Electronic Supplementary Material (ESI) for Natural Product Reports.

SUPPLEMENTARY MATERIAL for

Clerodane Diterpenes: Sources, Structures, and Biological Activities

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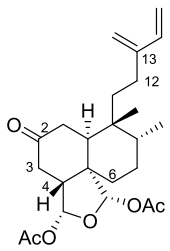
CONTENT:

Structure Classifications and Sources of Clerodane Diterpenes

1. Type I with an Acyclic Side Chain at C-9

1.1. Type I Subtype I with an *O*-Containing Five-membered Ring at C-18 and C-19

1.1.1. Type I Subtype Ia with the Isozuelanin Skeleton (Table 2)*



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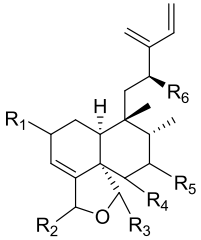

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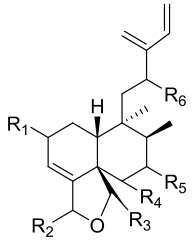

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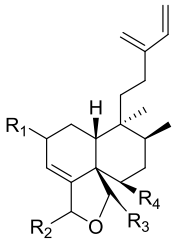

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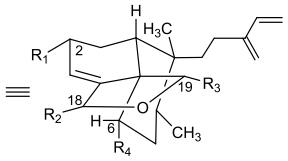

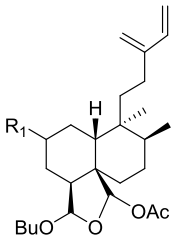

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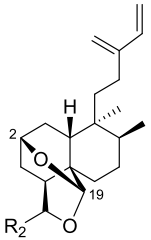

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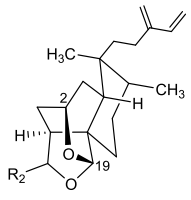


No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	Source	Ref.
10	balanspene A	—	—	—	—	—	—	*Casearia balansae*	*J. Nat. Prod.*, 2014, **77**, 2182−2189
11	balanspene B	=O	αOBu	αOAc	H	H	H		
12	balanspene C	αY_1	αOBu	αOAc	H	H	H		
13	balanspene D	αOBu	αOBu	αOAc	αOMe	H	H		
14	balanspene E	αY_1	αOBu	αOAc	αOMe	H	H		
15	balanspene F	αY_1	αOMe	αOAc	αOMe	H	H		
16	balanspene G	βOAc	αOMe	αOAc	αOMe	H	H		
17	zuelaguidin A	αOH	αOAc	αOAc	αOCin	H	H	*Zuelania guidonia*	*J. Nat. Prod.*, 2014, **77**, 455-463
18	zuelaguidin B	βOCin	αOAc	αOAc	αOH	H	H		
19	zuelaguidin C	αOH	αOAc	αOAc	αX_{13}	H	H		
20	zuelaguidin D	αOH	αOAc	αOAc	αX_{13}	H	αOH		
21	casearupestrin A	αOH	αOAc	βOAc	αX_1	βOH	H	*Casearia rupestris*	*J. Nat. Prod.*, 2011, **74** 776–781
22	casearupestrin B	αOH	αOAc	βOAc	αOH	βX_1	H		
23	casearupestrin C	αOH	αOMe	βOAc	αOH	βX_1	H		
24	casearupestrin D	αOH	αOAc	βOAc	αOAc	βX_1	H		
25	corymbulosin A	X_1	OAc	OAc	OH	H	H	*Laetia*	*Phytochemistry*,

26	corymbulosin B	OH	OAc	OAc	ODc	H	H	*corymbulosa*	2000, **55**, 233-236
27	corymbulosin C	OH	OAc	OAc	ODc	H	H		
28	*ent*-6*β*-hydroxyisozuelanin-2*β*-(2-methyl)-butanoate	αY_1	αOAc	βOAc	αOH	H	H	*Casearia corymbosa*	*Phytochemistry*, 1990, **29**, 3591-3595
29	*ent*-6*β*-methoxyisozuelanin-2*β*-(2-methyl)-butanoate	αY_1	αOAc	βOAc	αOMe	H	H		
30	*ent*-2*β*-(2-methyl)butoxy-3,4-dihydro-4*α*-isozuelanin	αY_1	αOAc	βOAc	H	H	H		
31	*ent*-6*β*-hydroxyisozuelanin-2*β*-(2-methyl)-propanoate	αOiBu	αOAc	βOAc	αOH	H	H		
32	*ent*-6*β*-methoxyisozuelanin-2*β*-(2-methyl)-propanoate	αOiBu	αOAc	βOAc	αOMe	H	H		
33	*ent*-2*β*-hydroxy-3,4-dihydro-4*α*-isozuelanin	αOH	αOAc	βOAc	H	H	H		
34	*ent*-2*β*-acetoxy-3,4-dihydro-4*α*-isozuelanin	αOAc	αOAc	βOAc	H	H	H		
35	intrapetacin A	βZ_1	αOMe	αOAc	αOH	H	H	*Licania intrapetiolaris*	*J. Nat. Prod.*, 2001, **64**, 497-501
36	intrapetacin B	βZ_1	αOAc	αOAc	αOH	H	H		
37	caseanigrescen A	αOBu	αOAc	αOAc	αOH	βOAc	H	*Casearia nigrescens*	*J. Nat. Prod.*, 2007, **70**, 206-209
38	caseanigrescen B	αOBu	αOAc	αOAc	αOH	βOH	H		
39	caseanigrescen C	αOBu	αOAc	αOAc	αOAc	βOH	H		
40	caseanigrescen D	αOBu	αOAc	αOAc	αOH	H	H		
41	argutin F	αX_1	αOAc	αOAc	OH	βH	OOH	*Casearia arguta*	*J. Nat. Prod.*, 2010, **73**, 2013-2018
42	argutin G	αX_1	αOAc	αOAc	OH	βOH	OOH		
43	argutin H	αOH	αOAc	αOAc	X_1	βOH	OOH		
44	*rel*-2*β*-acetoxyisozuelanin-6*β*-cinnamate	βOAc	βOAc	αOAc	βOCin	H	H	*Zuelania guidonia*	*Phytochemistry*, 1990, **29**, 2939-2942
45	isozuelanin**	H	βOAc	αOAc	H	H	H		
46	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-6(*R*)-methoxy-2(*S*)-(2ξ-methylbutanoyloxy)-5(*R*),8(*S*),9(*S*),10(*R*)-cleroda-3,13(16),14-triene	βY_1	βOAc	βOAc	βOMe	H	H	*Casearia tremula*	*Phytochemistry*, 1996, **41**, 565-570
47	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-2(*S*)-(2ξ-methylbutanoyloxy)-5(*R*),8(*S*),9(*S*),10(*R*)-cleroda-3,13(16),14-triene	βY_1	βOAc	βOAc	βH	H	H		
48	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-6(*R*)-hydroxy-2(*S*)-(2ξ-methylbutanoyloxy)-5(*R*),8(*S*),9(*S*),10(*R*)-cleroda-3,13(16),14-triene	βY_1	βOAc	βOAc	βOH	H	H		
49	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-6(*R*)-hydroxy-2(*S*)-undecanoyloxy-5(*R*),8(*S*),9(*S*),10(*R*)-cleroda-3,13(16),14-triene	βX_2	βOAc	βOAc	βOH	H	H		
50	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-6(*R*)-hydroxy-2(*S*)-octanoyloxy-5(*R*),8(*S*),9(*S*),10(*R*)-cleroda-3,13(16),14-triene	βOOct	βOAc	βOAc	βOH	H	H		
51	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-6(*R*)-hydroxy-2(*S*)-(3ξ-hydroxyoctanoyloxy)-5(*R*),8(*S*),9(*S*),10(*R*)-cleroda-3,13(16),14-triene	βX_3	βOAc	βOAc	βOH	H	H		
52	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-2(*R*)-hexanoyloxy-5(*R*),8(S),9(*S*),10(*R*)-cleroda-3,13(16),14-triene	αX_4	βOAc	βOAc	H	H	H		

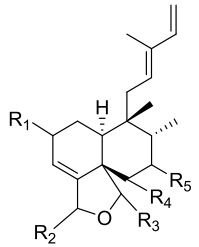
53	casearlucin B	αOAc	βOAc	βOAc	βOMe	H	H	*Casearia lucida*	*J. Nat. Prod.*, 2002, **65**, 100-107
54	casearlucin D	βY_1	βOAc	βOAc	βOAc	H	H		
55	casearlucin H	βY_1	βOAc	βOAc	βOH	H	αOH		
56	casearlucin I	βY_1	βOAc	βOAc	βOH	H	βOH		
57	casearlucin M	βY_1	βOAc	βOAc	βOMe	H	H		
58	casearlucin J	αY_1	βOAc	βOAc	βOH	H	αOH		
59	casearlucin K	αY_1	βOAc	βOAc	βOH	H	βOH		
60	caseamembrin A	βY_1	βOBu	βOAc	βOH	H	H	*Casearia membranacea*	*J. Nat. Prod.*, 2004, **67**, 316-321
61	caseamembrin B	βY_1	βOMe	βOAc	βOH	H	H		
62	caseamembrin C	βY_1	βOBu	βOAc	βOH	βOH	H		
63	caseamembrin D	βY_1	βOBu	βOAc	βOH	βOAc	H		
64	caseamembrin E	αY_1	βOAc	βOAc	βOH	H	H		
65	caseamembrin M	βY_1	βOAc	βOAc	βOBu	H	H		*J. Nat. Prod.*, 2005, **68**, 1665-1668
66	caseamembrin N	βY_1	βOAc	βOAc	βOH	βOAc	H		
67	caseamembrin O	βY_2	βOAc	βOAc	βOH	βOAc	H		
68	caseamembrol B	αY_1	βOAc	βOAc	βOH	H	βOH		*Chem. Pharm. Bull.*, 2004, **52**, 108-110
69	*rel*-2(*R*),18(*S*),19(*R*)-triacetoxy-18,19-epoxy-4(*S*),5(*S*),9(*S*),10(*R*)-clerodan-13(16),14-dien-6-one	αOAc	βOAc	βOAc	=O	H	H	*Casearia grayi*	*Nat. Prod. Commun.*, 2006, **1**, 441-448
70	*rel*-2(*R*),18(*S*),19(*R*)-tri-acetoxy-18,19-epoxy-4(*S*),5(*R*),8(*S*),9(*S*),10(R)-clerodan-13(16),14-diene	αOAc	βOAc	βOAc	H	H	H		
71	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-2(*R*)-(2ξ-methylbutanoyl)-4(*S*),-5(*S*),9(*S*),10(*R*)-clerodan-13(16),14-dien-6-one	αY_1	βOAc	βOAc	=O	H	H		*Biochem. Syst. Ecol.*, 2007, **35**, 631-633
72	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-2(*R*)-isobutanoyl-4(*S*),5(*R*),9(*S*),-10(*R*)-clerodan-13(16),14-diene	αOiBu	βOAc	βOAc	H	H	H		
73	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-2(*R*)-(2ξ-methylbutanoyl)-4(*S*),5(*R*),9(*S*),10(*R*)-clerodan-13(16),14-diene	αY_1	βOAc	βOAc	H	H	H		
74	caseargrewiin A	βY_2	βOAc	βOAc	βOMe	H	H	*Casearia grewiifolia*	*J. Nat. Prod.*, 2005, **68**, 183-188
75	6*β*-hydroxyisozuelanin-2*β*-benzoate	βOBz	βOAc	αOAc	βOH	H	H	*Zuelania guidonia*	*Phytochemistry*, 1990, **29**, 2939-2942
76	esculentin A	=O	βOAc	βOAc	H	H	H	*Casearia*	*Indian J. Chem.*,

								esculenta	2002, **41B**, 2706-2708
77	caseabalansin C	αOAc	OEt	OAc	OMe	—	—	*Casearia balansae*	*J. Nat. Prod.*, 2013, **76**, 1573-1579
78	2-epicaseabalansin C	βOAc	OEt	OAc	OMe	—	—		
79	caseabalansin D	βY_1	OEt	OAc	OH	—	—		
80	caseabalansin E	βY_1	OMe	OH	OMe	—	—		
81	caseabalansin F	=O	OAc	OAc	OMe	—	—		
82	caseabalansin G	=O	OBu	OAc	OMe	—	—		
83	caseabalansin B	αOH	—	—	—	—	—		
84	2-epicaseabalansin B	βOH	—	—	—	—	—		
85	caseabalansin A	—	βOH	—	—	—	—		
86	18-epicaseabalansin A	—	αOH	—	—	—	—		

* It should be noted that the absolute stereochemistry has not been determined in all cases. For example, esculentin A (**76**) has been reported in both *ent-neo*[16] and *neo*[32] configurations. In addition, caseargrewiin A (**74**) was shown as a *neo*-clerodane, while the co-isolated caseargrewiins B–D (**1256**–**1258**) were shown as *ent-neo*-clerodanes, with the absolute configuration of C-2 in **1258** established by a modified Mosher's method, NMR coupling constants, and NOESY correlations.[31] Generally, this review has focused on relative configurations only.

** Not an isolated compound

1.1.2. Type I Subtype Ib with the Zuelanin Skeleton (Table 3)



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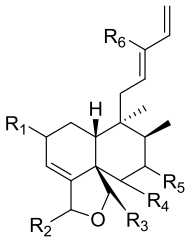

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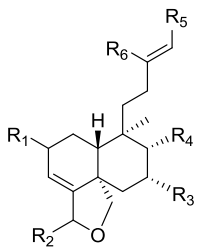
No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	Source	Ref.
87	casearvestrin A	βOiBu	αOAc	αOAc	αOH	H	—	*Casearia sylvestris*	*J. Nat. Prod.*, 2002, **65**, 95-99
88	casearvestrin B	βY_1	αOAc	αOAc	αOH	H	—		
89	casearvestrin C	βX_4	αOAc	αOAc	αOH	H	—		
90	argutin A	αX_1	αOAc	αOAc	OH	H	—	*Casearia arguta*	*J. Nat. Prod.*, 2010, **73**, 2013-2018
91	argutin B	αOH	αOAc	αOAc	X_1	H	—		
92	argutin C	αX_1	αOAc	αOAc	OH	OH	—		
93	argutin D	αOH	αOAc	αOAc	X_1	OH	—		
94	argutin E	αX_1	αOAc	αOAc	H	OH	—		
95	esculentin B	αY_2	βOAc	βOAc	βOH	αOH	—	*Casearia esculenta*	*Indian J. Chem.*, 2002, **41B**, 2706-2708
96	casearborin A	αZ_1	αOAc	αOAc	αH	H	—	*Casearia arborea*	*J. Nat. Prod.*, 2000, **63**, 657-661
97	casearborin B	αZ_2	αOAc	αOAc	αH	H	—		
98	casearborin C	αOH	αOAc	αOAc	αZ_1	H	—		
99	casearborin D	αZ_1	αOAc	αOAc	αOH	H	—		
100	casearborin E	αOAc	αOAc	αOAc	αZ_1	H	—		
101	laetiaprocerine A	αY_1	βOAc	βOAc	αOH	H	—	*Laetia procera*	*Bioorg. Med. Chem. Lett.*, 2005, **15**, 5065–5070
102	laetiaprocerine B	αOiBu	βOAc	βOAc	αOBz	H	—		
103	laetiaprocerine C	αY_1	βOAc	βOAc	αOBz	H	—		
104	caseargrewiin E	αOBu	αOAc	αOAc	H	H	—	*Casearia grewiifolia*	*J. Nat. Prod.*, 2007, **70**, 1122-1126
105	caseargrewiin F	αOBu	αOAc	αOAc	αOH	H	—		
106	caseargrewiin G	αOBu	αOMe	αOAc	αOH	H	—		
107	caseargrewiin H	αX_4	αOAc	αOAc	H	H	—		
108	caseargrewiin I	αX_4	αOAc	αOAc	αOH	H	—		

109	caseargrewiin J	αX_4	αOMe	αOAc	αOH	H	—		
110	caseargrewiin K	αX_4	αOMe	αOAc	αOH	βOH	—		
111	caseargrewiin L	αY_2	αOAc	αOAc	αOH	H	—		
112	*rel*-2*α*-hydroxyzuelanin-6*β*-cinnamate	αOH	βOAc	αOAc	βOCin	H	Me	*Zuelania guidonia*	*Phytochemistry*, 1990, **29**, 1609-1614
113	*rel*-6*β*-hydroxyzuelanin-2*α*-cinnamate	αOCin	βOAc	αOAc	βOH	H	Me		
114	*rel*-2*β*-hydroxyzuelanin- 6*β*-cinnamate	βOH	βOAc	αOAc	βOCin	H	Me		
115	casearlucin A	βY_1	βOAc	βOAc	βOH	H	Me	*Casearia lucida*	*J. Nat. Prod.*, 2002, **65**, 100-107
116	casearlucin C	βY_1	βOAc	βOAc	βOAc	H	Me		
117	casearlucin F	βY_1	βOAc	βOAc	H	H	Me		
118	casearlucin G	αY_1	βOAc	βOAc	H	H	Me		
119	caseamembrol A	αY_1	βOAc	βOAc	βOH	H	Me	*Casearia membranacea*	*Chem. Pharm. Bull.*, 2004, **52**, 108-110
120	6*β*-hydroxyzuelanin-2*α*-acetate	αOAc	βOAc	αOAc	βOH	H	Me	*Zuelania guidonia*	*Phytochemistry*, 1990, **29**, 2939-2942
121	6*β*-hydroxyzuelanin-2*α*-*n*-octacetate	αOOct	βOAc	αOAc	βOH	H	Me		
122	6*β*-hydroxyzuelanin-2*β*-*n*-octacetate	βOOct	βOAc	αOAc	βOH	H	Me		
123	6β-hydroxyzuelanin-2*β*-*n*-benzoate	βOBz	βOAc	αOAc	βOH	H	Me		
124	2*α*-hydroxyzuelanin-6*β*-*n*-benzoate	αOH	βOAc	αOAc	βOBz	H	Me		
125	2*α*-hydroxyzuelanin-6*β*-*n*-(3-hydroxy)-octanoate	αOH	βOAc	αOAc	βX_8	H	Me		
126	zuelanin-2*β*-benzoate	βOBz	βOAc	αOAc	H	H	Me		
127	caseobliquin A	αOAc	βOAc	αOAc	βZ_1	H	Me	*Casearia obliqua*	*J. Nat. Prod.*, 2009, **72**, 1847-1850
128	caseobliquin B	βOAc	βOAc	αOAc	βOCin	H	Me		
129	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-2(*R*),7(*S*),16-trihydroxy-6(*S*)-myristoyloxy-5(*R*), 8(*R*),9(*S*),10(*R*)-cleroda-3,12,14-triene	βOH	βOAc	βOAc	βOMyr	αOH	CH_2OH	*Laetia procera*	*Phytochemistry*, 1996, **43**, 635-638
130	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-2(*R*),7(*S*),16-trihydroxy-6(*S*)-palmitoyloxy-5(*R*), 8(*R*),9(*S*),10(*R*)-cleroda-3,12,14-triene	βOH	βOAc	βOAc	βOPal	αOH	CH_2OH		
131	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-2(*R*),6(*S*),16-trihydroxy-7(*S*)-myristoyloxy-5(*R*), 8(*R*),9(*S*),10(*R*)-cleroda-3,12,14-triene	βOH	βOAc	βOAc	βOH	αOMyr	CH_2OH		
132	*rel*-18(*S*),19(*R*)-diacetoxy-18,19-epoxy-2(*R*),7(*S*),16-trihydroxy-6(*S*)-palmitoyloxy-5(*R*), 8(*R*),9(*S*),10(*R*)-cleroda-3,12,14-triene	βOH	βOAc	βOAc	βOH	αOPal	CH_2OH		
133	bucidarasin A	βOiBu	βOAc	βOAc	βOH	H	Me	*Bucida buceras*	*Bioorg. Med. Chem. Lett.*, 2002, **12**, 345-348
134	bucidarasin B	βY_1	βOAc	βOAc	βOH	H	Me		
135	bucidarasin C	βOiBu	βOAc	βOAc	H	H	Me		

1.1.3. Type I Subtype Ic with Other Skeletons (Table 4)



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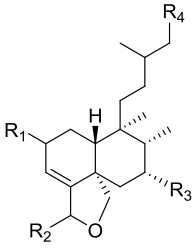

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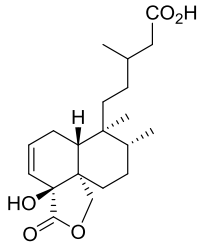

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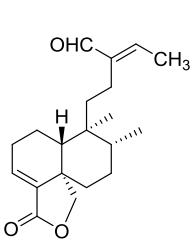

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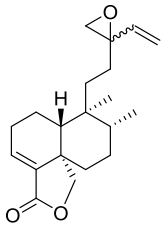
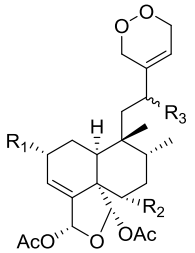


151 13-*epi*
152

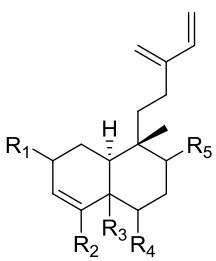


153-155

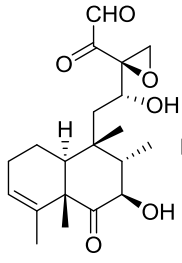
No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	Source	Ref.
136	15-malonyloxy-*ent*-cleroda-3,13*E*-dien-18,19-oIide	H	=O	H	Me	CH_2OMal	Me	*Olearia teretifolia*	*Phytochemistry*, 1992, **31**, 1703-1711
137	18,19-epoxy-18β-methoxy-*ent*-cleroda-3,13*E*-dien-l5-oic acid	H	βOMe	H	Me	CO_2H	Me		
138	18,19-epoxy-18α-methoxy-*ent*-cleroda-3,13*E*-dien-l5-oic acid	H	αOMe	H	Me	CO_2H	Me		
139	*ent*-clerod-3-en-15-oic acid-18,19-olide	H	=O	H	CO_2H	—	—		
140	15-malonyloxy-*ent*-clerod-3-en-18,19-olide	H	=O	H	CH_2OMal	—	—		
141	7*α*-hydroxy-*ent*-clerod-3-en-15-oic acid-18, 19-olide	H	=O	OH	CO_2H	—	—		
142	15-malonyloxy-7*α*-hydroxy-*ent*-clerod-3-en-l8,l9-olide	H	=O	OH	CH_2OMal	—	—		
143	2*α*-hydroxy-*ent*-cleroda-3-en-15-oic acid-18,19-olide	αOH	=O	H	CO_2H	—	—		
144	2*β*-hydroxy-*ent*-clerod-3-en-15-oic acid-18,19-olide	βOH	=O	H	CO_2H	—	—		
145	15-hydroxy-*ent*-clerod-3-en-18,19-olide	H	=O	H	CH_2OH	—	—		
146	7*α*,l5-dihydroxy-*ent*-clerod-3-en-18,19-olide	H	=O	OH	CH_2OH	—	—		
147	18,19-epoxy-l8*β*-methoxy-*ent*-clerod-3-en-15-oic acid	H	βOMe	H	CO_2H	—	—		
148	18,19-epoxy-18*α*-methoxy-*ent*-clerod-3-en-l5-oic acid	H	αOMe	H	CO_2H	—	—		
149	4*β*-hydroxy-*ent*-clerod-2-en-15-oic acid-18,19-olide	—	—	—	—	—	—		
150	baclinal	—	—	—	—	—	—	*Baccharis linearis*	*Phytochemistry*, 1996, **41**, 1123-1127
151	13-*epi*-baclinepoxide	—	—	—	—	—	—		
152	baclinepoxide	—	—	—	—	—	—		
153	zuelaguidin E	OH	OCin	H	—	—	—	*Zuelania guidonia*	*J. Nat. Prod.*, 2014, **77**, 455-463
154	zuelaguidin G	Dc	OXyl	βOH	—	—	—		
155	zuelaguidin H	Dc	OXyl	αOH	—	—	—		

1.2. Type I Subtype II with a Double Bond Between C-3 and C-4 or Another Position

1.2.1. Type I Subtype IIa with a Double Bond between C-3 and C-4 (Table 5)



156-159



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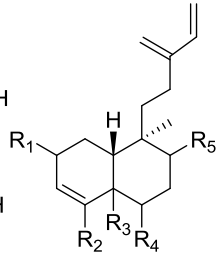
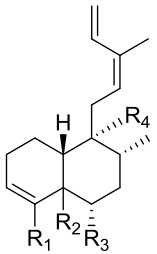
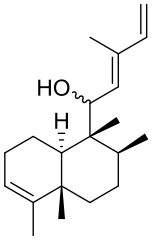


161-163



164-166



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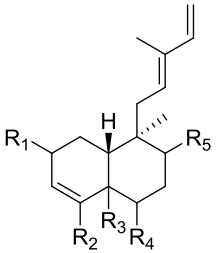
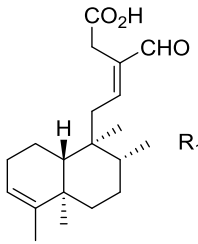


168-170



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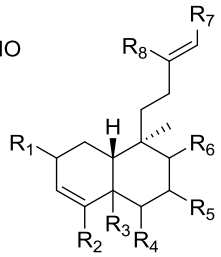
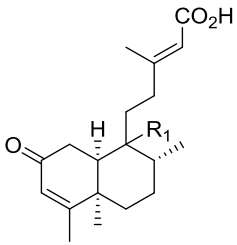
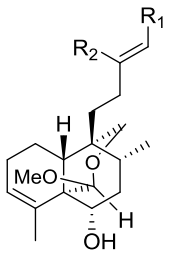


172-196



197,198



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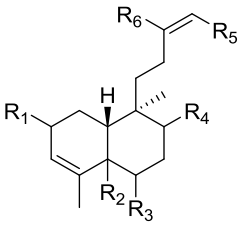

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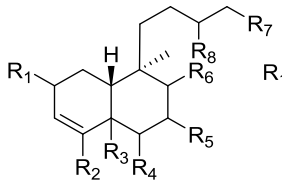
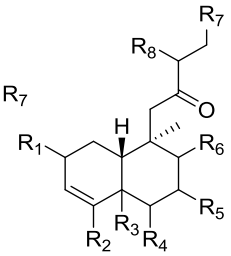
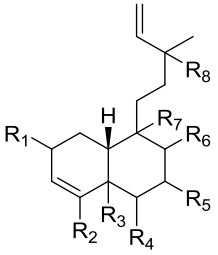


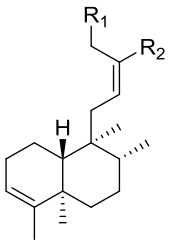
207-233



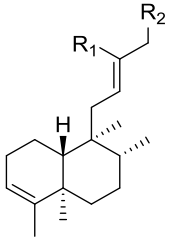
234-236



237-248



249,250



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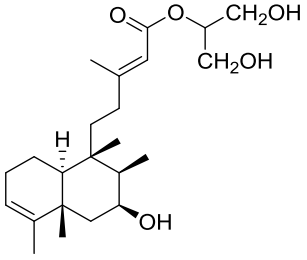


253

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	Source	Ref.
156	2-oxo-18-hydroxy-10*α*,17*α*,19*α*,20*β*-(-)-cleroda-3,13(16),14-triene	=O	CH_2OH	αMe	H	αMe	—	—	—	*Casearia corymbosa*	*Phytochemistry*, 1990, **29**, 3591-3595

157	2-oxo-18,19-diacetoxy-l0*α*,l7*α*,19*α*,20*β*-(-)-cleroda-3,13(16),14-triene	=O	CH_2OAc	αCH_2OAc	H	αMe	—	—	—		
158	balanspene H	αY_1	CHO	αCHO	αOMe	αMe	—	—	—	*Casearia balansae*	*J. Nat. Prod.*, 2014, **77**, 2182−2189
159	terpentetriene	H	Me	βMe	H	αMe	—	—	—	*Streptomyces lividans* transformant	*J. Bacteriol*., 2001, **183**, 6085-6094
160	terpentecin	—	—	—	—	—	—	—	—	*Streptomyces griseolosporeus*	
161	*ent*-clerod-3,13(16),14-triene	H	Me	αMe	H	αMe	—	—	—	*Jungermannia infusca*	*Phytochemistry*, 1998, **49**, 601-608
162	*ent*-clerod-3,13(16),14-triene-17-ol	H	Me	αMe	H	αCH_2OH	—	—	—		
163	caseamembrin F	βY_1	CHO	βCHO	βOH	βMe	—	—	—	*Casearia membranacea*	*J. Nat. Prod.*, 2004, **67**, 316-321
164	(-)-3,12*Z*,14-*cis*-c1erodatrien-18-oic acid	CO_2H	βMe	H	Me	—	—	—	—	*Schistochila acuminata*	*J. Chin. Chem. Soc*., 1992, **39**, 263-266
165	heteroscyphic acid A	Me	αMe	H	CO_2H	—	—	—	—	*Heteroscyphus planus*	*Phytochemistry*, 1994, **37**, 1263-1268
166	heteroscyphic acid B	Me	αMe	OAc	CO_2H	—	—	—	—		
167	heteroscyphol	—	—	—	—	—	—	—	—		*Phytochemistry*, 1995, **38**, 119-127
168	6*α*-hydroxy-3,12*E*,14-clerodatriene	H	Me	αMe	αOH	αMe	—	—	—	*Heteroscyphus billardierii*	*Chem. Pharm. Bull*., 2004, **52**, 556-560
169	(-)-3,12*E*,14-*cis*-clerodatrien-18-oic acid	H	CO_2H	βMe	H	αMe	—	—	—	*Schistochila acuminata*	*J. Chin. Chem. Soc*., 1992, **39**, 263-266
170	bucidarasin D	=O	CH_2OAc	βCH_2OAc	H	βMe	—	—	—	*Bucida buceras*	*Bioorg. Med. Chem. Lett*., 2002, **12**, 345-348
171	3,12*E*-kolavadien-15-oic acid-16-al	—	—	—	—	—	—	—	—	*Polyalthia viridis*	*Phytochemistry*, 1993, **34**, 457-460
172	18,19-dihydroxy-*ent*-cleroda-3,13*E*-dien-15-oic acid	H	CH_2OH	αCH_2OH	H	H	αMe	CO_2H	Me	*Olearia teretifolia*	*Phytochemistry*, 1992, **31**, 1703-1711
173	platypodiol	H	Me	αMe	βOH	H	αCH_2OH	CH_2OH	Me	*Baccharis platypoda*	*Tetrahedron Lett.*, 2014, **55**, 4898-4900
174	17-hydroxy-3,13*E*-clerodadien-15-al	H	Me	αMe	H	H	αCH_2OH	CHO	Me	*Jungermannia infusca*	*Chem. Pharm. Bull*., 2000, **48**, 1818-1821
175	6*α*,7*α*-dihydroxykolavenol	H	Me	αMe	αOH	αOH	αMe	CH_2OH	Me	*Ptychopetalum olacoides*	*Nat. Prod. Commun.*, 2011, **6**, 327-332
176	2*β*-acetoxy-19-carboxymethyl-cleroda-3,13-dien-15-oic acid	βOAc	CO_2Me	αMe	H	H	αMe	CO_2H	Me	*Scapania bolandeli*	*Phytochemistry*, 1999, **52**, 1551-1553
177	deserticolic acid	H	Me	βCH_2OH	H	H	αMe	CO_2H	Me	*Haplopappus deserticola*	*Phytochemistry*, 1999, **52**, 1531-1533
178	—	=O	Me	αMe	H	αOAc	αMe	CO_2Me	Me	*Solidago altissima*	*Phytochemistry*, 1999, **52**, 487-493

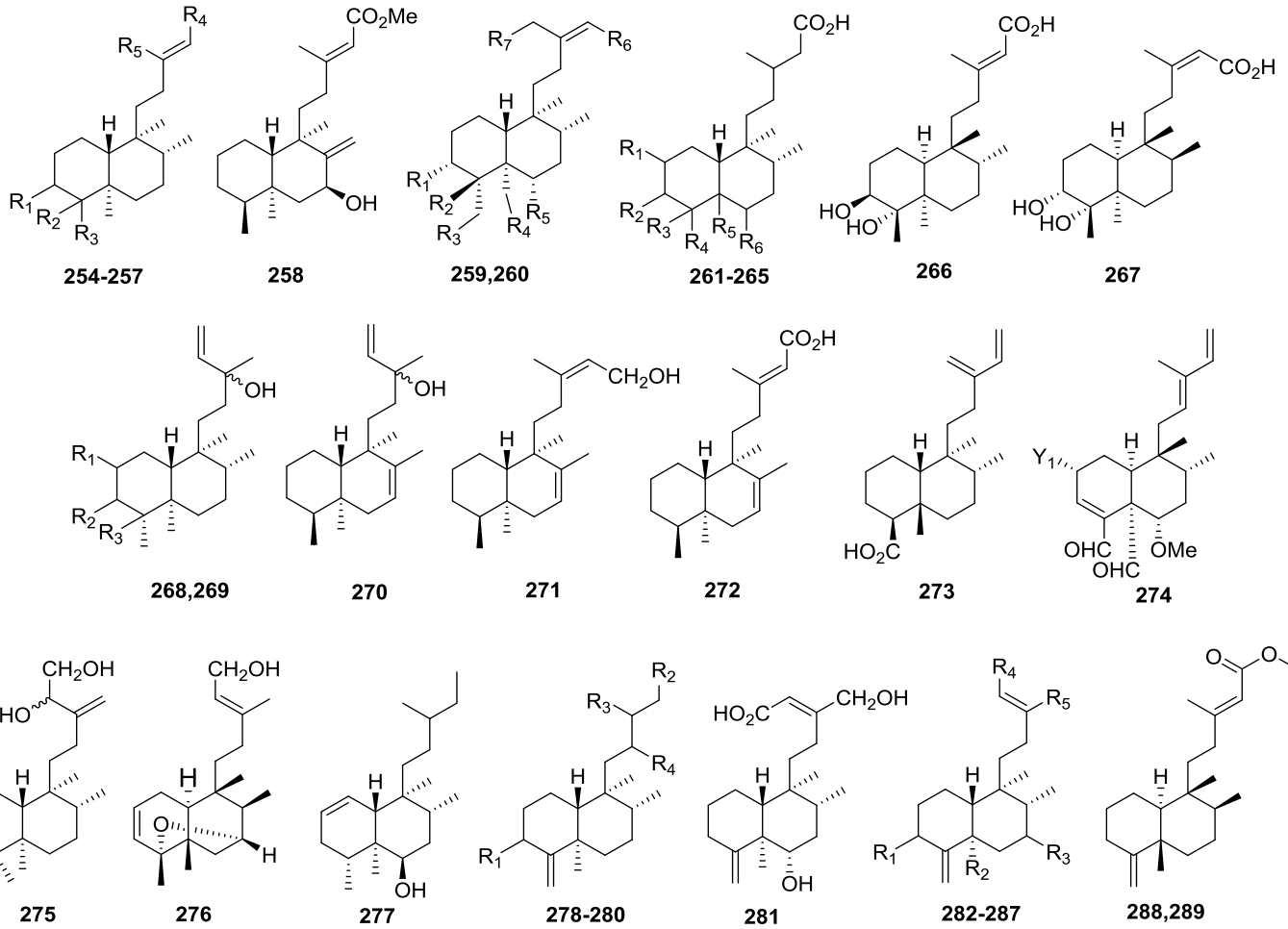
179	—	βOH	Me	αMe	H	αOAc	αMe	CO_2Me	Me		
180	—	αOH	Me	αMe	H	H	αMe	CO_2Me	Me		
181	—	βOH	Me	αMe	H	H	αMe	CO_2Me	Me		
182	diastereoisomer of kolavenol	H	Me	αMe	H	H	βMe	CH_2OH	Me	*Entada abyssinica*	*J. Ethnopharmacol.*, 1998, **61**, 179-183
183	16-oxo-*ent*-cleroda-3,13*Z*-diene-15,17-dioic acid	H	Me	αMe	H	H	αCO_2H	CO_2H	CHO	*Diplostephium floribundum*	*Phytochemistry*, 1992, **31**, 213-216
184	15-oxo-*ent*-cleroda-3,13*Z*-diene-16,17-dioic acid	H	Me	αMe	H	H	αCO_2H	CHO	CO_2H		
185	2*α*-acetoxy-l5-oxo-*ent*-cleroda-3,13*Z*-diene-16,17-dioic acid	αOAc	Me	αMe	H	H	αCO_2H	CHO	CO_2H		
186	7-oxo-*ent*-clerodan-3,13*E*-dien-15-oic acid	H	Me	αMe	H	=O	αMe	CO_2H	Me	*Platychaete aucheri*	*Phytochemistry*, 1990, **29**, 985-987
187	6*α*-hydroxy-7-oxo-*ent*-clerodane-3,13*E*- dien-l5-oic acid	H	Me	αMe	αOH	=O	αMe	CO_2H	Me		
188	crotonic acid	H	CH_2OAc	βMe	H	H	αMe	CO_2H	Me	*Croton chilensis*	*Bol. Soc. Chil. Quim.*, 1995, **40**, 157-162
189	polyalthialdoic acid	H	Me	αMe	H	H	αMe	CO_2H	CHO	*Polyalthia longifolia*	*Planta Med.*, 1991, **57**, 380-383
190	18-hydroxy-5,10-*trans*-cleroda-3,13*E*-dien-15-oic acid methyl ester	H	CH_2OH	αMe	H	H	αMe	CO_2Me	Me	*Heteroscyphus planus*	*Phytochemistry*, 1996, **41**, 581-587
191	pilosanol A	H	Me	αCH_2OH	αOH	H	αMe	CH_2OH	CH_2OH	*Portulaca pilosa*	*Phytochemistry*, 1991, **30**, 4075-4077
192	pilosanol B	H	CH_2OH	αCH_2OH	αOH	H	αMe	CH_2OH	CH_2OH		
193	methyl(13*E*)-2-oxo-neocleroda-3,13-dien-15-oate	=O	Me	αMe	H	H	αMe	CO_2Me	Me	*Amoora yunnanensis*	*Helv. Chim. Acta*, 2004, **87**, 1279-1286.
194	(13*E*)-2-oxoneocleroda-3,13-dien-15-ol	=O	Me	αMe	H	H	αMe	CH_2OH	Me		
195	(-)-(5R,8S,9S,10R)-cleroda-3,13*E*-dien-15-oic acid	H	Me	αMe	H	H	βMe	CO_2H	Me	*Hymenaea courbaril*	*Phytochemistry*, 2001, **58**, 1153-1157
196	methyl (5*S*,8*S*,9*S*,10*R*)-cleroda-3,13*E*-dien-15-oate	H	Me	βMe	H	H	βMe	CO_2Me	Me		
197	5α,8α-2-oxokolavenic acid	βMe	—	—	—	—	—	—	—	*Detarium microcarpum*	*J. Nat. Prod.*, 2006, **69**, 768-773
198	(13*E*)-2-oxo-5*α*-*cis*-17*α*,20*α*-cleroda-3,13-diene-15-oic acid	αMe	—	—	—	—	—	—	—	*Eperua purpurea*	*Phytochemistry*, 1991, **30**, 3474-3475
199	portulene acetal	CH_2OH	CH_2OH	—	—	—	—	—	—	*Portulaca grandiflora*	*J. Nat. Prod.*, 1997, **60**, 912-914
200	solidagocanin A	H	αMe	βOTig	αMe	CO_2H	Me	—	—	*Solidago canadensis*	*Helv. Chim. Acta*, 2012, **95**, 1121-1125
201	solidagocanin B	H	αMe	βOAng	αMe	CO_2H	Me	—	—		
202	17-hydroxy-3,13*Z*- clerodadien-15-al	H	αMe	H	αCH_2OH	CHO	Me	—	—	*Jungermannia infusca*	*Chem. Pharm. Bull.*, 2000, **48**, 1818-1821

203	PMS-1	H	αMe	H	αCH_2OH	Me	Me	—	—	*Brazilian propolis*	*Anticancer Res.*, 1996, **16**, 2669-2672
204	16-oxo-cleroda-3,13(14)*E*-diene-15-oic acid	H	αMe	H	αMe	CO_2H	CHO	—	—	*Polyalthia longifolia*	*Fitoterapia*, 2005, **76**, 336-339
205	2α-hydroxy-*cis*-cleroda-3,13(*Z*),8,17-trien-15-oic acid	αOH	βMe	H	$=CH_2$	CO_2H	Me	—	—	*Haplopappus foliosus*	*Planta Med.*, 2003, **69**, 675-677
206	2α-acetoxy-*cis*-cleroda-3,13(*Z*),8,17-trien-15-oic acid	αOAc	βMe	H	$=CH_2$	CO_2H	Me	—	—		
207	trinerdiol	H	CH_2OH	αMe	H	H	αMe	CH_2OH	Me	*Baccharis trinervis*	*Phytochemistry*, 1993, **34**, 1377-1384
208	15-acetyl-trinerdiol	H	CH_2OH	αMe	H	H	αMe	CH_2OAc	Me		
209	18-acetyl-trinerdiol	H	CH_2OAc	αMe	H	H	αMe	CH_2OH	Me		
210	18-methylmalonyl-trinerdiol	H	CH_2OMe-Mal	αMe	H	H	αMe	CH_2OH	Me		
211	15,18-diacetyl-triner-triol	H	CH_2OAc	αMe	H	H	αMe	CH_2OAc	CH_2OH		
212	14,15,18-triacetyl-trinertetrol	H	CH_2OAc	αMe	H	αOH	αMe	CH_2OAc	CH_2OAc		
213	15,16-diacetyl-trinertriol	H	CH_2OH	αMe	H	H	αMe	CH_2OAc	CH_2OAc		
214	15-hydroxy-16-acetoxy-ent-clerod-3-en-18-oic acid	H	CO_2H	αMe	H	H	αMe	CH_2OH	CH_2OAc	*Baccharis gaudichaudiana*	*Chem Pharm Bull*, 2007, **55**, 1532-1534
215	19-hydroxykovalic acid	H	CO_2H	αCH_2OH	H	H	αMe	CO_2H	Me	*Olearia teretifolia*	*Phytochemistry*, 1992, **31**, 1703-1711
216	18-oxo-19-senecioyl-oxy-*ent*-clerod-3-en-15-oic acid	H	CHO	αCH_2OSen	H	H	αMe	CO_2H	Me		
217	18-oxo-*ent*-clerod-3-en-15,19-dioic acid	H	CHO	αCO_2H	H	H	αMe	CO_2H	Me		
218	15,19-dihydroxy-*ent*-clerod-3-en-18-oic acid	H	CO_2H	αCH_2OH	H	H	αMe	CH_2OH	Me		
219	15,18,19-trihydroxy-*ent*-clerod-3-ene	H	CH_2OH	αCH_2OH	H	H	αMe	CH_2OH	Me		
220	18,19-dihydroxyclerod-3-en-l5-oic acid	H	CH_2OH	αCH_2OH	H	H	αMe	CO_2H	βMe	*Chrysocoma comaaurea*	*Phytochemistry*, 1991, **30**, 607-609
221	7-oxo-13,14-dihydrokolavenic acid	H	Me	αMe	H	=O	αMe	CO_2H	Me	*Pteronia camphorata*	*Phytochemistry*, 1990, **29**, 1231-1245
222	6α-hydroxy-7-oxo-13,14-dihydro-kolavenic acid	H	Me	αMe	αOH	=O	αMe	CO_2H	Me		
223	6α-angloyloxy-7-oxo-13,14-dihydro-kolavenic acid	H	Me	αMe	αOAng	=O	αMe	CO_2H	Me		

224	6α-isobutyryloxy-7-oxo-13,14-dihydrokolavenic acid	H	Me	αMe	αOiBu	=O	αMe	CO_2H	Me		
225	*epi*-populifolic acid	H	Me	βMe	H	H	αMe	CO_2H	Me	*Aristolochia cymbifera*	*Phytochemistry*, 1992, **31**, 3277-3279
226	18-acetoxy-*cis*-cleroda-3-en-15-oic acid	H	CH_2OAc	βMe	H	H	βMe	CO_2H	Me	*Haplopappus uncinatus*	*J. Ethnopharmacol.*, 2006, **103**, 297-301
227	(13*S*)-*ent*-7*β*-hydroxy-3-cleroden-15-oic acid	H	Me	αMe	H	αOH	αMe	CO_2H	βMe	*Nuxia sphaerocephala*	*Phytochemistry*, 2006, **67**, 444-451
228	*ent*-7*β*-hydroxy-2-oxo-3-cleroden-15-oic acid	=O	Me	αMe	H	αOH	αMe	CO_2H	βMe		
229	*ent*-2,7-dioxo-3-clero-den-15-oic acid	=O	Me	αMe	H	=O	αMe	CO_2H	βMe		
230	*ent*-18-(*E*)-caffeoyloxy-7β-hydroxy-3-cleroden-15-oic acid	H	CH_2Z_4	αMe	H	αOH	αMe	CO_2H	βMe		
231	2β-(formyloxy)clerod-3-en-15-oic acid	βOCHO	Me	αMe	H	H	αMe	CO_2H	Me	*Clausena dunniana*	*Helv. Chim. Acta.*, 2003, **86**, 3187-3193
232	2β-(acetyloxy)clerod-3-en-15-oic acid	βOAc	Me	αMe	H	H	αMe	CO_2H	Me		
233	ethyl clerod-3-en-15-oate	H	Me	αMe	H	H	αMe	CO_2Et	Me		
234	premnone A	H	Me	αMe	αOCin (*trans*)	βOH	αMe	CO_2Me	$=CH_2$	*Premna tomentosa*	*Phytochemistry*, 2006, **67**, 1243–1248
235	premnone B	H	Me	αMe	αOCin (cis)	βOH	αMe	CO_2Me	$=CH_2$		
236	premnone C	H	Me	αMe	αOH	βOCin	αMe	CO_2Me	$=CH_2$		
237	7-oxo-kolavelool	H	Me	αMe	H	=O	αMe	αMe	αOH	*Ptychopetalum olacoides*	*Nat. Prod. Commun.*, 2011, **6**, 327-332
238	7*α*-hydroxykolavelool	H	Me	αMe	H	αOH	αMe	αMe	αOH		
239	(-)-13-*epi*-2-oxo-kolavelool	=O	Me	αMe	H	H	αMe	αMe	βOH	*Aristolochia chamissonis*	*Phytochemistry*, 1999, **50**, 455-461
240	(-)-2*β*-hydroxykolavelool	βOH	Me	αMe	H	H	αMe	αMe	βOH		
241	(-)-2*β*-hydroperoxykolavelool	βOOH	Me	αMe	H	H	αMe	αMe	βOH		
242	13-*epi*-roseostachenol	αOH	Me	αMe	H	H	αMe	αMe	βOH		
243	roseostachenol	αOH	Me	αMe	H	H	αMe	αMe	αOH	*Stachys rosea*	*Phytochemistry*, 1994, **37**, 501-503
244	roseostachenone	=O	Me	αMe	H	H	αMe	αMe	OH		*Phytochemistry*, 1992, **31**, 3147-3149
245	13-hydroxy-*cis*-*ent*-cleroda-3,14-diene	H	Me	βMe	H	H	αMe	αMe	OH	*Adelanthus lindenbergianus*	*Phytochemistry*, 2004, **65**, 127–137
246	(-)-2-oxo-13-hydroxy-3,14-clerodan-diene	=O	Me	αMe	H	H	αMe	αMe	βOH	*Guarea trichilioides*	*Phytochemistry*, 1996, **41**, 1159-1161
247	*cis*-3,14-clerodadien-13-ol	H	Me	βMe	H	H	αMe	αMe	OH	*Jungermannia*	*J. Nat. Prod.*, 2001, **64**, 1309-1317

248	*ent*-kolavelool	H	Me	βMe	H	H	βMe	βMe	αOH	*infusca*	
249	15,16-diacetoxy-*ent*-cleroda-3,12*E*-diene	CH_2OAc	CH_2OAc	—	—	—	—	—	—	*Linaria saxatilis*	*Phytochemistry*, 1993, **33**, 631-633
250	*ent*-cleroda-3,12*E*-diene-15,16-dial	CHO	CHO	—	—	—	—	—	—		
251	15,16-diacetoxy-*ent*-cleroda-3,12*Z*-diene	CH_2OAc	CH_2OAc	—	—	—	—	—	—		
252	*ent*-cleroda-3,12*Z*-diene-15,16-dial	CHO	CHO	—	—	—	—	—	—		
253	palmadorin C	—	—	—	—	—	—	—	—	*Austrodoris kerguelenensis*	*J. Nat. Prod.*, 2010, **73**, 416–421

1.2.2. Type I Subtype IIb with a Double Bond at Another (or No) Position (Table 6)

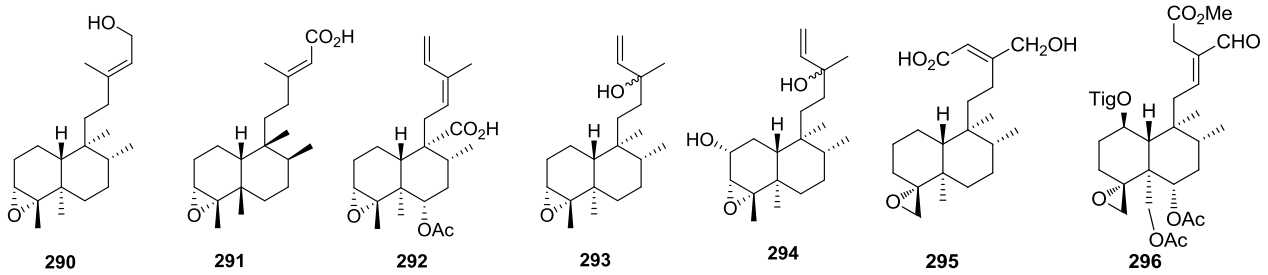


No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	Source	Ref.
254	3α,4β,13*E*-neoclerod-13-ene-3,4,15-triol	αOH	βOH	αMe	CH_2OH	Me	—	—	*Amoora stellatosquamosa*	*Helv. Chim. Acta*, 2004, **87**, 1279-1286
255	3α,4β,13*E*-4-ethoxy-neoclerod-13-ene-3,15-diol	αOH	βOEt	αMe	CH_2OH	Me	—	—		
256	crolechinol	H	H	βCH_2OH	CH_2OH	CH_2OH	—	—	*Croton lechleri*	*Phytochemistry*, 1993, **32**, 755-760
257	3*R*,4*R*-dihydroxyclerod-13*E*-en-15-al	αOH	βOH	αMe	CHO	Me	—	—	*Jungermannia hyalina*	*Phytochemistry*, 1995, **40**, 209-212

258	(-)-7*β*-hydroxy cleroda-8(17),13*E*-dien-15-oic acid	—	—	—	—	—	—	—	*Eperua leucantha*	*J. Nat. Prod.*, 1992, **55**, 845-850
259	3*R*,4*R*-dihydroxyclerod-13*Z*-en-15-al	OH	OH	H	H	H	CHO	H	*Jungermannia hyalina*	*Phytochemistry*, 1995, **40**, 209-212
260	syspirensin B	H	H	OH	OH	OH	CH_2OH	OH	*Teucrium chamaedrys* ssp. *syspirense*	*J. Nat. Prod.*, 1996, **59**, 457-460
261	2β-hydroxy-3-oxo-*cis*-clerodan-15-oic acid	βOH	=O	H	βMe	βMe	H	—	*Chrysocoma comaaurea*	*Phytochemistry*, 1991, **30**, 607-609
262	6*α*-angeloyloxy-4*α*-hydroxy-3,4,13,14-tetrahydrokolavenic acid	H	H	αOH	βMe	αMe	αOTig	—	*Pteronia camphorata*	*Phytochemistry*, 1990, **29**, 1231-1245
263	4*α*,18-dihydroxyclerodan-15-oic acid	H	H	αOH	βCH_2OH	αMe	H	—	*Clausena dunniana*	*Helv. Chim. Acta*., 2003, **86**, 3187-3193
264	4β-hydroxyclerodan-15-oic acid	H	H	βOH	αMe	αMe	H	—		
265	3*α*,4*α*-dihydroxy clerodan-15-oic acid	H	αOH	αOH	βMe	αMe	H	—		
266	3,4-dihydroxyclerodan-13*E*-en-15-oic acid	—	—	—	—	—	—	—	*Detarium microcarpum*	*J. Nat. Prod.*, 2006, **69**, 768-773
267	3,4-dihydroxyclerodan-13*Z*-en-15-oic acid	—	—	—	—	—	—	—		
268	roseotetrol	αOH	αOH	βOH	—	—	—	—	*Stachys rosea*	*Phytochemistry*, 1994, **37**, 501-503
269	roseostachone	H	=O	H	—	—	—	—		*Phytochemistry*, 1992, **31**, 3147-3149
270	13-hydroxycleroda-7,14-diene	—	—	—	—	—	—	—	*Carex distachya*	*Nat. Prod. Commun.*, 2010, **5**, 1539-1542
271	15-hydroxycleroda-7,13-diene	—	—	—	—	—	—	—		
272	(-)-cleroda-7,13*E*-dien-l5-oic acid	—	—	—	—	—	—	—	*Eperua purpurea*	*J. Nat. Prod.*, 1993, **56**, 1586-1589
273	—	—	—	—	—	—	—	—	*Schistochila aligera*	*Phytochemistry*, 1991, **30**, 849-851
274	laetiaprocerine D	—	—	—	—	—	—	—	*Laetia procera*	*Bioorg. Med. Chem. Lett.*, 2005, **15**, 5065–5070
275	(3*α*,4β-14RS)-neo-clerod-13(16)-ene-3,4,14,15-tetrol	—	—	—	—	—	—	—	*Amoora stellatosquamosa*	*Helv. Chim. Acta*, 2004, **87**, 1279-1286
276	leojaponin A	—	—	—	—	—	—	—	*Leonurus japonicus*	*Chin. Chem. Lett.*, 2014, **25**, 677-679
277	tinosporaclerodanol	—	—	—	—	—	—	—	*Tinospora cordifolia*	*Nat. Prod. Res.*, 2010, **24**, 926-934
278	pentandranoic acid C	αOH	CO_2H	$=CH_2$	=O	—	—	—	*Callicarpa pentandra*	*J. Nat. Prod.*, 2000, **63**, 1062-1065
279	3β-hydroxy-clerod-4(18)-en-15-oic acid	βOH	CO_2H	Me	H	—	—	—	*Clausena dunniana*	*Helv. Chim. Acta*., 2003, **86**, 3187-319
280	ethyl-clerod-4(18)-en-15-oate	H	CO_2Et	Me	H	—	—	—		
281	6*α*,16-dihydroxy cleroda-4(18),13-dien-15-oic acid	—	—	—	—	—	—	—	*Polyalthia longifolia*	*J. Nat. Prod.*, 2009, **72**, 1960-1963
282	—	αOH	Me	αOAc	CO_2Me	Me	—	—	*Solidago altissima*	*Phytochemistry*, 1999, **52**, 487-493
283	—	βOH	Me	αOAc	CO_2Me	Me	—	—		
284	—	=O	Me	H	CO_2Me	Me	—	—		
285	cleroda-4(18),13(14)*E*-dien-15-oic acid	H	Me	H	CO_2H	Me	—	—	*Polyalthia cheliensis*	*Phytochemistry*, 1995, **39**, 447-448
286	3-hydroxy-cleroda-4(18),13*Z*-dien-15-oic acid	βOH	Me	H	CO_2H	Me	—	—	*Cyathocalyx zeylanica*	*Phytochemistry*, 1995, **39**, 443-445
287	porwenin A	H	CO_2H	H	CH_2OH	CH_2OH	—	—	*Portulaca okinawensis*	*J. Nat. Prod.*, 2001, **64**, 804-805

288	palmadorin A	OH	—	—	—	—	—	—	*Austrodoris kerguelenensis*	*J. Nat. Prod.*, 2010, **73**, 416–421
289	palmadorin B	OAc	—	—	—	—	—	—		

1.3. Type I Subtype III with an Epoxy Ring (Table 7)



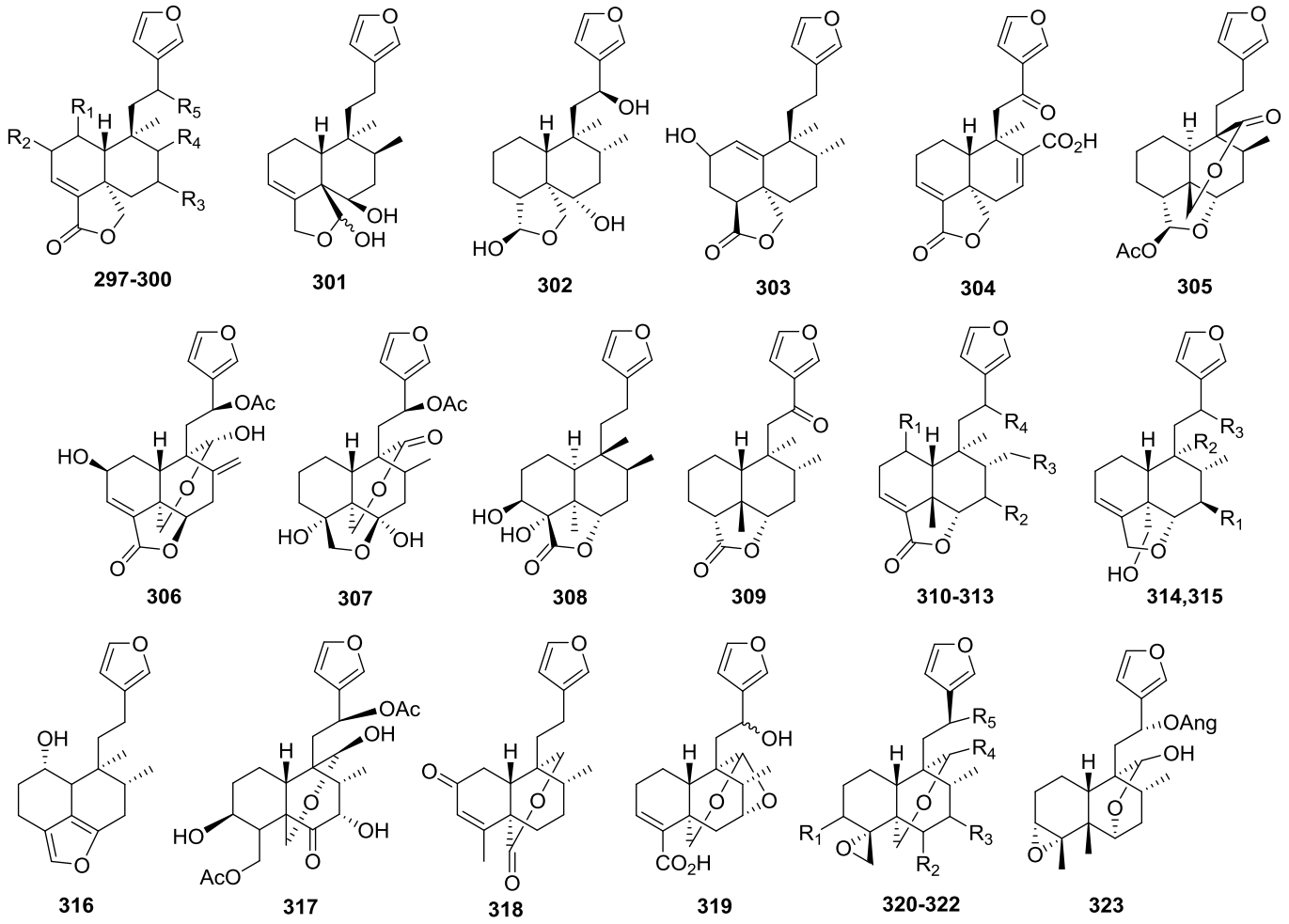
290 **291** **292** **293** **294** **295** **296**

No.	Compound Name	Source	Ref.
290	*ent*-3*β*,4*β*-epoxyclerod-13*E*-en-15-ol	*Jungermannia hyalina*	*Phytochemistry*, 1995, **40**, 209-212
291	3,4-epoxyclerodan-13*E*-en-15-oic acid	*Detarium microcarpum*	*J. Nat. Prod.*, 2006, **69**, 768-773
292	heteroscyphic acid C	*Heteroscyphus planus*	*Phytochemistry*, 1994, **37**, 1263-1268
293	*ent*-3*β*,4*β*-epoxy-clerod-14-en-13ζ-ol	*Jungermannia paroica*	*Phytochemistry*, 1992, **31**, 1420-1421
294	3α,4α-epoxyroseostachenol	*Stachys glutinosa*	*J. Nat. Prod.*, 2015, **78**, 69-76
295	4α,18*β*-epoxy-16-hydroxyclerod-13-en-15-oic acid	*Polyalthia longifolia*	*J. Nat. Prod.*, 2009, **72**, 1960-1963
296	ajugacumbin J	*Ajuga decumbens*	*Nat. Prod. Res.*, 2014, **28**, 196-200

2. Type II with a 2-Ethylfuran-based Side Chain at C-9

2.1. Type II with Various *O*-Containing Rings

2.1.1. Type II Subtype Ia with Various *O*-Containing Rings (Table 8)

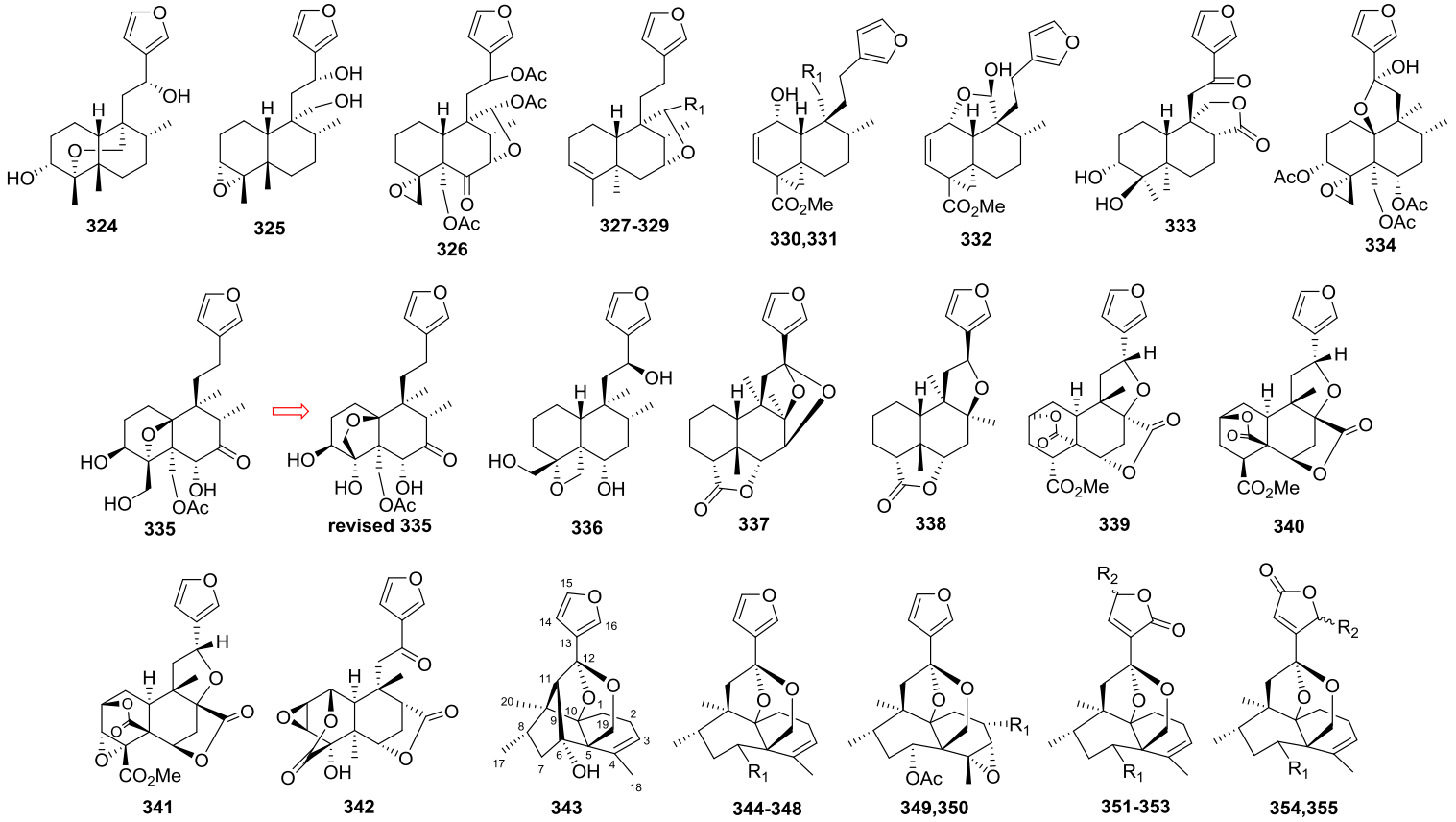


No.	Compound Name	R_1	R_2	R_3	R_4	R_5	Source	Ref.
297	nasimalun A	H	H	H	αCO_2Me	H	*Barringtonia racemosa*	*J. Nat. Prod.*, 2000, **63**, 410-411
298	2*α*-hydroxy-7*α*-acetoxy-12-oxo-15:16-epoxy-neoclerodan-3,13(16),14-trien-18:19-olide	H	OH	αOAc	αMe	=O	*Salvia urolepis*	*Phytochemistry*, 1995, **38**, 171-174
299	—	H	H	βOAc	αMe	OH	*Salvia miniata*	*Phytochemistry*, 2011, **72**, 265-275
300	*ent*-(5*R*,9*S*,l0*S*)-7*S*-acetoxy-15,16-epoxy-l*S*,2*S*,12ζ-trihydroxycleroda-3,13(16),14-trien-18,19-olide	αOH	βOH	αOAc	βMe	OH	*Salvia haenke*	*Tetrahedron*, 1997, **53**, 14719-14728
301	raspailol	—	—	—	—	—	*Raspailia* species	*Aust. J. Chem.*, 1998, **51**, 1097-1101
302	teumassilenin B	—	—	—	—	—	*Teucrium massiliense*	*J. Nat. Prod.*, 1998, **61**, 1242-1247
303	gaudichaudone	—	—	—	—	—	*Baccharis gaudicbaudiana*	*J. Nat. Prod.*, 1994, **57**, 801 -807
304	dugesin G	—	—	—	—	—	*Salvia dugesii*	*Nat. Prod. Bioprospect.*, 2011, **1**, 81-86
305	teuctomin	—	—	—	—	—	*Teucrium tomentosum*	*Nat. Prod. Res.*, 2010, **24**, 7-12
306	plaunol E	—	—	—	—	—	*Croton stellatopilosus*	*J. Nat. Med.*, 2013, **67**, 174-181
307	12-*O*-acetylteugnaphalodin	—	—	—	—	—	*Teucrium oxylepis*	*Phytochemistry*, 1991, **30**, 4079-4082
308	(2aβ,3α,5aβ,6β,7*R*,8aα)-6-[2-(3-furanyl)ethyl]-2a,3,4,5,5a,6,7,8,8a,8b-decahydro-2a,3-dihydroxy-6,7,8b-trimethyl-2*H*-naphtho[1,8-*bc*]furan-2-one	—	—	—	—	—	*Tinospora rumphii*	*J. Nat. Prod.*, 2000, **63**, 509-511
309	dihydrolinguifolide	—	—	—	—	—	*Demotarisia linguifolia*	*Phytochemistry*, 1990, **29**, 3229-3231
310	linguifolide	H	H	H	=O	—		
311	1β-acetoxy-12-hydroxy-15,16-epoxy-*cis*-cleroda-3,13(16),14-triene-18,16-olide	βOAc	H	H	OH	—	*Jamesoniella autumnalis*	*Phytochemistry*, 1995, **39**, 859-868
312	1β-acetoxy-7,12-dihydroxy-15,16-epoxy-*cis*-cleroda-3,13(16),14-triene-18,6-olide	βOAc	βOH	H	OH	—		*Phytochemistry*, 1998, **48**, 681-685
313	17-acetoxy-1β,12-dihydroxy-15,16-epoxy-*cis*-*ent*-cleroda-3,13(16),14-triene-6α,18-olide*	βOH	H	OAc	OH	—		*J. Nat. Prod.*, 1992, **55**, 111-121
314	tepolin A	OH	CO_2H	OH	—	—	*Teucrium polium*	*Him. Prir. Soedin.*, 1992, **5**, 503-508
315	tepolin B	H	CO_2H	OH	—	—		
316	difuranofruticol	—	—	—	—	—	*Teucrium fruticans*	*Phytochemistry*, 2005, **66**, 2298-2303
317	syrapolin II	—	—	—	—	—	*Teucrium polium*	*Jordan J. Chem.*, 2011, **6**, 339-345
318	sacacarin	—	—	—	—	—	*Croton cajucara*	*Phytochemistry*, 1998, **49**, 823-828

319	—	—	—	—	—	—	*Salvia miniata*	*Phytochemistry*, 2011, **72**, 265-275
320	6β-*O*-acetyl-3β-hydroxyteucroxylepin	βOH	βOAc	H	=O	OH	*Teucrium yemense*	*Phytochemistry*, 1995, **40**, 1737-1741
321	teucroxylepin	H	βOH	H	=O	βOH	*Teucrium oxylepis*	*Phytochemistry*, 1991, **30**, 4079-4082
322	montanin H	H	αOH	=O	αOH	OAc	*Teucrium montanum*	*Phytochemistry*, 1992, **31**, 4029-4030
323	pteroneeniol	—	—	—	—	—	*Pteronia eenii*	*Phytochemistry*, 1990, **29**, 1231-1245

*****Compound's name (6α,18-olide) and structure (18,6α-olide) are shown as given in reference 121.

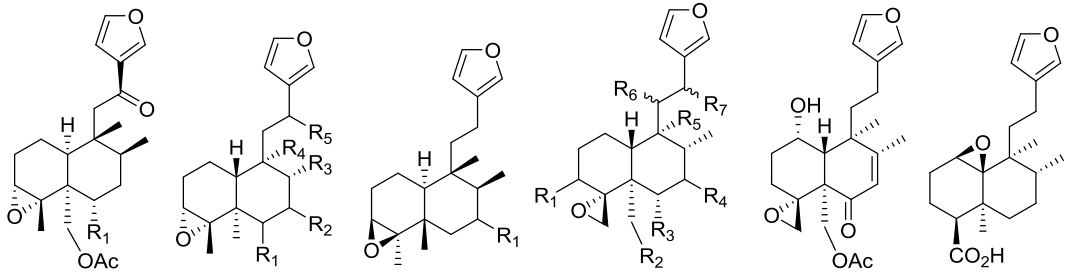
2.1.2. Type II Subtype Ib with Other *O*-Containing Rings (Table 9)



No.	Compound Name	R_1	R_2	Source	Ref.
324	3*α*,12-dihydroxy-4*α*,20,15,16-bisepoxy-8*β*,10*β*H-*ent*-cleroda-13(16),14-diene	—	—	*Microglossa pyrrhopappa*	*Phytochemistry*, 1990, **29**, 3233-3241
325	12,20-dihydroxy-3*α*,4*α*,15,16-bisepoxy-8*β*,10*β*H-*ent*-cleroda-13(16),14-diene	—	—		
326	teucossin B	—	—	*Teucrium cossonii*	*Phytochemistry*, 1992, **31**, 3957-3960
327	ptychonolide	=O	—	*Ptychopetalum olacoides*	*J. Nat. Prod.*, 2008, **71**, 1760-1763
328	20-*O*-methylptychonal acetal	βOMe	—		
329	ptychonal hemiacetal	βOH	—		
330	methyl dodonate A	H	—	*Dodonaea viscosa*	*Tetrahedron*, 2001, **57**, 2981-2989

331	methyl dodonate B	OH	—		
332	methyl dodonate C	—	—		
333	furocrotinsulolide B	—	—	*Croton insularis*	*Helv. Chim. Acta.*, 2005, **88**, 2654-2660
334	teucrolin A	—	—	*Teucrium oliverianum*	*J. Nat. Prod.*, 1993, **56**, 830-842
335	teucrolin E	—	—		*Phytochemistry*, 2002, **59**, 409-414
336	teumassilenin C	—	—	*Teucrium massiliense*	*J. Nat. Prod.*, 1998, **61**, 1242-1247
337	anastreptin	—	—	*Adelanthus lindenbergianus*	*Phytochemistry*, 2004, **65**, 127–137
338	8β,12:15,16-diepoxy-*cis*-*ent*-cleroda-13(16),14-dien-18α,6α-olide	—	—		
339	bafoudiosbulbin A	—	—	*Dioscorea bulbifera*	*Phytochemistry*, 2006, **67**, 1957-1963
340	bafoudiosbulbin D	—	—		*Helv. Chim. Acta*, 2007, **90**, 1599-1605
341	bafoudiosbulbin E	—	—		
342	Apiciflorin	—	—	*Cleidion spiciflorum*	*Phytochemistry*, 2006, **67**, 1029-1033
343	scaparvin A	—	—	*Scapania parva*	*Org. Lett.*, 2010, **12**, 4404-4407
344	scaparvin B	=O	—		
345	scaparvin C	αOH	—		
346	scaparvin D	αOAc	—		
347	parvitexin A	H	—	*Scapania parvitexta*	*Biosci. Biotechnol. Biochem.*, 2007, **71**, 2751-2758
348	parvitexin B	βOAc	—		
349	parvitexin C	βOH	—		
350	scaparvin E	OAc	—	*Scapania parva*	*Org. Lett.*, 2010, **12**, 4404-4407
351	stephanialide A	=O	OH	*Scapania stephanii*	*Phytochemistry*, 2014, **105**, 85-91
352	stephanialide B	βOH	OH		
353	stephanialide C	βOAc	OH		
354	stephanialide D	=O	OH		
355	stephanialide E	βOAc	OH		

2.1.3. Type II Subtype Ic with a Simple Epoxy Ring (Table 10)



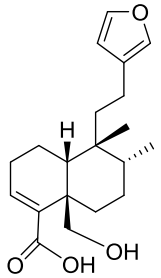
356,357 358-363 364,365 366-374 375 376

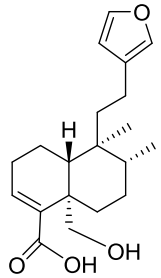
No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	Source	Ref.
356	parvitexin D	OAc	—	—	—	—	—	—	*Scapania parvitexta*	*Biosci. Biotechnol. Biochem.*, 2007, **71**, 2751-2758
357	parvitexin E	OH	—	—	—	—	—	—		
358	epoxychiromodine	H	H	CO_2Me	Me	=O	—	—	*Croton megalocarpus*	*Phytochemistry*, 1992, **31**, 2055-2058
359	eluterin C	H	αOAc	Me	CH_2OH	H	—	—	*Croton eluteria*	*J. Agric. Food Chem.*, 2002, **50**, 5131-5138
360	eluterin D	H	αOH	Me	CH_2OAc	H	—	—		
361	eluterin E	H	αOAc	Me	CH_2OH	βOH	—	—		
362	eluterin F	αOAc	αOAc	Me	CH_2OAc	H	—	—		
363	eluterin G	αOAc	αOAc	Me	CHO	H	—	—		
364	3*β*,4*β*:15,16-diepoxy-13(16),14-clerodadiene	H	—	—	—	—	—	—	*Thysananthus spathulistipus*	*Chem. Pharm. Bull.*, 2006, **54**, 1046-1049
365	thysaspathone	=O	—	—	—	—	—	—		
366	teucossin A	H	OAc	OH	H	CH_2OAc	H	OAc	*Teucrium cossonii*	*Phytochemistry*, 1992, **31**, 3957-3960
367	teugracilin E	βOAc	OAc	OAc	H	CH_2OAc	H	OAc	*Teucrium gracile*	*Phytochemistry*, 1992, **31**, 3531-3534
368	teugracilin C	βOH	OAc	OH	H	Me	H	OAc		*Phytochemistry*, 1991, **30**, 3693-3697
369	teucrolivin D	βOAc	OAc	OH	βOAc	Me	H	H	*Teucrium oliverianum*	*Phytochemistry*, 1991, **30**, 1603-1606
370	teucrolivin E	βOAc	OAc	OH	=O	Me	H	H		
371	7*β*-hydroxyfruticolone	H	OAc	=O	βOH	Me	H	H	*Teucrium fruticans*	*Phytochemistry*, 2004, **65**, 387–392
372	11-hydroxyfruticolone	H	OAc	=O	H	Me	OH	H		
373	deacetylfruticolone	H	OH	=O	H	Me	H	H		
374	deoxyfruticolone	H	OAc	=O	H	Me	H	H		*Phytochemistry*, 2005, **66**, 2298-2303

375	didehydrofruticolone	—	—	—	—	—	—	—		
376	phlomeoic acid	—	—	—	—	—	—	—	*Phlomis bracteosa*	*Nat. Prod. Commun.*, 2011, **6**, 171-173

2.2. Type II with or without a C=C Double Bond in the Decalin Moiety

2.2.1. Type II Subtype IIa with One or More Decalin C=C Double Bonds (Table 11)


377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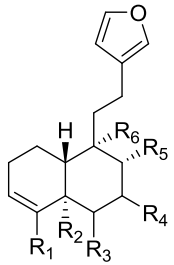
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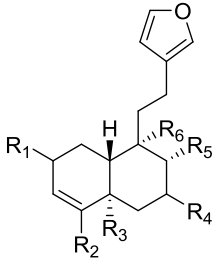
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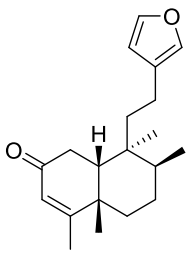
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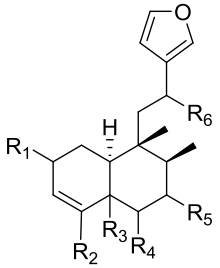
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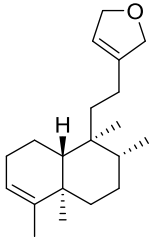
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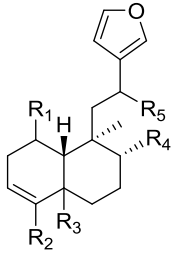
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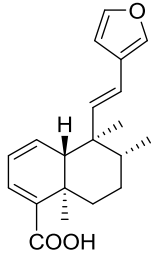
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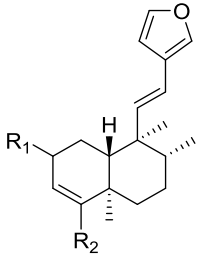
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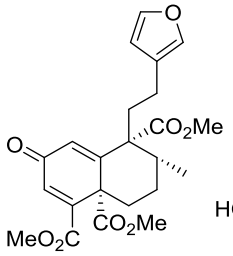
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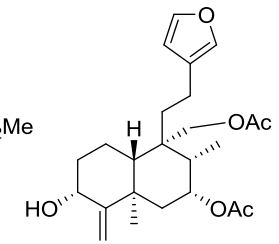
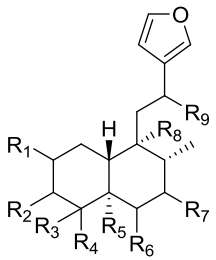

419

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	Source	Ref.
377	vishautriwaic acid	—	—	—	—	—	—	*Dodonaea viscosa*	*Z. Naturforsch. B*, 2010, **65**, 83-86
378	hautriwaic acid	—	—	—	—	—	—	*Eremocarpus setigerus*	*Indian J. Chem. B*, 1991, **30**, 1054-1055
379	nasimalun B	CO_2Me	Me	H	H	CO_2Me	Me	*Barringtonia racemosa*	*J. Nat. Prod.*, 2000, **63**, 410-411
380	ptychonal	Me	Me	H	αOH	Me	CHO	*Ptychopetalum olacoides*	*J. Nat. Prod.*, 2008, **71**, 1760-1763
381	eluterin K	Me	Me	αOAc	αOAc	Me	CH_2OAc	*Croton eluteria*	*J. Agric. Food Chem.*, 2003, **51**, 6970-6974
382	6*α*,7*α*-dihydroxyannonene	Me	Me	αOH	αOH	Me	Me	*Ptychopetalum*	*Bioorg. Med. Chem. Lett.*, 2009, **19**,

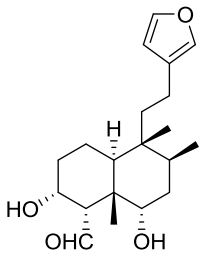
383	7*α*,20-dihydroxyannonene	Me	Me	H	αOH	Me	CH_2OH	*olacoides*	882–886
384	7*α*-acetoxybacchotricuneatin D	CH_2OH	Me	H	αOAc	Me	Me	*Copaifera sp.*	*Phytochemistry*, 1996, **42**, 1653-1656
385	6*α*-hydroxyannonene	Me	Me	αOH	H	Me	Me	*Croton sonderianus*	*Phytochemistry*, 1994, **36**, 1457-1463
386	6*α*,7*β*-dihydroxyannonene	Me	Me	αOH	βOH	Me	Me		
387	6*α*,7*β*-diacetoxyannonene	Me	Me	αOAc	βOAc	Me	Me		
388	7*α*-hydroxyhardwickiic acid	CO_2H	Me	H	αOH	Me	Me	*Conyza hypoleuca*	*Phytochemistry* 1991, **30**, 575-581
389	15,16-epoxy-8*R*-(benzoyloxy)methyl-cleroda-3,13(16),14-trien-18-oic acid	CO_2H	Me	H	H	CH_2OBz	Me	*Dodonaea polyandra*	*J. Nat. Prod.*, 2011, **74**, 650-657
390	15,16-epoxy-8*R*-(benzoyloxy)methyl-2*R*-hydroxycleroda-3,13(16),14-trien-18-oic acid	αOH	CO_2H	Me	H	CH_2OBz	Me		
391	15,16-epoxy-2*R*-benzoyloxycleroda-3,13(16),14-trien-18-oic acid	αOBz	CO_2H	Me	H	Me	Me		
392	15,16-epoxy-8*R*-(benzoyloxy)methyl-2-oxocleroda-3,13(16),14-trien-18-oic acid	=O	CO_2H	Me	H	CH_2OBz	Me		
393	15,16-epoxy-3,13(16)-clerodatriene-2-one	=O	Me	αMe	H	Me	Me	*Croton ururucana*	*Phytochemistry*, 1998, **49**, 171-174
394	cajucarin A	=O	Me	CHO	H	Me	CO_2Me	*Croton cajucara*	*Chem. Pharm. Bull.*, 1990, **38**, 701-705
395	cromiargyne	=O	Me	Me	H	Me	CO_2Me	*Croton hemiargyreus*	*Nat. Prod. Lett.*, 1998, **12**, 41-46
396	7-acetoxycromiargyne	=O	Me	Me	OAc	Me	CO_2Me		
397	raspailenone	—	—	—	—	—	—	*Raspailia* species	*Aust. J. Chem.*, 1998, **51**, 1097-1101
398	laevigatbenzoate	βOBz	CO_2H	βMe	H	H	H	*Croton laevigatus*	*J. Nat. Med.*, 2011, **65**, 391–394
399	6*β*-hydroxy-15,16-epoxy-5*β*,8*β*,9*β*,10*α*-cleroda-3,13(16),14-trien-18-oic acid	H	CO_2H	βMe	βOH	H	H	*Duranta repens*	*Helv. Chim. Acta*, 2001, **84**, 649-655
400	2*β*-hydroxy-15,16-epoxy-5*β*,8*β*,9*β*,10*α*-cleroda-3,13(16),14-trien-18-oic acid	βOH	CO_2H	βMe	H	H	H		
401	(5*R*,8*S*,9*R*,10*S*)-15,16-epoxy-*cis*-cleroda-3,13(16),14-trien-18-al	H	CHO	αMe	H	H	H	*Gottschelia schizopleura*	*Planta Med.*, 2009, **75**, 1597-1601
402	(+)-7*β*-acetoxy-15,16-epoxy-3,13(16),14-clerodatrien-18-oic acid	H	CO_2H	βMe	H	αOAc	H	*Sindora sumatrana*	*Chem. Pharm. Bull.*, 1994, **42**, 1202-1207
403	scaparvin F	H	Me	αCH_2OAc	βOH	H	βOAc	*Scapania*	*Phytochem. Lett.*, 2012, **5**, 535–540

								parva	
404	crotonolide G	—	—	—	—	—	—	*Croton laui*	*J. Nat. Prod.*, 2014, **77**, 1013-1020
405	divinatorin A	αOH	CO_2H	αMe	Me	H	—	*Salvia divinorum*	*J. Nat. Prod.*, 2003, **66**, 1242-1244
406	divinatorin B	αOH	CO_2Me	αMe	CH_2OH	H	—		
407	divinatorin C	H	CO_2H	αMe	CH_2OAc	H	—		
408	(-)-hardwickiic acid	H	CO_2H	αMe	Me	H	—		
409	divinatorin D	αOH	CO_2Me	αMe	CH_2OAc	H	—	*Salvia divinorum*	*Bioorg. Med. Chem.*, 2005, **13**, 5635-5639
410	divinatorin E	αOH	CO_2Me	αMe	CHO	H	—		
411	12-hydroxyhardwickiic acid	H	CO_2H	αMe	Me	OH	—	*Conyza hypoleuca*	*Phytochemistry* 1991, **30**, 575-581
412	12,17-dihydroxyhardwickiic acid methyl ester	H	CO_2Me	αMe	CH_2OH	OH	—		
413	15,16-epoxy-*cis*-cleroda-3,13(16),14-trien-19-oic acid	H	Me	βCO_2H	Me	H	—	*Chrysocoma comaaurea*	*Phytochemistry*, 1991, **30**, 607-609
414	crotomembranafuran	H	CO_2Me	αMe	CO_2Me	=O	—	*Croton membranaceus*	*Nat. Prod. Commun.*, 2008, **3**, 1875-1878
415	1,2,11,12*E*-tetradehydrohardwickiic acid	—	—	—	—	—	—	*Conyza hypoleuca*	*Phytochemistry* 1991, **30**, 575-581
416	2α-hydroxy-11,12*E*-dehydrohardwickiic acid	αOH	CO_2H	—	—	—	—		
417	dehydrohardwickiic acid	H	CO_2H	—	—	—	—	*Eremocarpus setigerus*	*Indian J. Chem. B*, 1991, **30**, 1054-1055
418	crotonoligaketone	—	—	—	—	—	—	*Croton oligandrum*	*Z. Naturforsch. C*, 2014, **69**, 181-185
419	eluterin B	—	—	—	—	—	—	*Croton eluteria*	*J. Agric. Food Chem.*, 2002, **50**, 5131-5138

2.2.2. Type II Subtype IIb without a Decalin C=C Double Bond (Table 12)



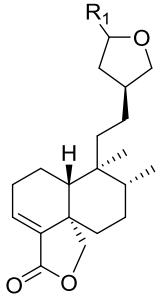
420-427



428

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	Source	Ref.
420	crotonolide H	H	αOH	βOH	Me	Me	H	H	Me	βOH	*Croton laui*	*J. Nat. Prod.*, 2014, **77**, 1013-1020
421	12-deoxycrotonolide H	H	αOH	βOH	Me	Me	H	H	Me	H		
422	crolechinic acid	H	H	H	βCO_2H	Me	H	H	Me	H	*Croton lechleri*	*Phytochemistry*, 1993, **32**, 755-760
423	teumassilenin A	H	H	H	βCHO	CH_2OH	αOH	H	Me	βOH	*Teucrium massiliense*	*J. Nat. Prod.*, 1998, **61**, 1242-1247
424	cascarilladione	=O	H	H	αMe	Me	H	H	Me	=O	*Croton eluteria*	*J. Agric. Food Chem.*, 2003, **51**, 6970-6974
425	eluterin A	H	=O	H	βMe	Me	H	αOAc	CH_2OAc	H		*J. Agric. Food Chem.*, 2002, **50**, 5131-5138
426	3,12-dioxo-15,16-epoxy-cleroda-13(16),14-dien-9-al	H	=O	H	βMe	Me	H	H	CHO	=O	*Croton hovarum*	*Phytochemistry*, 1997, **45**, 379-381
427	3α,4β-dihydroxy-15,16-epoxy-12-oxo-cleroda-13(16),14-dien-9-al	H	αOH	βOH	αMe	Me	H	H	CHO	=O		*Phytochemistry*, 1996, **41**, 561-563
428	nepetanal	—	—	—	—	—	—	—	—	—	*Nepeta juncea*	*Magn. Reson. Chem.*, 2009, **47**, 625-627

2.3. Type II Subtype III with a Tetrahydrofuran Ring (Table 13)



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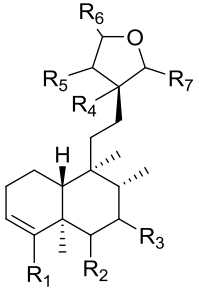

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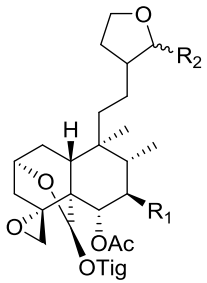
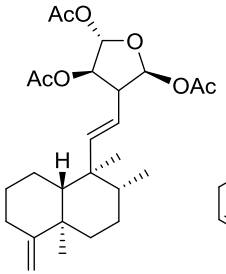


439,440



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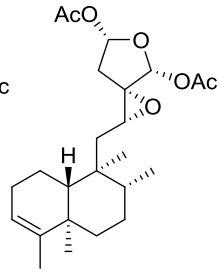

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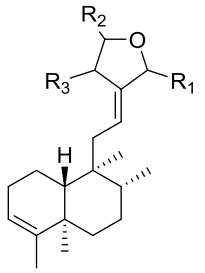

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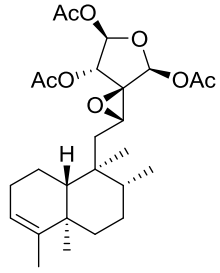


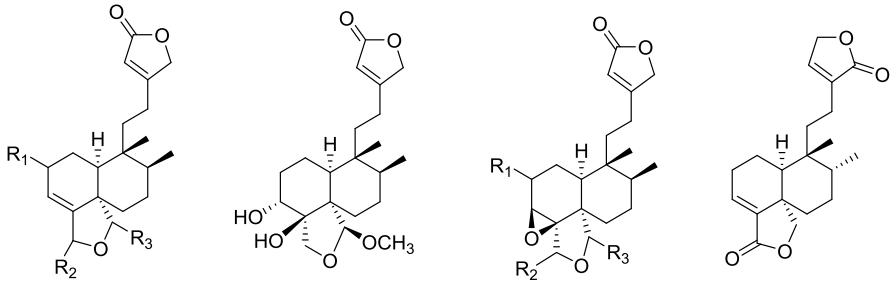
445

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	Source	Ref.
429	trinerolide	αOMe	—	—	—	—	—		*Baccharis trinervis*	*Phytochemistry*, 1993, **34**, 1377-1384
430	15-epitrinerolide	βOMe	—	—	—	—	—			
431	18-acetyl-7*α*-hydroxy-epimethyl-trineracetal	CH_2OAc	H	αOH	H	H	βOMe	H		
432	18-methylmalonyl-7*α*-hydrox-methyl-trineracetal	CH_2OMe-malo	H	αOH	H	H	αOMe	H		
433	18-methylmalonyl-7*α*-hydroxy-epimethyl-trineracetal	CH_2OMe-malo	H	αOH	H	H	βOMe	H		
434	15,16-epoxy-7α,18-dihydroxy-15-methoxy-*ent*-clerod-3-ene	CH_2OH	H	αOH	H	H	OMe	H	*Baccharis articulata*	*Phytochemistry*, 1993, **34**, 1087-1090
435	15,16-epoxy-15α-methoxy-*ent*-clerod-3-en-18-oic acid	COOH	H	H	H	H	αOMe	H	*Baccharis gaudichaudiana*	*J. Nat. Prod.*, 2006, **69**, 274-276
436	13-*epi*-15,16-epoxy-15α-methoxy-*ent*-clerod-3-en-18-oic acid	COOH	H	H	H	H	βOMe	H		
437	visclerodol acid	CO_2H	H	H	OH	βOH	βOAc	βOAc	*Dodonaea viscosa*	*Z. Naturforsch. B*, 2010, **65**, 83-86 *Phytochem. Lett.*, 2014, **8**, 10-15
438	13,14-dihydroxy-15,16-dimethoxy-(-)-6*α*-hydroxy-5*α*,8*α*,9*α*,10*α*-cleroda-3-en-18-oic acid	CO_2H	αOH	H	OH	βOH	βOMe	βOMe		
439	scutegalin B	OH	βOH	—	—	—	—	—	*Scutellaria galericulata*	*Phytochemistry*, 1993, **33**, 309-315, *Phytochemistry*, 1996, **41**, 247-253
440	scutegalin C	OTig	OH	—	—	—	—	—		
441	14,15,16-triacetoxy-15,16-epoxy-*ent*-cleroda-4(18),12*E*-diene	—	—	—	—	—	—	—	*Linaria saxatilis*	*Tetrahedron*, 1993, **49**, 9067-9078
442	15,16-diacetoxy-12,13-15,16-diepoxy-*ent*-cleroda-3-ene	—	—	—	—	—	—	—		*Phytochemistry*, 1993, **33**, 631-633, *Phytochemistry*, 1995, **40**, 1307-1309
443	14,15,16-triacetoxy-15,16-epoxy-*ent*-cleroda-3,12*Z*-diene	βOAc	αOAc	βOAc	—	—	—	—		
444	15,16-diacetoxy-15,16-epoxy-*neo*-cleroda-3,13*Z*-diene	OAc	OAc	H	—	—	—	—		
445	15,16-diacetoxy-12,13-15,16-diepoxy-14-hydroxy-*neo*-cleroda-3-ene	—	—	—	—	—	—	—		

3. Type III with a 3-Ethyl-2-butenolide-based Side Chain at C-9

3.1. Type III Subtype I with *O*-Containing Rings

3.1.1. Type III Subtype Ia with Five-Membered Cyclic *O*-Containing Rings (Table 14)



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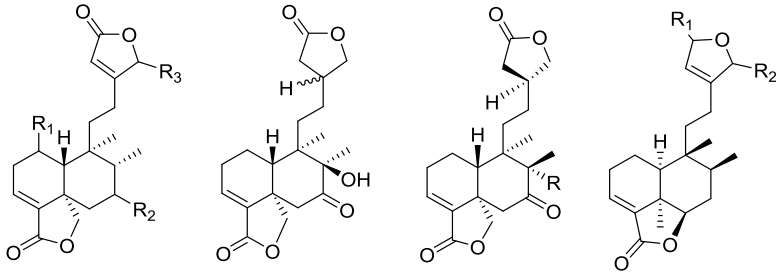

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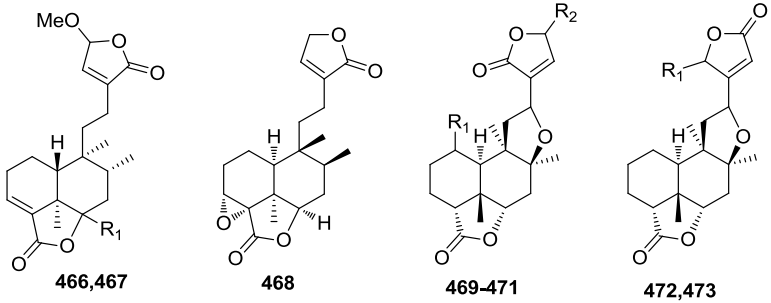
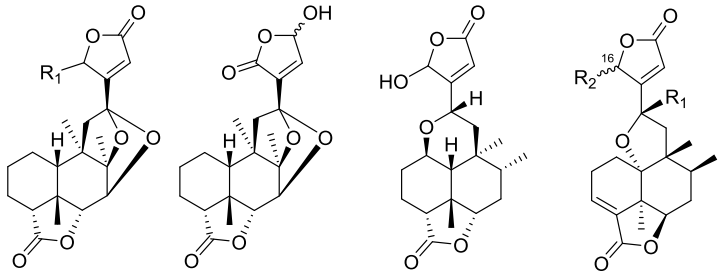


466,467 468 469-471 472,473

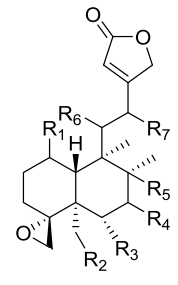


474,475 476 477 478-480

No.	Compound Name	R_1	R_2	R_3	Source	Ref.
446	amphiacrolide A	H	H	=O	*Amphiachyris dracunculoides*	*J. Nat. Prod.*, 1990, **53**, 1312-1326, *J. Nat. Prod.*, 1996, **59**, 463-468, *J. Nat. Prod.*, 1996, **59**, 5-14
447	amphiacrolide B	H	=O	H		
448	amphiacrolide C	H	H	OH		
449	amphiacrolide L	βOH	=O	H		
450	amphiacrolide J	—	—	—		
451	amphiacrolide D	H	H	OH		
452	amphiacrolide M	βOH	H	βOH		
453	amphiacrolide E	H	αOEt	αOH		
454	amphiacrolide I	H	αOMe	αOH		
455	cleroda-3,13(14)-dien-16,15:18,19-diolide	—	—	—	*Solidago virgaurea*	*Phytochemistry*, 2010, **71**, 104–109
456	Mkapwanin	H	H	H	*Dodonaea angustifolia*	*Phytochem. Lett.*, 2010, **3**, 217–220
457	15-methoxymkapwanin	H	H	OMe		
458	1α,7α-dihydroxyneocleroda-3,13-dien-16,15:18,19-diolide	αOH	αOH	H	*Baccharis crispa*	*J. Nat. Prod.*, 1997, **60**, 490-492
459	1α,7α,15-trihydroxyneocleroda-3,13-dien-16,15:18,19-diolide	αOH	αOH	OH		
460	8β-hydroxy-7-oxo-*ent*-cleroda-3-en-15,18-diacid-16,19-dilactone	—	—	—	*Baccharis articulate*	*Phytochemistry*, 1993, **34**, 1087-1090
461	gaudichanolide A	OH	—	—	*Baccharis gaudichaudiana*	*J. Nat. Prod.*, 2005, **68**, 1121-1124
462	gaudichanolide B	H	—	—		
463	cephaloziellin C	=O	OH	—	*Cephaloziella kiaeri*	*J. Nat. Prod.*, 2013, **76**, 1700-1708
464	cephaloziellin D	OH	=O	—		
465	amphiacrolide F	=O	H	—	*Amphiachyris dracunculoides*	*J. Nat. Prod.*, 1996, **59**, 5-14
466	ballatenolide A	αH	—	—	*Ballota limbata*	*Helv. Chim. Acta*, 2004, **87**, 682-689

467	limbatolide A	βH	—	—	*Otostegia limbata*	*Chem. Pharm. Bull.*, 2005, **53**, 378-381
468	crispene E	—	—	—	*Tinospora crispa*	*Org. Biomol. Chem.*, 2015, **13**, 3882-3886
469	1α-acetoxy-8β,12-epoxy-15-hydroxy-*cis*-*ent*-cleroda-13-en-16,15:18α,6α-diolide	αOAc	OH	—	*Adelanthus lindenbergianus*	*Phytochemistry*, 2004, **65**, 127–137
470	8β,12-epoxy-15α-hydroxy-transcleroda-13-en-16,15:18α,6α-diolide	H	αOH	—		
471	8β,12-epoxy-15β-hydroxy-transcleroda-13-en-16,15:18α,6α-diolide	H	βOH	—		
472	8β,12-epoxy-16α-hydroxy-transcleroda-13-en-15,16:18α,6α-diolide	αOH	—	—		
473	8β,12-epoxy-16β-hydroxy-transcleroda-13-en-15,16:18α,6α-diolide	βOH	—	—		
474	7β,12:8β,12-diepoxy-16α-hydroxy-*cis*-*ent*-cleroda-13-en-15,16:18α,6α-diolide	αOH	—	—		
475	7β,12:8β,12-diepoxy-16β-hydroxy-*cis*-*ent*-cleroda-13-en-15,16:18α,6α-diolide	βOH	—	—		
476	7β,12:8β,12-diepoxy-15-hydroxy-*cis*-*ent*-cleroda-13-en-16,15:18α,6α-diolide	—	—	—		
477	1β,12-epoxy-16-hydroxy-*cis*-*ent*-cleroda-13-en-15,16:18α,6α-diolide	—	—	—		
478	ciliatolide B	OEt	OH	—	*Scapania ciliata*	*Chem. Biodivers.*, 2013, **10**, 1606-1612
479	ciliatolide C	OMe	OH	—		
480	ciliatolide D	OEt	OEt	—		

2.3.1.2 Type III Subtype Ib with Other *O*-Containing Rings (Table 15)



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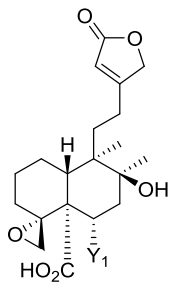

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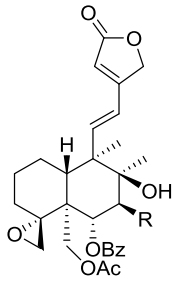

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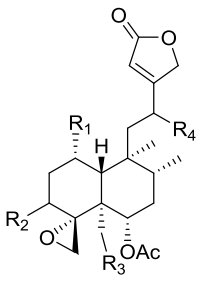

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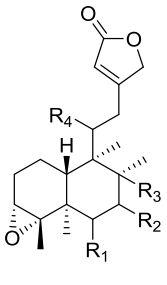

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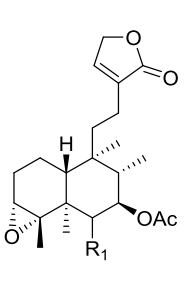

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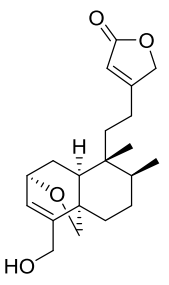

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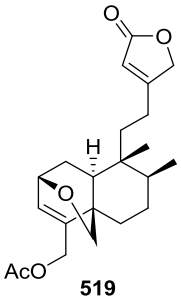

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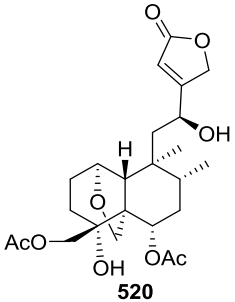

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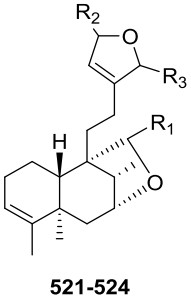

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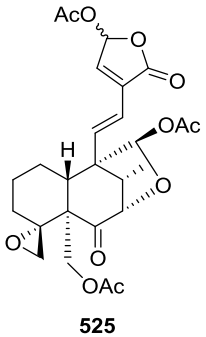

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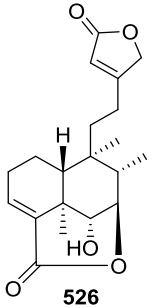

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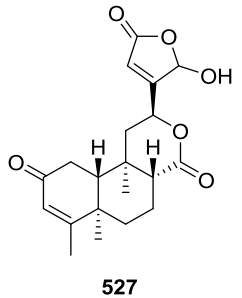


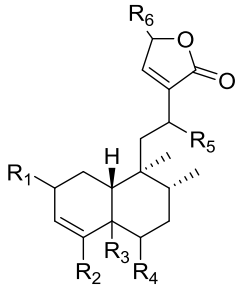
527

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	Source	Ref.
481	scutorientalin C	H	OH	OiBu	H	βOH	βOAc	H	*Scutellaria orientalis*	*Phytochemistry*, 1996, **43**, 173-178
482	scutalpin H	H	OAc	Y_1	βH	βOH	βOAc	H	*Scutellaria alpina*	*Phytochemistry*, 1995, **38**, 181-187
483	scutalpin I	H	OAc	OBz	βH	βOH	βOAc	H		
484	scutalpin L	H	OAc	OBz	βOBz	βOH	βH	H		
485	(12*S*)-6α-acetoxy-4α,18-epoxy-12-hydroxy-19-tigloyloxy-*neo*-clerod-13-en-15,16-olide	H	OTig	OAc	H	H	H	βOH	*Ajuga ciliate*	*Phytochem. Lett.*, 2012, **5**, 563-566
486	scutalpin N	H	OAc	OBz	βOBz	βOH	H	H	*Scutellaria alpine*	*Phytochemistry*, 1998, **49**, 2449-2452
487	ajugapantin A	βOAc	OAc	OAc	H	H	H	αOAc	*Ajuga pantantha*	*Phytochemistry*, 1993, **34**, 1091-1094
488	ajugamacrin C	βOiBu	OAc	OAc	H	H	H	αOiBu		
489	ajugamacrin D	βOiBu	OAc	OAc	H	H	H	αOY_1		
490	ajugamacrin E	βY_1	OAc	OAc	H	H	H	αOiBu		

491	ajugamacrin A	βOAc	OAc	OAc	H	H	H	βiBu	*Ajuga macrosperma*	*Phytochemistry*, 1993, **33**, 887-889
492	ajugamacrin B	βOAc	OAc	OAc	H	H	H	βY_1		
493	ajugatakasin A	OTig	OAc	OAc	H	H	H	OTig	*Ajuga decumbens*	*Biosci. Biotechnol. Biochem.*, 1997, **61**, 1518-1522
494	ajugatakasin B	Y_1	OAc	OAc	H	H	H	Y_1		
495	ajugamarin L2	H	OTig	OH	H	H	H	H	*Ajuga nipponensis*	*Chin. Chem. Lett.*, 1995, **6**, 581-582
496	(4*S*,11*S*)-11-acetoxy-8β,19-dihydroxy-6α-tigloyloxy-4,18-epoxy-*neo*-clerod-13-en-15,16-olide	H	OH	OTig	H	βOH	OAc	H	*Scutellaria alpina*	*Yakugaku Zasshi*, 1994, **114**, 264-271, *Phytochemistry*, 1993, **34**, 1589-1594
497	scutalpin C	H	OAc	OTig	H	OH	βOH	H		
498	scupolin A	H	OH	Y_1	H	βOH	βOAc	H	*Scutellaria polyodon*	*J. Nat. Prod.*, 1997, **60**, 1229-1235
499	scupolin B	H	OAc	OAc	H	βOH	βOAc	H		
500	scupolin C	H	OBz	OBz	H	βOH	βOAc	H		
501	scupolin D	H	OH	OH	βY_1	βOH	βOAc	H		
502	scupolin E	H	OH	Y_1	βOH	βOH	βOAc	H		
503	scupolin F	—	—	—	—	—	—	—		
504	scutorientalin E	H	OAc	OCin	βOAc	βOH	H	H	*Scutellaria orientalis*	*Phytochemistry* 1997, **46**, 587-589
505	hastifolin A	H	H	OCin	H	βOH	H	H	*Scutellaria hastifolia*	*Phytochemistry*, 2010, **71**, 2087-2091
506	ajugalide A	βOH	OAc	OAc	H	H	H	αOAc	*Ajuga taiwanensis*	*Chem. Pharm. Bull.*, 2005, **53**, 164-167
507	ajugalide B	βOAc	OAc	OAc	H	H	H	αOH		
508	ajugalide C	H	OAc	OAc	H	H	H	αOH		
509	(4*S*)-19-acetoxy-8β-hydroxy-6α-tigloyloxy-4,18-epoxy-*neo*-cleroda-11,13-dien-15,16-olide	αOTig	H	—	—	—	—	—	*Scutellaria alpina*	*Yakugaku Zasshi*, 1994, **114**, 264-271
510	scutalpin J	αOBz	H	—	—	—	—	—		*Phytochemistry*, 1995, **38**, 181-187
511	scutalpin K	αOBz	βOBz	—	—	—	—	—		
512	ajugacumbin E	OAc	βOAc	X_{12}	H	—	—	—	*Ajuga decumbens*	*Chem. Pharm. Bull.*, 1990, **38**, 3167-3168
513	3α-hydroxyajugamarin F4	H	αOH	OAc	βY_1	—	—	—	*Ajuga reptans*	*Phytochemistry*, 1998, **47**, 1227-1232
514	scuterivulactone A	αOBz	H	βOH	βOAc	—	—	—	*Scutellaria rivularis*	*Chem. Pharm. Bull.*, 1997, **45**, 152-160
515	seguiniilactone A	αOAc	βOAc	H	H	—	—	—	*Colquhounia seguinii*	*J. Integr. Plant Biol.*, 2014, **56**, 928-940
516	seguiniilactone B	αOAc	—	—	—	—	—	—		
517	seguiniilactone C	H	—	—	—	—	—	—		
518	amphiacrolide K	—	—	—	—	—	—	—	*Amphiachyris dracunculoides*	*J. Nat. Prod.*, 1996, **59**, 463-468
519	Conyzalactone	—	—	—	—	—	—	—	*Conyza blinii*	*Heterocycles*, 1999, **51**, 605-609

520	(12*S*)-1α,19-epoxy-6α,18-diacetoxy-4α,12-dihydroxy-*neo*-clerod-13-en-15,16-olide	—	—	—	—	—	—	—	*Ajuga decumbens*	*Fitoterapia*, 2012, **83**, 1409-1414
521	ptycholide I	=O	OMe	=O	—	—	—	—	*Ptychopetalum olacoides*	*Nat. Prod. Commun.*, 2011, **6**, 327-332
522	ptycholide II	OMe	OMe	=O	—	—	—	—		
523	ptycholide III	OMe	H	=O	—	—	—	—		
524	ptycholide IV	OMe	=O	OH	—	—	—	—		
525	Teucrasiolide	—	—	—	—	—	—	—	*Teucrium asiaticum*	*Phytochemistry*, 1997, **45**, 383-385
526	6α-hydroxycleroda-3,13-dien-15(16), 4(7)-diolide	—	—	—	—	—	—	—	*Pulicaria wightiana*	*Helv. Chim. Acta.*, 2008, **91**, 2081-2088
527	microdon B	—	—	—	—	—	—	—	*Gomphostemma microdon*	*Z. Naturforsch., B: J. Chem. Sci.*, 2009, **64**, 443-446

3.2.1. Type III Subtype IIa with C3/C4 Double Bond (Table 16)



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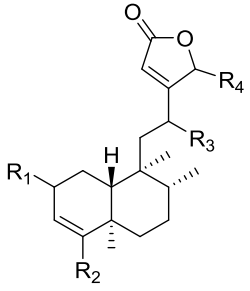

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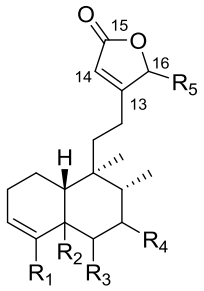

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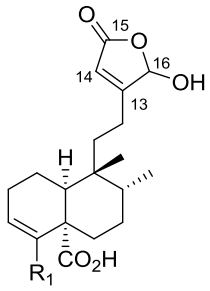

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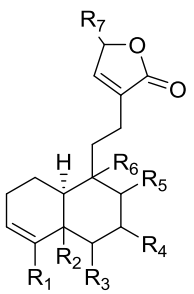

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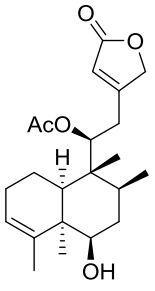

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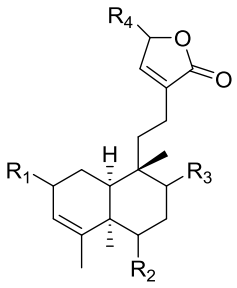

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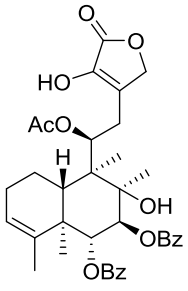

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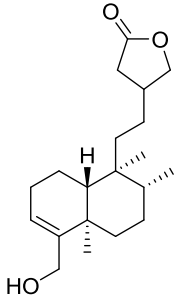


575

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	Source	Ref.
530	*ent*-2β,18,19-trihydroxycleroda-3,13-dien-16,15-olide	αOH	CH_2OH	αCH_2OH	H	H	H	—	*Crassocephalum bauchiense*	*Nat. Prod. Res.*, 2015, **29**, 1990-1994
531	(-)-6α-hydroxy-5α,8α,9α,10α-cleroda-3,13-dien-16,15-olid-18-oic acid*	H	CO_2H	αMe	αOH	H	H	—	*Dodonaea viscosa*	*Phytochem. Lett.*, 2014, **8**, 10-15
532	15-hydroxy-16-oxo-15,16H-hardwickiic acid	H	CO_2H	αMe	H	H	OH	—	*Grangea maderaspatana*	*Phytochemistry*, 1999, **52**, 1341-1343
533	limbatolide B	H	CO_2H	βMe	H	H	OMe	—	*Otostegia limbata*	*Chem. Pharm. Bull.*, 2005, **53**, 378-381
534	limbatolide C	H	CO_2H	βMe	H	H	H	—		
535	12(*S*)-hydroxycleroda-3,13-dien-16,15-olide	H	Me	αMe	H	βOH	H	—	*Callicarpa americana*	*J. Nat. Prod.*, 2007, **70**, 372-377
536	12(*S*),16ζ-dihydroxycleroda-3,13-dien-15,16-olide	H	Me	βOH	OH	—	—	—		
537	12(*S*)-hydroxy-16ζ-methoxycleroda-3,13-dien-15,16-olide	H	Me	βOH	OMe	—	—	—		
538	12(*S*)-hydroxycleroda-3,13-dien-15,16-olide	H	Me	βOH	H	—	—	—		

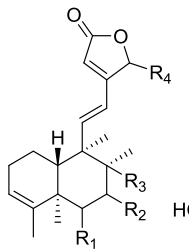
539	2β-methoxy-cleroda-3,13-dien-18-carboxy-15,16-olide	OMe	CO_2H	H	H	—	—	—	*Casearia sylvestris*	*Fitoterapia*, 2009, **80**, 404–407
540	16(*R*)-3,13*Z*-kolavadien-16,15-olide-2-one	=O	Me	H	αOH	—	—	—	*Polyalthia viridis*	*Phytochemistry*, 1990, **29**, 653-655
541	16(*S*)-3,13*Z*-kolavadien-16,15-olide-2-one	=O	Me	H	βOH	—	—	—		
542	polylongifoliaon A	=O	Me	H	αOMe	—	—	—	*P. longifolia* var. *pendula*	*RSC Advances*, 2014, **4**, 23707-23712
543	polylongifoliaon B	=O	Me	H	βOMe	—	—	—		
544	2β-(2-methylbutanoyl)cleroda-3,13-dien-15,16-olid-18-oic acid	Y_1	CO_2H	H	H	—	—	—	*Pulicaria wightiana*	*Helv. Chim. Acta.*, 2008, **91**, 2081-2088
545	methyl 6-oxocleroda-3,13-dien-15,16-olid-18-oate	CO_2Me	αMe	=O	H	H	—	—		
546	methyl 6α-hydroxycleroda-3,13-dien-15,16-olid-18-oate	CO_2Me	αMe	αOH	H	H	—	—		
547	methyl 6α,7α-dihydroxycleroda-3,13-dien-15,16-olid-18-oate	CO_2Me	αMe	αOH	αOH	H	—	—		
548	clerodermic acid	CO_2H	αMe	H	H	H	—	—	*Clerodendrum inerm*	*Phytochemistry*, 1990, **29**, 3671-3673
549	(-)-12,16-dihydroxy-*cis*-cleroda-3,13-dien-15-oic acid-15,16-olide	CO_2H	βMe	H	H	OH	—	—	*Croton schiedeanus*	*Phytochemistry*, 1999, **51**, 643-649
550	conyhypolide A	CO_2H	αMe	H	αOH	OH	—	—	*Conyza hypoleuca*	*Phytochemistry* 1991, **30**, 575-581
551	16α-hydroxy-cleroda-3,13*Z*-diene-15,16-olide	Me	αMe	H	H	αOH	—	—	*Polyalthia longifolia*	*Fitoterapia*, 2005, **76**, 336-339
552	16α-methoxycleroda-3,13*Z*-dien-16,15-olide	Me	αMe	H	H	αOMe	—	—		*J. Nat. Prod.*, 1992, **55**, 256-258
553	7-oxo-*ent*-clerodan-3,13-dien-15,16-olide	Me	αMe	H	=O	H	—	—	*Platychaete aucheri*	*Phytochemistry*, 1990, **29**, 985-987
554	6-hydroxy-7-oxo-*ent*-clerodane-3,13-dien-l5,16-olide	Me	αMe	αOH	=O	H	—	—		
555	thymonin	CH_2OH	αCH_2OH	αOH	H	H	—	—	*Salvia thymoides*	*Phytochemistry*, 1997, **46**, 1249-1254
556	7β-hydroxythymonin	CH_2OH	αCH_2OH	αOH	βOH	H	—	—		
557	soulidiol	CH_2OH	αCH_2OH	H	H	H	—	—	*Aster souliei*	*Chin. Chem. Lett.*, 1996, **7**, 619-620
558	solidagoic acid H	Me	—	—	—	—	—	—	*Solidago virgaurea*	*Phytochemistry*, 2010, **71**, 104–109
559	solidagoic acid I	CH_2OAng	—	—	—	—	—	—		
560	solidagoic acid C	Me	αCO_2H	H	H	αMe	βMe	H		
561	solidagoic acid D	CH_2OAng	αCO_2H	H	H	αMe	βMe	H		
562	solidagoic acid E	Me	αCO_2H	H	H	αMe	βMe	OH		
563	solidagoic acid F	CH_2OAng	αCO_2H	H	H	αMe	βMe	OH		
564	solidagoic acid G	Me	αCO_2H	H	H	αMe	βMe	OMe		
565**	methyl 6,15-dihydroxycleroda-3,13-dien-16,15-olid-18-oate	CO_2Me	αMe	αOH	H	αMe	αMe	OH	*Pulicaria wightiana*	*Helv. Chim. Acta.*, 2008, **91**, 2081-2088
566	(-)-6β-hydroxy-5β,8β,9β,10α-cleroda-3,13-dien-16,15-olid-18-oic acid	CO_2H	βMe	βOH	H	βMe	βMe	H	*Duranta repens*	*Chem. Pharm. Bull.*, 2004, **52**, 785-789
567	(+)-3,13-clerodadien-16,15-olid-18-oic acid	CO_2H	βMe	H	H	βMe	βMe	H		
568	(+)-7β-acetoxy-18-oxo-3,13-clerodadien-16,15-olide	CHO	βMe	H	βOAc	βMe	βMe	H	*Sindora sumatrana*	*Chem. Pharm. Bull.*, 1994, **42**,

569	(+)-7β-acetoxy-3,13-clerodadien-16,15-olid-18-oic acid	CO_2H	βMe	H	βOAc	βMe	βMe	H		1202-1207
570	(+)-7β-acetoxy-16-hydroxy-3,13-clerodadien-16,15-olid-18-oic acid	CO_2H	βMe	H	βOAc	βMe	βMe	OH		
571	scapanialide A	—	—	—	—	—	—	—	*Scapania parva*	*Phytochem. Lett.*, 2012, **5**, 535–540
572	scapanialide C	H	βOH	βMe	OH	—	—	—		
573	2-oxo-5α,8α-cleroda-3,13-dien-16,15-olide	=O	H	αMe	H	—	—	—	*Vellozia bicolor*	*Phytochemistry*, 1994, **37**, 1115-1117
574	scutebata A	—	—	—	—	—	—	—	*Scutellaria barbata*	*J. Nat. Prod.*, 2010, **73**, 233-236
575	trinerolactone	—	—	—	—	—	—	—	*Baccharis trinervis*	*Phytochemistry*, 1993, **34**, 1377-1384

[*] Compound's name indicates 10α H; however, compound's structure was presented as an *ent*-clerodane with a 10β H in *Phytochem. Lett.*, 2014, **8**, 10-15.

[**] C-10 H should be β

3.2.2. Type III Subtype IIb with Double Bonds in Other Positions (Tables 17 & 18)



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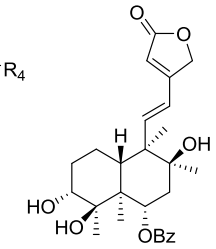

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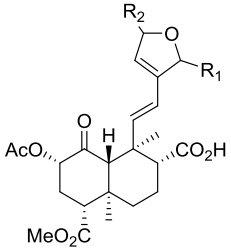

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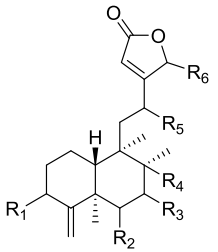

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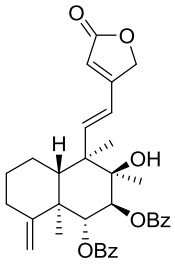

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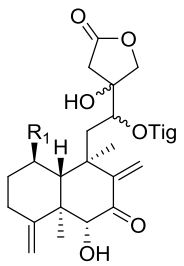

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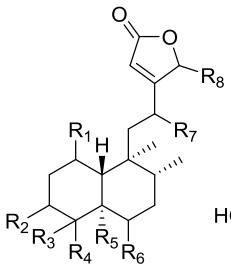
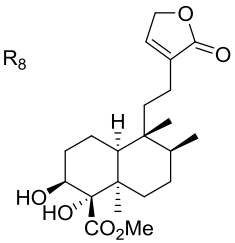


601-610



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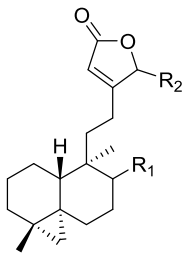


612-614

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	Source	Ref.
576	16ζ-hydroxycleroda-3,11(*E*),13-trien-15,16-olide	H	H	H	OH	–	–	*Callicarpa americana*	*J. Nat. Prod.*, 2007, **70**, 372-377
577	barbatin C	αOH	βOH	βOH	H			*Scutellaria barbata*	*J. Integr. Plant Biol.*, 2008, **50**, 699-702, *Fitoterapia*, 2010, **81**, 737-741, *Planta Med.*, 2011, **77**, 1536-1541, *Phytochemistry*, 2006, **67**, 1326-1330, *Planta Med.*, 2007, **73**, 1217-1220, *J. Asian Nat. Prod. Res.*, 2010, **12**, 859-864
578	barbatin D	αOBz	βOBz	βOH	H	–	–		
579	barbatin E	Y_4	M_1	βOH	H	–	–		
580	scutebata I	αOAc	βOH	βOH	H	–	–		
581	scutebata J	αOBz	βOH	βOH	H	–	–		
582	scutebata K	αY_9	βOH	βOH	H	–	–		
583	6,7-di-*O*-acetoxybarbatin A	αOAc	βOAc	βOH	H	–	–		
584	6-(2,3-epoxy-2-isopropyl-*n*-propoxy)barbatin C	αM_2	βOH	βOH	H	–	–		
585	6-acetoxybarbatin C	αOAc	βOH	βOH	H	–	–		

586	scuterivulactone D	H	–	–	–			*Scutellaria rivularis*	*Chem. Pharm. Bull.*, 1997, **45**, 152-160
587	salvidivin C	OH	=O	–	–			*Salvia divinorum*	*J. Nat. Prod.*, 2006, **69**, 1782-1786
588	salvidivin D	=O	OH	–	–				
589	(-)-3α,16α-dihydroxycleroda-4(18),13(14)*Z*-dien-15,16-olide	αOH	H	H	H	H	αOH	*Polyalthia longifolia*	*Nat. Prod. Res.*, 2010, **24**, 1687-1694
590	3β,16α-dihydroxycleroda-4(18),13(14)*Z*-dien-15,16- olide	βOH	H	H	H	H	αOH	*Polyalthia barnesii*	*Phytochemistry* 1994, **37**, 1659-1662
591	cleroda-4(18),13-dien-16,15-olide*	H	H	H	H	H	H	*Polyalthia longifolia*	*Phytochemistry* 1995, **38**, 189-194.
592	16-hydroxycleroda-4(18),13-dien-16,15-olide*	H	H	H	H	H	OH (α/β 1:1)		
593	—	H	H	H	H	H	βOH		*Pharmazie*, 1995, **50**, 227-228
594	16(*R*&*S*)-methoxycleroda-4(18),13-dien-15,16-olide	H	H	H	H	H	OMe	*Polyalthia longifolia* var. *pendula*	*Molecules*, 2014, **19**, 2049-2060
595	3α,12(*S*)-dihydroxy-cleroda-4(18),13-dien-15,16-olide	βOH	H	H	H	βOH	H	*Callicarpa americana*	*J. Nat. Prod.*, 2007, **70**, 372-377
596	Scutebaicalin	H	αOBz	βOBz	βOH	H	H	*Scutellaria baicalensis*	*Phytochemistry*, 1996, **43**, 835-837
597	scutebata L	–	–	–	–	–	–	*Scutellaria barbata*	*Planta Med.*, 2011, **77**, 1536-1541
598	calcicolin A	OiBu	–	–	–	–	–	*Glossocarya calcicola*	*Phytochemistry*, 2005, **66**, 2844-2850
599	calcicolin B	OTig	–	–	–	–	–		
600	calcicolin C	Y_1	–	–	–	–	–		

*****Compounds' names (16,15-olide) and structures (15,16-olide) are shown as given in *Phytochemistry* 1995, **38**, 189-194.

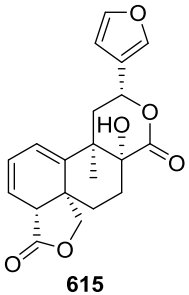
Table 18. Type III Subtype IIb continued

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	Source	Ref.
601	(12*S*)-6α,18,19-triacetoxy-4α,12-dihydroxy-1β-tigloyloxy-*neo*-clerod-13-en-15,16-olide	βOTig	H	βCH_2OAc	αOH	CH_2OAc	βOAc	βOH	H	*Ajuga ciliate*	*Fitoterapia*, 2011, **82**, 1123-1127
602	ajugaciliatin I	H	H	βCH_2OAc	αOH	CH_2OTig	βOH	H	H		*J. Nat. Prod.*, 2011, **74**, 1575–1583
603	ajugaciliatin J	H	H	βCH_2OTig	αOH	CH_2OH	βOH	H	H		
604	(12*S*)-18,19-diacetoxy-4α,6α,12-trihydroxy-1β-tigloyloxy-*neo*-clerod-13-en-15,16-olide	βOTig	H	βCH_2OAc	αOH	CH_2OAc	βOH	βOH	H	*Ajuga decumbens*	*Planta Med.*, 2012, **78**, 1579-1583
605	4α,6α-dihydroxy-18-(4′-methoxy-4′-oxobutyryloxy)-19-tigloyloxy-*neo*-clerod-13-en-15,16-olide	H	H	βCH_2X_7	αOH	CH_2OTig	βOH	βH	H		

606	6α,18-diacetoxy-4α-hydroxy-19-tigloyloxy-*neo*-clerod-13-en-15,16-olide	H	H	βCH$_2$OAc	αOH	CH$_2$OTig	βOAc	H	H	*Ajuga ciliate*	*Phytochem. Lett.*, 2012, **5**, 563-566
607	ajugalide D	H	H	H	αCO$_2$Me	Me	αOH	αOH	H	*Ajuga taiwanensis*	*Chem. Pharm. Bull.*, 2005, **53**, 164-167
608	ajugacumbin F	H	H	βCH$_2$OH	αOH	CH$_2$OTig	αOH	H	H	*Ajuga decumbens*	*Chem. Pharm. Bull.*, 1990, **38**, 3167-3168
609	4β,16α-dihydroxy-cleroda-13(14)*Z*-en-15,16-olide	H	H	βOH	αMe	Me	H	H	αOH	*Polyalthia barnesii*	*Phytochemistry* 1994, **37**, 1659-1662
610	16-hydroxycleroda-13-ene-15,16-olide-3-one	H	=O	H	αMe	Me	H	H	OH	*Polyalthia longifolia* var. *pendula*	*Planta Med.*, 2006, **72**, 1344-1347
611	methyl(1α,4αa,5α,6*β*,8aα)-5-[2-(3-furan-3-ene-2-one)ethyl]-1,2,3,4,4a,5,6,7,8,8a-decahydro-1,2-dihydroxy-1-naphthalene carboxylate	–	–	–	–	–	–	–	–	*Tinospora rumphii*	*J. Nat. Prod.*, 2000, **63**, 509-511
612	dytesinin A	αMe	OH	–	–	–	–	–	–	*Cystodytes* sp	*Tetrahedron* 2000, **56**, 7923-7926
613	dytesinin B	αMe	H	–	–	–	–	–	–		
614	echinoclerodane A	βMe	OH	–	–	–	–	–	–	*Echinomuricea sp*	*Molecules*, 2012, **17**, 9443-9450

4. Type IV with a 5-(3-Furyl)-δ-valerolactone-based Side Chain at C-9

4.1. Type IV Subtype I with *O*-Containing Rings (Table 19)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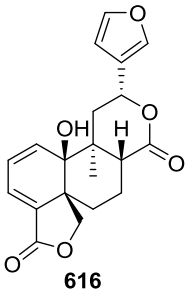
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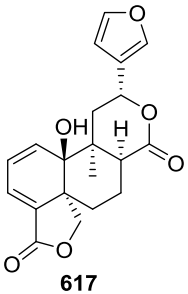
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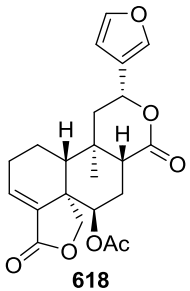
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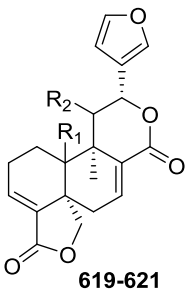
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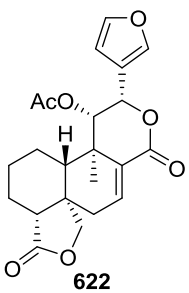
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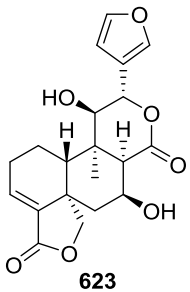
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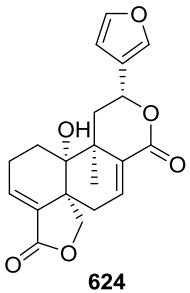
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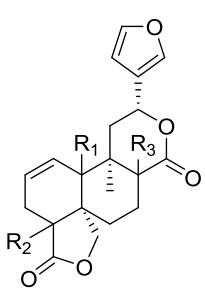
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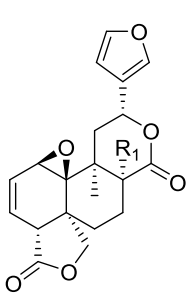
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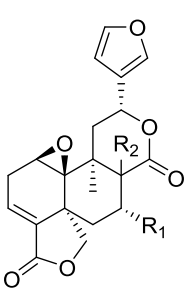
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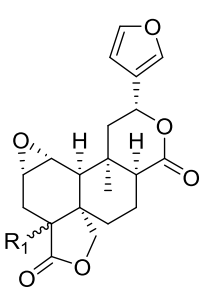
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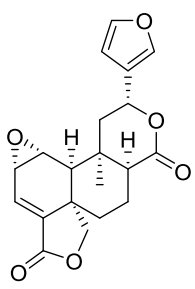
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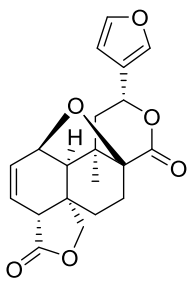
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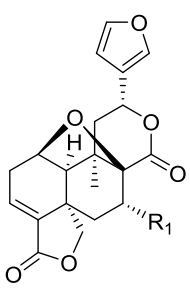
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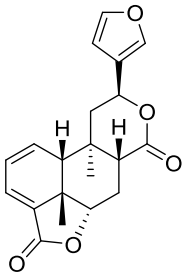
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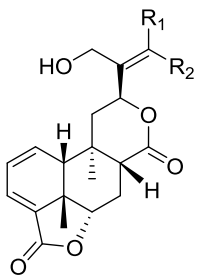
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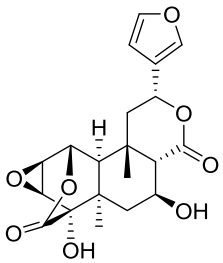
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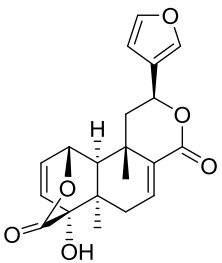
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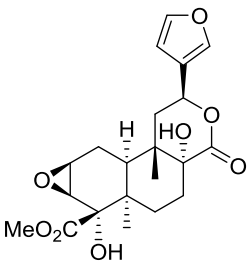
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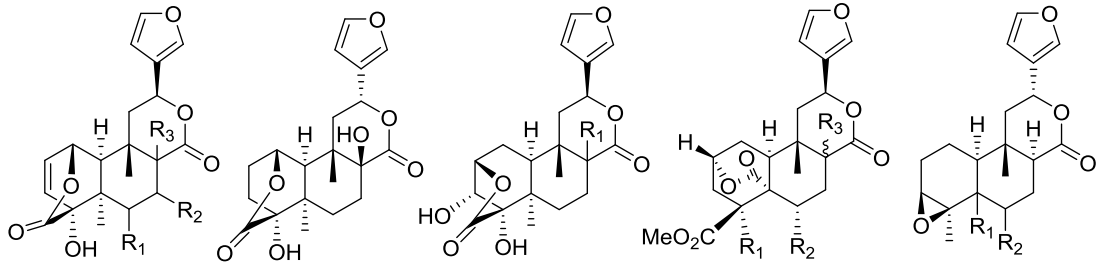
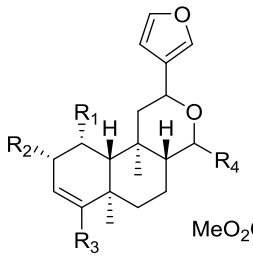


644-646 647 648,649 650-653 654,655

No.	Compound Name	R_1	R_2	R_3	Source	Ref.
615	tehuanin D	—	—	—	*Salvia herbacea*	*J. Nat. Prod.*, 2012, **75**, 951-958
616	salvimicrophyllin C	—	—	—	*Salvia microphylla*	*J. Nat. Prod.*, 2014, **77**, 1088-1092
617	salvimicrophyllin D	—	—	—		
618	dugesin E	—	—	—	*Salvia dugesii*	*Nat. Prod. Bioprospect.*, 2011, **1**, 81-86
619	*ent*-(5*R*,9*R*)-15,16-epoxy-l0*S*-hydroxy-cleroda-3,13(16),14-triene-17,12*S*;18,19-diolide	αOH	H	—	*Salvia haenkei*	*Tetrahedron*, 1997, **53**, 14719-14728
620	—	βH	αOH	—	*Salvia miniata*	*Phytochemistry*, 2011, **72**, 265-275
621	—	βOH	H	—		
622	—	—	—	—		
623	—	—	—	—		
624	*ent*-(5*R*,9*R*)-15,16-epoxy-10*S*-hydroxycleroda-3,7,13(16),14-tetraene-17,12*S*,18,19-diolide	—	—	—	*Salvia haenkei*	*Tetrahedron*, 1997, **53**, 14719-14728
625	*ent*-(4*S*,5*R*,9*S*,10*R*)-15,16-epoxycleroda-1,13(16),14-trien-17,12*S*;18,19-diolide	αH	αH	αH		
626	infuscatin	βOH	βOH	αOH	*Salvia infuscata*	*Phytochem. Anal.*, 1994, **5**, 302-304
627	tehuanin E	OH	—	—	*Salvia herbacea*	*J. Nat. Prod.*, 2012, **75**, 951-958
628	1β,10β-epoxysalviarin	H	—	—		
629	tehuanin F	OH	βH	—		
630	tehuanin G	H	αOH	—		
631	tehuanin H	H	H	—		
632	lα,2α-epoxy-3,4α-dihydrolinearolactone	αH	—	—	*Salvia reptans*	*Phytochemistry*, 1991, **30**, 2335-2338
633	polystachyne D	βH	—	—	*Salvia polystachya*	*Phytochemistry*, 2000, **53**, 103-109
634	polystachyne E	—	—	—		
635	tehuanin A	—	—	—	*Salvia herbacea*	*J. Nat. Prod.*, 2012, **75**, 951-958

636	tehuanin B	H	—	—		
637	tehuanin C	OH	—	—		
638	15,16-epoxy,1,3,13(16),14-clerodatetraene- 17,12:18,6-diolide	—	—	—	*Jamesoniella autumnalis*	*Phytochemistry*, 1998, **48**, 681-685
639	15-carboxy-8β,16-dihydroxy-1,3,13*E*-clerodatriene-17,12:18,6-diolide	CO_2H	H	—		
640	15-carboxy-8β,16-dihydroxy-1,3,13*Z*-clerodatriene-17,12:18,6-diolide	H	CO_2H	—		
641	fibrauretin A	—	—	—	*Fibraurea tinctoria*	*J. Nat. Prod.*, 2007, **70**, 1930-1933
642	tinospin E	—	—	—	*Tinospora sagittata*	*Chem. Pharm. Bull.*, 2012, **60**, 1324-1328
643	tinosporin A	—	—	—		*Phytochem. Lett.*, 2015, **12**, 173-176
644	tinosporin B	H	βOH	βH		
645	6-hydroxycolumbin	αOH	H	βH	*Penianthus zenkeri*	*Phytochemistry*, 1991, **30**, 1957-1962
646	6-hydroxyisocolumbin	αOH	H	αH		
647	epi-8-hydroxycolumbin	—	—	—	*Fibraurea tinctoria*	*Bioorg. Med. Chem.*, 2008, **16**, 9603-9609
648	fibrauretin B	αH	—	—		
649	fibrauretin C	βOH	—	—		
650	antadiosbulbin A	OH	H	αH	*Dioscorea antaly*	*Phytochemistry*, 2010, **71**, 1007-1013
651	antadiosbulbin B	OH	H	βH		
652	bafoudiosbulbin F	H	H	βOH	*Dioscorea bulbifera*	*Phytochemistry*, 2008, **69**, 2374-2379
653	bafoudiosbulbin G	H	αOAc	βOH		
654	3,4,15,16-diepoxy-cleroda-13(16),14-diene-12,17-olide	βMe	H	—	*Croton oblongifolius*	*Phytochem. Lett.*, 2011, **4**, 147-150
655	ravidin A	αMe	=O	—	*Nannoglottis ravida*	*Phytochemistry*, 2004, **65**, 2533-2537

4.2. Type IV Subtype II Other Compounds (Table 20)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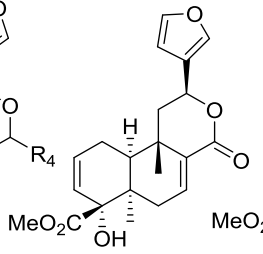
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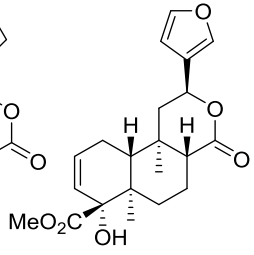
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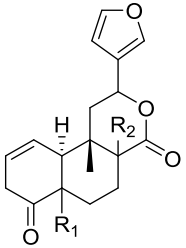
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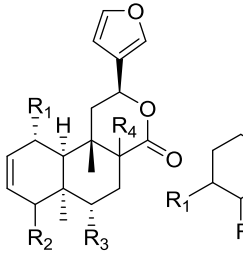
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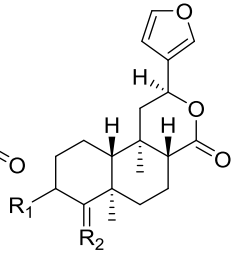
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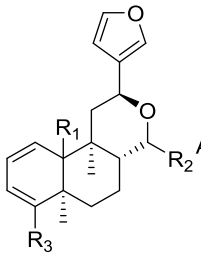
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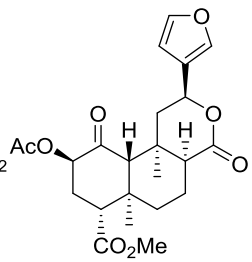
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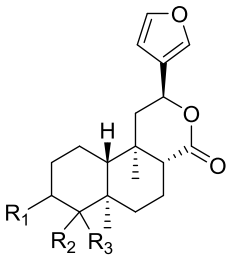
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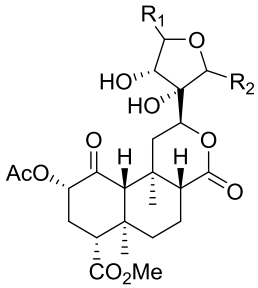
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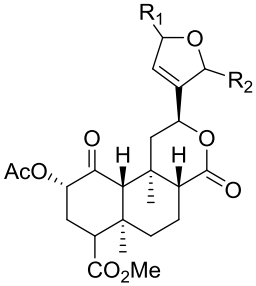
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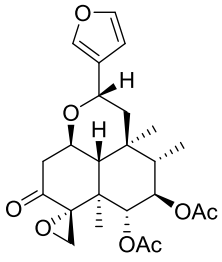
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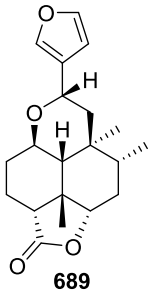
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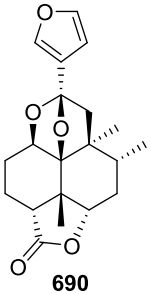
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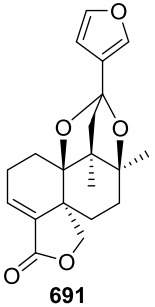
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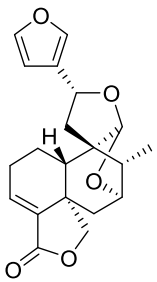
No.	Compound Name	R_1	R_2	R_3	R_4	Source	Ref.
656	microdon A	H	=O	Me	=O	*Gomphostemma microdon*	*Z. Naturforsch., B: J. Chem. Sci.*, 2009, **64**, 443-446
657	12-epi-methyl-barbascoate	H	H	CO_2Me	=O	*Croton ururucana*	*Phytochemistry*, 1998, **49**, 171-174
658	17-oxo-1,2-dihydrowelwitschic acid	H	H	CO_2H	=O	*Conyza welwitschii*	*Phytochemistry*, 1990, **29**, 2247-2252
659	salvinorin C	OAc	OAc	CO_2Me	=O	*Salvia divinorum*	*Org. Lett.*, 2001, **3**, 3935-3937
660	salvinorin D	OAc	OH	CO_2Me	=O		*J. Nat. Prod.*, 2003, **66**, 703-705
661	salvinorin E	OH	OAc	CO_2Me	=O		
662	salvinorin F	OH	H	CO_2Me	=O		
663	salvinorin H	OH	OH	CO_2Me	=O		*J. Nat. Prod.*, 2006, **69**, 1782-1786
664	salvinorin I	OH	OH	CO_2Me	βOH		
665	salvinorin J	OH	OAc	CO_2Me	α,β-OH		*J. Nat. Prod.*, 2009, **72**, 1361-1363
666	penianthic acid methyl ester	—	—	—	—	*Penianthus zenkeri*	*Phytochemistry*, 1991, **30**, 1957-1962
667	8-epicordatin	—	—	—	—	*Croton palanostigma*	*J. Braz. Chem. Soc.*, 2010, **21**, 731-739
668	tinocallone A	βMe	βH	—	—	*Tinospora capillipes*	*Chin. Chem. Lett.*, 1992, **3**, 185-188
669	tinocallone B	αMe	αH	—	—		

670	tinocallone C	H	=O	H	βH		
671	tinocallone D	H	=O	H	αH		
672	tincordin	OH	=O	OH	βH	*Tinospora cordifolia*	*Nat. Prod. Res.*, 2013, **27**, 1431-1436
673	crotonolide E	=O	αMe	—	—	*Croton laui*	*J. Nat. Prod.*, 2014, **77**, 1013-1020
674	crotonolide F	αOH	CH_2	—	—		
675	—	αH	=O	CO_2Me	—	*Croton jimenezii*	*Ingenieria Y Ciencia Quimica*, 2000, **19**, 68-73
676	—	βH	=O	CO_2Me	—		
677	17-oxo-10-epi-welwitschic acid	αH	=O	CO_2H	—	*Conyza welwitschii*	*Phytochemistry*, 1990, **29**, 2247-2252
678	17-oxo-welwitschic acid	βH	=O	CO_2H	—		
679	17α-hydroxywelwitschic acid	βH	αOH	CO_2H	—		
680	17β-hydroxywelwitschic acid	βH	βOH	CO_2H	—		
681	2-epi-8-epi-salvinorin A	—	—	—	—	the smoke of salvinorin A	*Tetrahedron Lett.*, 2010, **51**, 5207-5209
682	methyl 3-oxo-12-epibarbascoate	=O	H	CO_2Me	—	*Croton urucurana*	*J. Braz. Chem. Soc.*, 2013, **24**, 609-614.
683	furocrotinsulolide A	αOH	βOH	αMe	—	*Croton insularis*	*Helv. Chim. Acta.*, 2005, **88**, 2654-2660
684	salvinicin A	βOMe	βOMe	—	—	*Salvia divinorum*	*Org. Lett.*, 2005, **7**, 3017-3020
685	salvinicin B	αOMe	αOMe	—	—		
686	salvidivin A	=O	OH	—	—		*J. Nat. Prod.*, 2006, **69**, 1782-1786
687	salvidivin B	OH	=O	—	—		
688	cornutin A	—	—	—	—	*Cornutia grandifolia*	*J. Org. Chem.*, 1992, **57**, 862-866
689	1β,12:15,16-diepoxy-*cis*-*ent*-cleroda-13(16),14-dien-18α,6α-olide	—	—	—	—	*Adelanthus lindenbergianus*	*Phytochemistry*, 2004, **65**, 127–137
690	orcadensin	—	—	—	—		
691	salvianduline D	—	—	—	—	*Salvia miniata*	*Phytochemistry*, 2011, **72**, 265-275

5. Type V with an α-Spiro-attached 4-(3-Furyl)-γ-butyrolactone-based Side Chain at C-9

5.1. Type V Subtype I with Various *O*-Containing Rings (Table 21)



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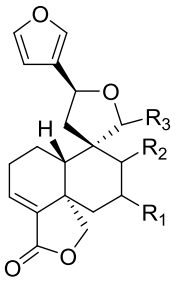

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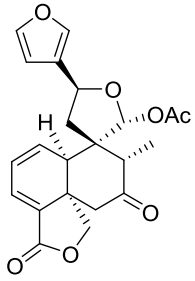

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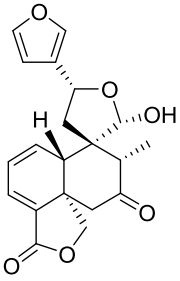

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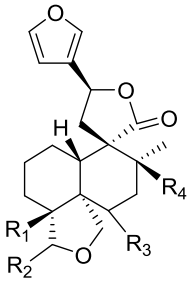

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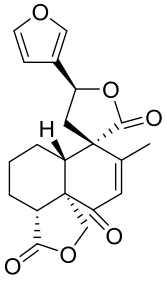

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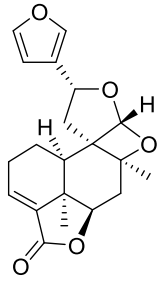

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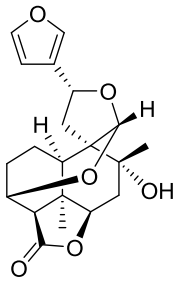

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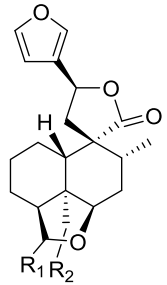

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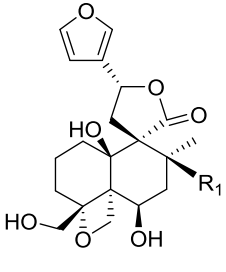

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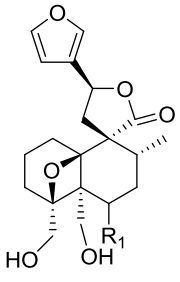

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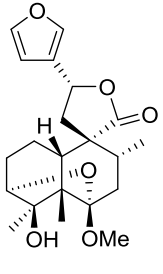

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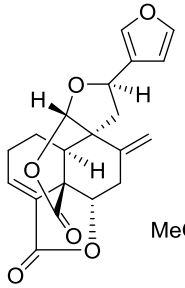

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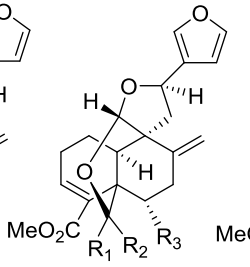

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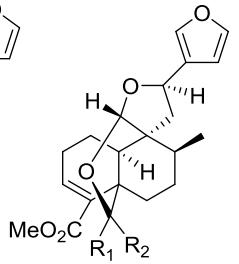
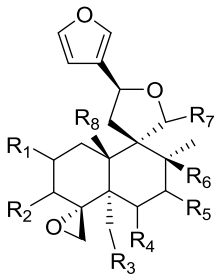


718,719

No.	Compound Name	R_1	R_2	R_3	R_4	Source	Ref.
692	*trans*-1,2-dihydrosalvifaricin	—	—	—	—	*Salvia fulgens*	*J. Nat. Med.*, 2006, **60**, 58-63
693	—	=O	βMe	αOAc	—	*Salvia miniata*	*Phytochemistry*, 2011, **72**, 265-275
694	—	αOH	αMe	βOAc	—		
695	salvifolin	—	—	—	—	*Salvia tiliaefolia*	*J. Org. Chem.*, 1990, **55**, 3522-3525
696	dugesin F	—	—	—	—	*Salvia dugesii*	*Nat. Prod. Bioprospect.*, 2011, **1**, 81-86
697	teupolin XII	H	βOMe	βOH	H	*Teucrium polium*	*Phytochemistry*, 2011, **72**, 2037-2044
698	teucvisin A	OH	=O	αOH	H	*Teucrium viscidum*	*Chem. Pharm. Bull.*, 2014, **62**, 472-476
699	teuperninB	H	=O	=O	OH	*Teucrium perny*	*Phytochemistry*, 1991, **30**, 1963-1966
700	teuperninC	H	=O	βOH	OH		

701	teupernin A	—	—	—	—		
702	cephaloziellin A	—	—	—	—	*Cephaloziella kiaeri*	*J. Nat. Prod.*, 2013, **76**, 1700-1708
703	cephaloziellin B	—	—	—	—		
704	teupolin X	αOH	OH	—	—	*Teucrium polium*	*Phytochemistry*, 2011, **72**, 2037-2044.
705	teupolin XI	αOMe	OH	—	—		
706	teucvisin B	=O	OAc	—	—	*Teucrium viscidum*	*Chem. Pharm. Bull.*, 2014, **62**, 472-476
707	12-*epi*-montanin D	H	—	—	—	*Teucrium maghrebinum*	*J. Nat. Prod.*, 2000, **63**, 1029-1031
708	teusandrin C	OH	—	—	—	*Teucrium sandrasicum*	*Phytochemistry*, 1997, **45**, 1653-1662
709	teusandrin D	H	—	—	—		
710	teusandrin E	=O	—	—	—		
711	teusandrin F	αOH	—	—	—		
712	4β-hydroxy-3α,6α,15,16-bis-epoxy-6β-methoxy-*cis*-clerodane-13(16),14-dien-20,12-olide	—	—	—	—	*Pteronia eenii*	*Phytochemistry*, 1990, **29**, 1231-1245
713	crotonolide A	—	—	—	—	*Croton laui*	*J. Nat. Prod.*, 2014, **77**, 1013-1020
714	crotonolide B	H	OH	H	—		
715	isocrotonolide B	OH	H	H			
716	crotonolide C	H	OH	OAc	—		
717	isocrotonolide C	OH	H	OAc			
718	crotonolide D	H	OH	—	—		
719	isocrotonolide D	OH	H	—	—		

5.2. Type V Subtype II with 4,18-; 3,4-; or 8,17-Oxirane Moieties (Table 22)



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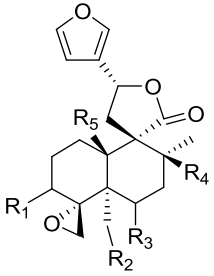

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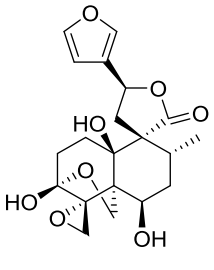

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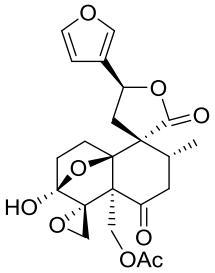

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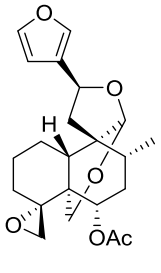

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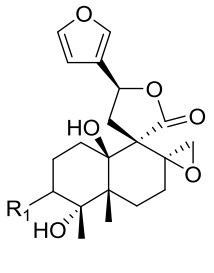

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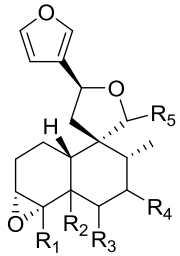

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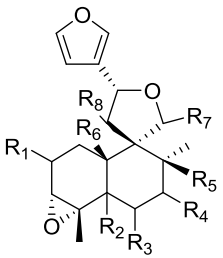

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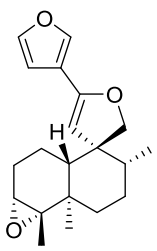

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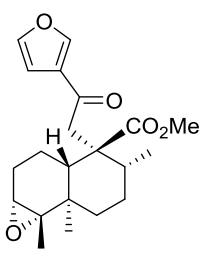

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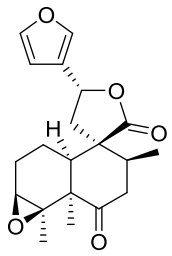

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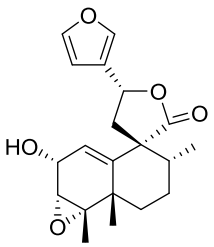


767

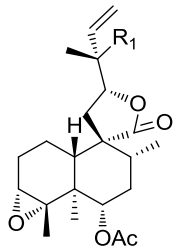
No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	Source	Ref.
720	teumassin	OH	H	OAc	=O	H	H	=O	H	*Teucrium massiliense*	*Phytochemistry*, 1992, **31**, 4366-4367
721	4α,18-epoxy-tafricanin A	H	=O	OAc	=O	H	H	=O	H	*Teucrium pestalozzae*	*Phytochemistry*, 1990, **29**, 988-989
722	20-oxo-teuflavin	H	=O	OAc	βOH	H	H	=O	H		
723	teutrifidin	H	=O	OAc	=O	βOH	H	=O	H	*Teucrium trifidum*	*Phytochemistry*, 1994, **36**, 1549-1550
724	3-*O*-deacetylteugracilin A	H	βOH	OAc	βOH	H	H	=O	H	*Teucrium gracile*	*Phytochemistry*, 1991, **30**, 3693-3697
725	teugracilin A	H	βOAc	OAc	βOH	H	H	=O	H		
726	teugracilin B	H	βOH	OAc	αOH	H	H	=O	H		

727	teusandrin A	H	H	OAc	αOAc	H	OH	=O	OH	*Teucrium sandrasicum*	*Phytochemistry*, 1997, **45**, 1653-1662
728	teusandrin B	H	H	OAc	αOH	H	OH	=O	OH		
729	3-deacetylteumicropodine	H	βOAc	OAc	αOH	H	H	=O	H	*Teucrium polium*	*Phytochemistry*, 1994, **37**, 1663-1666
730	3,20-bis-diacetylteupyreinidine	H	βOH	OAc	αOAc	H	H	αOH	H		
731	6,20-bis-deacetylteupyreinidine	H	βOAc	OAc	αOH	H	H	αOH	H		
732	3,6,20-tri-deacetyl-teupyreinidine	H	βOH	OAc	αOH	H	H	αOH	H		
733	10-hydroxyteucjaponin B	H	H	OAc	βOH	H	H	=O	OH	*Teucrium fruticans*	*Phytochemistry*, 2005, **66**, 2298-2303
734	6-acetyl-10-hydroxyteucjaponin B	H	H	OAc	βOAc	H	H	=O	OH		
735	6-acetylteucjaponin B	H	H	OAc	βOAc	H	H	=O	H		
736	12-*epi*-teupyreinin	H	βOAc	OAc	αOAc	H	H	=O	H	*Teucrium nudicaule*	*Nat. Prod. Res.*, 1996, **8**, 189-197
737	teubutilin B	H	H	OAc	αOAc	H	H	βOAc	H	*Teucrium abutiloides*	*Phytochemistry*, 1990, **29**, 579-584
738	teucrasiatin	H	H	OAc	=O	H	H	αOH	H	*Teucrium asiaticum*	*Phytochemistry*, 1996, **43**, 435-438
739	teugracilin D	H	βOH	OAc	αOH	H	H	αOAc	H	*Teucrium gracile*	*Phytochemistry*, 1992, **31**, 3531-3534
740	teucryemin	H	βOH	OH	βOAc	H	H	=O	H	*Teucrium yemense*	*Phytochemistry*, 1995, **40**, 1737-1741
741	19-*O*-acetylteucryemin	H	βOH	OAc	βOAc	H	H	=O	H		
742	teucryeminone	βOAc	OAc	=O	H	βH	—	—	—		
743	12-*epi*-teucjaponin A	H	OAc	βOH	H	βH	—	—	—	*Teucrium maghrebinum*	*J. Nat. Prod.*, 2000, **63**, 1029-1031
744	sandrasin A	H	OAc	αOAc	OH	βOH	—	—	—	*Teucrium*	*Phytochemistry*,

745	6-deacetylsandrasin A	H	OAc	αOH	OH	βOH	—	—	—	*sandrasicum*	1996, **42**, 775-778
746	teubrevin C	βOAc	OAc	=O	H	H	—	—	—	*Teucrium brevifolium*	*Tetrahedron*, 1995, **51**, 837-848
747	teubrevin D	βOAc	OAc	=O	OH	OH	—	—	—		
748	teupestalin A	—	—	—	—	—	—	—	—	*Teucrium pestalozzae*	*Phytochemistry*, 1990, **29**, 2229-2233
749	teupestalin B	—	—	—	—	—	—	—	—		
750	teubutilin A	—	—	—	—	—	—	—	—	*Teucrium abutiloides*	*Phytochemistry*, 1990, **29**, 579-584
751	3α-angeloyloxy-4β,10β-dihydroxy-8β,17,15,16-bis-epoxy-*cis*-clerodane-13(16),14-dien-20,12-olide	αOAng	—	—	—	—	—	—	—	*Pteronia incana*	*Phytochemistry*, 1990, **29**, 1231-1245
752	3α-acetoxy-4β,10β-dihydroxy-8β,17,15,16-bis-epoxy-*cis*-clerodane-13(16),14-dien-20,12-olide	αOAc	—	—	—	—	—	—	—		
753	3α,4β,10β-trihydroxy-8β,17,15,16-bis-epoxy-*cis*-clerodane-13(16),14-dien-20,12-olide	αOH	—	—	—	—	—	—	—		
754	korberin A	βCO_2Me	αMe	αCO_2Me	H	=O	—	—	—	*Croton lechleri*	*Phytochemistry*, 1993, **34**, 265-268
755	—	βMe	βMe	H	=O	=O	—	—	—	*Nardophyllum lanantum*	*Phytochemistry*, 1990, **29**, 1227-1230
756	eluterin J	H	αMe	H	αOAc	H	H	H	=O	*Croton eluteria*	*J. Agric. Food Chem.*, 2002, **50**, 5131-5138
757	eluterin I	H	αMe	H	αOAc	H	H	βOAc	H		
758	3α,4α-epoxy-6-oxo-15,16-epoxy-8β,10βH-*cis*-clerodane-13(16),14-dien-20,12-olide	H	βMe	=O	H	H	H	=O	H	*Pteronia eenii*	*Phytochemistry*, 1990, **29**, 1231-1245
759	3α,4α-epoxy-8β-hydroxy-6-oxo-15,16-epoxy-*cis*-clerodane-13(16),14-dien-20,12-olide	H	βMe	=O	H	OH	H	=O	H		
760	2α-hydroxy-3α,4α,15,16-bis-epoxy-8β,10βH-*ent*-cleroda-13(16),14-diene-20,12-olide	αOH	βMe	H	H	H	H	=O	H	*Microglossa pyrrhopappa*	*Phytochemistry*, 1990, **29**, 3233-3241
761	6β,10β-dihydroxy-3α,4α,15,16-bis-epoxy-8βH-cleroda-13(16),14-diene-20,12-olide	H	βMe	βOH	H	H	OH	=O	H		
762	6β-angeloyloxy-10β-hydroxy-3α,4α,15,16-bis-epoxy-8βH-cleroda-13(16),14-diene-20,12-olide	H	βMe	βOAng	H	H	OH	=O	H		

763	6β-[2-methylbutyryloxy]-10β-hydroxy-3α,4α,15,16-bis-epoxy-8βH-cleroda-13(16),14-diene-20,12-olide	H	βMe	βMeBu	H	H	OH	=O	H		
764	crotonpene A	—	—	—	—	—	—	—	—	*Croton yanhuii*	*Fitoterapia*, 2014, **95**, 229-233
765	crotonpene B	—	—	—	—	—	—	—	—		
766	ravidin B	—	—	—	—	—	—	—	—	*Nannoglottis ravida*	*Phytochemistry*, 2004, **65**, 2533-2537
767	2α-hydroxy-3α,4α,15,16-bis-epoxy-8βH-*ent*-cleroda-1(10),13(16),14-diene-20,12-olide	—	—	—	—	—	—	—	—	*Microglossa pyrrhopappa*	*Phytochemistry*, 1990, **29**, 3233-3241

5.3. Type V Subtype III with a C-9-Spiro-γ-lactol Moiety (Table 23)



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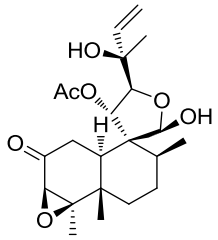

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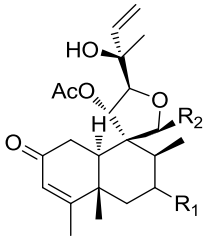
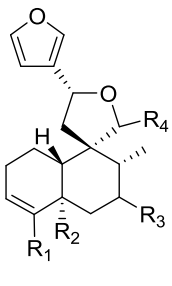


771-773

No.	Compound Name	R_1	R_2	Source	Ref.
768	heteroscypholide A	βOAc	—	*Heteroscyphus planus*	*Phytochemistry*, 1996, **41**, 581-587
769	heteroscypholide B	βOH	—		
770	heteroscyphone A	—	—		*Phytochemistry*, 1995, **38**, 119-127
771	heteroscyphone B	H	βOH		
772	heteroscyphone C	H	H		
773	heteroscyphone D	βOH	βOH		

5.4. Type V Subtype IV Other Compounds (Table 24)



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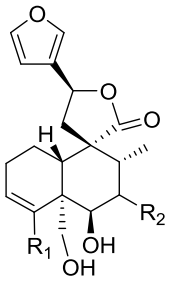
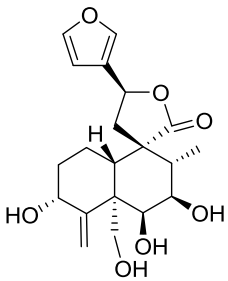


776,777



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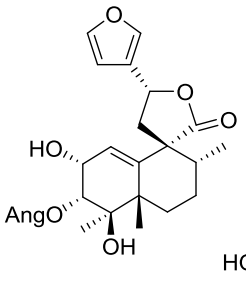

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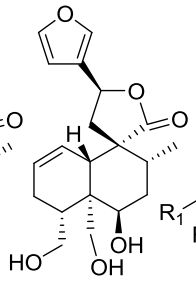

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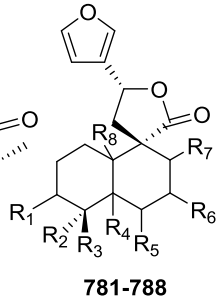

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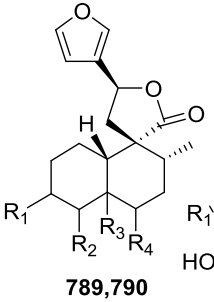
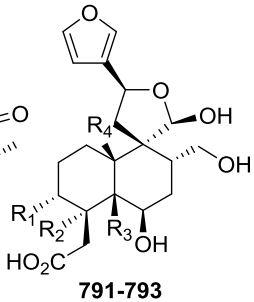


789,790



791-793

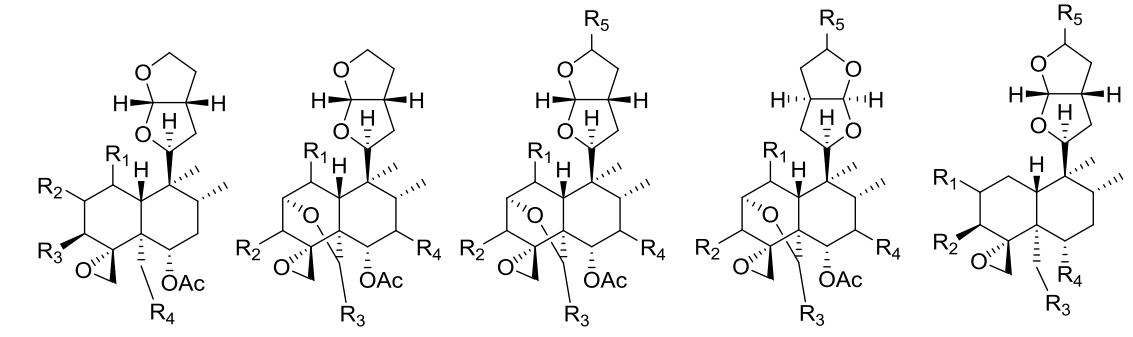
No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	Source	Ref.
774	eluterin H	Me	Me	αOAc	βOAc	—	—	—	—	*Croton eluteria*	*J. Agric. Food Chem.*, 2002, **50**, 5131-5138
775	crotocorylifuran	CO_2Me	CO_2Me	H	=O	—	—	—	—	*Croton haumanianus*	*Tetrahedron*, 1990, **46**, 5199-5202
776[a]	teupernin D	CO_2Me	H	—	—	—	—	—	—	*Teucrium pernyi*	*Phytochemistry*, 1993, **33**, 716-717
777	teulolin A	CH_2OH	βOH	—	—	—	—	—	—	*Teucrium polium*	*Phytochemistry*, 1999, **51**, 921-925
778	teulolin B	—	—	—	—	—	—	—	—		
779	3α-angeloyloxy-2α,4β-dihydroxy-15,16-epoxy-*cis*-clerodane-1(10),13(16),14-dien-20,12-olide	—	—	—	—	—	—	—	—	*Pteronia eenii*	*Phytochemistry*, 1990, **29**, 1231-1245
780	teupolin VI	—	—	—	—	—	—	—	—	*Teucrium polium*	*Phytochemistry*, 2011, **72**, 2037-2044
781	sandrasin B	H	OH	CH_2OH	αCH_2OH	=O	H	αMe	αOH	*Teucrium sandrasicum*	*Phytochemistry*, 1996, **42**, 775-778
782	3α,4β,8β,10β-tetrahydroxy-15,16-epoxy-*cis*-clerodane-13(16),14-dien-20,12-olide	αOH	Me	OH	βMe	H	H	αMe	βOH	*Pteronia eenii*	*Phytochemistry*, 1990, **29**, 1231-1245
783	3α-acetoxy-4β,8β,10β-trihydroxy-15,16-epoxy-*cis*-clerodane-13(16),14-dien-20,12-olide	αOAc	Me	OH	βMe	H	H	αMe	βOH		
784	3-oxo-4β,8β,10β-trihydroxy-15,16-epoxy-*cis*-clerodane-13(16),14-dien-20,12-olide	=O	Me	OH	βMe	H	H	αMe	βOH		
785	3α,4β,10β-trihydroxy-15,16-epoxy-*cis*-clerodane-8(17),13(16),14-dien-20,12-olide	αOH	Me	OH	βMe	H	H	$=CH_2$	βOH		

786	3-oxo-4β,10β-dihydroxy-15,16-epoxy-*cis*-clerodane-8(17),13(16),14-dien-20,12-olide	=O	Me	OH	βMe	H	H	$=CH_2$	βOH		
787	3α,4β,10β-trihydroxy-15,16-epoxy-*cis*-clerodane-13(16),14-dien-20,12-olide	αOH	Me	OH	βMe	H	H	αMe	βOH	*Pteronia incana*	
788	3α-angeloyloxy-4β,10β-dihydroxy-15,16-epoxy-*cis*-clerodane-8(17),13(16),14-dien-20,12-olide	αOAng	Me	OH	βMe	H	H	$=CH_2$	βOH		
789	korberin B	H	βCO_2Me	αMe	αCO_2Me	—	—	—	—	*Croton lechleri*	*Phytochemistry*, 1993, **34**, 265-268
790	teuctomentin	βOAc	αCH_2OH	αCH_2OH	βOH	—	—	—	—	*Teucrium tomentosum*	*Der Pharmacia Lettre*, 2014, **6**, 295-298
791	musabalbisiane A	OH	CO_2H	CHO	CHO	—	—	—	—	*Musa balbisiana*	*Phytochemistry*, 1992, **31**, 2173-2175
792	musabalbisiane B	OH	CHO	CO_2H	CH_2OH	—	—	—	—		
793	musabalbisiane C	OAng	CH_2OH	CH_2OH	CH_2OH	—	—	—	—		

[a] Compound **1025** in Table 29 was also given the name ‘teupernin D’.

6. Type VI with a Furofuran-based Side Chain at C-9

6.1. Type VI Subtype I with a Hexahydrofurofuran-based Side Chain at C-9 (Table 25)



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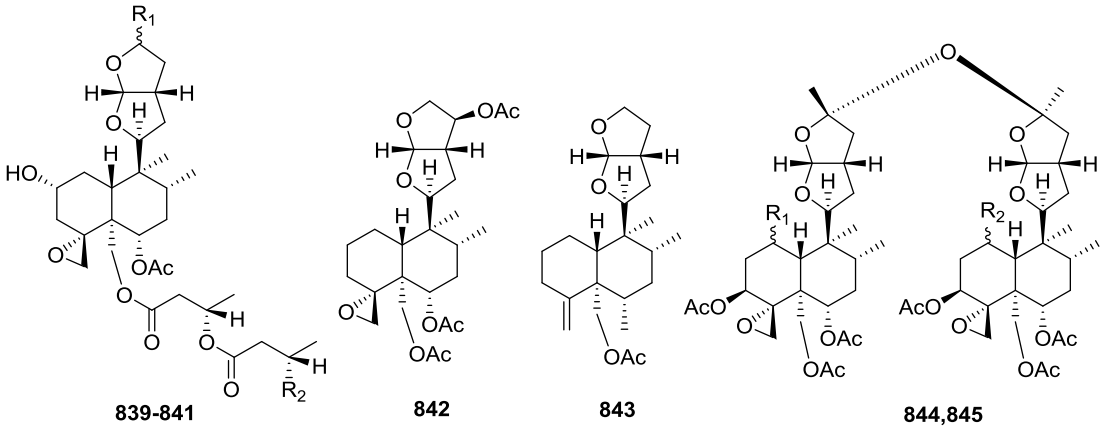


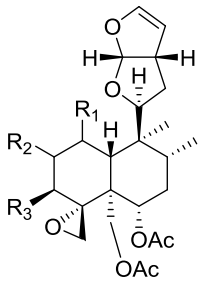
839-841 842 843 844,845

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	Source	Ref.
794	lupulin F	H	αOH	OPr	OAc	—	*Ajuga lupulina*	*Indian J. Chem.*, 1999, **38B**, 743-745
795	ajubractin C	H	H	MeBuO	OAc	—	*Ajuga bracteosa*	*J. Nat. Prod.*, 2011, **74**, 1036-1041
796	ajubractin D	H	αOH	OiBu	OAc	—		
797	ajubractin E	H	H	OH	OAc	—		
798	areptin A	βOH	αOAc	Y_1	OAc	—	*Ajuga reptans*	*Phytochemistry*, 1998, **49**, 2443-2447
799	ajugavensin A	βOY_1	H	H	OAc	—	*Ajuga genevensis*	*Phytochemistry*, 1991, **30**, 4083-4085

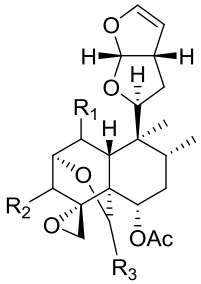
800	ajugavensin B	αOTig	H	H	OAc	—		
801	ajugavensin C	βOH	H	H	OTig	—		
802	3β-hydroxyajugavensin B	αOTig	H	OH	OAc	—	*Ajuga reptans*	*Phytochemistry*, 1998, **47**, 1227-1232
803	ajugorientin	βOTig	H	OH	OAc	—	*Ajuga orientalis*	*Phytochemistry*, 1997, **45**, 121-123
804	ajugapyrin A	βOH	H	βOTig	H	—	*Ajuga pyramidalis*	*Phytochemistry*, 1998, **47**, 303-305
805	14,15-dihydrojodrellin T	βOTig	H	OAc	H	—	*Scutellaria*	*Phytochemistry*, 1990, **29**, 1793-1796
806	scutegalin A	H	H	OTig	OTig	—	*galericulata*	*Phytochemistry*, 1993, **33**, 309-315
807	scutecyprin	H	H	βOTig	H	—	*Scutellaria cypria* var. *elatior*	*Phytochemistry*, 1993, **33**, 931-932
808	scutecolumnin B	H	H	βY_1	H	—	*Scutellaria columnae*	*Phytochemistry*, 1992, **31**, 3639-3641
809	scutecolumnin C	H	H	βOH	H	—		
810	scutecyprol B	H	H	βOTig	H	OH	*Scutellaria cypria* var. *cypria*	*Phytochemistry*, 1996, **42**, 555-557
811	scupolin K	H	βOH	OiBu	H	OH	*Scutellaria polyodon*	*J. Nat. Prod.*, 2000, **63**, 1032-1034
812	6α-*O*-acetyl-15β,19β-di-*O*-ethyl-2,19:4,18:11,16:15,16-tetraepoxyneoclerodane-6,15,19-triol	H	H	OEt	H	βOEt	*Scutellaria discolor*	*Chem. Pharm. Bull.*, 1996, **44**, 1540-1545
813	6α-*O*-acetyl-15α,19β-di-*O*-ethyl-2,19:4,18:11,16:15,16-tetraepoxyneoclerodane-6,15,19-triol	H	H	OEt	H	αOEt		
814	6α-*O*-acetyl-19β-*O*-ethyl-2,19:4,18:11,16:15,16-tetraepoxyneoclerodane-6,15,19-triol	H	H	OEt	H	OH		
815	6α,19-di-*O*-acetyl-2,19:4,18:11,16:15,16-tetraepoxy-neoclerodane-6,15,19-triol	H	H	OAc	H	OH		
816	scutalbin B	H	H	βY1	H	OH	*Scutellaria albida*	*Phytochemistry*, 1996, **42**, 1059-1064
817	scutalbin C	H	H	βOH	H	OH		
818	scutalsin	H	H	βOiBu	H	OH	*Scutellaria altissima*	
819	11-episcutecyprin	H	H	βOTig	H	H	*Scutellaria columnae*	*Phytochemistry*, 1997, **46**, 955-958
820	11-epi-scutecolumnin C	H	H	βOH	H	H	*Scutellaria columnae var columnae*	*Phytochemistry*, 1998, **49**, 811-815
821	15-epi-lupulin B	αOH	MeBuO	OAc	OAc	αOMe	*Ajuga bracteosa*	*J. Nat. Prod.*, 2011, **74**, 1036-1041
822	lupulin A	αOH	Y1	OAc	OAc	βOMe	*Ajuga lupulina*	*J. Nat. Prod.*, 1996, **59**, 668-670
823	lupulin B	H	Y1	OAc	OAc	αOMe		
824	(15*S*)-14,15-dihydro-15-hydroxyajugachin A	αOH	OiBu	OAc	OAc	βOH	*Ajuga salicifolia*	*Phytochemistry*, 1993, **34**, 1173-1175
825	(15*R*)-14,15-dihydro-15-hydroxyajugachin A	αOH	OiBu	OAc	OAc	αOH		
826	14,15-dihydro-15- oxoajugachin A	αOH	OiBu	OAc	OAc	=O		

827	hativene A	αOH	OiBu	OAc	OAc	βOMe	*Ajuga pseudoiva*	*Fitoterapia*, 2000, **71**, 105-112
828	hativene B	αOH	OiBu	OAc	OAc	αOMe		
829	hativene C	βOH	OiBu	OAc	OAc	αOMe		
830	15-methoxy-14,15-dihydro-3-epicaryoptin	H	OAc	OAc	OAc	βOMe	*Clerodendrum inerme*	*Phytochemistry*, 1992, **31**, 338-340
831	14,15-dihydro-15β-methoxy-3-epicaryoptin	H	OAc	OAc	OAc	OH		*Phytochemistry*, 2005, **66**, 643-648
832	15β-ethoxy-14-hydroclerodin	H	H	OAc	OAc	βOEt	*Scutellaria discolor*	*Chem. Pharm. Bull.*, 1996, **44**, 1540-1545
833	15α-ethoxy-14-hydroclerodin	H	H	OAc	OAc	αOEt		
834	14-hydro-15-hydroxy-6-*O*-deacetylclerodin	H	H	OAc	OH	OH		
835	scutelaterin C	Y1	H	OAc	OAc	OH	*Scutellaria lateriflora*	*Phytochemistry*, 1998, **48**, 687-691
836	scutellin A	H	H	OPr	OAc	βOMe	*Scutellaria barbata*	*Yunnan Zhiwu Yanjiu*, 2009, **31**, 474-476
837	scutalpin O	H	H	OiBu	OAc	OH	*Scutellaria alpine*	*Phytochemistry*, 1998, **49**, 2449-2452
838	scutecyprol A	H	H	OAc	OAc	OH	*Scutellaria cypria* var. *cypria*	*Phytochemistry*, 1996, **42**, 555-557
839	scupontin C	H	OAc	—	—	—	*Scutellaria pontica*	*J. Nat. Prod.*, 1997, **60**, 348-355
840	scupontin D	OH	OAc	—	—	—		
841	scupontin F	OH	OX_6	—	—	—		
842	scutalpin M	—	—	—	—	—	*Scutellaria alpina*	*Phytochemistry*, 1995, **38**, 181-187
843	lupulin C	—	—	—	—	—	*Ajuga lupulina*	*J. Nat. Prod.*, 1996, **59**, 668-670
844	inerme A	H	H	—	—	—	*Clerodendrum inerme*	*Phytochemistry*, 2005, **66**, 643-648
845	inerme B	OMe/H	H/OMe	—	—	—		

6.2. Type VI Subtype II with a Tetrahydrofurofuran-based Side Chain at C-9 (Table 26)



846-859



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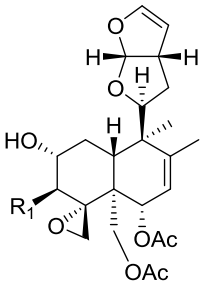

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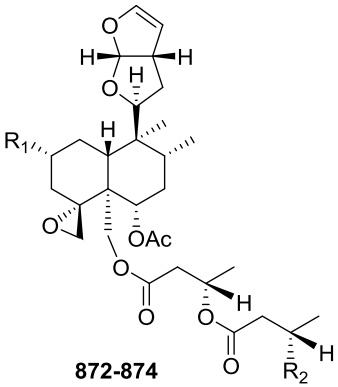
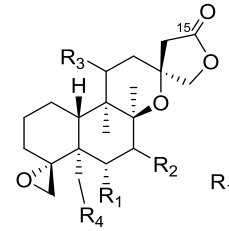


872-874

No.	Compound Name	R_1	R_2	R_3	Source	Ref.
846	lupulin E	H	αOH	OPr	*Ajuga lupulina*	*Indian J. Chem.*, 1999, **38B**, 743-745
847	ajugachin A	H	αOH	OiBu	*Ajuga chamaepitys*	*Phytochemistry*, 1990, **29**, 2931-2933
848	ajugachin B	H	αOH	Y_{11}		
849	clerodendrin B	H	αOH	Y_3	*Clerodendrum inerme*	*Phytochemistry*, 1993, **34**, 572-574
850	clerodendrin C	H	αOH	Y_{10}		
851	clerodendrin H	H	αOH	Y_7	*Clerodendrum trichotomum*	*Phytochemistry*, 1998, **49**, 1975-1980
852	galericulin	H	αOH	OTig	*Scutellaria galericulata*	*Phytochemistry*, 1990, **29**, 1793-1796
853	scutelaterin A	H	βOAc	H	*Scutellaria laterifora*	*Phytochemistry*, 1998, **48**, 687-691
854	scutelaterin B	H	βY_1	H		
855	ajubractin A	H	H	MeBuO	*Ajuga bracteosa*	*J. Nat. Prod.*, 2011, **74**, 1036-1041
856	ajubractin B	H	H	iBuO		
857	ajugapitin	H	αOH	MeBuO		
858	areptin B	βOTig	H	OH	*Ajuga reptans*	*Phytochemistry*, 1998, **49**, 2443-2447
859	14,15-dehydroajugareptansin	βY_1	H	OH		*Phytochemistry*, 1998, **47**, 1227-1232
860	jodrellin A	H	H	βOAc	*Scutellaria* spp.	*Phytochemistry*, 1991, **30**, 1125-1127
861	jodrellin B	H	H	βOiPr		
862	scupolin J	H	βOH	OiBu	*Scutellaria polyodon*	*J. Nat. Prod.*, 2000, **63**, 1032-1034
863	jodrellin T	βOTig	H	βOAc	*Scutellaria galericulata*	*Phytochemistry*, 1990, **29**, 1793-1796
864	19-*O*-deacetyljodrellin A	H	H	OH	*Scutellaria discolor*	*Chem. Pharm. Bull.*, 1996, **44**, 1540-1545

865	scutegrossin A	H	H	βOTig	*Scutellaria grossa*	*Chem. Pharm. Bull.*, 1997, **45**, 1097-1100
866	scutalbin A	H	H	βOH	*Scutellaria albida*	*Phytochemistry*, 1996, **42**, 1059-1064
867	scutecolumnin A	H	H	βY_1	*Scutellaria columnae*	*Phytochemistry*, 1992, **31**, 3639-3641
868	clerodendrin I	Y_6		—	*Clerodendrum trichotomum*	*Biosci. Biotechnol. Biochem.*, 1999, **63**, 1795-1797
869	clerodendrin E	Y_{10}		—		*Phytochemistry*, 1998, **49**, 1975-1980
870	clerodendrin F	Y_7		—		
871	clerodendrin G	Y_1		—		
872	scupontin A	OH	OAc	—	*Scutellaria pontica*	*J. Nat. Prod.*, 1997, **60**, 348-355
873	scupontin B	H	OAc	—		
874	scupontin E	OH	X_6	—		

7 Type VII with a 13-Spiro-15,16-γ-lactone Moiety (Table 27)



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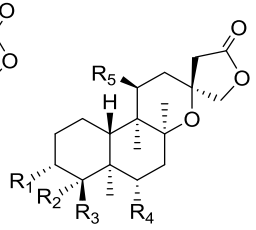

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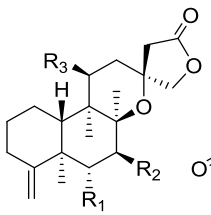

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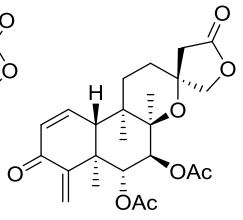

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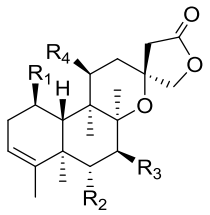

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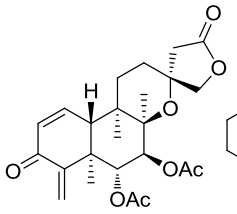

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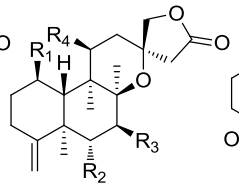

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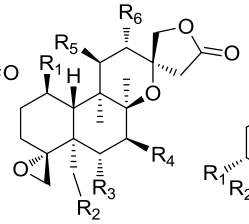

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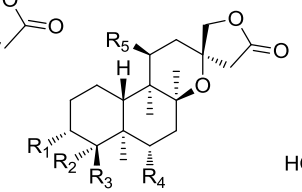

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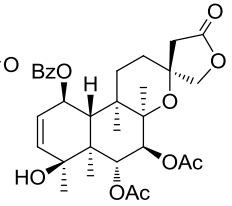
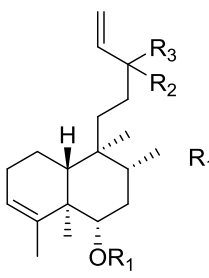


902

No.	Compound Name	R_1	R_2	R_3	R_4	R_5	R_6	Source	Ref.
875	scutorientalin A	OiBu	H	H	OAc			*Scutellaria orientalis* subsp. *pinnatifida*	*Phytochemistry*, 1996, **43**, 173-178
876	scutorientalin C	OiBu	H	αOH	OAc				
877	scutorientalin D	OiBu	H	βOAc	OAc				*Phytochemistry*, 1997, **44**, 121-124
878	scutalpin D	OTig	H	βOAc	OAc			*Scutellaria alpina* subsp. *javalambrensis*	*Phytochemistry*, 1993, **34**, 1589-1594
879	11-deacetylscutalpin D	OTig	H	βOH	OAc				*Phytochemistry*, 1997, **44**, 593-597
880	scutalpin A	Y_1	βOAc	H	OAc			*Scutellaria alpine*	*Phytochemistry*, 1993, **34**, 453-456
881	scutalpin F	OAc	βOAc	H	OAc				*Phytochemistry*, 1994, **35**, 1285-1288
882	scutalpin G	OBz	H	βOAc	OAc				*Phytochemistry*, 1995, **38**, 181-187
883	hastifolin C	OCin	H	H	H			*Scutellaria hastifolia*	*Phytochemistry*, 2010, **71**, 2087-2091
884	scuterivulactone C_2	OH	Me	OH	OBz	OAc		*Scutellaria rivularis*	*Chem. Pharm. Bull.*, 1997, **45**, 152-160

885	hastifolin E	H	OH	CH_2OH	OCin	H		*Scutellaria hastifolia*	*Phytochemistry*, 2010, **71**, 2087-2091
886	hastifolin G	OCin	H	H					
887	barbatin A	H	OBz	OH	OBz			*Scutellaria barbata*	*Phytochemistry*, 2006, **67**, 1326-1330
888	barbatellarine E								*Helv. Chim. Acta.*, 2011, **94**, 643-649
889	barbatin B	OBz	OBz	OH					*Phytochemistry*, 2006, **67**, 1326-1330
890	scutebata D	OBz	OAc	OAc	H				*J. Nat. Prod.*, 2010, **73**, 233-236
891	scutebata E	OiBu	OAc	OAc	H				
892	barbatellarine F								*Chem. Nat. Cmpds.*, 2014, **50**, 256-257
893	scuteselerin	OAc	OH	Y_{12}	OAc			*Scutellaria seleriana*	*Phytochemistry*, 1998, **47**, 135-137
894	hastifolin F	H	OCin	H	H			*Scutellaria hastifolia*	*Phytochemistry*, 2010, **71**, 2087-2091
895	hastifolin B	H	H	OCin	H	H	H		
896	scutenisin	H	OH	OiBu	OiBu	H	H	*Scutellaria orientalis* subsp.*sintenisii*	*Phytochemistry*, 1998, **49**, 1825-1827
897	scutalpin E	H	OAc	OTig	OAc	H	H	*Scutellaria alpina*	*Phytochemistry*, 1994, **35**, 1285-1288
898	scuteguatemalin	OiBu	H	OAc	H	OAc	OiBu	*Scutellaria guatemalensis*	*Heterocycles*, 1997, **45**, 2247-2252
899	hastifolin D	H	OH	CH_2OH	OCin	H		*Scutellaria hastifolia*	*Phytochemistry*, 2010, **71**, 2087-2091
900	scuterivulactone C_1	OH	Me	OH	OBz	OAc		*Scutellaria rivularis*	*Chem. Pharm. Bull.*, 1997, **45**, 152-160
901	scuterivulactone B	=O	Me	H	OBz	OAc			
902	barbatellarine A							*Scutellaria barbata*	*Bioorg. Med. Chem. Lett.*, 2010, **20**, 288-290

8. Clerodane Diterpene Glycosides (Table 28)



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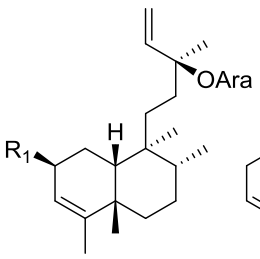

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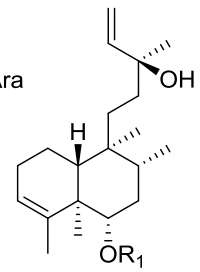

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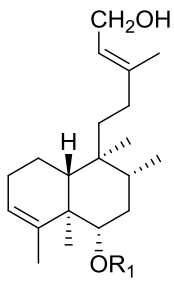

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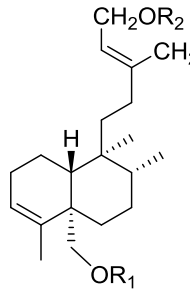

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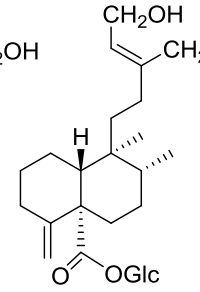

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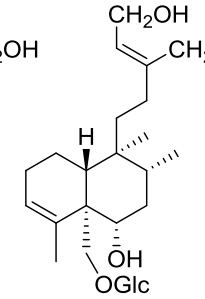

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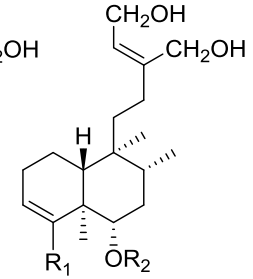

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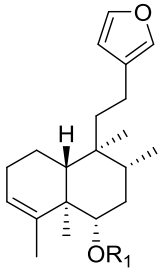

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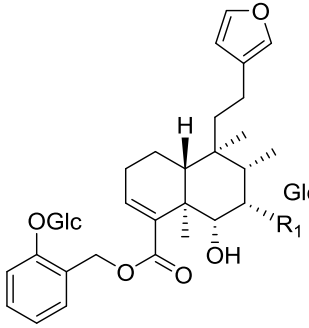

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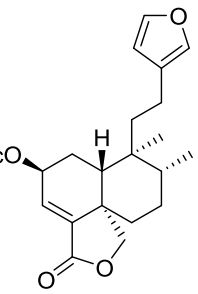

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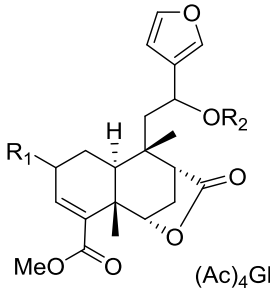

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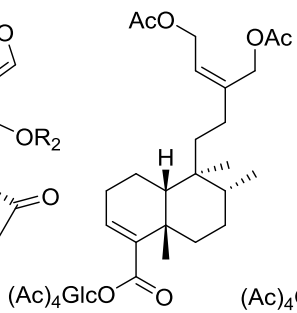

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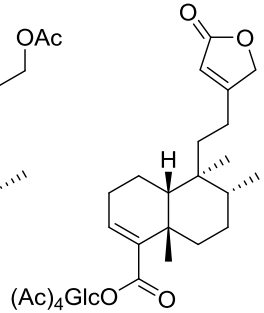

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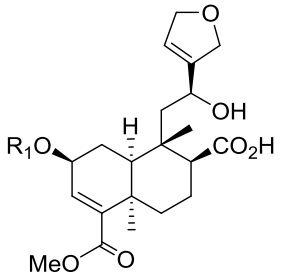

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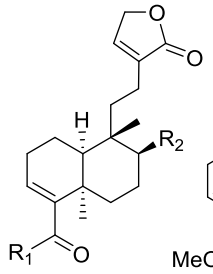

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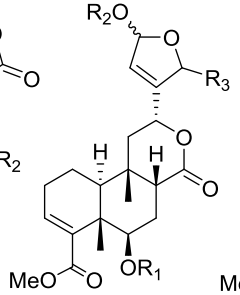

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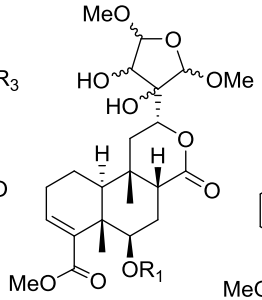

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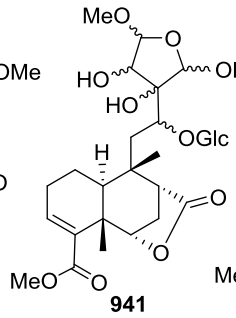

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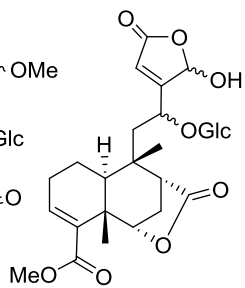

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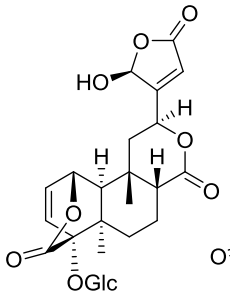

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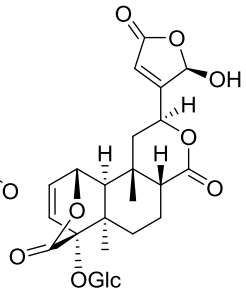

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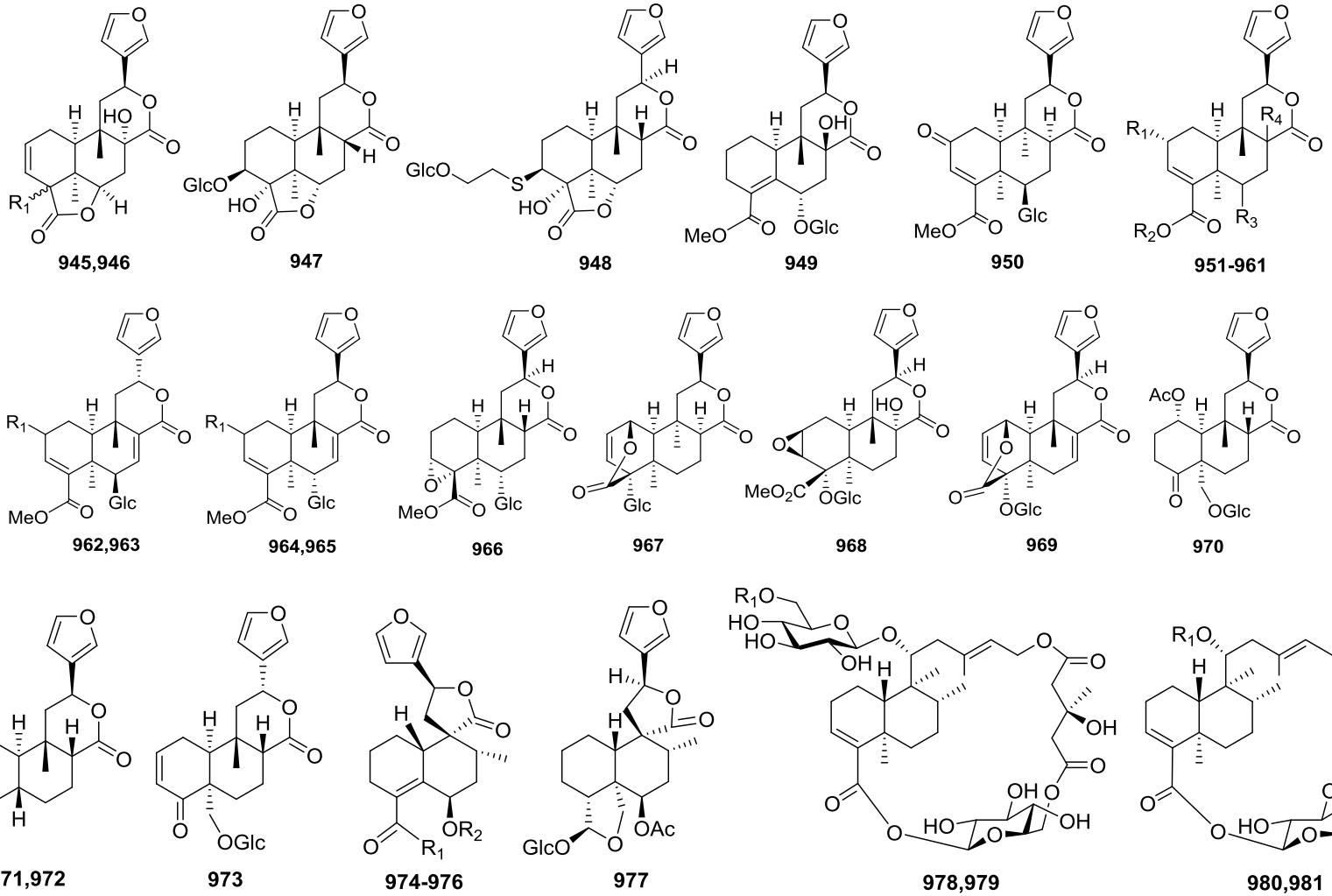

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903	α-vinyl-1,2,3,4,4a,7,8,8a-octahydro-α,1,2,4a,5-pentamethyl-1-naphthalenepropanol-4-*O*-β-glucopyranoside	β-Glc	OH	Me	—	*Gleichenia japonica*	*Chem. Lett.*, 1991, **4**, 701-704

904	α-vinyl-1,2,3,4,4a,7,8,8a-octahydro-α,1,2,4a,5-pentamethyl-1-naphthalenepropanol-4-*O*-α-rhamnopyranosyl-(1→2)-β-glucopyranoside	β-Glc-(2→1)-α-L-Rha	OH	Me	—		
905	(6*S*,13*S*)-6-O-[*β*-D-glucopyranosyl-(1→4)-*α*-L-rhamnopyranosyl]-l3-O-[*α*-L-rhamnopyranosyl-(1→4)-*β*-D-fucopyranosyl]-cleroda-3,14-diene	α-L-Rha-(4→1)-β-D-Glc	β-{β-D-Fuc-(4→1)-α-L-Rha}	αMe	—	*Dicranopteris pedata*	*Phytochemistry*, 1997, **46**, 839-844
906	(6*S*,13*S*)-cleroda-3,14-diene-6,13-diol-6-*O*-β-glucopyranosyl-13-*O*-β-fucopyranosyl-(1→2)-α-rhamnopyranoside	β-Glc	β-{α-Rha-(2→1)-β-Fuc}	αMe	—		
907	(5*S*,8*R*,9*S*,10*R*,13*S*)-10βH-13-*O*-α-L-arabinopyranosyl-2-oxo-17α,19β,20α-trimethyl-3,14-clerodadiene	=O	—	—	—	*Nannoglottis carpesioides*	*Fitoterapia*, 2014, **93**, 39-46
908	(5*S*,8*R*,9*S*,10*R*,13*S*)-10βH-13-*O*-α-L-arabinopyranosyl-17α,19β,20α-trimethyl-3,14-clerodadiene	H	—	—	—		
909	(5*S*,8*R*,9*S*,10*R*,13*S*)-10βH-13-*O*-α-L-arabinopyranosyl-2β-hydroperoxyl-17α,19β,20α-trimethyl-3,14-clerodadiene	OOH	—	—	—		
910	(6*S*,13*S*)-6-*O*-[6-*O*-acetyl-β-D-glucopyranosyl-(1→4)-α-L-rhamnopyranosyl]cleroda-3,14-dien-13-ol	6-*O*-acetyl-β-D-Glc-(1→4)-α-L-Rha	—	—	—	*Dicranopteris dichotoma*	*J. Nat. Prod.*, 2007, **70**, 265-268
911	(6*S*,13*S*)-6-*O*-[4-*O*-acetyl-β-D-glucopyranosyl-(1→4)-α-L-rhamnopyranosyl]cleroda-3,14-dien-13-ol	4-*O*-acetyl-β-D-Glc-(1→4)-α-L-Rha	—	—	—		
912	6-*O*-[6-*O*-acetyl-β-D-glucopyranosyl-(1-4)-α-L-rhamnopyranosyl]-(13*E*)-cleroda-3,13-dien-15-ol	6-*O*-acetyl-β-D-Glc-(1→4)-α-L-Rha	—	—	—		

913	6-*O*-[β-D-glucopyranosyl]-(1→4)-α-L-rhamnopyranosyl-(13*E*)-cleroda-3,13-dien-15-ol	β-Glc-(1→4)-α-L-Rha	—	—	—		
914	cussoside A	Glc	H	—		*Cussonia racemosa*	*Phytochemistry*, 2002, **60**, 339-343
915	cussoside B	Glc	Glc	—			
916	cussoside C	Glc	Api	—			
917	cussoside D	Glc-(6→1)-Api	H	—			
918	porwenin B	—	—	—	—	*Portulaca okinawensis*	*J. Nat. Prod.*, 2001, **64**, 804-805
919	pilosanol C	—	—	—	—	*Portulaca pilosa*	*Phytochemistry*, 1991, **30**, 4075-4077
920	salvigreside A	Me	β-D-Glc	—	—	*Salvia greggii*	*Phytochemistry*, 2004, **65**, 2577-2581
921	salvigreside B	Me	6-*O*-acetyl-β-D-Glc	—	—		
922	salvigreside C	CH_2OH	6-*O*-acetyl-β-D-Glc	—	—		
923	salvigreside D	6-*O*-acetyl-β-D-Glc	—	—	—		
924	6-hydroxy-(-)-hardwickiic acid 2'-β-D-glucopyranosyl benzyl ester	H	—	—	—	*Elsholtzia bodinieri*	*Indian J. Chem.*, 2008, **47B**, 166-170
925	6,7-dihydroxy-(-)-hardwickiic acid 2'-β-D-glucopyranosyl benzyl ester	OH	—	—	—		
926	amarisolide	—	—	—	—	*Salvia amarissima*	*Phytochemistry*, 1996, **42**, 1105-1108
927	borapetoside D	H	Glc-(6→1)-Glc	—	—	*Tinospora tuberculata*	*Liebigs Ann. Chem.*, 1993, 491-495
928	borapetoside E	H	Glc	—	—		
929	rumphioside I	αOH	Glc	—	—	*Tinospora rumphii*	*Phytochemistry*, 1996, **42**, 153-158
930	*cis*-cleroda-15,16-dihydroxy-3,13(*Z*)-dien-18-*O*-[β-D-galactopyranosyl]-peracetylester	—	—	—	—	*Baccharis sagittalis*	*Phytochemistry*, 2002, **61**, 899-905
931	*cis*-cleroda-3,13(14)-dien-15,16-olide-18-*O*-[β-D-galactopyranosyl]-peracetylester	—	—	—	—		
932	sagittatayunnanoside B	Glc-(6→1)-Glc			—	*Tinospora sagittata* var. *yunnanensis*	*Planta Med.*, 2014, **80**, 419-425
933	sagittatayunnanoside A	OH	CH_2OGlc				

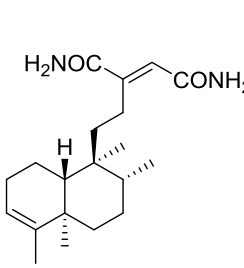
934	sagittatayunnanoside C	OGlc	CH_2OGlc				
935	sagittatayunnanoside D	OH	CO_2Glc	—	—		
936	rumphioside A	β-D-Glc	H	=O	—	*Tinospora rumphii*	*Phytochemistry*, 1995, **40**, 1729-1736
937	rumphioside B	β-D-Glc	Me	=O	—		
938	rumphioside Ac-D	$Glc(Ac)_4$	Me	OMe	—		
939	rumphioside C	β-D-Glc	—	—	—		
940	rumphioside C-1	β-D-Glc	—	—	—		
941	rumphioside E	—	—	—	—		
942	rumphioside F	—	—	—	—		
943	cordifolide B	—	—	—	—	*Tinospora cordifolia*	*Org. Lett.*, 2012, **14**, 2118-2121
944	cordifolide C	—	—	—	—		
945	fibrauretinoside A	αOGlc	—	—	—	*Fibraurea tinctoria*	*J. Nat. Prod.*, 2007, **70**, 1930-1933
946	*epi*-fibrauretinoside A	βOGlc	—	—	—		
947	borapetoside A	—	—	—	—	*Tinospora crispa*	*J. Nat. Prod.*, 2010, **73**, 541-547
948	cordifolide A	—	—	—	—	*Tinospora cordifolia*	*Org. Lett.*, 2012, **14**, 2118-2121
949	cordioside	—	—	—	—		*Phytochemistry*, 1995, **38**, 447-449
950	(5*R*,6*R*,8*S*,9*R*,10*S*,12*S*)-15,16-epoxy-2-oxo-6-*O*-(β-D-glucopyranosyl)-cleroda-3,13(16),14-trien-17,12-olid-18-oic acid methyl ester	—	—	—	—	*Tinospora crispa*	*J. Nat. Prod.*, 2010, **73**, 541-547
951	(2*R*,5*R*,6*R*,8*S*,9*S*,10*S*,12*S*)-15,16-epoxy-2-hydroxy-6-*O*-{β-D-glucopyranosyl-(1→6)-α-D-xylopyranosyl}-cleroda-3,13(16),14-trien-17,12-olid-18-oic acid methyl ester	αOH	Me	β-{β-D-Glc-(1→6)-α-D-Xyl}	αH		
952	(2*R*,5*R*,6*R*,8*R*,9*S*,10*S*,12*S*)-15,16-epoxy-2-hydroxy-6-*O*-(β-D-glucopyranosyl)-cleroda-3,13(16),14-trien-17,12-olid-18-oic acid methyl ester	αOH	Me	β-(β-D-Glc)	βH		

953	(5*R*,6*R*,8*S*,9*R*,10*R*,12*S*)-15,16-epoxy-2-oxo-6-*O*-(β-D-glucopyranosyl)-cleroda-3,13(16),14-trien-17,12-olid-18-oic acid methyl ester	=O	Me	β-(β-D-Glc)	αH		
954	epi-tinophylloloside	OGlc	Me	H	αH	*Tinospora capillipes*	*Chin. Chem. Lett.*, 1992, **3**, 185-188
955	tinospinoside A	OGlc	Me	H	βH	*Tinospora sagittata*	*Planta Med.*, 2012, **78**, 82-85
956	tinospinoside B	OGlc	Me	H	βOH		
957	tinospinoside C	OGlc	Me	H	αOH		
958	floribundic acid glucoside	H	Glc	H	αH	*Penianthus zenkeri*	*Phytochemistry*, 1991, **30**, 1957-1962
959	zenkerin	H	-Xyl-(1→6)-Glc	H	αH		
960	borapetoside C	H	Me	Glc	H	*Tinospora tuberculata*	*Liebigs Ann. Chem.*, 1993, 491-495
961	borapetoside G	=O	Me	Glc	H		
962	borapetoside F	H	—	—	—		
963	tinoscorside C	αOH	—	—	—	*Tinospora cordifolia*	*Fitoterapia*, 2010, **81**, 485-489
964	(2*R*,5*R*,6S,9*S*,10*S*,12*S*)-15,16-epoxy-2-hydroxy-6-*O*-(β-D-glucopyranosyl)-cleroda-3,7,13(16),14-tetraen-17,12-olid-18-oic acid methyl ester	αOH	—	—	—	*Tinospora crispa*	*J. Nat. Prod.*, 2010, **73**, 541-547
965	(5*R*,6S,9*S*,10*S*,12*S*)-15,16-epoxy-2-oxo-6-*O*-(β-D-glucopyranosyl)-cleroda-3,7,13(16),14-tetraen-17,12-olid-18-oic acid methyl ester	=O	—	—	—		
966	(3*R*,4*R*,5*R*,6*S*,8*R*,9*S*,10*S*,12*S*)-15,16-epoxy-3,4-epoxy-6-*O*-(β-D-glucopyranosyl)-cleroda-3,13(16),14-trien-17,12-olid-18-oic acid methyl ester	—	—	—	—		
967	(1*R*,4*S*,5*R*,8*S*,9*R*,10*S*,12*S*)-15,16-epoxy-4-*O*-(β-D-glucopyranosyl)-cleroda-2,13(16),14-triene-17(12),18(1)-diolide	—	—	—	—		
968	tinospinoside D	—	—	—	—	*Tinospora sagittata*	*Chem. Pharm. Bull.*, 2012, **60**, 1324-1328
969	tinospinoside E	—	—	—	—		
970	tinosposinenside A	—	—	—	—	*Tinospora sinensis*	*J. Nat. Prod.*, 2007, **70**, 1971-1976
971	tinosposinenside B	OAc	—	—	—		
972	tinosposinenside C	OH	—	—	—		
973	*epi*-12-palmatoside G	—	—	—	—	*Fibraurea tinctoria*	*J. Nat. Prod.*, 2007, **70**, 1930-1933
974	chamaedryoside A	OH	Glc	—	—	*Teucrium chamaedrys*	*Magn. Reson. Chem.*, 2009, **47**, 1007-1012
975	chamaedryoside B	O-6-α-Glc	H	—	—		

976	chamaedryoside C	O-6-β-Glc	H	—	—		
977	teulamioside	—	—	—	—	*Teucrium lamiifolium*	*Phytochemistry*, 1993, **34**, 1095-1098
978	syphonoside	H	—	—	—	*Syphonota geographica*, *Halophila stipulacea*	*J. Org. Chem.*, 2007, **72**, 5625-5630
979	6‴-acetyl syphonoside	Ac	—	—	—		*Tetrahedron*, 2008, **64**, 191-196
980	syphonosideol	H	—	—	—		
981	mixture of syphonoside esters	palmitic & stearic acid	—	—	—		

9. Clerodane Derivatives

9.1. *N* (or S or Cl)-Containing Derivatives (Table 29)



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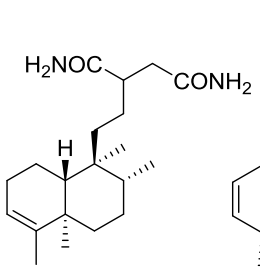

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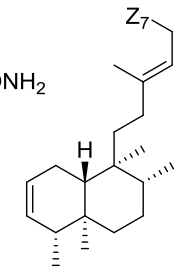

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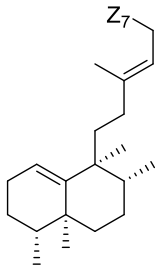

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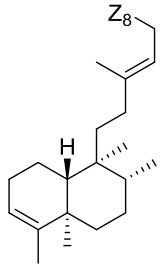

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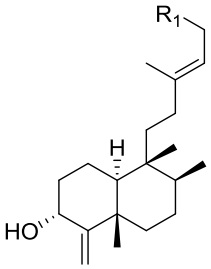

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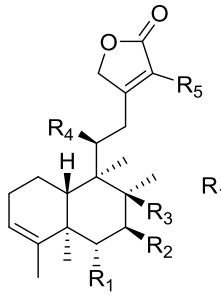
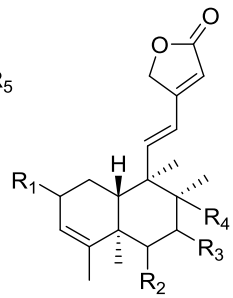
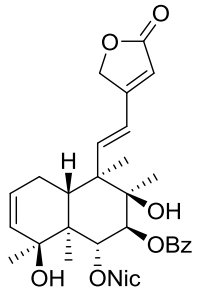


992-996



997-1008



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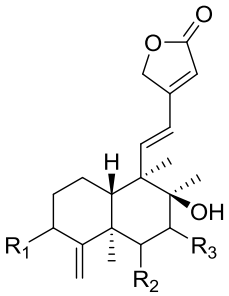

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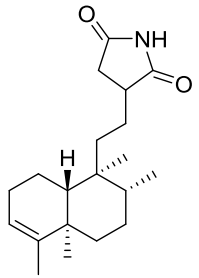

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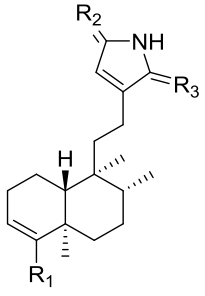

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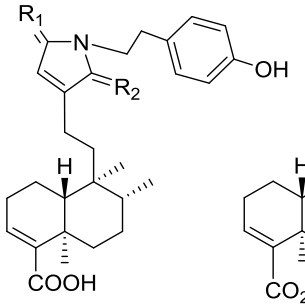
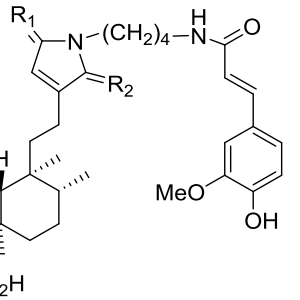


1017-1019



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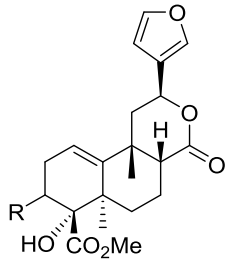

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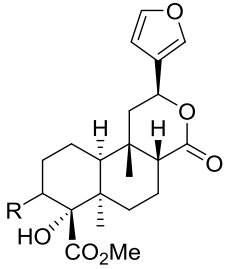

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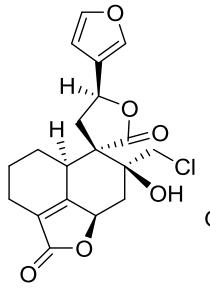

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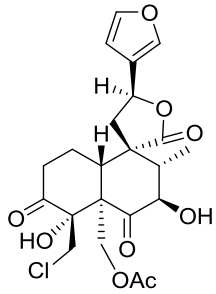

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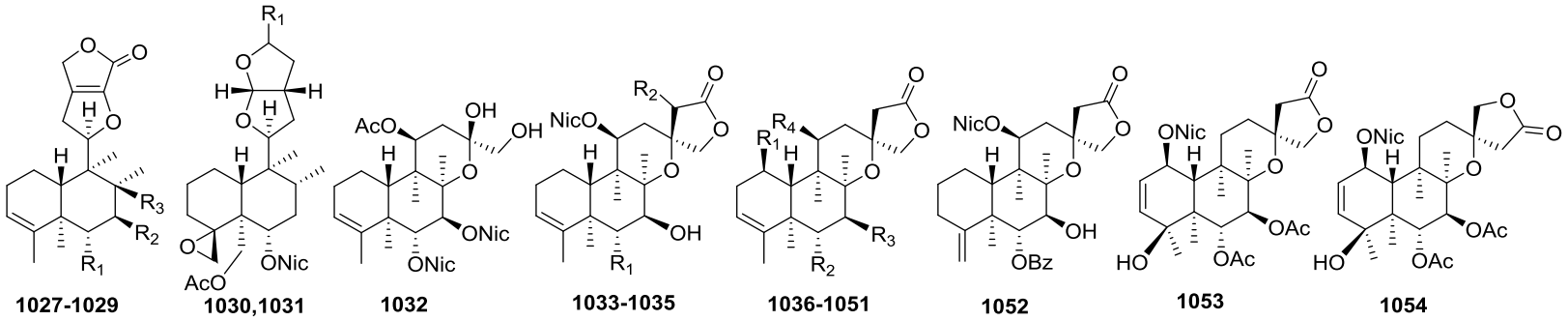


No.	Compound Name	R_1	R_2	R_3	R_4	R_5	Source	Ref.
982	cleroda-3,13(14)*E*-diene-15,16-diamide	—	—	—	—	—	*Polyalthia longifolia*	*Phytochem. Lett.*, 2015, **11**, 28-31
983	cleroda-3-ene-15,16-diamide	—	—	—	—	—		
984	agelasine K	—	—	—	—	—	*Agelas* cf. *mauritiana*	*J. Nat. Prod.*, 2008, **71**, 1451–1454
985	agelasine L	—	—	—	—	—		
986	axistatin 2	—	—	—	—	—	*Agelas axifera*	*J. Nat. Prod.*, 2013, **76**, 420-424
987	axistatin 1	H	Me	αMe	βMe	Z_8		
988	agelasine P	=O	CH_2OZ_5	αMe	βMe	Z_6	*Agelas* sp.	*Tetrahedron*, 2012, **68**, 9738-9744
989	agelasine Q	H	CH_2OZ_5	αMe	αMe	Z_6		
990	agelasine R	H	CH_2OZ_5	βMe	βMe	Z_6		
991	agelasine U	Z_6	—	—	—	—		
992	scutebarbatine Z	ONic	OH	H	H	H	*Scutellaria barbata*	*Chem. Pharm. Bull.*, 2010, **58**, 1267-1270
993	scutebarbatine X	ONic	ONic	OH	OAc	OH		
994	scutebata B	ONic	OBz	OH	OAc	OH		*J. Nat. Prod.*, 2010, **73**, 233-236
995	scutebata C	ONic	OH	OH	OAc	OH		
996	barbatellarine B	ONic	OBz	OH	OAc	H		*Bioorg. Med. Chem. Lett.*, 2010, **20**, 288-290
997	scutebarbatine Y	H	αOBz	βONic	βOH	—		*Chem. Pharm. Bull.*, 2010, **58**, 1267-1270
998	scutehenanine A	H	αOH	βONic	βOH	—		*J. Nat. Prod.*, 2009, **72**, 1793-1797
999	6-*O*-acetylscutehenanine A	H	αOAc	βONic	βOH	—		
1000	6-*O*-(2-carbonyl-3-methylbutanoyl)scutehenanine A	H	αOM_1	βONic	βOH	—		
1001	scutebarbatine B	H	αONic	βOBz	βOH	—		*Phytochemistry*, 2006, **67**, 1326-1330
1002	scutelinquanine C	H	αONic	βY_8	βOH	—		*Phytochem. Lett.*, 2010, **3**, 190-193

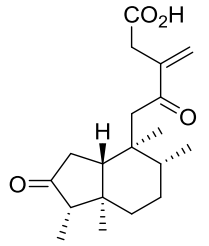
1003	scutebarbatine A	H	αONic	βONic	βOH	—		*Chin. Chem. Lett.*, 1996, **7**, 333-334
1004	scutebarbatine K	H	αONic	βOAc	βOH	—		*Chem. Pharm. Bull.*, 2008, **56**, 207-209
1005	scutebarbatine L	H	αONic	βY_4	βOH	—		
1006	2-carbonylscutebarbatine A	=O	αONic	βONic	βOH	—		*Planta Med.*, 2007, **73**, 1217-1220
1007	6-*O*-nicotinoylbarbatin A	H	αONic	βOH	βOH	—		
1008	8-*O*-nicotinoylbarbatin A	H	αOH	βOH	βONic	—		
1009	scutebarbatine C	—	—	—	—	—		*Chem. Pharm. Bull.*, 2006, **54**, 869-872
1010	scutebarbatine D	βOH	αONic	βOBz	—	—		
1011	scutebarbatine E	=O	αONic	βOBz	—	—		
1012	scutebarbatine O	αOH	βONic	αONic	—	—		*J. Asian Nat. Prod. Res.*, 2009, **11**, 451-456
1013	cleroda-3-ene yrrolidine-15,16-dione	—	—	—	—	—	*Polyalthia longifolia*	*Phytochem. Lett.*, 2015, **11**, 28-31
1014	cleroda-3-ene yrrole-15,16-dione	Me	=O	=O				
1015	echinophyllin C	CO_2H	H_2	O	—	—	*Echinodorus macrophyllus*	*J. Nat. Prod.*, 2000, **63**, 1576-1579
1016	echinophyllin F	CO_2H	O	H_2	—	—		
1017	echinophyllin D	O	H_2	—	—	—		
1018	15-oxo-echinophyllin A	O	O	—	—	—	*Casearia sylvestris*	*Fitoterapia*, 2009, **80**, 404–407
1019	echinophyllin A	H_2	O	—	—	—	*Echinodorus macrophyllus*	*Tetrahedron Lett.*, 2000, **41**, 2939-2943
1020	echinophyllin B	H_2	O	—	—	—		
1021	echinophyllin E	O	H_2	—	—	—		*J. Nat. Prod.*, 2000, **63**, 1576-1579
1022	cleidbrevoid A	βT	—	—	—	—	*Cleidion brevipetiolatum*	*Fitoterapia*, 2012, **83**, 1100-1104
1023	cleidbrevoid B	αT	—	—	—	—		
1024	cleidbrevoid C	βT	—	—	—	—		
1025[a]	teupernin D	—	—	—	—	—	*Teucrium pernyi*	*Chem. Pharm. Bull.*, 1992, **40**, 2193-2195
1026	teuracemin	—	—	—	—	—	*Teucrium racemosum*	*Phytochemistry*, 1995, **40**, 505-507
1027	scutehenanine D	OBz	ONic	OH	—	—	*Scutellaria barbata*	*J. Nat. Prod.*, 2009, **72**, 1793-1797
1028	scutebarbatine H	ONic	OH	OH	—	—		*Chem. Pharm. Bull.*, 2007, **55**, 1218-1221
1029	7-*O*-nicotinoylscutebarbatine H	ONic	ONic	OH	—	—		
1030	scutebarbatine I	βOEt	—	—	—	—		*Chem. Pharm. Bull.*, 2008, **56**, 207-209
1031	scutebarbatine J	αOEt	—	—	—	—		
1032	scutelinquanine B	—	—	—	—	—		*Phytochem. Lett.*, 2010, **3**, 190-193
1033	scutelinquanine A	OAc	H	—	—	—		
1034	scutehenanine H	OBz	OH	—	—	—		*Fitoterapia*, 2010, **81**, 737-741
1035	scutelinquanine D	OH	OH	—	—	—		*J. Asian Nat. Prod. Res.*, 2010, **12**, 859-864

1036	scutehenanine B* → scutebarbatine W (**1047**)	H	OBz	OH	ONic			*J. Nat. Prod.*, 2009, **72**, 1793-1797
1037	scutebarbatine F* → scutebata F (**1045**) = barbatine C **(1048**)	H	ONic	OAc	OAc			*Chem. Pharm. Bull.*, 2006, **54**, 869-872
1038	scutebarbatine G* → **1039**	H	OH	OH	ONic			*Chem. Pharm. Bull.*, 2007, **55**, 1218-1221
1039	—	ONic	OH	OH	H			
1040	6,7-di-*O*-nicotinoylscutebarbatine G* → **1041**	H	ONic	ONic	ONic			
1041		ONic	ONic	ONic	H			
1042	6-*O*-nicotinoyl-7-*O*-acetylscutebarbatine G* → barbatine D (**1049**)	H	ONic	OAc	ONic			
1043	6-*O*-nicotinoylscutebarbatine G* → **1044**	H	ONic	OH	ONic			*J. Asian Nat. Prod. Res.*, 2009, **11**, 451-456
1044		ONic	ONic	OH	H	—		
1045	scutebata F = barbatine C (**1048)**	ONic	OAc	OAc	H	—		*J. Nat. Prod.*, 2010, **73**, 233-236
1046	scutebata G	OBz	ONic	OBz	H	—		
1047	scutebarbatine W	OBz	ONic	OH	H	—		*Chem. Pharm. Bull.*, 2010, **58**, 1267-1270
1048	barbatine C= scutebata F (**1045**)	ONic	OAc	OAc	H	—		*Eur. J. Org. Chem.*, 2009, 5810-5815
1049	barbatine D	ONic	ONic	OAc	H	—		
1050	barbatine A	H	ONic	OAc	ONic	—		
1051	barbatine B	H	ONic	ONic	ONic	—		
1052	scutehenanine C							*J. Nat. Prod.*, 2009, **72**, 1793-1797
1053	barbatellarine C							*Helv. Chim. Acta.*, 2011, **94**, 643-649
1054	barbatellarine D							

[a] Compound **776** in Table 24 was also given the name 'teupernin D'.

*Original references for isolations listed in table; however, structure revisions (denoted by "→ revised compound name or number") were described in *Chem. Pharm. Bull.*, 2010, **58**, 1267-1270.

9.2. Degraded Derivatives (Table 30)



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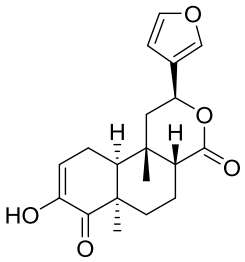

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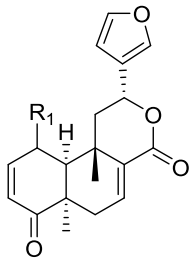

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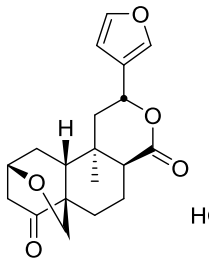

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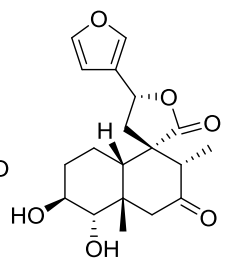

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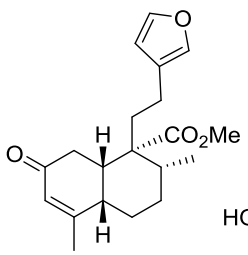

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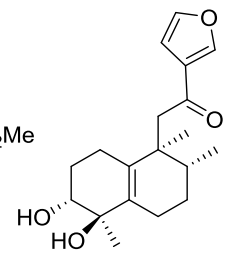

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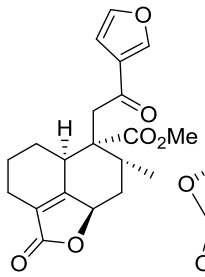

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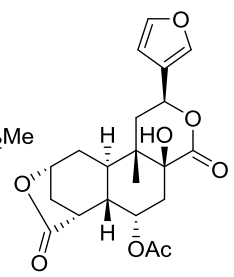

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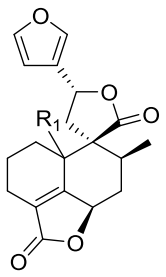

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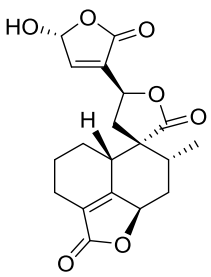

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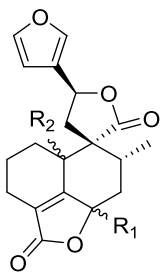

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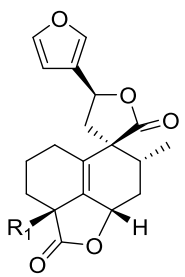

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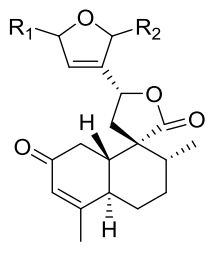

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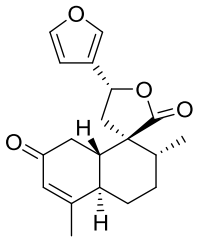

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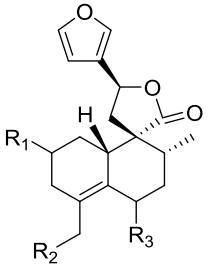

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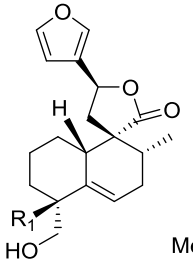

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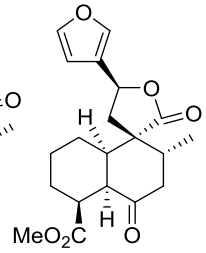

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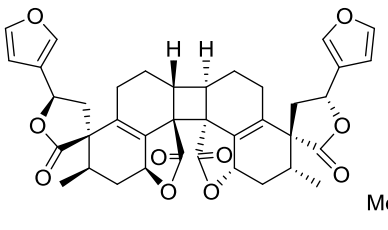

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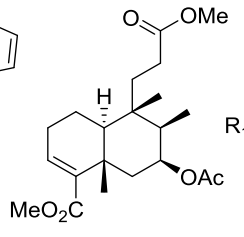

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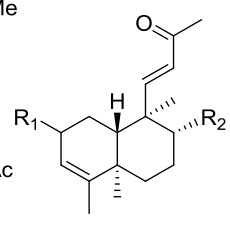

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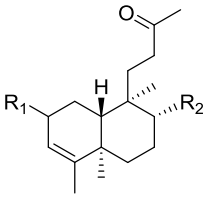

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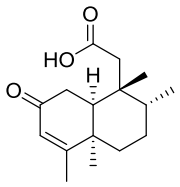

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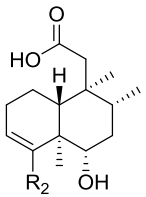

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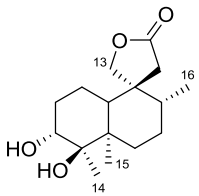

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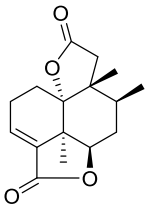

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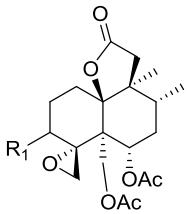

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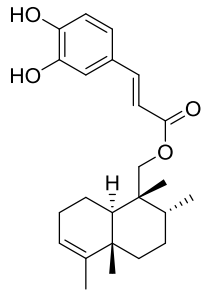
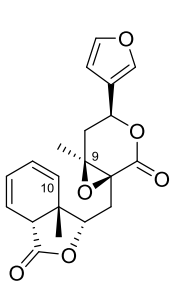


1097

No.	Compound Name	R_1	R_2	R_3	R_4	Source	Ref.
1055	pentandranoic acid B	—	—	—	—	*Callicarpa pentandra*	*J. Nat. Prod.*, 2000, **63**, 1062-1065
1056	sagitone	—	—	—	—	*Tinosporasagittata* var. *yunnanensi*	*Molecules*, 2010, **15**, 8360-8365
1057	fibaruretin D	H	—	—	—	*Fibraurea tinctoria*	*Bioorg. Med. Chem.*, 2008, **16**, 9603-9609
1058	fibaruretin E	αOH	—	—	—		
1059	fibaruretin F	=O	—	—	—		
1060	peniankerine	—	—	—	—	*Penianthus zenkeri*	*Phytochemistry*, 1997, **46**, 165-167
1061	—	—	—	—	—	*Nardophyllum lanatum*	*Phytochemistry*, 1990, **29**, 1227-1230
1062	cajucarin B	—	—	—	—	*Croton cajucara*	*Chem. Pharm. Bull.*, 1990, **38**, 701-705
1063	3α,4β-dihydroxy-15,16-epoxy-19-*nor*-12-oxo-cleroda-5(10),13(16),14-triene	—	—	—	—	*Croton hovarum*	*Phytochemistry*, 1997, **45**, 379-381
1064	crotoeurin C	CO_2Me	—	—	—	*Croton euryphyllus*	*Bioorg. Med. Chem. Lett.*, 2015, **25**, 1329-1332
1065	15,16-epoxy-6a-*O*-acetyl-8β-hydroxy-19-nor-clero-13(16),14-diene-17,12;18,2-diolide	—	—	—	—	*Dioscorea bulbifera*	*Nat. Prod. Commun.*, 2011, **6**, 1069-1072
1066	jatrophoidin	αCO_2Me	—	—	—	*Croton jatrophoides*	*Planta Med.*, 2009, **75**, 262-267
1067	isoteucvin	βH	—	—	—		
1068	crassifolin G	αOH	—	—	—	*Croton crassifolius*	*J. Nat. Prod.*, 2012, **75**, 2188-2192
1069	teuponin	—	—	—	—	*Teucrium japonicum.*	*Phytochemistry*, 1991, **30**, 4175-4177
1070	teucvisin C	βOH	βH			*Teucrium viscidum*	*Chem. Pharm. Bull.*, 2014, **62**, 472-476
1071	teucvisin D	αH	αOH				
1072	teucvisin E	OH	—	—	—		

1073	crassifolin H	H	—	—	—	*Croton crassifolius*	*Heterocycles*, 2014, **89**, 1585-1593
1074	cajucarinolide	OH	=O	—	—	*Croton cajucara*	*Planta Med.*, 1992, **58**, 549-551
1075	isocajucarinolide	=O	OH	—	—		
1076	*trans*-dehydrocrotonin	—	—	—	—	*Croton cajucara*	*J. Braz. Chem. Soc.*, 2014, **25**, 629-638
1077	teucorymbin	H	OAc	H	—	*Teucrium corymbosum*	*Phytochemistry*, 1995, **40**, 1481-1483
1078	syspirensin A	αOH	OH	αOH	—	*Teucrium chamaedrys* ssp. *syspirense*	*J. Nat. Prod.*, 1996, **59**, 457-460
1079	teupolin IX	H	OH	βOMe	—	*Teucrium polium*	*Phytochemistry*, 2011, **72**, 2037-2044
1080	12-epi-montanin B	H	OH	βOH	—	*Teucrium maghrebinum*	*J. Nat. Prod.*, 2000, **63**, 1029-1031
1081	teupolin VIII	OH	—	—	—	*Teucrium polium*	*Phytochemistry*, 2011, **72**, 2037-2044
1082	teupolin VII	OMe	—	—	—		
1083	crotoeurin B	—	—	—	—	*Croton euryphyllus*	*Bioorg. Med. Chem. Lett.*, 2015, **25**, 1329-1332
1084	crotoeurin A	—	—	—	—		
1085	(+)-7β-acetoxy-14,15,16-trinor-3-clerodene-13,18-dioate	—	—	—	—	*Sindora sumatrana*	*Chem. Pharm. Bull.*, 1994, **42**, 1202-1207
1086	2-oxo-14,15-bisnor-3,11*E*-kolavadien-13-one	=O	Me	—	—	*Polyalthia simiarum*	*Nat. Prod. Commun.*, 2010, **5**, 1543-1546
1087	14,15-bisnor-3,11*E*-kolavadien-13-one	H	Me	—	—	*Polyalthia viridis*	*Phytochemistry*, 1990, **29**, 653-655
1088	14,15-dinorclerod-3-ene-2,13-didione	=O	Me	—	—	*Clausena dunniana*	*Helv. Chim. Acta.*, 2003, **86**, 3187-3193
1089	bis-norinfuscaic acid	H	CO_2H	—	—	*Jungermannia infusca*	*Phytochemistry*, 1998, **49**, 601-608
1090	2-oxo-5α,8β-13,14,15,16-tetranorclerod-3-en-12-oic acid	—	—	—	—	*Vellozia bicolor*	*Phytochemistry*, 1994, **37**, 1115-1117
1091	18-hydroxyaylthonic acid	—	CH_2OH	—	—	*Dicranopteris dichotoma*	*J. Nat. Prod.*, 2007, **70**, 265-268
1092	18-oxo-aylthonic acid	—	CHO	—	—		
1093	crotinsulactone	—	—	—	—	*Croton insularis*	*Helv. Chim. Acta.*, 2005, **88**, 2654-2660
1094	ciliatolide A	—	—	—	—	*Scapania ciliata*	*Chem. Biodivers.*, 2013, **10**, 1606-1612
1095	teucrolin D	αOAc	—	—	—	*Teucrium oliverianum*	*J. Nat. Prod.*, 1993, **56**, 830-842
1096	teucrolivin F	=O	—	—	—		*Phytochemistry*, 1991, **30**, 1603-1606
1097	—	—	—	—	—	*Jamesoniella colorata*	*Nat. Prod. Commun.*, 2010, **5**, 999-1003

9.3 Ring-*seco* Derivatives (Table 31)



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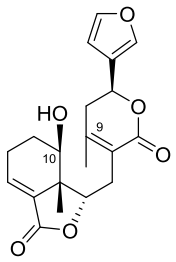

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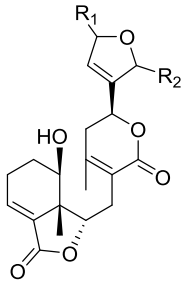

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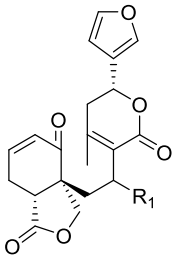

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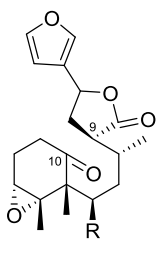

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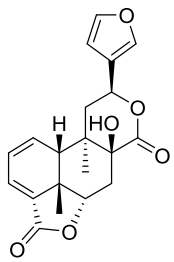

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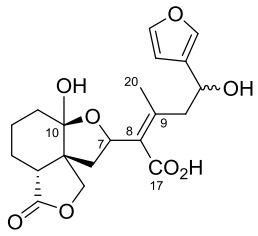

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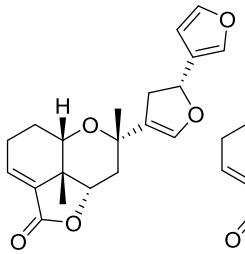

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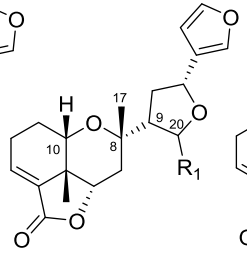

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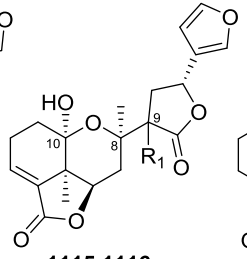

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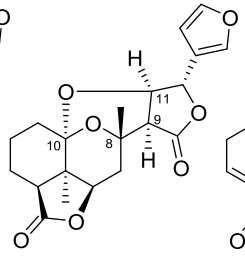

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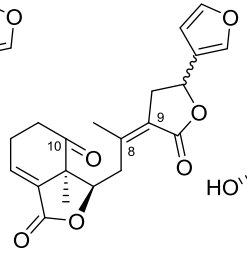

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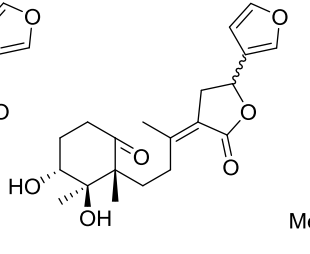

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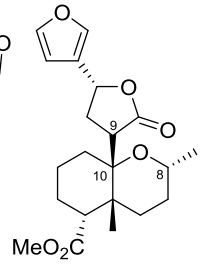

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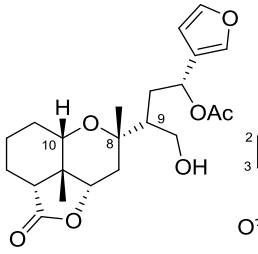

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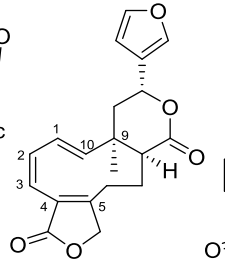

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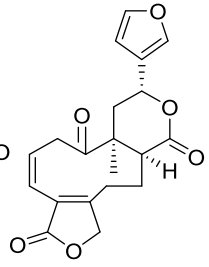

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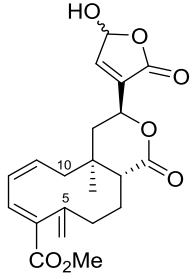

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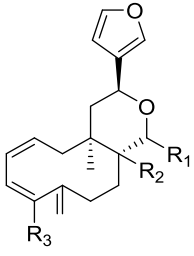

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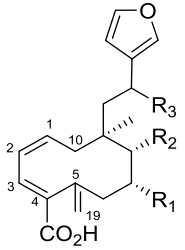

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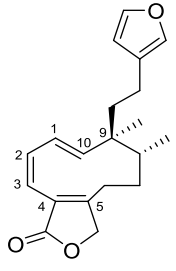

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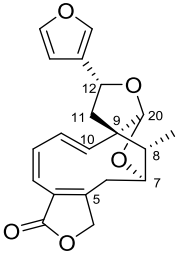

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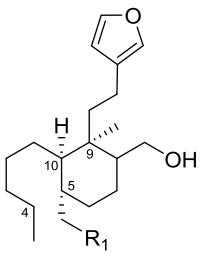

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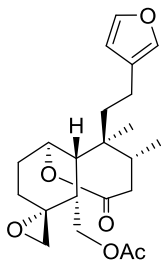

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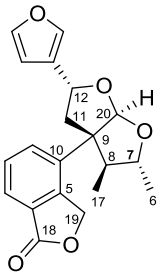

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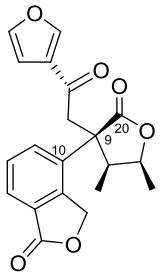

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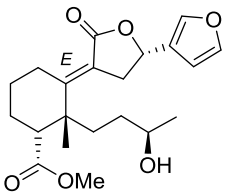

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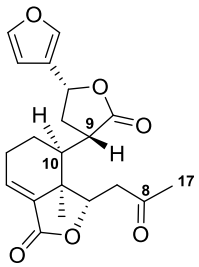

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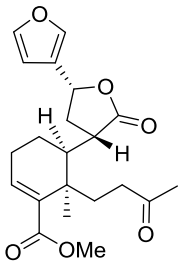

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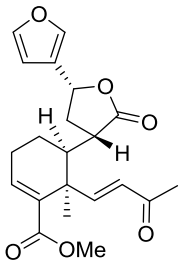
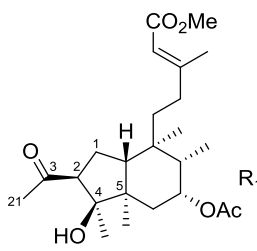


1145

No.	Compound Name	R_1	R_2	R_3	Source	Ref.
1098	jamesoniellide F	—	—	—	*Jamesoniella autumnalis*	*Phytochemistry*, 1995, **39**, 859-868, *Phytochemistry*, 1999, **51**, 743-750
1099	jamesoniellide I	—	—	—		
1100	jamesoniellide K	OH	=O	—	*Jamesoniella colorata*	*Phytochemistry*, 2003, **63**, 227-233
1101	jamesoniellide L	=O	OH	—		
1102	salvianduline A	αOAc	—	—	*Salvia lavanduloides*	*Phytochemistry*, 1991, **30**, 3357-3360
1103	salvianduline B	βOH	—	—		
1104	pyrrhopappolide	H	—	—	*Microglossa pyrrhopappa*	*Phytochemistry*, 1990, **29**, 3233-3241
1105	6β-hydroxypyrrhopappolide	OH	—	—		
1106	6β-angeloyloxypyrrhopappolide	OAng	—	—		
1107	6β-senecioyloxypyrrhopappolide	OSen	—	—		
1108	6β-tigloyloxypyrrhopappolide	OTig	—	—		
1109	6β-[2-methylbutyryloxy]pyrrhopappolide	OMeBu	—	—		
1110	15,16-epoxy-8-hydroxy-l,3,13(16),14-clerodatetraene-17,12:18,6-diolide	—	—	—	*Jamesoniella autumnalis*	*Phytochemistry*, 1995, **39**, 859-868
1111	—	—	—	—	*Salvia miniata*	*Phytochemistry*, 2011, **72**, 265-275
1112	jamesoniellide D	H	H	—	*Jamesoniella autumnalis*	*Phytochemistry*, 1995, **39**, 859-868, *Phytochemistry*, 1999, **51**, 743-750
1113	jamesoniellide E	=O	—	—		
1114	jamesoniellide H	αOH	—	—		
1115	cephaloziellin H	αH	—	—	*Cephaloziella kiaeri*	*J. Nat. Prod.*, 2013, **76**, 1700-1708
1116	cephaloziellin I	βH	—	—		
1117	cephaloziellin J	—	—	—		
1118	cephaloziellin K	—	—	—		
1119	*seco*-eeniolide	—	—	—	*Pteronia incana*	*Phytochemistry*, 1990, **29**, 1231-1245
1120	jamesoniellide A	—	—	—	*Jamesoniella autumnalis*	*J. Nat. Prod.*, 1992, **55**, 111-121

1121	jamesoniellide B	—	—	—		
1122	salvimicrophyllin A	—	—	—	*Salvia microphylla*	*J. Nat. Prod.*, 2014, **77**, 1088-1092
1123	salvimicrophyllin B	—	—	—		
1124	*seco*-hypoleucolide	—	—	—	*Conyza hypoleuca*	*Phytochemistry* 1991, **30**, 575-581
1125	17α-hydroxy-12β,17-epoxystrictic acid	αOH	βH	CO_2H	*Conyza welwitschii*	*Phytochemistry*, 1990, **29**, 2247-2252
1126	17β-hydroxy-12β,17-epoxystrictic acid	βOH	βH	CO_2H		
1127	17α-*O*-methyl ether of **1125**	αOMe	βH	CO_2H		
1128	17β-*O*-methyl ether of **1126**	βOMe	βH	CO_2H		
1129	strictic acid 12β,17-olide	=O	βH	CO_2H		
1130	—	=O	H	CO_2Me	*Croton jimenezii*	*Ingenieria Y Ciencia Quimica*, 2000, **19**, 68-73
1131	7α-hydroxystrictic acid	OH	Me	H	*Conyza hypoleuca*	*Phytochemistry* 1991, **30**, 575-581
1132	11,12*E*-dehydrostrictic acid	H	Me	H		
1133	12-hydroxystrictic acid	H	Me	βOH	*Conyza welwitschii*	*Phytochemistry*, 1990, **29**, 2247-2252
1134	12-oxo-17-oic-strictic diacid	H	CO_2H	=O		
1135	dodonolide	—	—	—	*Dodonaea viscosa.*	*Tetrahedron*, 2001, **57**, 2981-2989
1136	tonalensin	—	—	—	*Salvia tonalensis*	*J. Chem. Crystallogr.*, 1996, **26**, 239-242
1137	tinosporafuranol	H	—	—	*Tinospora cordifolias*	*Nat. Prod. Res.*, 2010, **24**, 926-9354
1138	tinosporafurandiol	OH	—	—		
1139	fruticolide	—	—	—	*Teucrium fruticans*	*Phytochemistry*, 1992, **31**, 3531-3534
1140	rhyacophiline	—	—	—	*Salvia rhyacophila*	*Tetrahedron*, 1991, **47**, 7199-7208
1141	salvireptanolide	—	—	—	*Salvia reptans*	*Phytochemistry*, 1991, **30**, 2335-2338
1142	jamesoniellide J	—	—	—	*Jamesoniella autumnalis*	*Phytochemistry*, 1999, **51**, 743-750
1143	cephaloziellin E	—	—	—	*Cephaloziella kiaeri*	*J. Nat. Prod.*, 2013, **76**, 1700-1708
1144	cephaloziellin F	—	—	—		
1145	cephaloziellin G	—	—	—		

9.4. Rearranged Derivatives (Table 32)



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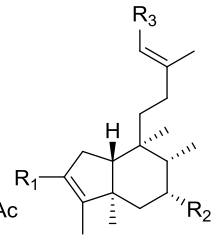

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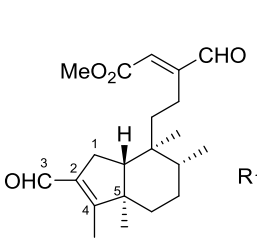

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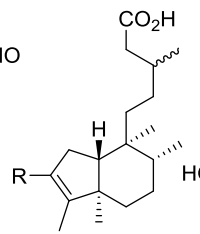

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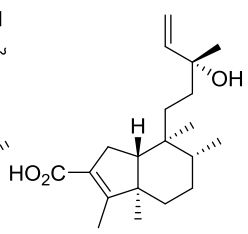

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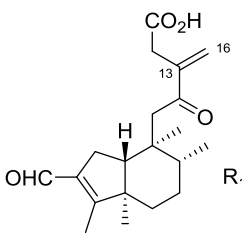

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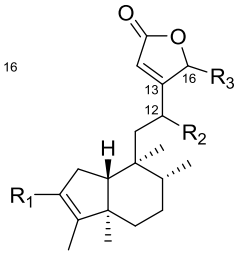

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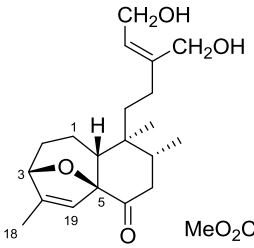

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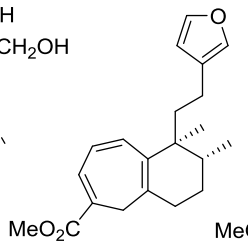

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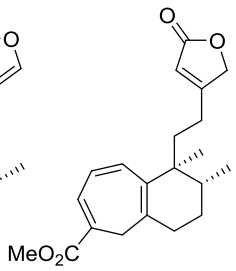

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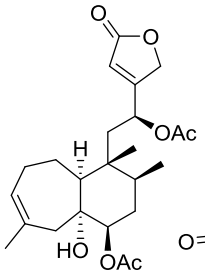

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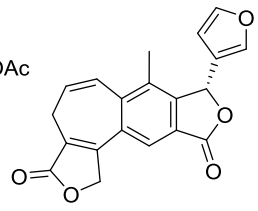

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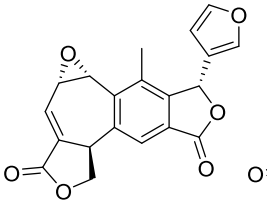

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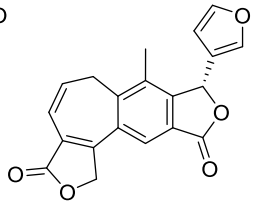

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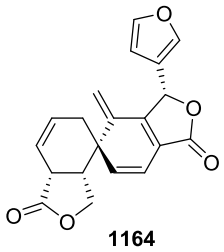

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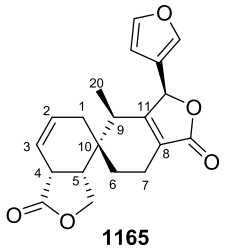

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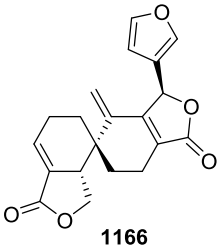

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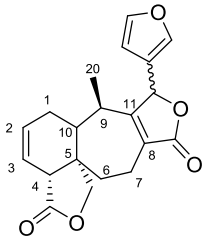

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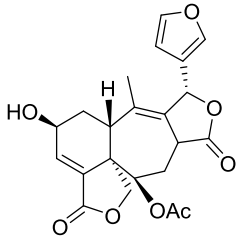

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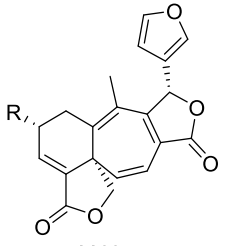
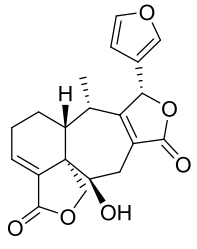


1169 R = OH
1170 R = H



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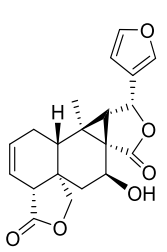

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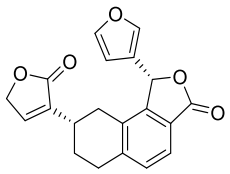

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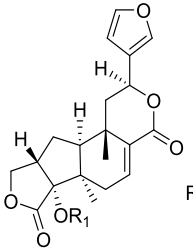

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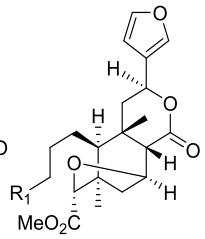

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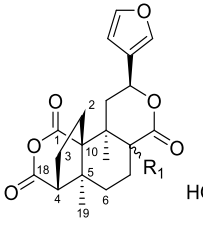

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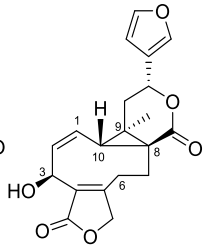

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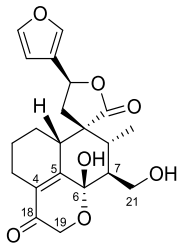

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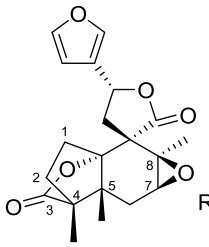

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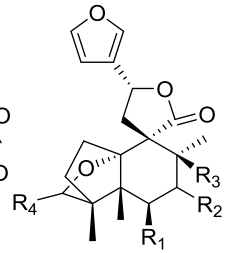

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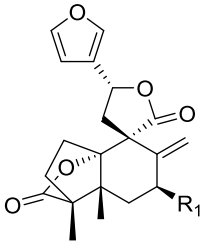

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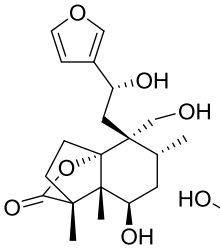

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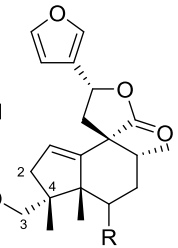

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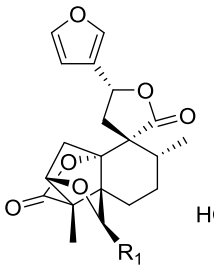

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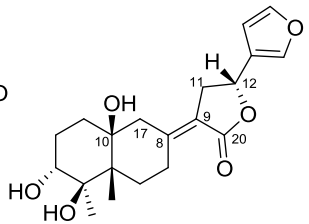

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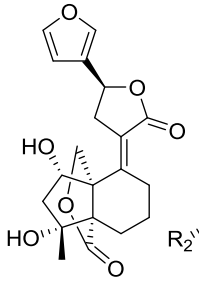

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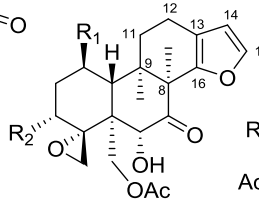

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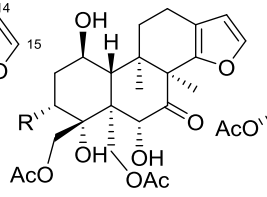

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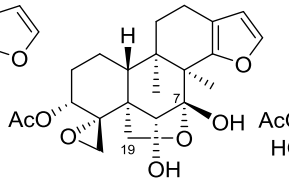

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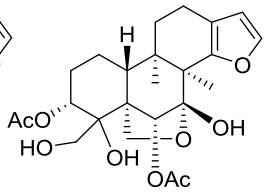

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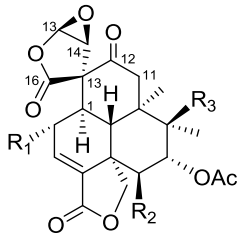

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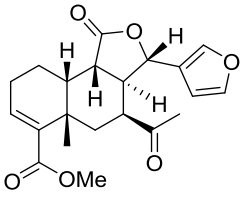

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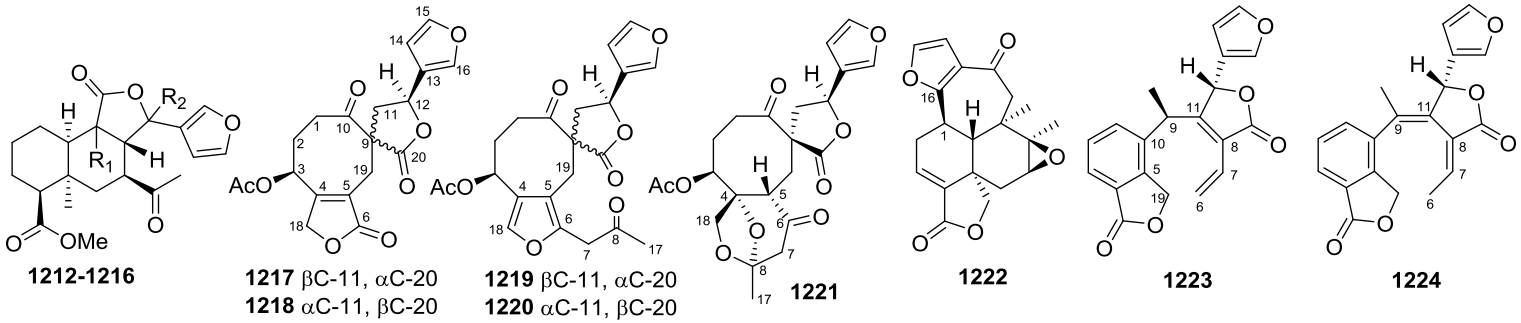


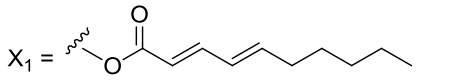
1212-1216 **1217** βC-11, αC-20 **1218** αC-11, βC-20 **1219** βC-11, αC-20 **1220** αC-11, βC-20 **1221** **1222** **1223** **1224**

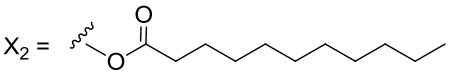
No.	Compound Name	R_1	R_2	R_3	R_4	Source	Ref.
1146	—	—	—	—	—	*Solidago altissima*	*Phytochemistry*, 1999, **52**, 487-493
1147	—	CHO	αOAc	CO_2Me	—		
1148	(4→2)-*abeo*-cleroda-2,13*E*- dien-2,14-dioic acid	CO_2H	H	CO_2H	—	*Polyalthia longifolia var. pendula*	*Molecules*, 2014, **19**, 2049-2060
1149	(4→2)-*abeo*-2,13-diformyl- cleroda-2,13*E*-dien-14-oic acid	—	—	—	—		
1150	dunniana acid A	CO_2H	—	—	—	*Clausena dunniana*	*J. Nat. Prod.*, 2002, **65**, 392-394
1151	dunniana acid B	CHO	—	—	—		
1152	(+)-(4→2)-*abeo*-kolavelool-3-oic acid	—	—	—	—	*Aristolochia chamissonis*	*Phytochemistry*, 1999, **50**, 455-461
1153	pentandranoic acid A	—	—	—	—	*Callicarpa pentandra*	*J. Nat. Prod.*, 2000, **63**, 1062-1065
1154	pentandralactone	CHO	αOH	H	—		
1155	(4→2)-*abeo*-16(R&S)-2,13*Z*-kolavadien-16,15-olide-3-al	CHO	H	βOH	—	*Polyalthia viridis*	*Phytochemistry*, 1990, **29**, 653-655
1156	polylongifoliaic A	CO_2H	H	OH		*Polyalthia longifolia* var. *pendula*	*RSC Advances*, 2014, **4**, 23707-23712
1157	pilosanone C	—	—	—	—	*Portulaca pilosa*	*Phytochemistry*, 1995, **40**, 205-207
1158	methyl dodovisate A	—	—	—	—	*Dodonaea viscosa*	*J. Asian. Nat. Prod. Res.*, 2010, **12**, 7-14
1159	methyl dodovisate B	—	—	—	—		
1160	scapanialide B	—	—	—	—	*Scapania parva*	*Phytochem. Lett.*, 2012, **5**, 535–540
1161	isosalvipuberulin	—	—	—	—	*Salvia leucantha*	*J. Nat. Med.*, 2006, **60**, 206-209
1162	salvileucantholide	—	—	—	—		*Tetrahedron*, 1994, **50**, 11593-11600
1163	dugesin B	—	—	—	—	*Salvia dugesii*	*Helv. Chim. Acta*, 2004, **87**, 949-955
1164	spiroleucantholide	—	—	—	—	*Salvia leucantha*	*J. Nat. Med.*, 2006, **60**, 206-209
1165	salvioccidentalin	—	—	—	—	*Salvia occidentalis*	*Molecules*, 2011, **16**, 9109-9115
1166	dugesin C	—	—	—	—	*Salvia dugesii*	*Nat. Prod. Bioprospect.*, 2011, **1**, 81-86
1167	blepharolide B	—	—	—	—	*Salvia blepharophylla*	*Phytochemistry*, 1999, **52**, 1535-1540
1168	2β-hydroxysalvigenolide	—	—	—	—	*Salvia xalapensis*	*J. Nat. Prod.*, 2005, **68**, 787-790

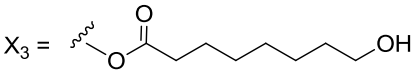
1169	salviandulin E	—	—	—	—	*Salvia leucantha*	*Tetrahedron*, 1994, **50**, 11593-11600
1170	dugesin A	—	—	—	—	*Salvia dugesii*	*Helv. Chim. Acta*, 2004, **87**, 949-955
1171	dugesin D	—	—	—	—		*Nat. Prod. Bioprospect.*, 2011, **1**, 81-86
1172	blepharolide A	—	—	—	—	*Salvia blepharophylla*	*Phytochemistry*, 1999, **52**, 1535-1540
1173	tilifodiolide	—	—	—	—	*Salvia dugesii*	*J. Org. Chem.*, 1990, **55**, 3522-3525
1174	baenzigeride A	H	—	—	—	*Tinospora baenzigeri*	*Phytochemistry*, 1999, **52**, 1335-1340
1175	baenzigeroside A	Glc	—	—	—		
1176	baenzigeride B	H	—	—	—		*Chem. Pharm. Bull.*, 2001, **49**, 854-857
1177	baenzigeroside B	Glc	—	—	—		
1178	—	αH	—	—	—	the smoke of salvinorin A	*Tetrahedron Lett.*, 2010, **51**, 5207-5209
1179	—	βH					
1180	microphyllandiolide	—	—	—	—	*Salvia microphylla*	*Org. Lett.*, 2013, **15**, 3210-3213
1181	teubetonin					*Teucrium betonicum*	*Tetrahedron*, 1995, **51**, 2363-2368
1182	7β,8β-epoxyisochiliolide lactone	—	—	—	—	*Microglossa pyrrhopappa*	*Phytochemistry*, 1990, **29**, 3233-3241
1183	6β-angeloyloxyisochiliolide lactone	OAng	H	H	=O		
1184	6β-[2-methylbutyryloxy]-isochiliolide lactone	OMeBu	H	H	=O		
1185	8β-hydroxyisochiliolide lactone	H	H	OH	=O		
1186	isochiliolide lactone	H	H	H	=O		
1187	7β-angeloxyisochiliolide lactone	H	βOAng	βH	=O		
1188	3α-hydroxypteronia lactone	OAc	βH	βOAng	αOH	*Pteronia divaricata*	*Phytochemistry*, 1990, **29**, 1231-1245
1189	3β-hydroxypteronia lactone	OAc	βH	βOAng	βOH		
1190	3-oxo-pteronia lactone	OAc	βH	βOAng	=O		
1191	8(17)-dehydroisochiliolide lactone	H	—	—	—	*Microglossa pyrrhopappa*	*Phytochemistry*, 1990, **29**, 3233-3241
1192	7β-acetoxy-8(17)-dehydro- isochiliolide lactone	OAc	—	—	—		
1193	6β-hydroxyisochiliolide	—	—	—	—		
1194	6β-hydroxy-incana-pteroniolide	βOH	—	—	—		
1195	incanapteroniolide	H	—	—	—	*Pteronia incana*	*Phytochemistry*, 1990, **29**, 1231-1245
1196	19α-hydroxypteronia-dilactone	αOH	—	—	—	*Pteronia eenii*	
1197	19β-hydroxypteronia-dilactone	βOH	—	—	—		
1198	pteroniatrilactone	=O	—	—	—		
1199	eeniolide	—	—	—	—		
1200	jamesoniellide C	—	—	—	—	*Jamesoniella autumnalis*	*Phytochemistry*, 1994, **37**, 491-494

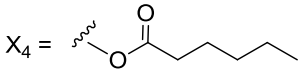
1201	alysine A	OH	OAc	—	—	*Teucrium alyssifolium*	*Tetrahedron*, 1995, **51**, 11793-11800.
1202	alysine C	H	OH	—	—		
1203	alysine B	OAc	—	—	—		
1204	3-deacetylalysine B	OH	—	—	—		
1205	alysine D	—	—	—	—		*J. Nat. Prod.*, 1997, **60**, 1045-1047
1206	alysine E	—	—	—	—		
1207	salvilanguiduline A	H	H	H	—	*Salvia languidula*	*Tetrahedron Lett.*, 1992, **33**, 581-584
1208	salvilanguiduline B	OH	H	H	—		
1209	salvilanguiduline C	H	OH	H	—		
1210	salvilanguiduline D	H	H	OH	—		
1211	cephaloziellin Q	—	—	—	—	*Jamesoniella colorata*	*Nat. Prod. Commun.*, 2010, **5**, 999-1003
1212	cephaloziellin L	βH	αH	Δ^3		*Cephaloziella kiaeri*	*J. Nat. Prod.*, 2013, **76**, 1700-1708
1213	cephaloziellin M	βH	βH	Δ^3			
1214	cephaloziellin N	αH	αH				
1215	cephaloziellin O	βH	αH				
1216	cephaloziellin P	βH	βH				
1217	teubrevin E	—	—	—	—	*Teucrium brevifolium*	*Tetrahedron*, 1995, **51**, 837-848
1218	teubrevin F	—	—	—	—		
1219	teubrevin G	—	—	—	—		
1220	teubrevin H	—	—	—	—		
1221	teubrevin I	—	—	—	—		
1222	salvixalapoxide	—	—	—	—	*Salvia xalapensis*	*J. Nat. Prod.*, 2005, **68**, 787-790
1223	salvixalapadiene	—	—	—	—		
1224	isosalvixalapadiene	—	—	—	—		

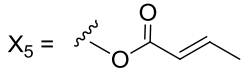
Abbreviation of Functional Groups

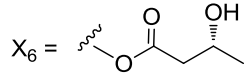


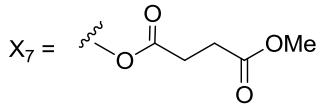


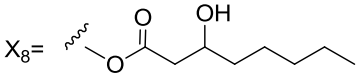












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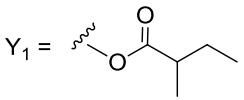

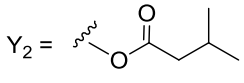

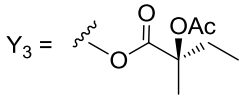

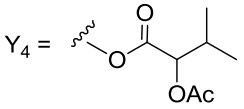

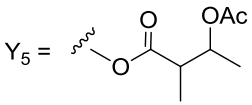

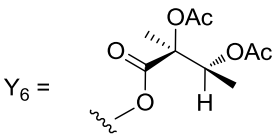

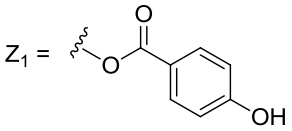

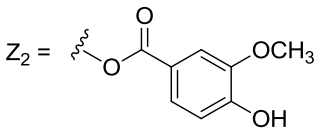

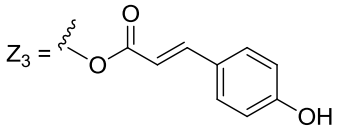

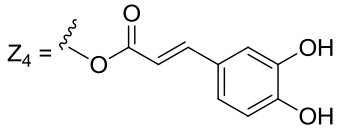

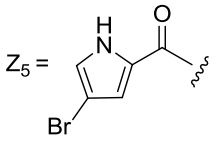

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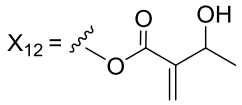
X_{12} = 

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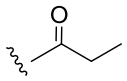
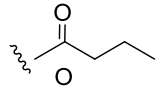
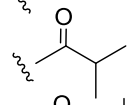
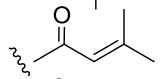
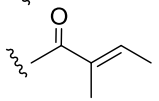
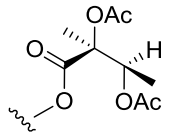
Pr = 

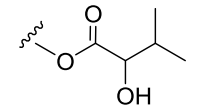
Bu = 

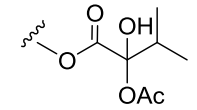
iBu = 

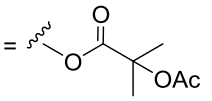
Sen = 

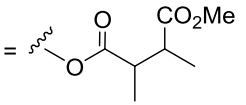
Tig = 

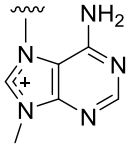
Y_7 = 

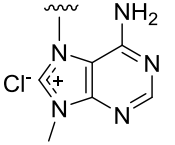
Y_8 = 

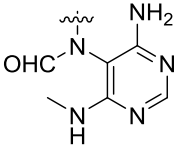
Y_9 = 

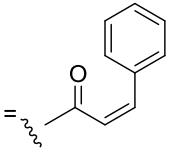
Y_{10} = 

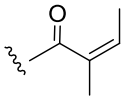
Y_{11} = 

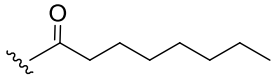
Z_6 = 

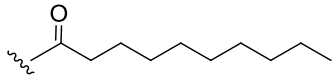
Z_7 = 

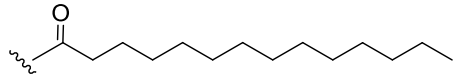
Z_8 = 

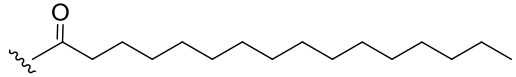
Cin^* = 

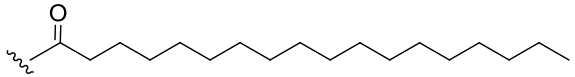
Ang = 

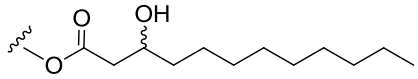
Oct = 

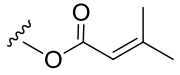
Dc = 

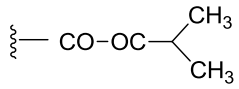
Myr = 

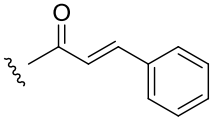
Pal = 

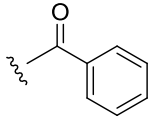
Ste = 

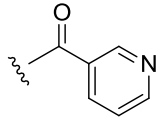
X_{13} = 

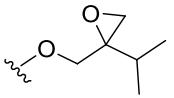
Y_{12} = 

M_1= 

Cin = 

Bz = 

Nic = 

M_2 = 

T =