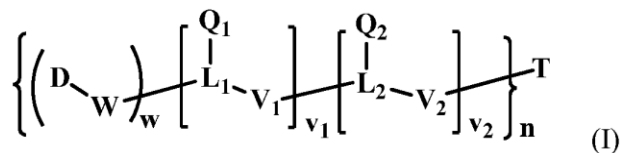


CLAIMS

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 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 fragment that binds to the target cell, protein, or an albumin-attached molecule;

L₁ and L₂ are the same or different and are independently O, NH, N, S, P, NNH, NHNH, N(R₁₂), N(R₁₂)N(R₁₂'), CH, CO, C(O)NH, C(O)O, NHC(O)NH, NHC(O)O, or (Aa)_r, wherein r=1 (one amino acid unit), which is a natural or unnatural amino acid;

W is a stretcher unit having C₁-C₈, comprising 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 comprising O, NH, S, C₁-C₈ alkyl, C₂-C₈ heteroalkyl, C₃-C₈ aryl, heterocyclic, cycloalkyl, 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 0-100; 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

Ar, ;

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

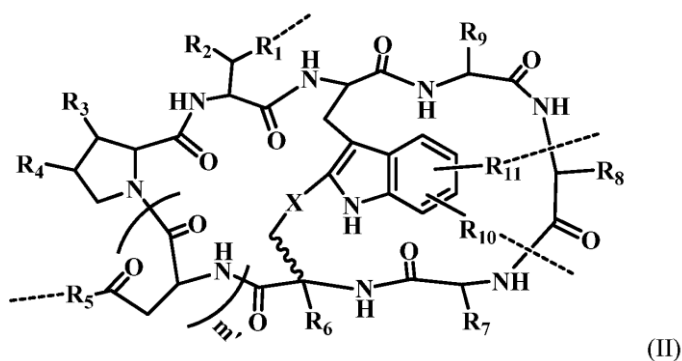
p₁, p₂ and p₃ are independently 0-100 but are not 0 at the same time;

q₁ and q₂ are independently 0-24;

a C₂-C₁₀₀ polycarboxylic acid; a C₂-C₁₀₀ polyalkylamine; a C₆-C₁₀₀ oligosaccharide or polysaccharide; a C₆-C₁₀₀ zwitterionic betaine or zwitterionic poly(sulfobetaine) (PSB) that consists of a quaternary ammonium cation and a sulfonate anion; a C₆-C₁₀₀ 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)-conjugated peptides, poly(ethylene glycol)-containing an amino acid or peptides, poly(ethylene glycol)-conjugated lipids, poly(ethylene glycol)-conjugated alkylcarboxylic acid, poly(ethylene glycol)-conjugated alkylamine, poly(lactide-co-glycolide, hyaluronic acid (HA) (glycosaminoglycan), heparin/heparan sulfate (HSGAGs), chondroitin sulfate/dermatan sulfate (CSGAGs), poly(ethylene glycol)-conjugated alkylsulfate, poly(ethylene glycol)-conjugated alkylphosphate, or poly(ethylene glycol)-conjugated alkyl quaternary ammonium;

alternatively, any one or more of W, Q₁, Q₂, L₁, L₂, V₁, or V₂, can be independently absent but Q₁, and Q₂ 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 an optical isomer, racemate, diastereomer or enantiomer thereof,

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

a single bond on aromatic 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 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 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 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 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<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub> are independently 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, heterocyclic, or carbocyclic;

R<sub>10</sub> and R<sub>11</sub> are independently 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>3</sub>~C<sub>8</sub> aryl, heterocyclic; -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>'

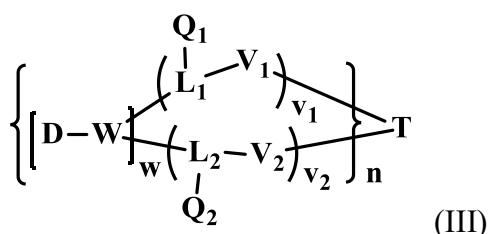
(amine),  $-\text{NHR}_{12}\text{NHR}_{12}'\text{NHR}_{12}''$  (amine);  $-\text{R}_{12}\text{NCO}-\text{NR}_{12}'$  (urea),  $-\text{R}_{12}\text{NCOOR}_{12}'$  (carbamate),  $-\text{OCONR}_{12}\text{R}_{12}'$  (carbamate);  $-\text{NR}_{12}(\text{C}=\text{NH})\text{NR}_{12}'\text{R}_{12}''$  (guanidinium);  $-\text{R}_{12}\text{NHCO}(\text{Aa})_p$ ,  $-\text{R}_{12}\text{NHR}_{12}'\text{CO}(\text{Aa})_p$ ,  $-\text{NR}_{12}\text{CO}(\text{Aa})_p$ , (an amino acid or peptide, wherein Aa is an amino acid or a polypeptide, p represents 0-6);  $-\text{N}(\text{R}_{12})\text{CONR}_{12}'\text{R}_{12}''$  (urea);  $-\text{OCSNHR}_{12}$  (thio-carbamate);  $-\text{R}_{12}\text{SH}$  (thiol);  $-\text{R}_{12}\text{SR}_{12}'$  (sulfide);  $-\text{R}_{12}\text{SSR}_{12}'$  (disulfide);  $-\text{S}(\text{O})\text{R}_{12}$  (sulfoxide);  $-\text{S}(\text{O}_2)\text{R}_{12}$  (sulfone);  $-\text{SO}_3$ ,  $\text{HSO}_3$ ,  $\text{HSO}_2$ , or a salt of  $\text{HSO}_3^-$ ,  $\text{SO}_3^{2-}$  or  $-\text{HSO}_2^-$  (sulphite);  $-\text{OSO}_3^-$ ;  $-\text{N}(\text{R}_{12})\text{SOOR}_{12}'$  (sulfonamide);  $-\text{N}(\text{R}_{12})\text{OR}_{12}'$ ;  $\text{R}_{12}\text{C}(=\text{O})\text{NOH}$  or a salt formed with a cation (hydroxamic acid);  $(\text{HOCH}_2\text{SO}_2^-)$ , or its salts (formaldehyde sulfoxylate);  $-\text{N}(\text{R}_{12})\text{COR}_{12}'$  (amide);  $\text{R}_{12}\text{R}_{12}'\text{R}_{12}''\text{NPO}_3\text{H}$  (trialkylphosphoramidate or phosphoramidic acid);  $\text{OP}(\text{O})(\text{OM}_1)(\text{OM}_2)$ ,  $\text{OCH}_2\text{OP}(\text{O})(\text{OM}_1)(\text{OM}_2)$ ,  $\text{OSO}_3\text{M}_1$ ; O-glycoside (glucoside, galactoside, mannoside, glucuronoside, alloside, fructoside), NH-glycoside, S-glycoside or  $\text{CH}_2$ -glycoside;  $\text{M}_1$  and  $\text{M}_2$  are independently H, Na, K, Ca, Mg,  $\text{NH}_4$ ,  $\text{NR}_1'$ ,  $\text{R}_2'$  or  $\text{R}_3'$ ; wherein  $\text{R}_1'$ ,  $\text{R}_2'$  and  $\text{R}_3'$  are independently H,  $\text{C}_1\sim 8$  alkyl; Ar, Ar', and Ar'' are  $\text{C}_3\text{-C}_8$  aryl or heteroaromatic group;

wherein  $\text{R}_{12}$ ,  $\text{R}_{12}'$ , and  $\text{R}_{12}''$  are independently H,  $\text{C}_1\sim \text{C}_8$  alkyl; or 1-8 carbon atoms of esters, ether, or amide; or polyethyleneoxy unit of formula  $(\text{OCH}_2\text{CH}_2)_p$  or  $(\text{OCH}_2\text{CH}(\text{CH}_3))_p$ , wherein p is an integer from 0 to 100;

X is S, O, NH, or  $\text{CH}_2$ ;

$m'$  is 0 or 1.

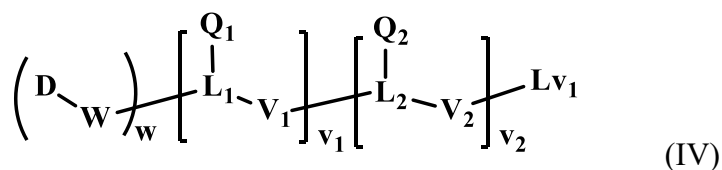
2. A side chain-linkaged conjugate compound of the Formula (III):



wherein D, W, w,  $\text{L}_1$ ,  $\text{L}_2$ ,  $\text{Q}_1$ ,  $\text{Q}_2$ ,  $\text{V}_1$ ,  $\text{V}_2$ ,  $v_1$ ,  $v_2$ , n, and T are as defined in claim 1.

3. A side chain-linkage compound of Formula (IV), which can readily react to a cell-binding

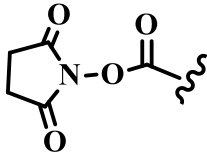
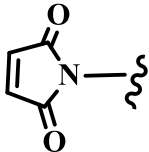
molecule T to form a conjugate of Formula (I) as defined in claim 1:

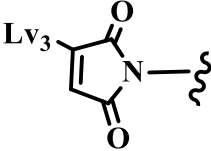
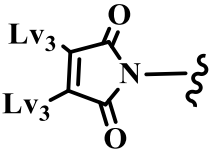


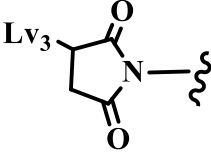
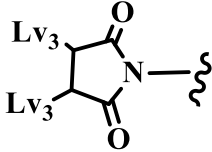
wherein D, W, w, L<sub>1</sub>, L<sub>2</sub>, Q<sub>1</sub>, Q<sub>2</sub>, V<sub>1</sub>, V<sub>2</sub>, v<sub>1</sub>, v<sub>2</sub>, and n are as defined in claim 1;

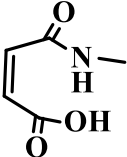
Lv<sub>1</sub> is a reacting group that can be reacted with a thiol, amine, carboxylic acid, selenol, phenol or hydroxyl group on a cell-binding molecule, wherein Lv<sub>1</sub> is OH; F; Cl; Br; I; nitrophenol; N-hydroxysuccinimide (NHS); phenol; dinitrophenol; pentafluorophenol; tetrafluorophenol; 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 acetyl anhydride or

formyl anhydride;  $\text{R}_3\text{---S---S---}\zeta$  disulfide;  $\text{X}'_1\text{---CH}_2\text{---C(=O)---X}'_2\text{---}\zeta$  haloacetyl;  $\text{X}'_1\text{---C(=O)---}\zeta$  acyl

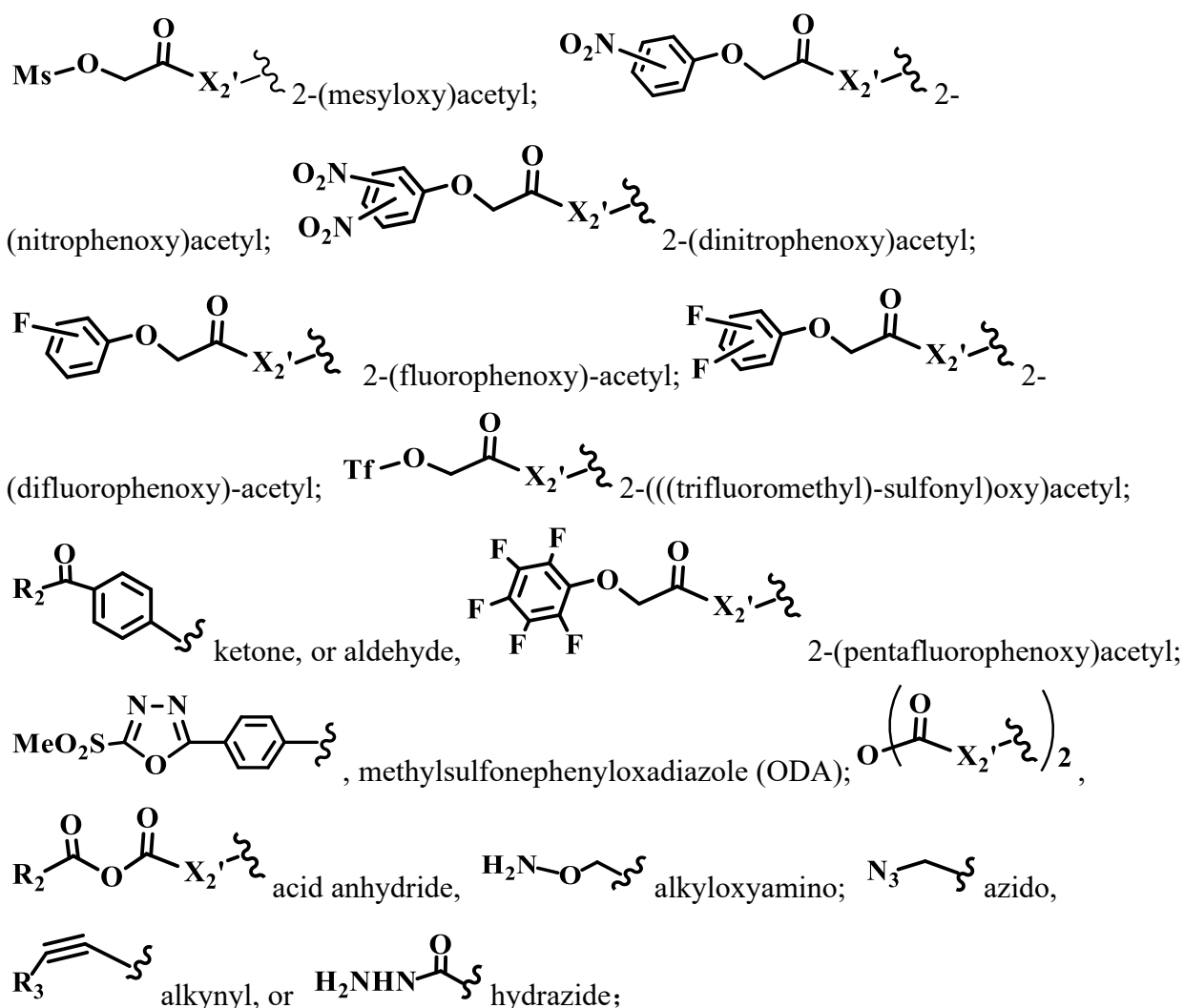
halide (acid halide);  N-hydroxysuccinimide ester;  maleimide;

 monosubstituted maleimide;  disubstituted maleimide;

 monosubstituted succinimide;  disubstituted succinimide;

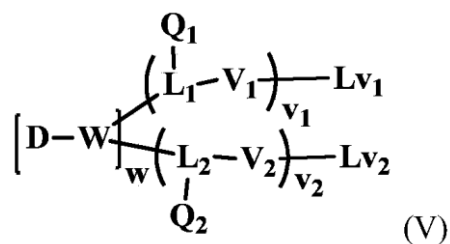
 substituted maleic acid; -CHO aldehyde;  $\text{=C---S(=O)}_2\text{---X}'_2\text{---}\zeta$  ethenesulfonyl;

$\text{=C---C(=O)---X}'_2\text{---}\zeta$  acryl (acryloyl);  $\text{Ts---O---CH}_2\text{---C(=O)---X}'_2\text{---}\zeta$  2-(tosyloxy)acetyl;



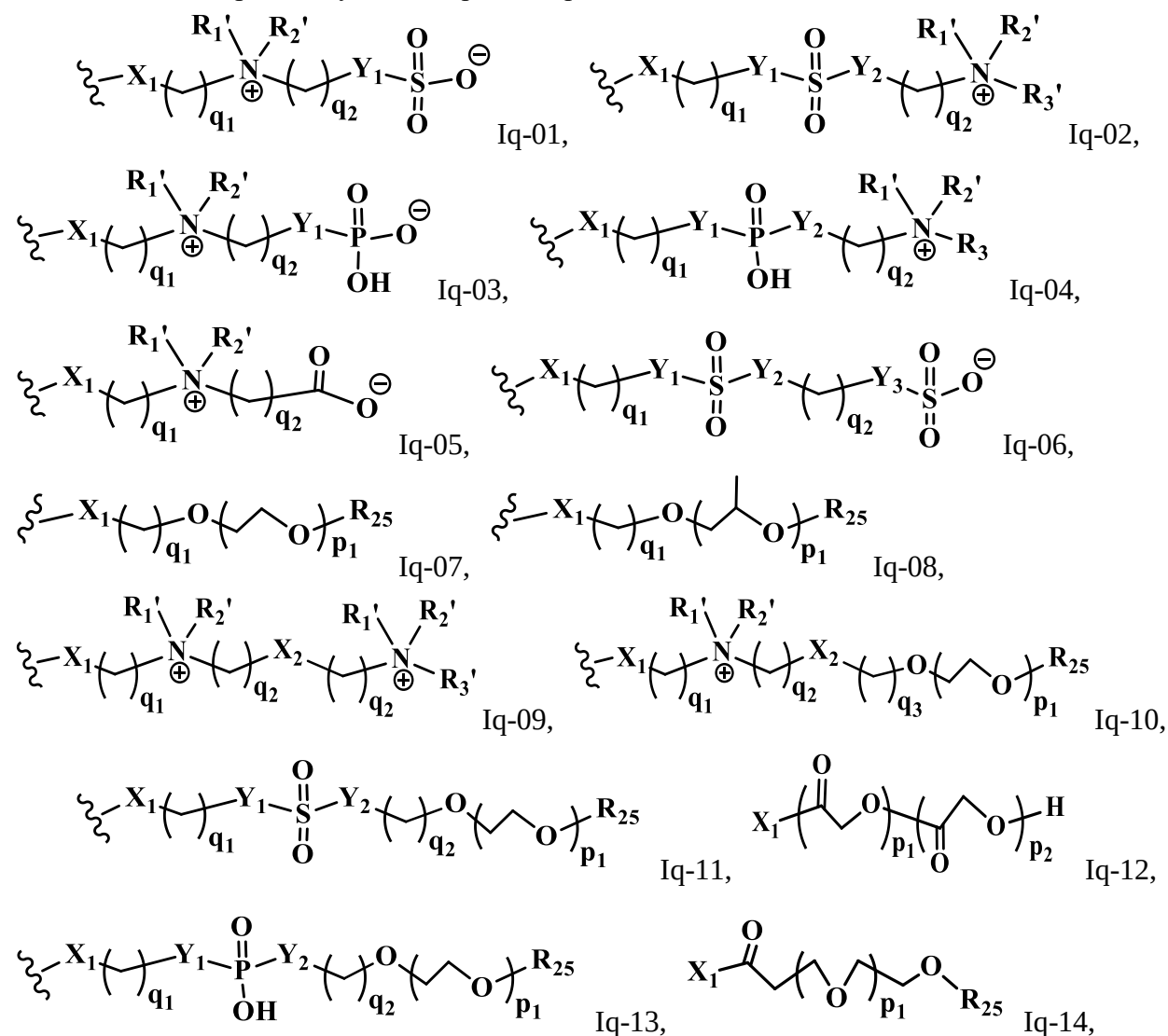
wherein  $\text{X}_1'$  is F, Cl, Br, I or  $\text{Lv}_3$ ;  $\text{X}_2'$  is O, NH,  $\text{N}(\text{R}_1)$ , or  $\text{CH}_2$ ;  $\text{R}_3$  is independently H, aromatic, heteroaromatic, or aromatic group wherein one or several H atoms are replaced independently by  $-\text{R}_1$ , -halogen,  $-\text{OR}_1$ ,  $-\text{SR}_1$ ,  $-\text{NR}_1\text{R}_2$ ,  $-\text{NO}_2$ ,  $-\text{S}(\text{O})\text{R}_1$ ,  $-\text{S}(\text{O})_2\text{R}_1$ , or  $-\text{COOR}_1$ ;  $\text{Lv}_3$  is a leaving group 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 acetyl anhydride or formyl anhydride; or an intermediate 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:

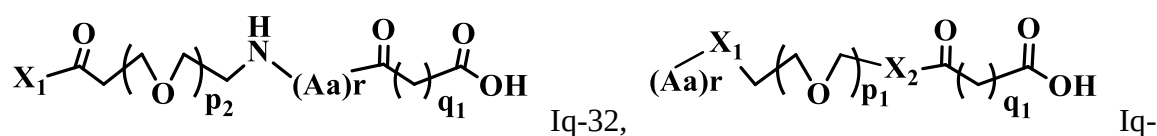


wherein D, W, w, L<sub>1</sub>, L<sub>2</sub>, Q<sub>1</sub>, Q<sub>2</sub>, V<sub>1</sub>, V<sub>2</sub>, v<sub>1</sub>, v<sub>2</sub>, and n, are as defined in claim 1; wherein Lv<sub>1</sub> and Lv<sub>2</sub> have independently the same definition of Lv<sub>1</sub> in Formula (IV) of claim 3 and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

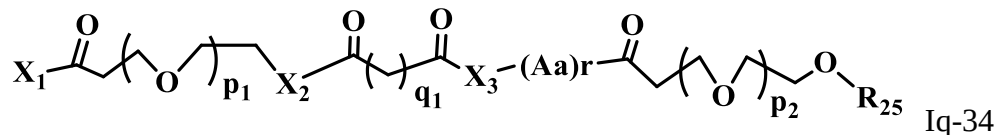
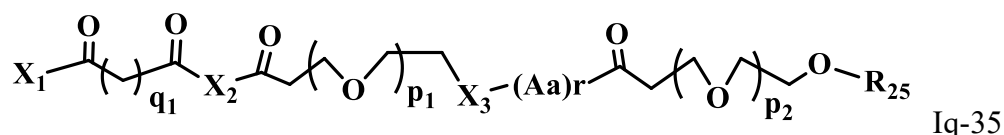
5. A side chain-linkage compound according to any one of claims 1 to 4, wherein the side chains Q<sub>1</sub> and Q<sub>2</sub> are independently one of Iq-01 to Iq-35:





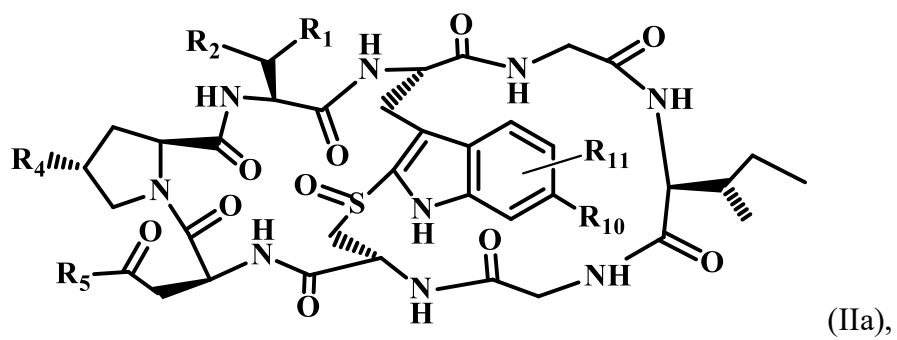
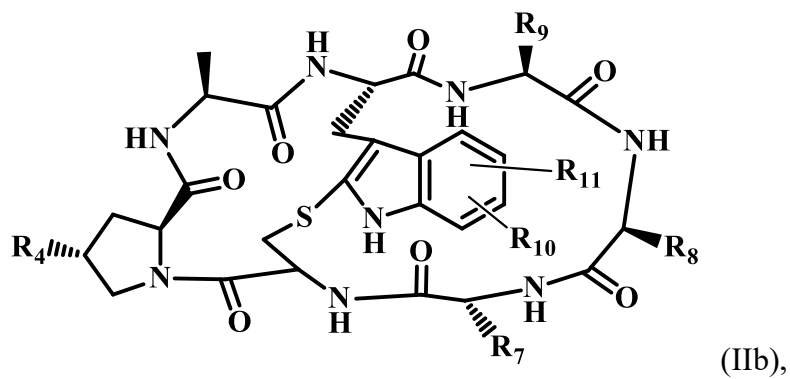
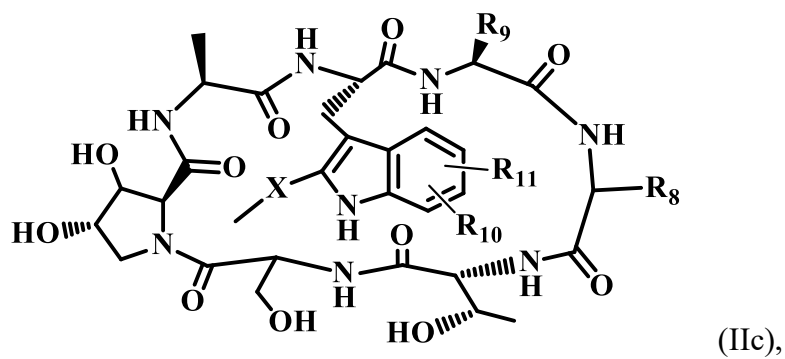
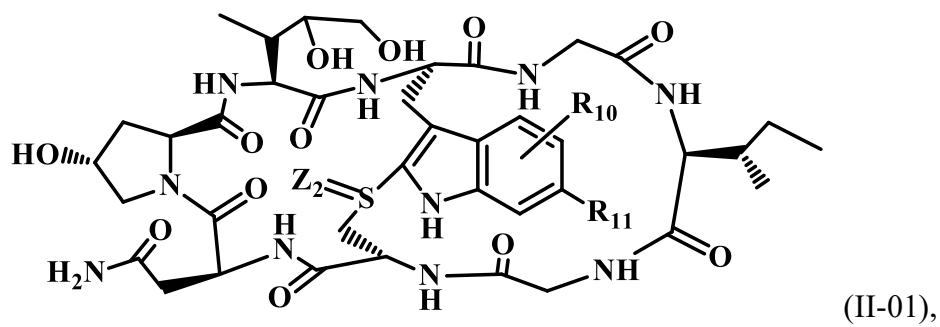
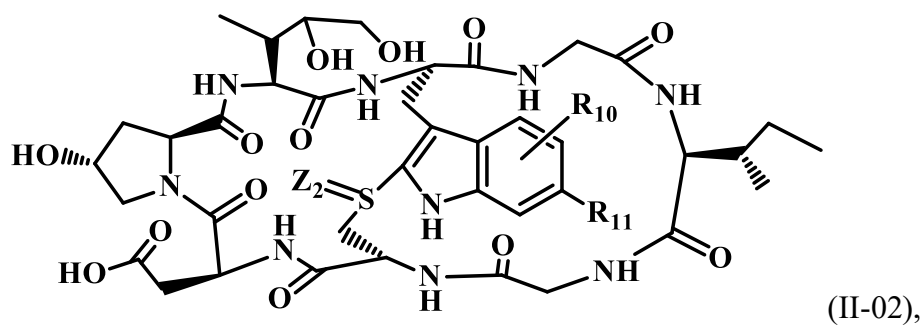


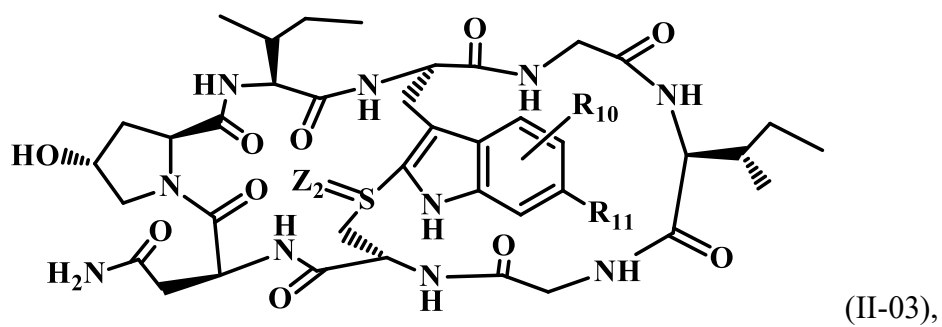
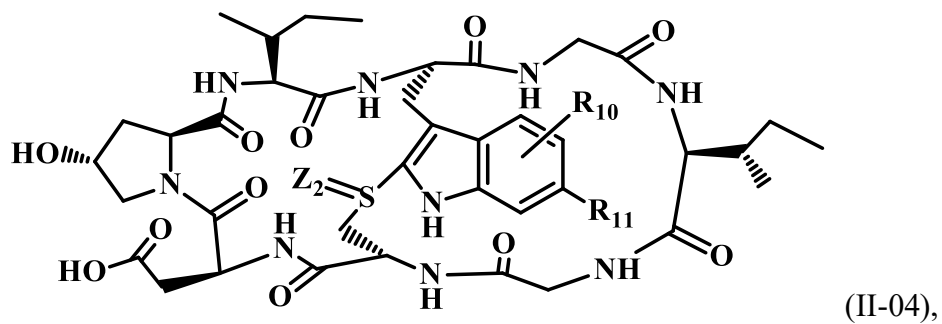
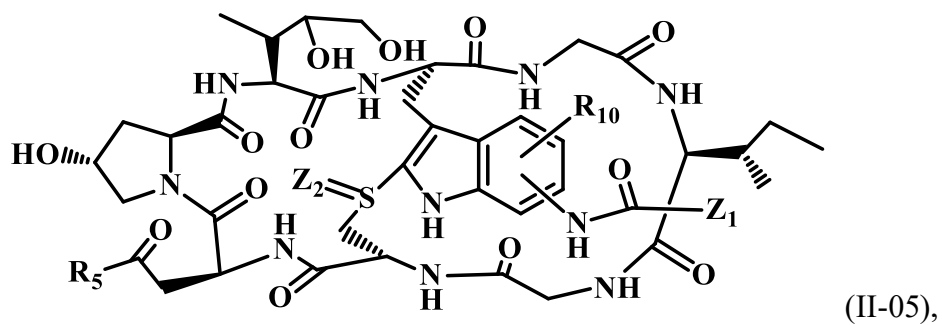
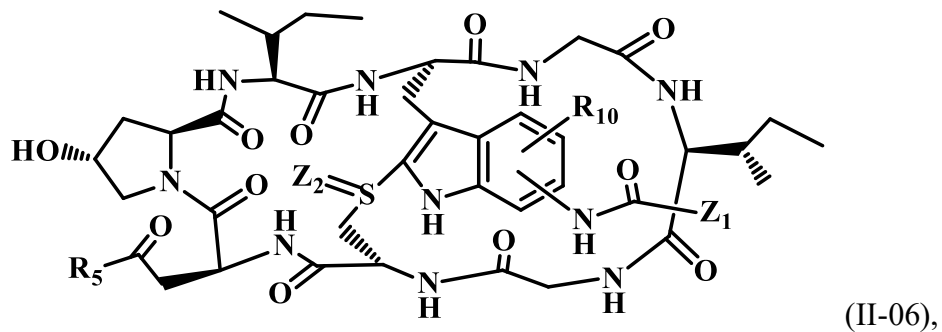
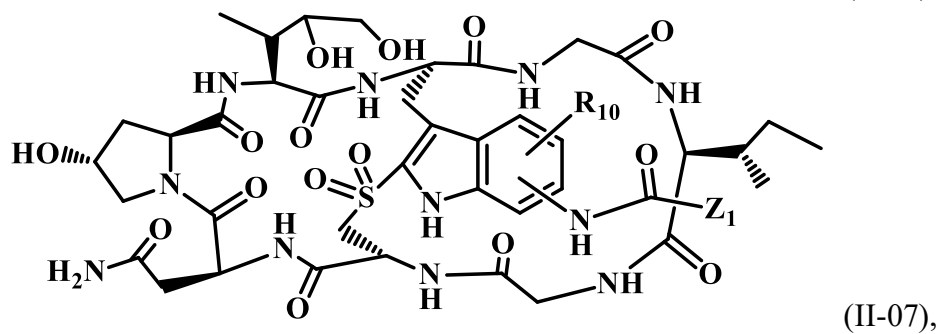
33,

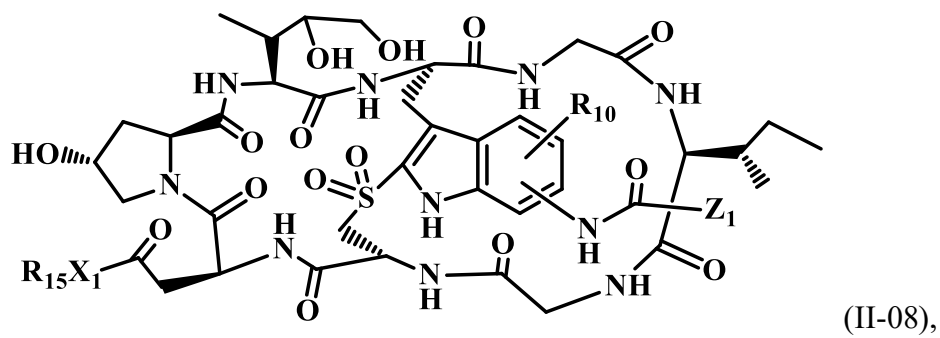
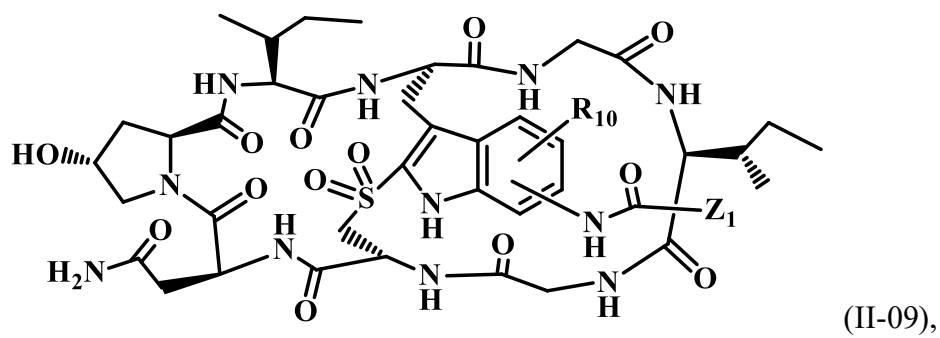
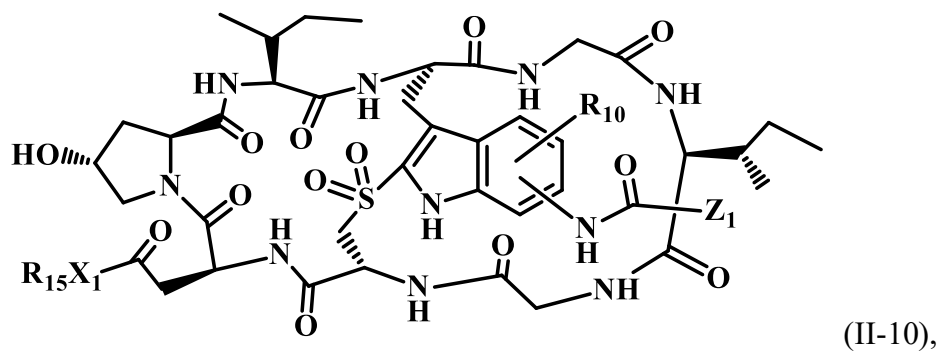
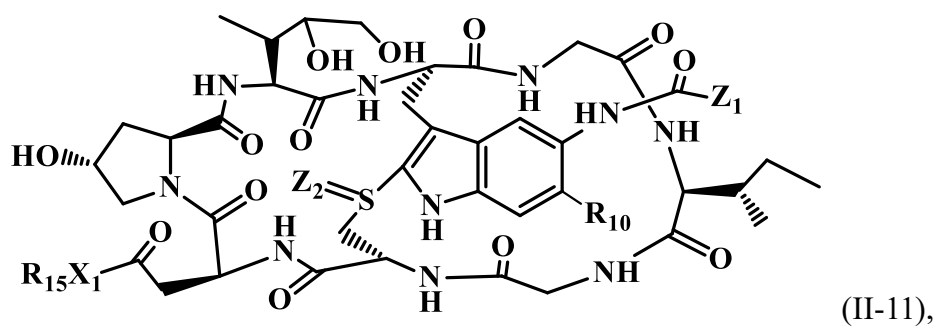
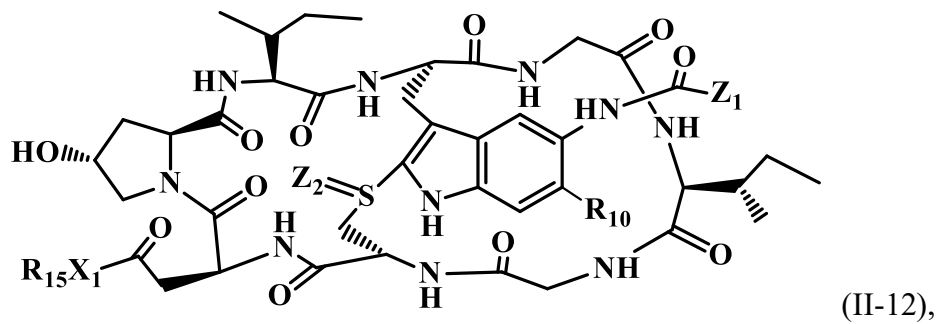


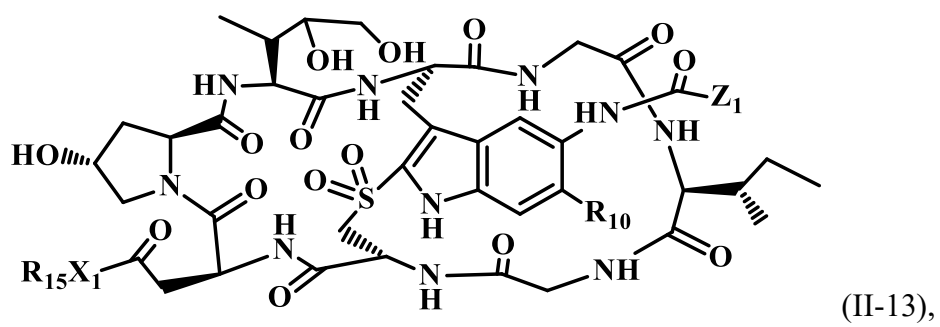
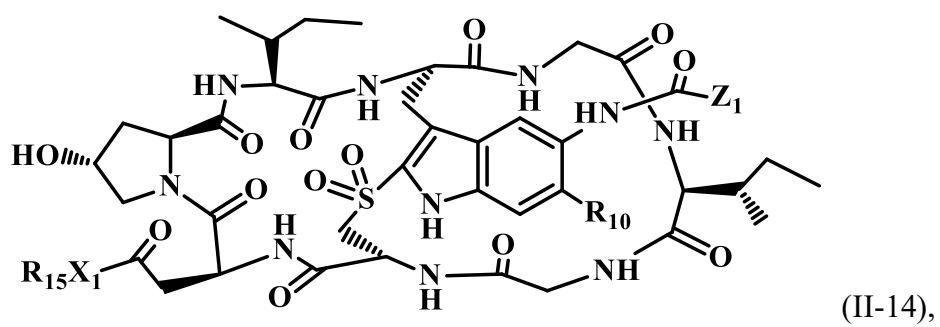
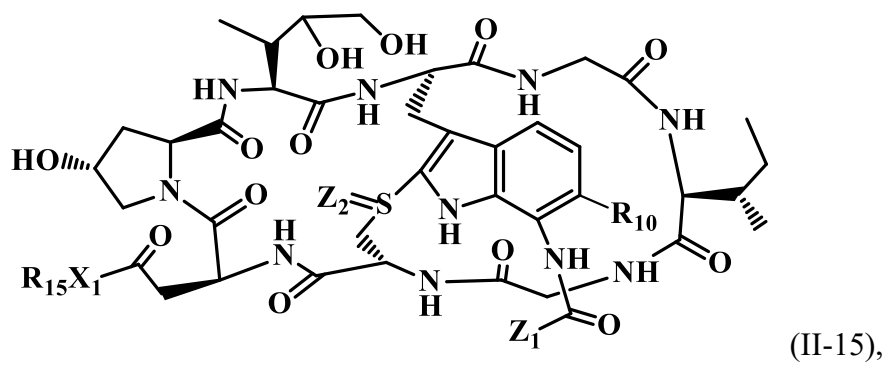
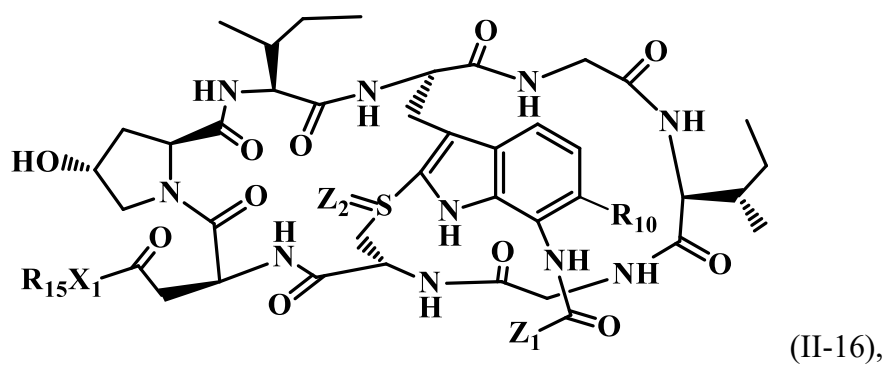
wherein  $\text{R}_{25}$  and  $\text{R}_{25}'$  are independently H;  $\text{HC(O)}$ ,  $\text{CH}_3\text{C(O)}$ ,  $\text{CH}_3\text{C(NH)}$ ,  $\text{NH-(C}_1\text{-C}_{18}\text{)alkyl}$ ,  $\text{C(O)NH-(C}_1\text{-C}_{18}\text{)alkyl}$ ,  $\text{C(O)-(C}_1\text{-C}_{18}\text{)alkyl}$ ,  $\text{C}_1\text{-C}_{18}\text{alkyl}$ ,  $\text{C}_1\text{-C}_{18}$  alkyl,  $\text{alkyl-Y}_1\text{-SO}_3\text{H}$ ,  $\text{C}_1\text{-C}_{18}\text{alkyl-Y}_1\text{-PO}_3\text{H}_2$ ,  $\text{C}_1\text{-C}_{18}\text{alkyl-Y}_1\text{-CO}_2\text{H}$ ,  $\text{C}_1\text{-C}_{18}\text{alkyl-Y}_1\text{-N}^+\text{R}_{12}\text{R}_{13}\text{R}_{13}'\text{R}_{14}$ ,  $\text{C}_1\text{-C}_{18}\text{alkyl-Y}_1\text{-CONH}_2$ ,  $\text{C}_2\text{-C}_{18}\text{alkylene}$ ,  $\text{C}_2\text{-C}_{18}$  ester,  $\text{C}_2\text{-C}_{18}$  ether,  $\text{C}_2\text{-C}_{18}$  amine,  $\text{C}_2\text{-C}_{18}$  alkyl carboxylamide,  $\text{C}_3\text{-C}_{18}$  aryl,  $\text{C}_3\text{-C}_{18}$  cyclic alkyl,  $\text{C}_3\text{-C}_{18}$  heterocyclic, a peptide of 1~24 amino acids;  $\text{C}_{18}$  lipid, a  $\text{C}_2\text{-C}_{18}$  fatty acid or a  $\text{C}_2\text{-C}_{18}$  fatty ammonium lipid;  $\text{X}_1$  and  $\text{X}_2$  are independently NH,  $\text{N(R}_{12}\text{'})$ , O,  $\text{CH}_2$ , S,  $\text{C(O)}$ ,  $\text{S(O)}$ ,  $\text{S(O)}_2$ ,  $\text{P(O)(OH)}$ ,  $\text{NHNH}$ ,  $\text{CH=CH}$ , Ar or  $(\text{Aa})_{q_1}$ ,  $q_1 = 0\text{-}24$  (0-24 amino acids,  $q_1=0$  means absent);  $\text{X}_1$ ,  $\text{X}_2$ ,  $\text{X}_3$ ,  $\text{X}_4$ ,  $\text{Y}_1$ ,  $\text{Y}_2$  and  $\text{Y}_3$  are independently NH,  $\text{N(R}_{12}\text{'})$ , O,  $\text{C(O)}$ ,  $\text{CH}_2$ , S,  $\text{S(O)}$ ,  $\text{NHNH}$ ,  $\text{C(O)}$ ,  $\text{OC(O)}$ ,  $\text{OC(O)O}$ ,  $\text{OC(O)NH}$ ,  $\text{NHC(O)NH}$ , Ar or  $(\text{Aa})_{q_1}$ ,  $\text{X}_1$ ,  $\text{X}_2$ ,  $\text{X}_3$ ,  $\text{X}_4$ ,  $\text{Y}_1$ ,  $\text{Y}_2$  and  $\text{Y}_3$  can be independently absent;  $p_1$ ,  $p_2$  and  $p_3$  are independently 0 -100 but are not 0 at the same time;  $q_1$ ,  $q_2$  and  $q_3$  are independently 0 -24;  $\text{R}_{12}$ ,  $\text{R}_{13}$ ,  $\text{R}_{13}'$  and  $\text{R}_{14}'$  are independently H or  $\text{C}_1\text{-C}_6$  alkyl; Aa is natural or unnatural amino acid; Ar or  $(\text{Aa})_{q_1}$ , is the same or different sequence of peptides;  $q_1=0$  means (Aa)  $q_1$  absent.

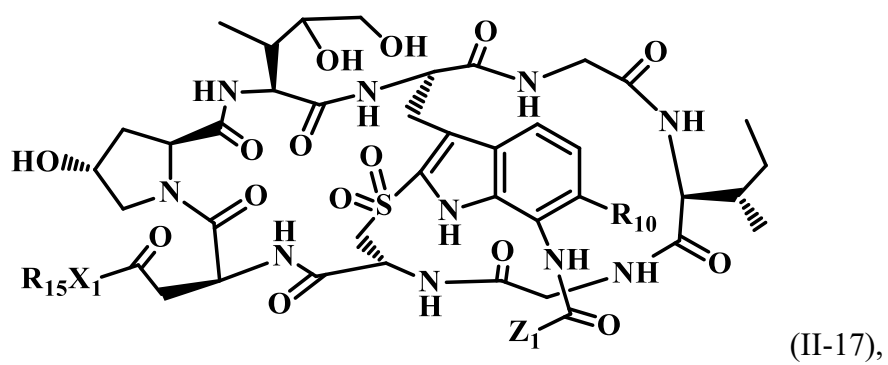
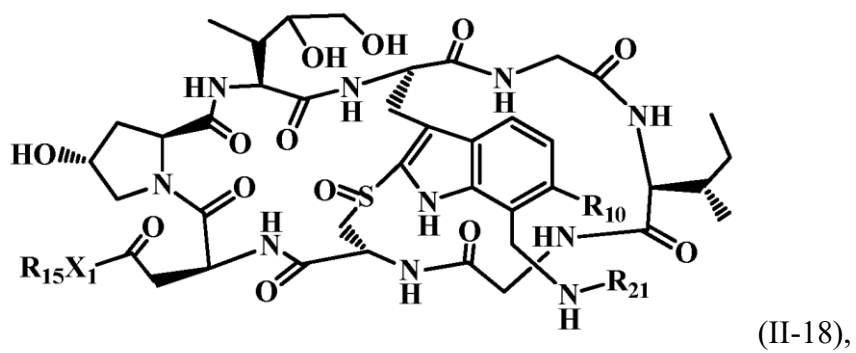
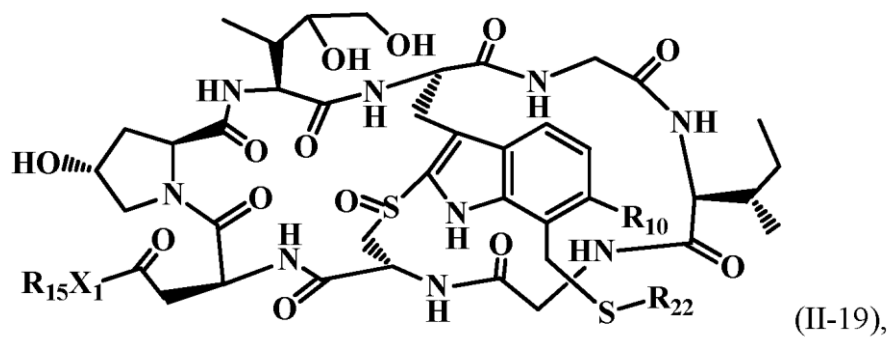
6. A side chain-linkage compound according to any one of claims 1 to 4, wherein D is IIa, IIb, IIc, II-01, II-02, II-03, II-04, II-05, II-06, II-07, II-08, II-09, II-10, II-11, II-12, II-13, II-14, II-15, II-16, II-17, II-18, II-19, II-20, II-21, II-22, II-23, II-24, II-25, or II-26:

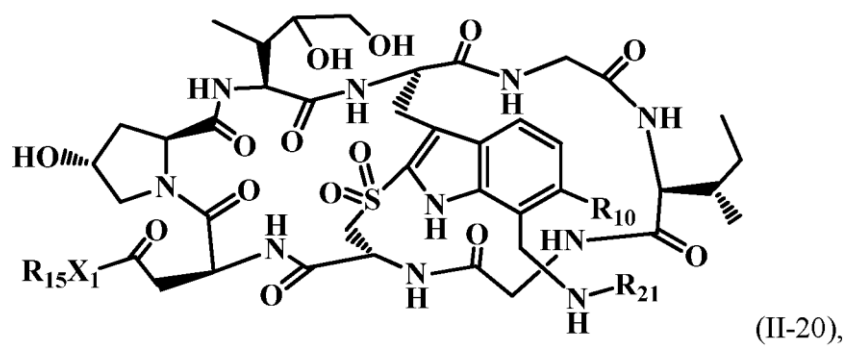
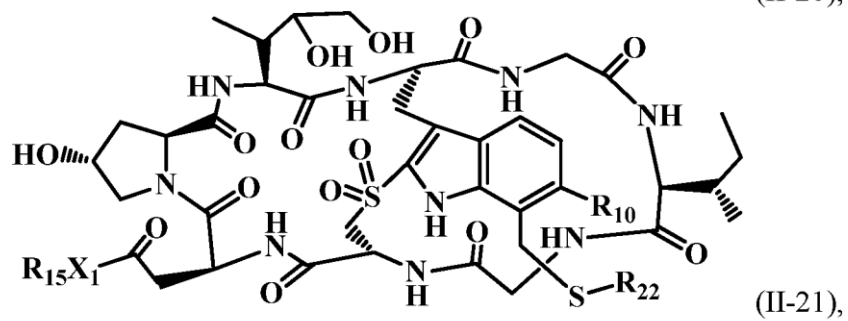
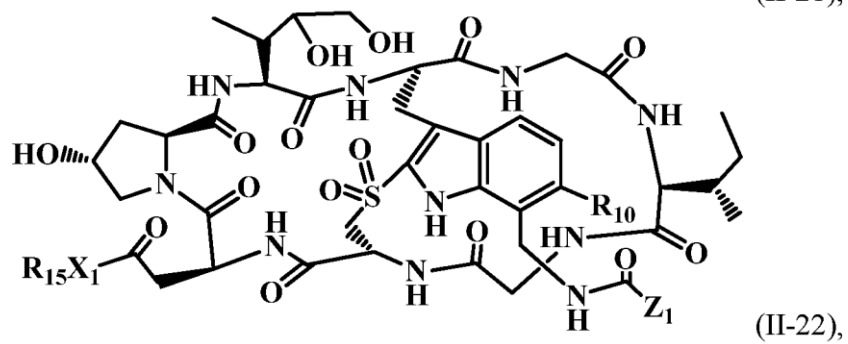
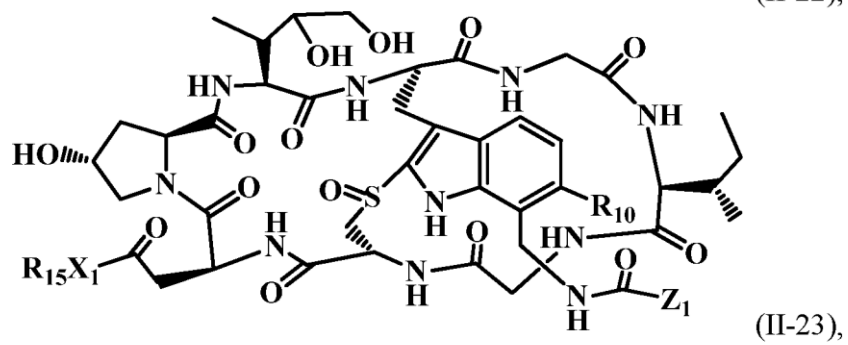
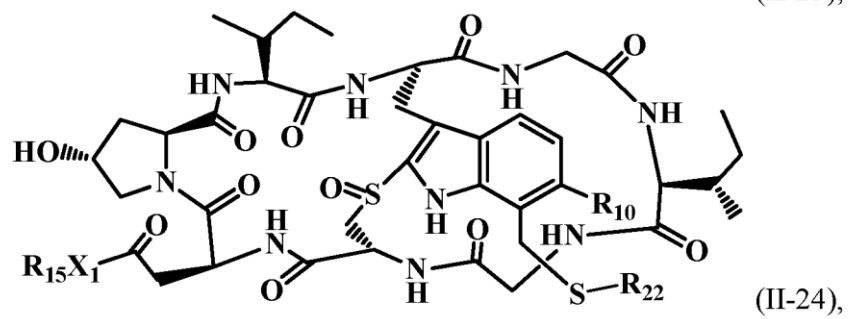


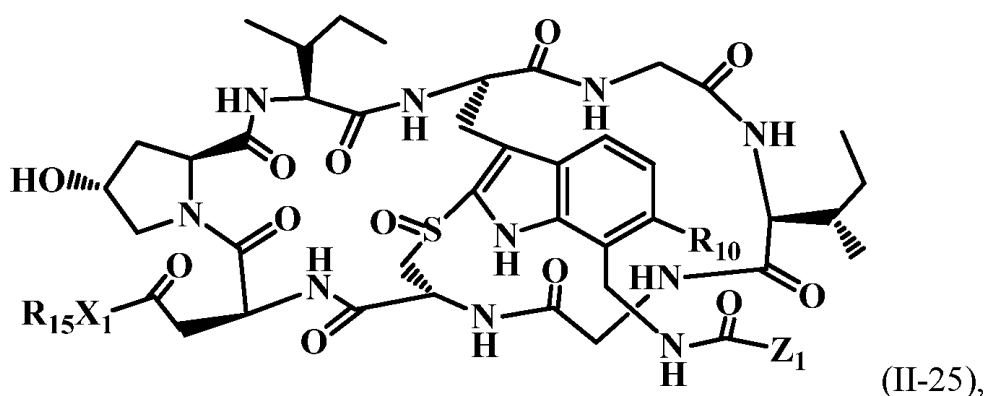
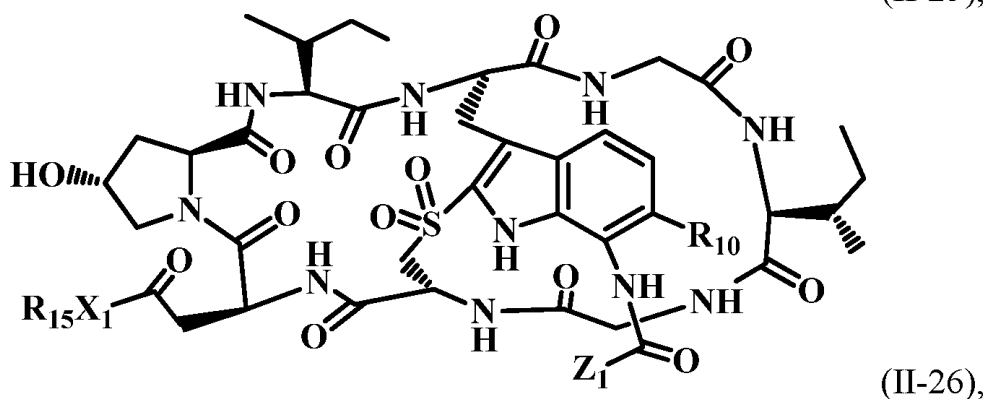








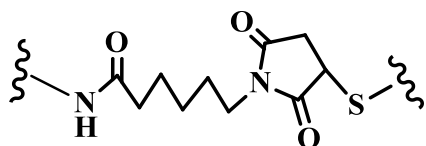




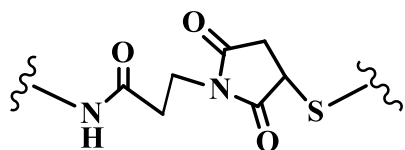
or

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<sub>2</sub>: is an oxygen or lone pair of electrons; R<sub>15</sub> is H; NHR<sub>12</sub>, OR<sub>12</sub>, C<sub>1</sub>-C<sub>8</sub> linear or branched alkyl or heteroalkyl; C<sub>2</sub>-C<sub>8</sub> linear or branched alkenyl, alkynyl, alkylcycloalkyl, heterocycloalkyl; C<sub>3</sub>-C<sub>8</sub> linear or branched aryl, Ar-alkyl, heterocyclic, carbocyclic, cycloalkyl, heteroalkylcycloalkyl, alkylcarbonyl, heteroaryl; carbonate -R<sub>1</sub>C(O)OR<sub>12</sub>, carbamate -R<sub>12</sub>C(O)NR<sub>12</sub>·R<sub>13</sub>; or C<sub>1</sub>-C<sub>8</sub> carboxylate, esters, ether, or amide; or a peptide of 1~8 amino acids; 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 1000; Z<sub>1</sub> is H, O, S, NH, NHNH, R<sub>12</sub>, or absent; R<sub>21</sub> is COR<sub>12</sub>, NHCOR<sub>12</sub>, COOR<sub>12</sub>, CONHR<sub>12</sub>, R<sub>12</sub>, R<sub>12</sub>NH; R<sub>22</sub> is R<sub>12</sub>, SR<sub>12</sub>, SCH(CH<sub>3</sub>)R<sub>12</sub>, SC(CH<sub>3</sub>)<sub>2</sub>R<sub>12</sub>, X is O, S, NH, NHNH, or CH<sub>2</sub>, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>12</sub>', R<sub>13</sub>, and X<sub>1</sub> are defined the same above.

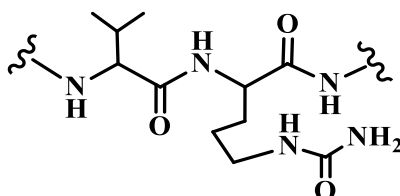
7. A side chain-linkage compound according to any one of claims 1 to 4, wherein W, L<sub>1</sub>, L<sub>2</sub>, V<sub>1</sub>, and V<sub>2</sub> independently comprise one or more linker components of the following structures:



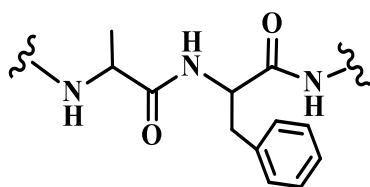
6-maleimidocaproyl (MC),



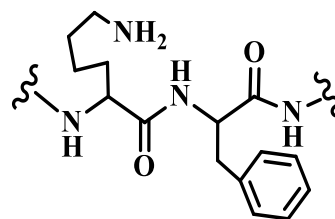
maleimido propanoyl (MP),



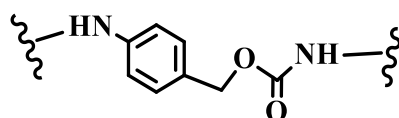
valine-citrulline (val-cit),



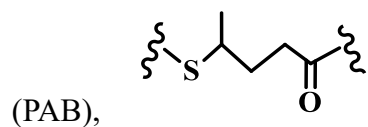
alanine-phenylalanine (ala-phe),



lysine-phenylalanine (lys-phe),

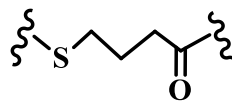


p-aminobenzyloxycarbonyl

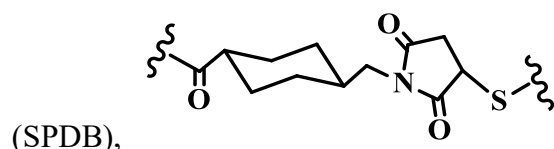


(PAB),

4-thio-pentanoate (SPP),

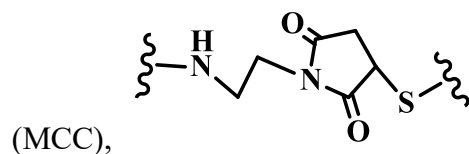


4-thio-butyrte



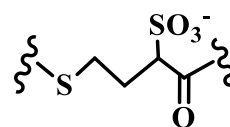
(SPDB),

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

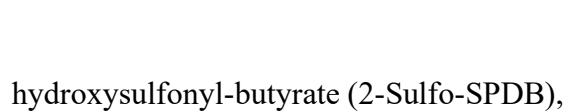


(MCC),

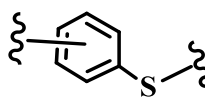
maleimidoethyl (ME),



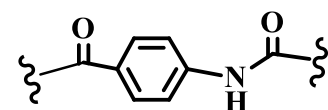
4-thio-2-



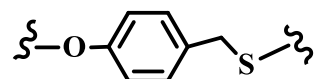
hydroxysulfonyl-butyrte (2-Sulfo-SPDB),



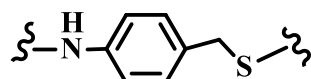
aryl-thiol (PySS),



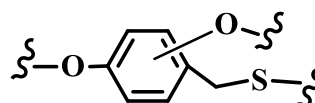
(4-acetyl)aminobenzoate (SIAB),

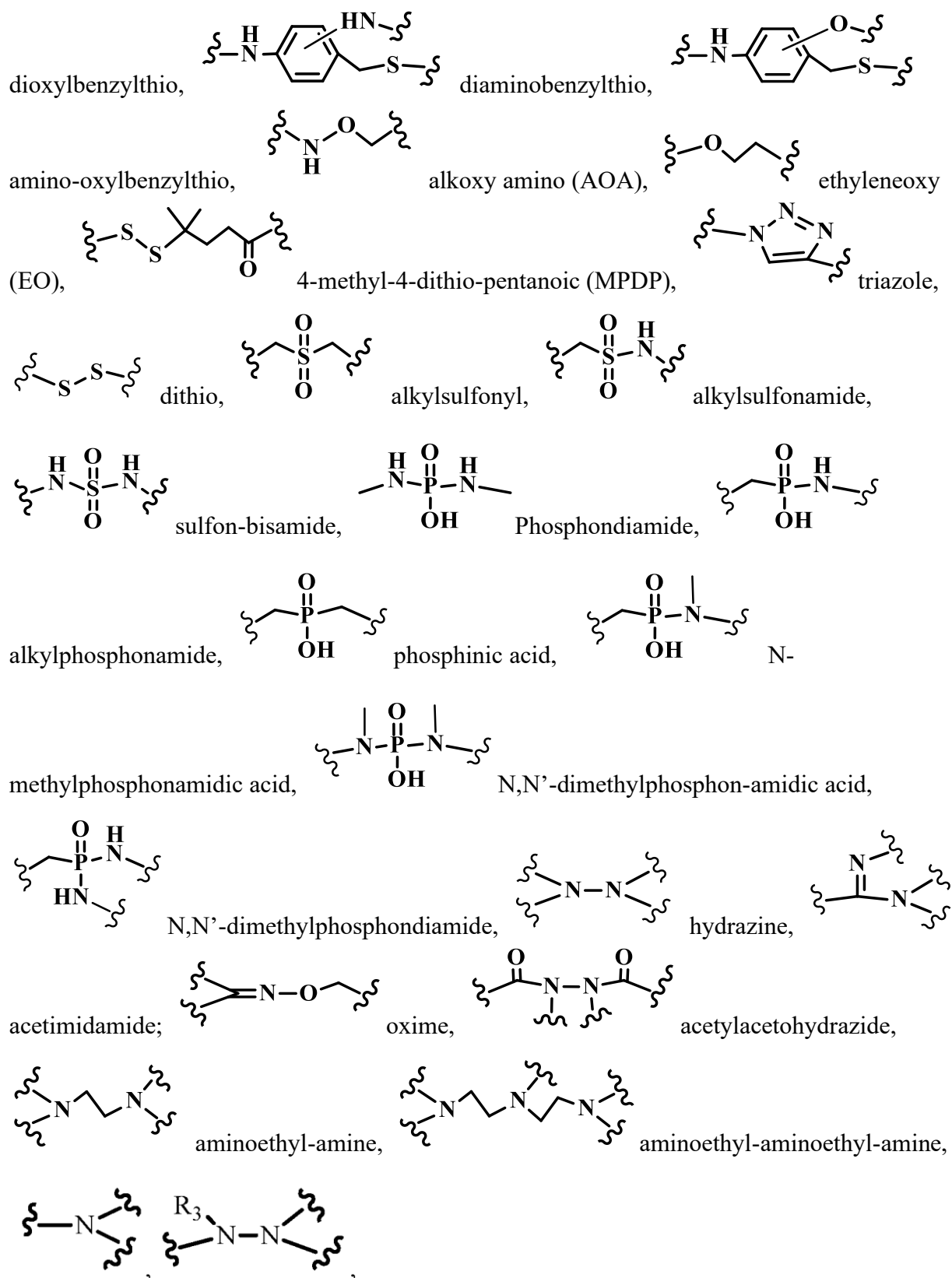


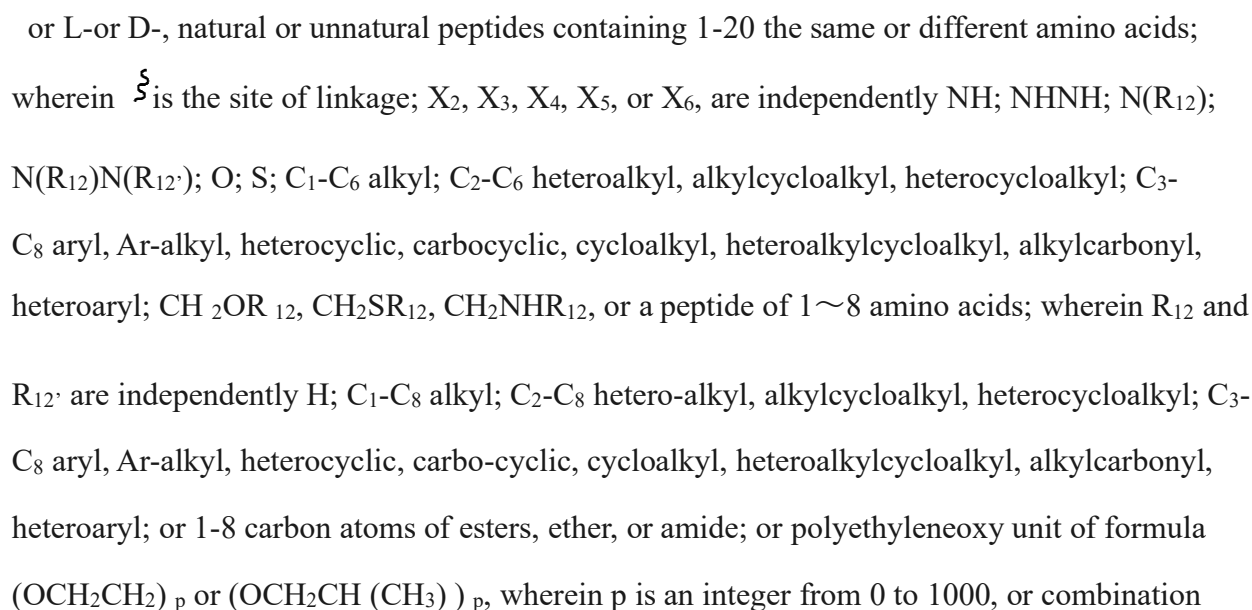
oxylbenzylthio,



aminobenzylthio,

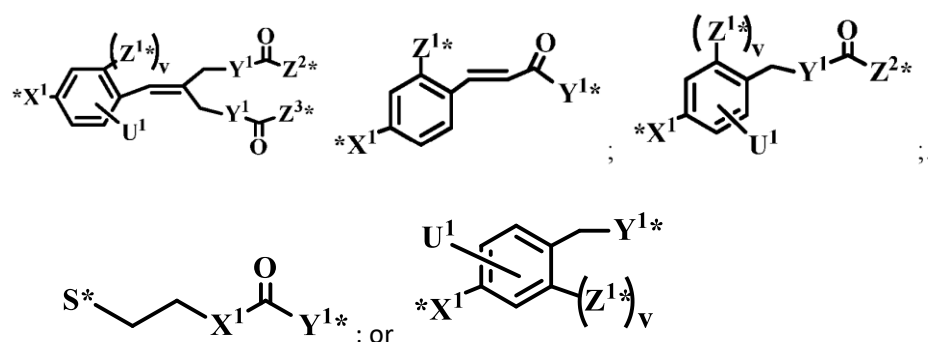






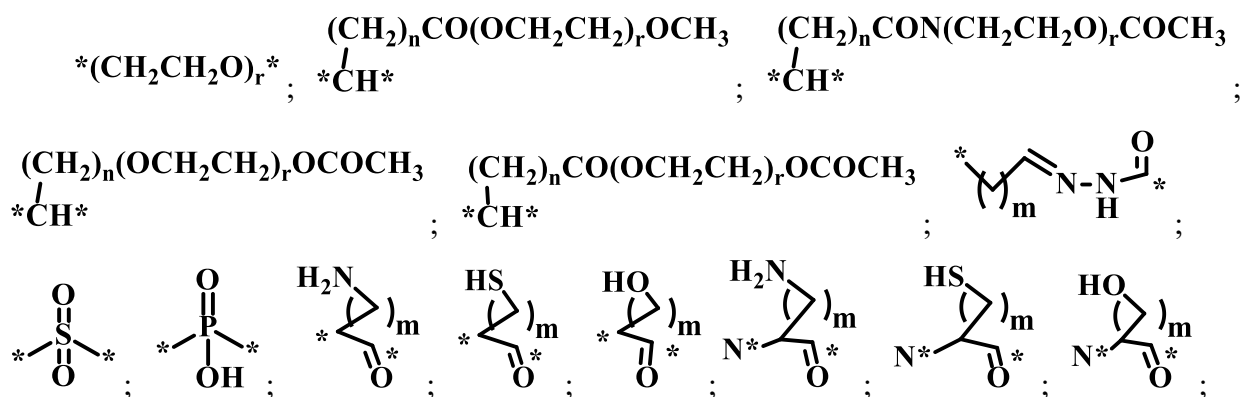
above thereof.

8. A side chain-linkage compound according to any one of claims 1 to 4, wherein W, L<sub>1</sub>, L<sub>2</sub>, V<sub>1</sub>, and V<sub>2</sub> independently 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 comprises para-aminobenzyl-carbamoyl (PAB) groups, beta-glucuronide, and ortho or para-aminobenzylacetals; or one of the following structures:

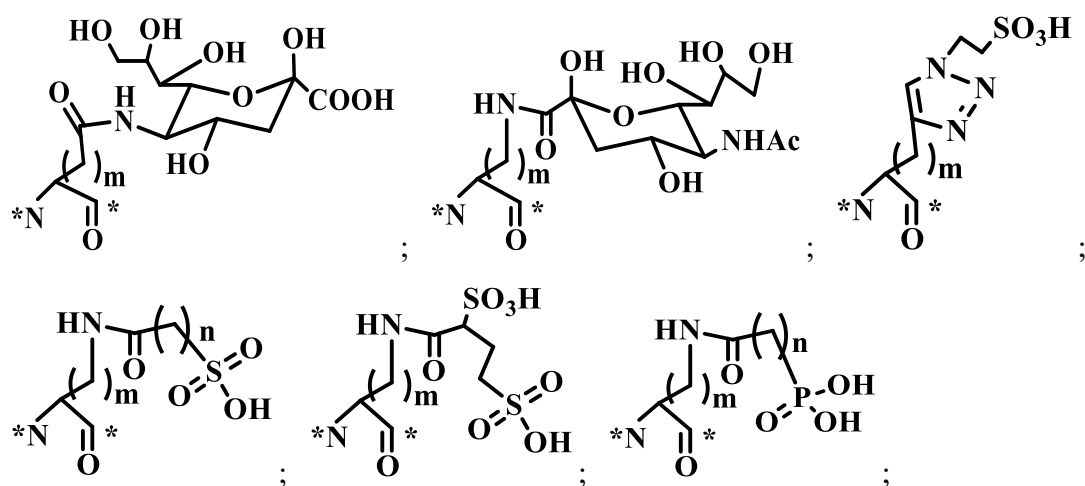


wherein the (\*) atom is the point of attachment of another component; X<sup>1</sup>, Y<sup>1</sup>, Z<sup>2</sup> and Z<sup>3</sup> are independently NH, O, or S; Z<sup>1</sup> is independently H, NHR<sub>1</sub>, OR<sub>1</sub>, SR<sub>1</sub>, COX<sub>1</sub>R<sub>1</sub>, wherein X<sub>1</sub> and 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 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:





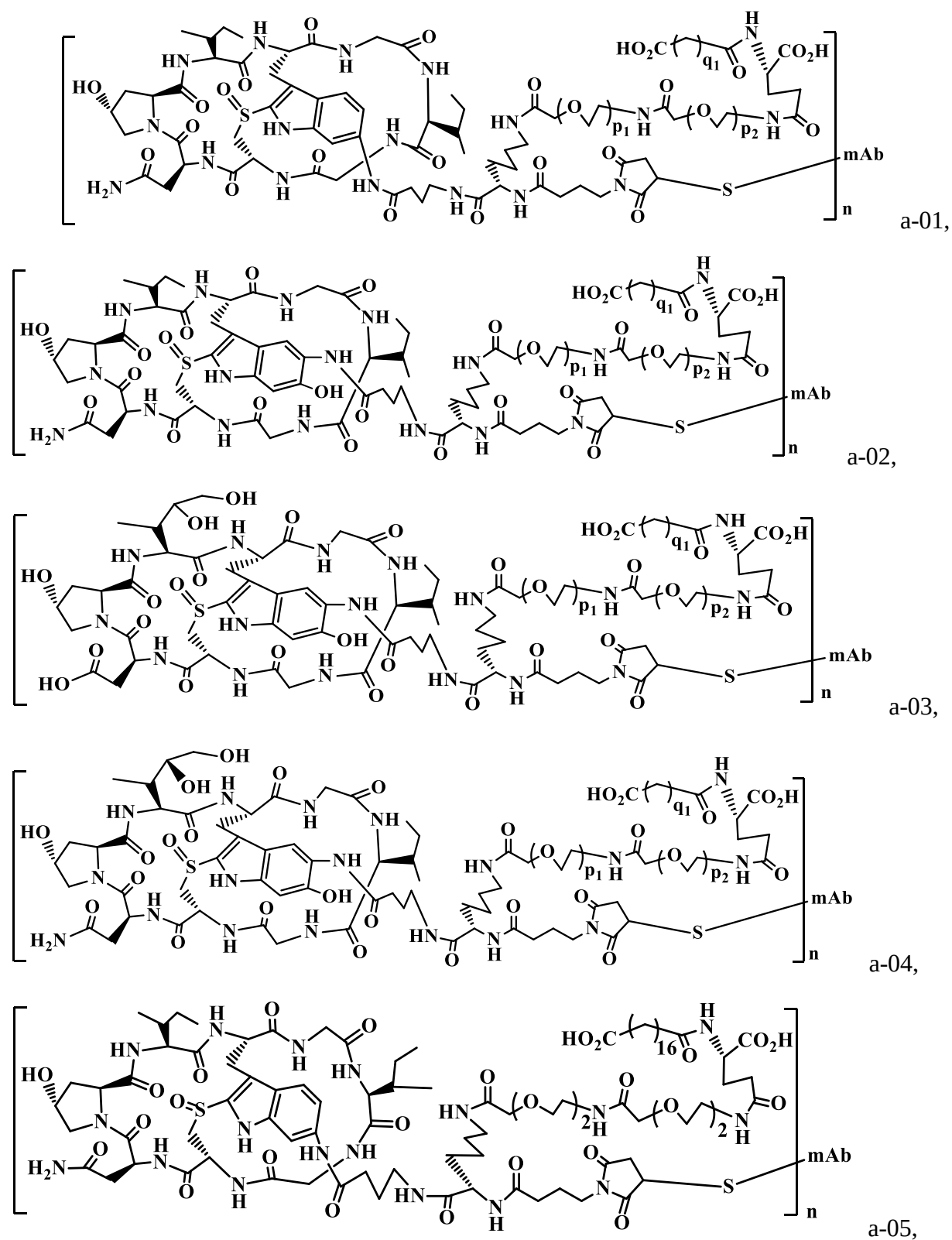


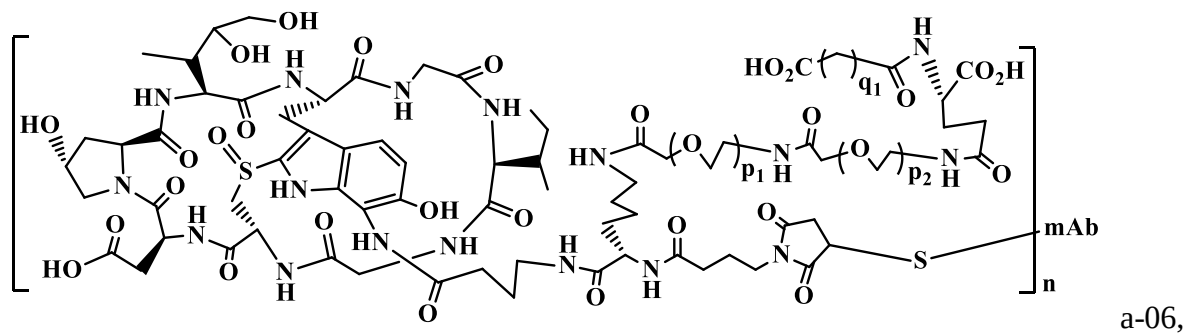
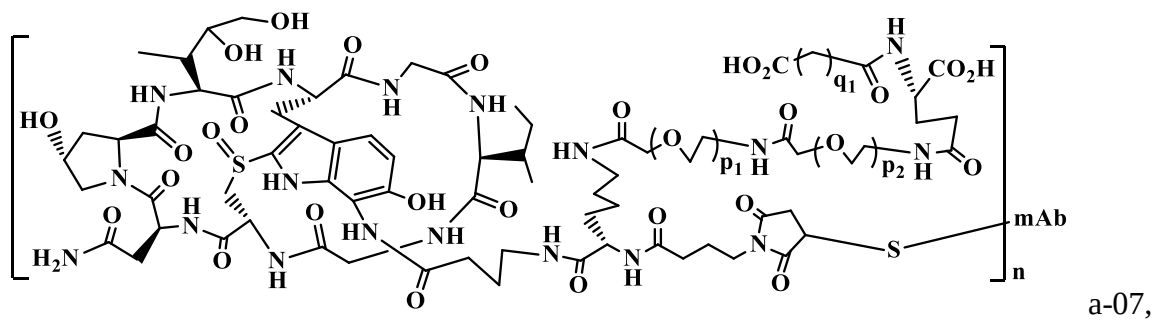
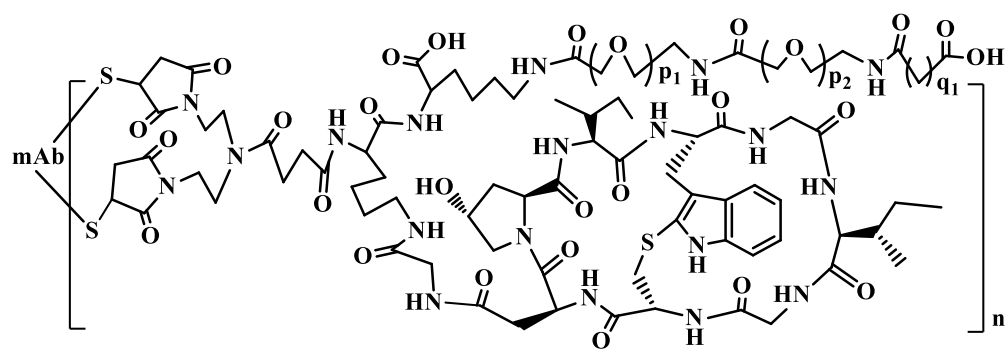
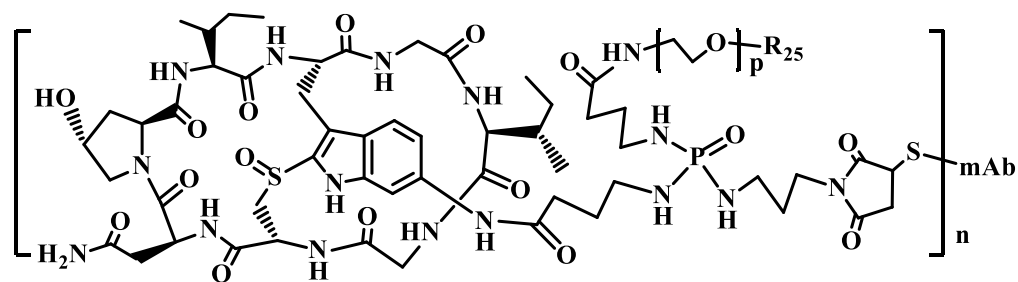
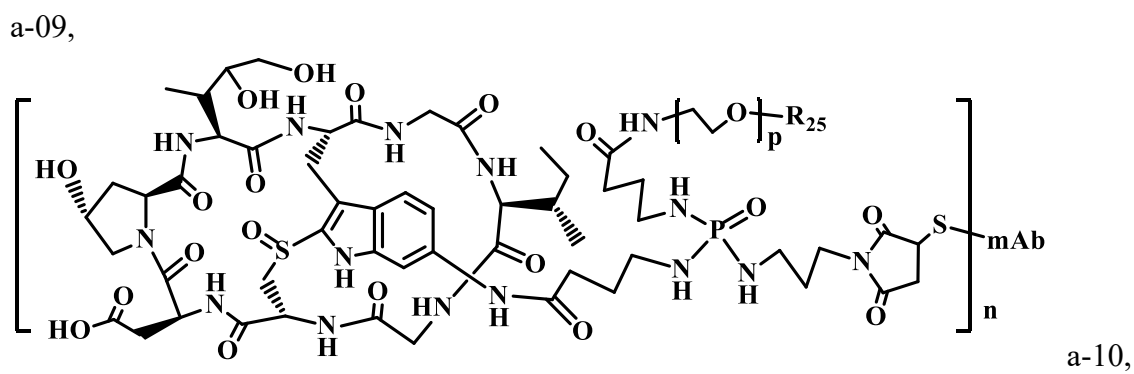
wherein the (\*) atom is the point of attachment of additional spacer or releasable linkers, the cyto-toxic agents, and/or the binding molecules;  $X^1$ ,  $Y^1$ ,  $U^1$ ,  $R^5$ ,  $R^{5'}$  are defined as above;  $r$  is 0~100;  $m$  and  $n$  are 0~20 independently;

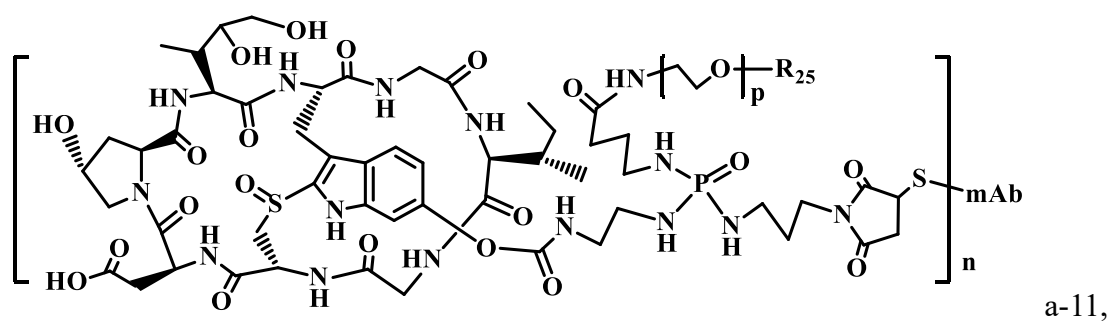
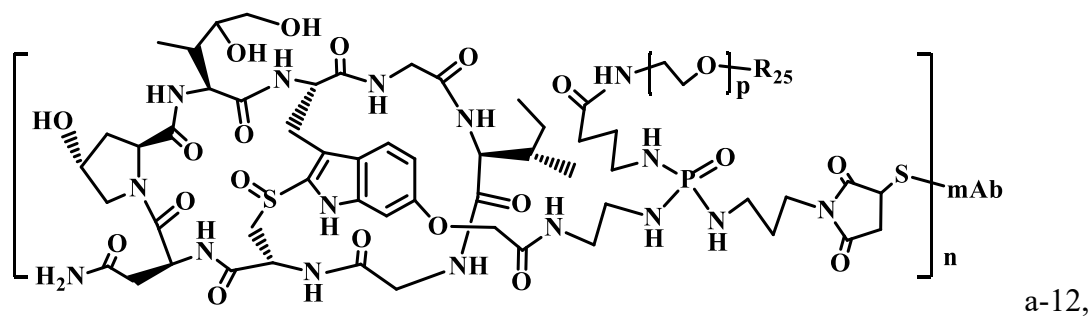
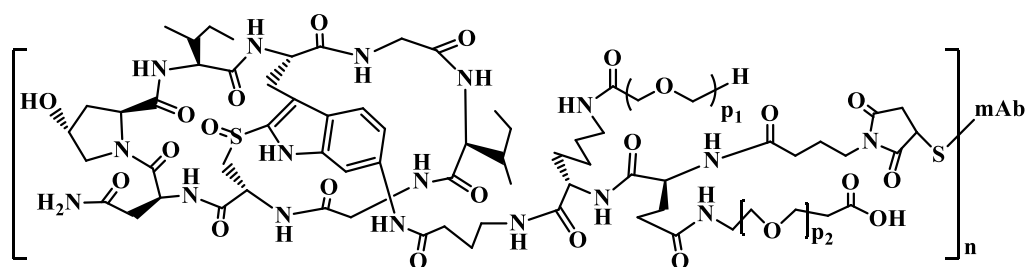
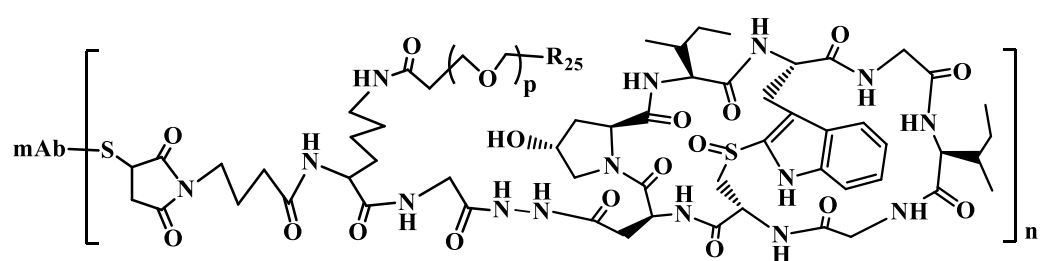
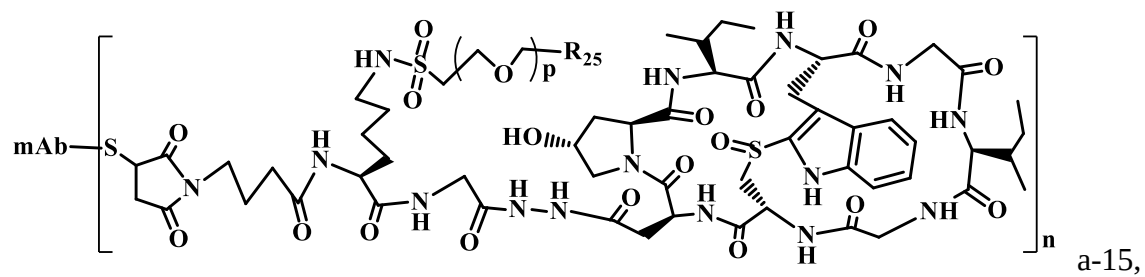
(C): a releasable component that at least one bond that can be broken under physiological conditions: a pH-labile, acid-labile, base-labile, oxidatively labile, metabolically labile, biochemically labile or enzyme-labile bond, which having one of the following structures: -  
 $(CR_{15}R_{16})_m(Aa)_r(CR_{17}R_{18})_n(OCH_2CH_2)_t$ , -  $(CR_{15}R_{16})_m(CR_{17}R_{18})_n(Aa)_r(OCH_2CH_2)_t$ , -  $(Aa)_r$  -  
 $(CR_{15}R_{16})_m(CR_{17}R_{18})_n(OCH_2CH_2)_t$ , -  $(CR_{15}R_{16})_m(CR_{17}R_{18})_n(OCH_2CH_2)_t(Aa)_t$ , -  
 $(CR_{15}R_{16})_m(CR_{17}=CR_{18})(CR_{19}R_{20})_n(Aa)_t(OCH_2C_2)_t$ , -  
 $(CR_{15}R_{16})_m(NR_{11}CO)(Aa)_t(CR_{19}R_{20})_n(OCH_2CH_2)_t$ , -  
 $(CR_{15}R_{16})_m(Aa)_t(NR_{21}CO)(CR_{19}R_{20})_n(OCH_2CH_2)_t$ , -  $(CR_{15}R_{16})_m(OCO)(Aa)_t$  -  
 $(CR_{19}R_{20})_n(OCH_2CH_2)_t$ , -  $(CR_{15}R_{16})_m(OCNR_{17})(Aa)_t(CR_{19}R_{20})_n(OCH_2CH_2)_t$ , -  $(CR_{15}R_{16})_m$  -  
 $(CO)(Aa)_t(CR_{19}R_{20})_n(OCH_2CH_2)_t$ , -  $(CR_{15}R_{16})_m(NR_{21}CO)(Aa)_t(CR_{19}R_{20})_n(OCH_2CH_2)_t$ , -  
 $(CR_{15}R_{16})_m(OCO)(Aa)_t(CR_{19}R_{20})_n(OCH_2CH_2)_t$ , -  
 $-(CR_{15}R_{16})_m(OCNR_{17})(Aa)_t(CR_{19}R_{20})_n(OCH_2CH_2)_t$ , -  $(CR_{15}R_{16})_m(CO)(Aa)_t(CR_{19}R_{20})_n$  -  
 $(OCH_2CH_2)_t$ , -  $(CR_{15}R_{16})_m$ -phenyl-CO(Aa)<sub>t</sub>-(CR<sub>17</sub>R<sub>18</sub>)<sub>n</sub>-, -  $(CR_{15}R_{16})_m$ -furyl-CO(Aa)<sub>t</sub>-(CR<sub>17</sub>R<sub>18</sub>)<sub>n</sub>-, -  
 $(CR_{15}R_{16})_m$ -oxazolyl-CO(Aa)<sub>t</sub>-(CR<sub>17</sub>R<sub>18</sub>)<sub>n</sub>-, -  $(CR_{15}R_{16})_m$ -thiazolyl-CO(Aa)<sub>t</sub>-(CCR<sub>17</sub>R<sub>18</sub>)<sub>n</sub>-, -  
 $(CR_{15}R_{16})_t$ -thienyl-CO(CR<sub>17</sub>R<sub>18</sub>)<sub>n</sub>-, -  $(CR_{15}R_{16})_t$ -imidazolyl-CO-(CR<sub>17</sub>R<sub>18</sub>)<sub>n</sub>-, -  $(CR_{15}R_{16})_t$ -  
morpholino-CO(Aa)<sub>t</sub>-(CR<sub>17</sub>R<sub>18</sub>)<sub>n</sub>-, -  $(CR_{15}R_{16})_t$ -piperazino-CO(Aa)<sub>t</sub>-(CR<sub>17</sub>R<sub>18</sub>)<sub>n</sub>-  $-(CR_{15}R_{16})_t$ -N-  
methylpiperazin-CO(Aa)<sub>t</sub>-(CR<sub>17</sub>R<sub>18</sub>)<sub>n</sub>-, -  $(CR_{15}R_{16})_m$ -(Aa)<sub>t</sub>phenyl-, -  $(CR_{15}R_{16})_m$ -(Aa)<sub>t</sub>furyl-, -

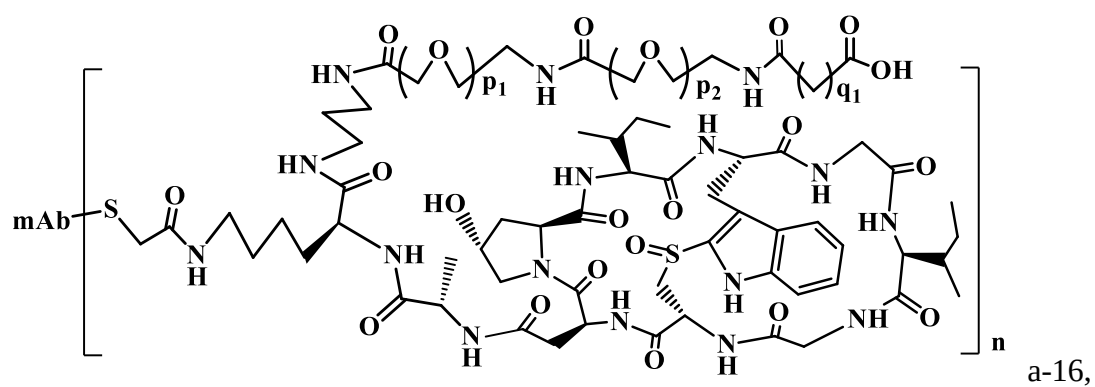
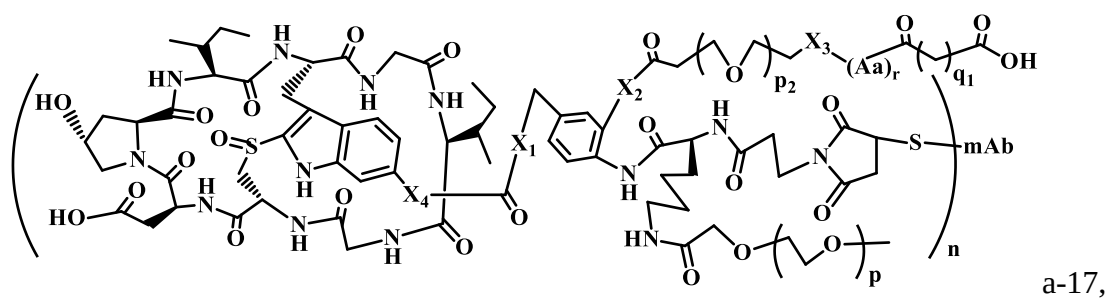
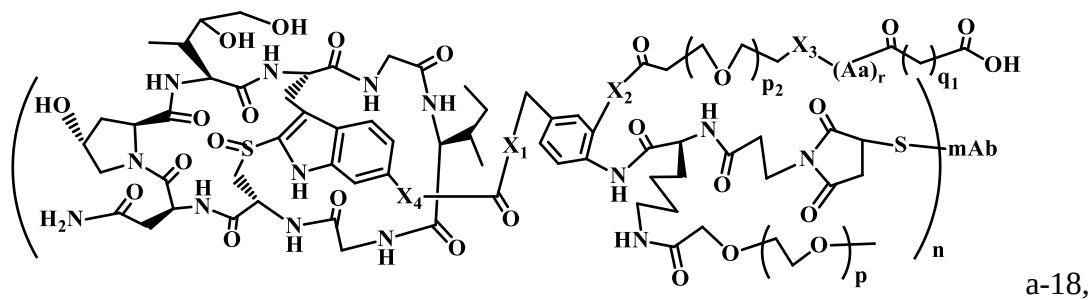
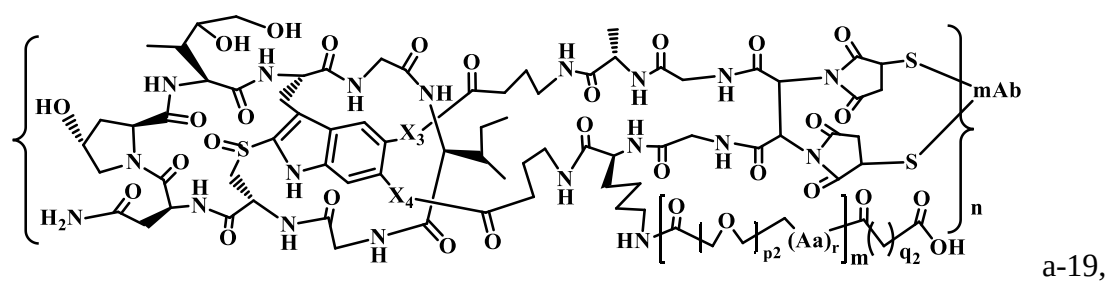
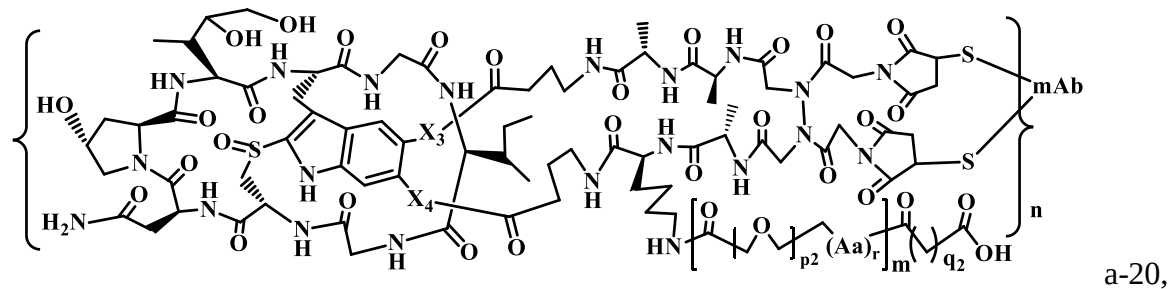
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wherein m, Aa, m, n, R<sub>13</sub>, R<sub>14</sub>, and R<sub>15</sub> are as defined in claim 1; t and r here are 0–100 independently; R<sub>16</sub>, R<sub>17</sub>, R<sub>18</sub>, R<sub>19</sub>, and R<sub>20</sub> are independently chosen from H; halide; C<sub>1</sub>~C<sub>8</sub> alkyl or heteroalkyl, C<sub>2</sub>~C<sub>8</sub> aryl, alkenyl, alkynyl, ether, ester, amine or amide, C<sub>3</sub>~C<sub>8</sub> aryl which 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, heterocyclic or heteroaromatic ring having C<sub>3</sub>-C<sub>12</sub>; or peptides containing the same or different 2-20 amino acids.

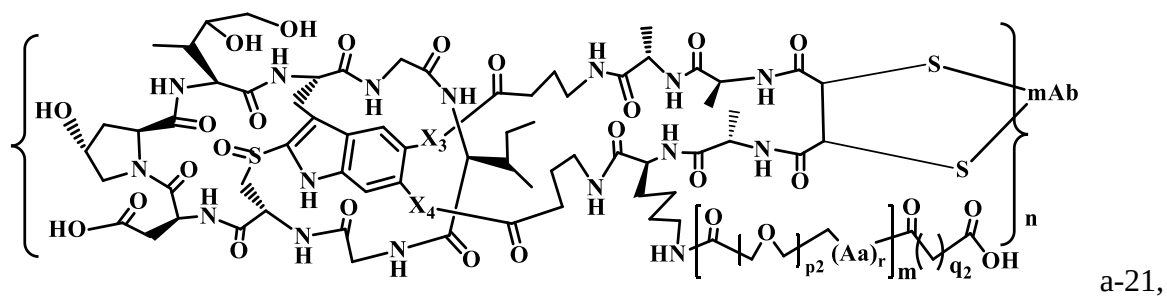
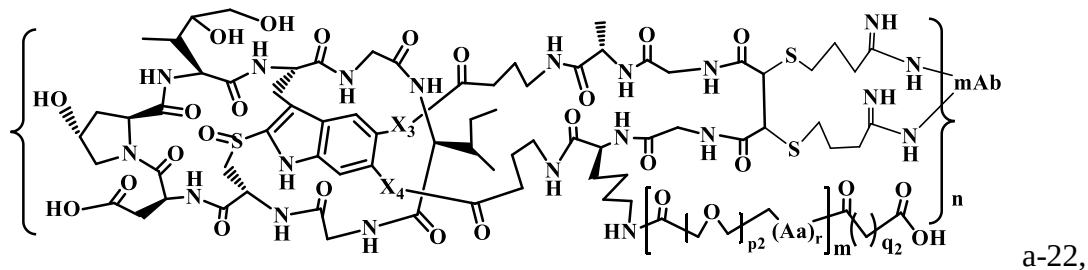
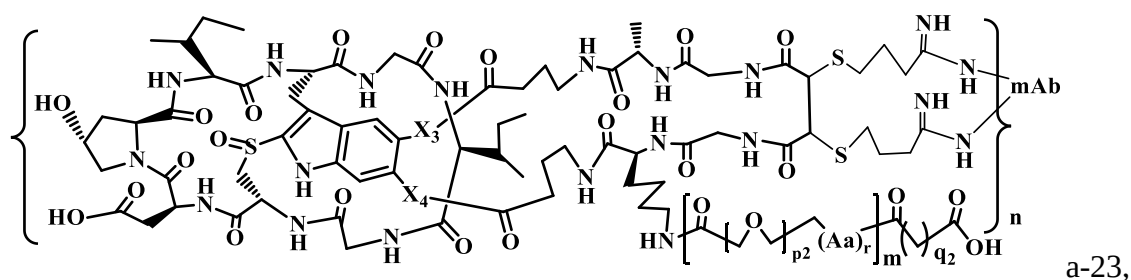
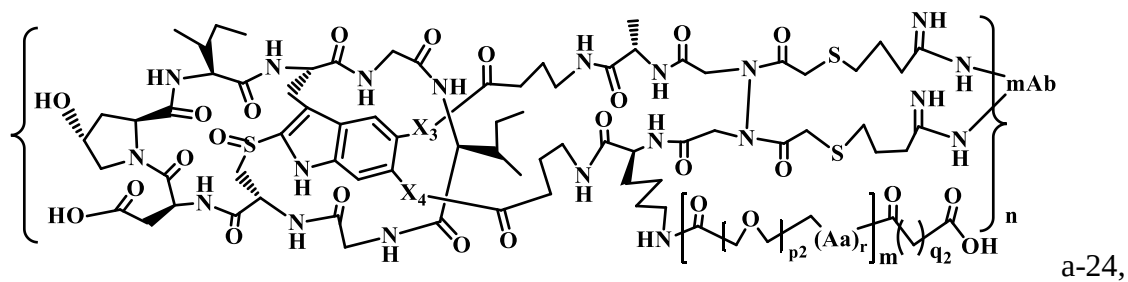
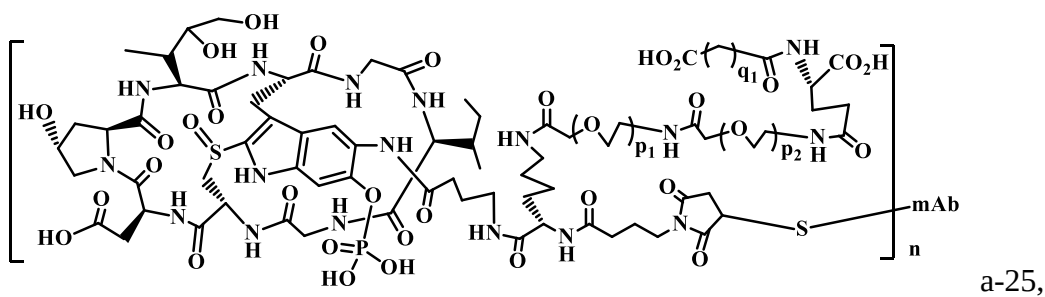
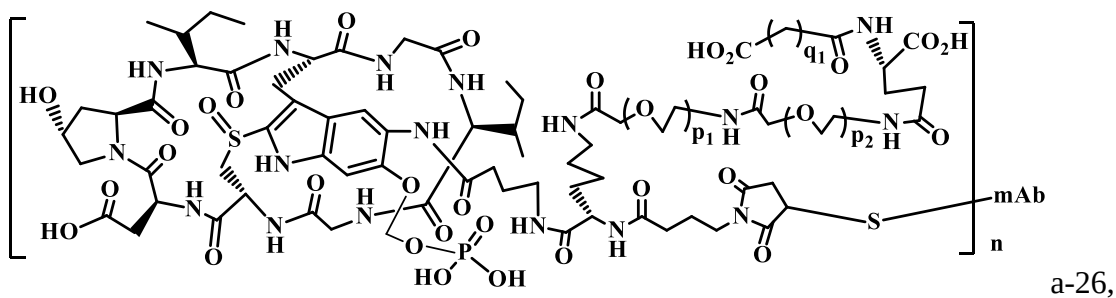
9. The conjugate compound of Formula (I) according to claim 1 having the following structures of a-01 to a-40, 78a-c, 91, 95, 97, 114, 117, 126, 132, 146, 154, 167, 179, 181, 197, 198, 206, 247, 250, 258, 260, 262 below:

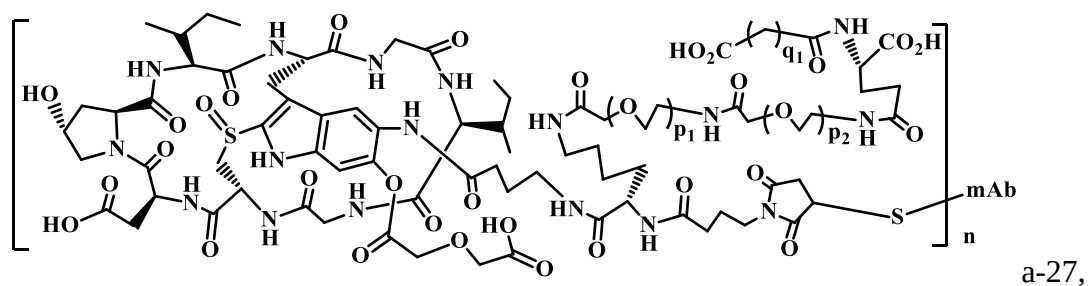
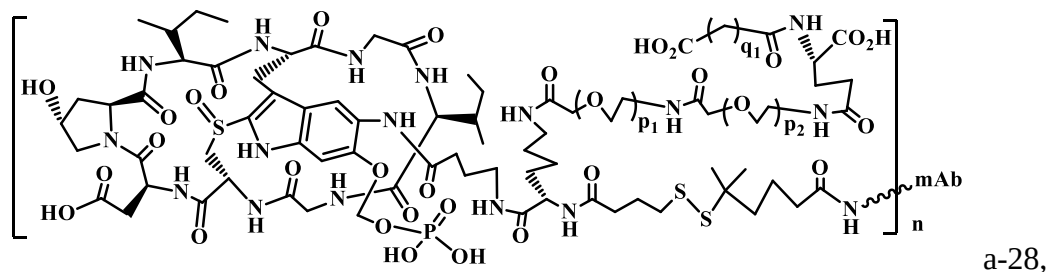
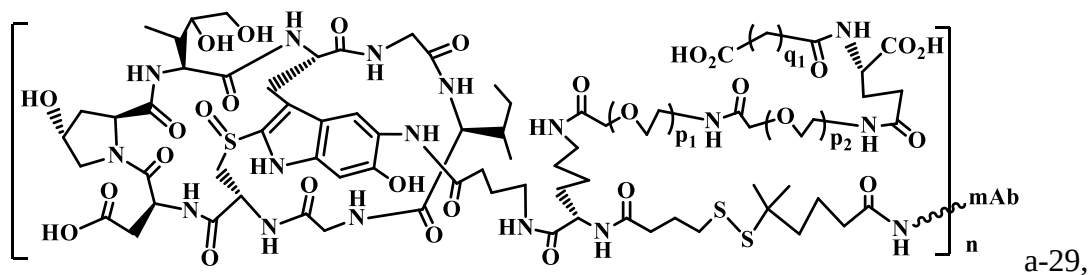
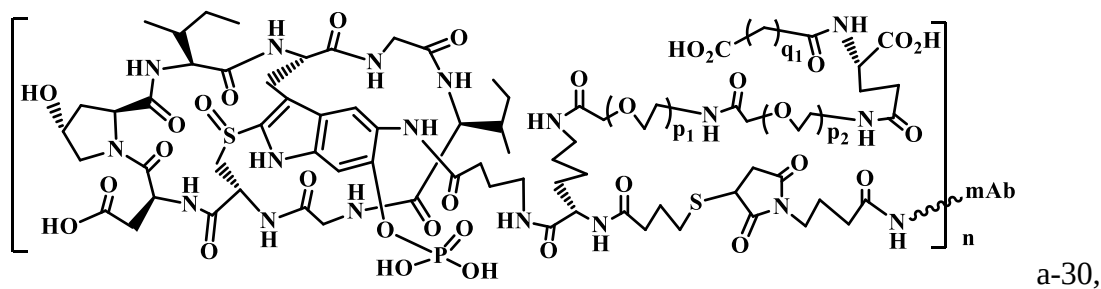
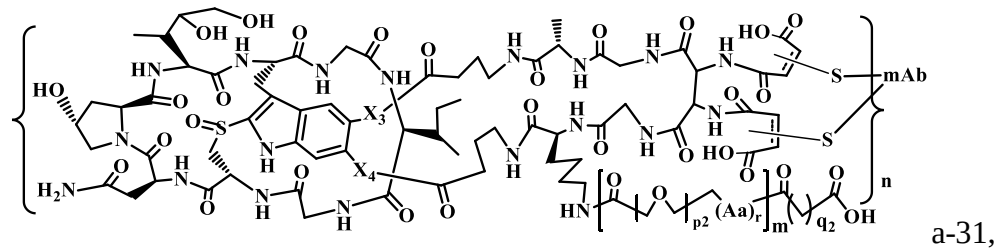
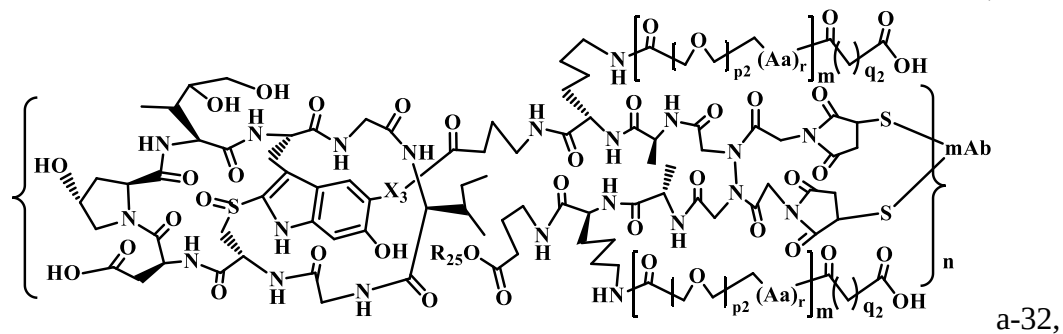


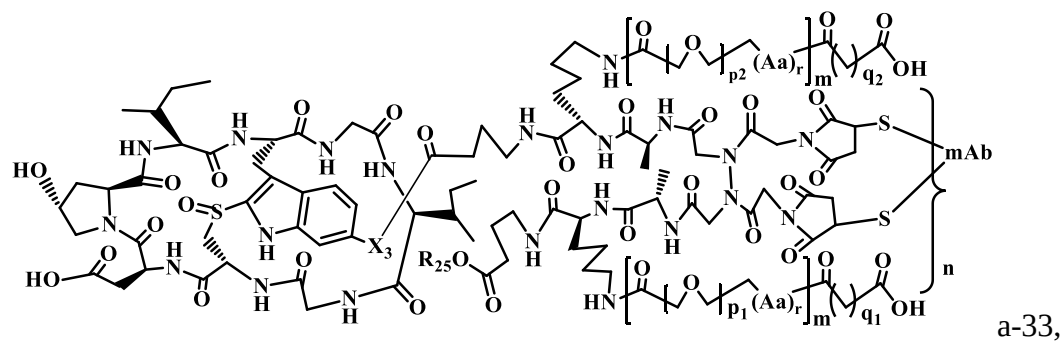
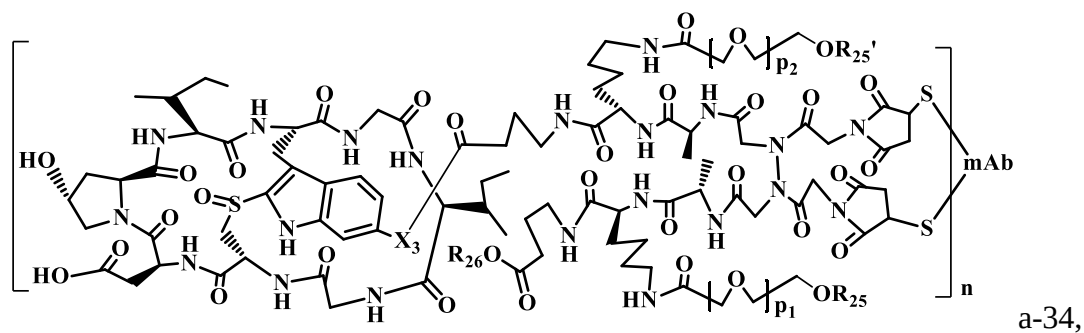
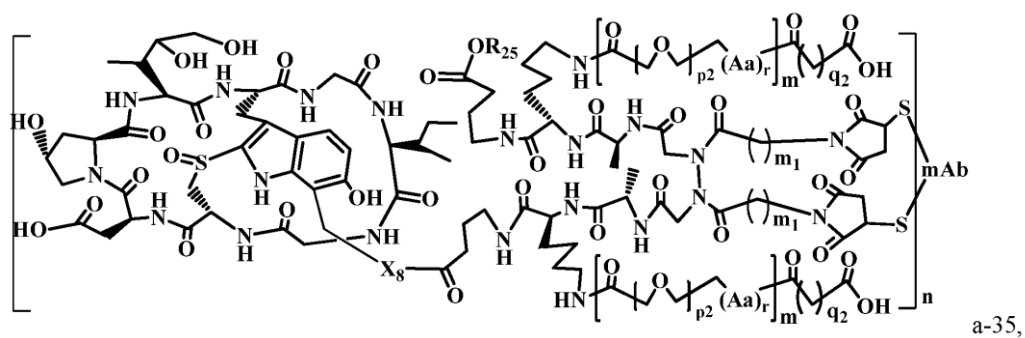
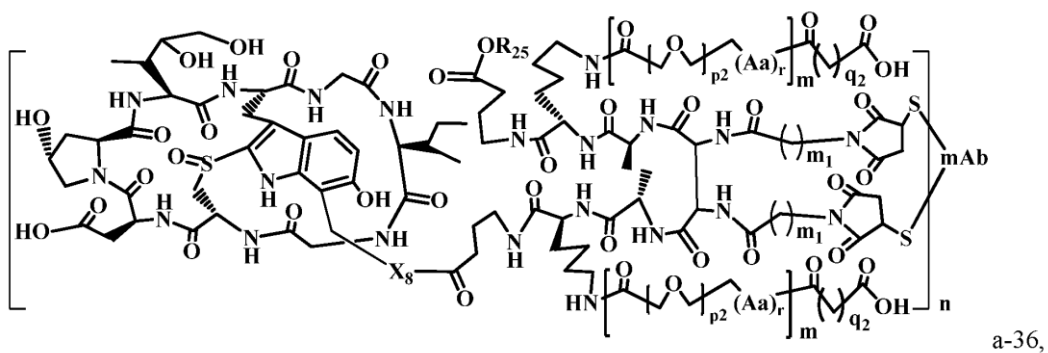


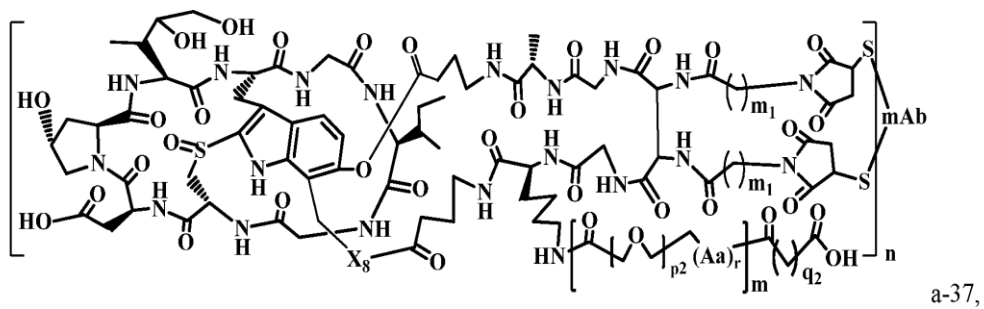
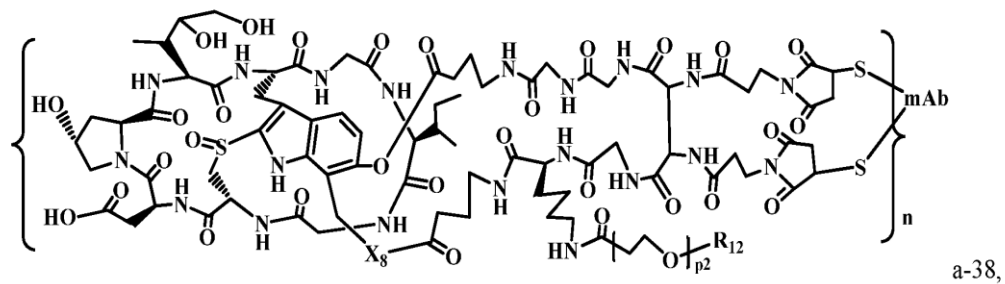
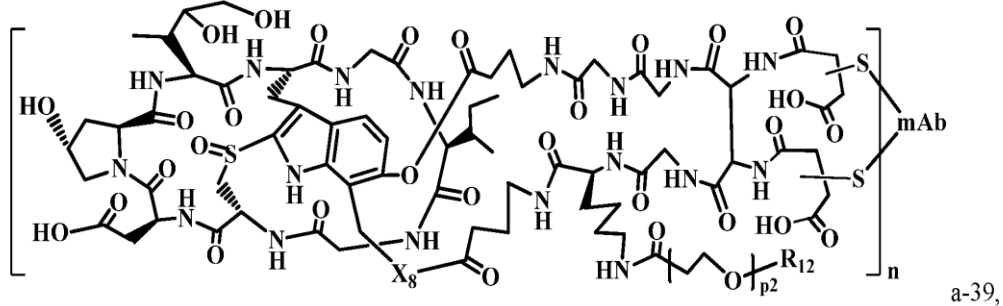
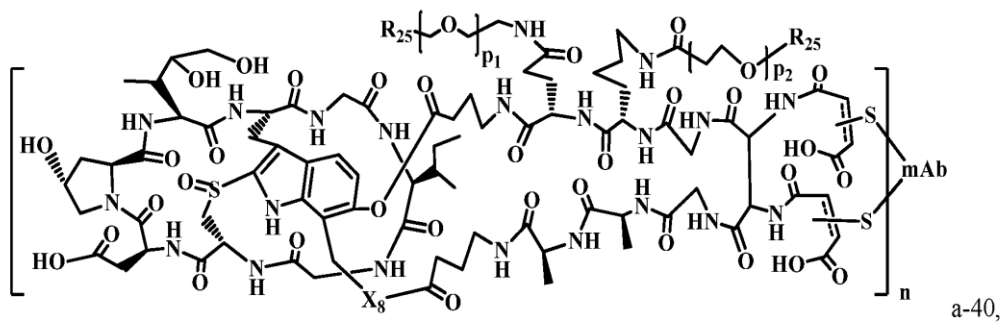
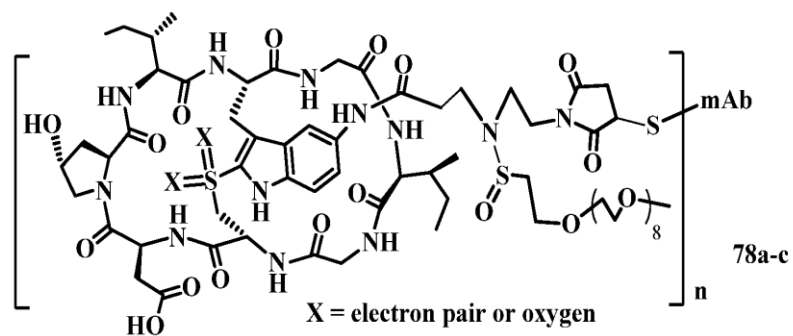


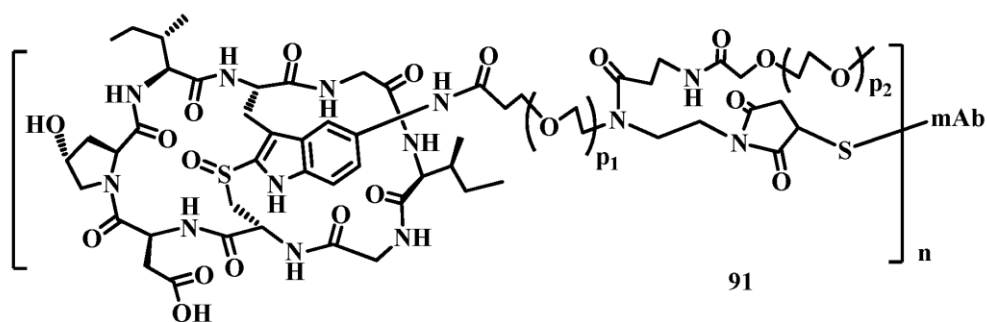
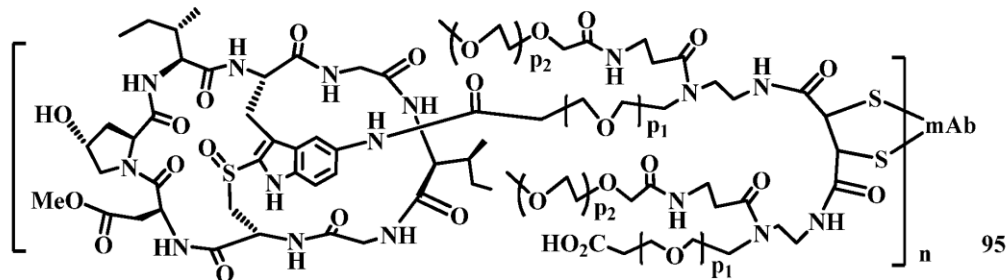
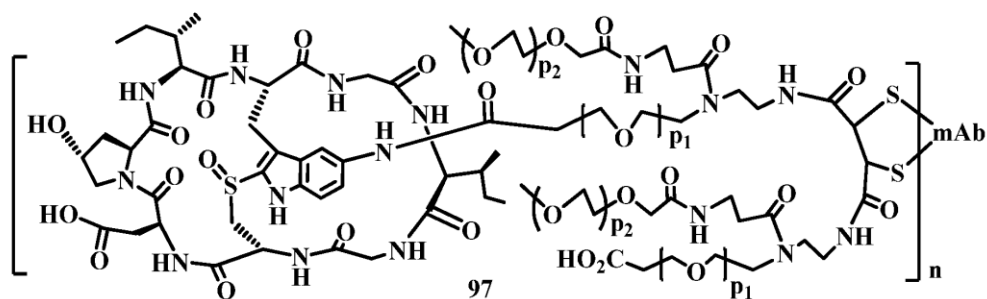
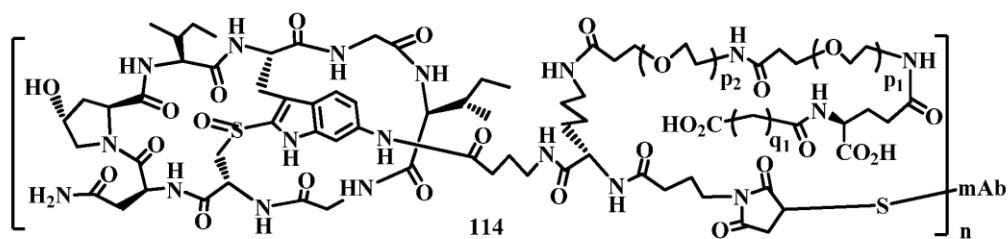
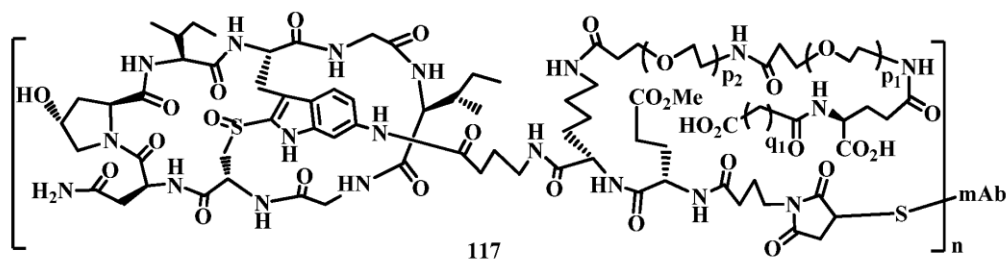


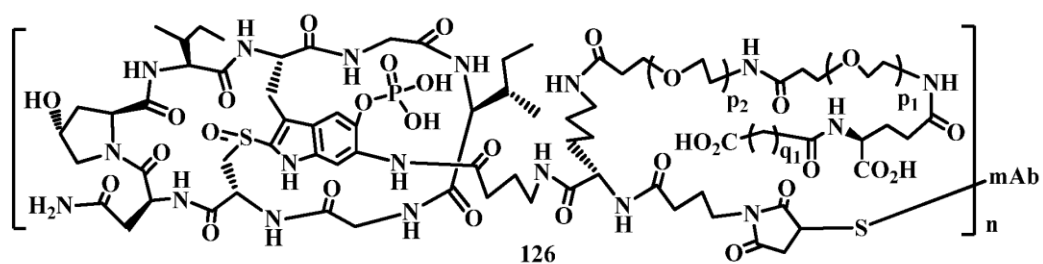
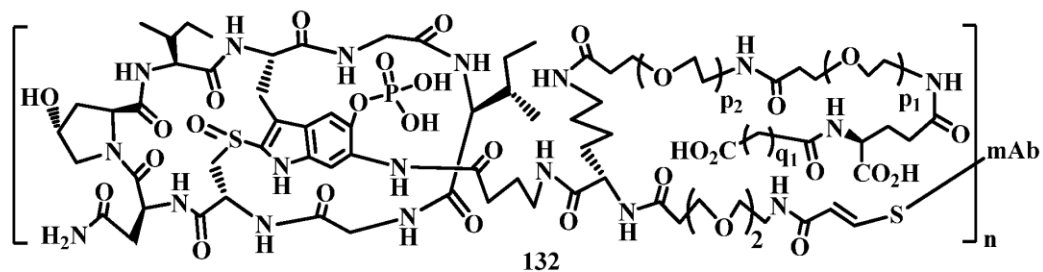
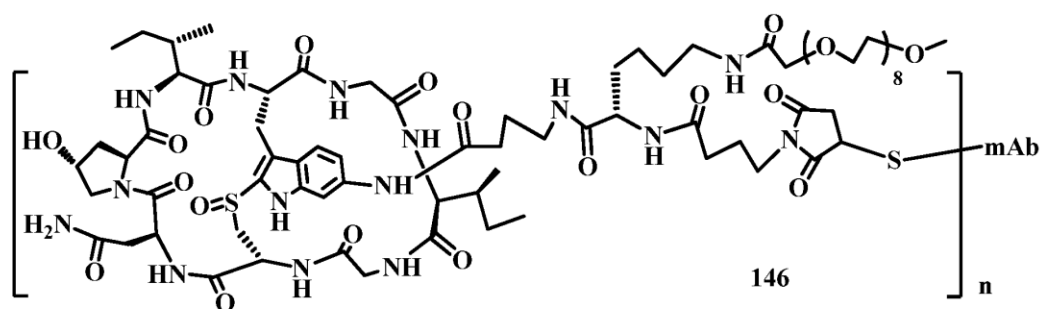
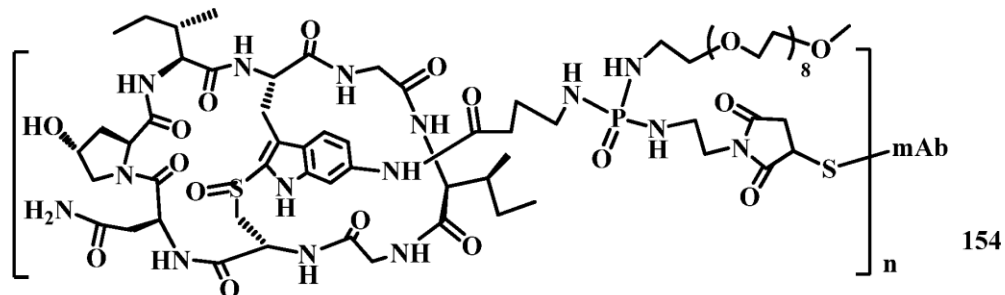
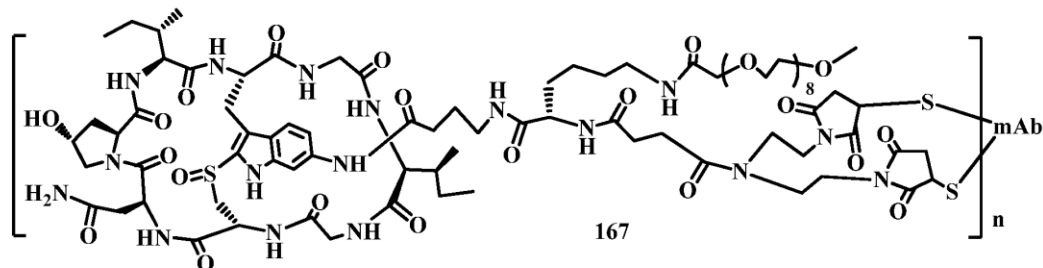


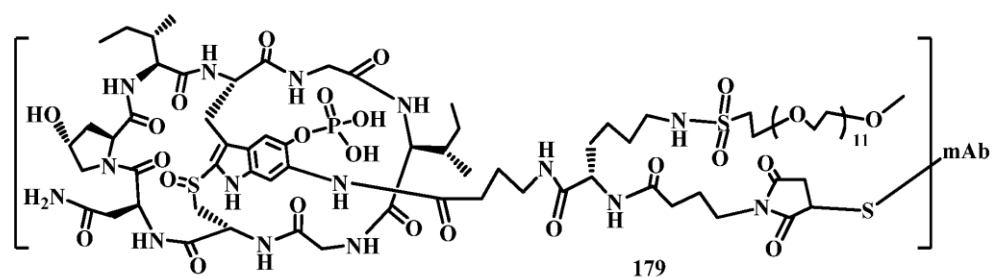
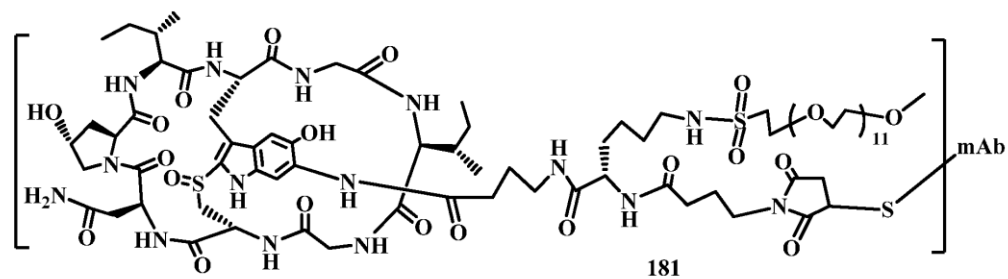
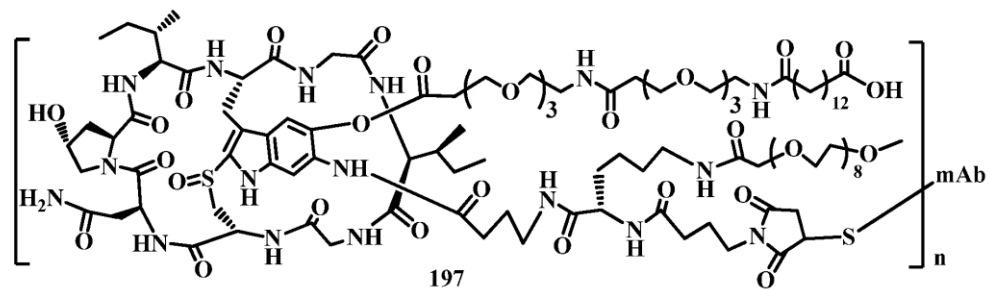
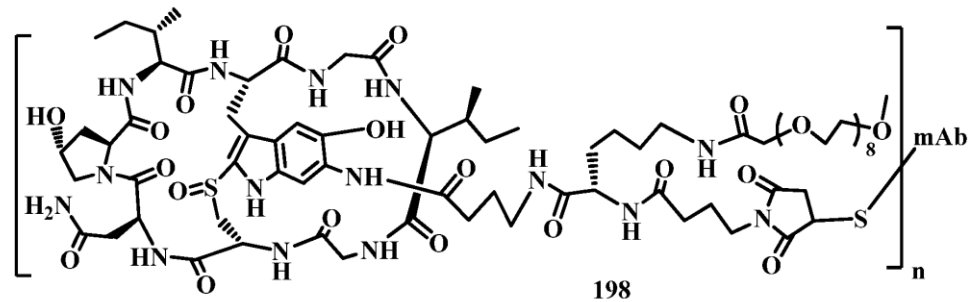
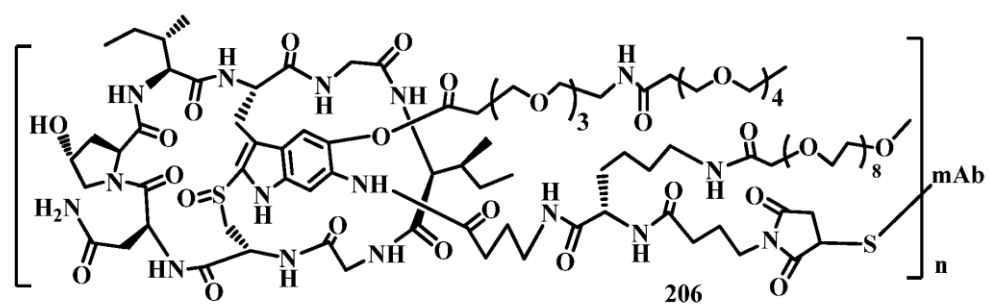


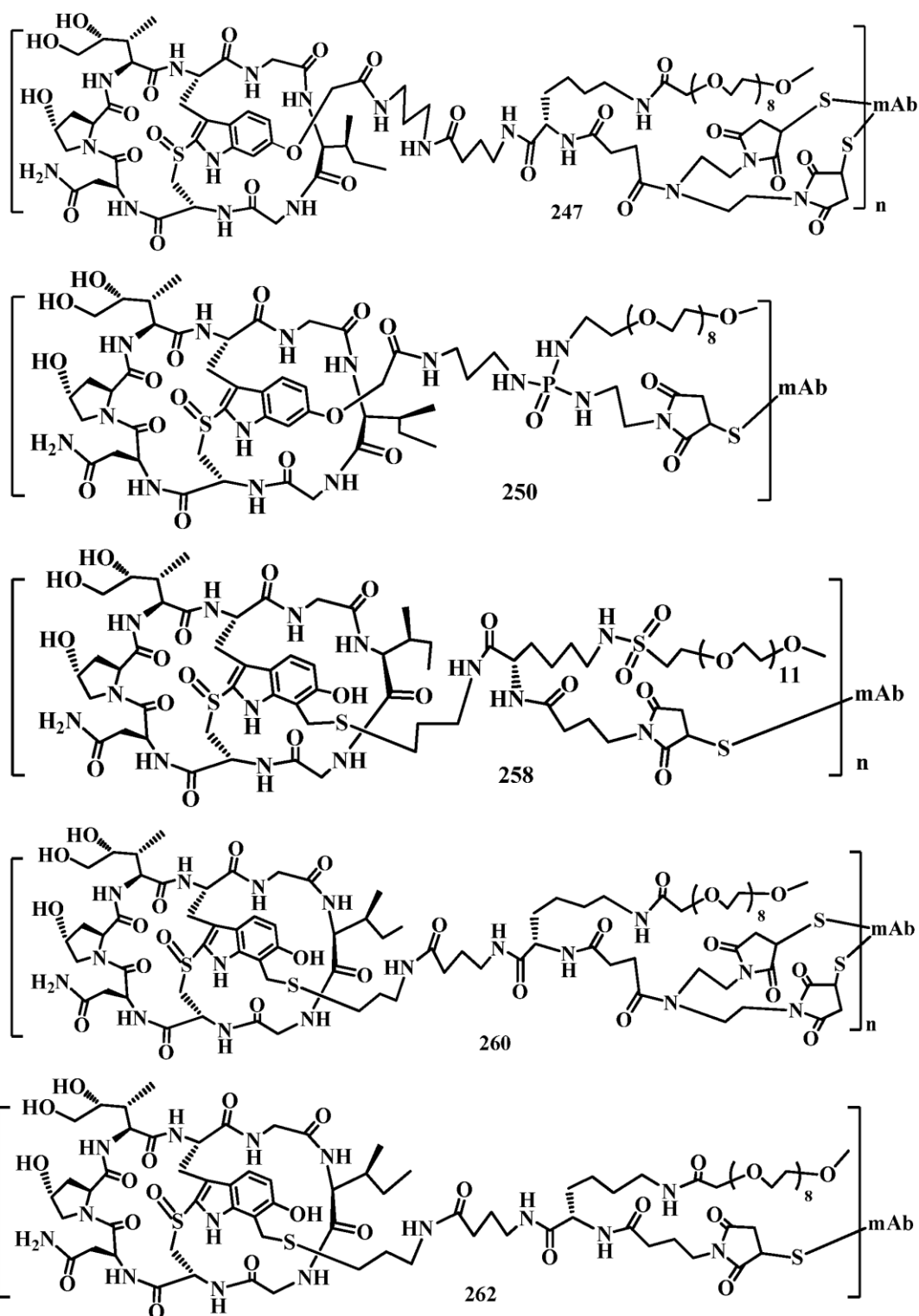






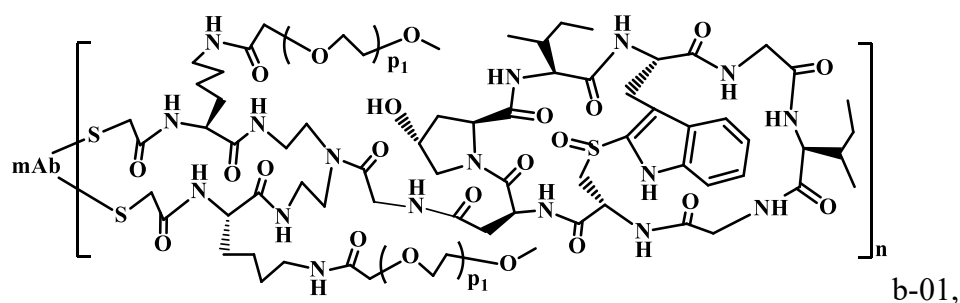
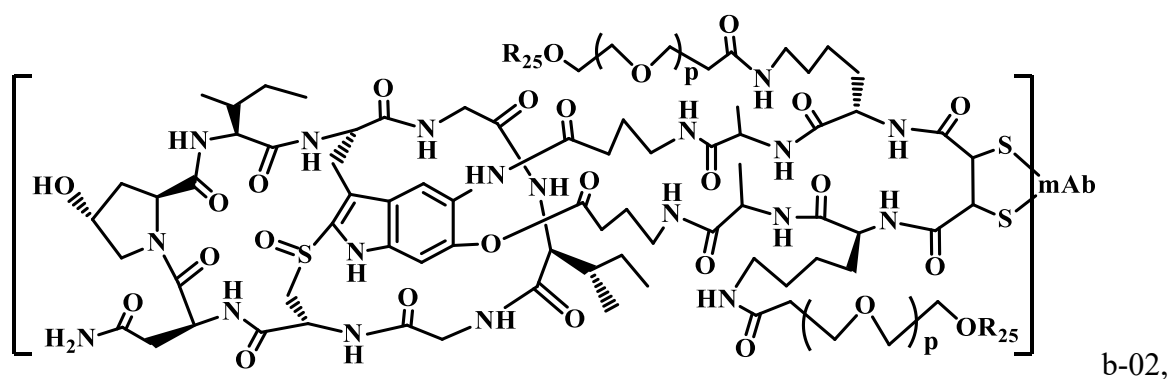
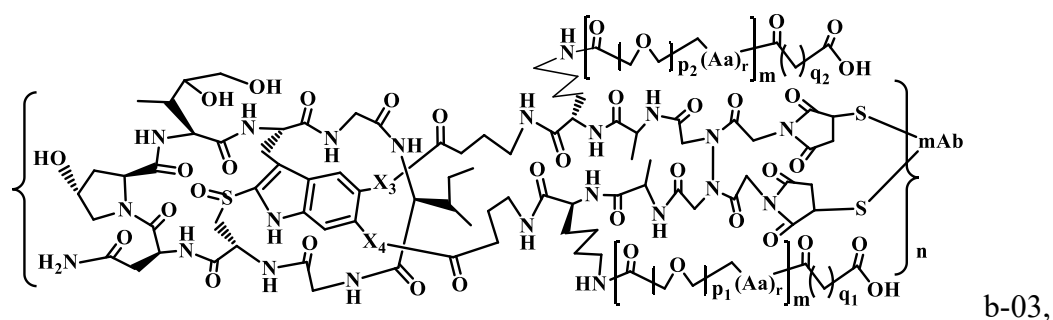
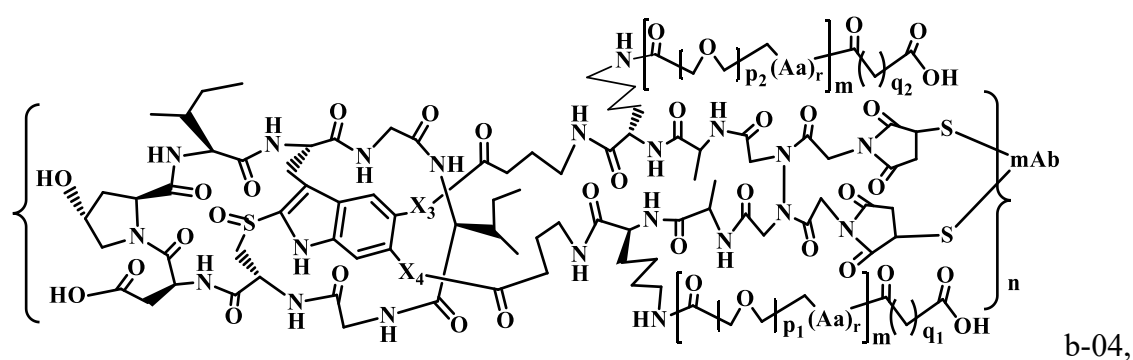


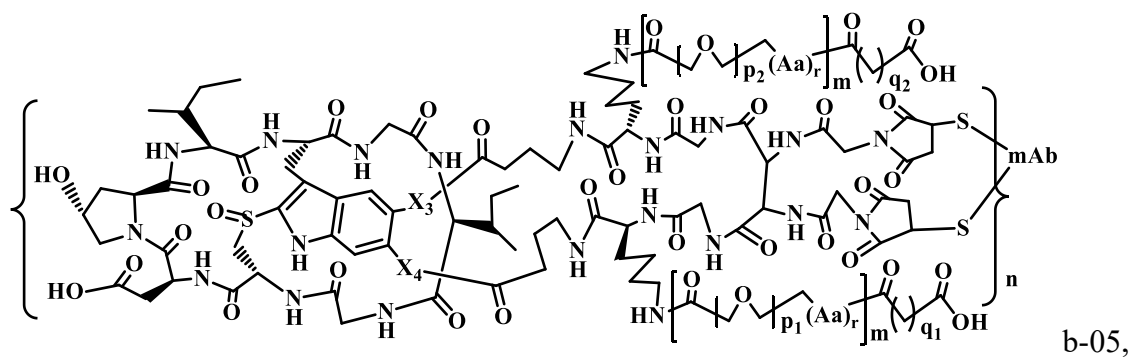
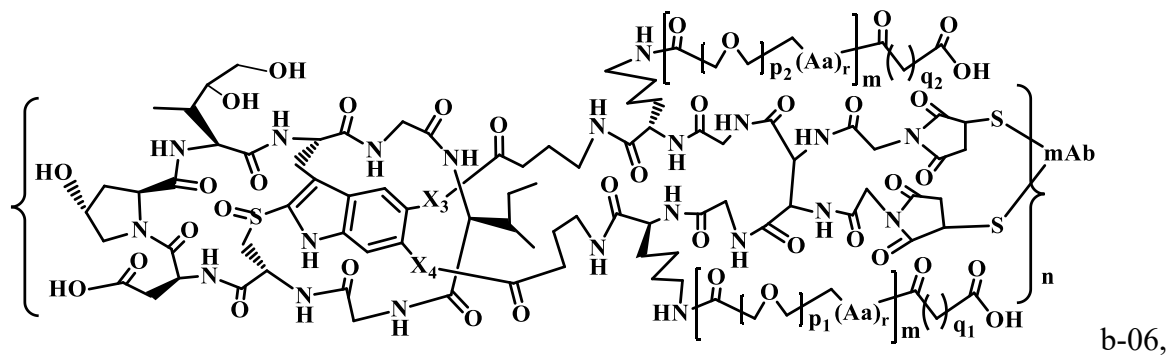
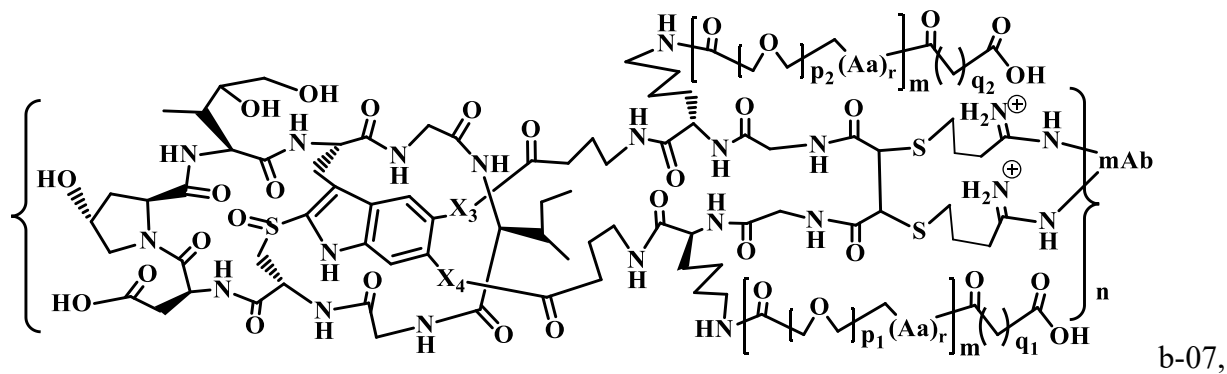
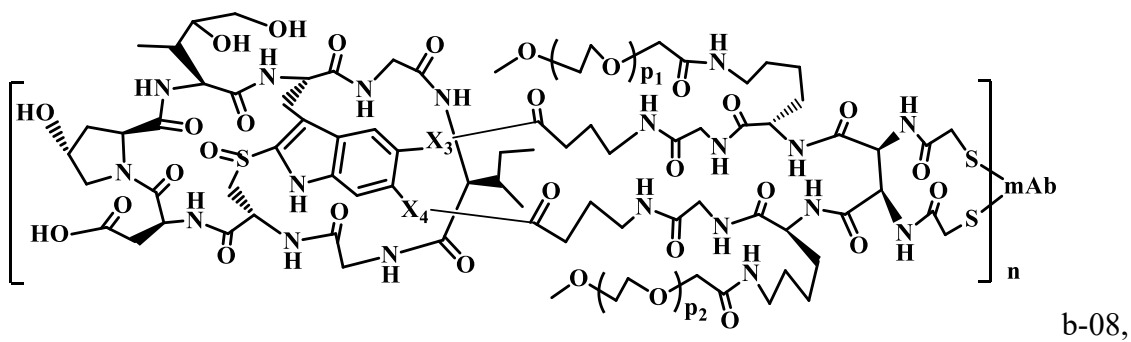
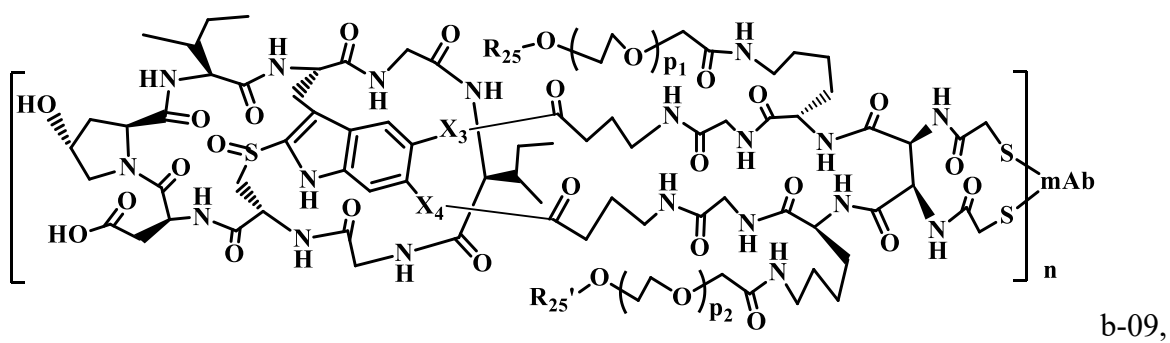


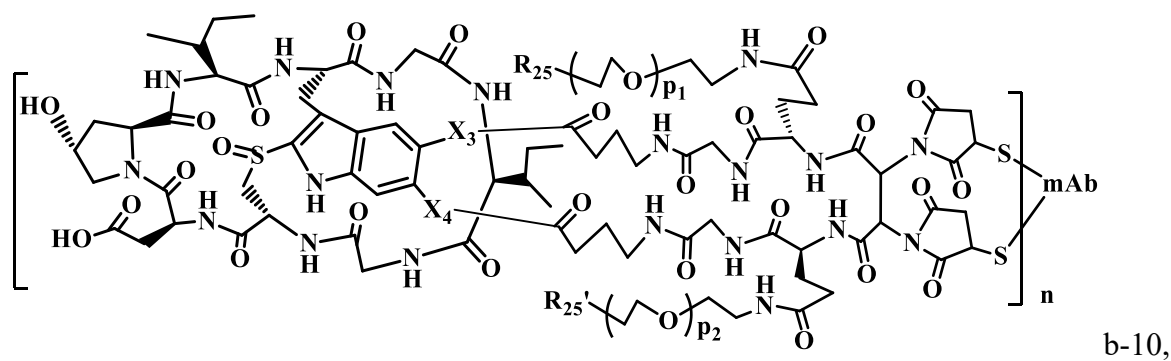
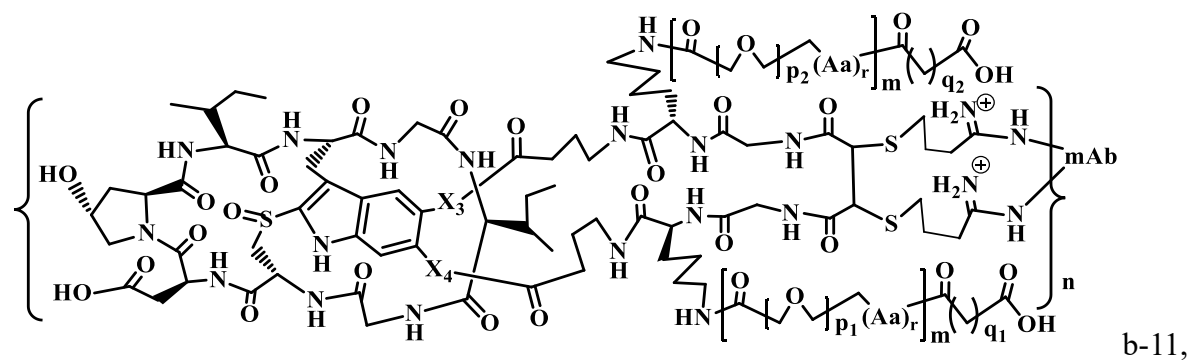
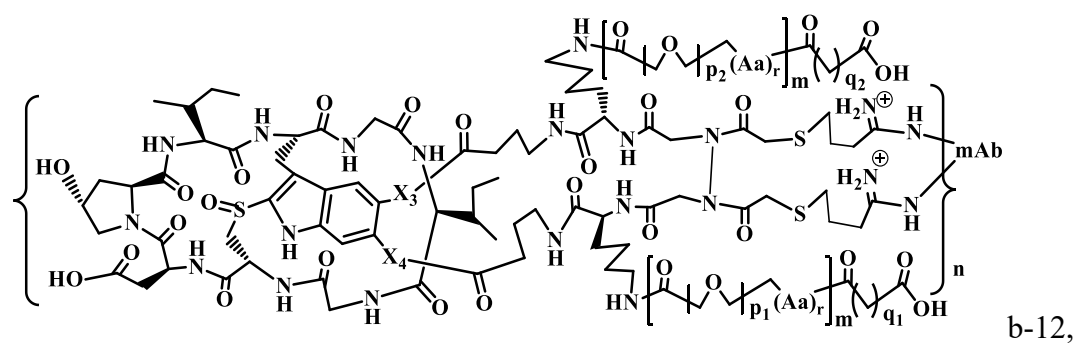
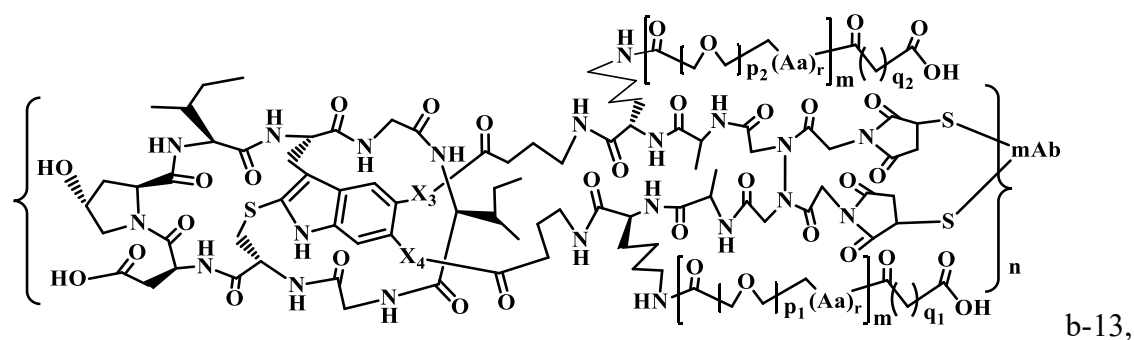
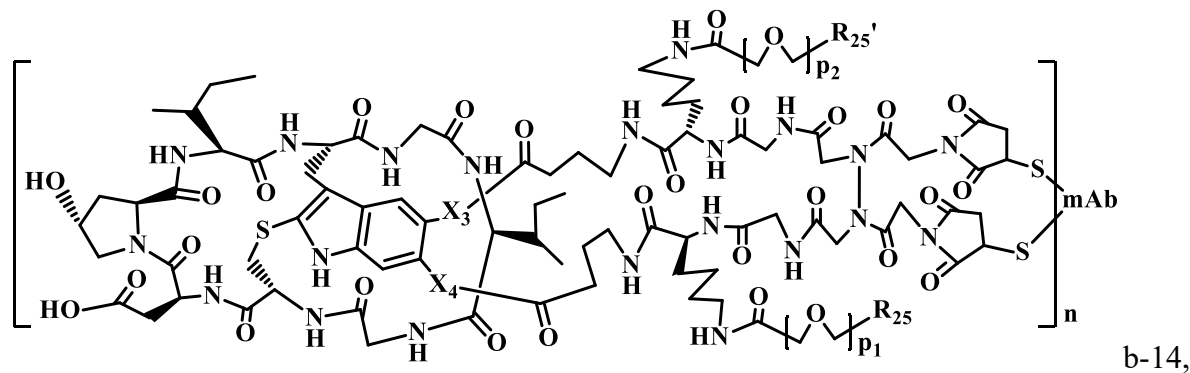


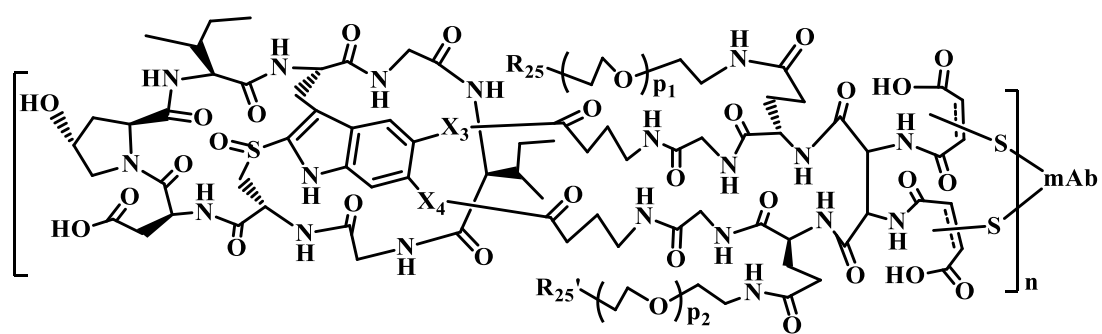
or one or more isotope of chemical elements, pharmaceutically acceptable salts, hydrates, or hydrated salts; or the polymorphic crystalline structures of these compounds; or the optical isomers, racemates, diastereomers or enantiomers; wherein  $X_8$  is O, S, NH, NHNH, NHR<sub>12</sub>, SR<sub>12</sub>, SSR<sub>12</sub>, SSCH(CH<sub>3</sub>)R<sub>12</sub>, SSC(CH<sub>3</sub>)<sub>2</sub>R<sub>12</sub>, or R<sub>12</sub>; m<sub>1</sub> is 0-20; X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub>, p<sub>1</sub>, p<sub>2</sub>, q<sub>1</sub>, q<sub>2</sub>, m, n, R<sub>25</sub>, (Aa)<sub>r</sub> and mAb are as defined in claim 1.

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:

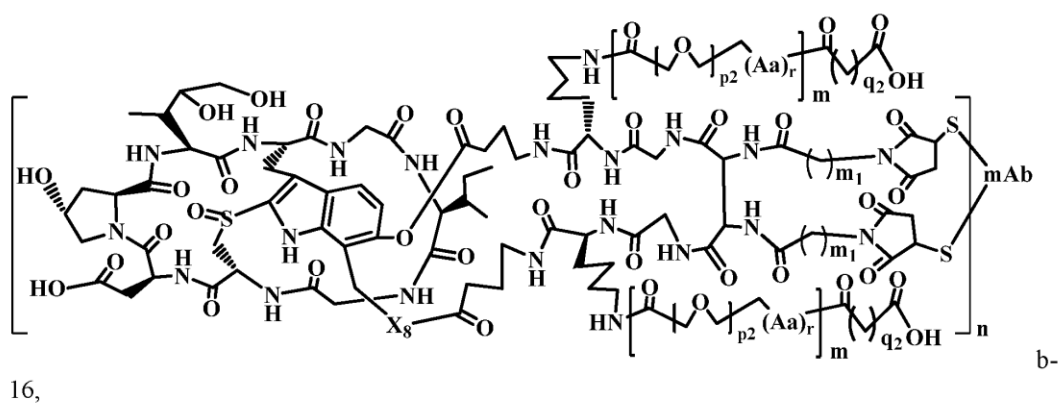
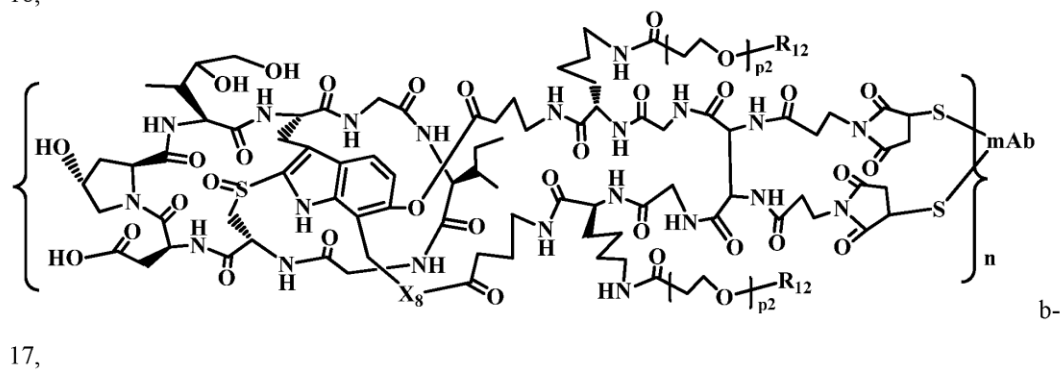
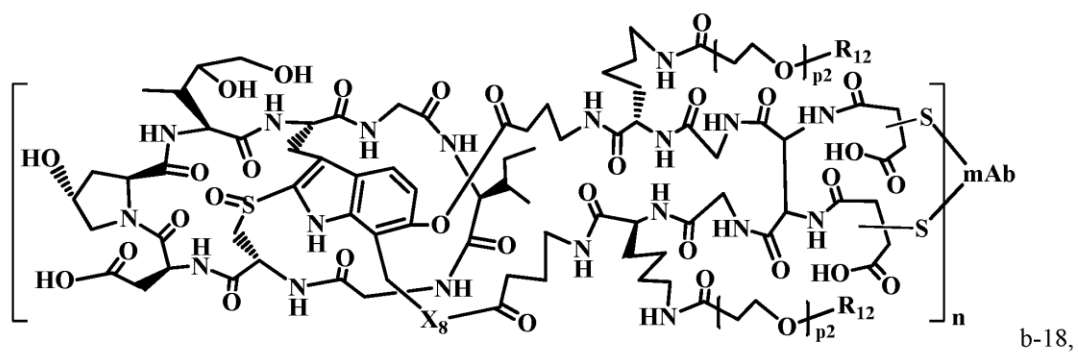
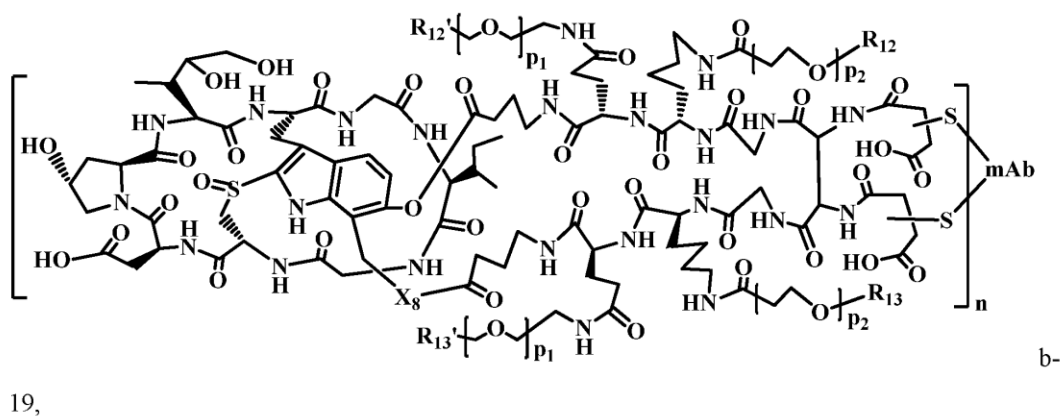


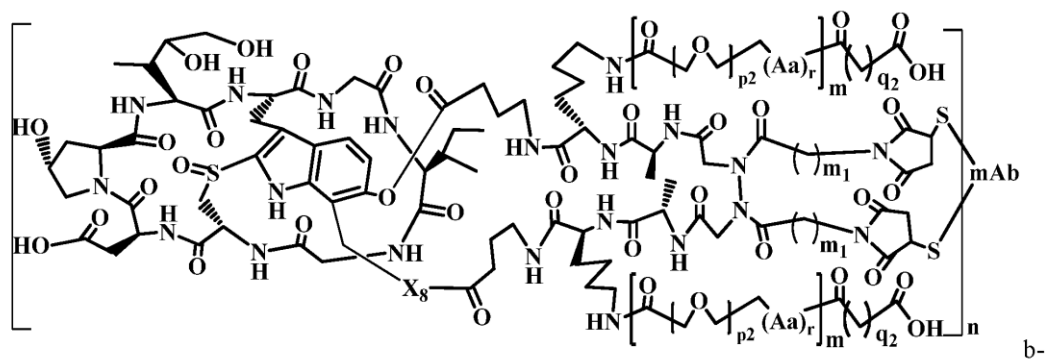
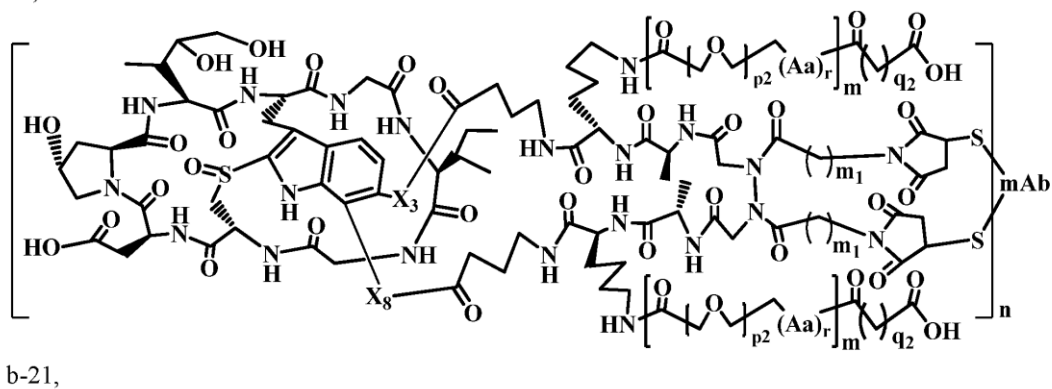
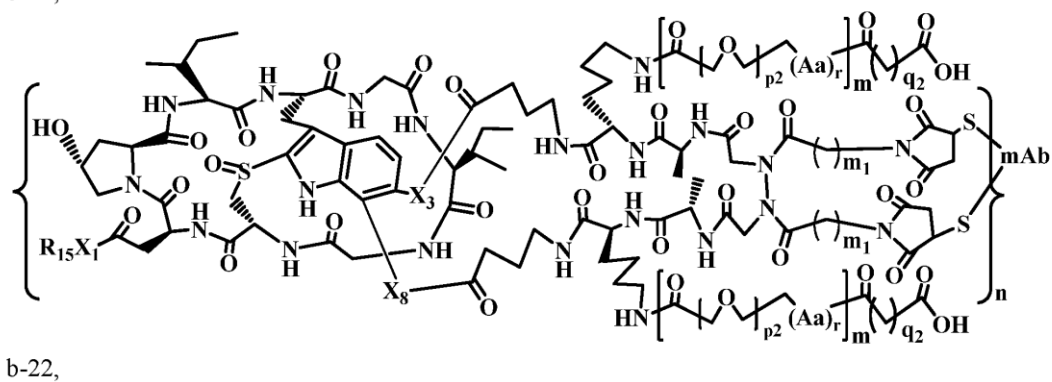
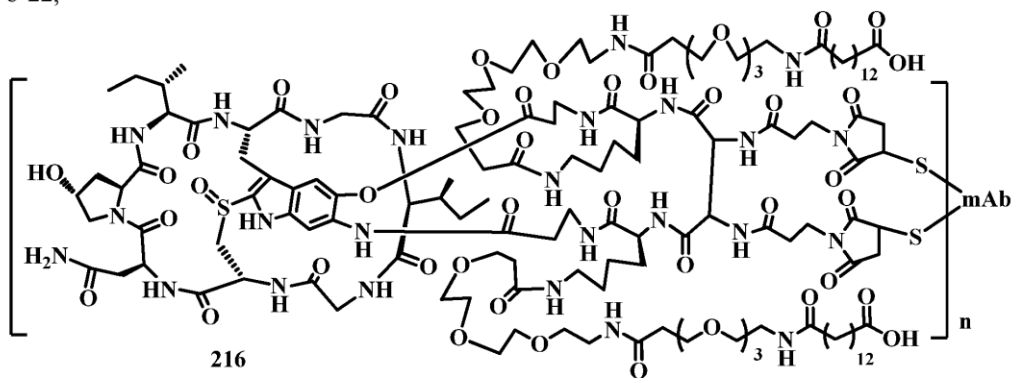


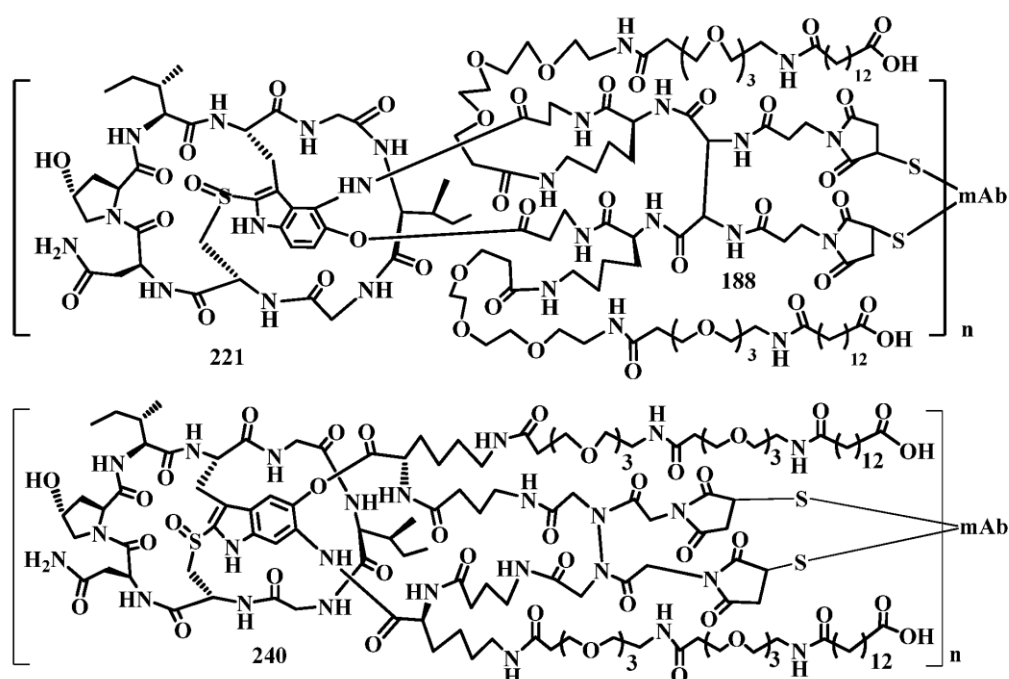




b-15,

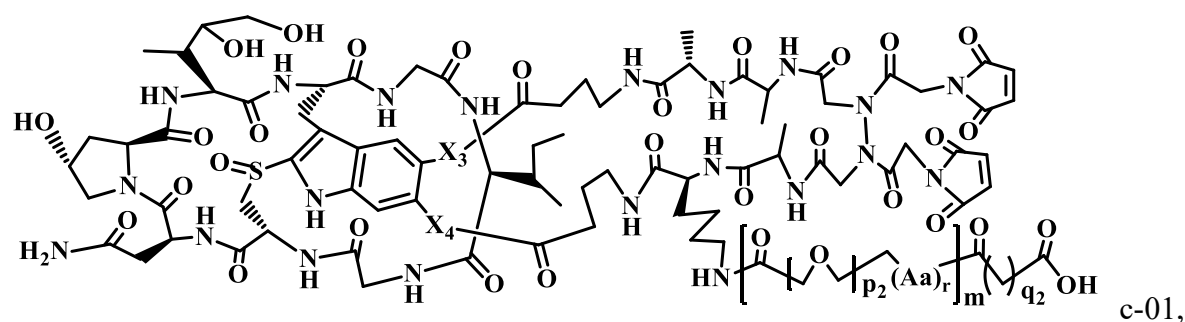


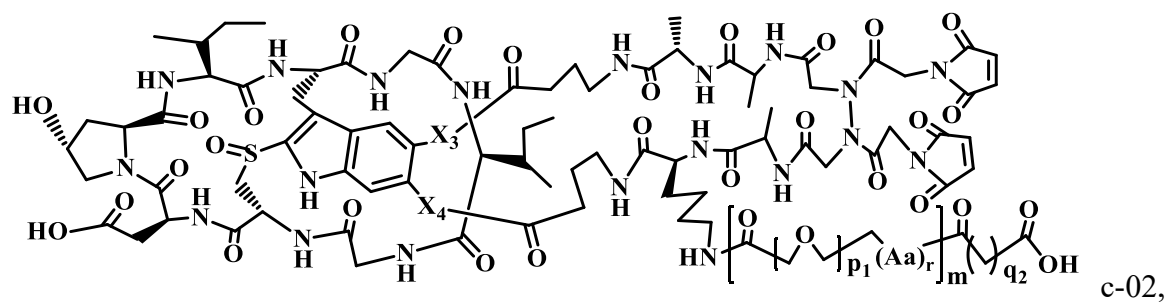
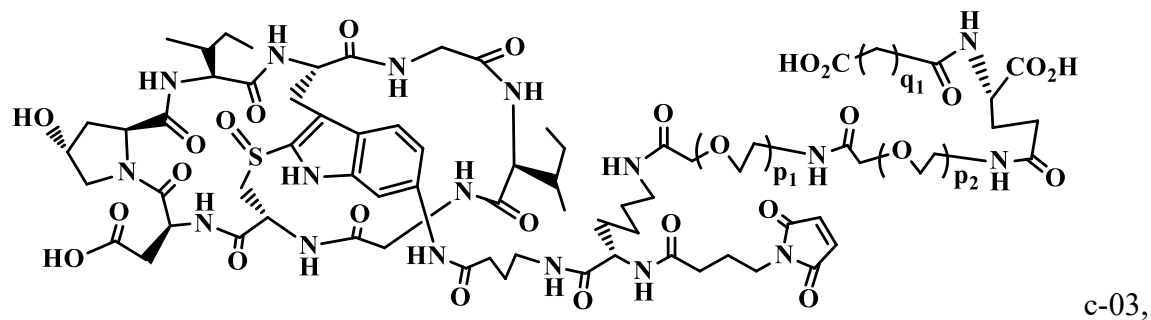
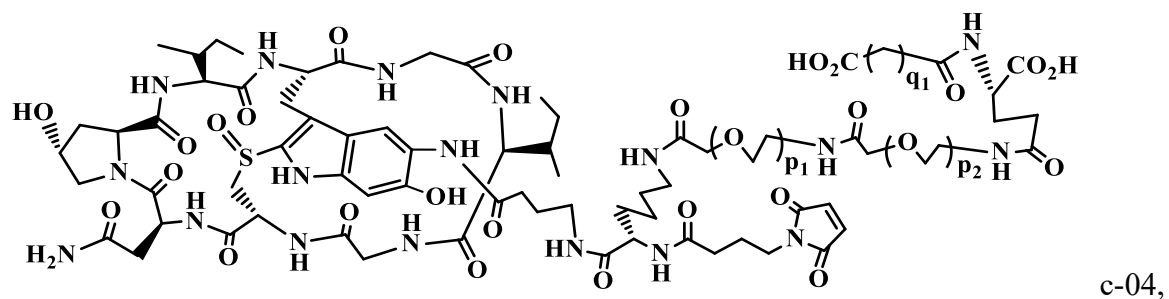
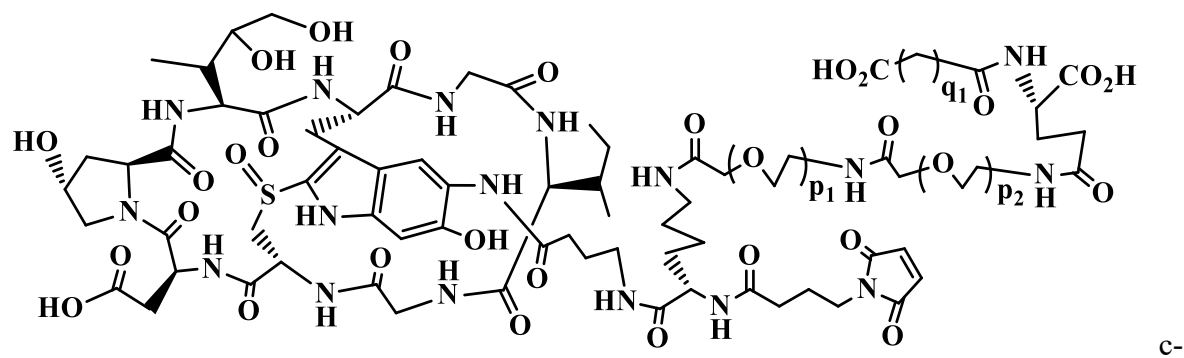




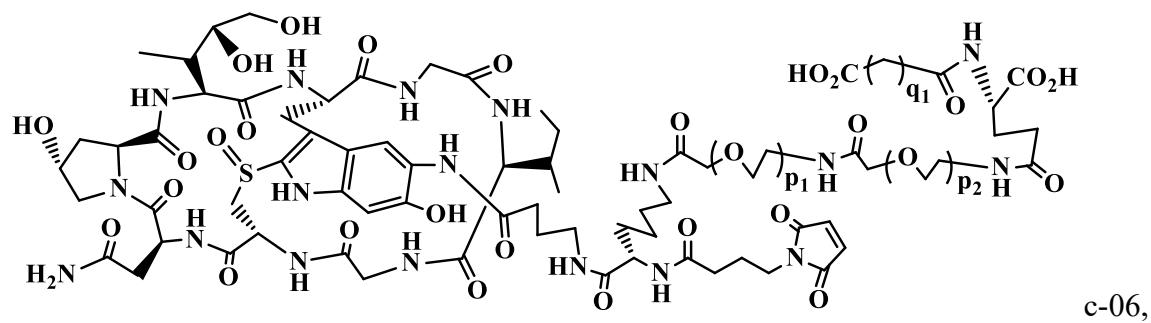
or one or more isotope of chemical elements, or their pharmaceutically acceptable salts, hydrates, or hydrated salts; or the polymorphic crystalline structures of these compounds; or their optical isomers, racemates, diastereomers or enantiomers; wherein  $X_8$  is O, S, NH, NHHN,  $NHR_{12}$ ,  $SR_{12}$ ,  $SSR_{12}$ ,  $SSCH(CH_3)R_{12}$ ,  $SSC(CH_3)_2R_{12}$ , or  $R_{12}$ ;  $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ ,  $X_5$ ,  $R_{12}$ ,  $R_{12}'$ ,  $R_{13}$ ,  $R_{13}'$ ,  $R_{25}$ ,  $R_{25}'$ ,  $p_1$ ,  $p_2$ ,  $q_1$ ,  $q_2$ ,  $m$ ,  $m_1$ ,  $n$ ,  $(Aa)_r$  and  $mAb$  are as defined in claim 1.

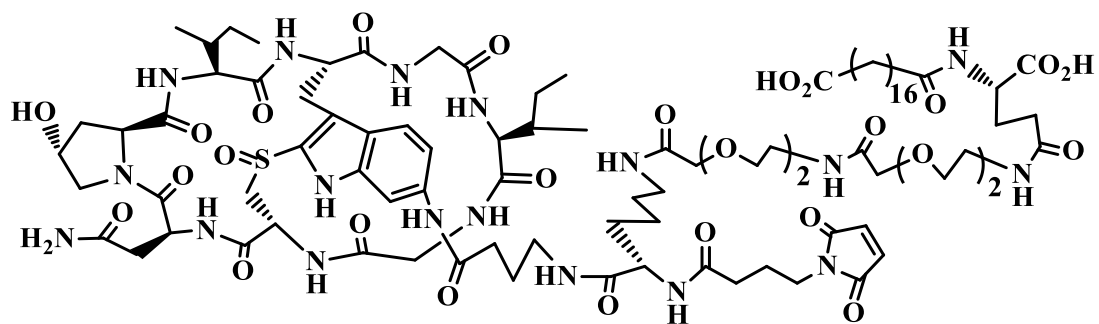
11. The compound of Formula (IV) according to claim 3 having the following structures c-01 to c-40, 71, 76, 77, 90, 94, 96, 113, 116, 126, 131, 145, 153, 166, 178, 180, 195, 196, 205, 246, 249, 257, 259, 261 below:



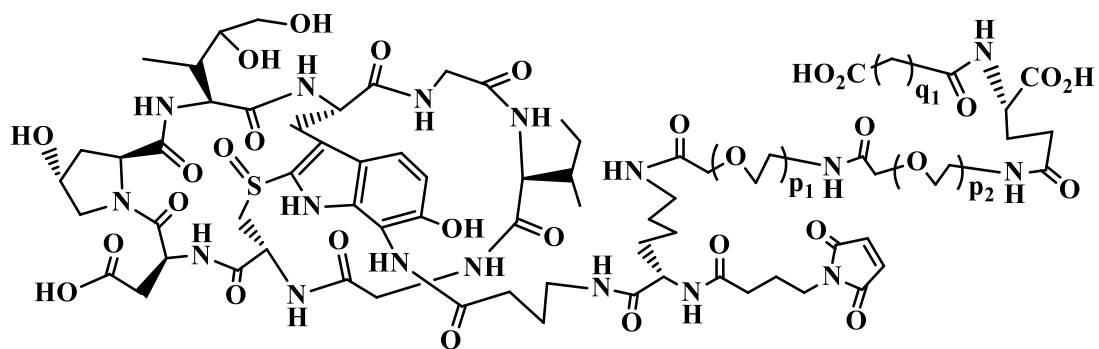


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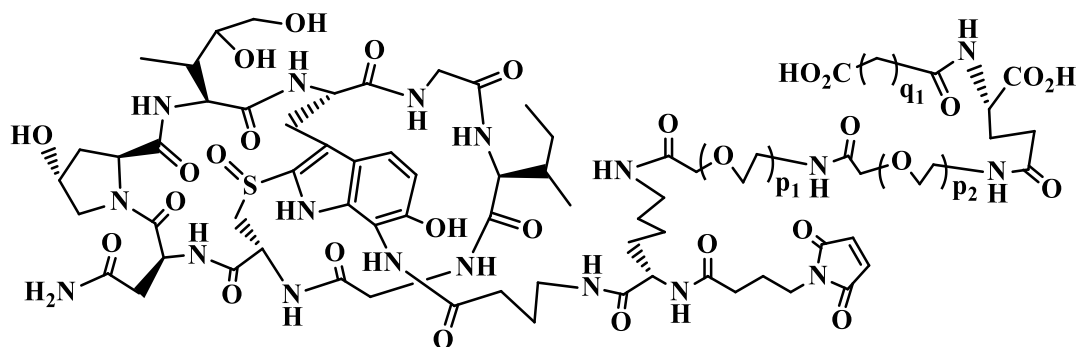




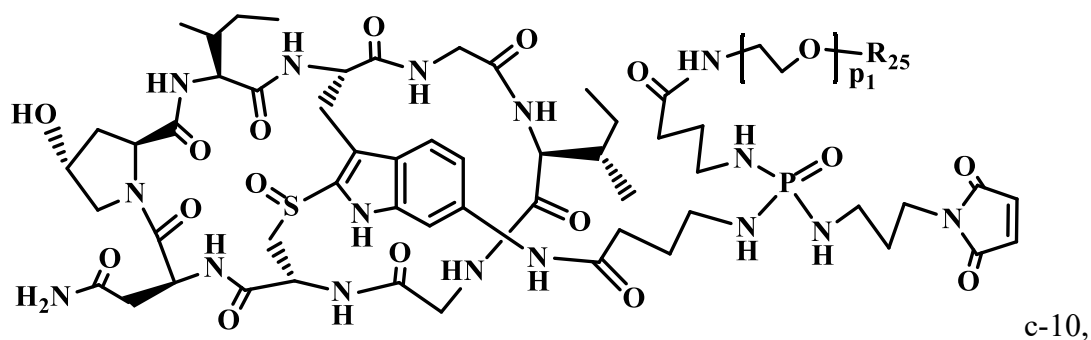
c-07,



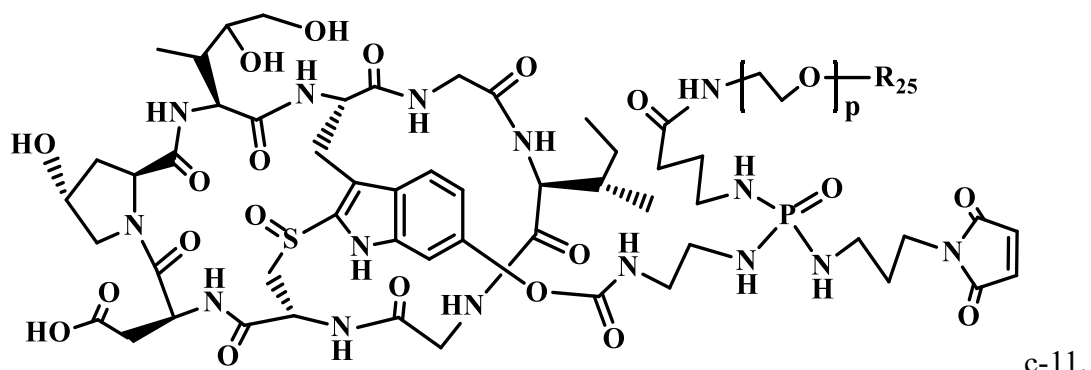
c-08,



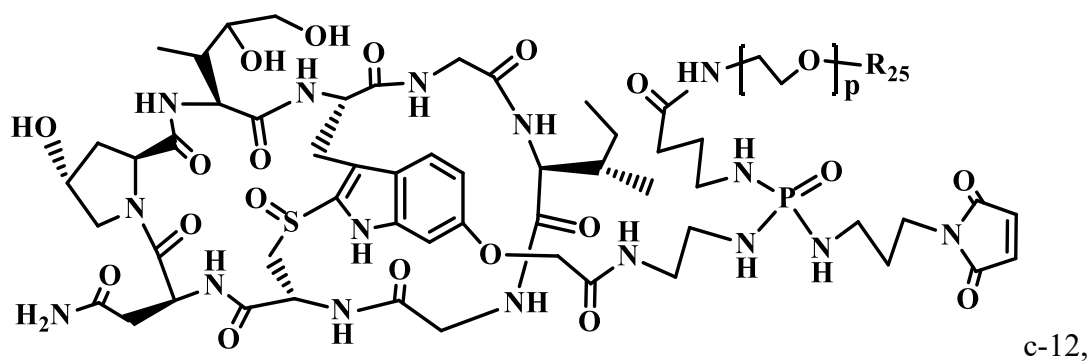
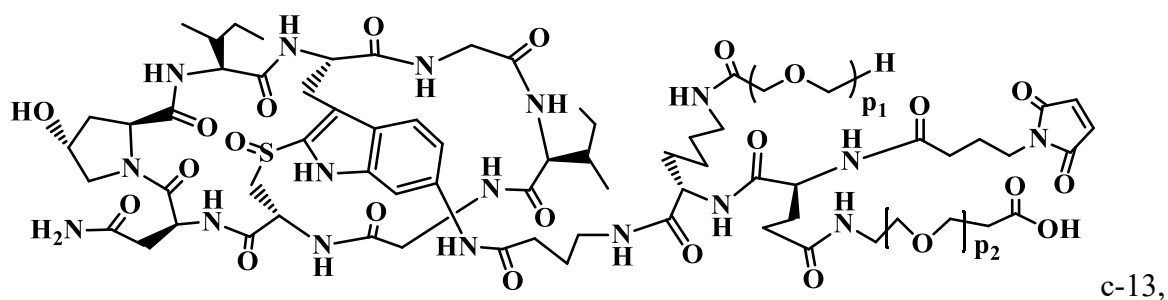
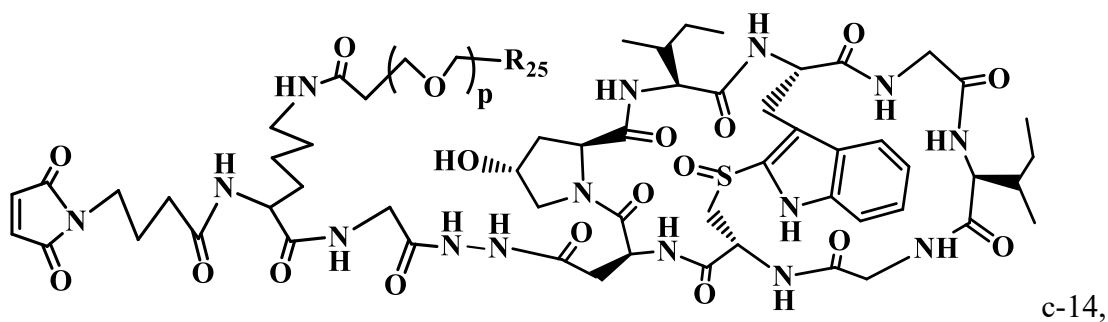
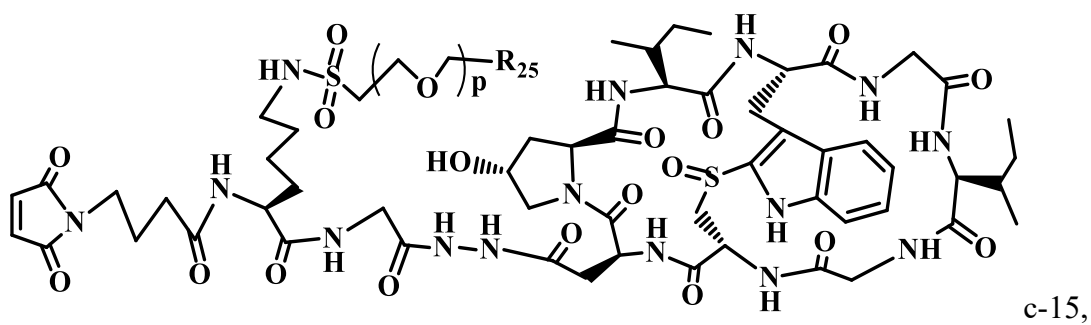
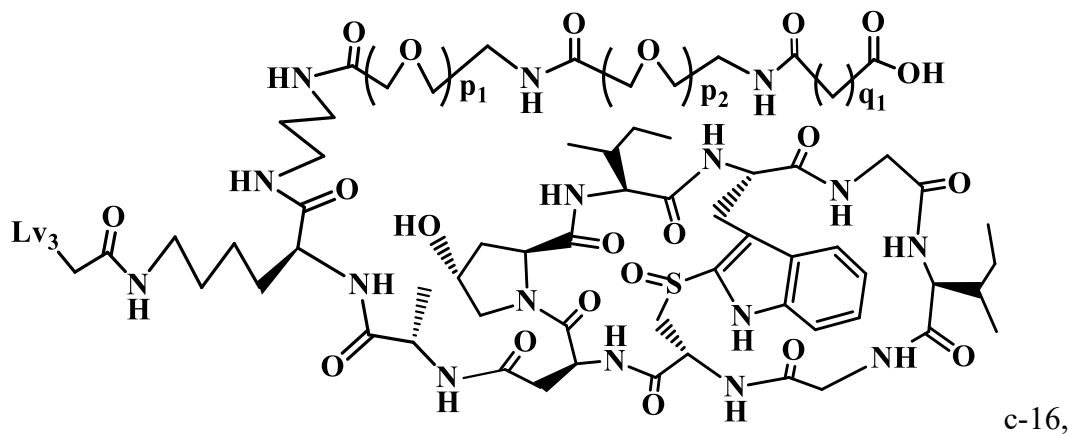
c-09,

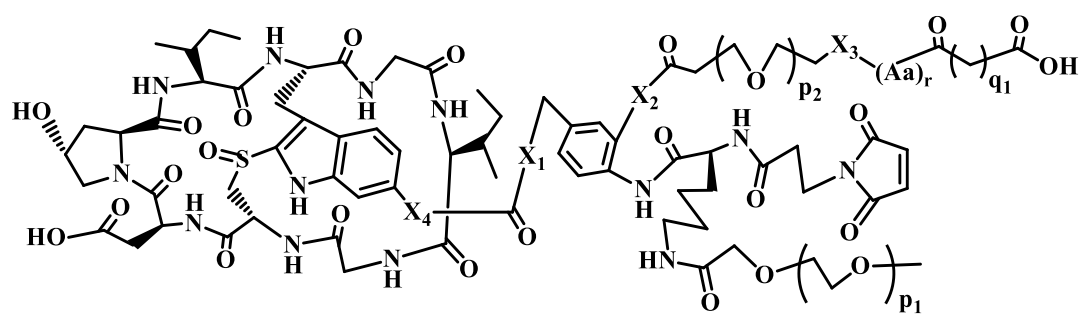


c-10,

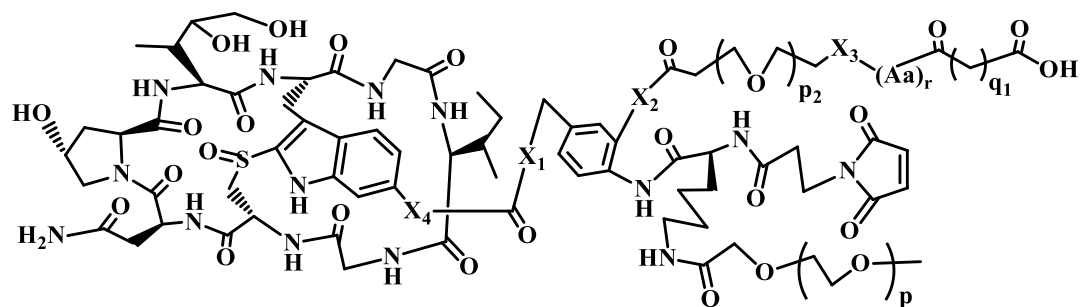


c-11,

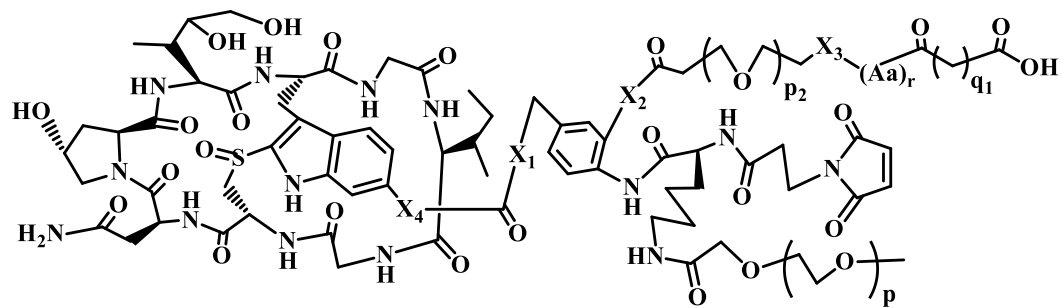




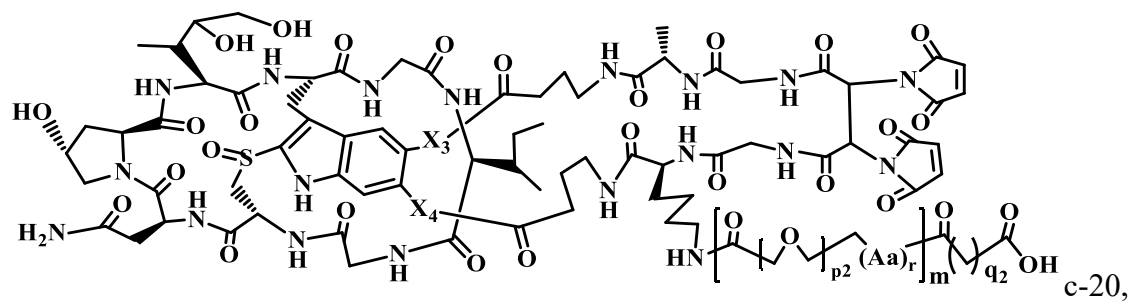
c-17,



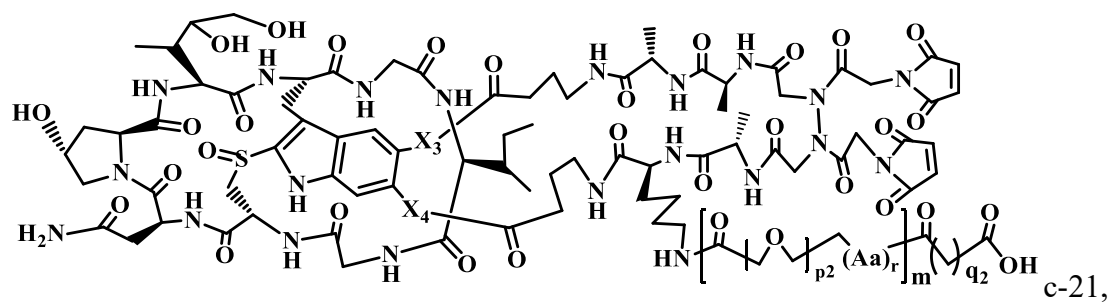
c-18,



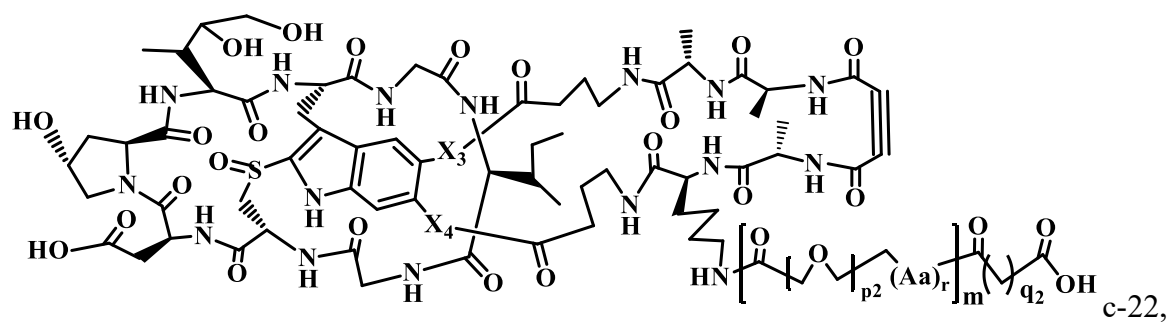
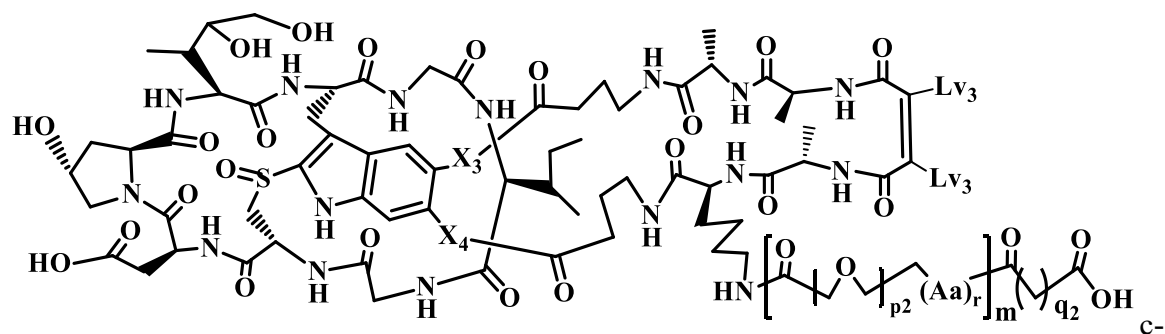
c-19,



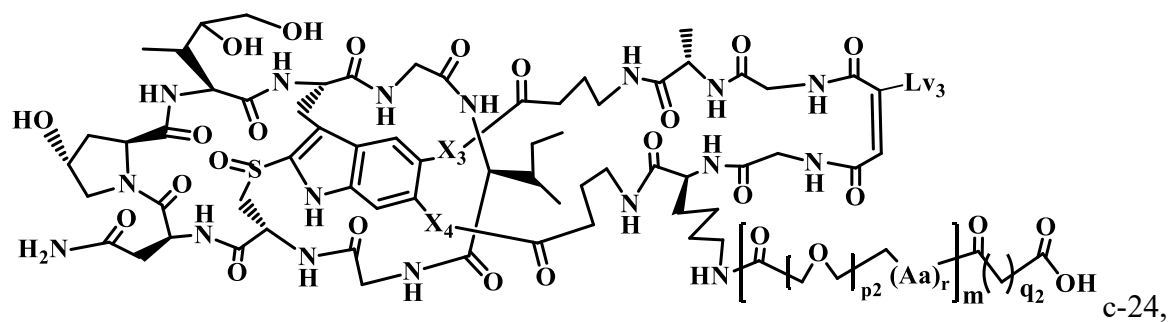
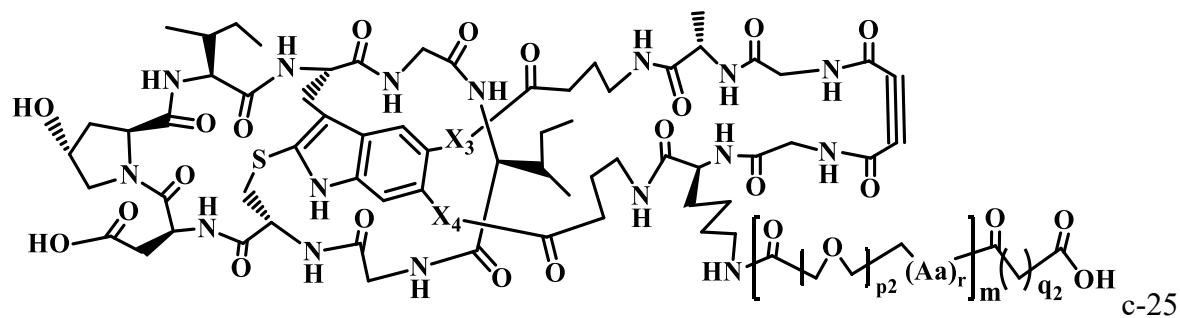
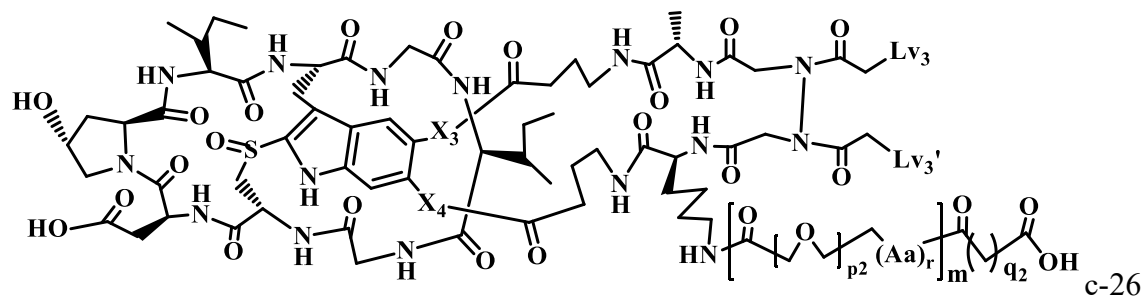
c-20,

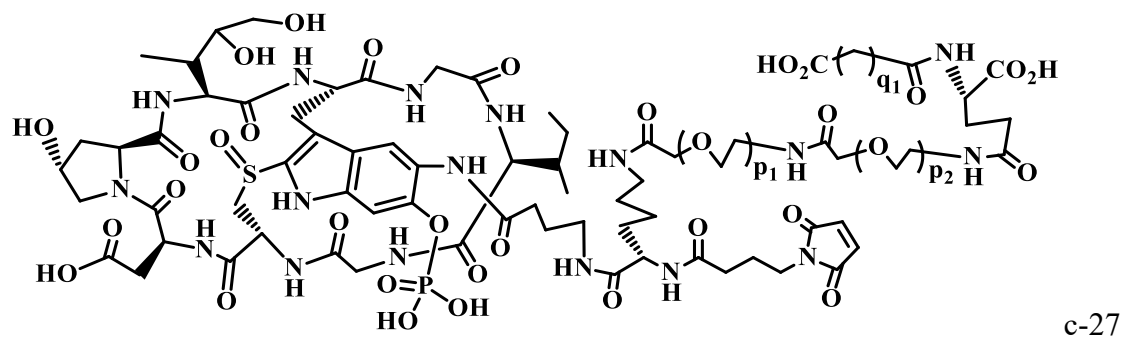
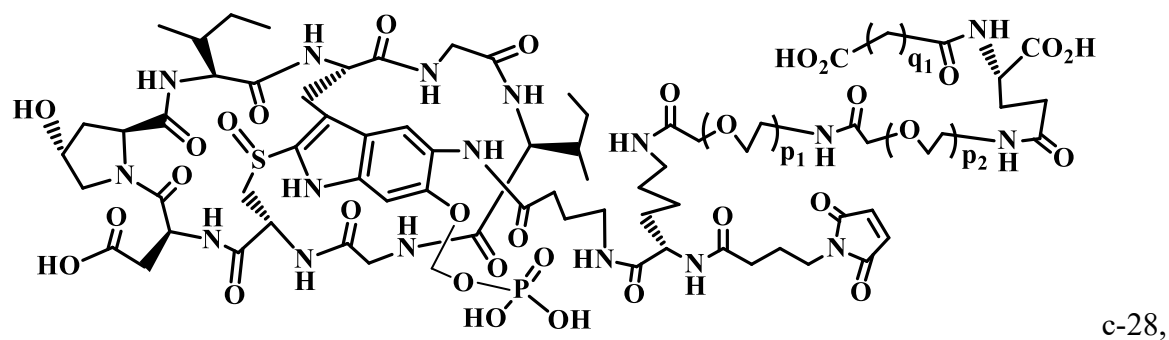
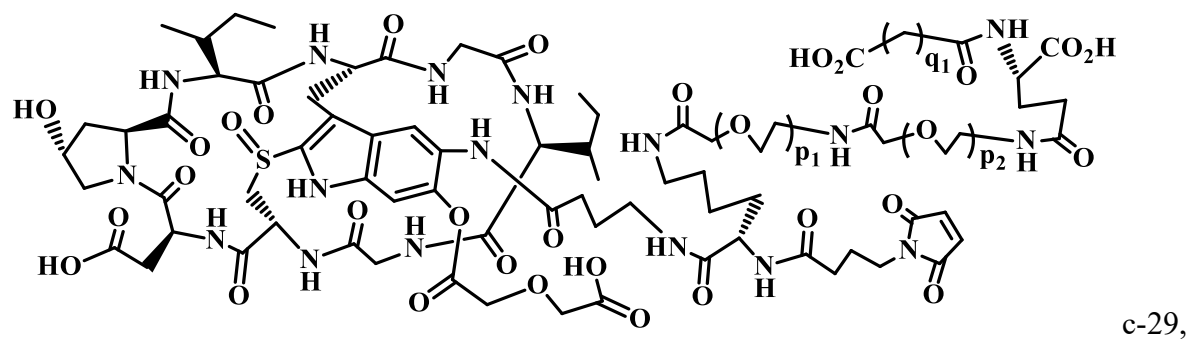
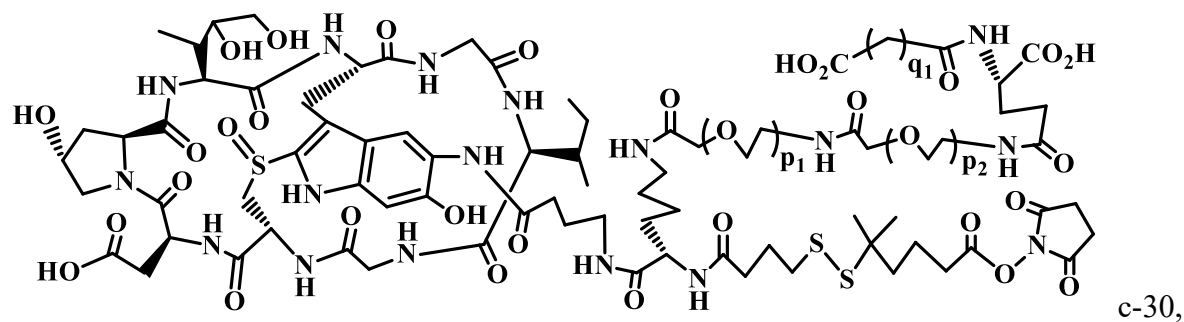
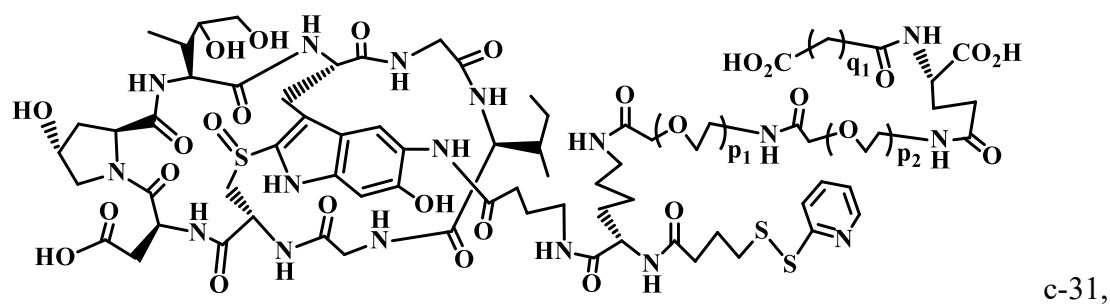


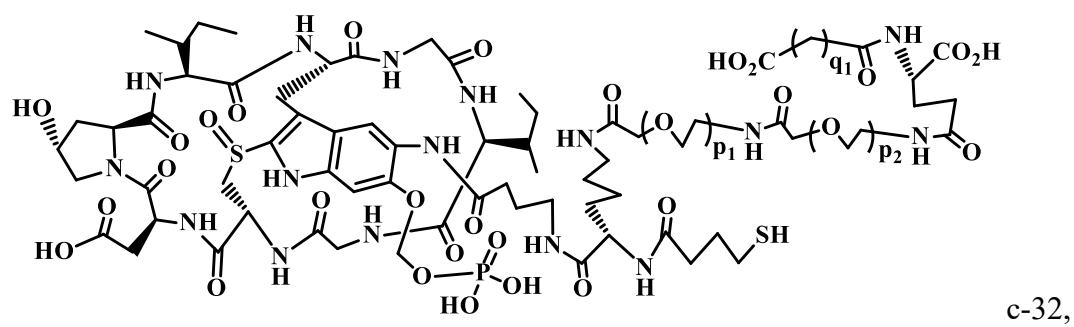
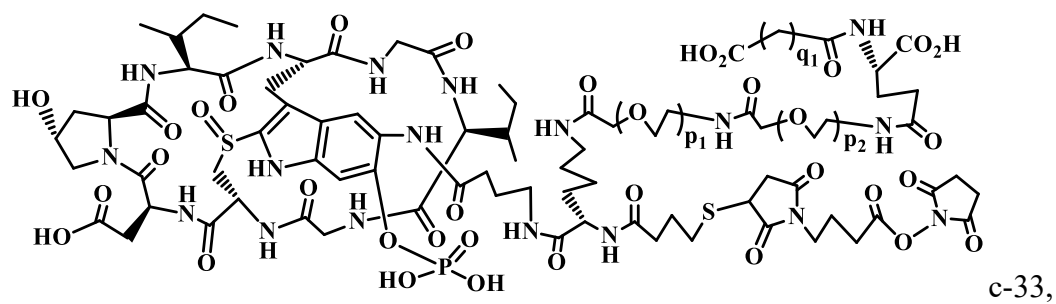
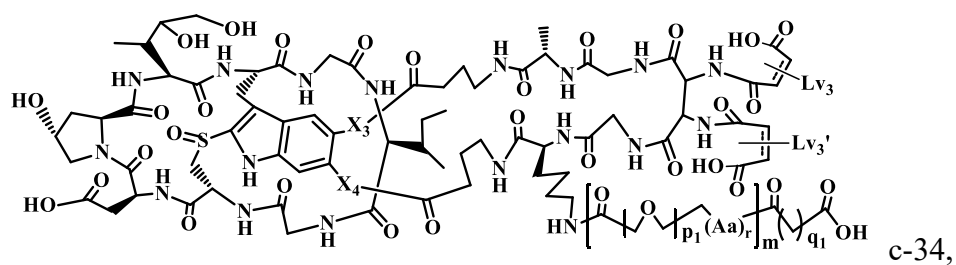
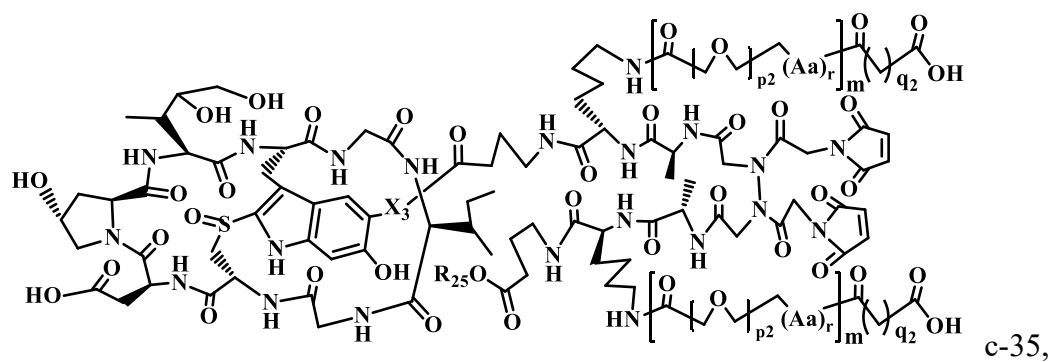
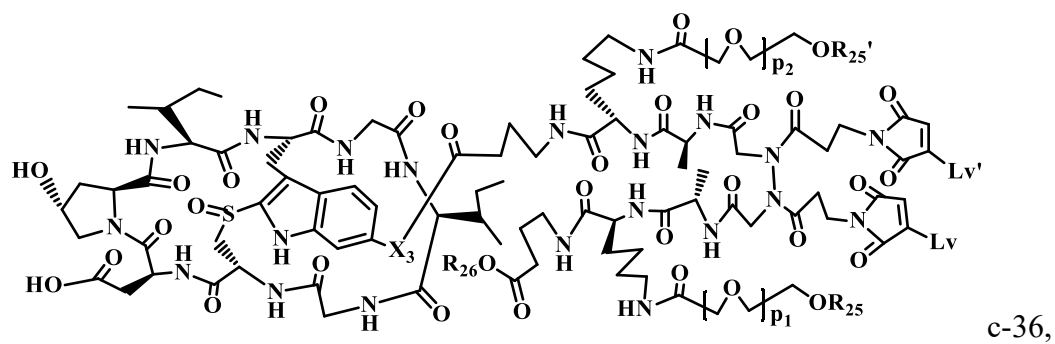
c-21,

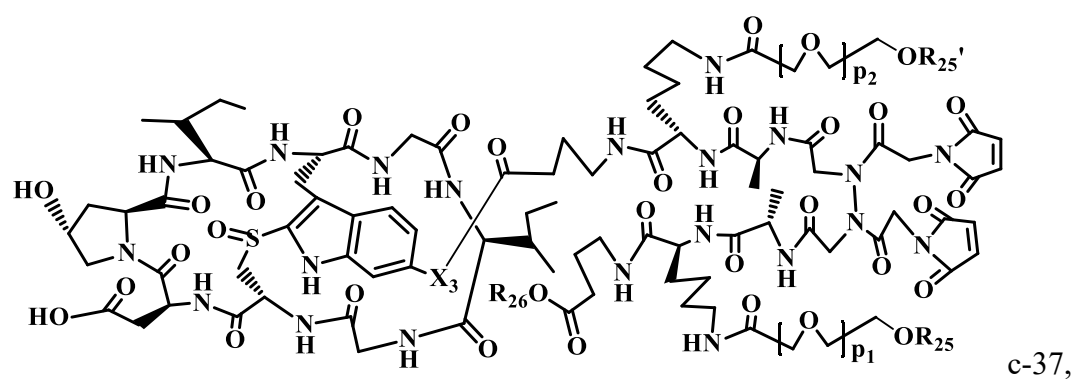
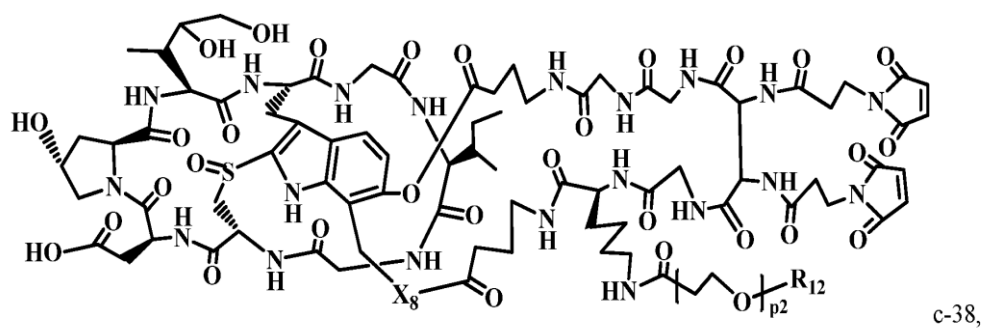


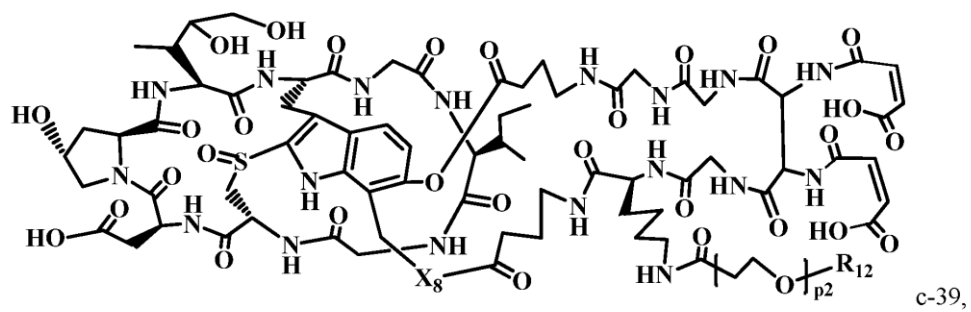
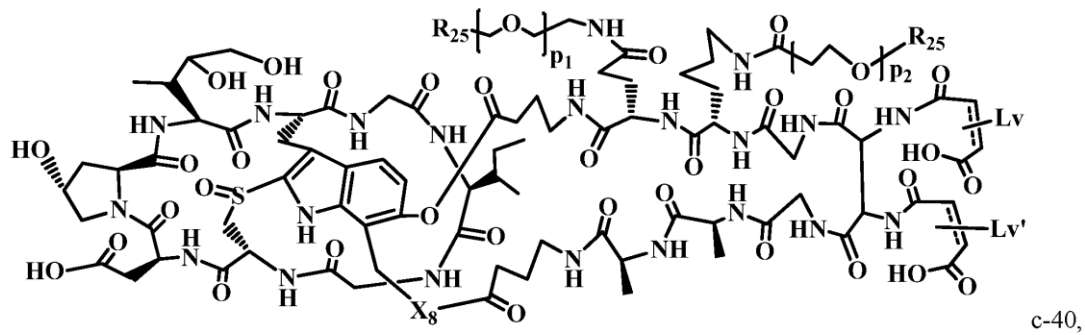
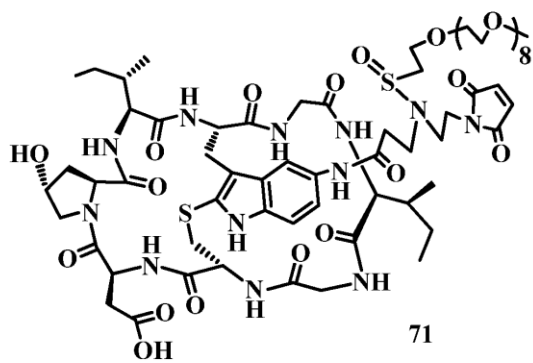
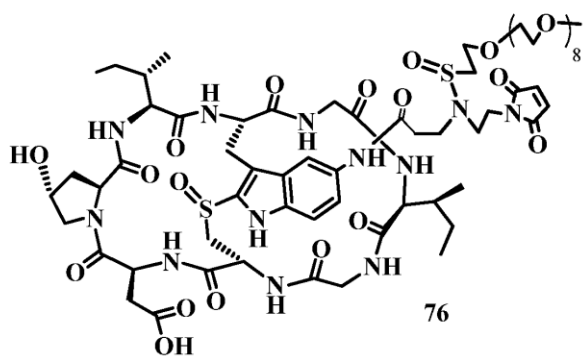
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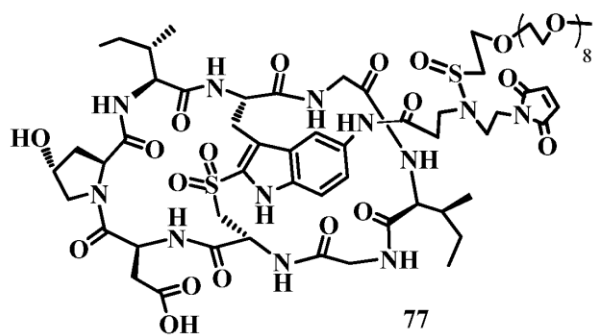
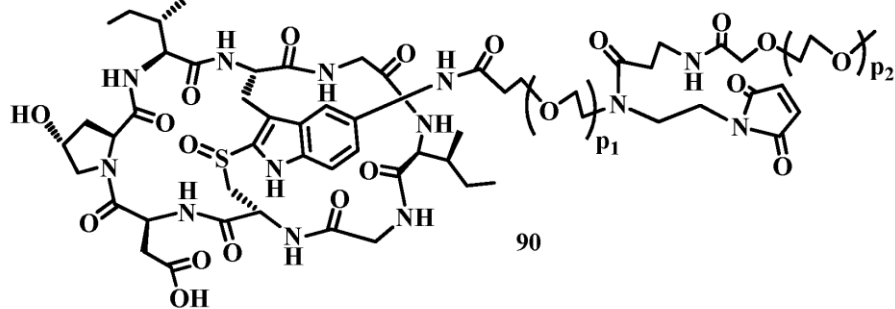
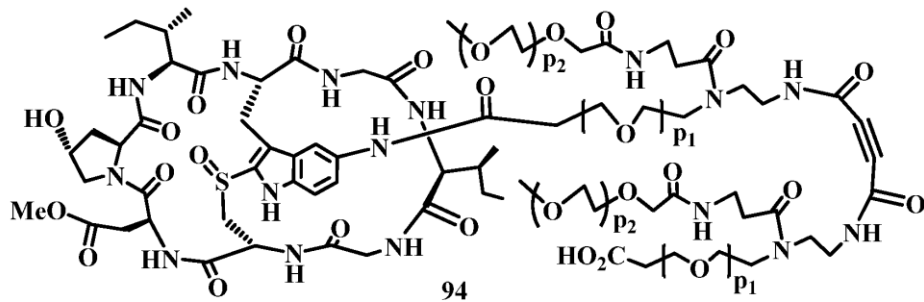
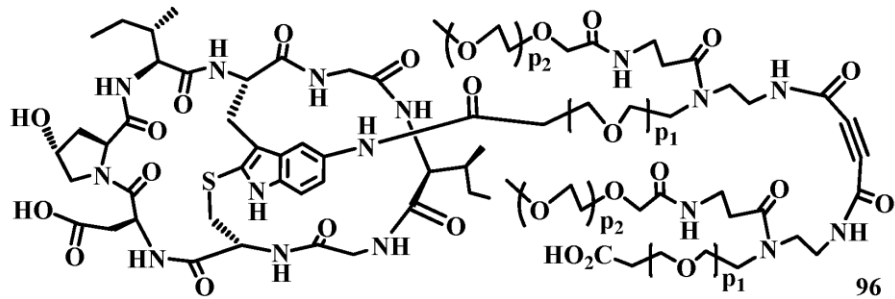
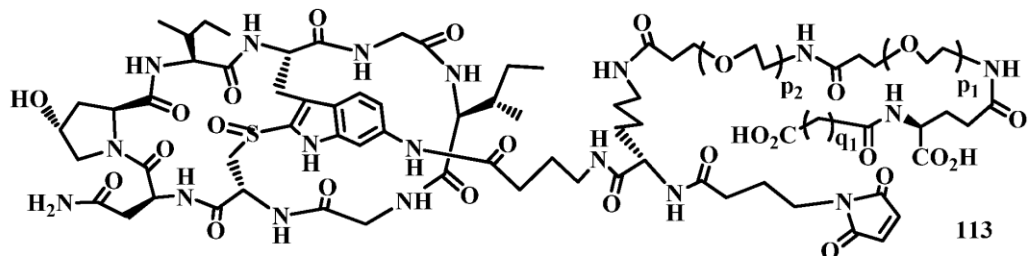


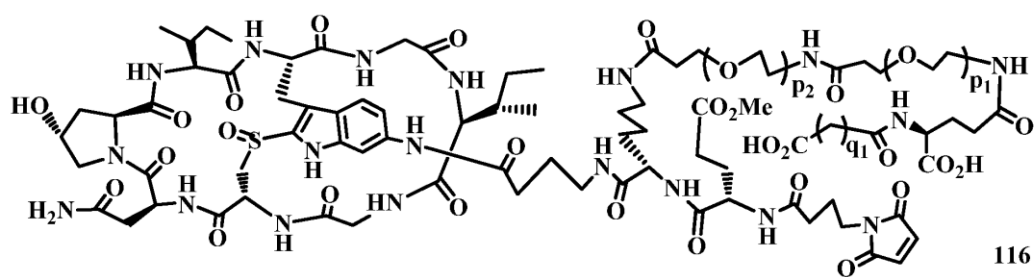
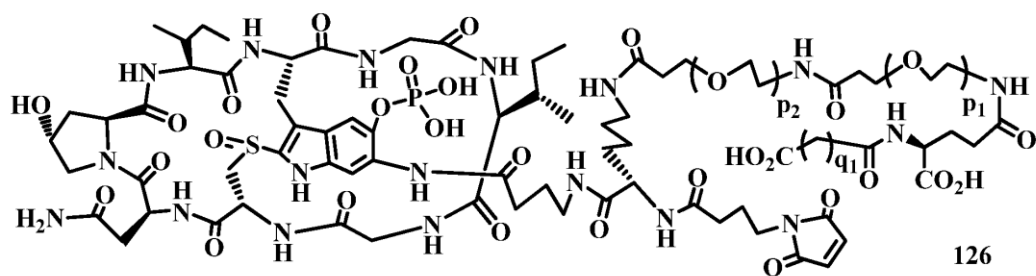
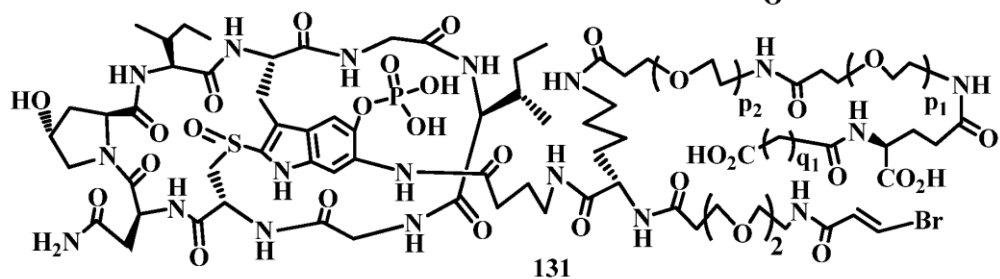
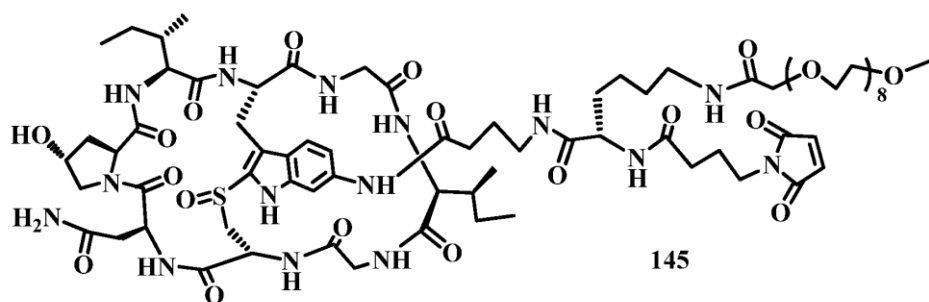
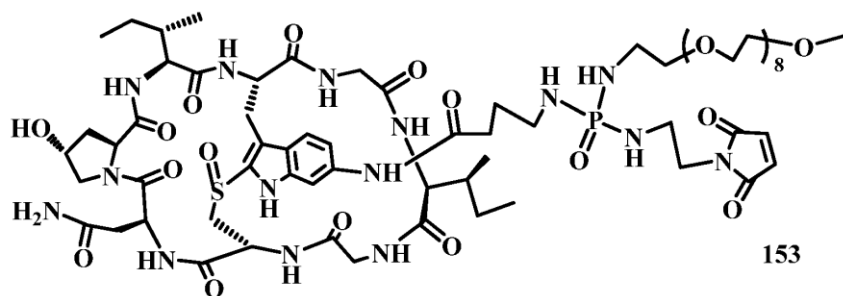


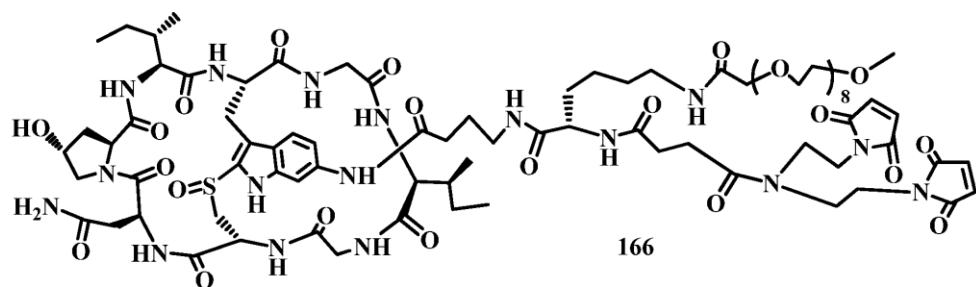
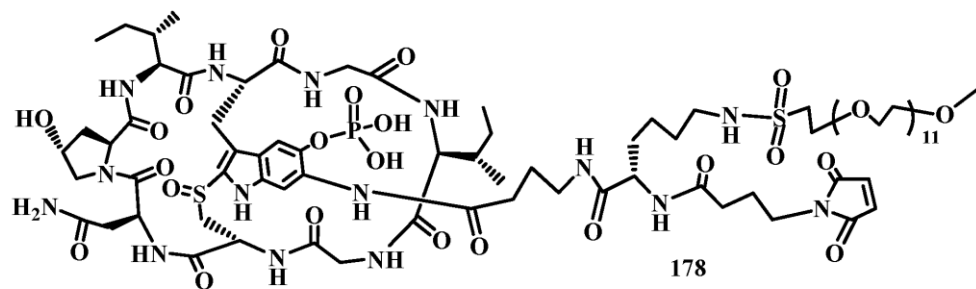
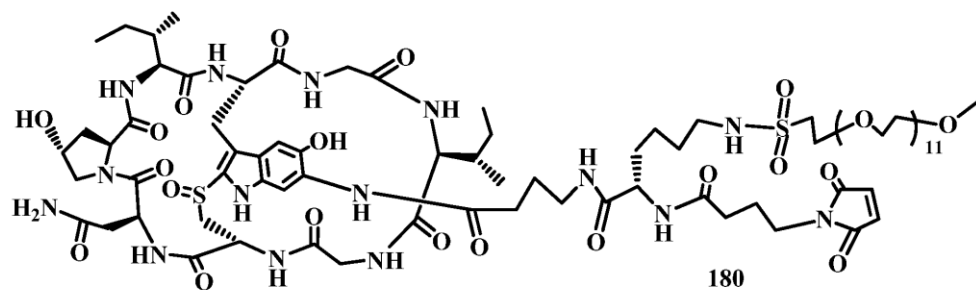
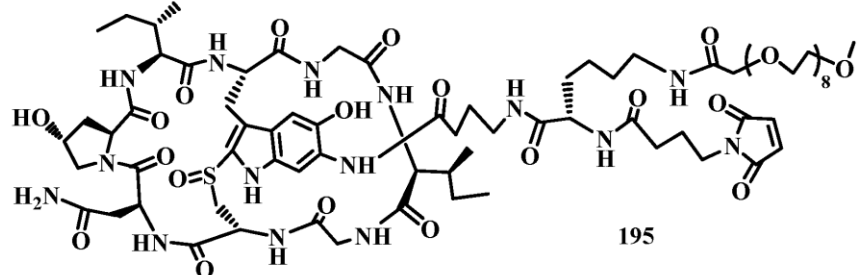
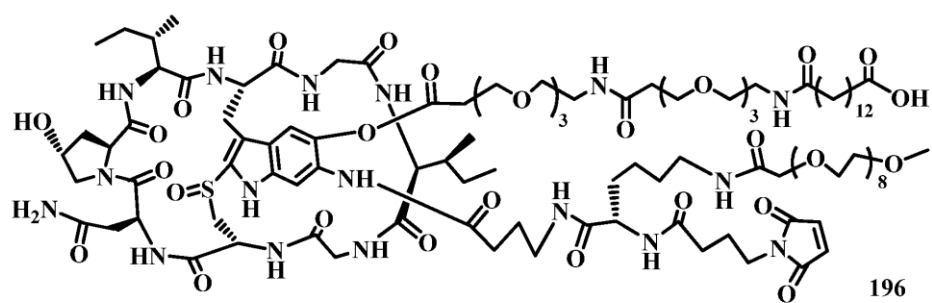


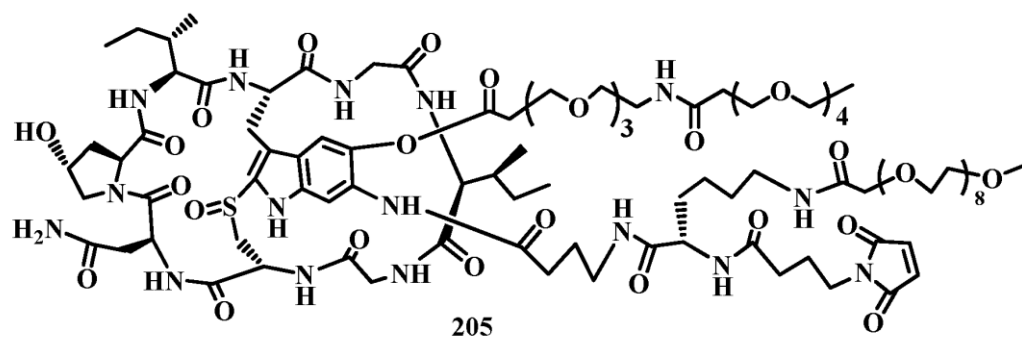
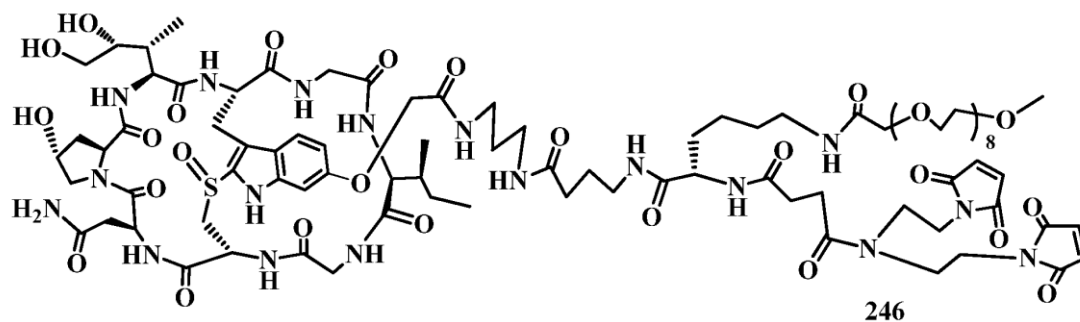
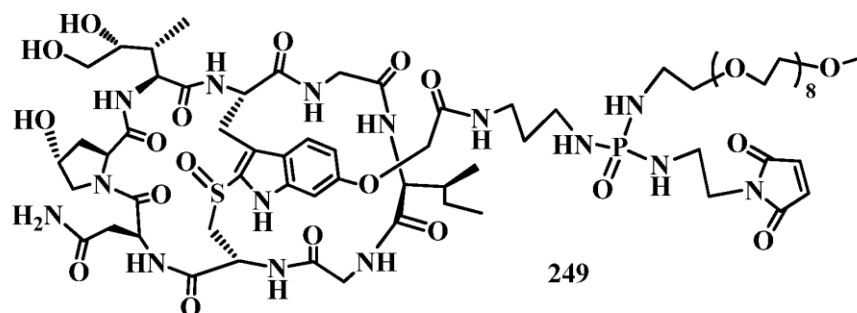
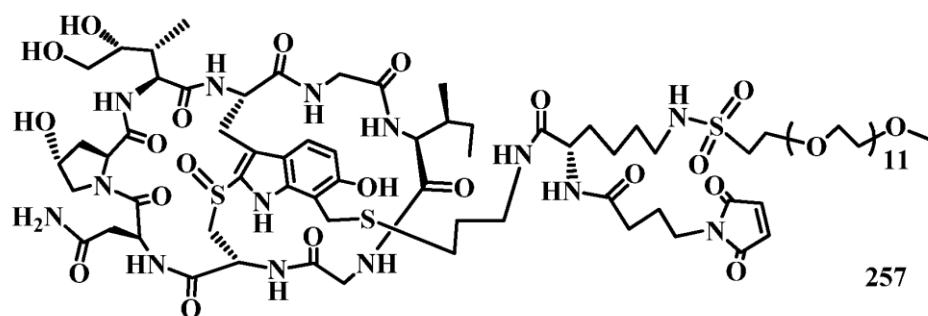
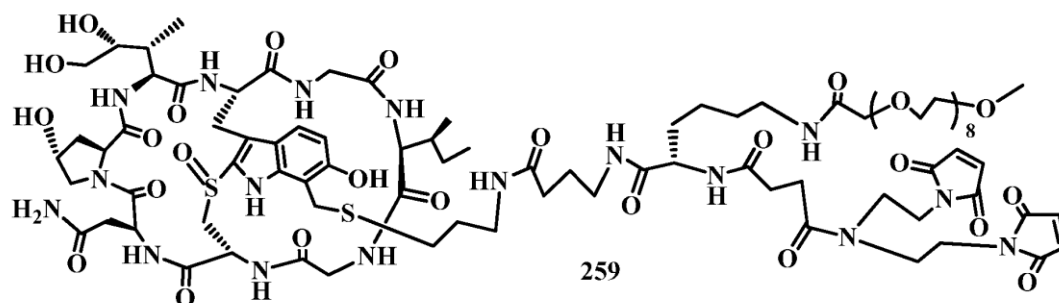


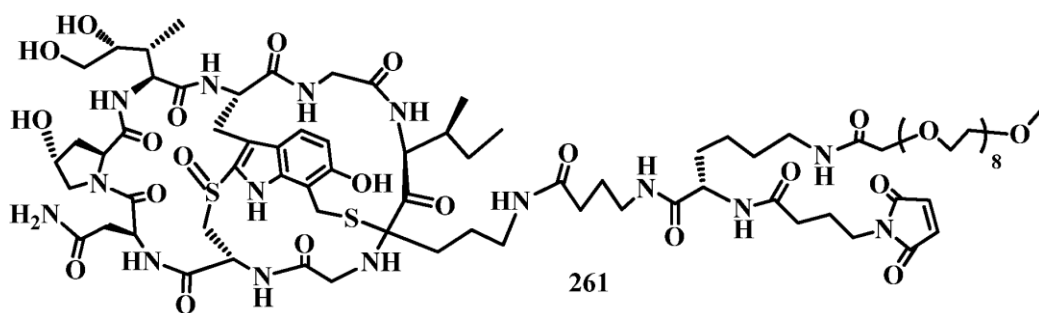






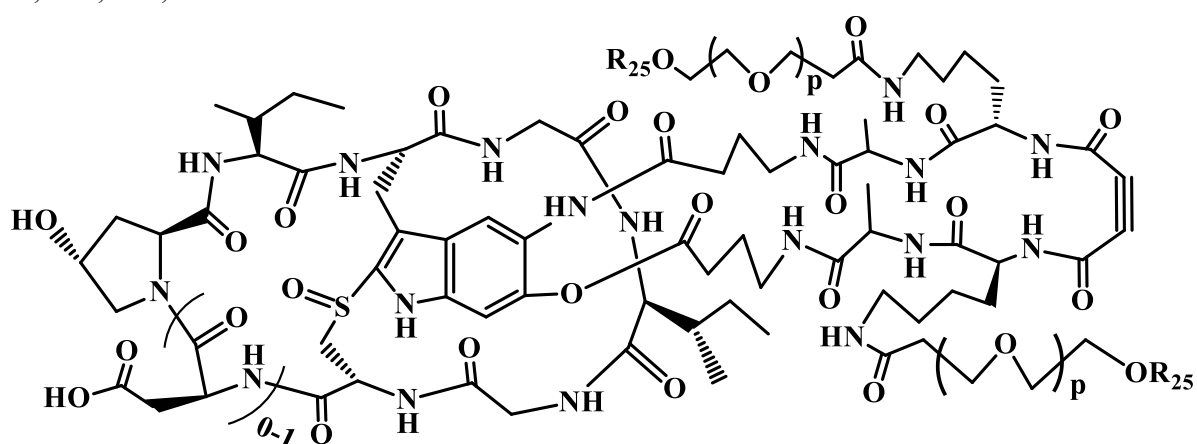




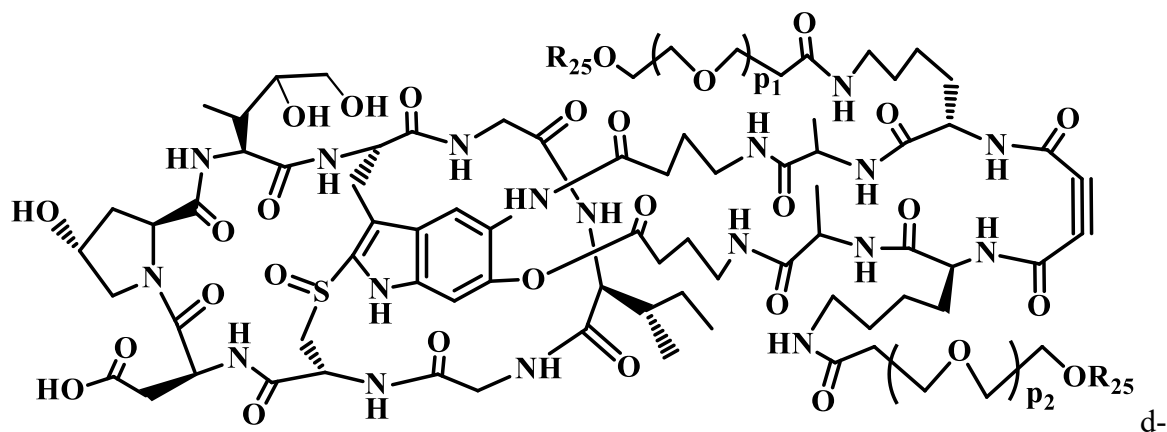


Or one or more isotope of chemical elements, pharmaceutically acceptable salts, hydrates, or hydrated salts; or the polymorphic crystalline structures of these compounds; or the optical isomers, racemates, diastereomers or enantiomers; wherein  $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ ,  $X_5$ ,  $X_8$ ,  $Z_2$ ,  $Z_3$ ,  $p$ ,  $p_1$ ,  $p_2$ ,  $p_3$ ,  $q_1$ ,  $q_2$ ,  $LV_3$ ,  $m$ ,  $n$ ,  $R_{12}$ ,  $R_{12'}$ ,  $R_{25}$ ,  $R_{25'}$ ,  $(Aa)_r$  and  $mAb$  are as defined in claim 1.

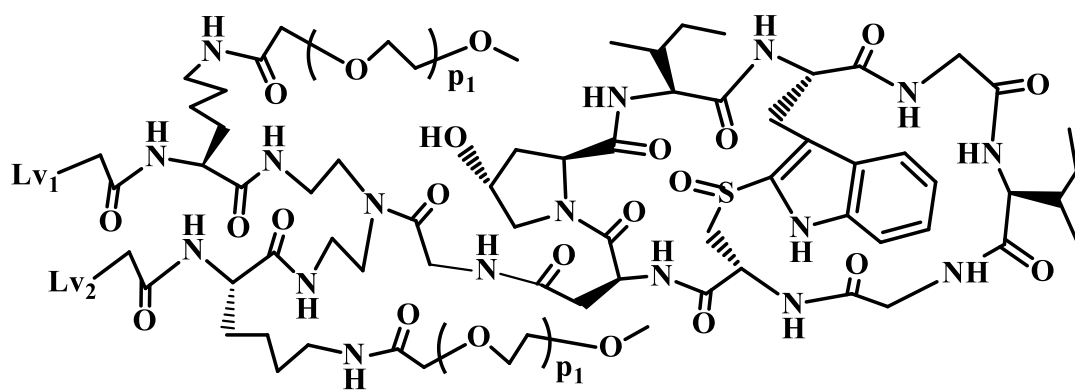
12. The compound of Formula (V) according to claim 4 having the following structures of d-01 to d-25, 215, 220, 239 below:



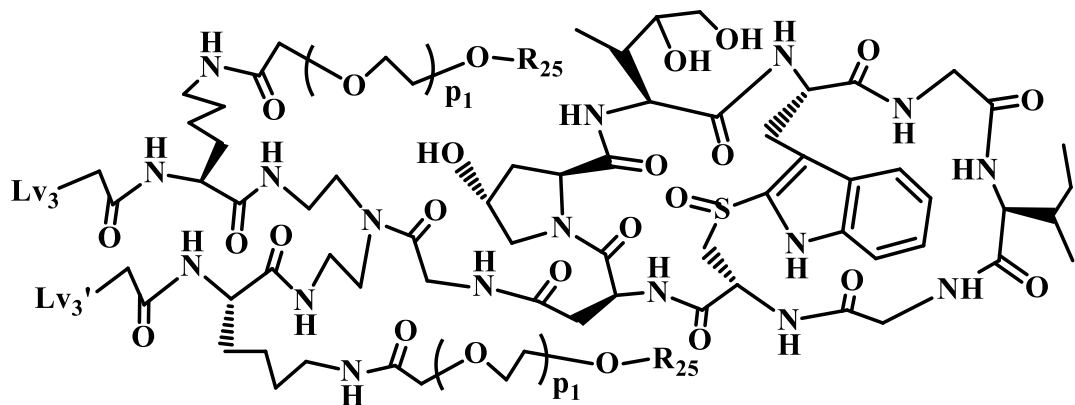
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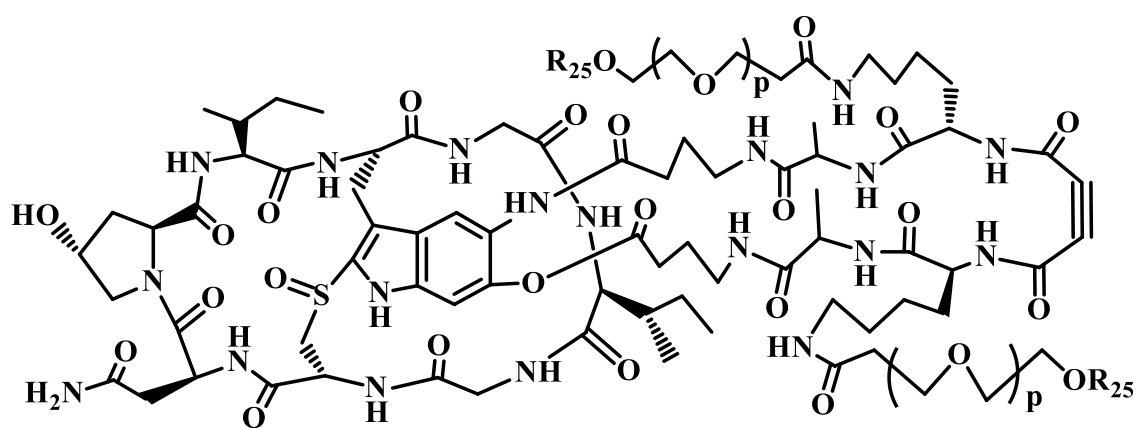
02,



d-03,

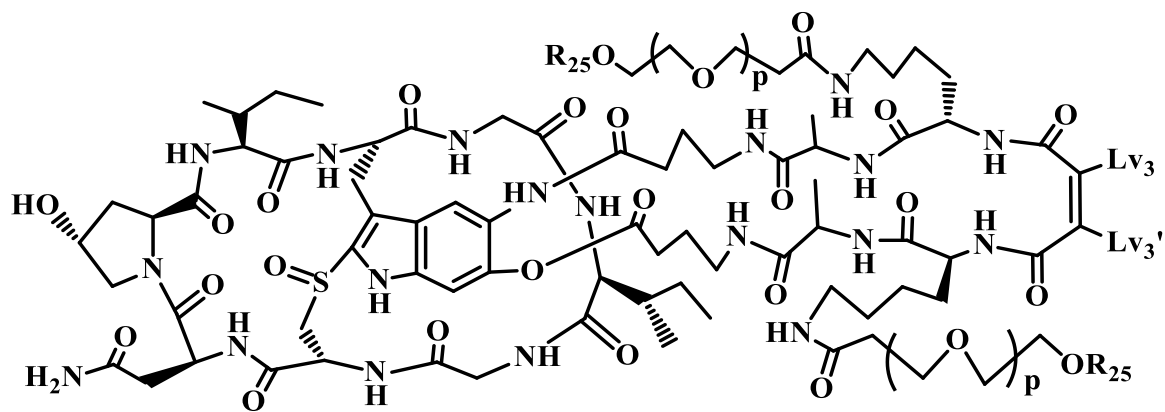


d-04,

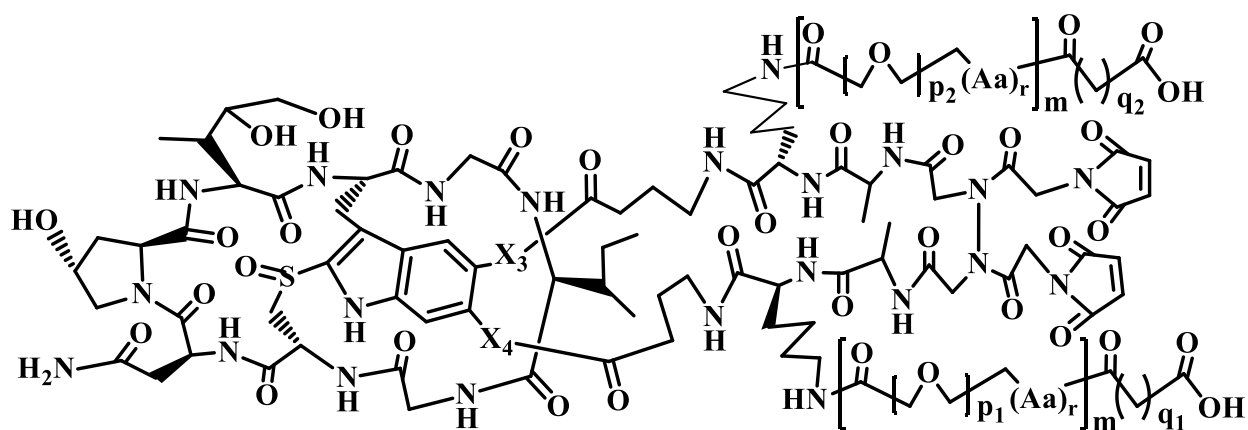


d-

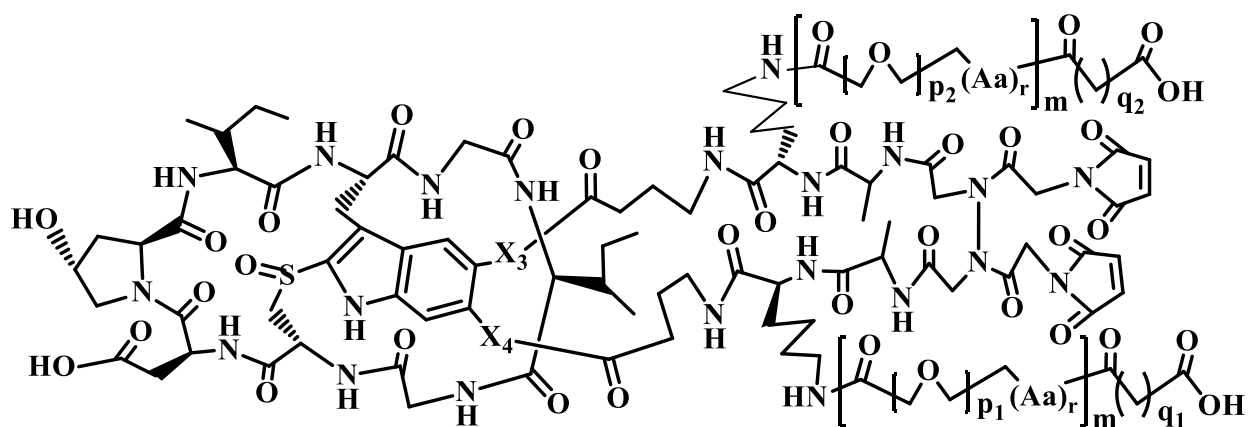
05,



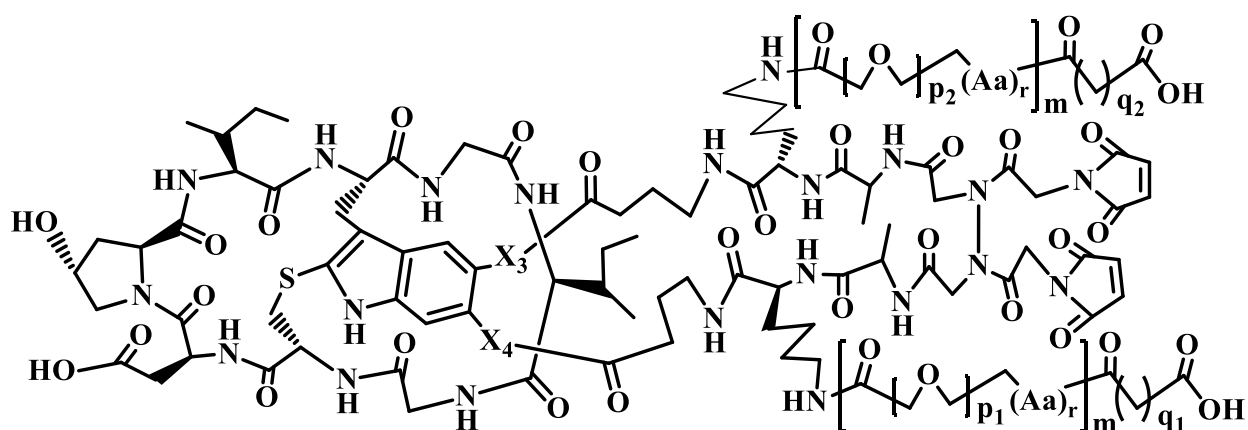
d-06,



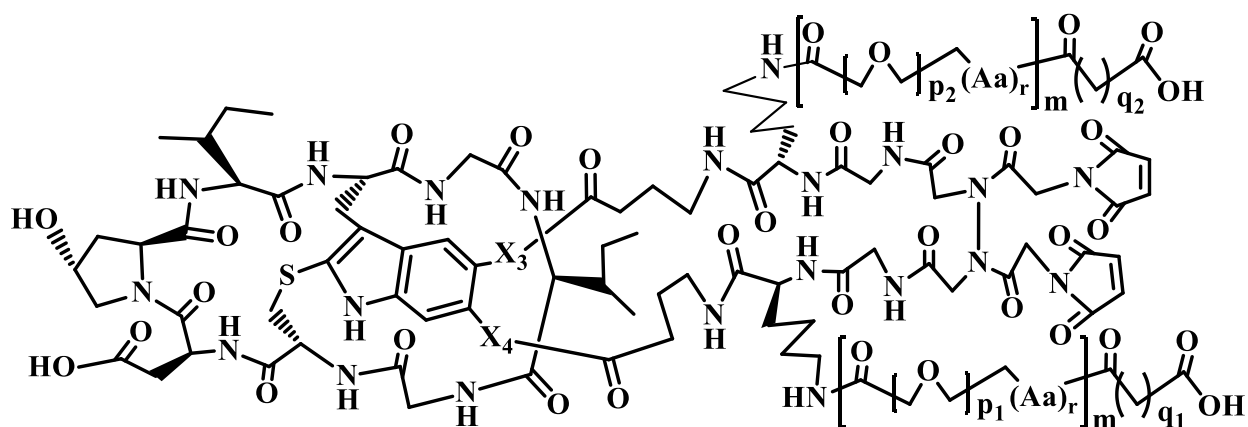
d-07,



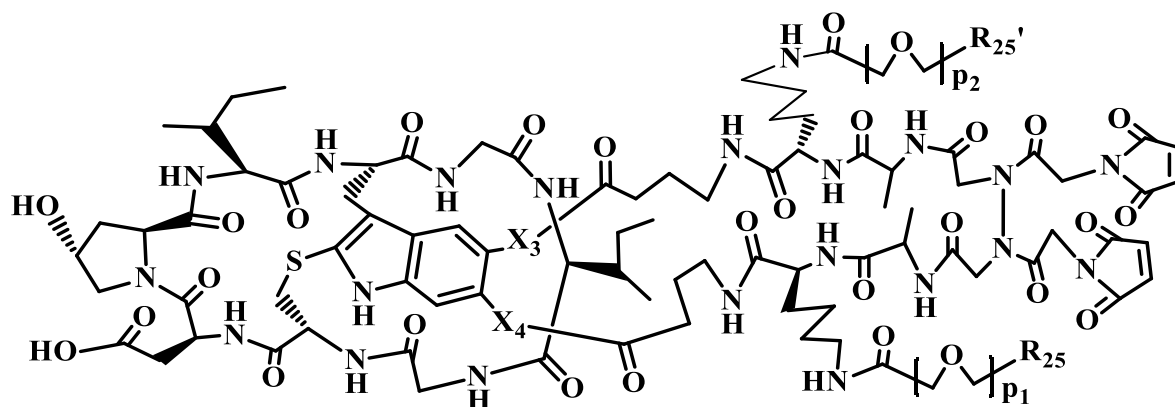
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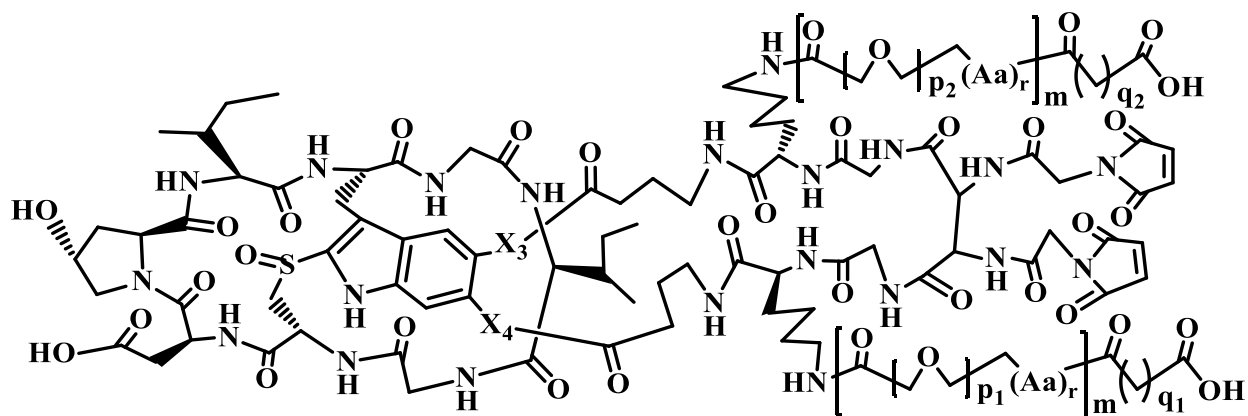
d-09,



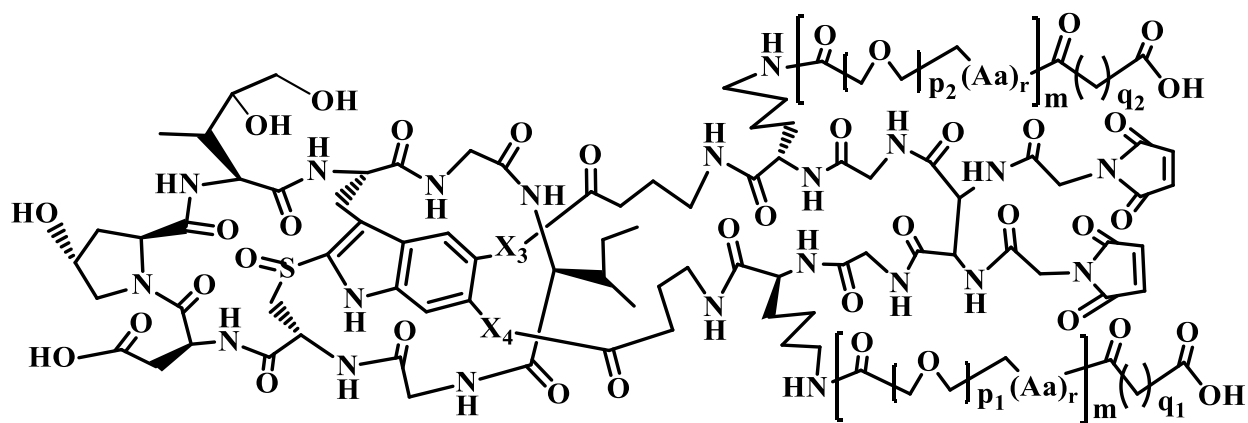
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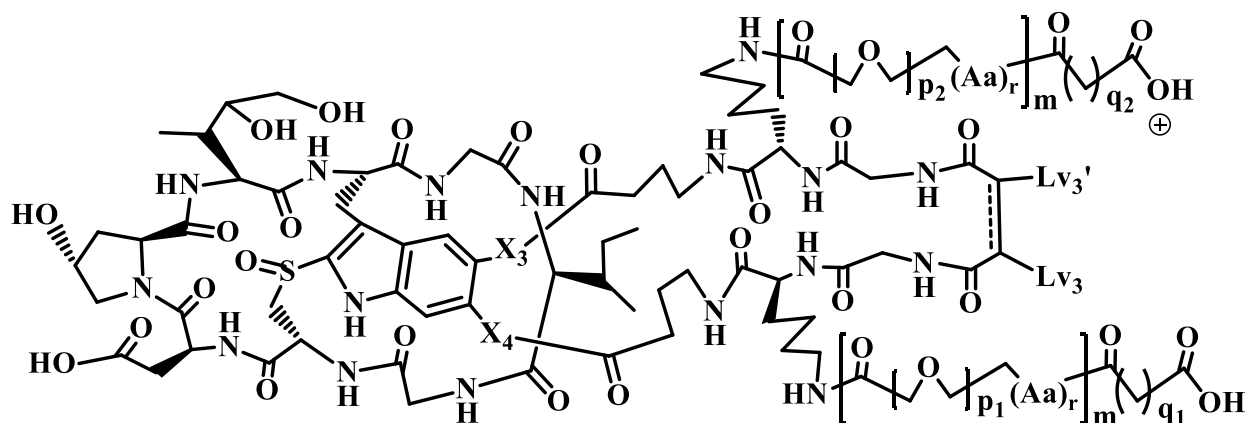
d-11,



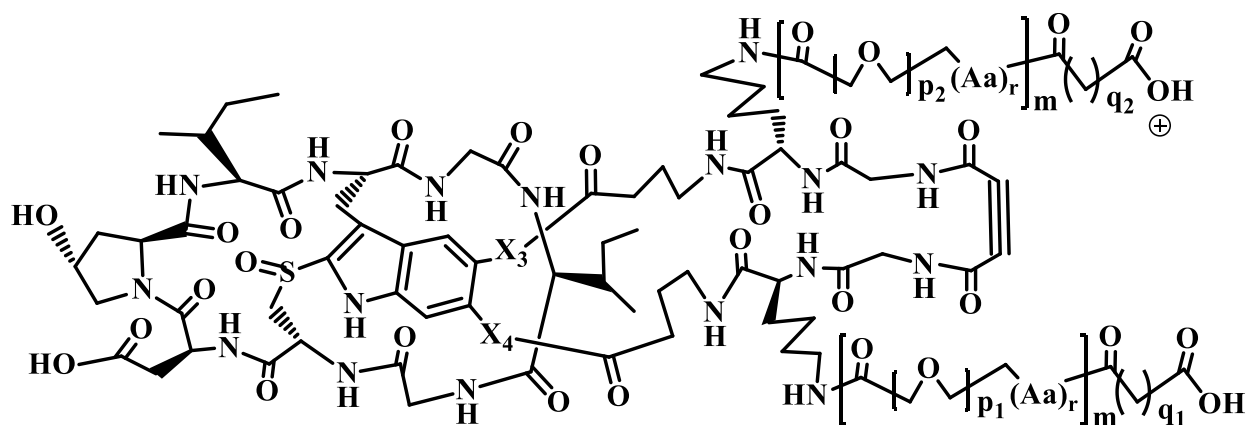
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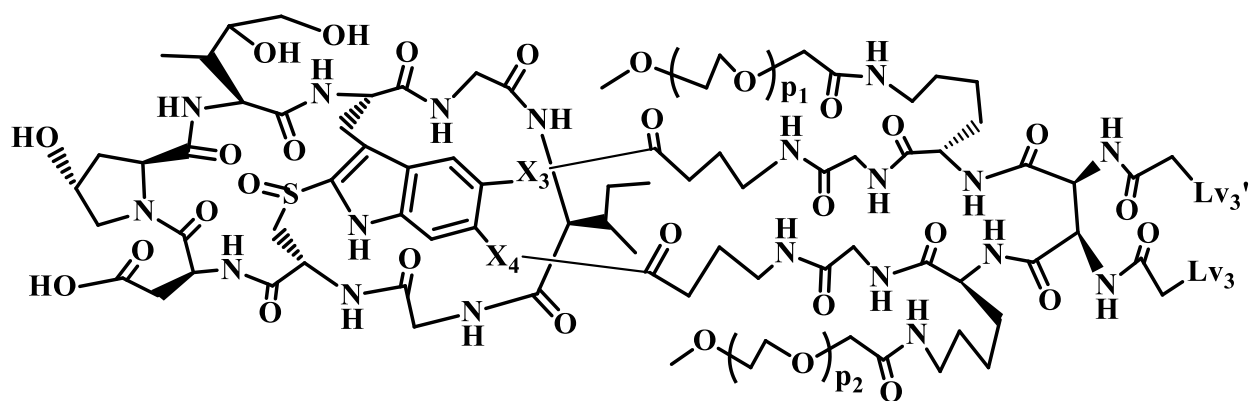
d-13,



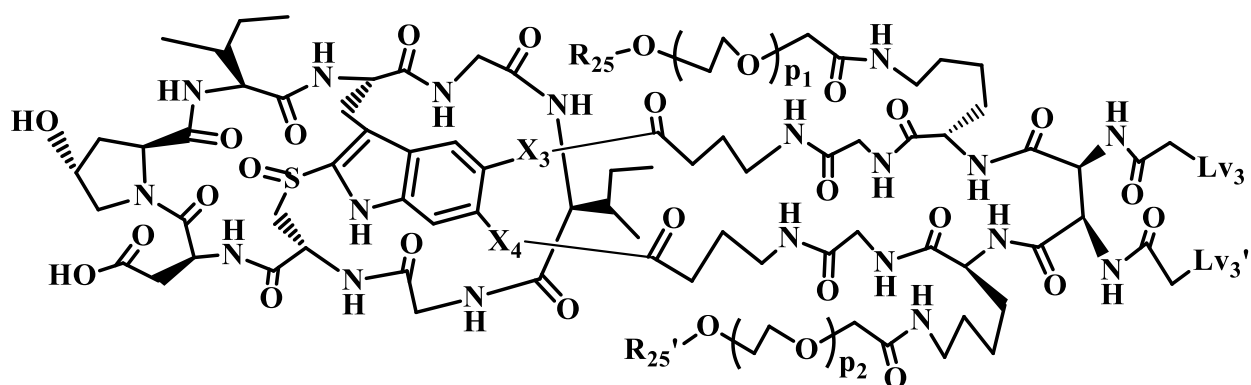
d-14,



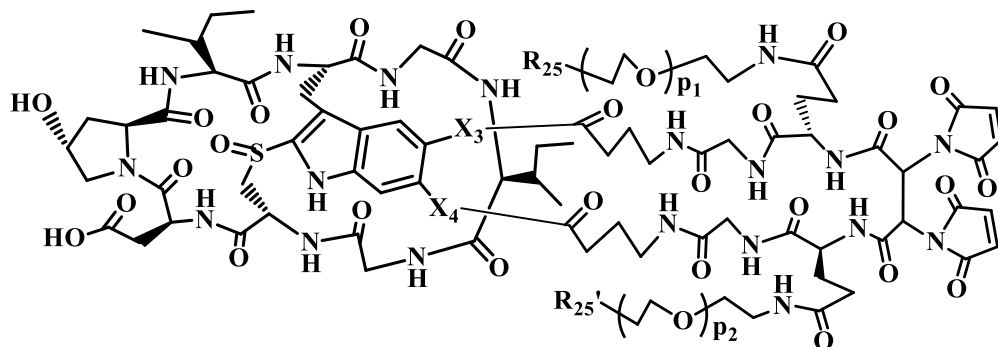
d-15,



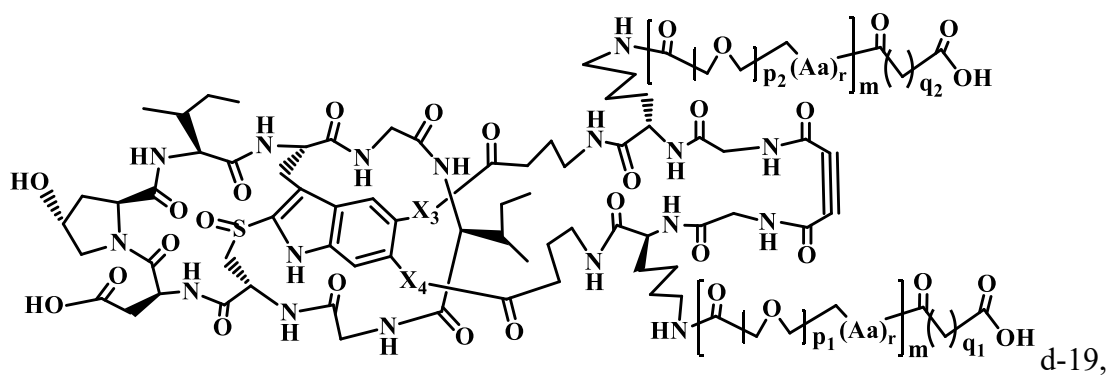
d-16,



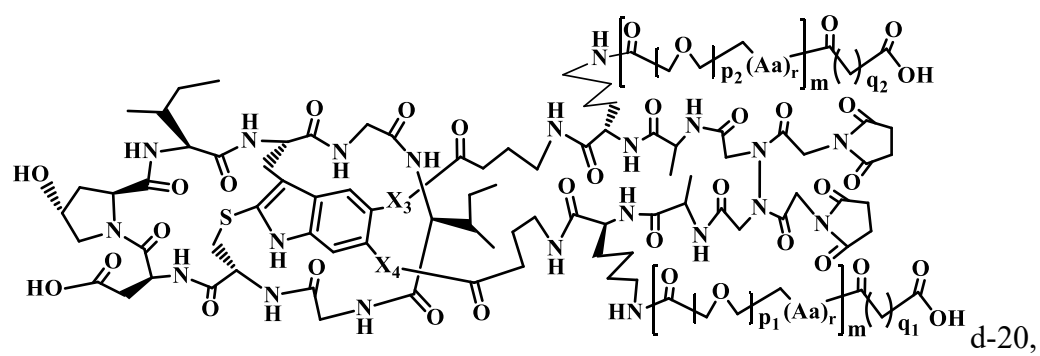
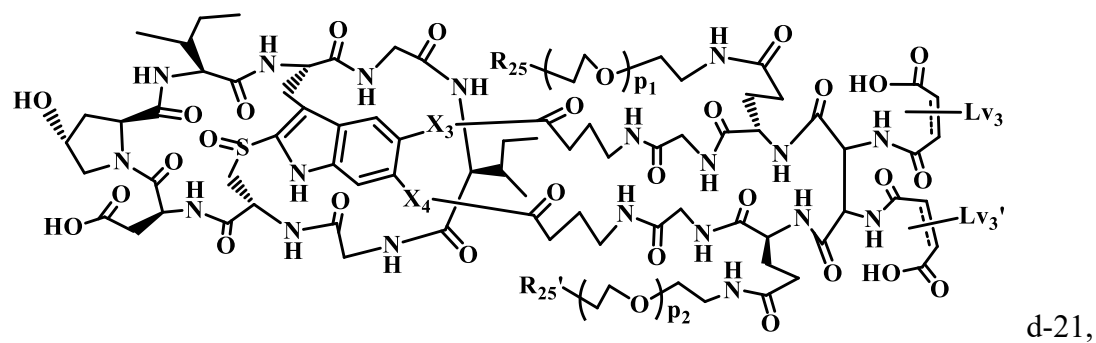
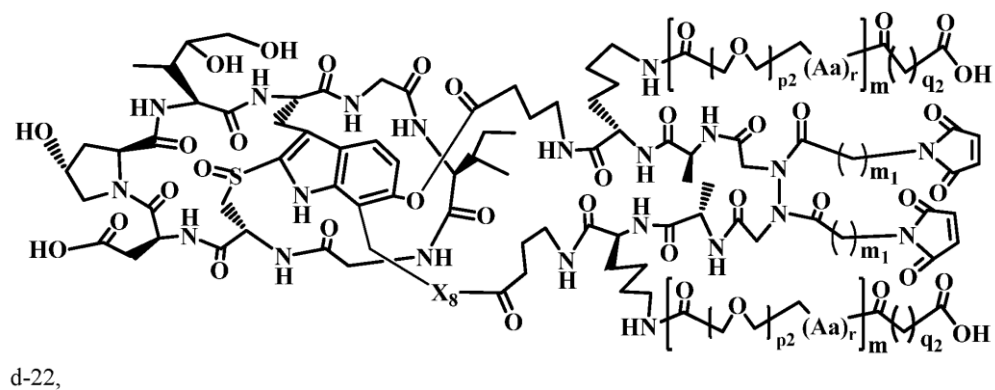
d-17,

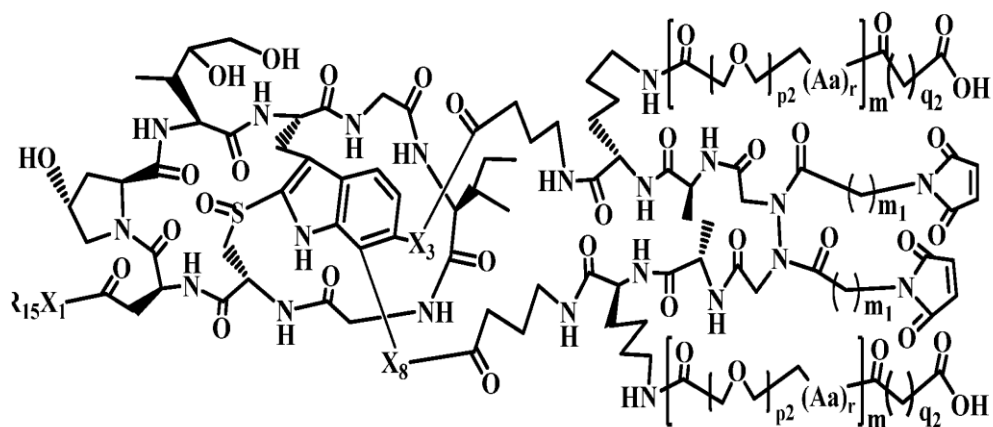


d-18,

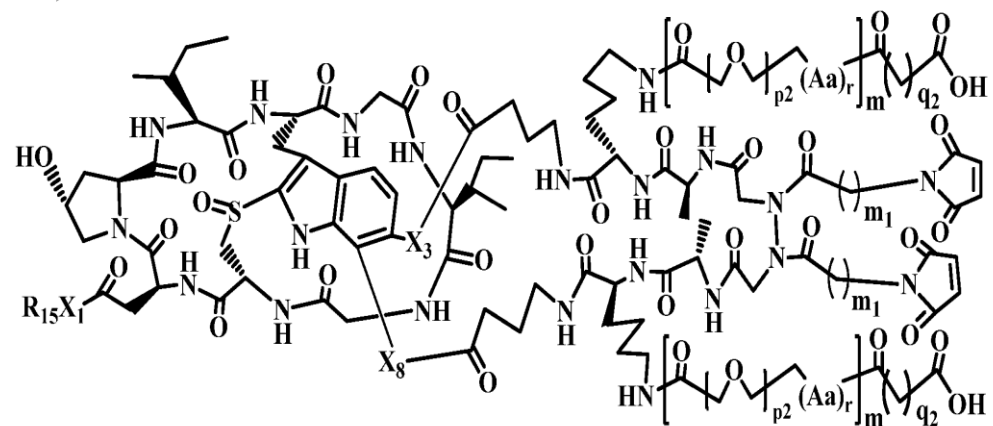


d-19,

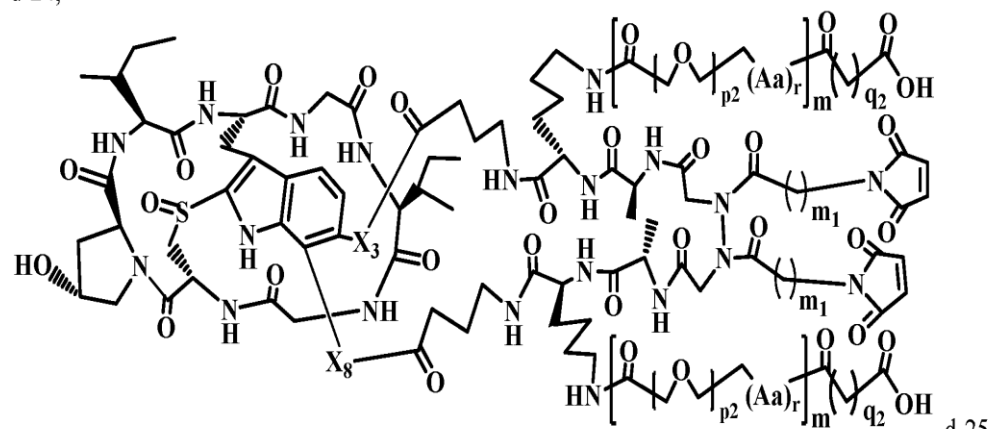




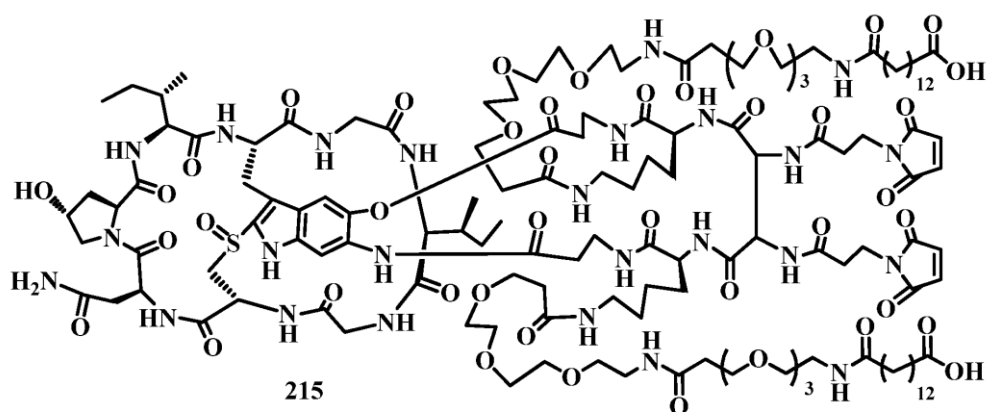
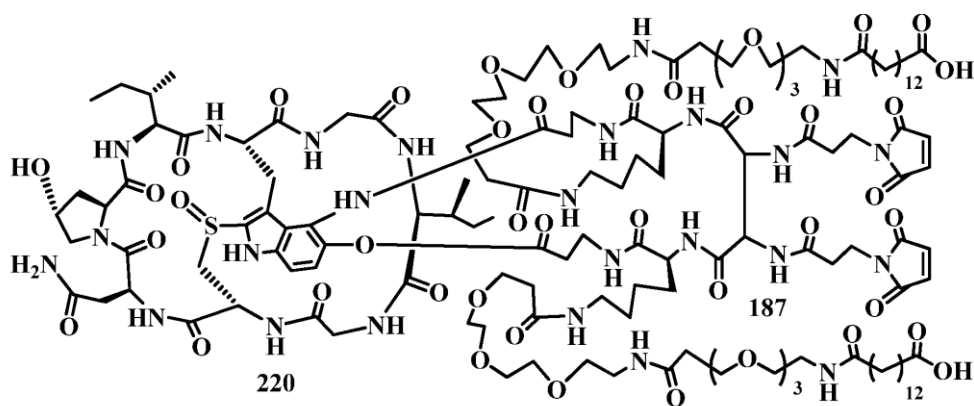
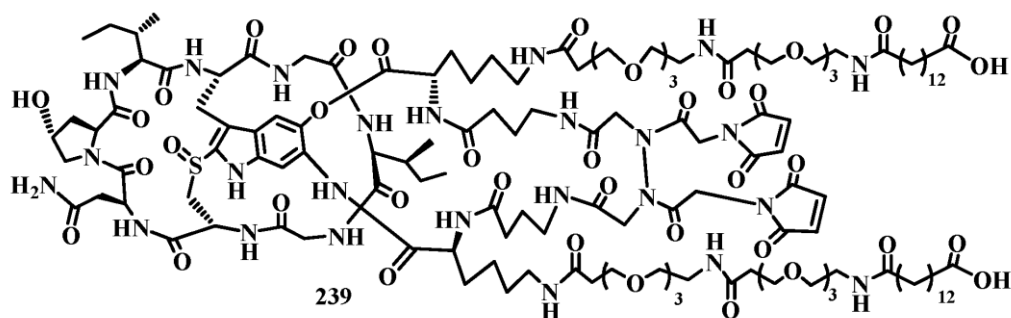
d-23,



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  $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ ,  $X_5$ ,  $X_8$ ,  $Z_2$ ,  $Z_3$ ,  $p$ ,  $p_1$ ,  $p_2$ ,  $p_3$ ,  $q_1$ ,  $q_2$ ,  $Lv_1$ ,  $Lv_2$ ,  $Lv_3$ ,  $Lv_3'$ ,  $m$ ,  $n$ ,  $R_{12}$ ,  $R_{12}'$ ,  $R_{15}$ ,  $R_{25}$ ,  $R_{25}'$ ,  $(Aa)_r$  and  $mAb$  are as defined in claim 1.

13. The compound according to claim 1, 2, 9, or 10, wherein the cell binding agent or molecule according comprises:

(A) the group consisting of an antibody, a protein, probody, nanobody, a vitamin (including folate), 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;

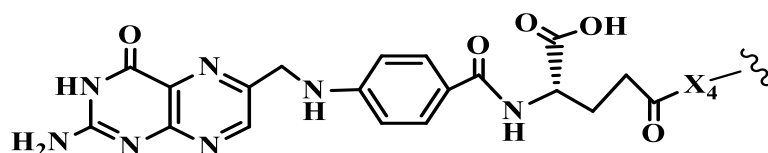
(B) an antibody-like protein, a full-length antibody, a polyclonal antibody, a monoclonal antibody, an antibody dimer, an antibody multimer, a multispecific antibody comprising a bispecific antibody, trispecific antibody, or tetraspecific antibody; a single chain antibody, an antibody fragment that binds 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, diabody, triabody, tetrabody, miniantibody, a probody, a probody fragment, small immune proteins (SIP);

(C) a cell-binding ligand or receptor agonist comprising folate; glutamic acid urea; somatostatin, octreotide (sandostatin), lanreotide (Somatuline); an aromatic sulfonamide; a pituitary adenylate cyclase activating peptide (PACAP) (PAC1); a vasoactive intestinal peptide (VIP) (VPAC1, VPAC2); a melanocyte-stimulating hormone ( $\alpha$ -MSH); a cholecystokinin (CCK)/gastrin receptor agonist; a bombesin comprising Pyr-Gln-Arg-Leu-Gly-Asn-Gln-Trp-Ala-Val-Gly-His-Leu-Met-NH<sub>2</sub>/gastrin-releasing peptide (GRP); a neurotensin receptor ligand (NTR1, NTR2, NTR3); a substance P (NK1 receptor) ligand; a Neuropeptide Y (Y1–Y6); a homing peptide comprising RGD (Arg-Gly-Asp) or NGR (Asn-Gly-Arg), a dimeric and multimeric cyclic RGD peptide comprising cRGDfV, TAASGVRSMDH or LTLRWVGLMS (Chondroitin sulfate proteoglycan NG2 receptor ligands) or F3 peptides; a cell penetrating peptide (CPPs); a peptide hormone comprising a luteinizing hormone-releasing hormone (LHRH) agonist or antagonist, or a

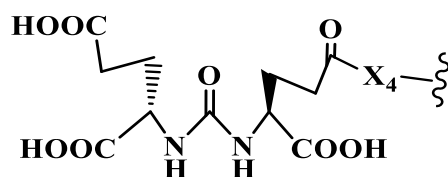
gonadotropin-releasing hormone (GnRH) agonist, acts by targeting follicle stimulating hormone (FSH) and luteinizing hormone (LH), as well as testosterone production, comprising buserelin (Pyr-His-Trp-Ser-Tyr-D-Ser(OtBu)-Leu-Arg-Pro-NHEt), Gonadorelin(Pyr-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH<sub>2</sub>), 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>), Cetrorelix(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-hydroorotyl) -D-4-aminoPhe (carba-moyl) -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<sup>9</sup>, N<sup>10</sup>-diethyl) -homoArg-Leu- (N<sup>9</sup>, N<sup>10</sup>-diethyl) -homoArg-Pro-D-Ala-NH<sub>2</sub>); a pattern recognition receptor (PRRs) comprising a Toll-like receptor (TLR) ligand, a C-type lectin or nodlike receptor (NLR) ligand; a calcitonin receptor agonist; an integrin receptor or their receptor subtype comprising  $\alpha_v\beta_1$ ,  $\alpha_v\beta_3$ ,  $\alpha_v\beta_5$ ,  $\alpha_v\beta_6$ ,  $\alpha_6\beta_4$ ,  $\alpha_7\beta_1$ ,  $\alpha_L\beta_2$ ,  $\alpha_{IIb}\beta_3$  agonist comprising GRGDSPK, cyclo (RGDfV) (L1), 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 (VHH (camelid Ig)); a domain antibody; a bispecific T cell engager (BiTE, a bispecific diabody); a Dual Affinity ReTargeting (DART, a bispecific diabody); Tetravalent tandem antibodies (TandAb, a dimerized bispecific diabody); Anticalin; Adnectins (10th FN3 (Fibron-ectin) ); Designed Ankyrin Repeat Proteins (DARPs); Avimers; EGF receptors, or VEGF receptors' agonists;

(D) A molecule of cell-binding molecule or ligand or a cell receptor agonist comprising LB01 (Folate), LB02 (PMSA ligand), LB03 (PMSA ligand), LB04 (PMSA ligand), LB05 (Somatostatin), LB06 (Somatostatin), LB07 (Octreotide), LB08 (Lanreotide), LB09 (Vapreotide (Sanvar)), LB10 (CAIX ligand), LB11 (CAIX ligand), LB12 (Gastrin releasing peptide receptor (GRPr), MBA), LB13 (luteinizing hormone-releasing hormone (LH-RH) ligand or GnRH),

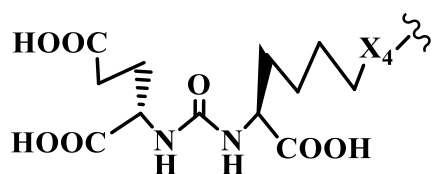
LB14 (luteinizing hormone-releasing hormone (LH-RH) and GnRH ligand), LB15 (GnRH antagonist, Abarelix), LB16, LB17 (cobalamin), LB18 (for  $\alpha_v\beta_3$  integrin receptor, cyclic RGD pentapeptide), LB19 (hetero-bivalent peptide ligand for VEGF receptor), LB20 (Neuromedin B), LB21 (bombesin for a 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, LB26, LB27, LB28 (Fludrocortisone), LB29 (Dexa-methasone), LB30 (fluticasone propionate), LB31 (Beclometasone dipropionate), LB32 (Triamcinolone acetonide), LB33 (Prednisone), LB34 (Prednisolone), LB35 (Methylprednisolone), LB36 (Betame-thasone), LB37, LB38, LB39, LB40, LB41, LB42, LB43, LB44 (Clindamycin), LB45, LB46, LB47, LB48, LB49, LB50, LB51, LB52, LB53 or LB54 which are shown in the following structures:



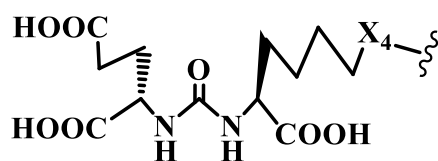
LB01 (Folate conjugate),



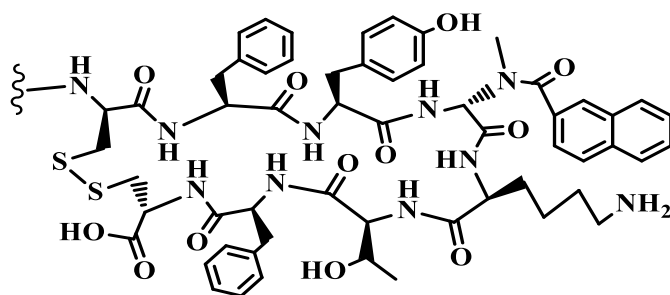
LB02 (PMSA ligand conjugate),



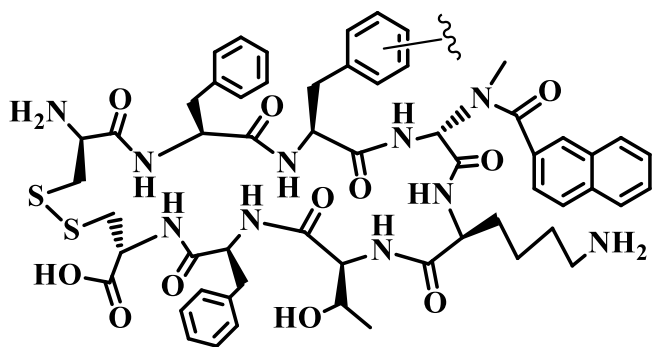
LB03 (PMSA ligand conjugate),



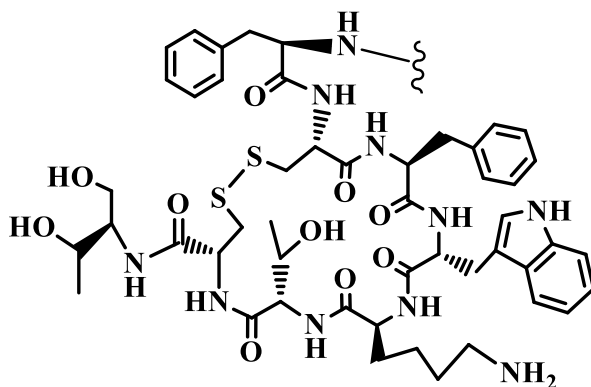
LB04 (PMSA ligand),



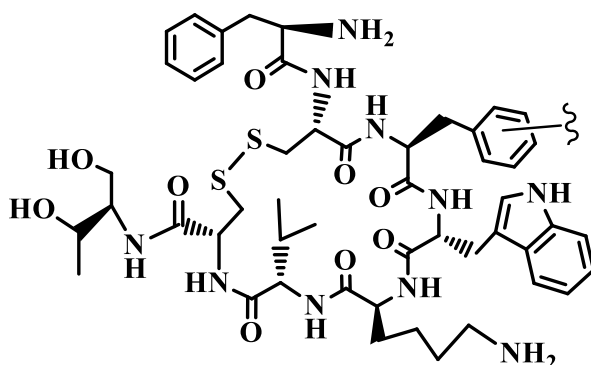
LB05 (Somatostatin),



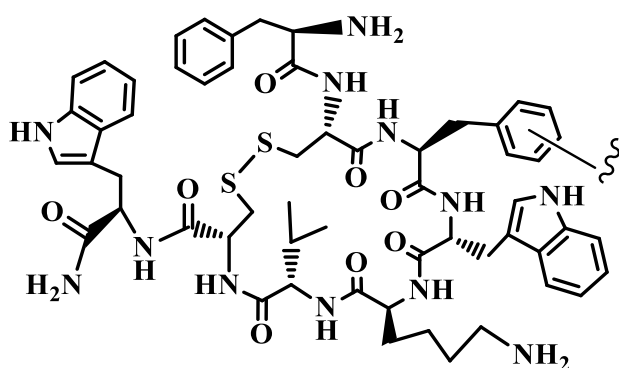
LB06 (Somatostatin),



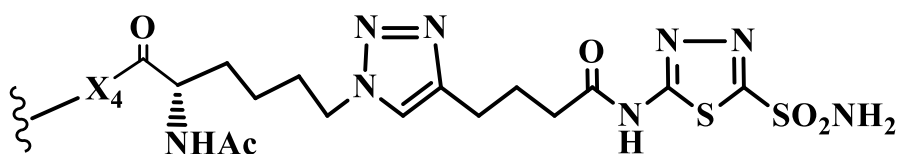
LB07 (Octreotide),



LB08 (Lanreotide),

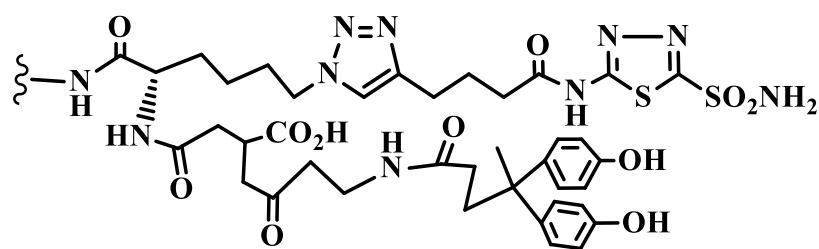


LB09 (Vapreotide (Sanvar)),

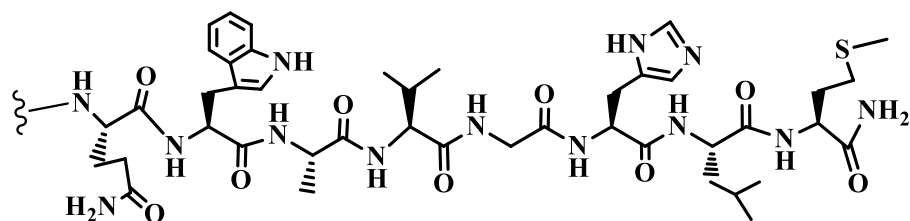


LB10 (CAIX

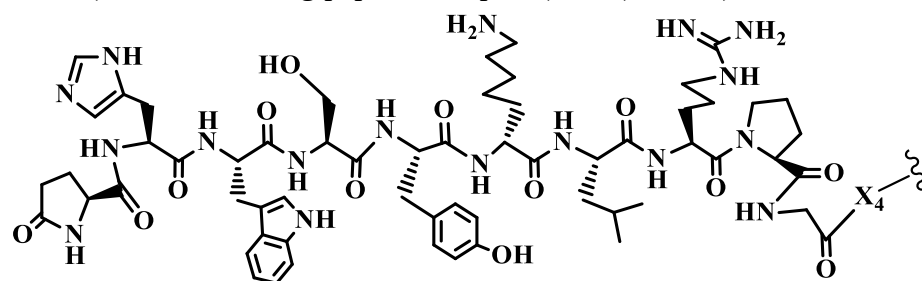
ligand),



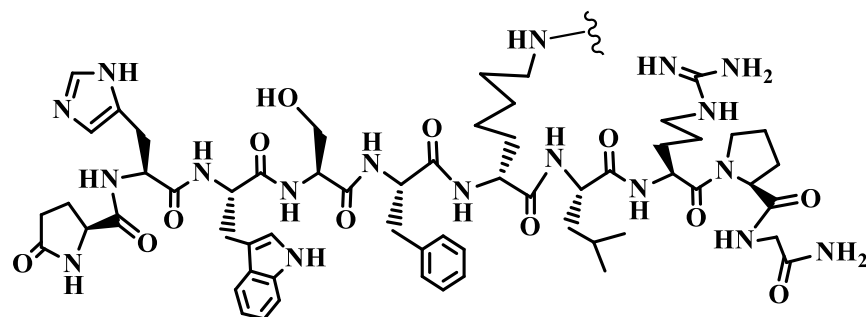
LB11 (CAIX ligand),



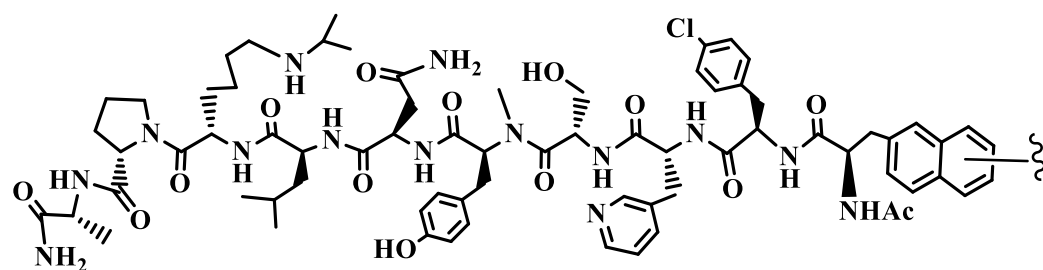
LB12 (Gastrin releasing peptide receptor (GRPr), MBA),



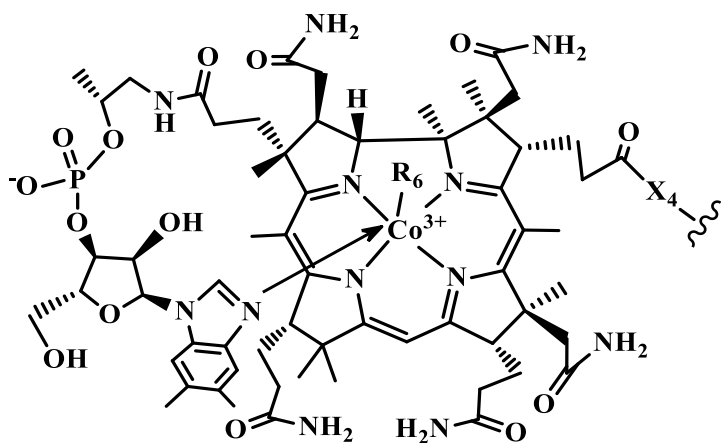
LB13 (luteinizing hormone-releasing hormone (LH-RH) ligand and GnRH),



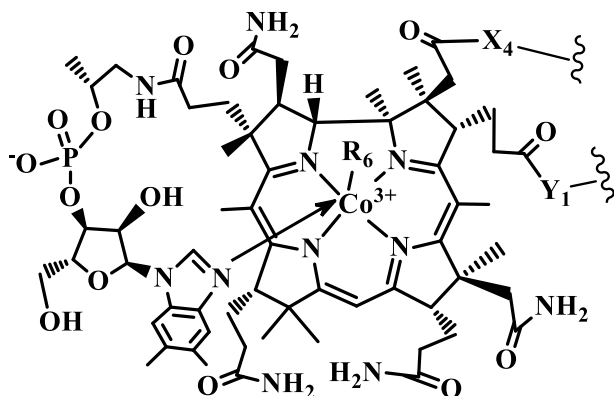
LB14 (luteinizing hormone-releasing hormone (LH-RH) and GnRH ligand),



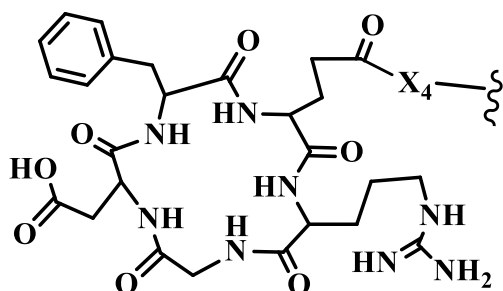
LB15 (GnRH antagonist, Abarelix),



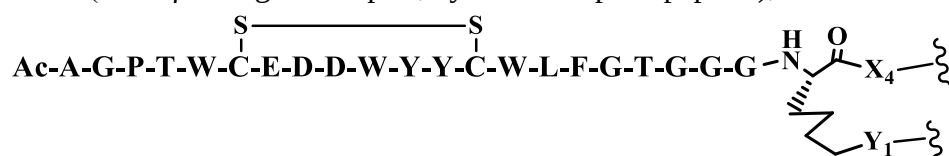
LB16,



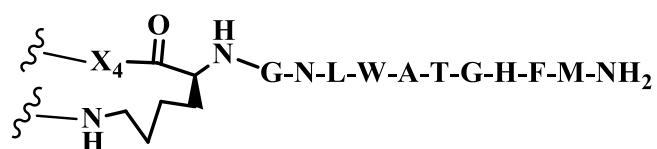
LB17,



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



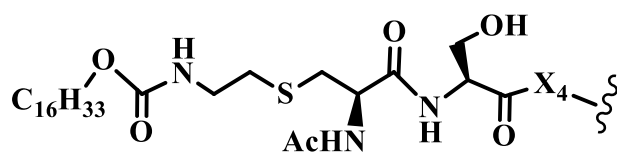
LB19 (hetero-bivalent peptide ligand conjugate for VEGF receptor),



LB20 (Neuromedin B),

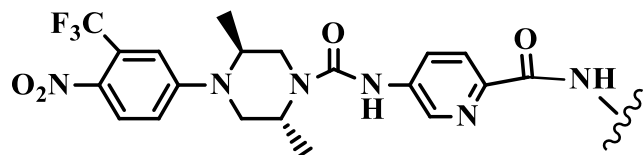


LB21 (bombesin conjugate for a G-protein coupled receptor),

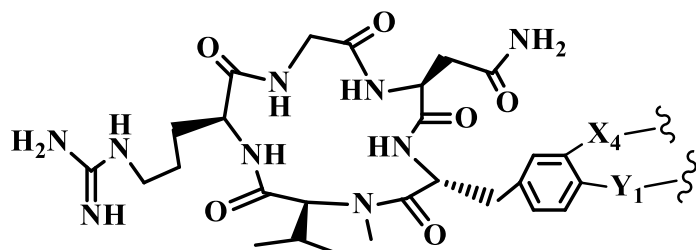


LB22 (TLR<sub>2</sub> conjugate for a Toll-like

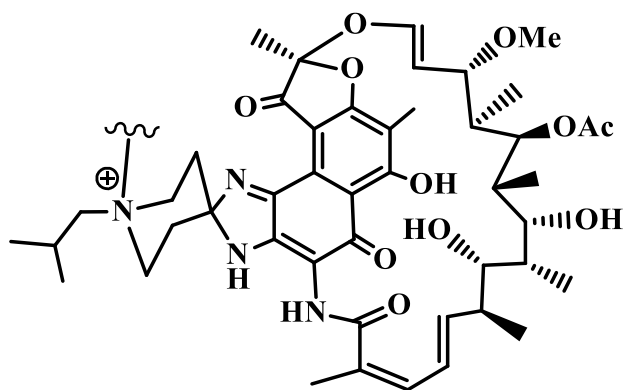
receptor),



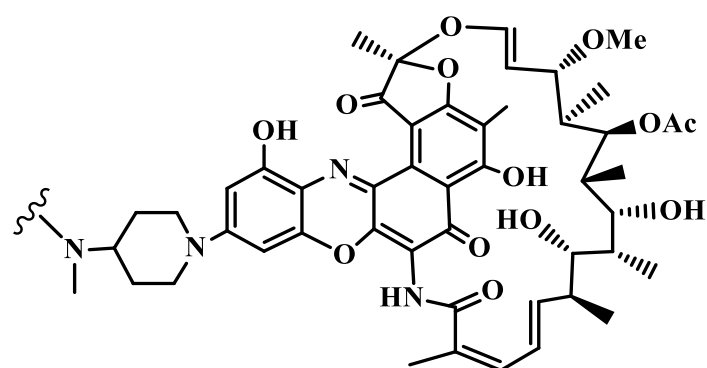
LB23 (an androgen receptor),



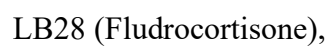
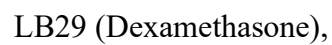
LB24 (Cilengitide/cyclo(-RGDfV-) conjugate for an  $\alpha_v$  integrin receptor)

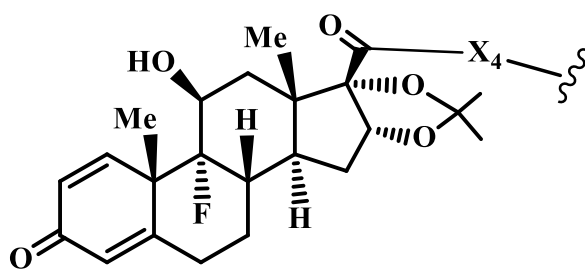


LB25,

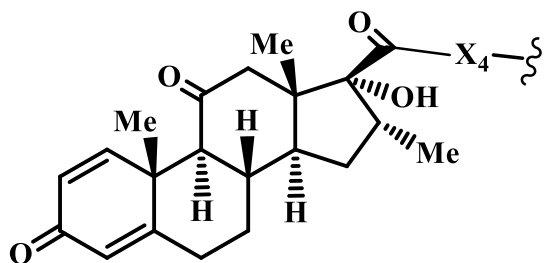


LB26,

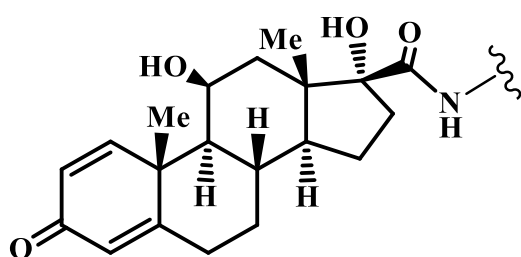




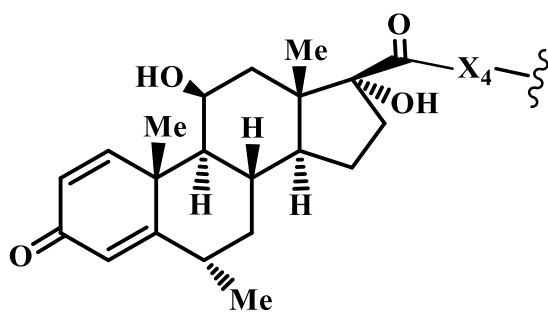
LB32 (Triamcinolone acetonide),



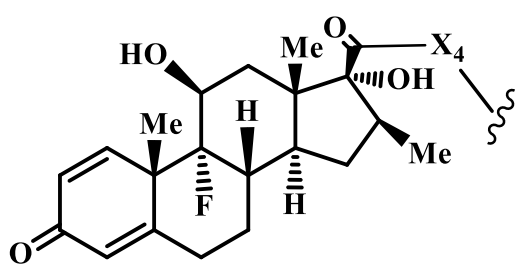
LB33 (Prednisone),



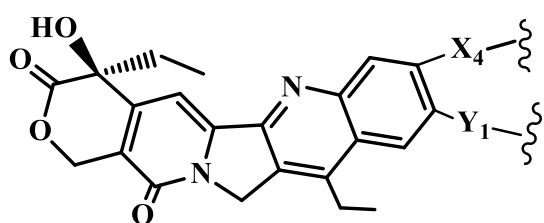
LB34 (Prednisolone),



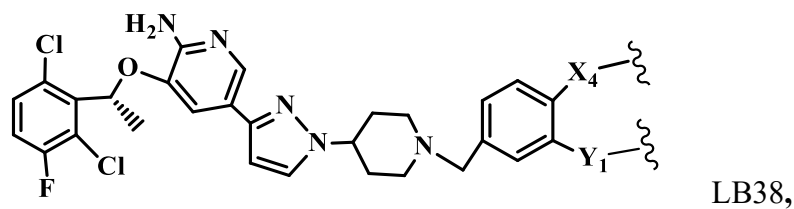
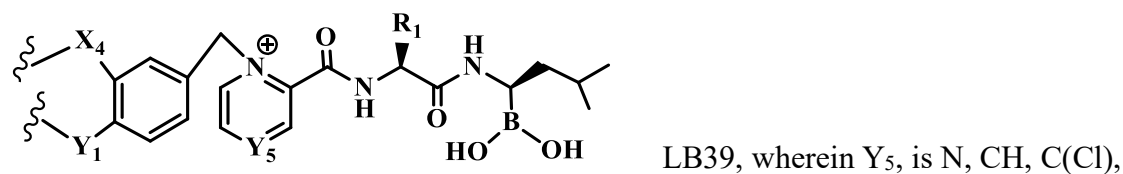
LB35 (Methylprednisolone),



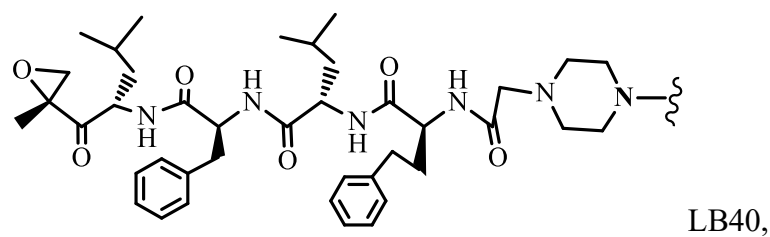
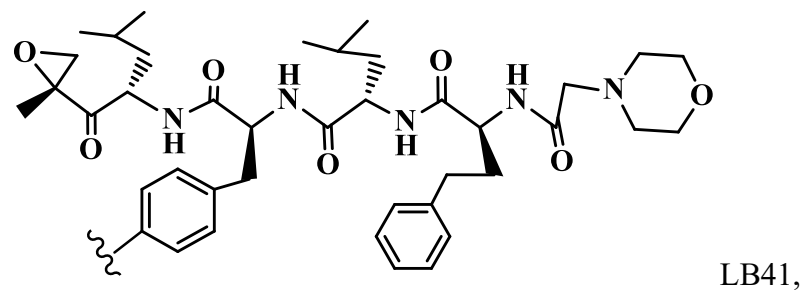
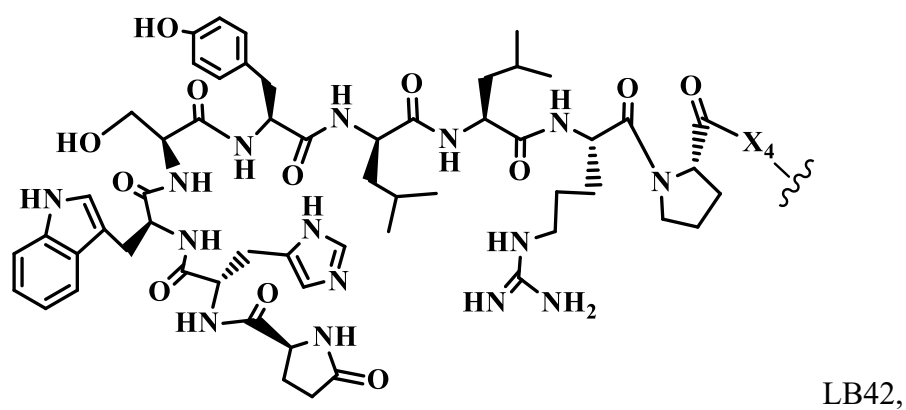
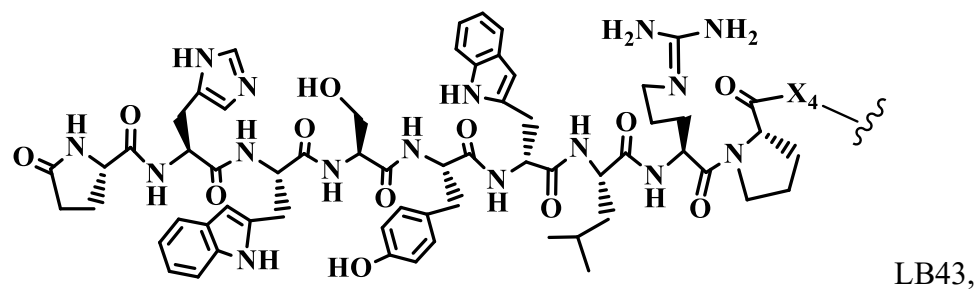
LB36 (Betamethasone),

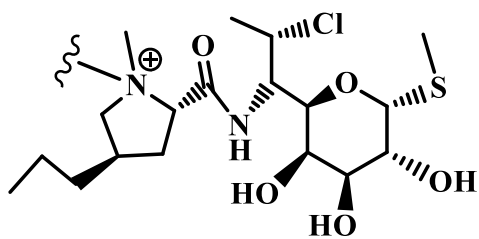


LB37,

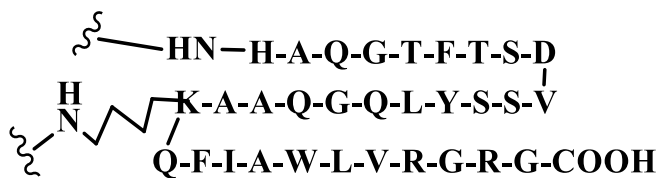


C(CH<sub>3</sub>), or C(COOR<sub>1</sub>); R<sub>1</sub> is H, C<sub>1</sub>-C<sub>6</sub> Alkyl, C<sub>3</sub>-C<sub>8</sub> Ar;

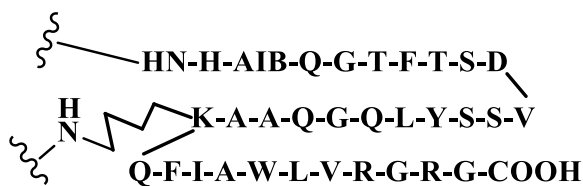




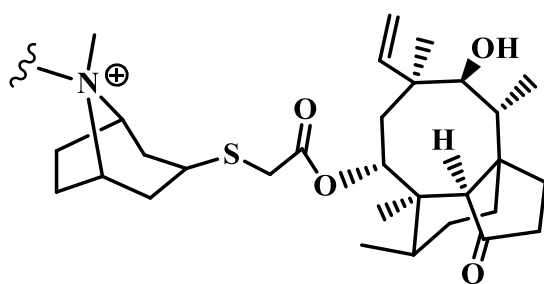
LB44 (Clindamycin),



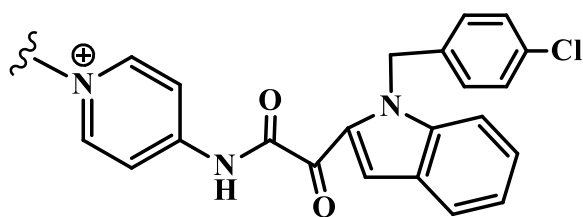
LB45,



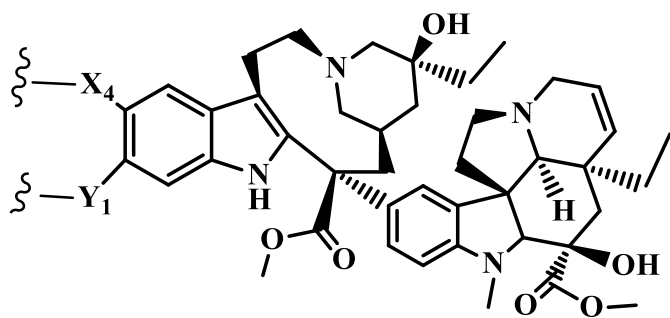
LB46,



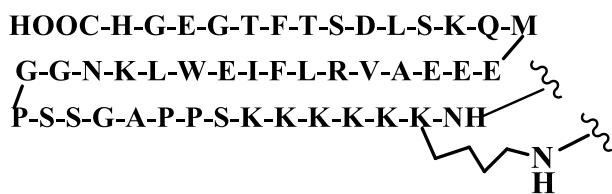
LB47,



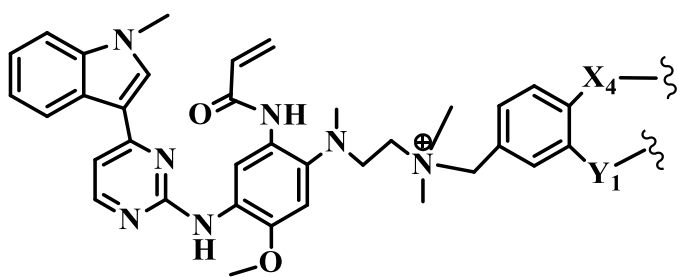
LB48,



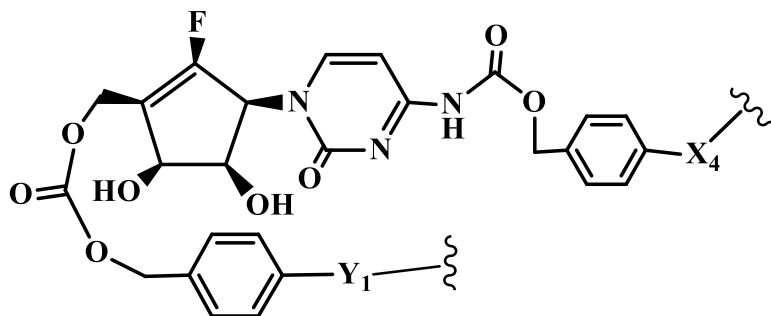
LB49,



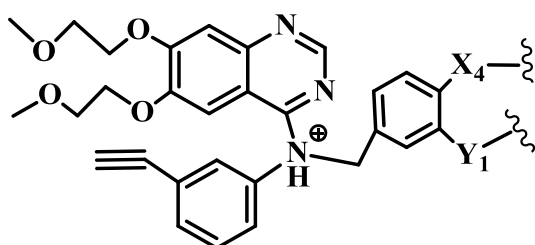
LB50,



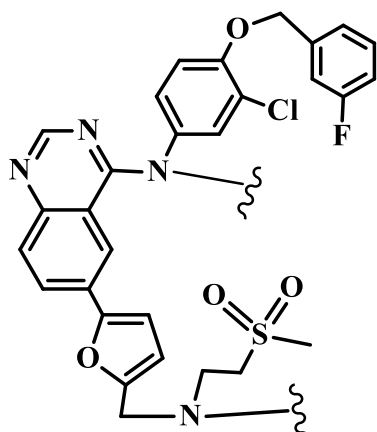
LB51,



LB52,



LB53,



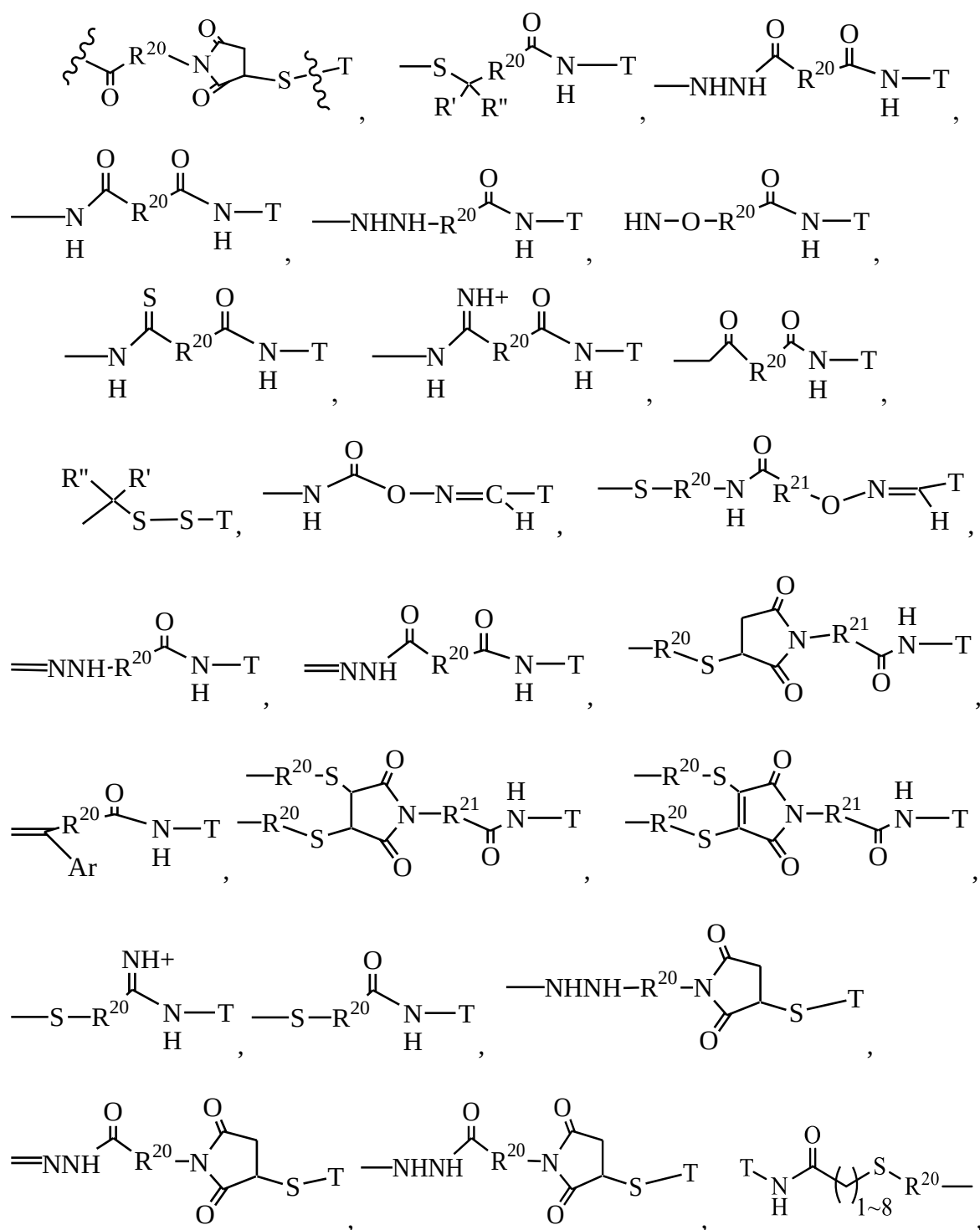
LB54,

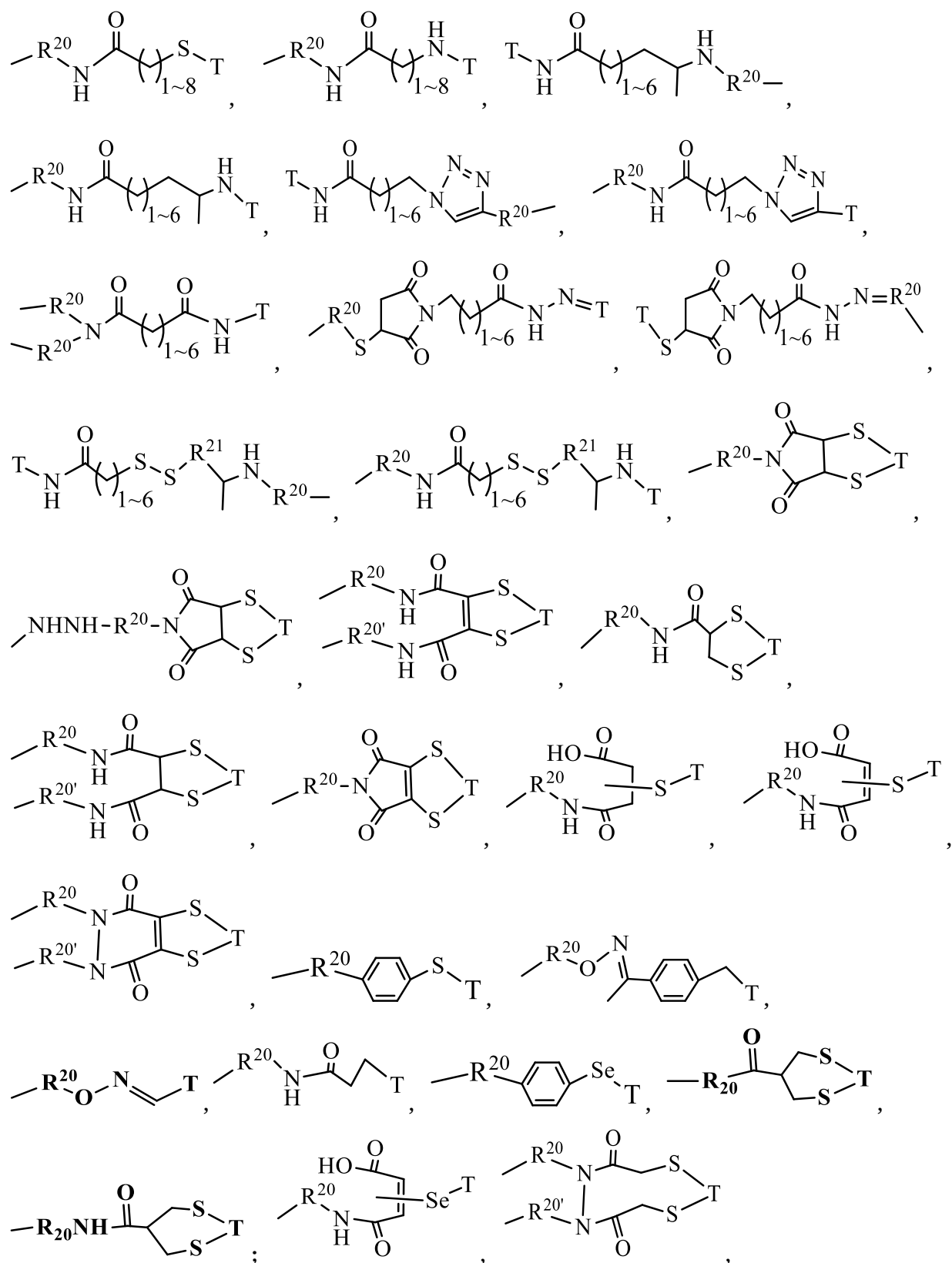
wherein “” is the site to link the side chain linker of the present patent;

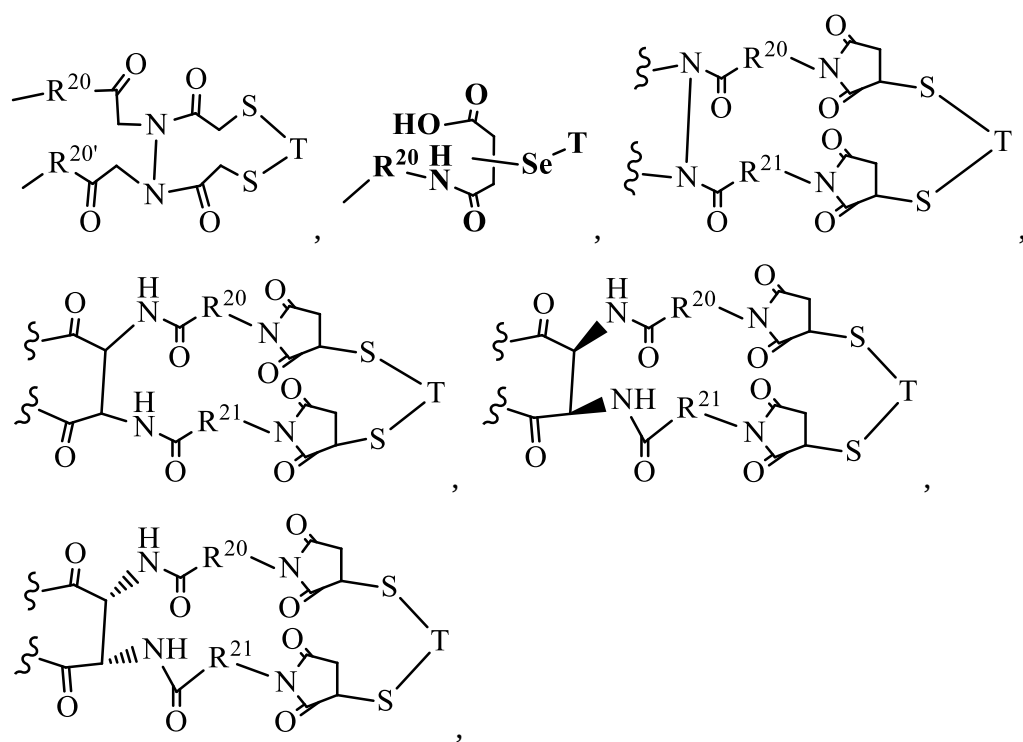
X<sub>4</sub>, and Y<sub>1</sub> are independently O, NH, NHNH, NR<sub>1</sub>, S, C(O)O, C(O)NH, OC(O)NH, OC(O)O, NHC(O)NH, NHC(O)S, OC(O)N(R<sub>1</sub>), N(R<sub>1</sub>)C(O)N(R<sub>1</sub>), CH<sub>2</sub>, C(O)NHNHC(O) or C(O)NR<sub>1</sub>; X<sub>1</sub> is H, CH<sub>2</sub>, OH, O, C(O), C(O)NH, C(O)N(R<sub>1</sub>), R<sub>1</sub>, NHR<sub>1</sub>, NR<sub>1</sub>, C(O)R<sub>1</sub> or C(O)O; X<sub>5</sub> is H, CH<sub>3</sub>, F, or Cl;

M<sub>1</sub> and M<sub>2</sub> are independently H, Na, K, Ca, Mg, NH<sub>4</sub>, N(R<sub>12</sub>R<sub>12'</sub>R<sub>13</sub>R<sub>13'</sub>); R<sub>12</sub>, R<sub>12'</sub>, R<sub>13</sub> and R<sub>13'</sub> are defined in claim 1.

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







wherein  $R^{20}$  and  $R^{21}$  are independently  $C_1 \sim C_8$  alkyl;  $C_2 \sim C_8$  heteroalkyl, or heterocyclic;  $C_3 \sim C_8$  aryl, Ar-alkyl, cycloalkyl, alkylcycloalkyl, heterocycloalkyl, heteroalkylcycloalkyl, carbocyclic, or alkylcarbonyl; or  $C_2$ - $C_{100}$  polyethylene glycol having formula of  $(CH_2CH_2O)_p$  wherein  $p$  is 2-100.

15. The compound according to claim 1, 2, 9, or 10, wherein the cell binding agent or molecule 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, 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,  
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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, CD202a, 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,  
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CD278, CD279, CD281, CD282, CD283, CD284, CD285, CD286, CD287, CD288, CD289,  
CD290, CD291, CD292, CD293, CD294, CD295, CD296, CD297, CD298, CD299, CD300,

CD300a, CD300b, CD300c, CD301, CD302, CD303, CD304, CD305, CD306, CD307, CD307a, CD307b, CD307c, CD307d, CD307e, CD307f, CD308, CD309, CD310, CD311, CD312, CD313, CD314, CD315, CD316, CD317, CD318, CD319, CD320, CD321, CD322, CD323, CD324, CD325, CD326, CD327, CD328, CD329, CD330, CD331, CD332, CD333, CD334, CD335, CD336, CD337, CD338, CD339, CD340, CD341, CD342, CD343, CD344, CD345, CD346, CD347, CD348, CD349, CD350, CD351, CD352, CD353, CD354, CD355, CD356, CD357, CD358, CD359, CD360, CD361, CD362, CD363, CD364, CD365, CD366, CD367, CD368, CD369, CD370, CD371, CD372, CD373, CD374, CD375, CD376, CD377, 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 WIF1, 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 factor), 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 familiaris 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, EGFR<sup>II</sup>, EG-FR<sup>vIII</sup>, 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 (a cell surface antigen glycolipid), GD3 idio type, GloboH, Glypican 3, N-glycolylneuraminic acid, GM3, GMCSF receptor  $\alpha$ -chain, Growth differentiation factor 8, GP100, GPNMB (Transmembrane 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 complex, 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), Idio type, 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 (Lymphocyte 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 factor (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, Myostatin, 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 is a lymphoma cell, myeloma

cell, renal cell, breast cancer cell, prostate cancer cell, ovarian cancer cell, colorectal cancer cell, gastric cancer cell, squamous cancer cell, small-cell lung cancer cell, non-small-cell lung cancer cell, testicular cancer cell, or malignant cell.

17. A pharmaceutical composition comprising a therapeutically effective amount of the conjugate compounds of claim 1, 2, 9, or 10, or a pharmaceutically acceptable salt thereof, 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 the liquid formula or in the formulated lyophilized solid or powder according to claim 17, comprising by weight of: 0.01%-99% of one or more conjugates 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 250 to 350 mOsm when reconstituted for administration to a patient;

wherein the polyol is 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 or its metallic salts;

wherein the surfactant is 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-taurate; dodecyl betaine, dodecyl dimethylamine oxide, cocamidopropyl betaine and coco ampho glycinate; or isostearyl ethylimido-nium ethosulfate; polyethyl glycol, polypropyl glycol, or a copolymer of ethylene and propylene glycol;

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

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

wherein the antioxidant is ascorbic acid, glutathione, cystine or methionine;

wherein the chelating agent is EDTA or EGTA;

wherein the buffer salt is 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 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 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 the pharmaceutical composition according to claim 17 or 18, which is formulated for administration concurrently with a chemotherapeutic agent, a radiation therapy, an

immunotherapy agent, an autoimmune disorder agent, an anti-infectious agent or a conjugate, for synergistically treatment or prevention of a cancer, an autoimmune disease, or an infectious disease.

22. The use according to claim 21, further comprising use of:

(1) a) an alkylating agent 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, carzelesin, bizelesin; duocarmycin, 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 or trimethylolomelamine;

b) A plant alkaloid comprising Vinca alkaloids: including vincristine, vinblastine, vindesine, vinorelbine, and navelbin; Taxoids: comprising paclitaxel, docetaxol, Maytansinoids including DM1, DM2, DM3, DM4, DM5, DM6, DM7, maytansine, ansamitocins, 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 comprising Epipodophyllins: comprising 9-aminocamptothecin, camptothecin, crisnatol, daunomycin, etoposide, etoposide phosphate, irinotecan, mitoxantrone, novantrone, retinoic acids, retinols, teniposide, topotecan, 9-nitrocamptothecin or RFS 2000; or mitomycins;

d) an antimetabolite comprising { [Anti-folate: (DHFR inhibitors: comprising methotrexate, trimetrexate, denopterin, pteropterin, aminopterin (4-aminopteroic acid) or folic acid); IMP dehydrogenase inhibitors: (including mycophenolic acid, tiazofurin, ribavirin, EICAR); Ribonucleotide reductase Inhibitors: (including hydroxyurea, deferoxamine)]; pyrimidine: uracil, ancitabine, azacitidine, 6-azauridine, capecitabine, carmofur, cytarabine, dideoxyuridine, doxifluridine, enocitabine, 5-Fluorouracil, floxuridine, ratitrexed; cytosine, cytarabine, cytosine arabinoside, fludarabine; Purine, azathioprine, fludarabine, mercaptopurine, thiamiprine, thioguanine; folic acid replenisher, or frolinic acid} ;

e) a hormonal therapy comprising receptor 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) ]; Retinoids/Deltoids: [Vitamin D3, CB 1093, EB 1089 KH 1060, cholecalciferol, ergocal-ciferol; Photodynamic therapies: (including verteporfin, phthalocyanine, photosensitizer Pc4, demethoxyhypocrellin A); Cytokines: (comprising Interferon-alpha, Interferon-gamma, tumor necrosis factor (TNFs), or human proteins containing a TNF domain) ] ;

f) A kinase inhibitor 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 comprising olaparib, ni-raparib, 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 comprising an enediyne antibiotic 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 chromomophores), aclacinomycins, actinomycin, authramy-

cin, azaserine, bleomycins, cactinomycin, carabycin, carminomycin, carzinophilin; chromomycins, dactinomycin, daunorubicin, detorubicin, 6-diazo-5-oxo-L-norleucine, doxorubicin, morpholino-doxorubicin, cyanomorpholino-doxorubicin, 2-pyrrolino-doxorubicin and deoxydoxorubicin, epirubi-cin, eribulin, esorubicin, idarubicin, marcellomycin, nitomycins, mycophenolic acid, nogalamycin, olivomycins, peplomycin, potfiromycin, puromycin, quelamycin, rodorubicin, streptonigrin, streptozo-cin, tubercidin, ubenimex, zinostatin, or zorubicin;

i) A polyketide (acetogenin), bullatacin and bullatacinone; gemcitabine, epoxomicins and carfil-zomib, bortezomib, thalidomide, lenalidomide, pomalidomide, tosedostat, zybrestat, 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 stau-rosporine), Actinomycins (including Actinomycin D, dactinomycin), amanitins, Bleomycins (including bleomycin A2, bleomycin B2, peplomycin), Anthracyclines (including daunorubicin, doxorubicin (adriamycin), idarubicin, epirubicin, pirarubicin, zorubicin, mtroxantrone, 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 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, verrucaric acid, roridin A and anguidine); urethane, siRNA, or antisense drugs;

(2) An anti-autoimmune disease agent: cyclosporine, cyclosporine A, aminocaproic acid,

azathio-prine, bromocriptine, chlorambucil, chloroquine, cyclophosphamide, corticosteroids (including the group consisting of amcinonide, betamethasone, budesonide, hydrocortisone, flunisolide, fluticasone propionate, fluocortolone danazol, dexamethasone, Triamcinolone acetonide, beclometasone dipropio-nate), DHEA, enanercept, hydroxychloroquine, infliximab, meloxicam, methotrexate, mofetil, myco-phenylate, prednisone, sirolimus, or tacrolimus;

(3) An anti-infectious disease agents comprising:

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

b) Amphenicols: azidamfenicol, chloramphenicol, florfenicol, or thiamphenicol;

c) Ansamycins: geldanamycin or herbimycin;

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

e) Cepheids: carbacephem (loracarbef), cefacetrile, cefaclor, cefradine, cefadroxil, cefalonium, cefaloridine, cefalotin or cefalothin, cefalexin, cefaloglycin, cefamandole, cefapirin, cefatrizine, cefazaflur, cefazedone, cefazolin, cefbuperazone, cefcapene, cefdaloxime, cefepime, cefminox, cefoxitin, cefprozil, cefroxadine, ceftazidime, 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, tosufloxacin, 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 comprising fusidic acid;
- t) Tetracyclines: doxycycline, chlortetracycline, clomocycline, demeclocycline, lymecycline, meclocycline, metacycline, minocycline, oxytetracycline, penimepicycline, rolitetracycline, tetracy-cline, glycylcyclines (including tigecycline);
- u) antibiotics 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-2',3'-dideoxythymidine (FLT) 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) 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) pharmaceutically acceptable salts, acids, hydrate or hydrated salt; or a crystalline 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 comprise Abatacept, abemaciclib, Abiraterone acetate, Abraxane, Acetaminophen/hydrocodone, Acalabrutinib, 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, Buprenorphine, 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, dactinib, dacomotinib, daptomycin, Daratumumab, Darbepoetin alfa, Darunavir, dasatinib, denileukin diftitox, Denosumab, Depakote, Dexlansoprazole, Dexmethylphenidate, Dexamethasone, DigniCap Cooling System, Dinutuximab, Doxycycline, Duloxetine, Duvelisib, durvalumab, elotuzumab, Emtricit-bine/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, letrozole, Levothyroxine, Levothyroxine, Lidocaine, Linezolid, Liraglutide, Lisdexamphetamine, LN-144, lorlatinib, Memantine, Methylphenidate, Metoprolol, Mekinist, mericitabine/Rilpivirine/Tenofovir, Modafinil, Mometasone, Mycidac-C, Necitumumab, neratinib, Nilotinib, niraparib, Nivolumab, ofatumumab, 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, ProscarVax, 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, Tafenlar, 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, trametinib, tremelimumab, Trifluridine/tipiracil, Tretinoin, Uro-BCG, Ustekinumab, Valsartan, veliparib, vandetanib, vemurafenib, venetoclax, vorinostat, ziv-aflibercept, Zostavax, or pharmaceutically acceptable salts thereof, or any combination thereof.