Supporting Information

Trends in antimalarial marine natural products: progresses, challenges and opportunities

Yang Hai [a,#], Zi-Mu Cai [a,#], Peng-Jie Li [a], Mei-Yan Wei [a,b], Chang-Yun Wang [a,d], Yu-Cheng Gu [c,*], Chang-Lun Shao [a,d,*]

[a] Key Laboratory of Marine Drugs, The Ministry of Education of China, School of Medicine and Pharmacy, Ocean University of China, Qingdao 266003, China

[b] College of Food Science and Engineering, Ocean University of China, Qingdao 266003, China

[c] Syngenta Jealott's Hill International Research Centre, Bracknell, Berkshire, RG42 6EY, United Kingdom

[d] Laboratory for Marine Drugs and Bioproducts, Qingdao National Laboratory for Marine Science and Technology, Qingdao 266200, China

Corresponding Author

*E-mail: shaochanglun@163.com and yucheng.gu@syngenta.com.

Author Contributions

[#] These authors contributed equally to this work.

Table S1. Detailed information of compounds **1**–**361**

No.	Name	origin	genus	IC_{50}
1	plakortin	sponge	*Plakortis halichondrioides*	IC_{50} D6 = 0.87 μM IC_{50} W2 = 0.39 μM
2	dihydroplakortin	sponge	*Plakortis simplex*	IC_{50} D10 = 0.90 μM IC_{50} W2 = 0.43 μM
3	3-epiplakortin	sponge	*Plakortis simplex*	IC_{50} D6 = 1.03 μM IC_{50} W2 = 0.67 μM
4	plakortide F	sponge	*Plakortis* sp.	IC_{50} D6 = 1.35 μM IC_{50} W2 = 1.1 μM
5	plakortone G	sponge	*Plakortis* sp.	IC_{50} D6 = 15.1 μM IC_{50} W2 > 17.1 μM
6	plakortide I	sponge	*Plakortis* sp.	IC_{50} W2 = 2.01 μM
7	plakortide Q	sponge	*Plakortis simplex*	IC_{50} D6 = 1.0 μM IC_{50} W2 = 0.52 μM
8	plakortide R	sponge	*Plakinastrella mamillaris*	IC_{50} FcM29 = 5–50 μM
9	plakortide S	sponge	*Plakinastrella mamillaris*	IC_{50} FcM29 = 5–50 μM
10	plakortide T	sponge	*Plakinastrella mamillaris*	IC_{50} FcM29 = 5–50 μM
11	plakortide U	sponge	*Plakinastrella mamillaris*	IC_{50} FcM29 = 0.8 μM
12	haterumadioxin A	sponge	*Plakortis lita*	IC_{50} FcM29 = 5–50 μM
13	haterumadioxin A methyl ester	sponge	*Plakortis simplex*	IC_{50} D10 = 4.05 μM IC_{50} W2 = 2.7 μM
14	haterumadioxin B methyl ester	sponge	*Plakortis simplex*	IC_{50} D10 = 3.89 μM IC_{50} W2 = 2.91 μM
15	gracilioether A	sponge	*Agelas gracilis*	IC_{50} = 28.2 μM
16	gracilioether B	sponge	*Agelas gracilis*	IC_{50} = 1.56 μM
17	gracilioether C	sponge	*Agelas gracilis*	IC_{50} = 31.04 μM
18	gracilioether H	sponge	*Plakinastrella mamillaris*	IC_{50} FC29 = 3.3 μM
19	methyl 2-((3S,4S,6S)-4,6-diethyl-6-((S)-2-ethylhexyl)-1,2-dioxan-3-yl)acetate	sponge	*Plakortis simplex*	IC_{50} D10 = 6.18 μM IC_{50} W2 = 4.98 μM
20	methyl 2-((3R,4S,6S)-4,6-diethyl-6-((S)-2-ethylhexyl)-1,2-dioxan-3-yl)acetate	sponge	*Plakortis simplex*	IC_{50} W2 = 11.4 μM
21	methyl 2-((3R,4S,6S)-4-ethyl-6-((2S)-2-ethyl-4-methyloctyl)-	sponge	*Plakortis simplex*	IC_{50} D10 = 5.12 μM IC_{50} W2 = 4.10 μM

	6-methyl-1,2-dioxan-3-yl)acetate			
22	peroxyplakoric acid A3 methyl ester	sponge	*Plakortis* sp.	IC_{50} = 0.15 μM
23	peroxyplakoric acid B_3 methyl ester	sponge	*Plakortis* sp.	IC_{50} = 0.12 μM
24	diacarnuperoxide M	sponge	*Diacarnus megaspinorhabdosa*	IC_{50} W2 = 4.2 μM IC_{50} D6 = 5.6 μM
25	diacarnuperoxide N	sponge	*Diacarnus megaspinorhabdosa*	IC_{50} W2 = 3.0 μM IC_{50} D6 = 6.6 μM
26	(+)-2,3,6-epihurghaperoxide	sponge	*Diacarnus megaspinorhabdosa*	IC_{50} W2 = 1.6 μM IC_{50} D6 = 2.2 μM
27	(+)-2,3,6-epihurghaperoxide acid	sponge	*Diacarnus megaspinorhabdosa*	IC_{50} W2 = 4.9 μM IC_{50} D6 = 7.3 μM
28	chaetoxanthone A	fungus	*Chaetomium* sp.	IC_{50} K1= 9.41 μM
29	chaetoxanthone B	fungus	*Chaetomium* sp.	IC_{50} K1= 1.41 μM
30	chaetoxanthone C	fungus	*Chaetomium* sp.	IC_{50} K1= 10.25 μM
31	trioxacarcin A	actinomycete	*Streptomyces* sp.	IC_{50} K1= 1.83 nM IC_{50} NF54 = 1.71 nM
32	trioxacarcin B	actinomycete	*Streptomyces* sp.	IC_{50} K1= 1.13 μM IC_{50} NF54 = 0.91 μM
33	trioxacarcin D	actinomycete	*Streptomyces* sp.	IC_{50} K1= 2.76 nM IC_{50} NF54 = 2.04 nM
34	marilone A	fungus	*Stachylidium* sp.	IC_{50} = 12.1 μM
35	bromophycoic acid A	red alga	*Callophycus* sp.	IC_{50} 3D7 = 30.7 μM
36	bromophycoic acid B	red alga	*Callophycus* sp.	IC_{50} 3D7 = 41.3 μM
37	bromophycoic acid C	red alga	*Callophycus* sp.	IC_{50} 3D7 = 8.7 μM
38	bromophycoic acid D	red alga	*Callophycus* sp.	IC_{50} 3D7 = 27 μM
39	malyngolide dimer	cyanobacterium	*Lyngbya majuscula*	IC_{50} W2 = 19 μM
40	lithanoside	red alga	*Hydrolithon reinboldii*	IC_{50} = 72 μM
41	palmarumycin P1	fungi	/	IC_{50} = 2.36 μM
42	diacarperoxide H	sponge	*Diacarnus megaspinorhabdosa*	IC_{50} D6 = 12.9 μM
43	diacarperoxide I	sponge	*Diacarnus megaspinorhabdosa*	IC_{50} D6 = 4.8 μM IC_{50} W2 = 7.9 μM

44	diacarperoxide J	sponge	*Diacarnus megaspinorhabdosa*	IC_{50} D6 = 1.8 μM IC_{50} W2 = 1.6 μM
45	5-carboxymellein	fungus	*Halorosellinia oceanica*	IC_{50} = 18.01 μM
46	nodulisporacid A	fungus	*Nodulisporium* sp.	IC_{50} = 1–10 μM
47	vermelhotin	fungus	*Nodulisporium* sp.	IC_{50} = 1–10 μM
48	pseudopyronine A	bacteria	*Pseudomonas* sp.	IC_{50} K1 = 55.94 μM
49	pseudopyronine B	bacteria	*Pseudomonas* sp.	IC_{50} K1 = 48.26 μM
50	actinosporin E	bacteria	*Actinokineospora spheciospongiae* and *Rhodococcus* sp.	IC_{50} 3D7 = 0.28 μM
51	actinosporin H	bacteria	*Actinokineospora spheciospongiae* and *Rhodococcus* sp.	IC_{50} 3D7 = 27.03 μM
52	actinosporin G	bacteria	*Actinokineospora spheciospongiae* and *Rhodococcus* sp.	IC_{50} 3D7 = 30.21 μM
53	tetragulol	bacteria	*Actinokineospora spheciospongiae* and *Rhodococcus* sp.	IC_{50} 3D7 = 31.9 μM
54	capillasterquinone B	bacteria	*Actinokineospora spheciospongiae* and *Rhodococcus* sp.	IC_{50} 3D7 = 29.29 μM
55	dicerandrol D	fungi	*Diaporthe* sp.	IC_{50} 3D7 = 0.6 μM
56	alternarlactone A	fungus	*Alternaria alternata*	IC_{50} NF54 = 5.9 μM
57	alternarlactone B	fungus	*Alternaria alternata*	IC_{50} NF54 = 9.7 μM
58	alisiaquinone A	sponge	undescribed	IC_{50} FcMC29 = 8.5 μM IC_{50} FcB1 = 7.4 μM IC_{50} F32C = 9.1 μM
59	alisiaquinone B	sponge	undescribed	IC_{50} FcMC29 = 2.6 μM IC_{50} FcB1 = 8.4 μM IC_{50} F32C = 7.1 μM
60	alisiaquinone C	sponge	undescribed	IC_{50} FcMC29 = 0.08 μM IC_{50} FcB1 = 0.21 μM IC_{50} F32C = 0.15 μM

61	alisiaquinol	sponge	undescribed	IC_{50} FcMC29 = 7.9 μM IC_{50} FcB1 = 6.4 μM IC_{50} F32C = 9.9 μM
62	kallolide A	sea plumes	*Pseudopterogorgia kallos*	IC_{50} W2 = 39.6 μM
63	kallolide D	sea plumes	*Pseudopterogorgia bipinnata*	IC_{50} W2 = 30.6 μM
64	kallolide F	sea plumes	*Pseudopterogorgia bipinnata*	IC_{50} W2 = 52.8 μM
65	kallolide G	sea plumes	*Pseudopterogorgia kallos*	IC_{50} W2 = 83.3 μM
66	kallolide H	sea plumes	*Pseudopterogorgia kallos*	IC_{50} W2 = 41.5 μM
67	kallolide I	sea plumes	*Pseudopterogorgia kallos*	IC_{50} W2 = 57.2 μM
68	gersemolide	sea plumes	*Pseudopterogorgia kallos*	IC_{50} W2 = 21.3 μM
69	gersolide	sea plumes	*Pseudopterogorgia kallos*	IC_{50} W2 = 45.7 μM
70	pinnatin B	sea plumes	*Pseudopterogorgia kallos*	IC_{50} W2 = 23.3 μM
71	pinnatin D	sea plumes	*Pseudopterogorgia kallos*	IC_{50} W2 = 43.6 μM
72	monamphilectine A	sponge	*Hymeniacidon sp.*	IC_{50} W2 = 0.6 μM
73	monamphilectine B	sponge	*Svenzea flava*	IC_{50} 3D7 = 44.5 nM
74	monamphilectine C	sponge	*Svenzea flava*	IC_{50} 3D7 = 43.3 nM
75	8,15-diisocyano-11(20)-amphilectene [(−)-DINCA]	sponge	*Svenzea flava*	IC_{50} 3D7 = 40 nM
76	briarellin D	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 32 μM
77	briarellin D hydroperoxide	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 21 μM
78	briarellin K	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 38 μM
79	briarellin K hydroperoxide	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 22 μM
80	briarellin L	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 17 μM
81	briarellin M	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 54 μM
82	briarellin O	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 55 μM

83	briarellin P	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 31 μM
84	briarellin Q	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 6.8 μM
85	Briarellin R	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 37 μM
86	seco-briarellin R	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 44 μM
87	asbestinin-10	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 24 μM
88	asbestinin-20	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 34 μM
89	6-epi-asbestinin-20	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 45 μM
90	asbestinin-21	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 46 μM
91	11-Acetoxy-4-deacetoxyasbestinin F	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 33 μM
92	nor-asbestinin A	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 39 μM
93	asbestinin-24	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 41 μM
94	asbestinin-26	gorgonian	*Briareum polyanthes*	IC_{50} W2 = 48 μM
95	methyl diacarnoate A	sponge	*Diacarnus levii*	IC_{50} HB3 = 7.1 μM IC_{50} F32 = 0.01 μM IC_{50} FCR3 = 21 μM
96	methyl 3-epinuapapuanoate	sponge	*Diacarnus levii*	IC_{50} HB3 = 7.4 μM IC_{50} FCR3 = 7.2 μM
97	2-epimukubulin benzyl ester	sponge	*Diacarnus levii*	IC_{50} F32 = 124 μM IC_{50} D2 = 73 μM
98	ent-muqubilin benzyl ester	sponge	*Diacarnus levii*	IC_{50} F32 = 73 μM IC_{50} D2 = 62 μM
99	deoxydiacarnoate B benzyl ester	sponge	*Diacarnus levii*	IC_{50} F32 = 11 μM IC_{50} D2 = 6.4 μM
100	(-)-(1S,5S,8R)-2-Isocyanoclovene	nudibranch	*Phyllidia ocellata*	IC_{50} Dd2 = 0.36 μM IC_{50} 3D7 = 0.30 μM
101	(-)-(1S,5S,8R)-2-Isocyanoclovane	nudibranch	*Phyllidia ocellata*	IC_{50} Dd2 =0.83 μM IC_{50} 3D7 = 0.29 μM
102	4,5-epi-10-isocyanoisodauc-6-ene	nudibranch	*Phyllidia ocellata*	IC_{50} Dd2 = 0.87 μM IC_{50} 3D7 = 0.26 μM
103	(1*S*,3*S*,4*R*,7*S*,8*S*,11*S*,12*S*,13*S*,15*R*,20*R*)-7-	sponge	*Cymbastela hooperi*	IC_{50} FCR3F86 = 0.58 μM

	formamido-20-isocyanoisocycloamphilectane			
104	(1S,3S,4R,7S,8S,11S, 12S,13S, 15R,20R)-7,20-diformamidoisocycloamphilectane	sponge	*Cymbastela hooperi*	IC_{50} FCR3F86 = 41.08 μM
105	cembradiene 1	octocoral	*Eunicea* sp.	IC_{50} W2 = 63.49 μM
106	cembradiene 2	octocoral	*Eunicea* sp.	IC_{50} W2 = 44.88 μM
107	cembradiene4	octocoral	*Eunicea* sp.	IC_{50} W2 = 40.18 μM
108	bielschowskysin	gorgonian octocoral	*Pseudopterogorgia kallos* sp.	IC_{50} = 23.69 μM
109	drechslerine E	fungus	*Drechslera dematioidea*	IC_{50} K1 = 5.9 μM IC_{50} NF54 = 3.65 μM
110	drechslerine G	fungus	*Drechslera dematioidea*	IC_{50} K1 = 2.9 μM IC_{50} NF54 = 4.24 μM
111	sinuketal	soft coral	*Sinularia* sp.	IC_{50} 3D7 = 80 μM
112	2,5-didehydroxy-6-methylembelin	mangrove	*Aegiceras corniculatum*	IC_{50} 3D7 = 25.95 μM IC_{50} K1 = 21.82 μM
113	dolabellane 1	octocoral	*Eunicea* sp.	IC_{50} W2 = 13.2 μM
114	dolabellane 2	octocoral	*Eunicea* sp.	IC_{50} W2 = 50.0 μM
115	dolabellane 3	octocoral	*Eunicea* sp.	IC_{50} W2 = 20.3 μM
116	dolabellane 4	octocoral	*Eunicea* sp.	IC_{50} W2 = 36.4 μM
117	dolabellane 5	octocoral	*Eunicea* sp.	IC_{50} W2 = 36.1 μM
118	dolabellane 6	octocoral	*Eunicea* sp.	IC_{50} W2 = 50.3 μM
119	dolabellane 7	octocoral	*Eunicea* sp.	IC_{50} W2 = 37.7 μM
120	dolabellane 9	octocoral	*Eunicea* sp.	IC_{50} W2 = 9.4 μM
121	dolabellane 10	octocoral	*Eunicea* sp.	IC_{50} W2 = 40.9 μM
122	8-isocyanato-15-formamidoamphilect-11(20)-ene	sponge	*Stylissa* cf. *massa*	IC_{50} K1 = 8.85 μM
123	8-isothiocyanato-15-formamidoamphilect-11(20)-ene	sponge	*Stylissa* cf. *massa*	IC_{50} K1 = 8.07 μM
124	halorosellinic acid	fungus	*Halorosellinia oceanica*	IC_{50} = 30.08 μM
125	cytochalasin Q	fungus	*Halorosellinia oceanica*	IC_{50} = 34.47 μM
126	(8R*)-8-bromo-10-epi-β-snyderol [(1′R*,3′R*,5′R*)-5-(3,5′dibromo-2′,2′-	red alga	*Laurencia obtusa*	IC_{50} D6 = 7.14 μM IC_{50} W2 = 10.58 μM

	dimethyl-6′-methylenecyclohexyl)-3-methylpent-1-en-3-ol]			
127	caucanolide A	gorgonian coral	*Pseudopterogorgia bipinnata*	IC_{50} W2 = 45.43 μM
128	caucanolide D	gorgonian coral	*Pseudopterogorgia bipinnata*	IC_{50} W2 = 40.09 μM
129	(3S,5aS,6S,9aR,9bR)-6-hydroxy-3,5a,9a-trimethyl-9-methylenedecahydronaphtho[1,2-b]furan-2(3H)-one	gorgonian coral	*Eunicea* sp.	IC_{50} W2 = 53 μM
130	(3S,7S,11aR,E)-7-hydroxy-3,10-dimethyl-6-methylene-3a,4,5,6,7,8,9,11a-octahydrocyclodeca[b]furan-2(3H)-one	gorgonian coral	*Eunicea* sp.	IC_{50} W2 = 71.95 μM
131	(1S,2R,4aS,5S,8aR)-2-acetyl-5-hydroxy-4a-methyl-8-methylenedecahydronaphthalen-1-yl (E)-4-hydroxy-4-methylpent-2-enoate	gorgonian coral	*Eunicea* sp.	IC_{50} W2 = 28.55 μM
132	(1S,6S,10R,E)-10-acetyl-6-hydroxy-3-methyl-7-methylenecyclodec-2-en-1-yl (E)-4-hydroxy-4-methylpent-2-enoate	gorgonian coral	*Eunicea* sp.	IC_{50} W2 = 39.98 μM
133	(1S,10R,E)-10-acetyl-3-methyl-7-methylene-6-oxocyclodec-2-en-1-yl (E)-4-hydroxy-4-methylpent-2-enoate	gorgonian coral	*Eunicea* sp.	IC_{50} W2 = 45.95 μM
134	8α,11-dihydroxypachydictyol A	brown alga	*Dictyota* sp.	IC_{50} K1 = 9.25 μM

135	fucoxanthin	brown alga	*Dictyota* sp.	IC_{50} K1 = 4.40 μM
136	aberrarone	gorgonian	*Pseudopterogorgia elisabethae*	IC_{50} W2 = 30.29 μM
137	elisapterosin F	gorgonian	*Pseudopterogorgia elisabethae*	IC_{50} W2 = 51.7 μM
138	(2E,3E,5R,6S)-5,6-dichloro-2-(chloromethylene)-6-methylocta-3,7-dienal	red alga	*Plocamium cornutum*	IC_{50} D10 = 27 μM
139	(1E,3E,5R,6S)-1,5,6-trichloro-2-(dichloromethyl)-6-methylocta-1,3,7-triene	red alga	*Plocamium cornutum*	IC_{50} D10 = 16 μM
140	(5R,6S,E)-5,6-dichloro-2-(dichloromethyl)-6-methylocta-1,3,7-triene	red alga	*Plocamium cornutum*	IC_{50} D10 = 17 μM
141	(1Z,3E,5S*,6S*)-1-bromo-5,6-dichloro-2,6-dimethyl-octa-1,3,7-triene	red alga	*Plocamium cornutum*	IC_{50} D10 = 230 μM
142	(1Z,3E,5R*,6S*)-1-bromo-5,6-dichloro-2,6-dimethyl-octa-1,3,7-triene	red alga	*Plocamium cornutum*	IC_{50} D10 = 210 μM
143	(-)-9-isothiocyanatopupukeanane	sponge	*Axinyssa* sp.	IC_{50} D6 = 12.5 μM IC_{50} W2 = 3.38 μM
144	(-)-9-isocyanopupukeanane	sponge	*Axinyssa* sp.	IC_{50} D6 = 10.9 μM IC_{50} W2 = 6.96 μM
145	(-)-2-thiocyanatoneopupukeanane	sponge	*Axinyssa* sp.	IC_{50} D6 = 17.86 μM IC_{50} W2 = 6.92 μM
146	(-)-epipolasin-A	sponge	*Axinyssa* sp.	IC_{50} D6 = 21.28 μM IC_{50} W2 = 21.09 μM
147	10-epikalihinol I	sponge	*Acanthella* sp.	EC_{50} >1.8 μM
148	5,10-bisisothiocyanatokalihinol G	sponge	*Acanthella* sp.	EC_{50} = 2.6 μM
149	kalihinol A	sponge	*Acanthella* sp.	EC_{50} = 1.2 nM
150	kalihinen	sponge	*Acanthella* sp.	EC_{50} = 10 nM
151	6-hydroxykalihinene	sponge	*Acanthella* sp.	EC_{50} = 80 nM

152	15-Oxopuupehenol	sponge	*Hyrtios* spp.	IC_{50} D6 = 5.81 μM IC_{50} W2 = 3.78 μM
153	axisonitile-3	sponge	*Acanthella klethra*	undescribed
154	sandresolide C	gorgonian	*Pseudopterogorgia elisabethae*	IC_{50} W2 = 56.22 μM
155	peyssonnoside A	red alga	*Peyssonnelia* sp.	EC_{50} = 2.4 μM
156	peyssonnoside B	red alga	*Peyssonnelia* sp.	EC_{50} = 5.8 μM
157	1-((5R,6S)-3,6-dimethyl-6-vinyl-4,5,6,7-tetrahydrobenzofuran-5-yl)vinyl acetate	octocoral	*Muricea austera*	IC_{50} W2 = 42 μM
158	manzamine A	sponge	*Xestospongia ashmorica*	IC_{50} D6 = 8.21 nM IC_{50} W2 = 14.6 nM
159	manzamine E	sponge	*Xestospongia ashmorica*	IC_{50} D6 = 6.02 μM IC_{50} W2 = 8.43 μM
160	manzamine F	sponge	*Xestospongia ashmorica*	IC_{50} D6 = 1.34 μM IC_{50} W2 = 2.93 μM
161	manzamine J	sponge	*Xestospongia ashmorica*	IC_{50} D6 = 2.36 μM IC_{50} W2 =1.36 μM
162	manzamine X	sponge	*Xestospongia* sp.	IC_{50} D6 = 1.64 μM IC_{50} W2 =3.45 μM
163	manzamine Y	sponge	*Haliclona* sp.	IC_{50} D6 = 0.74 μM IC_{50} W2 =1.51 μM
164	(+)-8-hydroxymanzamine A	sponge	*Acanthostrongylophora*	IC_{50} D6 = 0.01 μM IC_{50} W2 = 0.01 μM
165	manzamine A N-oxide	sponge	*Xestospongia ashmorica*	IC_{50} D6 = 0.02 μM IC_{50} W2 = 0.02 μM
166	3,4-dihydromanzamine A N-oxide	sponge	*Xestospongia ashmorica*	IC_{50} D6 = 2.9 μM IC_{50} W2 = 6.7 μM
167	3,4-dihydromanzamine J N-oxide	sponge	*Amphimedon* sp.	IC_{50} W2 = 12.7 μM
168	12,34-oxamanzamine A	sponge	*Petrosiidae genus*	IC_{50} D6 = 8.71 μM
169	ent-8-hydroxymanzamine A	sponge	*Prianos* sp.	IC_{50} ＜ 1 μM
170	6-hydroxymanzamine E	sponge	*Acanthostrongylophora genus*	IC_{50} D6 = 1.34 μM IC_{50} W2 = 1.50 μM
171	ent-12,34-oxamanzamine F	sponge	*Acanthostrongylophora*	IC_{50} D6 = 1.45 μM IC_{50} W2 = 1.90 μM
172	ent-manzamine F	sponge	*Prianos* sp.	undescribed
173	6-deoxymanzamine X	sponge	*Xestospongia ash*	IC_{50} D6 = 2.30 μM

			morica	IC_{50} W2 = 2.48 μM
174	manzamine Y	sponge	*Xestospongia* sp.	IC_{50}D6 = 0.74 μM IC_{50} W2 = 1.51 μM
175	*neo*-kauluamine	sponge	*Pachypellina* sp.	IC_{50} D6 = 1.46 μM IC_{50} W2 = 2.41 μM
176	zamamidine A	sponge	*Amphimedon* sp.	IC_{50} K1 = 9.57 μM
177	zamamidine C	sponge	*Amphimedon* sp.	IC_{50} K1 = 0.78 μM
178	ircinol A	sponge	*Acanthostrongylophora*	IC_{50} D6 = 5.82 μM IC_{50} W2 = 7.52 μM
179	22(S)-hydroxyingamine A	sponge	*Petrosid Ng5 Sp5*	IC_{50} D6 = 0.47 μM IC_{50} W2 = 0.30 μM
180	dihydroingenamine D	sponge	*Petrosid Ng5 Sp5*	IC_{50} D6 = 0.18 μM IC_{50} W2 = 0.13 μM
181	tsitsikammamine C	sponge	*Zyzzya* sp.	IC_{50} Dd2 = 18 nM IC_{50} 3D7 = 13 nM
182	makaluvamine J	sponge	*Zyzzya* sp.	IC_{50} Dd2 = 22 nM IC_{50} 3D7 = 25 nM
183	makaluvamine G	sponge	*Zyzzya* sp.	IC_{50} Dd2 = 39 nM IC_{50} 3D7 = 36 nM
184	makaluvamine L	sponge	*Zyzzya* sp.	IC_{50} Dd2= 21 nM IC_{50} 3D7 = 40 nM
185	thiaplakortone A	sponge	*Plakortis lita*	IC_{50} 3D7 = 51 nM IC_{50} Dd2 = 6.6 nM
186	thiaplakortone B	sponge	*Plakortis lita*	IC_{50} 3D7 = 650 nM IC_{50} Dd2 = 92 nM
187	thiaplakortone C	sponge	*Plakortis lita*	IC_{50} 3D7 = 309 nM IC_{50} Dd2 = 171 nM
188	thiaplakortone D	sponge	*Plakortis lita*	IC_{50} 3D7 = 279 nM IC_{50} Dd2 = 159 nM
189	marineosin A	actinomycete	*Streptomyces* sp.	IC_{50} D6 = 138 nM IC_{50} Dd2 = 127 nM IC_{50} 7G7= 199 nM
190	premarineosin A	actinomycete	*Streptomyces* sp.	IC_{50} D6 = 2.3 nM IC_{50} Dd2 = 12 nM IC_{50} 7G7= 1.5 nM
191	16-ketopremarineosin A	actinomycete	*Streptomyces* sp.	IC_{50} D6 = 138 nM IC_{50} Dd2 = 127 nM IC_{50} 7G7= 199 nM
192	merobatzelladine A	sponge	*Monanchora* sp.	IC_{50} K1 = 1.33 μM
193	merobatzelladine B	sponge	*Monanchora* sp.	IC_{50} K1 = 3.16 μM
194	neopetrosiamine A	sponge	*Neopetrosia proxima*	IC_{50} = 2.3 μM
195	(+)-7-	sponge	*Ancorina sp.*	IC_{50} Dd2 = 5.4 μM

	bromotrypargine			IC_{50} 3D7 = 3.5 μM
196	unguiculin A	sponge	*Monanchora unguiculata*	IC_{50} 3D7 = 12.89 μM
197	ptilomycalin E	sponge	*Monanchora unguiculata*	IC_{50} 3D7 = 0.35 μM
198	ptilomycalin F	sponge	*Monanchora unguiculata*	IC_{50} 3D7 = 0.23 μM
199	ptilomycalin G	sponge	*Monanchora unguiculata*	IC_{50} 3D7 = 0.46 μM compounds (199+200)
200	ptilomycalin H	sponge	*Monanchora unguiculata*	IC_{50} 3D7 = 0.46 μM compounds (199+200)
201	fromiamycalin	sponge	*Monanchora unguiculata*	IC_{50} 3D7 = 0.24 μM
202	marinacarboline A	actinomycete	*Marinactinospora thermotolerans*	IC_{50} Dd2 = 1.92 μM IC_{50} 3D7 = 36.03 μM
203	marinacarboline B	actinomycete	*Marinactinospora thermotolerans*	IC_{50} Dd2 = 15.59 μM IC_{50} 3D7 = 16.65 μM
204	marinacarboline C	actinomycete	*Marinactinospora thermotolerans*	IC_{50} Dd2 = 3.38 μM IC_{50} 3D7 = 3.09 μM
205	marinacarboline D	actinomycete	*Marinactinospora thermotolerans*	IC_{50} Dd2 = 3.59 μM IC_{50} 3D7 = 5.39 μM
206	13-N-demethyl-methylpendolmycin	actinomycete	*Marinactinospora thermotolerans*	IC_{50} Dd2 = 18.67 μM IC_{50} 3D7 = 20.75 μM
207	methylpendolmycin-14-O-α-glucoside	actinomycete	*Marinactinospora thermotolerans*	IC_{50} Dd2 = 5.03 μM IC_{50} 3D7 = 10.43 μM
208	agelasine J	sponge	*Agelas* cf. *mauritiana*	IC_{50} = 6.6 μM
209	agelasine K	sponge	*Agelas* cf. *mauritiana*	IC_{50} = 8.3 μM
210	agelasine L	sponge	*Agelas* cf. *mauritiana*	IC_{50} 3D7 = 18 μM
211	naseseazine C	actinomycete	*Streptomyces* sp.	IC_{50} = 3.52 μM
212	netamine O	sponge	*Biemna laboutei*	IC_{50} = 16.99 μM
213	netamine P	sponge	*Biemna laboutei*	IC_{50} = 32.62 μM
214	netamine Q	sponge	*Biemna laboutei*	IC_{50} = 8.35 μM
215	xestostreptin	actinomycete	*Streptomyces* sp.	IC_{50} Dd2 = 50 μM
216	farneside A	actinomycete	*Streptomyces* sp.	IC_{50} 3D7 = 69.3 μM
217	opacaline A	ascidian	*Pseudodistoma opacum*	IC_{50} K1 = 2.5 μM
218	opacaline B	ascidian	*Pseudodistoma opacum*	IC_{50} K1 = 4.5 μM
219	didemnidine A	ascidian	*Didemnum* sp.	IC_{50} K1 = 41 μM
220	didemnidine B	ascidian	*Didemnum* sp.	IC_{50} K1 = 15 μM

221	caulamidine A	bryozoan	*Caulibugula intermis*	IC_{50} D6 = 11.3 μM IC_{50} W2 = 8.3 μM
222	caulamidine B	bryozoan	*Caulibugula intermis*	IC_{50} D6 = 12 μM IC_{50} W2 = 12.9 μM
223	pustulosaisonitrile-1	nudibranch	*Phyllidiella pustulosa*	IC_{50} Dd2 = 1.54 μM IC_{50} 3D7 = 1.08 μM
224	7-bromo-N-hydroxyhomotrypargine	ascidian	*Pseudodistoma opacum*	IC_{50} FcB1 = 3.8 μM
225	(+)-(R)-eudistidine C	ascidian	*Eudistoma* sp.	IC_{50} D6 = 2.8 μM IC_{50} W2 = 1.5 μM
226	(−)-(S)eudistidine C	ascidian	*Eudistoma* sp.	IC_{50} D6 = 4.2 μM IC_{50} W2 = 2.5 μM
227	tumonic acid I	cyanobacterium	*Blennothrix cantharidosmum*	IC_{50} = 2 μM
228	cycloaplysinopsin C	hard coral	*Tubastraea* sp.	IC_{50} F32 = 2.7 μM IC_{50} FcB1 = 1.8 μM
229	netamine K	sponge	*Biemna laboutei*	IC_{50} = 2.4 μM
230	aplidiopsamine A	ascidian	*Aplidiopsis confluata*	IC_{50} Dd2 = 1.65 μM IC_{50} 3D7 = 1.47 μM
231	astepyrazinoxide	fungus	*Aspergillus terreus*	IC_{50} = 24.82 μM
232	astechrome	fungus	*Aspergillus terreus*	IC_{50} = 0.94 μM
233	hatsusamide A	fungus	*Penicillium steckii*	IC_{50} K1 = 27.2 μM IC_{50} FCR3 = 27.9 μM
234	tanzawaic acid B	fungus	*Penicillium steckii*	IC_{50} K1 = 78.5 μM IC_{50} FCR3= 79.2 μM
235	psammaplin A	sponge	*Aplysinella rhax*	IC_{50} 3D7 = 60 μM
236	psammaplin D	sponge	*Aplysinella rhax*	IC_{50} 3D7 = 67 μM
237	bisaprasin	sponge	*Aplysinella rhax*	IC_{50} 3D7 = 29 μM
238	araplysillin I	sponge	*suberea ianthelliformis*	IC_{50} FCB1 = 4.5 μM IC_{50} 3D7 = 4.6 μM
239	Araplysillin N20-formamide	sponge	*suberea ianthelliformis*	IC_{50} FCB1 = 3.6 μM IC_{50} 3D7 = 7.0 μM
240	Araplysillin N20-hydroxyformamide	sponge	*suberea ianthelliformis*	IC_{50} FCB1 = 5.0 μM IC_{50} 3D7 = 4.1 μM
241	Araplysillin IV	sponge	*suberea ianthelliformis*	IC_{50} FCB1 = 27.6 μM
242	Araplysillin V	sponge	*suberea ianthelliformis*	IC_{50} FCB1 = 50.5 μM
243	Araplysillin VI	sponge	*suberea ianthelliformis*	IC_{50} FCB1 = 37.4 μM
244	Aerophobin I	sponge	*Suberea ianthelliformis*	IC_{50} FCB1 = 59.0 μM

245	Aerophobin II	sponge	*Suberea ianthelliformis*	IC_{50} FCB1 = 24.9 μM IC_{50} 3D7 = 19.9 μM
246	Purealidin Q	sponge	*Suberea ianthelliformis*	IC_{50} FCB1 = 3.6 μM
247	aerothionin	sponge	*Suberea ianthelliformis*	IC_{50} FCB1 = 3.4 μM IC_{50} 3D7 = 4.2 μM
248	aplysinone D	sponge	*Suberea ianthelliformis*	IC_{50} FCB1 = 1.0 μM IC_{50} 3D7 = 3.1 μM
249	11,19-Dideoxyfistularin 3	sponge	*Suberea ianthelliformis*	IC_{50} FCB1 = 2.1 μM IC_{50} 3D7 = 0.9 μM
250	11-Hydroxyfistularin 3	sponge	*Suberea ianthelliformis*	IC_{50} FCB1 = 2.1 μM IC_{50} 3D7 = 2.6 μM
251	ceratinadin E	sponge	*Pseudoceratina* sp.	IC_{50} K1 = 0.91 μM IC_{50} FCR3 = 0.68 μM
252	ceratinadin F	sponge	*Pseudoceratina* sp.	IC_{50} K1 > 8.31 μM
253	19-hydroxypsammaplysin E	sponge	*Aplysinella strongylata*	IC_{50} 3D7 = 6.4 μM
254	10-bromohomofascaplysate A	Sponge	Undescribed	IC_{50} D6 = 4.6 nM IC_{50} W2 = 4.8 nM
255	10-bromofascaplysin	Sponge	Undescribed	IC_{50} D6 = 0.3 nM IC_{50} W2 = 0.26 nM
256	bromophycolide A	red alga	*Callophycus serratus*	IC_{50} = 0.9 μM
257	bromophycolide B	red alga	*Callophycus serratus*	IC_{50} = 4.8 μM
258	bromophycolide C	red alga	*Callophycus serratus*	IC_{50} = 56 μM
259	bromophycolide D	red alga	*Callophycus serratus*	IC_{50} = 0.3 μM
260	bromophycolide E	red alga	*Callophycus serratus*	IC_{50} = 0.8 μM
261	bromophycolide F	red alga	*Callophycus serratus*	IC_{50} = 18 μM
262	bromophycolide G	red alga	*Callophycus serratus*	IC_{50} = 14 μM
263	bromophycolide H	red alga	*Callophycus serratus*	IC_{50} = 0.9 μM
264	bromophycolide I	red alga	*Callophycus serratus*	IC_{50} = 2.5 μM
265	bromophycolide J	red alga	*Callophycus serratus*	IC_{50} = 2.7 μM
266	bromophycolide K	red alga	*Callophycus*	IC_{50} = 44 μM

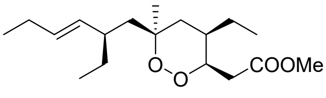
			serratus	
267	bromophycolide L	red alga	*Callophycus serratus*	IC_{50} = 9.8 μM
268	bromophycolide M	red alga	*Callophycus serratus*	IC_{50} = 0.5 μM
269	bromophycolide N	red alga	*Callophycus serratus*	IC_{50} = 1.4 μM
270	bromophycolide O	red alga	*Callophycus serratus*	IC_{50} = 1.4 μM
271	bromophycolide P	red alga	*Callophycus serratus*	IC_{50} = 2.9 μM
272	bromophycolide Q	red alga	*Callophycus serratus*	IC_{50} = 1.4 μM
273	bromophycolide R	red alga	*Callophycus serratus*	IC_{50} = 1.7 μM
274	bromophycolide S	red alga	*Callophycus serratus*	IC_{50} = 0.9 μM
275	bromophycolide T	red alga	*Callophycus serratus*	IC_{50} = 8.4 μM
276	bromophycolide U	red alga	*Callophycus serratus*	IC_{50} = 2.1 μM
277	callophycoic acid A	red alga	*Callophycus serratus*	IC_{50} = 41.0 μM
278	callophycoic acid B	red alga	*Callophycus serratus*	IC_{50} = 51.5 μM
279	callophycoic acid C	red alga	*Callophycus serratus*	IC_{50} = 58.6 μM
280	callophycoic acid D	red alga	*Callophycus serratus*	IC_{50} = 76.1 μM
281	callophycoic acid E	red alga	*Callophycus serratus*	IC_{50} = 96.2 μM
282	callophycoic acid F	red alga	*Callophycus serratus*	IC_{50} = 27.0 μM
283	callophycol A	red alga	*Callophycus serratus*	IC_{50} = 35.7 μM
284	callophycol B	red alga	*Callophycus serratus*	IC_{50} = 40.4 μM
285	callophycolide A	red alga	*Callophycus serratus*	IC_{50} = 5.2 μM
286	bastimolide A	cyanobacterium	*Okeania hirsute*	IC_{50} = 0.08–2.7 μM
287	bastimolide B	cyanobacterium	*Okeania hirsute*	IC_{50} = 5.7 μM
288	monocerin	fungus	*Exserohilum* sp.	IC_{50} = 1.13 μM
289	monocerin-1d	derivative	/	IC_{50} =0.77 μM

290	monocerin-1n	derivative	/	IC_{50} = 0.38 μM
291	monocerin-2a	derivative	/	IC_{50} = 2.58 μM
292	lepadin D	tunicate	*Didemnum* sp.	IC_{50} K1 = 20 μM IC_{50} NF54 = 33 μM
293	lepadin E	tunicate	*Didemnum* sp.	IC_{50} K1 = 0.9 μM IC_{50} NF54 = 2 μM
294	lepadin F	tunicate	*Didemnum* sp.	IC_{50} K1 = 0.4 μM IC_{50} NF54 = 0.7 μM
295	psammaplysin F	sponge	*Hyattella* sp.	IC_{50} Dd2 = 1.4 μM IC_{50} 3D7 = 0.87 μM
296	psammaplysin G	sponge	*Hyattella* sp.	IC_{50} 3D7 = 5.22 μM
297	psammaplysin H	sponge	*Pseudoceratina* sp.	IC_{50} 3D7 = 0.41 μM
298	kabiramid B	sponge	*Pachastrissa nux*	IC_{50} = 1.67 μM
299	kabiramid C	sponge	*Pachastrissa nux*	IC_{50} = 4.79 μM
300	kabiramid D	sponge	*Pachastrissa nux*	IC_{50} = 1.87 μM
301	kabiramid I	sponge	*Pachastrissa nux*	IC_{50} = 4.50 μM
302	kabiramid J	sponge	*Pachastrissa nux*	IC_{50} = 0.31 μM
303	kabiramid K	sponge	*Pachastrissa nux*	IC_{50} = 0.39 μM
304	kabiramid L	sponge	*Pachastrissa nux*	IC_{50} = 2.60 μM
305	elaiophylin	actinomycete	*Streptomyces* sp.	IC_{50} Dd2 = 0.60 μM IC_{50} 3D7 = 0.78 μM
306	palstimolide A	cyanobacterium	*Leptolyngbya* sp.	IC_{50} Dd2 = 0.22 μM
307	hypothemycin	fungus	*Aigialus parvus*	IC_{50} K1 = 5.82 μM
308	aigialomycin D	fungus	*Aigialus parvus*	IC_{50} K1 = 19.75 μM
309	lagunamide A	cyanobacterium	*Lyngbya majuscula*	IC_{50} = 0.19 μM
310	lagunamide B	cyanobacterium	*Lyngbya majuscula*	IC_{50} = 0.91 μM
311	lagunamide C	cyanobacterium	*Lyngbya majuscula*	IC_{50} = 0.29 μM
312	venturamide A	cyanobacterium	*Oscillatoria* sp.	IC_{50} = 8.2 μM
313	venturamide B	cyanobacterium	*Oscillatoria* sp.	IC_{50} = 5.6 μM
314	dragomabin	cyanobacterium	*Lyngbya majuscula*	IC_{50} W2 = 6.0 μM
315	carmabin A	cyanobacterium	*Lyngbya majuscula*	IC_{50} W2 = 4.3 μM
316	dragonamide A	cyanobacterium	*Lyngbya majuscula*	IC_{50} W2 = 7.7 μM
317	gallinamide A	cyanobacterium	*Schizothrix* sp.	IC_{50} 3D7 = 0.05 μM
318	mollemycin A	actinomycete	*Streptomyces* sp.	IC_{50} Dd2 = 7 nM IC_{50} 3D7 = 9 nM
319	hoshinoamide A	red alga	*Callophycus serratus*	IC_{50} 3D7 = 0.52 μM

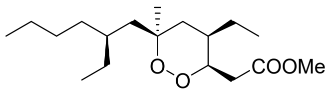
320	hoshinoamide B	red alga	*Callophycus serratus*	IC_{50} 3D7 = 1.0 μM
321	pumilacidin A	bacterium	*Bacillus* sp.	IC_{50} = 8.34–15.44 μM
322	pumilacidin C	bacterium	*Bacillus* sp.	IC_{50} = 7.75–19.59 μM
323	companeramide A	cyanobacterium	/	IC_{50} D6 = 0.57 μM IC_{50} Dd2 = 0.10 μM IC_{50} 7G8 = 1.1 μM
324	companeramide B	cyanobacterium	/	IC_{50} D6 = 0.22 μM IC_{50} Dd2 = 0.23 μM IC_{50} 7G8 = 0.70 μM
325	dudawalamide A	cyanobacterium	*Moorea producens*	IC_{50} = 3.6 μM
326	dudawalamide B	cyanobacterium	*Moorea producens*	IC_{50} = 8.0 μM
327	dudawalamide C	cyanobacterium	*Moorea producens*	IC_{50} = 10 μM
328	dudawalamide D	cyanobacterium	*Moorea producens*	IC_{50} = 3.5 μM
329	actinoramide A	actinomycete	*Streptomyces bangulaensis*	EC_{50} = 0.16–0.34 μM
330	actinoramide B	actinomycete	*Streptomyces bangulaensis*	EC_{50} = 4.96–8.08 μM
331	actinoramide D	actinomycete	*Streptomyces bangulaensis*	EC_{50} = 1.55–4.21 μM
332	actinoramide E	actinomycete	*Streptomyces bangulaensis*	EC_{50} = 3.11–6.92 μM
333	25-epi- actinoramide A	actinomycete	*Streptomyces bangulaensis*	EC_{50} = 6.72–10.71 μM
334	(Z)-N-[2-(4-hydroxyphenyl)ethyl]-3-methyldodec-2-enamide	octocoral	*Muricea austera*	IC_{50} W2 = 36 μM
335	*N*-(4-Hydroxyphenethyl)-3-methyldodecanamide	octocoral	*Muricea austera*	IC_{50} W2 = 45 μM
336	(5Z,8Z,11Z)-N-(4-Hydroxyphenylethyl)tetradeca-5,8,11-trienamide	octocoral	*Muricea austera*	IC_{50} W2 = 38 μM
337	ikoamide	cyanobacterium	*Okeania* sp.	IC_{50} 3D7 = 0.14 μM
338	dominicin	sponge	*Eurypon laughlini*	IC_{50} Dd2 = 1.8 μM IC_{50} 3D7 = 3.6 μM
339	friomaramide	sponge	*Inflatella coelosphaeroides*	IC_{50} = 6.1 μM
340	kaimanol	sponge	*Xestospongia* sp.	IC_{50} 3D7 = 359 nM
341	saringosterol	sponge	*Xestospongia* sp.	IC_{50} 3D7 = 0.25 nM
342	halymeniaol	red alga	*Halymenia floresii*	IC_{50} 3D7 = 3.7 μM

343	24*S*-24-methyl-cholestane 3β, 6β, 25-triol-25-O-acetate	sponge	*Callyspongia fibrosa*	IC_{50} 3D7 = 54.81 μM IC_{50} K1 = 54.02 μM
344	24*S*-24-methyl-cholestane-3β, 5α, 6β, 25-tetraol-25-monoacetate	sponge	*Callyspongia fibrosa*	IC_{50} 3D7 = 30.1 μM IC_{50} K1 = 20.54 μM
345	24*S*-24-methyl-cholestane-3β, 6β, 8β, 25-tetraol-25-O-acetate	sponge	*Callyspongia fibrosa*	IC_{50} 3D7 = 48.46 μM IC_{50} K1 = 44.44 μM
346	24*S*-24-methyl-chelestane-3β, 5α, 6β, 12β, 25-pentaol-25-O-acetate	sponge	*Callyspongia fibrosa*	IC_{50} 3D7 = 48.48 μM IC_{50} K1 = 47.75 μM
347	3‘-O-Acetyl-3β-pregna-5,20-dienyl-β-d-arabinopyranoside	octocoral	*Muricea austera*	IC_{50} W2 = 67 μM
348	4‘-O-Acetyl-3-pregna-5,20-dienyl-β-d-arabinopyranoside	octocoral	*Muricea austera*	IC_{50} W2 = 80 μM
349	salinipostin A	actinomycete	*Salinospora* sp.	EC_{50} W2 = 0.05 μM
350	salinipostin B	actinomycete	*Salinospora* sp.	EC_{50} W2 = 0.14 μM
351	salinipostin C	actinomycete	*Salinospora* sp.	EC_{50} W2 = 0.41 μM
352	salinipostin D	actinomycete	*Salinospora* sp.	EC_{50} W2 = 0.08 μM
353	salinipostin E	actinomycete	*Salinospora* sp.	EC_{50} W2 = 3.22 μM
354	salinipostin F	actinomycete	*Salinospora* sp.	EC_{50} W2 = 0.27 μM
355	salinipostin G	actinomycete	*Salinospora* sp.	EC_{50} W2 = 1.52 μM
356	salinipostin H	actinomycete	*Salinospora* sp.	EC_{50} W2 = 0.87 μM
357	salinipostin I	actinomycete	*Salinospora* sp.	EC_{50} W2 = 1.26 μM
358	salinipostin J	actinomycete	*Salinospora* sp.	EC_{50} W2 = 49.6 μM
359	salinipostin K	actinomycete	*Salinospora* sp.	EC_{50} W2 = 32 μM
360	polyether metabolite	actinomycete	*Streptomyces* sp.	IC_{50} = 0.15–0.29 μM
361	bifurcatriol	brown alga	*Bifurcaria bifurcata*	IC_{50} K1 = 2.0 μM

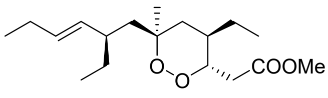
Polyketide (1–57, 57)



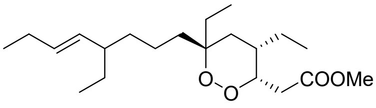
1



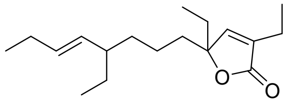
2



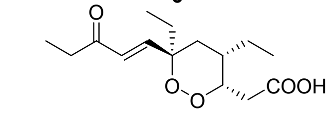
3



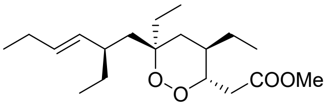
4



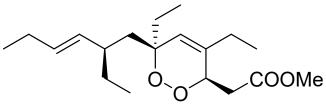
5



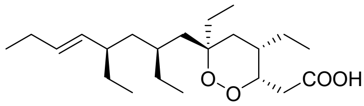
6



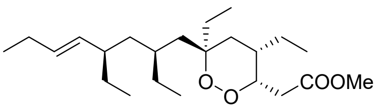
7



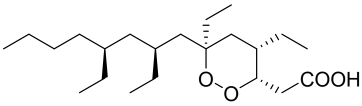
8



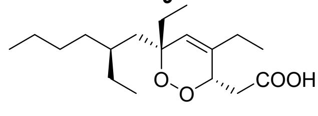
9



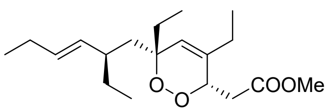
10



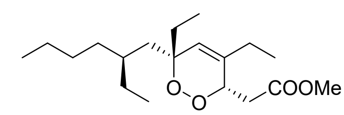
11



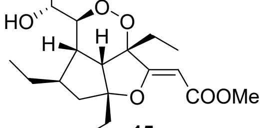
12



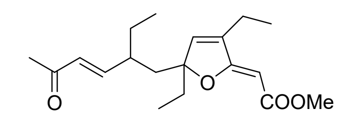
13



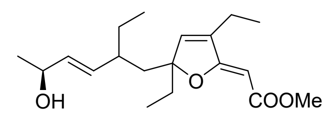
14



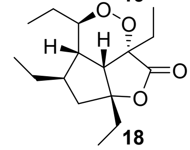
15



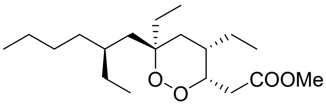
16



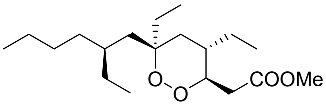
17



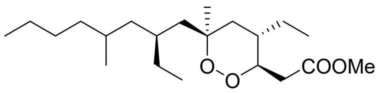
18



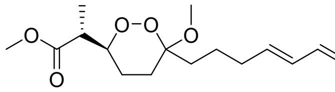
19



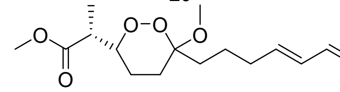
20



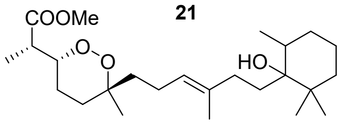
21



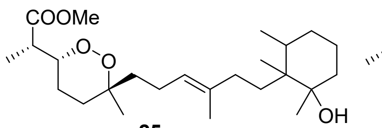
22



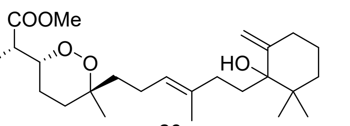
23



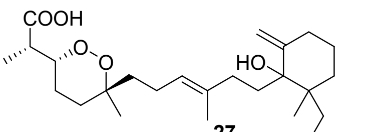
24



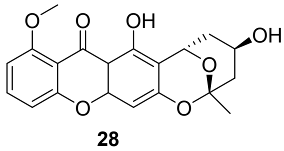
25



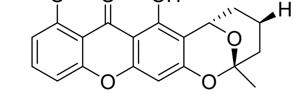
26



27

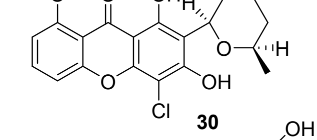


28

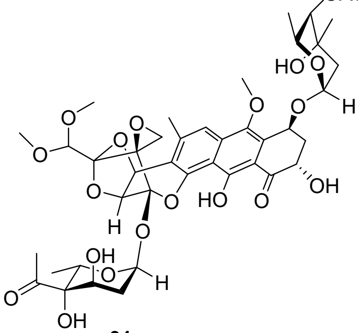


isolated as a racemic mixture

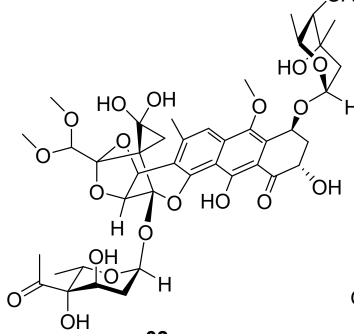
29



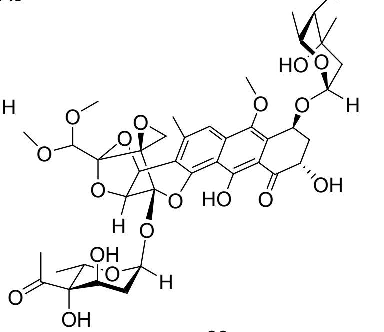
30



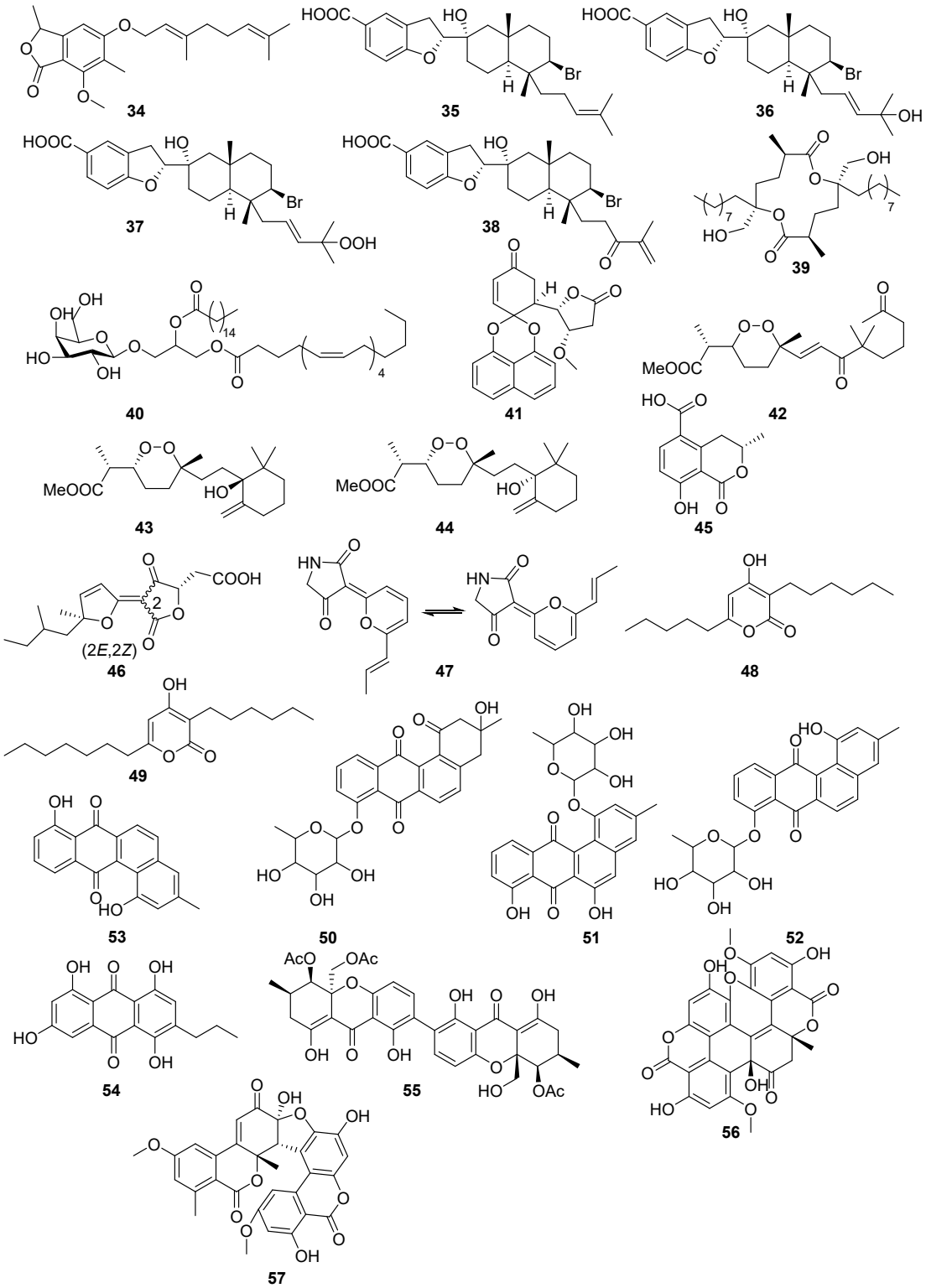
31



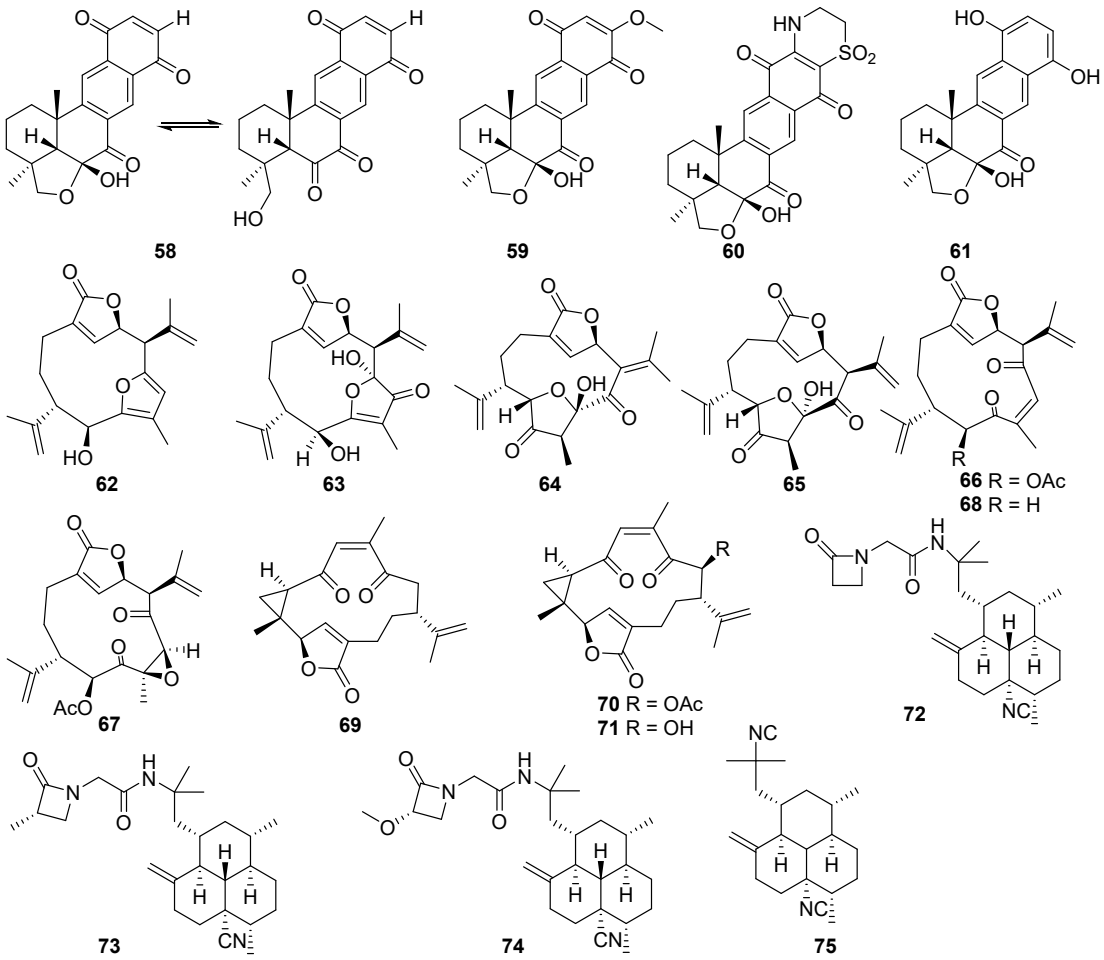
32

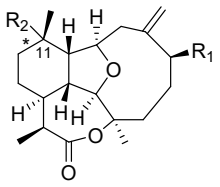


33

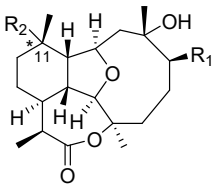


Terpenoid (58–157, 100)

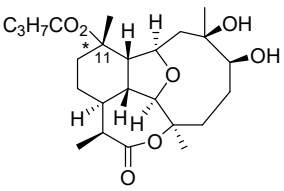




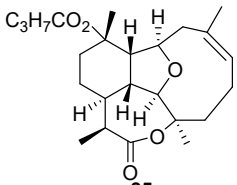
76 R_1 = OH, R_2 = $O_2CC_3H_7$
77 R_1 = OOH, R_2 = $O_2CC_3H_7$
78 R_1 = OH, R_2 = OAc
79 R_1 = OOH, R_2 = OAc
80 R_1 = OAc, R_2 = $O_2CC_3H_7$



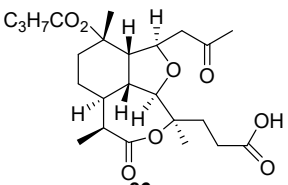
81 R_1 = OH, R_2 = OAc
82 R_1 = OH, R_2 = $O_2CC_3H_7$
83 R_1 = OMe, R_2 = $O_2CC_3H_7$



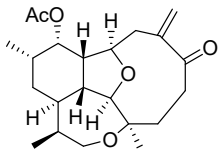
84



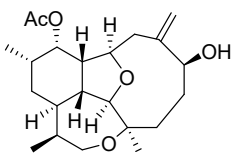
85



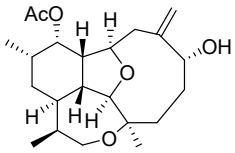
86



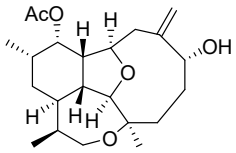
87



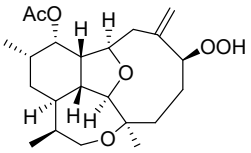
88



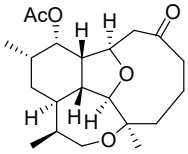
89



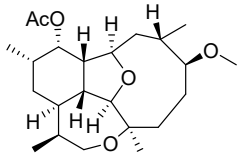
90



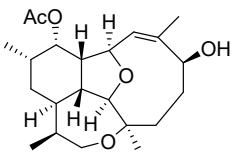
91



92

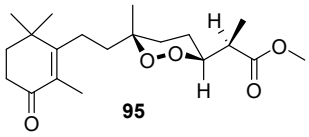


93

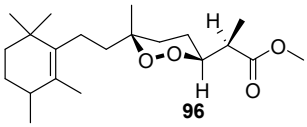


94

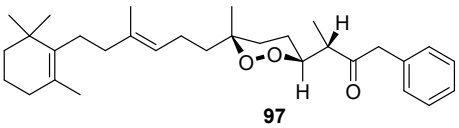
* These structures may require a revision of the sterochemistry of C-11



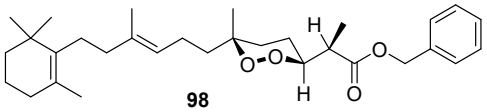
95



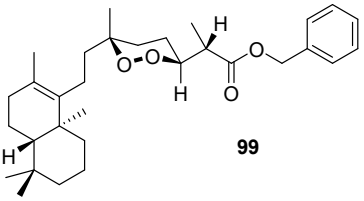
96



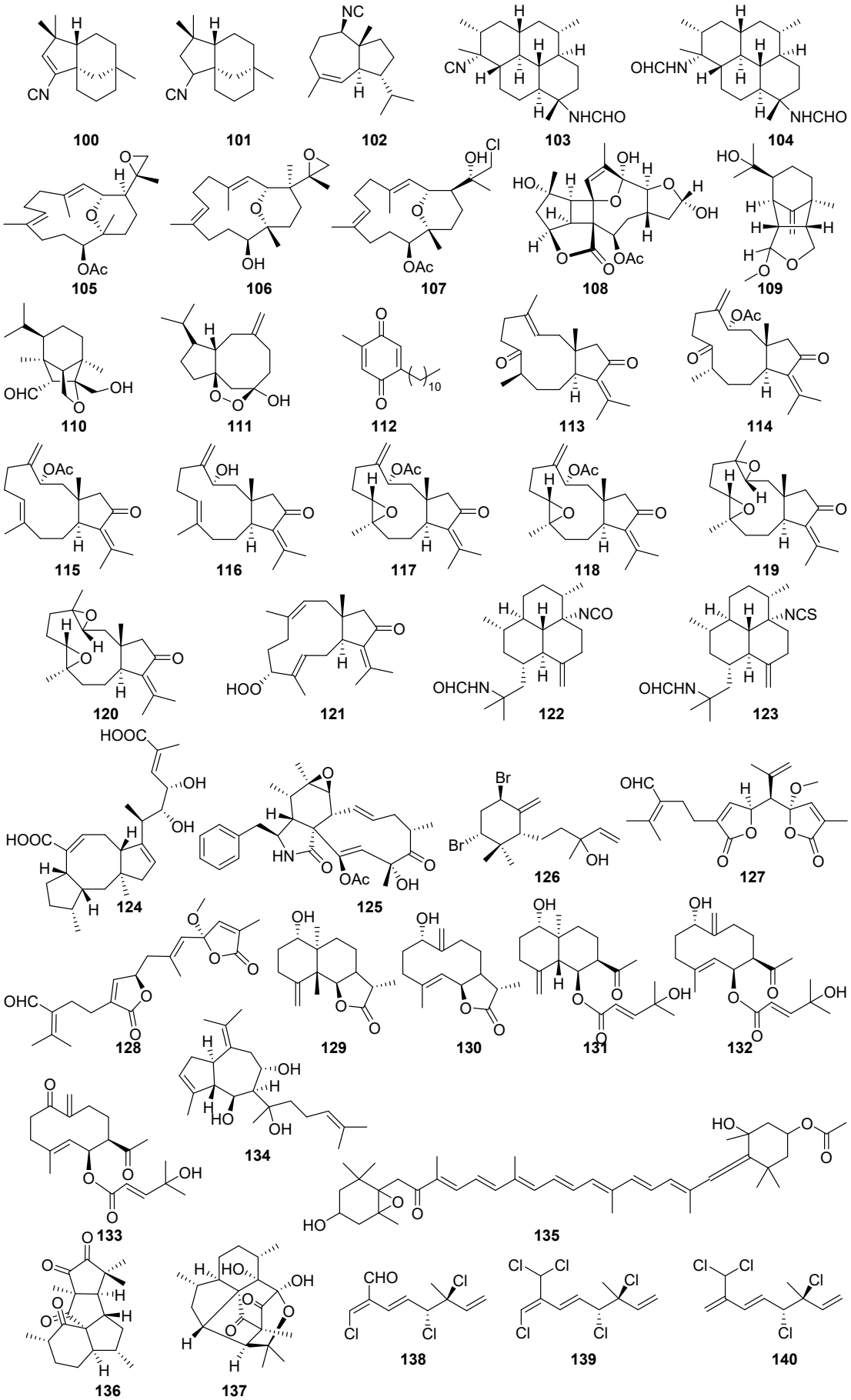
97

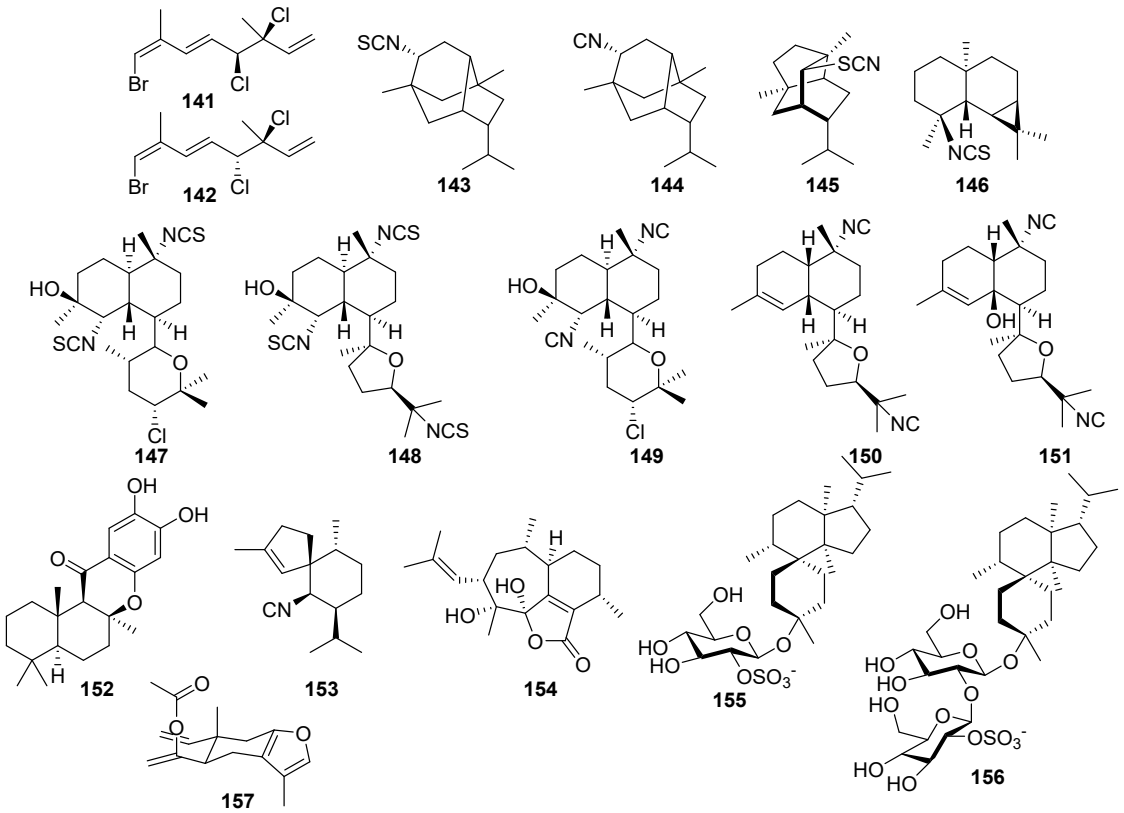


98

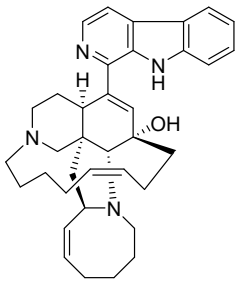


99

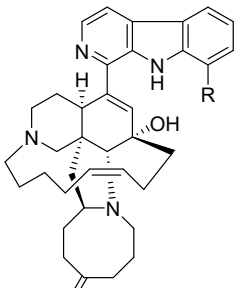

100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140


Cl
Br
Cl
141
Cl
Br
Cl
142
SCN
143
CN
144
SCN
145
H
NCS
146
H
NCS
HO
SCN
H
H
O
Cl
147
H
NCS
HO
SCN
H
H
O
NCS
148
H
NC
HO
CN
H
H
O
Cl
149
H
NC
H
H
O
NC
150
H
NC
OH
H
O
NC
151
OH
OH
O
O
H
152
CN
153
H
HO
HO
O
O
154
OH
HO
HO
O
O
OSO3-
155
OH
HO
HO
O
O
HO
O
OSO3-
HO
HO
156
O
O
O
O
157

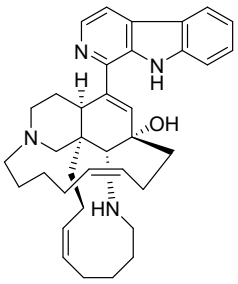
Alkaloid (158–255, 98**)**



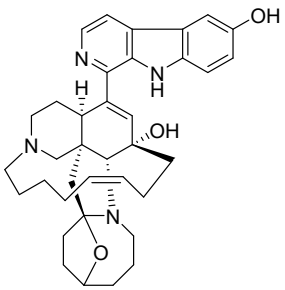
158



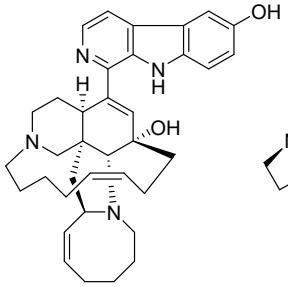
159 R = H
160 R = OH



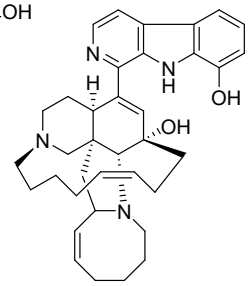
161



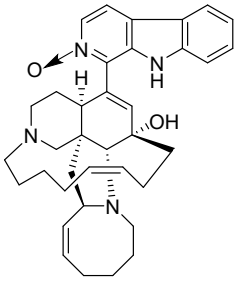
162



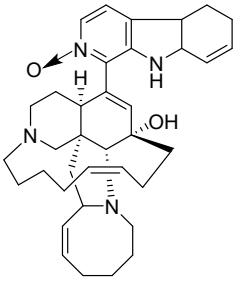
163



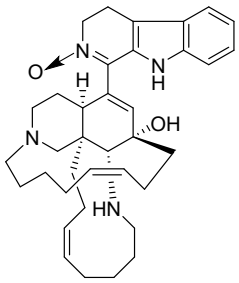
164



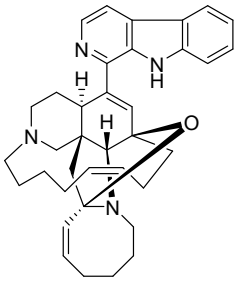
165



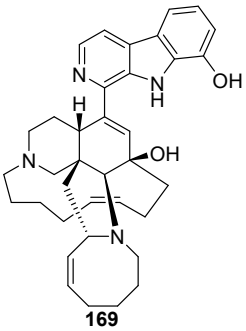
166



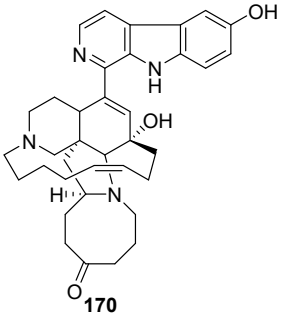
167



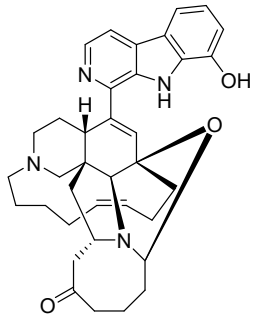
168



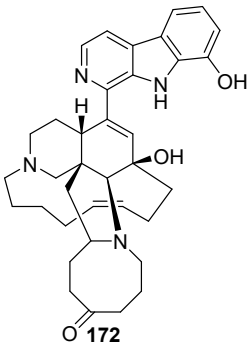
169



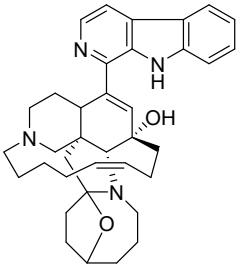
170



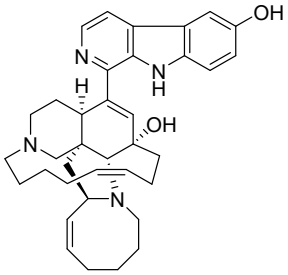
171



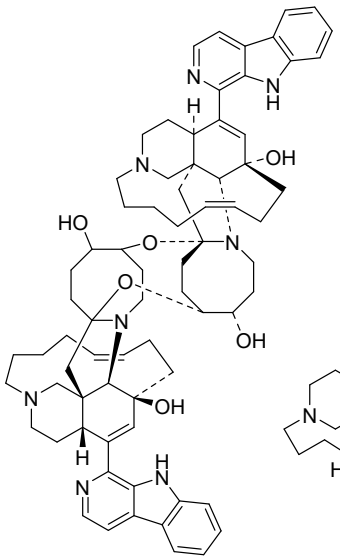
172



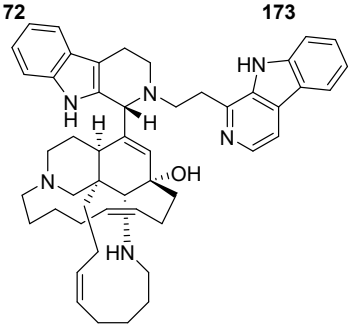
173



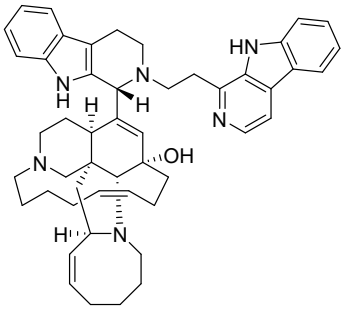
174



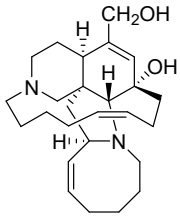
175



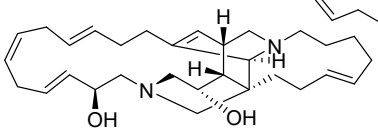
176



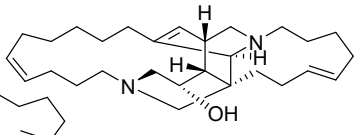
177



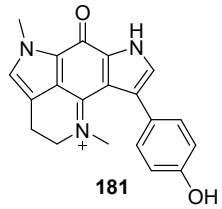
178



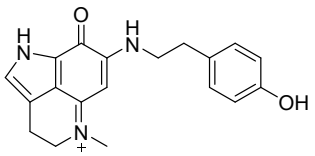
179



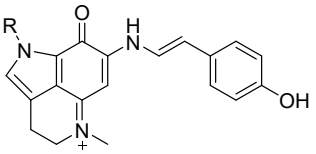
180



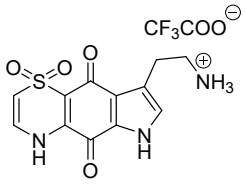
181



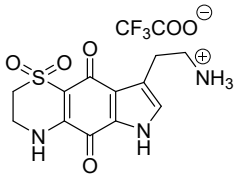
182



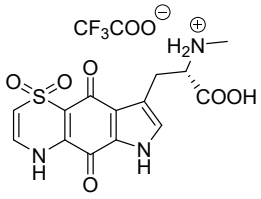
183 R = CH_3
184 R = H



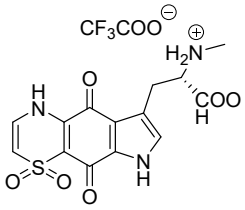
185



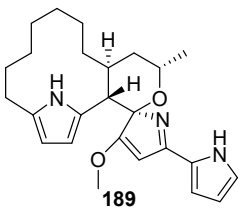
186



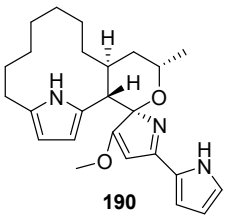
187



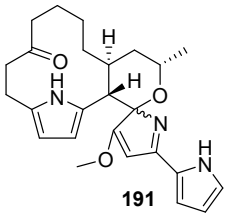
188



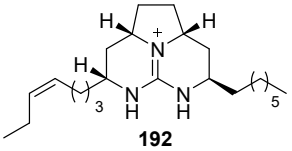
189



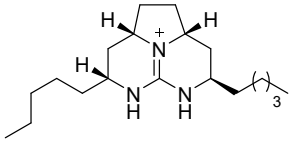
190



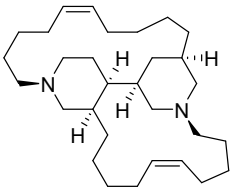
191



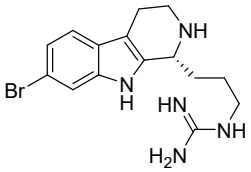
192



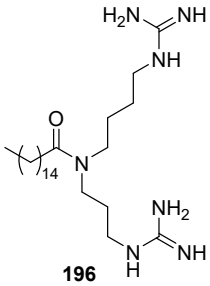
193



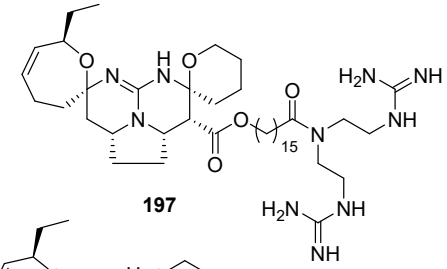
194



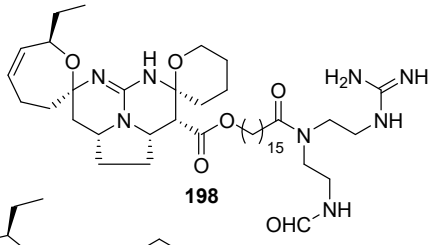
195



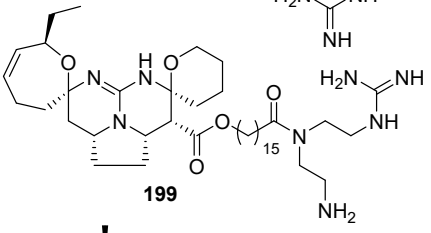
196



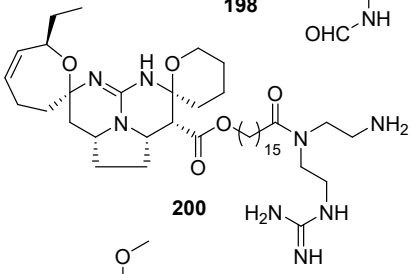
197



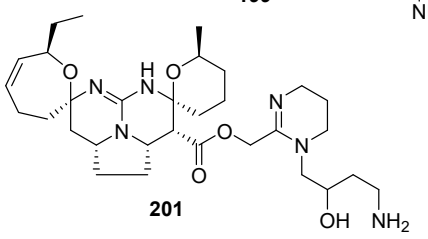
198



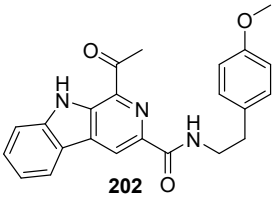
199



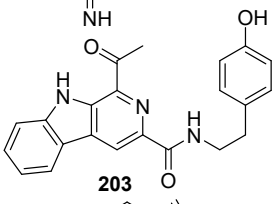
200



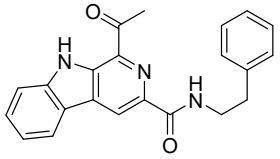
201



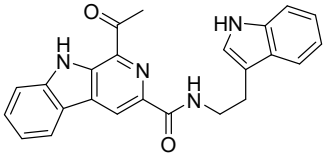
202



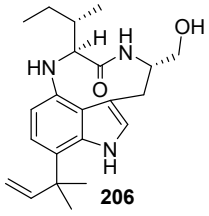
203



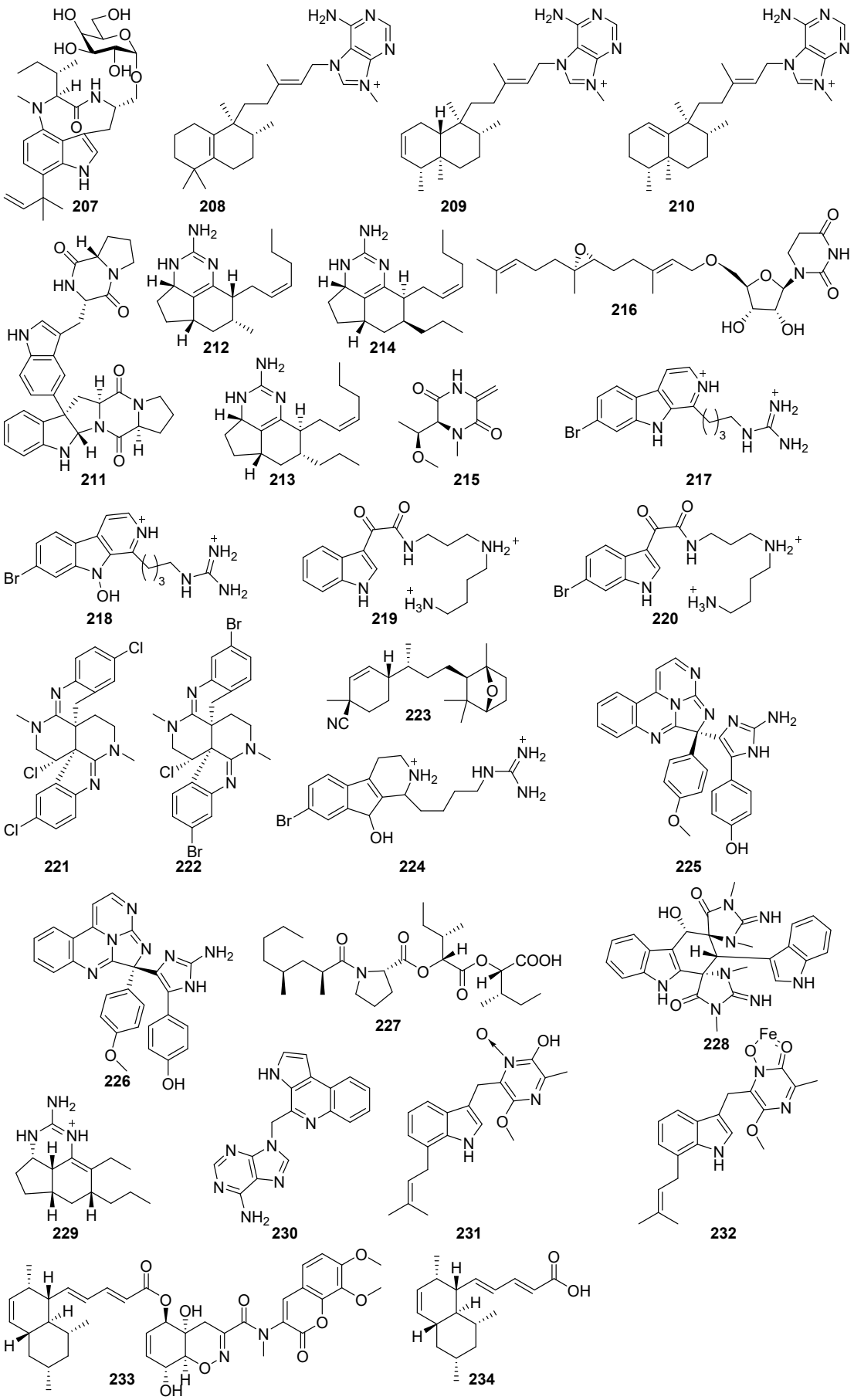
204

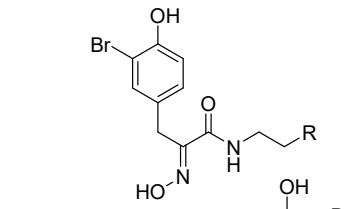


205

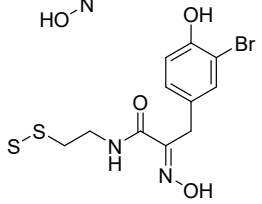


206

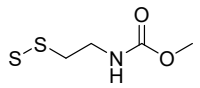

207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234

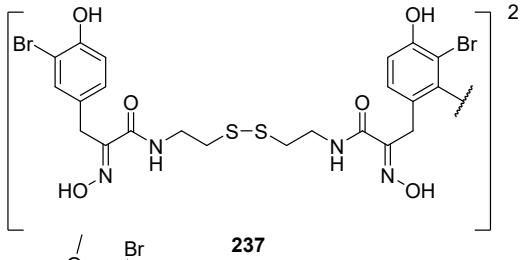


235 R =

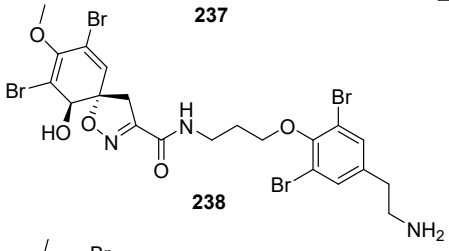


236 R =

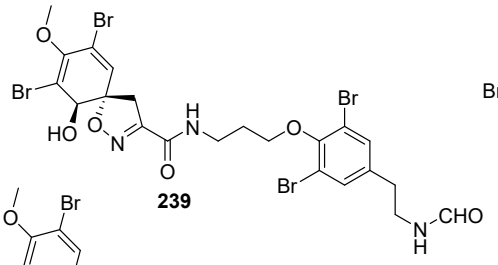




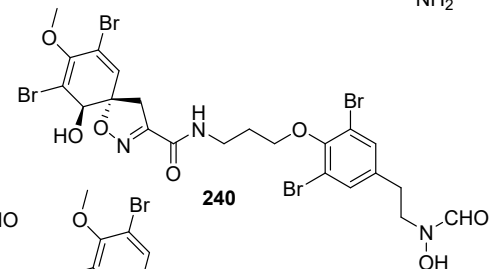
237



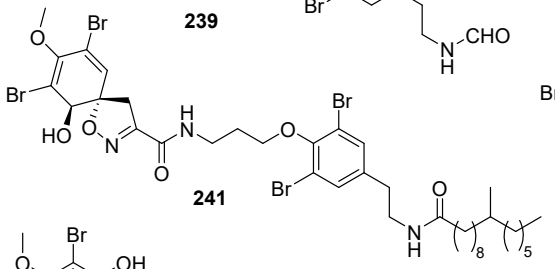
238



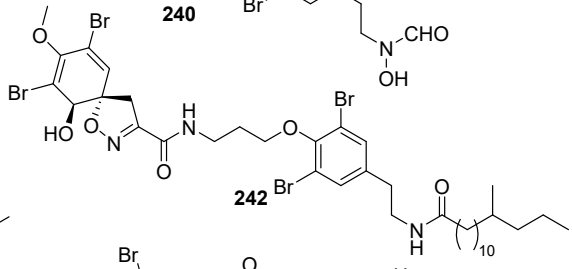
239



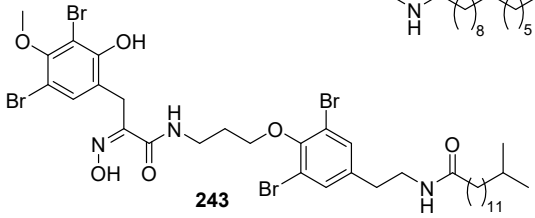
240



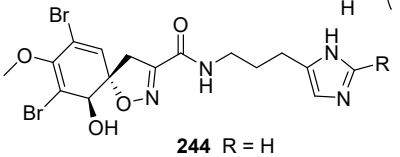
241



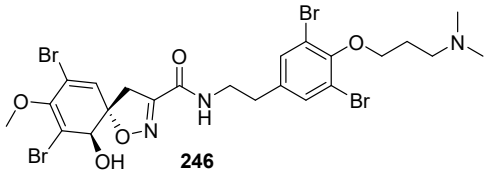
242



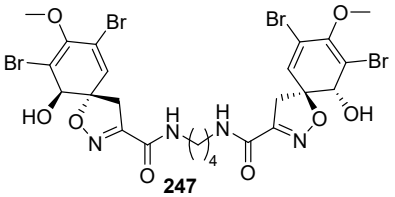
243



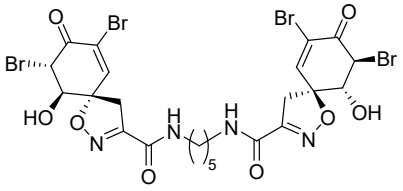
244 R = H
245 R = NH_2



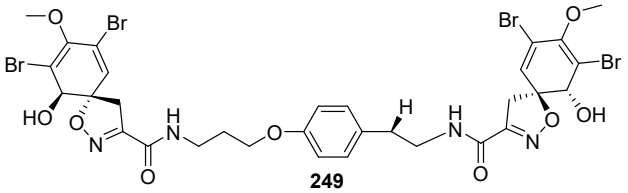
246



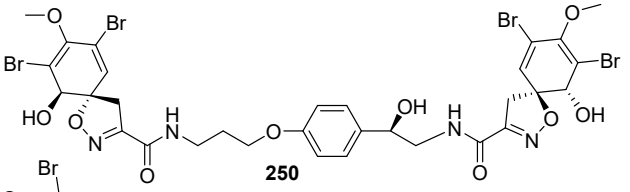
247



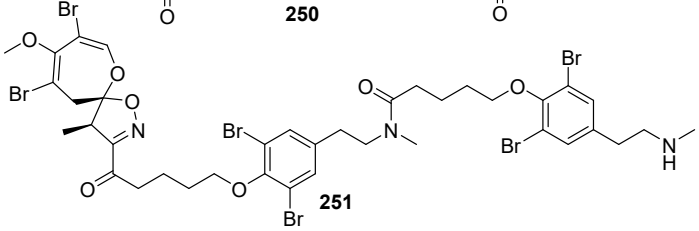
248



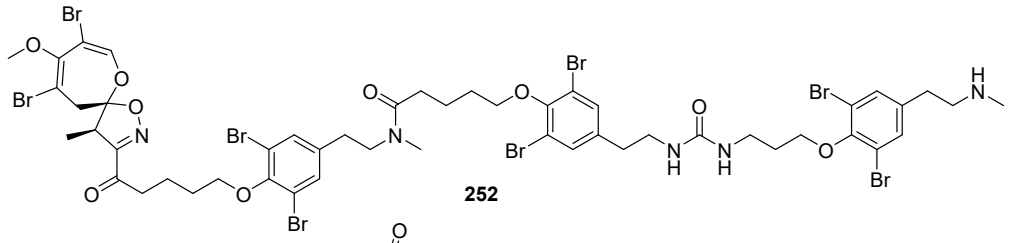
249



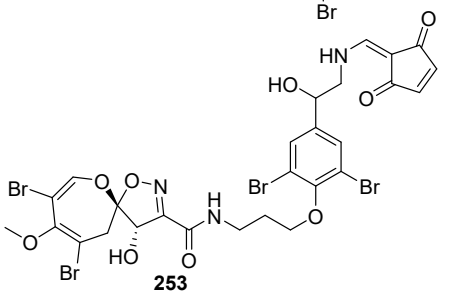
250



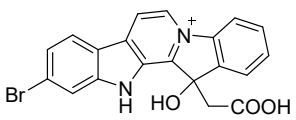
251



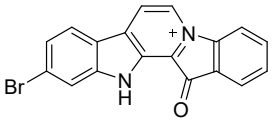
252



253

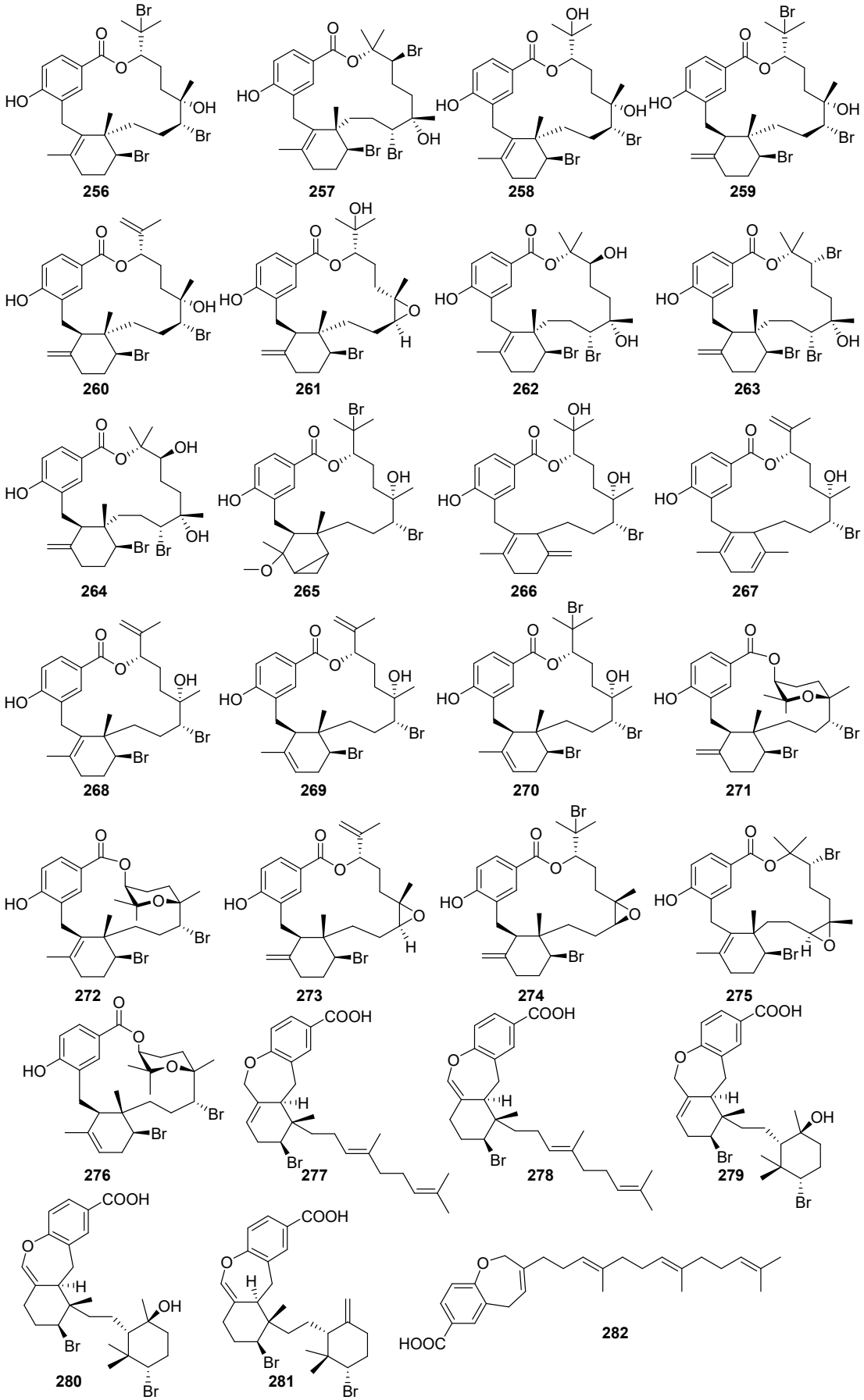


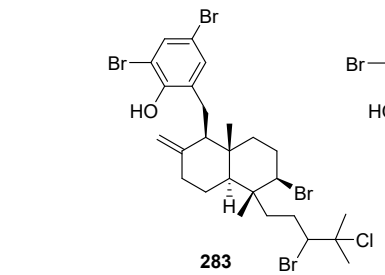
254



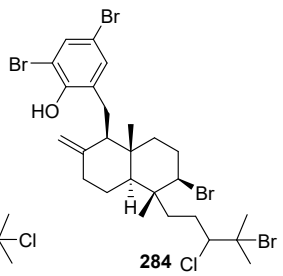
255

Macrolide (256–308, 53)

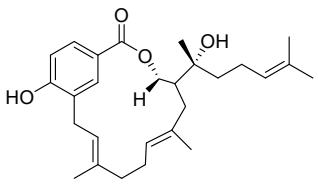




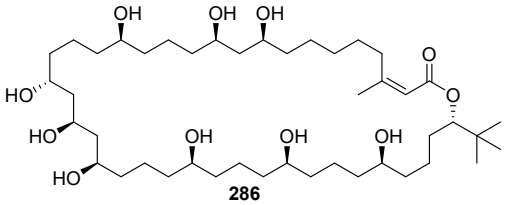
283



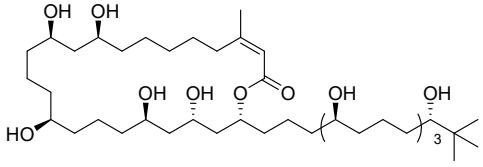
284



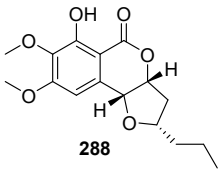
285



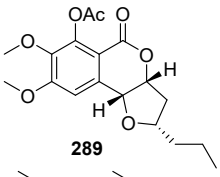
286



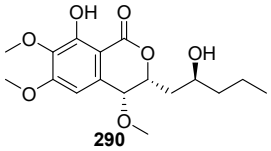
287



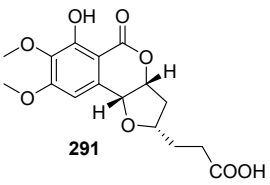
288



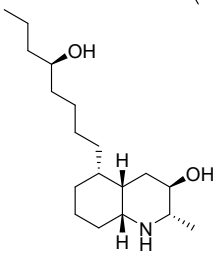
289



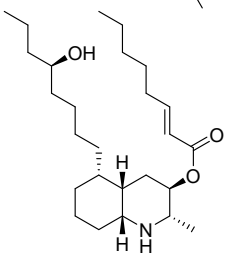
290



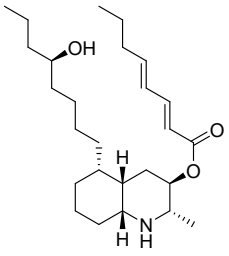
291



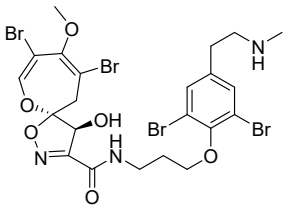
292



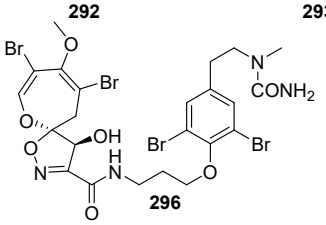
293



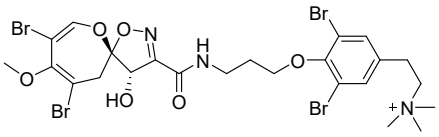
294



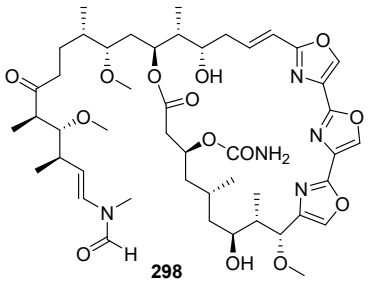
295



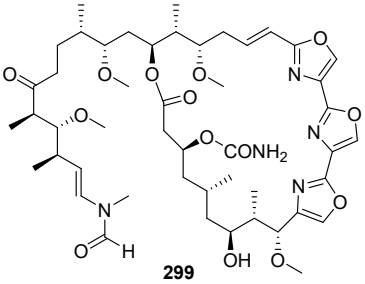
296



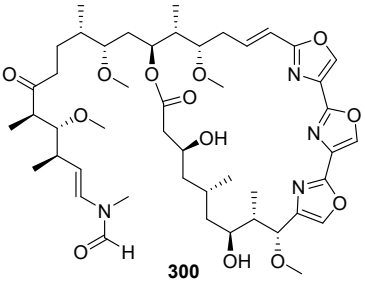
297



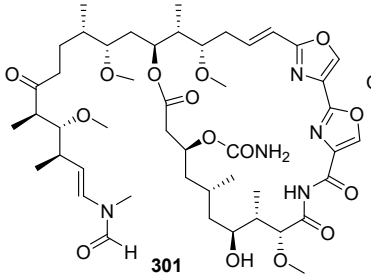
298



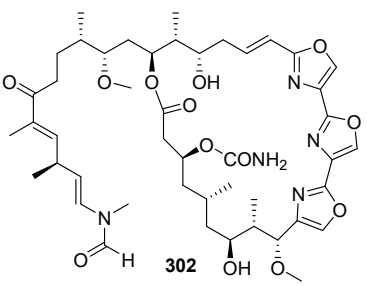
299



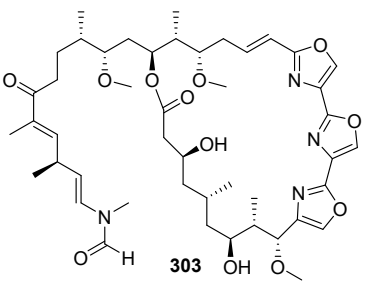
300



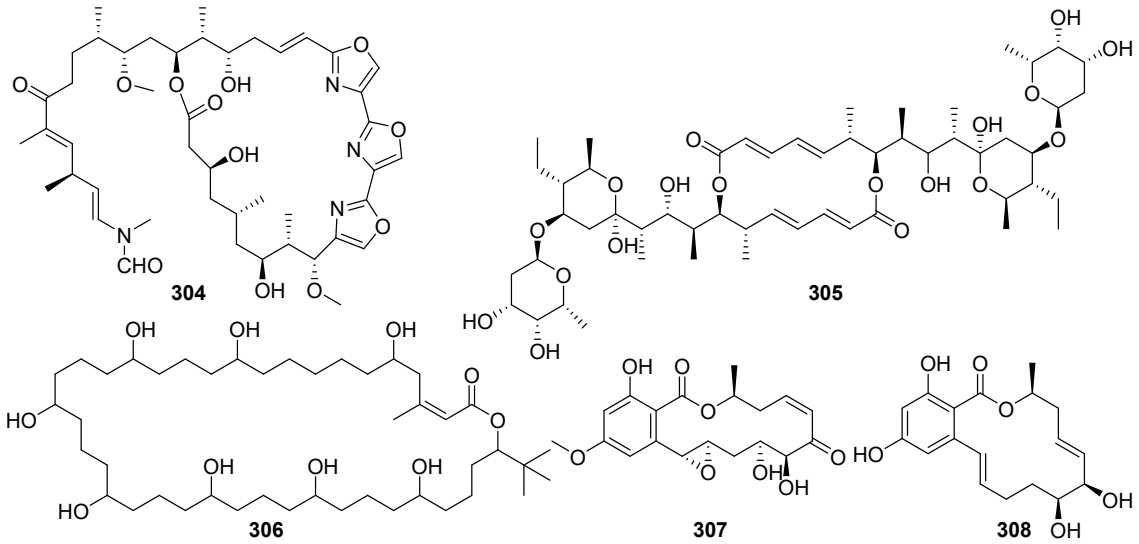
301



302

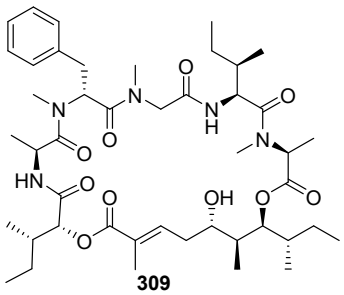


303

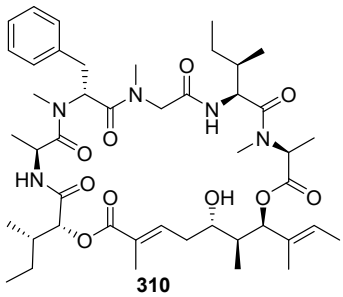


304 305 306 307 308

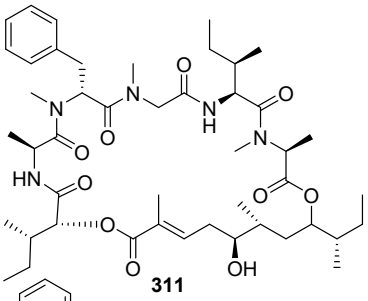
Peptide (309–339, 31)



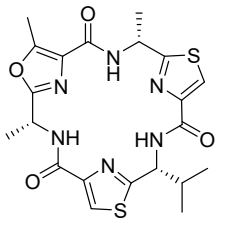
309



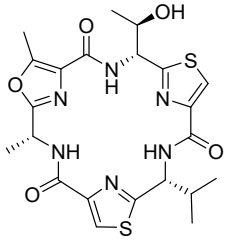
310



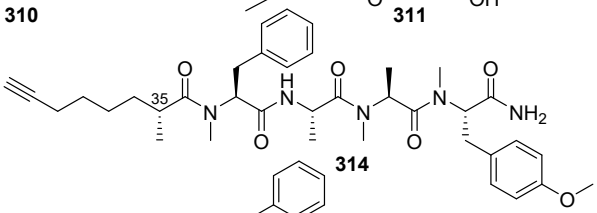
311



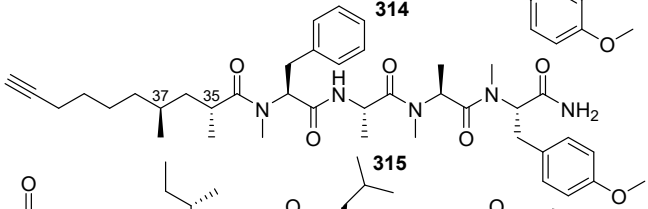
312



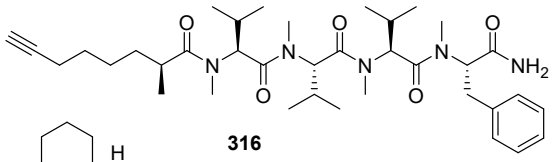
313



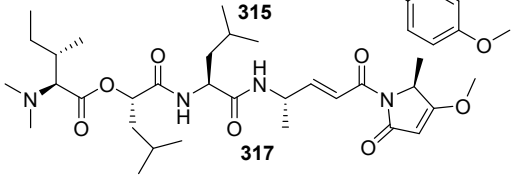
314



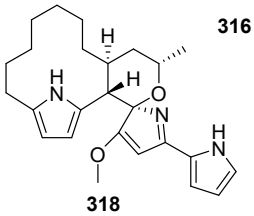
315



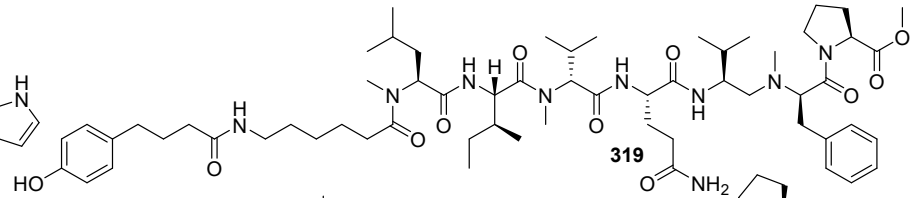
316



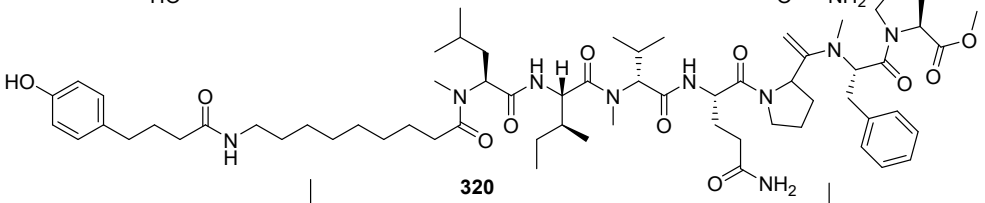
317



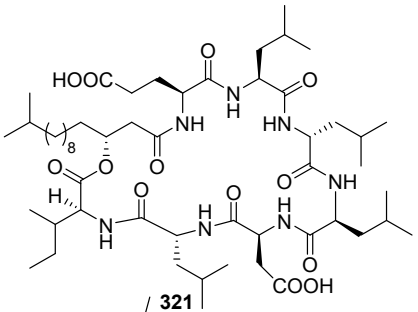
318



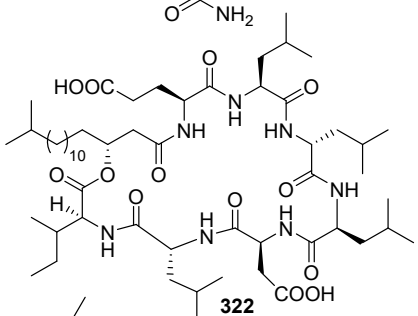
319



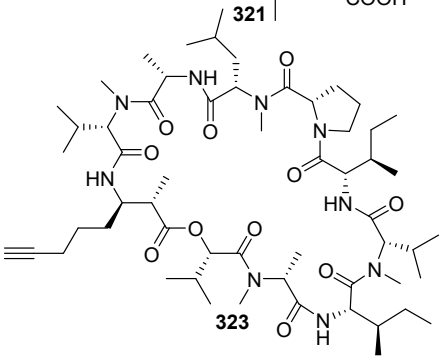
320



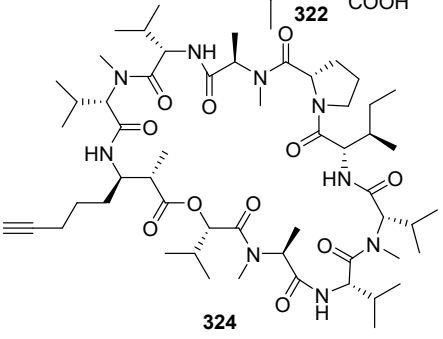
321



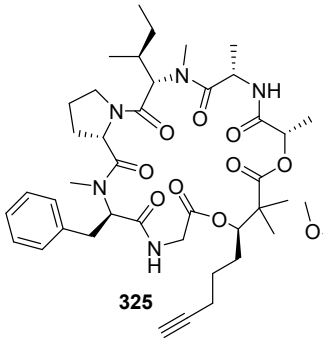
322



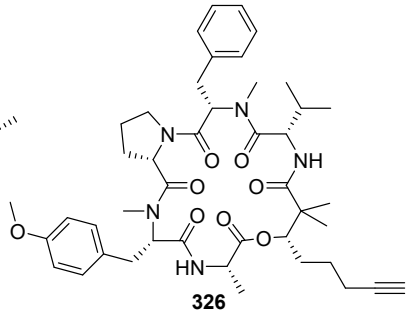
323



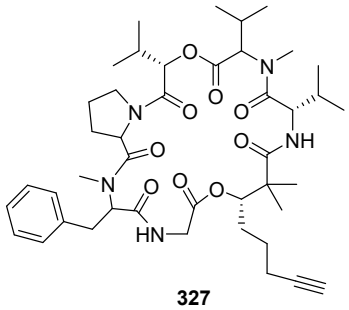
324



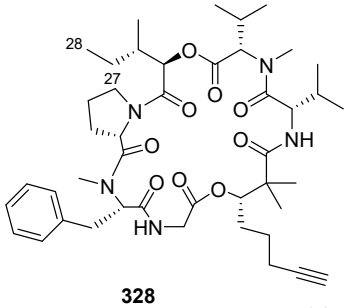
325



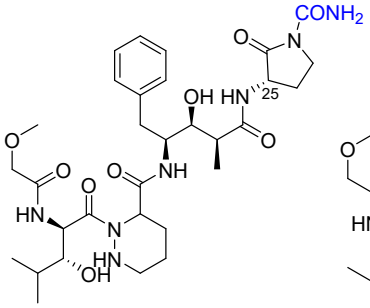
326



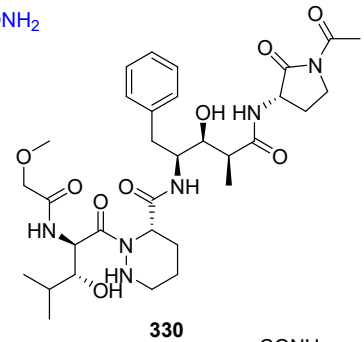
327



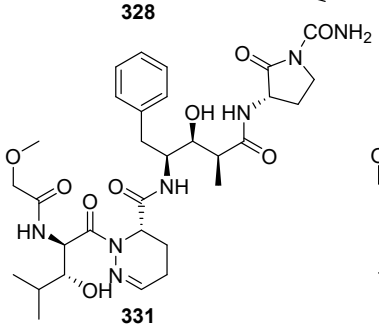
328



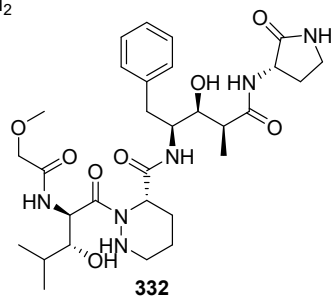
329



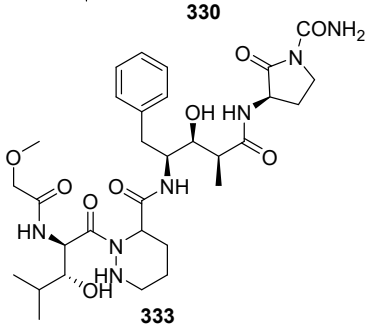
330



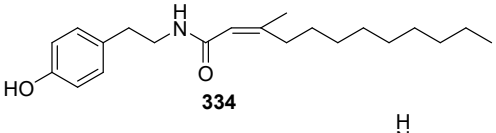
331



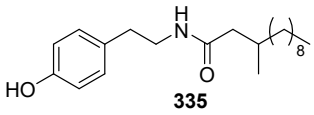
332



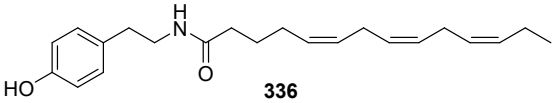
333



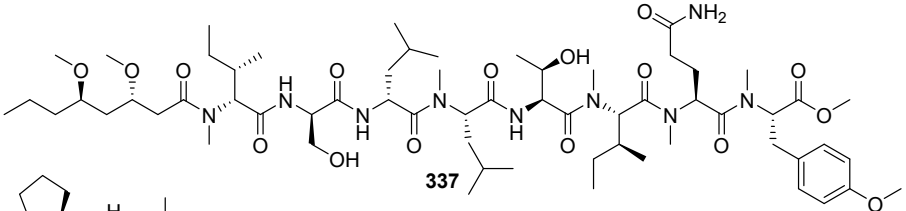
334



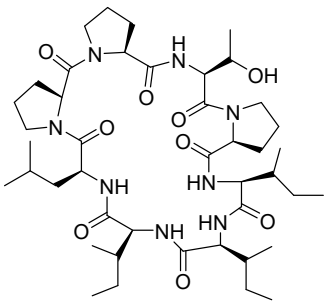
335



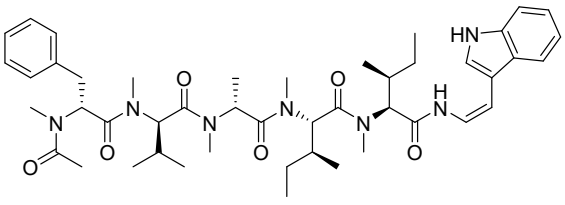
336



337

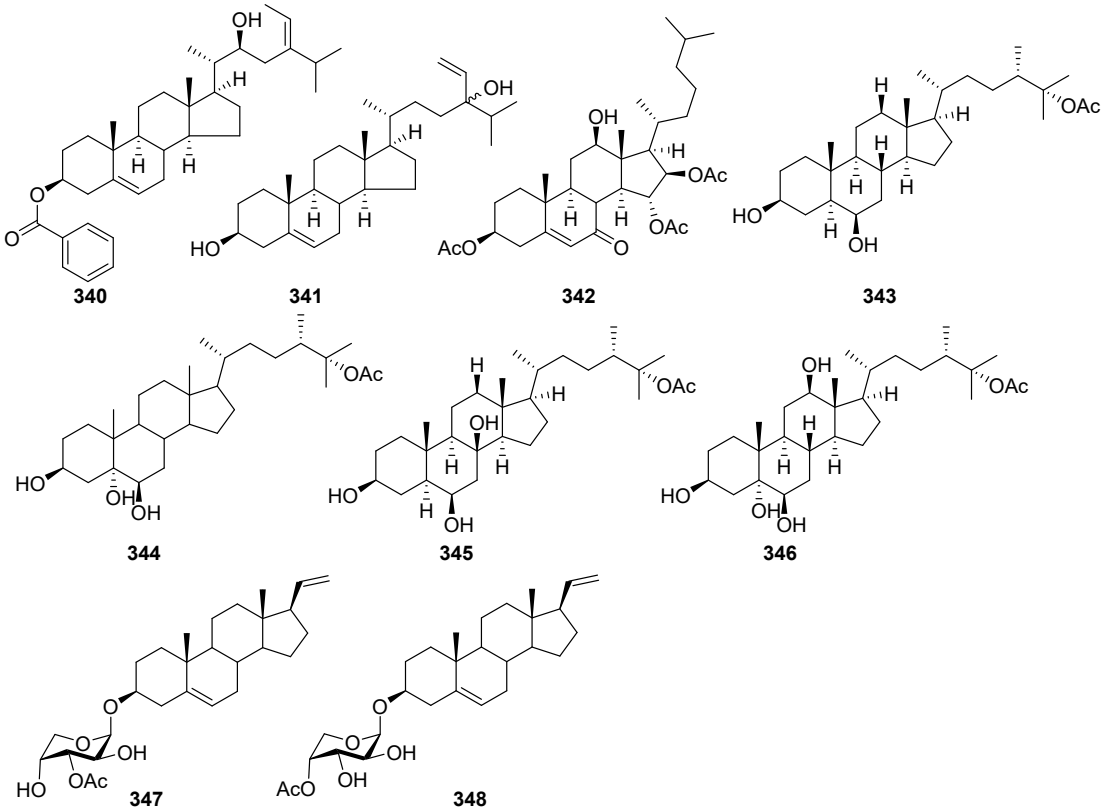


338



339

Steroid (340–348, 9**)**

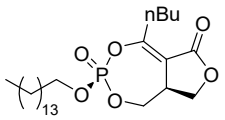


340 341 342 343

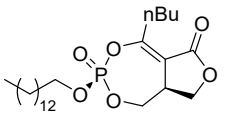
344 345 346

347 348

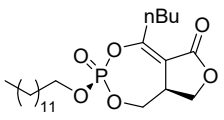
Others (349–361, 13)



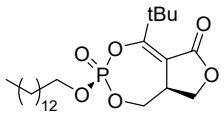
349



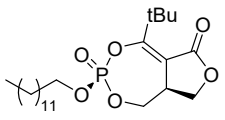
350



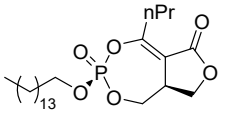
351



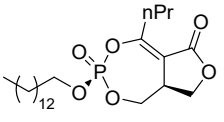
352



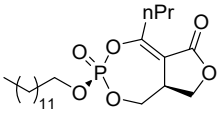
353



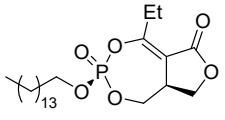
354



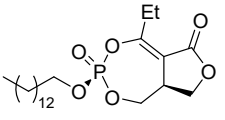
355



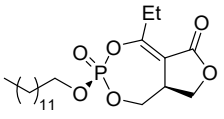
356



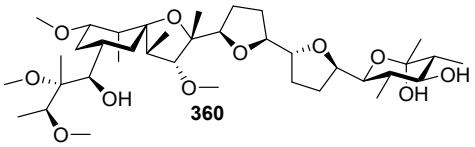
357



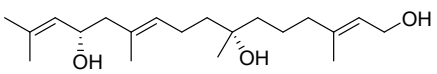
358



359



360



361