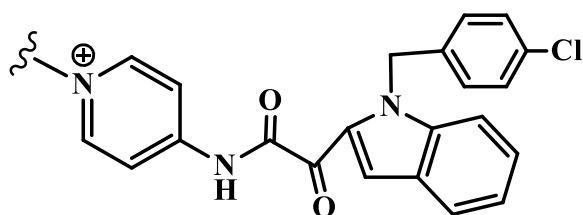
LB45 (~~Liraglutide analog~~),



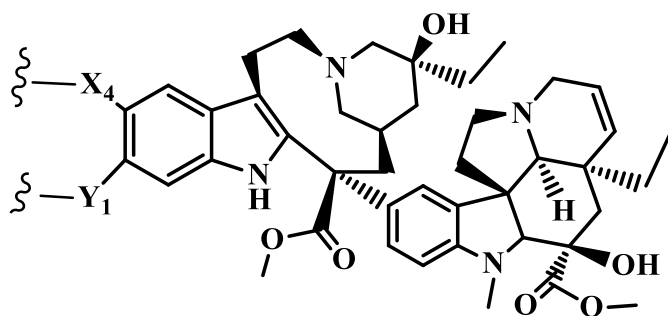
LB46 (~~Semaglutide analog~~),



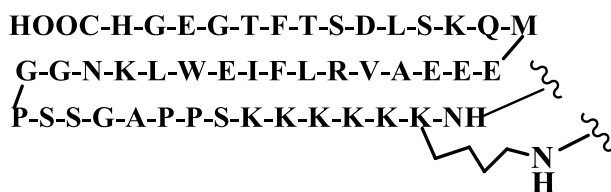
LB47 (~~Retapamulin analog~~),



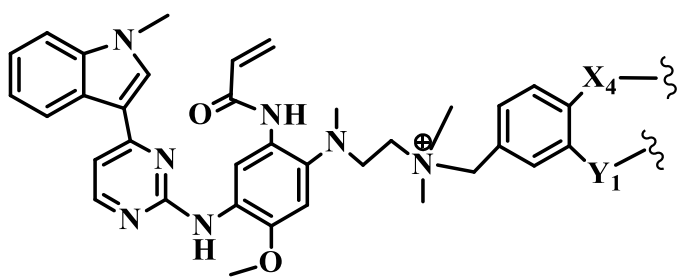
LB48 (~~Indibulin analog~~),



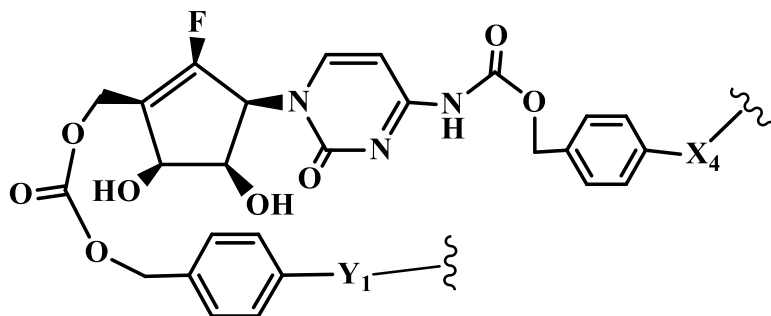
LB49 (~~Vinblastine analog~~),



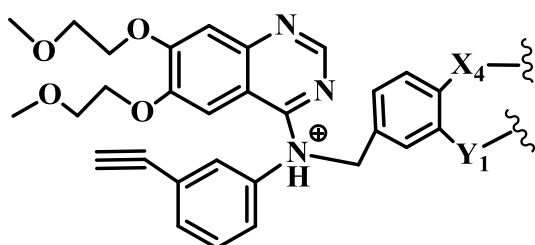
LB50 (~~Lixisenatide analog~~),



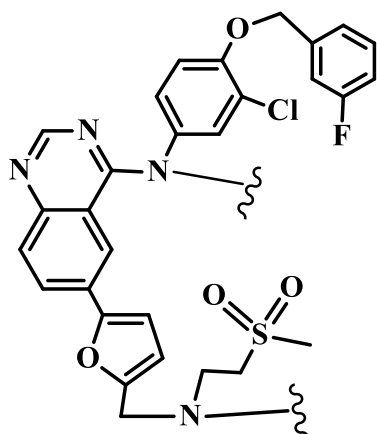
LB51 (~~Osimertinib analog~~),



LB52 (~~a nucleoside analog~~),



LB53 (~~Erlotinib analog~~),



LB54 (~~Lapatinib analog~~),

wherein “” is the site to link the side chain linker of the present patent;—

X-4, and Y-1 are inde-pendently O, NH, NHNH, NR<sub>1</sub>, S, C-(O)-O, C-(O)-NH, OC-(O)-NH, OC-(O)-O, NHC-(O)-NH, NHC-(O)-S, OC-(O)-N-(R-1)-, N-(R-1)-C-(O)-N-(R-1)-, CH<sub>2</sub>, C-(O)-NHNHC-(O) ~~and/or~~ C-(O)-NR<sub>1</sub>;—

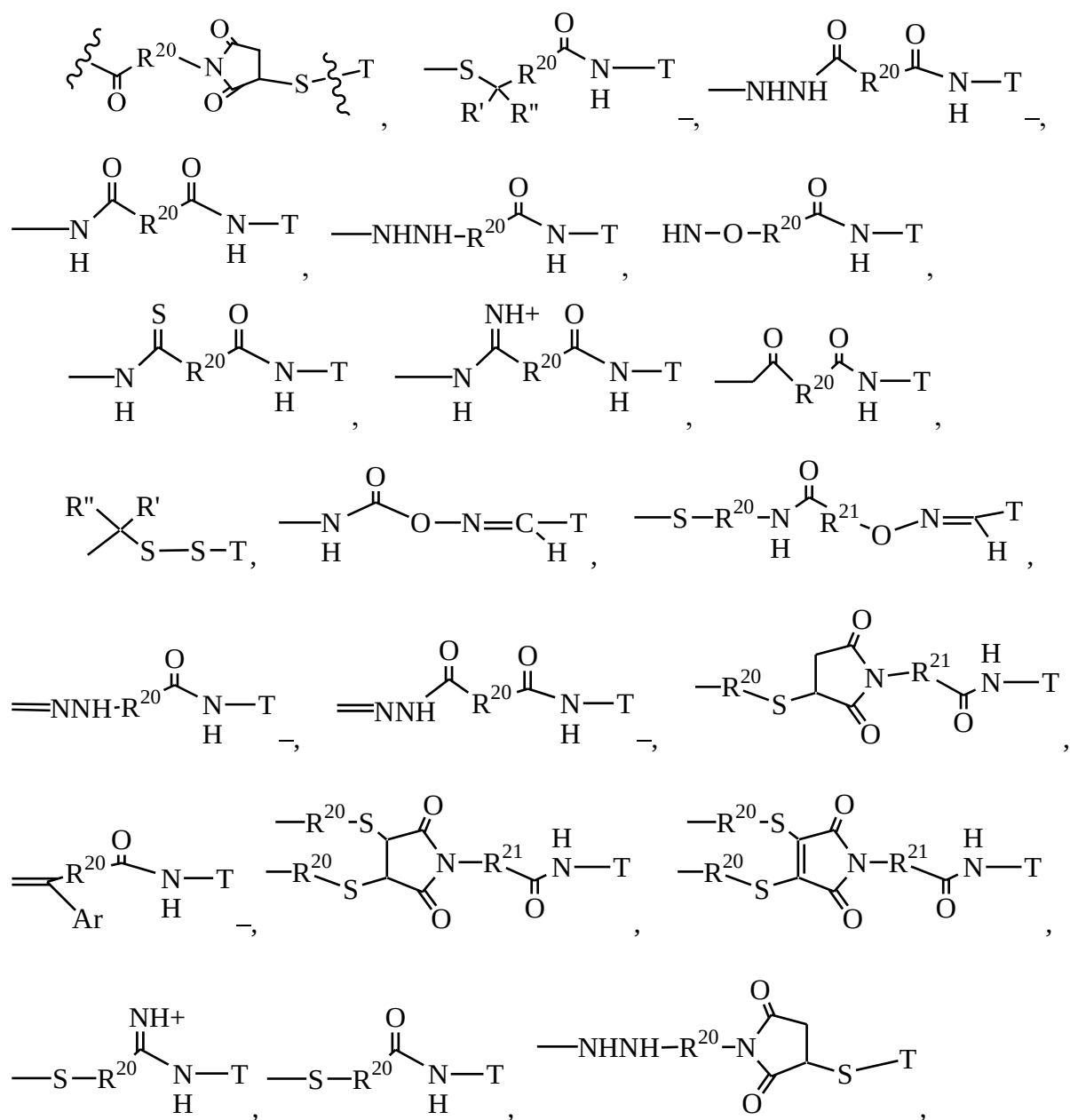
X-1 is H, CH<sub>2</sub>, OH, O, C-(O)-, C-(O)-NH, C-(O)-N-(R-1)-, R-1, NHR<sub>1</sub>, NR<sub>1</sub>, C-(O)-R-1 or C-(O)-O;

X-5 is H, CH<sub>3</sub>, F, or Cl;—

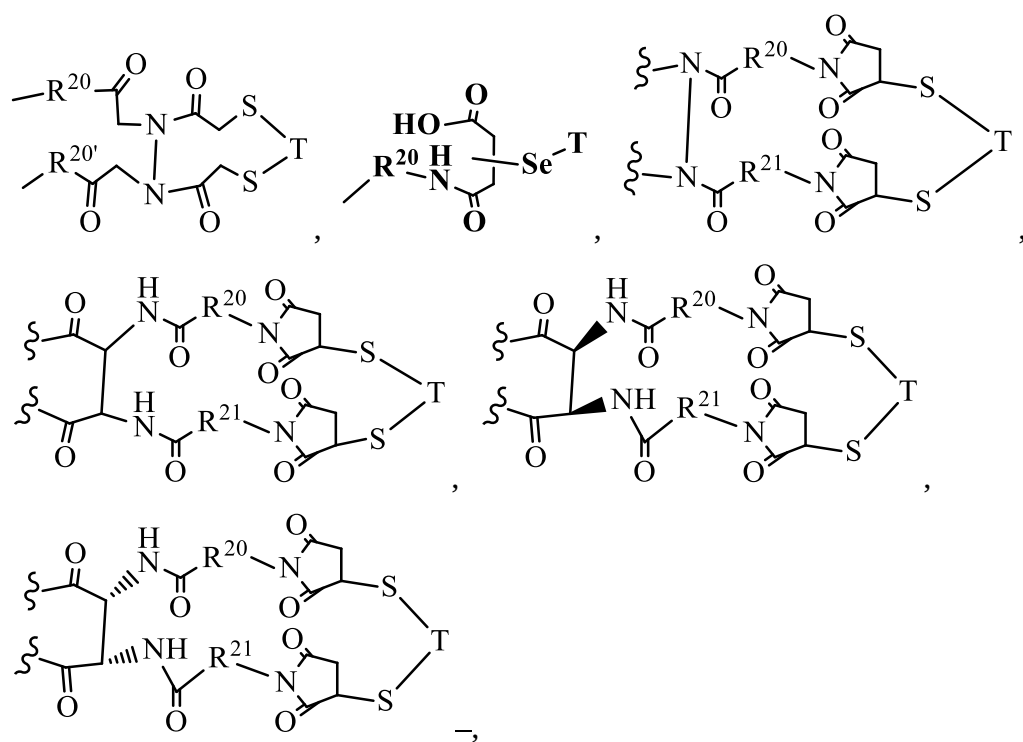
M-1 and M-2 are independently H, Na, K, Ca, Mg, NH-4, N-(R-12R-12'-R-13-R-13'); R-12, R-12',

R-13 and R-13' are defined in Claim 1.

14. The compound according to claim 1, 2, or 13, wherein the cell-binding molecule, T, according to Claim 1, or 2 or 13, when linking to V-1 and/or V-2, of Formula (I) and (III)-, or when T directly linking to L-1 and/or L-2 of Formula (I) and (III)-, wherein V-1, and/or V-2, are absent, having one or more of the following the linkage structures:







wherein  $\text{R}^{20}$  and  $\text{R}^{21}$  are independently  $\text{C}_1\sim\text{C}_8$  alkyl;  $\text{C}_2\sim\text{C}_8$  heteroalkyl, or heterocyclic;  $\text{C}_3\sim\text{C}_8$  aryl, Ar-alkyl, cycloalkyl, alkylcycloalkyl, heterocycloalkyl, heteroalkylcycloalkyl, carbocyclic, or alkylcarbonyl; or  $\text{C}_2\text{--C}_{100}$  polyethylene glycol having formula of  $(\text{CH}_2\text{CH}_2\text{O})_p$  wherein  $p$  is 2-100.

15. The compound according to claim 1, 2, 9, or 10, wherein the cell binding agent/ or molecule according to claim 1, 2, 9, or 10, is capable of targeting against a tumor cell, a virus infected cell, a microorganism infected cell, a parasite infected cell, an autoimmune disease cell, an activated tumor cells, a myeloid cell, an activated T-cell, an affecting B cell, or a melanocyte, or any cells expressing any one of the following antigens or receptors: CD1, CD1a, CD1b, CD1c, CD1d, CD1e, CD2, CD3, CD3d, CD3e, CD3g, CD4, CD5, CD6, CD7, CD8, CD8a, CD8b, CD9, CD10, CD11a, CD11b, CD11c, CD11d, CD12w, CD14, CD15, CD16, CD16a, CD16b, CDw17, CD18, CD19, CD20, CD21, CD22, CD23, CD24, CD25, CD26, CD27, CD28, CD29, CD30, CD31, CD32, CD32a, CD32b, CD33, CD34, CD35, CD36, CD37, CD38, CD39, CD40, CD41, CD42, CD42a, CD42b, CD42c, CD42d, CD43, CD44, CD45, CD46, CD47, CD48, CD49b, CD49c, CD49c, CD49d, CD49f, CD50, CD51, CD52, CD53, CD54, CD55, CD56, CD57, CD58, CD59,

CD60, CD60a, CD60b, CD60c, CD61, CD62E, CD62L, CD62P, CD63, CD64, CD65, CD65s, CD66, CD66a, CD66b, CD66c, CD66d, CD66e, CD66f, CD67, CD68, CD69, CD70, CD71, CD72, CD73, CD74, CD75, CD75s, CD76, CD77, CD78, CD79, CD79a, CD79b, CD80, CD81, CD82, CD83, CD84, CD85, CD85a, CD85b, CD85c, CD85d, CD85e, CD85f, CD85g, CD85g, CD85i, CD85j, CD85k, CD85m, CD86, CD87, CD88, CD89, CD90, CD91, CD92, CD93, CD94, CD95, CD96, CD97, CD98, CD99, CD100, CD101, CD102, CD103, CD104, CD105, CD106, CD107, CD107a, CD107b, CD108, CD109, CD110, CD111, CD112, CD113, CD114, CD115, CD116, CD117, CD118, CD119, CD120, CD120a, CD120b, CD121, CD121a, CD121b, CD122, CD123, CD123a, CD124, CD125, CD126, CD127, CD128, CD129, CD130, CD131, CD132, CD133, CD134, CD135, CD136, CD137, CD138, CD139, CD140, CD140a, CD140b, CD141, CD142, CD143, CD144, CD145, CDw145, CD146, CD147, CD148, CD149, CD150, CD151, CD152, CD153, CD154, CD155, CD156, CD156a, CD156b, CD156c, CD156d, CD157, CD158, CD158a, CD158b1, CD158b2, CD158c, CD158d, CD158e1, CD158e2, CD158f2, CD158g, CD158h, CD158i, CD158j, CD158k, CD159, CD159a, CD159b, CD159c, CD160, CD161, CD162, CD163, CD164, CD165, CD166, CD167, CD167a, CD167b, CD168, CD169, CD170, CD171, CD172, CD172a, CD172b, CD172g, CD173, CD174, CD175, CD175s, CD176, CD177, CD178, CD179, CD179a, CD179b, CD180, CD181, CD182, CD183, CD184, CD185, CD186, CDw186, CD187, CD188, CD189, CD190, CD191, CD192, CD193, CD194, CD195, CD196, CD197, CD198, CD199, CDw198, CDw199, CD200, CD201, CD202, CD202(a, CD202b), CD203, CD203c, CD204, CD205, CD206, CD207, CD208, CD209, CD210, CDw210a, CDw210b, CD211, CD212, CD213, CD213a1, CD213a2, CD214, CD215, CD216, CD217, CD218, CD218a, CD218, CD21b9, CD220, CD221, CD222, CD223, CD224, CD225, CD226, CD227, CD228, CD229, CD230, CD231, CD232, CD233, CD234, CD235, CD235a, CD235b, CD236, CD237, CD238, CD239, CD240, CD240ce, CD240d, CD241, CD242, CD243, CD244, CD245, CD246, CD247, CD248, CD249, CD250, CD251, CD252, CD253, CD254, CD255, CD256, CD257, CD258, CD259, CD260, CD261, CD262, CD263, CD264, CD265, CD266, CD267, CD268, CD269, CD270, CD271, CD272, CD273, CD274, CD275, CD276, CD277, CD278, CD279, CD281, CD282, CD283, CD284, CD285, CD286, CD287, CD288,

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 CD378, CD379, CD381, CD382, CD383, CD384, CD385, CD386, CD387, CD388, CD389,  
 CRIPTO, CRIPTO, CR, CR1, CRGF, CRIPTO, CXCR5, LY64, TDGF1, 4-1BB, APO2,  
 ASLG659, BMPR1B, 4-1BB, 5AC, 5T4 (Trophoblastic glycoprotein, TPBG, 5T4, Wnt-  
 Activated Inhibitory Factor 1 or WAIF1)-, Adenocarcinoma antigen, AGS-5, AGS-22M6, Activin  
 receptor-like kinase 1, AFP, AKAP-4, ALK, Alpha integrin, Alpha v beta6, Amino-peptidase N,  
 Amyloid beta, Androgen receptor, Angiopoietin 2, Angiopoietin 3, Annexin A1, Anthrax toxin  
 protective antigen, Anti-transferrin receptor, AOC3 (VAP-1)-, B7-H3, Bacillus anthracis anthrax,  
 BAFF (B-cell activating fac-tor)-, BCMA, B-lymphoma cell, bcr-abl, Bombesin, BORIS, C5,  
 C242 antigen, CA125 (carbohydrate antigen 125, MUC16)-, CA-IX (or CAIX, carbonic  
 anhydrase 9)-, CALLA, CanAg, Canis lupus famil-iaris IL31, Carbonic anhydrase IX, Cardiac  
 myosin, CCL11 (C-C motif chemokine 11)-, CCR4 (C-C chemokine receptor type 4)-, CCR5,  
 CD3E (epsilon)-, CEA (Carcinoembryonic antigen)-, CEACAM3, CEACAM5 (carcino-  
 embryonic antigen)-, CFD (Factor D)-, Ch4D5, Cholecystokinin 2 (CCK2R)-, CLDN18  
 (Claudin-18)-, Clumping factor A, cMet, CRIPTO, FCSF1R (Colony stimulating factor 1  
 receptor)-, CSF2 (colony stimulating factor 2, Granulocyte-macrophage colony-stimulating  
 factor (GM-CSF)-), CSP4, CTLA4 (cytotoxic T-lymphocyte-associated protein 4)-, CTAA16.88  
 tumor antigen, CXCR4, C-X-C chemokine receptor type 4, cyclic ADP ribose hydrolase, Cyclin  
 B1, CYP1B1, Cyto-megalovirus, Cytomegalovirus glycoprotein B, Dabigatran, DLL3 (delta-  
 like-ligand 3)-, DLL4 (delta-like-ligand 4)-, DPP4 (Dipeptidyl-peptidase 4)-, DR5 (Death

receptor 5)-, E. coli shiga toxin type-1, E. coli shiga toxin type-2, ED-B, EGFL7 (EGF-like domain-containing protein 7)-, EGFR, EGFRII, EG-FRvIII, Endoglin, Endothelin B receptor, Endotoxin, EpCAM (epithelial cell adhesion molecule)-, EphA2, Episialin, ERBB2 (Epidermal Growth Factor Receptor 2)-, ERBB3, ERG (TMPRSS2 ETS fusion gene)-, Escherichia coli, ETV6-AML, FAP (Fibroblast activation protein alpha)-, FCGR1, alpha-Fetoprotein, Fibrin II, beta chain, Fibronectin extra domain-B, FOLR (folate receptor)-, Folate receptor alpha, Folate hydrolase, Fos-related antigen 1F protein of respiratory syncytial virus, Frizzled receptor, Fucosyl GM1, GD2 ganglioside, G-28 (acell surface antigen glyvolipid)-, GD3 idio type, GloboH, Glypican 3, N-glycolylneuraminic acid, GM3, GMCSF receptor  $\alpha$ -chain, Growth differentiation fac-tor 8, GP100, GPNMB (Trans-membrane glycoprotein NMB)-, GUCY2C (Guanylate cyclase 2C, guanylyl cyclase C (GC-C)-, intestinal Guanylate cyclase, Guanylate cyclase-C receptor, Heat-stable enterotoxin receptor (hSTAR) )-, Heat shock proteins, Hemagglutinin, Hepatitis B surface antigen, Hepatitis B virus, HER1 (human epidermal growth factor receptor 1)-, HER2, HER2/neu, HER3 (ERBB-3)-, IgG4, HGF/SF (Hepatocyte growth factor/scatter factor)-, HHGFR, HIV-1, Histone com-plex, HLA-DR (human leukocyte antigen)-, HLA-DR10, HLA-DRB-, HMWMAA, Human chorionic gonadotropin, HNGF, Human scatter factor receptor kinase, HPV E6/E7, Hsp90, hTERT, ICAM-1 (Intercellular Adhesion Molecule 1)-, Idiotyp e, IGF1R (IGF-1, insulin-like growth factor 1 receptor)-, IGHE, IFN- $\gamma$ , Influenza hemagglutinin, IgE, IgE Fc region, IGHE, interleukins (comprising IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-6R, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-15, IL-17, IL-17A, IL-18, IL-19, IL-20, IL-21, IL-22, IL-23, IL-27, or IL-28)-, IL31RA, ILGF2 (Insulin-like growth factor 2)-, Integrins ( $\alpha$ 4,  $\alpha$  IIb $\beta$ -3,  $\alpha$ v $\beta$ 3,  $\alpha$ -4 $\beta$ -7,  $\alpha$ 5 $\beta$ 1,  $\alpha$ 6 $\beta$ 4,  $\alpha$ 7 $\beta$ 7,  $\alpha$ II $\beta$ 3,  $\alpha$ 5 $\beta$ 5,  $\alpha$ v $\beta$ 5)-, Interferon gamma-induced protein, ITGA2, ITGB2, KIR2D, Kappa Ig, LCK, Le, Legumain, Lewis-Y antigen, LFA-1 (Lympho-cyte function-associated antigen 1, CD11a)-, LHRH, LINGO-1, Lipoteichoic acid, LIV1A, LMP2, LTA, MAD-CT-1, MAD-CT-2, MAGE-1, MAGE-2, MAGE-3, MAGE A1, MAGE A3, MAGE 4, MART1, MCP-1, MIF (Macrophage migration inhibitory factor, or glycosylation-inhibiting fac-tor (GIF) )-, MS4A1 (membrane-spanning 4-domains subfamily A member 1)-, MSLN (mesothelin)-, MUC1 (Mucin 1, cell surface associated (MUC1) or

polymorphic epithelial mucin (PEM) )-, MUC1-KLH, MUC16 (CA125)-, MCP1 (monocyte chemotactic protein 1)-, MelanA/MART1, ML-IAP, MPG, MS4A1 (membrane-spanning 4-domains subfamily A)-, MYCN, Myelin-associated glycoprotein, My-ostatin, NA17, NARP-1, NCA-90 (granulocyte antigen)-, Nectin-4 (ASG-22ME)-, NGF, Neural apopto-sis-regulated proteinase 1, NOGO-A, Notch receptor, Nucleolin, Neu oncogene product, NY-BR-1, NY-ESO-1, OX-40, OxLDL (Oxidized low-density lipoprotein)-, OY-TES1, P21, p53 nonmutant, P97, Page4, PAP, Paratope of anti- (N-glycolylneuraminic acid)-, PAX3, PAX5, PCSK9, PDCD1 (PD-1, Programmed cell death protein 1)-, PDGF-R $\alpha$  (Alpha-type platelet-derived growth factor receptor)-, PDGFR- $\beta$ , PDL-1, PLAC1, PLAP-like testicular alkaline phosphatase, Platelet-derived growth factor receptor beta, Phosphate-sodium co-transporter, PMEL 17, Polysialic acid, Proteinase3 (PR1)-, Prostat-ic carcinoma, PS (Phosphatidylserine)-, Prostatic carcinoma cells, Pseudomonas aeruginosa, PSMA, PSA, PSCA, Rabies virus glycoprotein, RHD (Rh polypeptide 1 (RhPI) )-, Rhesus factor, RANKL, RhoC, Ras mutant, RGS5, ROBO4, Respiratory syncytial virus, RON, ROR1, Sarcoma translocation breakpoints, SART3, Sclerostin, SLAMF7 (SLAM family member 7)-, Selectin P, SDC1 (Syndecan 1)-, sLe (a)-, Somatomedin C, SIP (Sphingosine-1-phosphate)-, Somatostatin, Sperm protein 17, SSX2, STEAP1 (six-transmembrane epithelial antigen of the prostate 1)-, STEAP2, STn, TAG-72 (tumor associated glycoprotein 72)-, Survivin, T-cell receptor, T cell transmembrane protein, TEM1 (Tumor endothelial marker 1)-, TENB2, Tenascin C (TN-C)-, TGF- $\alpha$ , TGF- $\beta$  (Transforming growth factor beta)-, TGF- $\beta$ 1, TGF- $\beta$ 2 (Transforming growth factor-beta 2)-, Tie (CD202b)-, Tie2, TIM-1 (CDX-014)-, Tn, TNF, TNF- $\alpha$ , TNFRSF8, TNFRSF10B (tumor necrosis factor receptor superfamily member 10B)-, TNFRSF-13B (tumor necrosis factor receptor superfamily member 13B)-, TPBG (trophoblast glyco-protein)-, TRAIL-R1 (Tumor necrosis apoptosis Inducing ligand Receptor 1)-, TRAILR2 (Death recep-tor 5 (DR5) )-, tumor-associated calcium signal transducer 2, tumor specific glycosylation of MUC1, TWEAK receptor, TYRP1 (glycoprotein 75)-, TRP-2, Tyrosinase, VCAM-1, VEGF, VEGF-A, VEGF-2, VEGFR-1, VEGFR2, or vimentin, WT1, XAGE 1, or cells expressing any insulin growth factor receptors, or any epidermal growth factor receptors.

16. The compound according to claim 15, wherein the tumor cell ~~according to claim 15 is~~ ~~selected from the group consisting of~~ a lymphoma cells, myeloma cells, renal cells, breast cancer cells, prostate cancer cells, ovarian cancer cells, colorectal cancer cells, gastric cancer cells, squamous cancer cells, small-cell lung cancer cells, ~~none-small-cell lung cancer cells, testicular cancer cells, or malignant cells, or any cells that grow and divide at an unregulated, quickened pace to cause cancers.~~

17. A pharmaceutical composition comprising a therapeutically effective amount of the conjugate compounds of ~~any one of claim 1, 2, 9, or 10, and/or~~ a pharmaceutically acceptable salt ~~thereof, carrier, diluent, or excipient therefore,~~ or a combination of the conjugates thereof, together with a carrier, diluent, or excipient, for the treatment or prevention of a cancer, or an autoimmune disease, or an infectious disease.

18. The pharmaceutical composition either in ~~in~~ the liquid formula or in the formulated lyophilized solid ~~or~~ powder according to ~~C~~claim 17, comprising by weight of: 0.01%-99% of one or more conjugates of ~~any one of claim 1, 2, 9, or 10;~~ 0.0%-20.0% of one or more polyols; 0.0%-2.0% of one or more surfactants; 0.0%-5.0% of one or more preservatives; 0.0%-30% of one or more amino acids; 0.0%-5.0% of one or more antioxidants; 0.0%-0.3% of one or more metal chelating agents; 0.0%-30.0% of one or more buffer salts for adjusting pH of the formulation to pH 4.5 to 7.5; and 0.0%-30.0% of one or more of isotonic agent for adjusting osmotic pressure ~~between about~~ 250 to 350 mOsm when reconstituted for administration to a patient;

wherein the polyol is ~~selected from~~ fructose, mannose, maltose, lactose, arabinose, xylose, ribose, rhamnose, galactose, glucose, sucrose, trehalose, sorbose, melezitose, raffinose, mannitol, xylitol, erythritol, maltitol, lactitol, erythritol, threitol, sorbitol, glycerol, or L-gluconate ~~and/or~~ its metallic salts);

wherein the surfactant is ~~selected from~~ polysorbate 20, polysorbate 40, polysorbate 65, poly-sorbate 80, polysorbate 81, or polysorbate 85, poloxamer, poly-(ethylene oxide) -poly-(propylene oxide)-, polyethylene-polypropylene, Triton<sup>TM</sup>; sodium dodecyl sulfate (SDS)-,

sodium laurel sulfate; sodium octyl glycoside; lauryl-, myristyl-, linoleyl-, or stearyl-sulfobetaine; lauryl-, myristyl-, linoleyl- or stearyl-sarcosine; linoleyl-, myristyl-, or cetyl-betaine; lauroamidopropyl-, cocamidopropyl-, linoleamidopropyl-, myristamidopropyl-, palmidopropyl-, or isostearamidopropyl-betaine (lauroamidopropyl-); myristamidopropyl-, palmidopropyl-, or isostearamidopropyl-dimethylamine; sodium methyl cocoyl-, or disodium methyl oleyl-aurate; dodecyl betaine, dodecyl dimethylamine oxide, cocamidopropyl betaine and coco amphi glycinate; or isostearyl ethylimidazolinium ethosulfate; polyethyl glycol, polypropyl glycol, ~~and/or~~ a copolymers of ethylene and propylene glycol;

wherein the preservative is ~~selected from~~ benzyl alcohol, octadecyldimethylbenzyl ammonium chloride, hexamethonium chloride, benzalkonium chloride, benzethonium chloride, phenol, butyl ~~and/or~~ benzyl alcohol, an alkyl parabens such as comprising methyl or propyl paraben, catechol, resorcinol, cyclo-hexanol, 3-pentanol, or m-cresol;

wherein the amino acid is ~~selected from~~ arginine, cystine, glycine, lysine, histidine, ornithine, isoleucine, leucine, alanine, glycine glutamic acid or aspartic acid;—————

wherein the antioxidant is ~~selected from~~ ascorbic acid, glutathione, cystine or ~~and~~ methionine;

wherein the chelating agent is ~~selected from~~ EDTA or EGTA;

wherein the buffer salt is ~~selected from~~ sodium, potassium, ammonium, or trihydroxyethylamino salts of citric acid, ascorbic acid, gluconic acid, carbonic acid, tartaric acid, succinic acid, acetic acid or phthalic acid; Tris or tromethamine hydrochloride, phosphate or sulfate; arginine, glycine, glycylglycine, or histidine with anionic acetate, chloride, phosphate, sulfate, or succinate salts;

wherein the tonicity agent is ~~selected from~~ mannitol, sorbitol, sodium acetate, potassium chloride, sodium phosphate, potassium phosphate, trisodium citrate, or sodium chloride.

19. A kit comprising ~~The~~ pharmaceutical composition according to ~~Claim~~ 17 or 18, ~~is~~ packed in a vial, bottle, pre-filled syringe, or pre-filled auto-injector syringe, wherein the pharmaceutical composition is in a form of a liquid or lyophilized solid.

20. The conjugate of ~~Claim~~ 1, 2, 9, 10, or in the form of the pharmaceutical composition of ~~Claim~~ 17 or 18, having in vitro, in vivo or ex vivo cell killing activity.

21. ~~Use of A~~the pharmaceutical composition according to ~~Claim~~ 17 or 18, which is formulated for administration~~administered~~ concurrently with a chemotherapeutic agent, a radiation therapy, an immunotherapy agent, an autoimmune disorder agent, an anti-infectious agents or ~~the other a~~ conjugate, ~~s~~ for synergistically treatment or prevention of a cancer, ~~or~~ an autoimmune disease, or an infectious disease.

22. The ~~use~~chemotherapeutic agent according to ~~Claim~~ 21, further is selected from any one or more of~~comprising use of~~:

(1)- a)- an alkylating agent: ~~selected from~~ comprising nitrogen mustards: chlorambucil, chlornaphazine, cyclophosphamide, dacarbazine, estramustine, ifosfamide, mechlorethamine, mechlorethamine oxide hydrochloride, mannomustine, mitobronitol, melphalan, mitolactol, pipobroman, novembichin, phenesterine, prednimustine, thiotepa, trofosfamide, uracil mustard; CC-1065 and adozelesin, car-zelesin, bizelesin ~~or their synthetic analogues~~; duocarmycin ~~and its synthetic analogues~~, KW-2189, CBI-TMI, or CBI dimers; benzodiazepine dimers or pyrrolobenzodiazepine (PBD) dimers, tomaymy-cin dimers, indolinobenzodiazepine dimers, imidazobenzothiadiazepine dimers, or oxazolidinobenzo-diazepine dimers; Nitrosoureas: comprising carmustine, lomustine, chlorozotocin, fotemustine, ni- mustine, ranimustine; Alkylsulphonates: including busulfan, treosulfan, improsulfan and piposulfan)-; Triazenes or dacarbazine; Platinum containing compounds: comprising carboplatin, cisplatin, and oxaliplatin; aziridines, benzodopa, carboquone, meturedopa, or uredopa; ethylenimines and methyl-amelamines including altretamine, triethylenemelamine, trietylenephosphoramidate, triethylenethio-phosphoramidate ~~and or~~ trimethylolomelamine)-;

b)- A plant alkaloid: ~~selected from the group consisting of~~ comprising Vinca alkaloids: including vincristine, vinblastine, vindesine, vinorelbine, and navelbin; Taxoids: comprising

paclitaxel, docetaxol ~~and their analogs~~, Maytansinoids including DM1, DM2, DM3, DM4, DM5, DM6, DM7, maytansine, ansami-tocins ~~and their analogs~~, cryptophycins (including the group of cryptophycin 1 and cryptophycin 8)-; epothilones, eleutherobin, discodermolide, bryostatins, dolostatins, auristatins, tubulysins, cepha-lostatins; pancratistatin; a sarcodictyin; or spongistatin;

c)- A DNA Topoisomerase Inhibitor: ~~selected from the groups of comprising~~ Epipodophyllins: comprising 9-aminocamptothecin, camptothecin, crisnatol, daunomycin, etoposide, etoposide phosphate, irinotecan, mitoxantrone, novantrone, retinoic acids ~~(or, retinols)~~, teniposide, topotecan, 9-nitrocamptothecin or RFS 2000; ~~and/or~~ mitomycins ~~and their analogs~~;

d)- ~~A~~ an antimetabolite: ~~selected from the group consisting of comprising~~ { [Anti-folate: (DHFR inhibitors: comprising methotrexate, trimetrexate, denopterin, pteropterin, aminopterin (4-aminopteroic acid) or folic acid ~~analogues~~)-; IMP dehydrogenase ~~I~~ inhibitors: (including mycophenolic acid, tiazofurin, ribavi-rin, EICAR)-; Ribonucleotide reductase Inhibitors: (including hydroxyurea, deferoxamine)-]; ~~[P~~pyrimi-dine ~~analogues~~: U~~uracil~~, ~~analogues~~: (including ancitabine, azacitidine, 6-azauridine, capecitabine, carmofur, cytarabine, dideoxyuridine, doxifluridine, enocitabine, 5-Fluorouracil, floxuridine, ratitrexed)-; ~~C~~cyto-sine, ~~analogues~~: ~~(including~~ cytarabine, cytosine arabinoside, fludarabine)-; Purine ~~analogues~~: ~~(including~~ azathioprine, fludarabine, mercaptopurine, thiamiprine, thioguanine)-]; folic acid replenisher, or frolinic acid}-;

e)- ~~A~~ hormonal therapy: ~~selected from comprising~~ R~~e~~ceptor antagonists: [Anti-estrogen: (including megestrol, raloxifene, tamoxifen)-; LHRH agonists: (including goserelin, leuprolide acetate)-; Anti-androgens: (including bicalutamide, flutamide, calusterone, dromostanolone propionate, epitiostanol, goserelin, leuprolide, mepitiostane, nilutamide, testolactone, trilostane ~~and other androgens inhibitors~~) ]-; Retin-oids/Deltoids: [Vitamin D3 ~~analogues~~: ~~(including~~ CB 1093, EB 1089 KH 1060, cholecalciferol, ergocal-ciferol)-; Photodynamic therapies: (including verteporfin, phthalocyanine, photosensitizer Pc4, de-methoxyhypocrellin A)-; Cytokines: (comprising Interferon-alpha, Interferon-gamma, tumor necrosis factor (TNFs)-, or human proteins containing a TNF domain) ] }-;

f)- A kinase inhibitor, ~~selected from the group consisting of~~ comprising BIBW 2992 (anti-EGFR/Erb2)-, imatinib, gefitinib, pegaptanib, sorafenib, dasatinib, sunitinib, erlotinib, nilotinib, lapatinib, axitinib, pazopanib-, vandetanib, E7080 (anti-VEGFR2)-, mubritinib, ponatinib, bafetinib, bosutinib, cabozantin-ib, vismodegib, iniparib, ruxolitinib, CYT387, axitinib, tivozanib, sorafenib, bevacizumab, cetuximab, Trastuzumab, Ranibizumab, Panitumumab, or ispinesib;

g)- A poly-(ADP-ribose) polymerase (PARP) inhibitors ~~selected from the group of~~ comprising olaparib, niraparib, iniparib, talazoparib, veliparib, CEP 9722 (Cephalon<sup>TM</sup>'s)-, E7016 (Eisai<sup>TM</sup>'s)-, BGB-290 (BeiGene<sup>TM</sup>'s)-, or 3-aminobenzamide-;

h)- An antibiotic, ~~selected from the group consisting of~~ comprising an enediyne antibiotic (~~selected from the group of~~ comprising calicheamicin, calicheamicin  $\gamma$ 1,  $\delta$ 1,  $\alpha$ 1 or  $\beta$ 1; dynemicin, including dynemicin A and deoxydynemicin; esperamicin, kedarcidin, C-1027, maduropeptin, or neocarzinostatin chromophore and related chromoprotein enediyne antibiotic chromomorphores)-, aclacinomycins, actinomycin, anthramycin, azaserine, bleomycins, cactinomycin, carubicin, carminomycin, carzinophilin; chromomycins, dactinomycin, daunorubicin, doxorubicin, 6-diazo-5-oxo-L-norleucine, doxorubicin, morpholino-doxorubicin, cyanomorpholino-doxorubicin, 2-pyrrolino-doxorubicin and deoxydoxorubicin, epirubicin, eribulin, esorubicin, idarubicin, marcellomycin, nitomycins, mycophenolic acid, nogalamycin, olivomycins, peplomycin, pofsiromycin, puromycin, quelamycin, rodorubicin, streptonigrin, streptozocin, tubercidin, ubenimex, zinostatin, or zorubicin;

i)- A polyketide (acetogenin)-, bullatacin and bullatacinone; gemcitabine, epoxomicins and carfilzomib, bortezomib, thalidomide, lenalidomide, pomalidomide, tosedostat, zibrestat, PLX4032, STA-9090, Stimuvax, allovectin-7, Xegeva, Provence<sup>TM</sup>, Yervoy<sup>TM</sup>, Isoprenylation inhibitors and Lovastatin, Dopaminergic neurotoxins and 1-methyl-4-phenylpyridinium ion, Cell cycle inhibitors (including staurosporine)-, Actinomycins (including Actinomycin D, dactinomycin)-, amanitins, Bleomycins (including bleomycin A2, bleomycin B2, peplomycin)-, Anthracyclines (including daunorubicin, doxorubicin (adriamycin)-, idarubicin, epirubicin, pirarubicin, zorubicin, mitoxantrone, MDR inhibitors or verapamil, Ca<sup>2+</sup>ATPase inhibitors or

thapsigargin, Histone deacetylase inhibitors ( (including Vorinostat, Ro-midepsin, Panobinostat, Valproic acid, Mocetinostat (MGCD0103)-, Belinostat, PCI-24781, Entinostat, SB939, Resminostat, Givinostat, AR-42, CUDC-101, sulforaphane, Trichostatin A)-; Thapsigargin, Celecoxib, glitazones, epigallocatechin gallate, Disulfiram, Salinosporamide A.-; Anti-adrenals,—~~select-ed from the group of~~ comprising aminoglutethimide, mitotane, trilostane; aceglatone; aldophosphamide glycoside; aminolevulinic acid; amsacrine; arabinoside, bestabucil; bisantrene; edatraxate; defofamine; demecol-cine; diaziquone; eflornithine (DFMO)-, elfomithine; elliptinium acetate, etoglucid; gallium nitrate; gacytosine, hydroxyurea; ibandronate, lentinan; lonidamine; mitoguazone; mitoxantrone; mopidamol; nitracrine; pentostatin; phenamet; pirarubicin; podophyllinic acid; 2-ethylhydrazide; procarbazine; PSK<sup>®</sup>; razoxane; rhizoxin; sizofiran; spirogermanium; tenuazonic acid; triaziquone; 2,-2',-2"—trichlorotriethylamine; trichothecenes (including the group of T-2 toxin, verrucarins A, roridin A and anguidine)-; urethane, siRNA, or antisense drugs;

(2)- An anti-autoimmune disease agent: cyclosporine, cyclosporine A, aminocaproic acid, azathioprine, bromocriptine, chlorambucil, chloroquine, cyclophosphamide, corticosteroids (including the group consisting of amcinonide, betamethasone, budesonide, hydrocortisone, flunisolide, fluticasone propionate, fluocortolone, danazol, dexamethasone, Triamcinolone acetonide, beclomethasone dipropionate)-, DHEA, enanercept, hydroxychloroquine, infliximab, meloxicam, methotrexate, mofetil, mycophenolate, prednisone, sirolimus, or tacrolimus;

(3)- An anti-infectious disease agents comprising:

a)- Aminoglycosides: amikacin, astromycin, gentamicin (netilmicin, sisomicin, isepamicin), hygromycin B, kanamycin (amikacin, arbekacin, bekanamycin, dibekacin, tobramycin)-, neomycin (framycetin, paromomycin, ribostamycin)-, netilmicin, spectinomycin, streptomycin, tobramycin, or verdamicin;

b)- Aminopenicillins: azidamphenicol, chloramphenicol, florfenicol, or thiamphenicol;

c)- Ansamycins: geldanamycin, or herbimycin;

d)- Carbapenems: biapenem, doripenem, ertapenem, imipenem, cilastatin, meropenem, or panipenem;

e)- Cephems: carbacephem (loracarbef)-, cefacetrile, cefaclor, cefradine, cefadroxil, cefalonium, cefaloridine, cefalotin or cefalothin, cefalexin, cefaloglycin, cefamandole, cefapirin, cefatrizine, cefazaflur, cefazedone, cefazolin, cefbuperazone, cefcapene, cefdaloxime, cefepime, cefminox, cefox-itin, cefprozil, cefroxadine, ceftezole, cefuroxime, cefixime, cefdinir, cefditoren, cefepime, cefetamet, cefmenoxime, cefodizime, cefonicid, cefoperazone, ceforanide, cefotaxime, cefotiam, cefozopran, cephalixin, cefpimizole, cefpiramide, cefpirome, cefpodoxime, cefprozil, cefquinome, cefsulodin, ceftazidime, cefteram, ceftibuten, ceftiolene, ceftizoxime, ceftobiprole, ceftriaxone, cefuroxime, cefu-zonam, cephamycin (including cefoxitin, cefotetan, cefmetazole)-, or oxacephem (flomoxef, latamoxef)-;

f)- Glycopeptides: bleomycin, vancomycin (including oritavancin, telavancin)-, teicoplanin (dalba-vancin)-, or ramoplanin;

g)- Glycylcyclines: tigecycline;

h)-  $\beta$ -Lactamase inhibitors: penam (sulbactam, tazobactam)-, or clavam (clavulanic acid)-;

i)- Lincosamides: clindamycin, or lincomycin;

j)- Lipopeptides: daptomycin, A54145, calcium-dependent antibiotics (CDA);

k)- Macrolides: azithromycin, cethromycin, clarithromycin, dirithromycin, erythromycin, flurithromycin, josamycin, ketolide (telithromycin, cethromycin)-, midecamycin, miocamycin, olean-domycin, rifamycins (rifampicin, rifampin, rifabutin, rifapentine)-, rokitamycin, roxithromycin, spec-tinomycin, spiramycin, tacrolimus (FK506)-, troleandomycin, or telithromycin;

l)- Monobactams: aztreonam, or tigemonam;

m)- Oxazolidinones: linezolid;

n)- Penicillins: amoxicillin, ampicillin, pivampicillin, hetacillin, bacampicillin, metampicillin, talampicillin, azidocillin, azlocillin, benzylpenicillin, benzathine benzylpenicillin, benzathine phe-noxymethylpenicillin, clometocillin, procaine benzylpenicillin, carbenicillin (carindacillin)-, cloxacillin, dicloxacillin, epicillin, flucloxacillin, mecillinam (pivmecillinam)-, mezlocillin, meticillin, nafcillin, oxacillin, penamecillin, penicillin, pheneticillin, phenoxymethylpenicillin, piperacillin, propicillin, sulbenicillin, temocillin, or ticarcillin;

o)- Polypeptides: bacitracin, colistin, or polymyxin B;

p)- Quinolones: alatrofloxacin, balofloxacin, ciprofloxacin, clinafloxacin, danofloxacin, difloxacin, enoxacin, enrofloxacin, floxin, garenoxacin, gatifloxacin, gemifloxacin, grepafloxacin, kano trovaflox-acin, levofloxacin, lomefloxacin, marbofloxacin, moxifloxacin, nadifloxacin, norfloxacin, orbifloxacin, ofloxacin, pefloxacin, trovafloxacin, grepafloxacin, sitafloxacin, sparfloxacin, temafloxacin, tosuflox-acin, or trovafloxacin;

q)- Streptogramins: pristinamycin, or quinupristin/dalfopristin;

r)- Sulfonamides: mafenide, prontosil, sulfacetamide, sulfamethizole, sulfanilimide, sulfasalazine, sulfisoxazole, trimethoprim, or trimethoprim-sulfamethoxazole (co-trimoxazole);

s)- Steroid antibacterials: ~~selected from~~ comprising fusidic acid;

t)- Tetracyclines: doxycycline, chlortetracycline, clomocycline, demeclocycline, lymecycline, meclocycline, metacycline, minocycline, oxytetracycline, penimepicycline, rolitetracycline, tetracy-cline, glycylcyclines (including tigecycline); u)- ~~Other~~ ~~antibiotics: selected from the group consisting of~~ comprising annonacin, arspenamine, bactoprenol inhibitors (Bacitracin)-, DADAL/AR inhibitors (cycloserine)-, dictyostatin, discodermolide, eleuthero-bin, epothilone, ethambutol, etoposide, faropenem, fusidic acid, furazolidone, isoniazid, laulimalide, metronidazole, mupirocin, mycolactone, NAM synthesis inhibitors (fosfomycin)-, nitrofurantoin, paclitaxel, platensimycin, pyrazinamide, quinupristin/dalfopristin, rifampicin (rifampin)-, tazobactam tinidazole, or uvaricin;

(4)- Anti-viral drugs comprising:

a)- Entry/fusion inhibitors: aplaviroc, maraviroc, vicriviroc, gp41 (enfuvirtide)-, PRO 140, or CD4 (ibalizumab)-;

b)- Integrase inhibitors: raltegravir, elvitegravir, or globoidnan A;

c)- Maturation inhibitors: bevirimat, or vivecon;

d)- Neuraminidase inhibitors: oseltamivir, zanamivir, or peramivir;

e)- Nucleosides ~~&~~ or nucleotides: abacavir, aciclovir, adefovir, amdoxovir, apricitabine, brivudine, cidofovir, clevidine, dexelvucitabine, didanosine (ddI)-, elvucitabine, emtricitabine (FTC)-, entecavir, famciclovir, fluorouracil (5-FU)-, ~~3'-fluoro-substituted 2',3'-~~

~~dideoxynucleoside analogues (including the group consisting of 3'-fluoro-2',3' -~~  
dideoxythymidine (FLT) ~~and/or~~ 3'-fluoro-2',3'-dideoxyguanosine (FLG)-, fomivirsen,  
ganciclovir, idoxuridine, lamivudine (3TC)-, l-nucleosides (including the group consisting of  $\beta$ -l-  
thymidine and  $\beta$ -l-2' -deoxycytidine)-, penciclovir, racivir, ribavirin, stampidine, stavudine  
(d4T)-, taribavirin (viramidine)-, telbivudine, tenofovir, trifluridine valaciclovir, valganciclovir,  
zalcitabine (ddC)-, or zidovudine (AZT)-;

f)- Non-nucleosides: amantadine, ateviridine, capravirine, diarylpyrimidines (etravirine,  
rilpi-virine)-, delavirdine, docosanol, emivirine, efavirenz, foscarnet (phosphonoformic acid)-,  
imiquimod, interferon alfa, loviride, lodenosine, methisazone, nevirapine, NOV-205,  
peginterferon alfa, podophyl-lotoxin, rifampicin, rimantadine, resiquimod (R-848)-, or  
tromantadine;

g)- Protease inhibitors: amprenavir, atazanavir, boceprevir, darunavir, fosamprenavir,  
indinavir, lopinavir, nelfinavir, pleconaril, ritonavir, saquinavir, telaprevir (VX-950), or  
tipranavir;

h)- ~~Other types of~~ anti-virus drugs: abzyme, arbidol, calanolide a, ceragenin, cyanovirin-n,  
diarylpyrimidines, epigallocatechin gallate (EGCG)-, foscarnet, griffithsin, taribavirin  
(viramidine)-, hydroxyurea, KP-1461, miltefosine, pleconaril, portmanteau inhibitors, ribavirin,  
or seliciclib-;

(5)- ~~The~~ pharmaceutically acceptable salts, acids, ~~derivatives~~, hydrate or hydrated salt; or a  
crys-talline structure; or an optical isomer, racemate, diastereomer or enantiomer of any of the  
above drugs.

23. The use according to claim 21, wherein the synergistic agents according to claim 20 are  
~~selected from one or several of the following drugs:comprise~~ Abatacept, abemaciclib,  
Abiraterone acetate, Abraxane, Acetaminophen/hydrocodone, Acalabru-tinib, aducanumab,  
Adalimumab, ADXS31-142, ADXS-HER2, afatinib dimaleate, aldesleukin, alec-tinib,  
alemtuzumab, Alitretinoin, ado-trastuzumab emtansine, Amphetamine/dextroamphetamine, anas-  
trozole, Aripiprazole, anthracyclines, Aripiprazole, Atazanavir, Atezolizumab, Atorvastatin,

Avelumab, Axicabtagene ciloleucel, axitinib, belinostat, BCG Live, Bevacizumab, bexarotene, blinatumomab, Bortezomib, bosutinib, brentuximab vedotin, brigatinib, Budesonide, Budesonide/formoterol, Bupren-orphine, Cabazitaxel, Cabozantinib, capmatinib, Capecitabine, carfilzomib, chimeric antigen receptor-engineered T (CAR-T) cells, Celecoxib, ceritinib, Cetuximab, Chidamide, Ciclosporin, Cinacalcet, crizotinib, Cobimetinib, Cosentyx, crizotinib, CTL019, Dabigatran, dabrafenib, dacarbazine, dacli-zumab, dacomotinib, daptomycin, Daratumumab, Darbepoetin alfa, Darunavir, dasatinib, denileukin diftitox, Denosumab, Depakote, Dexlansoprazole, Dexmethylphenidate, Dexamethasone, DigniCap Cooling System, Dinutuximab, Doxycycline, Duloxetine, Duvelisib, durvalumab, elotuzumab, Emtricitbine/Rilpivirine/Tenofovir, disoproxil fumarate, Emtricitbine/tenofovir/efavirenz, Enoxaparin, en-sartinib, Enzalutamide, Epoetin alfa, erlotinib, Esomeprazole, Eszopiclone, Etanercept, Everolimus, exemestane, everolimus, exenatide ER, Ezetimibe, Ezetimibe/simvastatin, Fenofibrate, Filgrastim, fingolimod, Fluticasone propionate, Fluticasone/salmeterol, fulvestrant, gazyva, gefitinib, Glatiramer, Goserelin acetate, Icotinib, Imatinib, Ibritumomab tiuxetan, ibrutinib, idelalisib, ifosfamide, Infliximab, imiquimod, ImmuCyst, Immuno BCG, iniparib, Insulin aspart, Insulin detemir, Insulin glargine, Insulin lispro, Interferon alfa, Interferon alfa-1b, Interferon alfa-2a, Interferon alfa-2b, Interferon beta, Interferon beta 1a, Interferon beta 1b, Interferon gamma-1a, lapatinib, Ipilimumab, Ipratropium bromide/sal-butamol, Ixazomib, Kanuma, Lanreotide acetate, lenalidomide, lenaliomide, lenvatinib mesylate, letro-zole, Levothyroxine, Levothyroxine, Lidocaine, Linezolid, Liraglutide, Lisdexamfetamine, LN-144, lorlatinib, Memantine, Methylphenidate, Metoprolol, Mekinist, mericitabine/Rilpivirine/Tenofovir, Modafinil, Mometasone, Mycidac-C, Necitumumab, neratinib, Nilotinib, niraparib, Nivolumab, ofatu-mumab, obinutuzumab, olaparib, Olmesartan, Olmesartan/hydrochlorothiazide, Omalizumab, Omega-3 fatty acid ethyl esters, Oncorine, Oseltamivir, Osimertinib, Oxycodone, palbociclib, Palivizumab, panitumumab, panobinostat, pazopanib, pembrolizumab, PD-1 antibody, PD-L1 antibody, Pemetrexed, pertuzumab, Pneumococcal conjugate vaccine, pomalidomide, Pregabalin, Proscavax, Propranolol, Quetiapine, Rabeprazole, radium 223 chloride, Raloxifene, Raltegravir, ramucirumab,

Ranibizumab, regorafenib, ribociclib, Rituximab, Rivaroxaban, romidepsin, Rosuvastatin, ruxolitinib phosphate, Sal-butamol, savolitinib, semaglutide, Sevelamer, Sildenafil, siltuximab, Sipuleucel-T, Sitagliptin, Sitagliptin/metformin, Solifenacin, solanezumab, Sonidegib, Sorafenib, Sunitinib, tacrolimus, tacrimus, Tadalafil, tamoxifen, Tafinlar, Talimogene laherparepvec, talazoparib, Telaprevir, talazoparib, Te-mozolomide, temsirolimus, Tenofovir/emtricitabine, tenofovir disoproxil fumarate, Testosterone gel, Thalidomide, TICE BCG, Tiotropium bromide, Tisagenlecleucel, toremifene, trametinib, Trastuzumab, Trabectedin (~~ecteinascidin 743~~), trametinib, tremelimumab, Trifluridine/tipiracil, Tretinoin, Uro-BCG, Ustekinumab, Valsartan, veliparib, vandetanib, vemurafenib, venetoclax, vorinostat, ziv-aflibercept, Zostavax, ~~and their analogs, derivatives, or~~ pharmaceutically acceptable salts, ~~carriers, diluents, or excipients~~ thereof, or any combination ~~above~~ thereof.