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Natural Compounds

Natural Sesquiterpene Esters

Plant Sources, Structure and Properties

With 1007 Figures and 248 Tables


 Springer

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Germacrane – Diesters

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Part 2

Occurrence of Sesquiterpene Esters in Plant Species

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<i>Gymnomitrium obtusum</i> (Lindb.) Pears.	749
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<i>Magnolia watsonii</i> Hook. f.	753
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<i>Plagiochila cristata</i> (Sw.) Dumort.	757
<i>Plagiochila ericicola</i> Steph.	758
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<i>Nicotiana undulata</i> Ruiz. et Pav.	766
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Physicochemical and Pharmacological Properties of Sesquiterpene Esters

The Bicyclic Sesquiterpene Esters

Eudesmanes (Selinanes) – Monoesters

1 β -Acetoxy-eudesma-4(15),7-diene	776
1 β -Acetoxy-5 α ,7 α (H)-eudesm-4(15)-ene-6 α ,11-diol	776
2 α -Acetoxy-eudesma-4,6-diene-3,8-dione (2 β -Acetoxy-8-oxo- β -cyperon)	777
2 α -Acetoxy-5 α ,7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid (2 α -Acetoxycostate)	777
2 α -Acetoxy-5 α ,7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid Methyl Ester (Methyl-2 α -acetoxycostate)	777
3 β -Acetoxy-5 α (H)-eudesm-7-ene-1 β ,4 β -diol	778
3 α -Acetoxy-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one (Cuauthemone-3- <i>O</i> -acetate)	778
3 α -Acetoxy-4 α -hydroxy-5 α ,7 α (H)-eudesm-11(13)-en-12-oic Acid	779
3 β -Acetoxy-4 α -hydroxy-5 α ,7 α (H)-eudesm-11(13)-en-12-oic Acid	779
3 β -Acetoxy-7 α (H)-eudesma-4,11(13)-dien-12-oic Acid Methyl Ester	780
3 β -Acetoxy-7 α (H)-eudesm-4(15)-ene-5 α ,11,12,13-tetraol	780
4 α -Acetoxy-5 α ,7 α (H)-eudesmane-6 α ,11-diol (Pygmal-4-monoacetate)	780
6 α -[(4-Acetoxy)-7 <i>Z</i> -coumaroyloxy]-7 α (H)-eudesm-4(15)-ene	781
6 β -Acetoxy-1 α ,4 α -epoxy-7 α (H)-eudesmane (1 α ,4 α -Oxy- 6 β -acetoxyeudesmane)	781
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6 β -Acetoxy-7 α (H)-eudesmane-1 β ,4 β -diol	782
6 β -Acetoxy-7 α (H)-eudesm-4(15)-ene-1 β ,5 α -diol	783
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6 β -Acetoxy-7 α (H)-eudesm-4(15)-en-1 β -ol (1 β -Hydroxy- 6 β -acetoxyeudesm-4(15)-ene)	784
6 α -Acetoxy-5 α ,7 α (H)-eudesm-4(15)-en-11-ol (β -Chenopodiol- 6-monoacetate)	785
6 β -Acetoxy-4 β -hydroxy-7 α (H)-eudesman-1-one	785
6 α -Acetoxy-11-hydroxy-5 α ,7 α (H)-eudesm-3-en-2-one (α -Chenopodiol- 2-one-6-monoacetate)	785
6 β -Acetoxy-5 β ,7 α (H)-eudesm-4(15)-ene-1 α ,2 β -diol	786
8 α -Acetoxy-5 α (H)-eudesmane-4 α ,11-diol ((+)-8 α -Acetoxy -cryptomeridiol)	786
8 α -Acetoxy-eudesma-4,11(13)-dien-12-oic Acid	787
8 β -Acetoxy-5 α ,7 α (H)-eudesma-1,4(15),11(13)-trien-3-on-12-oic Acid Methyl Ester (Gerin)	787
8 β -Acetoxy-1 β -hydroxy-5 α ,7 α (H)-eudesma-3(4),11(13)-dien-12-oic Acid Methyl Ester (1 β -Hydroxy-8 β -acetoxycostic Acid Methyl Ester)	788
8 β -Acetoxy-1 β -hydroxy-5 α ,7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid Methyl Ester (1 β -Hydroxy-8 β -acetoxycostic Acid Methyl Ester)	788

8 α -(4'-Acetoxy-3'-hydroxy-2'-methylenbutyroxy)-1 β ,6 α -dihydroxy-5 α ,7 α (H)-eudesm-11(13)-en-15-al-12-oic Acid Methyl Ester (Atticin)	789
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9 β -Acetoxy-4 α ,5 α -epoxy-7 α (H)-eudesm-11(13)-en-12-oic Acid	790
9 β -Acetoxy-4 β ,5 β -epoxy-7 α (H)-eudesm-11(13)-en-12-oic Acid	790
9 β -Acetoxy-7 α (H)-eudesma-4,11(13)-dien-12-oic Acid (9 β -Acetoxy-4,5-dehydro-4(15)-dihydrocotic Acid)	791
9 β -Acetoxy-3 α -hydroxy-7 α (H)-eudesma-4,11(13)-dien-12-oic Acid	792
9 β -Acetoxy-5 α -hydroperoxy-7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid	792
9 β -Acetoxy-5 α -hydroxy-7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid	793
9 β -Acetoxy-15-hydroxy-7 α (H)-eudesma-4,11(13)-dien-12-oic Acid	793
12-Acetoxy-7 α (H)-eudesma-4(15),11(13)-diene	793
1 α -Angeloyloxy-5 α ,7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid Methyl Ester (1 α -Angeloyloxy-4(15),11(13)-selinadien-12-oic Acid Methyl Ester; 1 α -Angeloyloxy Costus Acid Methyl Ester)	794
1 β -Angeloyloxy-eudesm-6-en-4 α -ol (7,8(H)-6,7-Dehydroblodiol-1- <i>O</i> -angelate)	794
1 β -Angeloyloxy-5 α (H)-eudesm-7-en-4 α -ol	795
1 β -Angeloyloxy-5 α (H)-eudesm-7-en-4 β -ol (Oblodiol-3-angelicat)	795
3 α -Angeloyloxy-4 α ,11-dihydroxy-5 α (H)-eudesm-6-en-8-one	795
3 β -Angeloyloxy-4 α ,11-dihydroxy-5 α (H)-eudesm-6-en-8-one	796
3 β -Angeloyloxy-7 α (H)-eudesma-4,11(13)-dien-12-oic Acid (3 β -Angeloyloxyisocostic Acid)	796
3 β -Angeloyloxy-5 α ,7 α (H)-eudesm-4(15)-en-12-oic Acid Methyl Ester (3 β -Angeloyloxy-11,13-dihydrocostus Acid Methyl Ester)	797
3 α -Angeloyloxy-4 α -hydroxy-7 β ,11 β -epoxy-5 α (H)-eudesm-8-one (7 β ,11-Epoxycuauthemone 3- <i>O</i> -Angelate)	797
3 β -Angeloyloxy-4 α -hydroxy-7 α ,11-epoxy-eudesm-5-en-8-one	798
3 β -Angeloyloxy-4 α -hydroxy-7 β ,11-epoxy-5 α (H)-eudesman-8-one	798
3 α -Angeloyloxy-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one	799
3 β -Angeloyloxy-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one (3- <i>O</i> -Angeloyl-3- <i>epi</i> -cuauhtemone)	799
3 β -Angeloyloxy-4 β -hydroxy-5 α ,7 α (H)-eudesman-8-one	800
3 β -Angeloyloxy-4 β -hydroxy-7 α (H)-eudesma-5,11(13)-dien-12-oic Acid (3 β -Angeloyloxy-4 β -hydroxy-5-en-cotic Acid)	801
3 α -Angeloyloxy-4 α -hydroxy-11-hydroperoxy-5 α (H)-eudesm-6-en-8-one	801
3 β -Angeloyloxy-5-hydroperoxy-7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid (3 β -Angeloyloxy-5 α -hydroperoxy-cotic Acid)	802
6 β -Angeloyloxy-5,10-bis- <i>epi</i> -eudesm-4(15)-en-1 α -ol	802
6 α -Angeloyloxy-5 α ,7 α (H)-eudesm-4(15)-ene	803
12-Angeloyloxy-5 α ,7 α (H)-eudesma-3,11(13)-diene	803
12-Angeloyloxy-5 α ,7 α (H)-eudesma-4(15),11(13)-diene	803
6 β -Anisoyloxy-1 β ,4 β -epoxy-5,10-bis- <i>epi</i> -eudesmane (6 β -Anisoyloxy-5,10-bis- <i>epi</i> -eudesmane-1 β ,4 β -epoxide)	804
6 β -Anisoyloxy-5,10-bis- <i>epi</i> -eudesm-3-en-1 α -ol (1 α -Hydroxy-6 β -anisoyloxy-5,10-bis- <i>epi</i> -eudesm-3-ene)	804

6 β -Benzoyloxy-5 α ,7 α (H)-eudesmane-3 α ,4 β -diol	805
15-Butyroyloxy-7 α (H)-eudesma-3,11(13)-dien-12-oic Acid Methyl Ester	805
3 α -(3'-Chloro-2'-hydroxy-2'-methylbutyroyloxy)-4 α ,11-dihydroxy- 5 α (H)-eudesm-6-en-8-one (3 α -(2'-Hydroxy-2'-methyl-3'-chloro- butyroyloxy)-4 α ,11-dihydroxy-6,7-dehydroeudesman-8-one)	806
3 α -(3'-Chloro-2'-hydroxy-2'-methylbutyroyloxy)-4 α ,11-dihydroxy-5 α (H)-eudesm-7(11)-en-8-one (3 α -(3'-Chloro-2'-hydroxy-2'- methylbutanoyl)-cuauhtemone)	806
1 α -Cinnamoyloxy-5,10-bis- <i>epi</i> -eudesm-3-en-6 β -ol	807
4 β -Cinnamoyloxy-eudesm-7-ene-1 β ,2 α -diol (4 β -Cinnamoloxy-1 β ,2 α - dihydroxyeudesm-7-ene)	807
4 β -Cinnamoyloxy-eudesm-7-ene-1 β ,3 α -diol (4 β -Cinnamoloxy-1 β ,3 α - dihydroxyeudesm-7-ene)	808
6 β -Cinnamoyloxy-5,10-bis- <i>epi</i> -eudesm-3-en-1 α -ol	808
6 β -Cinnamoyloxy-5,10-bis- <i>epi</i> -eudesm-4(15)-en-1 α -ol (β -Chaenocephalol Cinnamate)	809
6 β -Cinnamoyloxy-1 α ,4 α -epoxy-5 α ,6 α ,7 α (H)-eudesmane (6 β -Cinnamoyloxy-1 α ,4 α -oxidoeudesmane)	809
6 β -Cinnamoyloxy-1 β ,4 β -epoxy-5,10-bis- <i>epi</i> -eudesmane	810
6 β -Cinnamoyloxy-4 α ,5 α ,7 α (H)-eudesman-15-al	810
6 β -Cinnamoyloxy-5 α ,7 α (H)-eudesmane-1 β ,4 α -diol (6 β -Cinnamoyloxy-1 β ,4 α -dihydroxyeudesmane)	811
6 β -Cinnamoyloxy-5 α ,6 α ,7 α (H)-eudesmane-1 β ,4 β -diol (6 β -Cinnamoyloxy-1 β ,4 β -dihydroxyeudesmane)	811
6 β -Cinnamoyloxy-5 α ,7 α (H)-eudesmane-3 α ,4 β -diol	812
6 β -Cinnamoyloxy-7 α (H)-eudesmane-3 β ,4 α -diol (6 β -[Cinnamoyloxy]- 3 β ,4 α -dihydroxyeudesmane)	813
6 β -Cinnamoyloxy-5 α ,7 α (H)-eudesmane-4 β ,9 β -diol	814
6 β -Cinnamoyloxy-7 α (H)-eudesmane-4 α ,15-diol (15-Hydroxy -verbessindiol-6- <i>O</i> -cinnamate; 6 β -Cinnamoyloxy-4 α , 15-dihydroxyeudesmane)	814
6 β -Cinnamoyloxy-5 α ,7 α (H)-eudesm-3-ene (6 β -Cinnamoyloxy- 3,4-didehydroeudesmane)	815
6 β -Cinnamoyloxy-5 α ,7 α (H)-eudesm-3-en-15-al (6 β -Cinnamoyloxy- 3,4-didehydroeudesman-15-al)	815
6 β -Cinnamoyloxy-5 α ,6 α ,7 α (H)-eudesm-3-en-1 β -ol (6 β -Cinnamoyloxy-1 β -hydroxy-Eudesm-3-ene; 6 β -Cinnamoyloxy- 3,4-dehydroeudesmane)	816
6 β -Cinnamoyloxy-5 α ,6 α ,7 α (H)-eudesm-4(15)-en-1 β -ol (6 β -Cinnamoyloxy-1 β -hydroxyeudesm-4(15)-ene)	816
6 β -Cinnamoyloxy-5 α ,7 α (H)-eudesman-15-oic Acid	817
6 β -Cinnamoyloxy-5 α ,6 α ,7 α (H)-eudesman-4 β -ol (6 β -Cinnamoyloxy-4 β - hydroxyeudesmane)	818
6 β -Cinnamoyloxy-5 α ,7 α (H)-eudesmane-1 β ,4 α ,15-triol (1 β ,15- Dihydroxyverbessin Diol-6- <i>O</i> -cinnamate)	818
6 β -Cinnamoyloxy-1 α -hydroxy-5,10-bis- <i>epi</i> -eudesm-4-en-3-one	819
6 β -Cinnamoyloxy-1 α -hydroxy-5 α ,7 α (H)-eudesman-15-oic Acid	820
6 β -Cinnamoyloxy-3 α -hydroxy-5 α ,7 α (H)-eudesman-15-oic Acid	820

6 β -Cinnamoyloxy-3 β -hydroxy-4 α ,5 α ,7 α (H)-eudesman-15-al	821
6 β -Cinnamoyloxy-3 β -hydroxy-4 β ,5 α ,7 α (H)-eudesman-15-al	821
6 β -Cinnamoyloxy-3 β -hydroxy-eudesm-4-en-1-one	822
6 β -Cinnamoyloxy-3 β -hydroperoxy-5,10-bis- <i>epi</i> -eudesm-4-en-1 α -ol	822
6 β -Cinnamoyloxy-3 β -hydroperoxy-5,10-bis- <i>epi</i> -eudesm-4(15)-en-1 α -ol	823
6 β -Cinnamoyloxy-4 β -hydroperoxy-5,10-bis- <i>epi</i> -eudesm-2-en-1 α -ol	823
9 β -Cinnamoyloxy-5 α ,7 α (H)-eudesm-3-en-1 β -ol (9 β -Cinnamoyloxy-1 β -hydroxy-3,4-Dehydroeudesmane)	824
15-Cinnamoyloxy-5 β ,6 α ,7 α (H)-5(10)-bis- <i>epi</i> -eudesmane-1 α ,4 β ,6 β ,9 α -tetraol (Rupesterol Cinnamate)	824
15-Cinnamoyloxy-5,10-bis- <i>epi</i> -eudesmane-1 α ,4 β ,6 β -triol (Rupestrinol Cinnamate)	825
15- <i>cis</i> -Cinnamoyloxy-eudesma-3,11(13)-dien-12-oic Acid Methyl Ester	825
15- <i>trans</i> -Cinnamoyloxy-eudesma-3,11(13)-dien-12-oic Acid Methyl Ester	826
3 β -Hydrocinnamoyloxy-5 α ,7 α (H)-eudesm-4(15)-en-12-oic Acid Methyl Ester (3 β -Hydrocinnamoyloxy-11,13-dihydrocostus Acid Methyl Ester)	826
6 α -Coumaroyloxy-5 β ,7 α (H)-eudesm-3-ene	827
6 β -Coumaroyloxy-5 α ,7 α (H)-eudesm-3-ene (β -Verbesinolcumarat)	827
6 α -(7' <i>Z</i> -Coumaroyloxy)-eudesm-4(15)-ene	827
6 α - <i>trans</i> -Coumaroyloxy-5 α ,7 α (H)-eudesm-4(15)-ene (6- <i>epi</i> - β -Verbesinol Coumarate)	828
6 β -Coumaroyloxy-5 α ,7 α (H)-eudesm-4(15)-ene (α -Verbesinolcumarat)	828
6 β -Coumaroyloxy-5 α ,7 α (H)-eudesm-4 α -ol	829
6 β -Coumaroyloxy-5 α ,6 α ,7 α (H)-eudesman-4 β -ol (6 β -Coumaroyloxy-4 β -hydroxy-eudesmane)	829
15- <i>cis</i> -Coumaroyloxy-eudesma-3(4),11(13)-dien-12-oic Acid Methyl Ester	830
15- <i>trans</i> -Coumaroyloxy-eudesma-3(4),11(13)-dien-12-oic Acid	830
3 α -(2',3'-Dihydroxy-2'-methylbutyroyloxy)-4 α ,11-dihydroxy-5 α (H)-eudesm-6-en-8-one (3 α -(2',3'-Dihydroxy-2'-methylbutanoyl)-4,11-dihydroxy-6,7-dehydroeudesman-8-one)	831
3 α -(2',3'-Dihydroxy-2'-methylbutyroyloxy)-4 α -hydroxy-eudesm-7(11)-en-8-one (3 α - <i>O</i> -[2,3-Dihydroxy-2-methylbutyroyl]-cuauhtemone)	831
3 β -(2',3'-Dihydroxy-2'-methylbutyroyloxy)-4 α -hydroxy-11-hydroperoxy-5 α (H)-eudesm-6-en-8-one (3 β -(2',3'-Dihydroxy-2'-methylbutyroyloxy)-4 α -hydroxy-11-hydroperoxy-6,7-dehydroeudesman-8-one; Odonticin)	832
3 α -(2',3'-Epoxy-angeloyloxy)-4 α ,11-dihydroxy-5 α (H)-eudesm-6-en-8-one (3 α -(2,3-Epoxy-2-methylbutyroyl)-4 α ,11-dihydroxy-6-eudesmen-8-one; 3 α -(2'-Methyl-2',3'-epoxy-butyroyloxy)-4 α ,11-dihydroxy-6,7-dehydroeudesman-8-one)	832
3 α -(2',3'-Epoxy-angeloyloxy)-4 α -formiloyloxy-5 α (H)-eudesm-7(11)-en-8-one (3- <i>O</i> -[2',3'-Epoxy-2'-methylbutyroyloxy]-cuauthemone- <i>O</i> -formiate)	833
3 α -(2',3'-Epoxy-angeloyloxy)-4 α -hydroxy-7 β ,11 β -epoxy-5 α (H)-eudesman-8-one (7 β ,11-Epoxycuauthemone 3 α - <i>O</i> -epoxyangelate)	833
3 β -(2',3'-Epoxy-angeloyloxy)-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one	834

3 α -(2',3'-Epoxy-angeloyloxy)-4 α -hydroxy-eudesm-7(11)-en-8-one (Cuauhtemon-3-(2,3-epoxy-2,3-dihydroangelikate); (3 <i>S</i> ,4 <i>R</i> ,5 <i>S</i> ,10 <i>S</i> ,2' <i>R</i> ,3' <i>R</i>)-3- <i>O</i> -[2,3-Epoxy-2-methylbutyroyl] -cuauhtemone)	834
3 α -(2',3'-Epoxy-angeloyloxy)-4 α -hydroxy-5 α (H)-eudesm-11(13)-en- 8-on-12-oic Acid Methyl Ester (Pluchecinin)	835
6 β -Feruloyloxy-5 α ,6 α ,7 α (H)-eudesman-4 β -ol (6 β -Feruloyloxy-4 β - hydroxy-eudesmane)	835
6 α -[4- <i>O</i> -(9 <i>Z</i> -Hexadecenoyl)]-7 <i>E</i> -coumaroyloxy]-5 α ,7 α (H)-eudesm- 4(15)-ene	836
8 α -(4'-Hydroxy-2'-methylacryloyloxy)-1 β ,6 α -dihydroxy-5 α ,7 α (H)- eudesm-11(13)-en-15 α -al-12-Oic Acid Methyl Ester (4- <i>epi</i> - Carmanin)	837
8 α -(4'-Hydroxy-2'-methylacryloyloxy)-1 β ,6 α -dihydroxy-5 α ,7 α (H)- eudesm-11(13)-en-15 β -al-12-Oic Acid Methyl Ester (Carmanin)	837
8 α -(4'-Hydroxy-2'-methylacryloyloxy)-1 β -hydroxy-6 α ,15 α -hemiacetal- 11(13)-eudesmen-12-oic Acid Methyl Ester (6 α ,15 α -Hemiacetal of Carmanin)	838
8 α -(5'-Hydroxy-tigloyloxy)-1 β ,6 α -dihydroxy-7 α (H)-eudesm-11(13)- en-15 α -al-12-oic Acid Methyl Ester (8 α -(2'-Hydroxy- 2'-butenoyloxy)-1 β ,6 α -dihydroxy-15-oxo-11(13)-eudesmen- 12-oic Acid Methyl Ester)	838
2 α -Isobutyroyloxy-5 α ,7 α (H)-eudesma-3,11(13)-dien-12-oic Acid	839
3 β -Isobutyroyloxy-5 α ,7 α (H)-eudesm-4(15)-en-12-oic Acid Methyl Ester (3 β -Isobutyroyloxy-11,13-dihydrocostus Acid Methyl Ester)	839
3 α -Isobutyroyloxy-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one (Cuauthemone-3- <i>O</i> -isobutyrate)	840
12-Isobutyroyloxy-5 α ,7 α (H)-eudesma-3,11(13)-diene	840
3 β -Isovaleroyloxy-5 α ,7 α (H)-eudesm-4(15)-en-12-oic Acid Methyl Ester (3 β -Isovaleryloxy-11,13-dihydrocostus Acid Methyl Ester)	841
12-Isovaleroyloxy-5 α ,7 α (H)-eudesma-3,11(13)-diene	841
12-Isovaleroyloxy-5 α ,7 α (H)-eudesma-4(15),11(13)-diene	842
3 β -(2'-Methylbutyroyloxy)-4 α ,11-dihydroxy-5 α (H)-eudesm-6-en-8-one	842
3 β -(2'-Methylbutyroyloxy)-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one (3 β - <i>O</i> -(2-Methylbutyroyl)-3- <i>epi</i> -cuauhtemone)	843
12-(2'-Methylbutyroyloxy)-5 α ,7 α (H)-eudesma-3,11(13)-diene	843
12-(2'-Methylbutyroyloxy)-5 α ,7 α (H)-eudesma-4(15),11(13)-diene	844
1 β -(4'-Methylseneciolyoxy)-5 α (H)-eudesm-6-en-4 β -ol (7.8H-6.7- Dehydrooblodiol-(3-methylpent-2-enoate))	844
1 β -(4'-Methylseneciolyoxy)-5 α (H)-eudesm-7-en-4 β -ol (Oblodiol-1- [3-methylpent-2-enoate])	845
2 α -(4'-Methylseneciolyoxy)-5 α ,7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid (2 α -[3-Ethylbut-2 <i>Z</i> -enoyloxy]-costoate)	845
2 α -(4'-Methylseneciolyoxy)-5 α ,7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid Methyl Ester (Methyl 2 α -[3-Ethylbut-2 <i>Z</i> -enoyloxy]-costoate)	846
3 α -(4'-Methylseneciolyoxy)-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one (Cuauthemone-3- <i>O</i> -(4-methylsenecioate))	846
3 α -(3'-Methylvaleroyloxy)-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one (Cuauthemone-3- <i>O</i> -(3-methylvalerate))	847

6 α -(4'- <i>O</i> -Methyl-7' <i>E</i> -coumaroyloxy)-5 α ,7 α (H)-eudesm-4(15)-ene	847
11-Oleoyloxy-5 α ,7 α (H)-eudesm-4(15)-ene (11- <i>O</i> -Oleoyl- β -eudesmol)	848
6 α -[(4- <i>O</i> -Palmityl)-7 <i>E</i> -coumaroyloxy]-5 α ,7 α (H)-eudesm-4(15)-ene	848
15-Propionyloxy-7 α (H)-eudesma-3,11(13)-dien-12-oic Acid	849
2 α -Seneciyoxyloxy-5 α ,7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid (2 α -Seneciyoxyloxycostate)	849
2 α -Seneciyoxyloxy-5 α ,7 α (H)-eudesma-4(15),11(13)-dien-12-oic Acid Methyl Ester (Methyl 2 α -Seneciyoxyloxycostate)	850
3 α -Seneciyoxyloxy-4 α ,11-dihydroxy-5 α (H)-eudesm-6-en-8-one	850
3 β -Seneciyoxyloxy-5 α ,7 α (H)-eudesm-4(15)-en-12-oic Acid Methyl Ester (3 β -Seneciyoxyloxy-11,13-dihydrocostus Acid Methyl Ester)	851
3 α -Seneciyoxyloxy-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one (Cuauthemone-3- <i>O</i> -senecioate)	851
3 α -Seneciyoxyloxy-4 α -hydroxy-11-hydroperoxy-5 α (H)-eudesm-6-en-8-one	852
6 α -[(4- <i>O</i> -Stearyl)-7 <i>E</i> -coumaroyloxy]-5 α ,7 α (H)-eudesm-4(14)-ene	852
1 β -Tigloyloxy-5 α (H)-eudesm-7-en-4 β -ol (Oblodiol-1-tiglate)	853
3 β -Tigloyloxy-5 α ,7 α (H)-eudesm-4(15)-en-12-oic Acid Methyl Ester (3 β -Tiglinoyloxy-11,13-dihydrocostus Acid Methyl Ester)	853
3 β -Tigloyloxy-4 α -hydroxy-5 α (H)-eudesm-7(11)-en-8-one	854
6 α -Tigloyloxy-5 α ,7 α (H)-eudesm-4(15)-ene (6 α -Tiglinoyloxy- 4,15-dehydroeudesmane)	854
15-Tigloyloxy-5 α ,7 α (H)-eudesma-3(4),11(13)-dien-12-oic Acid Methyl Ester	855

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1 α -Acetoxy-6 β -cinnamoyloxy-5 α ,7 α (H)-eudesman-15-oic Acid	857
2 β -Acetoxy-6 β -benzoyloxy-5,10-bis- <i>epi</i> -eudesm-4(15)-en- 1 α -ol (Ivanuol)	858
4 α -Acetoxy-3 α -(2'-acetoxy-3'-hydroxy-2'-methylbutyroyloxy)-5 α (H)- eudesm-7(11)-en-8-one (Argutin)	858
4 α -Acetoxy-3 α -(3'-acetoxy-2'-hydroxy-2'-methylbutyroyloxy)-5 α (H)- eudesm-7(11)-en-8-one (4 α - <i>O</i> -Acetyl Cuauthemone 3 α - <i>O</i> -[2-Methyl- 2-hydroxy-3-acetoxy-butyrate])	859
4 α -Acetoxy-3 α -angeloyloxy-7 β ,11 β -epoxy-5 α (H)-eudesm-8-one (7,11-Epoxide-3-angeloyl-4-acetoxy-eudesmen-8-one; 4- <i>O</i> -Acetyl- 7 β ,11-epoxycuauthemone 3- <i>O</i> -Angelate)	859
4 β -Acetoxy-3 β -angeloyloxy-7 α ,11 α -epoxy-5 α (H)-eudesman-8-one	860
4 α -Acetoxy-3 β -angeloyloxy-5 α ,7 α (H)-eudesman-8-one	860
4 α -Acetoxy-3 α -angeloyloxy-5 α (H)-eudesm-7(11)-en-8-one	861
4 α -Acetoxy-3 β -angeloyloxy-5 α (H)-eudesm-7(11)-en-8-one (3- <i>O</i> -Angeloyl-3- <i>epi</i> -cuauhtemon-4- <i>O</i> -acetate)	861
4 β -Acetoxy-3 β -angeloyloxy-7 α -hydroxy-5 α (H)-eudesm-11(13)-en-8-one	862
4 α -Acetoxy-3 α -angeloyloxy-11-hydroxy-5 α (H)-eudesm-6-en-8-one (4 α -Acetoxy-3 α -angeloyloxy-11-hydroxy-6,7-dehydroeudesman -8-one)	862
4 α -Acetoxy-3 β -angeloyloxy-11-hydroxy-5 α (H)-eudesm-6-en-8-one (4 α -Acetoxy-3 β -angeloyloxy-11-hydroxy-6,7-dehydroeudesman- 8-one)	863

4 α -Acetoxy-3 α -angeloyloxy-7 α -hydroperoxy-5 α (H)-eudesm-11(13)- en-8-one (4 α -O-Acetyl-7 α -hydroperoxy-11,13-dehydro-7,11- dihydrocuathemone 3 α -O-Angelate)	863
4 α -Acetoxy-3 α -angeloyloxy-11-hydroperoxy-5 α (H)-eudesm-6-en-8-one (4 α -O-Acetyl-11-hydroperoxy-6,7-dehydro-7,11-dihydrocuathemone 3 α -O-Angelate)	864
4 α -Acetoxy-3 α -(2',3'-epoxy-angeloyloxy)-7 β ,11 β -epoxy-5 α (H)- eudesman-8-one (4 α -O-Acetyl-7 β ,11-epoxycuathemone 3 α - O-Epoxyangelate)	864
4 α -Acetoxy-3 α -(2',3'-epoxy-angeloyloxy)-5 α (H)-eudesm-7(11)- en-8-one	865
4 α -Acetoxy-3 β -(2',3'-epoxy-angeloyloxy)-5 α ,7 α (H)-eudesm-8-one	866
4 α -Acetoxy-3 α -(2',3'-epoxy-angeloyloxy)-11-hydroxy-5 α (H)-eudesm- 6-en-8-one (4-Epiarguticinin; 4 α -Acetoxy-3 α -[2-methyl-2,3-epoxy- butyroxyloxy]-11-hydroxy-6,7-dehydroeudesman-8-one)	866
4 β -Acetoxy-3 α -(2',3'-epoxy-angeloyloxy)-11-hydroxy-5 α (H)- eudesm-6-en-8-one (4 β -Acetoxy-3 α -(2'-methyl-2',3'- epoxybutyroxyloxy)-11-hydroxy-6,7-dehydroeudesman-8-one; Arguticinin)	867
4 α -Acetoxy-3 α -(2',3'-epoxy-Angeloyloxy)-11-hydroperoxy-5 α (H)- eudesm-6-en-8-one (3 α -[2,3-Epoxy-2-methylbutyroxyloxy]- 4 α -acetoxy-11-peroxy-eudesm-6-en-8-one)	868
4 α -Acetoxy-3 α -(2'-hydroxy-2'-methyl-3'-chloro-butyroxyloxy)- 11-hydroxy-5 α (H)-eudesm-6-en-8-one	868
4 α -Acetoxy-3 β -(2'-methylbutyroxyloxy)-5 α (H)-eudesm-7(11)- en-8-one (4-O-Acetyl-3-O-(2-methylbutyryl)-3- <i>epi</i> -cuahtemone)	869
4 α -Acetoxy-3 β -(2'-methylbutyroxyloxy)-11-hydroxy-5 α (H)-eudesm-6 -en-8-one	869
4 β -Acetoxy-3 β -(2'-methylbutyroxyloxy)-11-hydroxy-5 α (H)-eudesm -6-en-8-one	870
8 β -Acetoxy-3 β -angeloyloxy-eudesma-4,11(13)-dien-12-oic-Acid Methyl Ester (8 β -Acetoxy-3 β -angeloyloxy-isocostic Acid Methyl Ester)	870
8 β -Acetoxy-3 β -angeloyloxy-5 α -hydroxy-eudesma-4(15),11(13)-dien- 12-oic Acid (8 β -Acetoxy-3 β -angeloyloxy-5 α -hydroxy-costic Acid)	871
8 β -Acetoxy-3 α -angeloyloxy-5 α -hydroperoxy-eudesma-4(15),11(13)- dien-12-oic Acid (8 β -Acetoxy-3 α -angeloyloxy-5 α -hydroperoxy -costic Acid)	871
8 β -Acetoxy-3 β -angeloyloxy-5 α -hydroperoxy-eudesma-4(15),11(13)- dien-12-oic Acid (8 β -Acetoxy-3 β -angeloyloxy-5 α -hydroperoxy- costic Acid)	872
8 β -Acetoxy-3 β -isobutyroxyloxy-eudesma-4,11(13)-dien-12-oic Acid Methyl Ester (8 β -Acetoxy-3 β -isobutyroxyloxy-isocostic Acid Methyl Ester)	872
8 β -Acetoxy-3 β -isobutyroxyloxy-5 α -hydroxy-eudesma-4(15),11(13)-dien- 12-oic Acid (8 β -Acetoxy-3 β -isobutyroxyloxy-5 α -hydroxy-costic Acid)	873
8 β -Acetoxy-3 β -isobutyroxyloxy-5 α -hydroperoxy-eudesma- 4(15),11(13)-dien-12-oic Acid (8 β -Acetoxy-3 β -isobutyroxyloxy- 5 α -hydroperoxy-costic Acid)	873

8β-Acetoxy-3β-(4'-methylseneciolyoxy)-eudesma-4,11(13)-dien-12-oic Acid Methyl Ester (8β-Acetoxy-3β-[4-methylseneciolyoxy]-isocostic Acid Methyl Ester)	874
8β-Acetoxy-3β-propionyloxy-eudesma-4,11(13)-dien-12-oic Acid Methyl Ester (8β-Acetoxy-3β-propionyloxy-isocostic Acid Methyl Ester)	874
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2α,9β-Diacetoxy-1α-isovaleroyloxy-5,10-bis- <i>epi</i> -eudesma-3,11(13)- dien-14-ol (1α-Isovaleryloxypolyachyrol)	877
2α,9β-Diacetoxy-1α-seneciolyoxy-5,10-bis- <i>epi</i> -eudesma-3,11(13)- dien-14-ol (1α-Seneciolyloxypolyachyrol)	878
2α,9β-Diacetoxy-1α-tigloyloxy-5,10-bis- <i>epi</i> -eudesma-3,11(13)-dien- 14-ol (1α-Tigloyloxypolyachyrol)	878
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2α,9β,14-Triacetoxy-1α-tigloyloxy-5,10-bis- <i>epi</i> -eudesma-3,11(13)- diene (1α-Tigloyloxypolyachyrol-14- <i>O</i> -acetate)	881
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3α-Angeloyloxy-5α(H)-furanoeudesman-4α-ol (3α-Angeloyloxyfuroepatol)	883
3α-(2',3'-Epoxy-Angeloyloxy)-5α(H)-Furanoeudesmane-4α, 6β-diol (6β-Hydroxy-3α-(2',3'-Epoxy-2'-Methylbutyroxy)-Furoepaltol)	883
3α-(2',3'-Epoxy-Angeloyloxy)-5α(H)-Furanoeudesman-4α-ol (3α- (2',3'-Epoxy-2'-Methylbutyroxy)-Furoepaltol; 3α-(2',3'-Epoxy-2'- Methylbutyroxy)-Shizukafuranol)	884
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2β-Acetoxy-10β,11-epoxy-1α,4β,5β,7α(H)-guaian-8α-ol (Kessyl Glycol 2-Acetate)	887
6β-Acetoxy-1β,7α,10βH-guaia-4,11(13)-dien-3-one	888
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8α-Acetoxy-1β,5α(H)-guaia-9,11-diene-3β,4α-diol (8α-Acetoxydolichlasin; 8α-Acetoxy-9,11-guaiadiene-3,4-diol)	890
8β-Acetoxy-10α-oxyethyl-1,5,7β(H)-guaiane-4α,11-diol	890

9 α -Acetoxy-5 α (11)-epoxy-1 β ,4 β ,7 β ,10 α (H)-guaiane (α -Liguloxidol Acetate)	891
9 β -Acetoxy-5 β (11)-epoxy-1 β ,4 β ,7 α ,10 α (H)-guaiane (β -Liguloxidol Acetate)	891
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11-Acetoxy-1 α ,5 α (H)-guai-10(14)-en-4 α -ol (11-Acetoxy- <i>cis</i> -guaia-10(14)-en-4-ol)	892
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12-Acetoxy-1 β ,5 α ,7 α (H)-guai-11-ene-4 α ,6 α ,10 α -triol (4 α ,6 α -Trihydroxy-13-acetoxylguaia-11-ene)	894
12-Acetoxy-1 α ,5 α ,6 β ,7 α (H)-guaia-4,10(14),11-Trien-6 α -ol (Watsonol B)	895
8 α -Angeloyloxy-5 β ,6 α ,7 α (H)-guai-1(10)-ene-4 β ,6 β -diol (Cycloshiomodiol-8- <i>O</i> -angelate)	895
9 α -Angeloyloxy-1 β ,10 β -dihydroxy-5 α ,7 β (H)-guai-15-en-6-one	896
8 β -Cinnamoyloxy-5 β ,6 α ,7 α (H)-guai-10(14)-ene-4 β ,6 β -diol (8 β -Cinnamoyl-dihydroxynardol; 2,10-Dihydroxy-3-isopropyl-10-methyl-6-methylidenebicyclo[5.3.0]dec-4-yl Cinnamate)	896
[4 <i>S</i> ,5 <i>S</i> ,7 <i>S</i> ,8 <i>S</i>]-8- <i>p</i> -Coumaroyloxy-1(10)-guaien-11-ol	897
8 α -[(4-Hydroxyphenyl)-Acetoxy]-6 α ,15-dihydroxy-5 α ,6 β ,7 α (H)-guaia-1(10),3,11(13)-trien-2-on-12-oic Acid Methyl Ester (Lactupicrin Methyl Ester)	898
[4 <i>S</i> ,5 <i>S</i> ,7 <i>S</i> ,8 <i>S</i>]-8 α -Feruloyloxy-1(10)-guaien-11-ol	898
8 α -(4'-Hydroxy-benzoyloxy)-5 α ,7 α (H)-guaia-3,1(10)-diene (Microferin)	899
8 α -(4'-Hydroxy-benzoyloxy)-5 α ,6 α ,7 α (H)-guai-1(10)-ene-4 β ,6 β -diol (Karaferin)	899
12-(3'-Hydroxy-isovaleroyloxy)-1 β ,7 α ,10 β (H)-guaia-4,11-dien-3-one	900
12-(2'-Hydroxy-2'-methylbutyroxyloxy)-1 β ,7 α ,10 β (H)-guaia-4,11-dien-3-one	900
8 β -Isovaleroyloxy-2 α -hydroxy-1 β ,7 α (H)-guaia-4,11-dien-3-one	901
8 α -Isovanilloyloxy-5 α ,7 α (H)-guaia-1(10),3-diene (Microferinin)	901
8 α -Isovanilloyloxy-5 α ,6 α ,7 α (H)-guai-1(10)-ene-4 β ,6 β -diol (Karaferinin)	902
[4 <i>S</i> ,5 <i>S</i> ,7 <i>S</i> ,8 <i>S</i>]-8 α -Seneciolyoxy-1(10)-guaien-11-ol	902

Guaianes – Diesters

6 β -Acetoxy-8 α -angeloyloxy-5 β ,7 α (H)-guai-1(10)-en-4 β -ol (Cycloshiomodiol-6- <i>O</i> -acetate-8- <i>O</i> -angelate)	904
11-Acetoxy-8 β -angeloyloxy-1 β ,7 α ,10 α (H)-guai-4-en-3-one (Torilin)	904
11-Acetoxy-8 β -angeloyloxy-1 α -hydroxy-7,10 α (H)-guai-4-en-3-one (1 α -Hydroxytorilin)	905
11-Acetoxy-8 β -angeloyloxy-1 β -hydroxy-7,10 α (H)-guai-4-en-3-one (1 β -Hydroxytorilin; 1 β ,7 β ,8 β ,10 β)-1,8,11-Trihydroxy-4-guaien-8-angeloyl-3-one; 1-Hydroxytorilin A)	906

6 α -Acetoxy-9 β -(2',3'-epoxy-angeloyloxy)-5 α ,8 α -dihydroxy-7 α (H)- guaia-1(10),3,11-trien-2-on-12-oic Acid Methyl Acid (Methyl-9 β - [epoxyangeloyloxy]-5 α ,8 α -dihydroxy-2-oxo-3,4-dehydro- δ - guaien-12-oate)	907
11-Acetoxy-8 β -isobutyroyloxy-1 β ,7 α ,10 α (H)-guai-4-en-3-one (11-Acetoxy-8-isobutyryl-4-guaien-3-one)	908
11-Acetoxy-8 β -(2'-methylacryloyloxy)-1 β ,7 α ,10 α (H)-guai-4-en-3-one (11-Acetoxy-8-methacrylyl-4-guaien-3-one)	908
11-Acetoxy-8-propionyloxy-1 β ,7 α ,10 α (H)-guai-4-en-3-one (11-Acetoxy-8-propionyl-4-guaien-3-one)	909
2 β ,8 α -Diacetoxy-10 β ,11-epoxy-1 α ,4 β ,5 β ,7 α (H)-guaiane (Kessyl Glycol Diacetate)	910
4 α ,9 α -Diacetoxy-1 β ,5 α (H)-guai-6-en-10 β -ol	910
12,13-Diacetoxy-1 α ,5 α ,7 α (H)-guaia-4 α ,6 α ,10 α ,11-tetraol	911
 Guaianes – Triesters	
4 α ,9 α ,10 β -Triacetoxy-1 β ,5 α (H)-guai-6-ene	913
6 β ,12,15-Triacetoxy-1 β ,7 α ,10 β (H)-guaia-4,11-dien-3-one	913
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2 β -Acetoxy-6 β ,7 α -dihydroxy-4 β ,5 α ,9 α (H)-oplopana-3(14)Z,8(10)-diene	915
2 β -Acetoxy-8 α -hydroxy-3 α ,4 β ,5 α ,9 α (H)-oplopan-14-one (2 β -Acetoxyoplopanone)	916
14 β -Acetoxy-3 β ,4 α ,5 β (H)-oplopan-8(10)-en-2-one (Petasipaline B)	916
1 α -Angeloyloxy-3 α ,4 β ,5 α (H)-oplopan-8-en-7,14-dione (1 α -Angeloyloxy-7-oxo-isoanhydrooplopanone)	917
1 α -Angeloyloxy-3 α ,4 β ,5 α ,9 α (H)-oplopan-8(10)-en-14-one (1 α -Angeloyloxyanhydrooplopanone)	917
6 β -Angeloyloxy-7 α -hydroxy-4 β ,5 α ,9 α (H)-oplopana-3(14)E,8(10) -dien-2-one	918
6 β -Angeloyloxy-7 α -hydroxy-4 β ,5 α ,9 α (H)-oplopana-3(14)Z,8(10) -dien-2-one	918
7 α -Angeloyloxy-6 β -hydroxy-4 β ,5 α ,9 α (H)-oplopana-3(14)E,8(10) -dien-2-one	919
7 α -Angeloyloxy-6 β -hydroxy-4 β ,5 α ,9 α (H)-oplopana-3(14)Z,8(10) -dien-2-one	919
7 β -Angeloyloxy-4 α ,5 β ,9 β (H)-oplopana-3(14)Z,8(10)-dien-2-one	920
1 α -Anisoyloxy-3 α ,4 β ,5 α (H)-oplopan-8-en-7,14-dione (1 α -Anisoyloxy-7-oxo-isoanhydrooplopanone)	920
1 α -Cinnamoyloxy-3 α ,4 β ,5 α (H)-oplopan-8-en-7,14-dione (1 α -Cinnamoyloxy-7-oxo-isoanhydrooplopanone)	921
15-Cinnamoyloxy-4 β ,5 α ,9 α (H)-oplopan-14-one	921
7 β -Isovaleroyloxy-14(R)-hydroxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10) -en-2-one	922
7 α -(4'-Methylseneciolyloxy)-6 β -hydroxy-4 β ,5 α ,9 α (H)-oplopana- 3(14)Z,8(10)-dien-2-one	922

7 β -(4'-Methylseneciolyloxy)-14 β (<i>R</i>)-hydroxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (7 β -(3'-Ethyl- <i>cis</i> -crotonoyl)-14-hydroxy-notonipetranone)	923
7 β -(4'-Methylseneciolyloxy)-4 α ,5 β ,9 β (H)-oplopana-3(14) <i>E</i> ,8(10)-dien-2-one	923
7 α -Seneciolyloxy-6 β -hydroxy-4 β ,5 α ,9 α (H)-oplopana-3(14) <i>Z</i> ,8(10)-dien-2-one	924
7 β -Seneciolyloxy-4 α ,5 β ,9 α (H)-oplopana-3(14) <i>Z</i> ,8(10)-dien-2-one	924

Oplopanes – Diesters

2 β -Acetoxy-6 β -angeloyloxy-7 α -hydroxy-4 β ,5 α ,9 α (H)-oplopana-3(14) <i>Z</i> ,8(10)-diene	927
2 β -Acetoxy-7 α -angeloyloxy-6 β -hydroxy-4 β ,5 α ,9 α (H)-oplopana-3(14) <i>Z</i> ,8(10)-diene	927
2 β -Acetoxy-7 α -(4'-methylseneciolyloxy)-6 β -hydroxy-4 β ,5 α ,9 α (H)-oplopana-3(14) <i>Z</i> ,8(10)-diene	928
14-Acetoxy-7 α -angeloyloxy-6 β -hydroxy-3 α ,4 β ,5 α ,9 α (H)-oplopan-8(10)-en-2-one	928
14 β -Acetoxy-7 β -angeloyloxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (14 β -Acetoxy-7 β -angeloyloxy-notonipetranone)	929
14-Acetoxy-7 β -isovaleroyloxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (Notonipetron)	929
14-Acetoxy-7 β -(4'-methylseneciolyloxy)-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (14-Acetoxy-7 β -(3'-ethyl Crotonoyloxy)-notonipetranone; Tussilagone; (7 <i>R</i> ,14 <i>R</i>)-14-Acetoxy-7-[(2' <i>E</i>)-3'-methylpent-2'-enoyloxy]-oplopanone)	930
14 β -Acetoxy-7 β -seneciolyloxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (14-Acetoxy-7 β -seneciolyloxy-notonipetranone)	931
1 α -Angeloyloxy-7 β -(4''-methylseneciolyloxy)-4 α ,5 β ,9 β (H)-oplopana-3(14) <i>Z</i> ,8(10)-dien-2-one	931
7,14 β -Diacetoxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (Petasipaline A)	932
1 α ,7 β -Di(4'-methylseneciolyloxy)-4 α ,5 β ,9 β (H)-oplopana-3(14) <i>Z</i> ,8(10)-dien-2-one	932
1 α -(2'-Methylbutyryloxy)-7 β -(4''-methylseneciolyloxy)-14-hydroxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (7 β -(3'-Ethyl Crotonoyloxy)-14-hydroxy-1 α -(2'-methylbutyryloxy)-notonipetranone)	933
1 α -(2'-Methylbutyryloxy)-7 β -(4''-methylseneciolyloxy)-4 α ,5 β ,9 β (H)-oplopana-3(14) <i>E</i> ,8(10)-dien-2-one (7 β -(3'-Ethyl Crotonoyloxy)-1 α -(2'-methylbutyryloxy)-3,14-dehydro- <i>E</i> -notonipetranone)	934
1 α -(2'-Methylbutyryloxy)-7 β -(4''-methylseneciolyloxy)-4 α ,5 β ,9 β (H)-oplopana-3(14) <i>Z</i> ,8(10)-dien-2-one (7 β -(3'-Ethyl Crotonoyloxy)-1 α -(2'-methylbutyryloxy)-3,14-dehydro- <i>Z</i> -notonipetranone)	934

Oplopanes – Triesters

14-Acetoxy-7 β -angeloyloxy-6 β -(4''-Acetoxy-4''-methylseneciolyloxy)-11(12)-epoxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (4'-Acetoxy-7 β -des-(2''-methylbutyryloxy)-7 β -angeloyloxy-abrotanifolon)	937
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14-Acetoxy-1 α -(2'-methylbutyroyloxy)-7 β -(4''-methylseneciolyoxy)-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (14-Acetoxy-7 β -(3'-ethyl-crotonoyloxy)-1 α -(2'-methylbutyryloxy)-notonipetranone)	937
14-Acetoxy-7 β -(2'-methylbutyroyloxy)-6 β -(4''-acetoxy-4''-methylseneciolyoxy)-11(12)-epoxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (4''-Acetoxy-abrotanifolon)	938
14-Acetoxy-7 β -(2'-methylbutyroyloxy)-6 β -(4''-methylseneciolyoxy)-11(12)-epoxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (Abrotanifolon)	939
14-Acetoxy-7 α -(2'-methylbutyroyloxy)-6 α -(4''-methylseneciolyoxy)-11(12)-epoxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-on-13-oic Acid Methyl Ester (6 α -(4'-methylseneciolyoxy)-7 α -(2'-methylbutyryloxy)-6.7-desacyloxy-abrotanifolon-13-oic Acid Methyl Ester)	940
14-Acetoxy-7 β -(2'-methylbutyroyloxy)-6 α -(4''-methylseneciolyoxy)-11(12)-epoxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-on-13-oic Acid Methyl Ester (6 α -(4'-Methylseneciolyoxy)-7 β -(2'-methylbutyryloxy)-6.7-desacyloxy-abrotanifolon-13-oic Acid Methyl Ester)	941
14-Acetoxy-6 α -(4'-methylseneciolyoxy)-7 β -(3''-methylvaleryoxy)-11(12)-epoxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-on-13-oic Acid Methyl Ester (6 α -(4'-Methylseneciolyoxy)-7 β -(3''-methylvaleryoxy)-6.7-desacyloxy-abrotanifolon-13-oic Acid Methyl Ester)	941
1 β ,7 α -Di(2'-methylbutyroyloxy)-6 α -(4'''-acetoxy-4'''-methylseneciolyoxy)-8(10);11(12)-diepoxy-4 β ,5 α ,9 α (H)-oplopan-3(14)Z-en-2-one (4'-Acetoxy-1 β -(2-methylbutyryloxy)-14-desacetoxy-3,14-dehydro-8,10-epoxyabrotanifolone)	942
1 α ,6 β -Di(2'-methylbutyroyloxy)-6 β -(4'''-methylseneciolyoxy)-11(12)-epoxy-4 α ,5 β ,9 β (H)-oplopana-3(14)E,8(10)-dien-2-one (3,14E-Implexin)	942
1 α ,6 β -Di(2'-methylbutyroyloxy)-6 β -(4'''-methylseneciolyoxy)-11(12)-epoxy-4 α ,5 β ,9 β (H)-oplopana-3(14)Z,8(10)-dien-2-one (3,14Z-Implexin)	943

Oplopanes – Tetraesters

14-Acetoxy-1 β ,2 α -diisobutyroyloxy-7 α -(4'''-acetoxy-4'''-methylseneciolyoxy)-11(12)-epoxy-3 α ,4 β ,5 α ,9 α (H)-oplopan-8(10)-ene (Crellisin 2)	945
14-Acetoxy-1 β ,7 α -di(2'-Methylbutyroyloxy)-6 α -(4'''-acetoxy-4'''-methylseneciolyoxy)-8(10);11(12)-diepoxy-3 α ,4 β ,5 α ,9 α (H)-oplopan-2-one (14-Acetoxy-(4'-acetoxy-1 β -(2-methylbutyryloxy)-8,10-epoxyabrotanifolone))	946
14-Acetoxy-1 α ,7 β -di(2'-methylbutyroyloxy)-6 β -(4'''-methylseneciolyoxy)-11(12)-epoxy-3 β ,4 α ,5 β ,9 β (H)-oplopan-8(10)-en-2-one (14-Acetoxy-3,14-dihydroimplexin)	946
14-Acetoxy-2 α -isobutyroyloxy-1 β -(2''-methylbutyroyloxy)-7 α -(4'''-acetoxy-4'''-methylseneciolyoxy)-11(12)-epoxy-3 α ,4 β ,5 α ,9 α (H)-oplopan-8(10)-ene (Crellisin 1)	947

2β,14-Diacetoxy-6α-(2'-methylbutyroyloxy)-7α-(4''-methylsenecioyloxy)-11(12)-epoxy-3α,4β,5α,9α(H)-oplopan-8(10)-ene (2β,14-Diacetoxy-6α-methylbutyroyloxy-7α-methyl-senecioyloxy-11,12-epoxyoplopan-8(10) -ene) 948

Oplopanes – Pentaester

2β,14-Diacetoxy-1β,6α-DI(2'-Methylbutyroyloxy)-7α-(4'''-Acetoxy-4'''-Methylsenecioyloxy)-11(12)-Epoxy-3α,4β,5α,9α(H)-Oplopan-8(10)-ene 950

Thapsanes – Monoesters

3β-Angeloyloxy-14β,15α-epoxythapsan-14α-ol 952
 [8*R*,14*S*]-8α-Angeloyloxy-14,15-epoxythapsan-14α-ol
 ([4α*R*,4β*R*,6α*S*,7α*S*]-4α,4,5,9β-Tetramethylhydroindeno[6,7-C]-furan) 952
 8α-Coumaroyloxy-14β,15α-epoxythapsan-14α-ol 953
 8α-Feruloyloxy-14β,15α-epoxythapsan-14α-ol 953
 15-Feruloyloxy-6(14)-thapsene (7-Octahydro-4α,4,5,9β-tetramethyl-14-methylene-15(H)-indenemethanol Ferulic Ester) 953
 1α(*S*)-Senecioyloxy-6(14)-thapsene-15-ol 954
 1α(*S*)-Senecioyloxy-6β(*R*),14β-epoxythapsan-15-ol 954
 1β-Senecioyloxy-14β,15α-epoxythapsan-14α-ol 955
 8α-Senecioyloxy-14β,15α-epoxythapsan-14α-ol 955

Thapsanes – Diester

15-Acetoxy-1α(*S*)-senecioyloxy-6β(*R*),14β-epoxy-thapsane 958

Thapsanes – Di-14,15-epoxythapsane

[8'α-Angeloyloxy-14'β,15'α-epoxythapsan]-14α,14'α-oxy-8α-senecioyloxy-14β,15α-epoxythapsane 960

Valerananes – Monoester

1β-Acetoxy-5α,8β,9β(H)-valerana-3,11-dien-14-oic Acid
 (1β-Acetoxy-valerenic Acid) 962
 13-Acetoxy-5α,8β,9β(H)-valerana-3,11-diene (*Z*-Valerenyl Acetate) 962
 14-Acetoxy-5α,8β,9β(H)-valerana-3,11-diene (*E*-Valerenyl Acetate) 963
 13-Hexanoyloxy-5α,8β,9β(H)-valerana-3,11-diene (*Z*-Valerenyl Hexanoate) 963
 14-Hexanoyloxy-5α,8β,9β(H)-valerana-3,11-diene (*E*-Valerenyl Hexanoate) 963
 13-Isovaleroyloxy-5α,8β,9β(H)-valerana-3,11-diene (*Z*-Valerenyl Isovalerate) 964
 14-Isovaleroyloxy-5α,8β,9β(H)-valerana-3,11-diene (*E*-Valerenyl Isovalerate) 964

13-Valeroyloxy-5 α ,8 β ,9 β (H)-valerana-3,11-diene (<i>Z</i> -Valerenyl Valerate)	965
14-Valeroyloxy-5 α ,8 β ,9 β (H)-valerana-3,11-diene (<i>E</i> -Valerenyl Valerate)	965

Other Bicyclic Sesquiterpene Esters

Bergamotene

12-Acetoxy- α -bergamotene	968
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Carabrane

8 β -Cinnamoyloxy-6 β -hydroxy-1 α ,5 β ,6 α ,7 α (H)-carabran-4-one (8 β -Cinnamoyl-echinaxathol; 5-Hydroxy-4-isopropyl-1-methyl-7-(3-oxobutyl)bicyclo[4.1.0]hept-3-yl Cinnamate)	970
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Drimane

Ugandensidial (Agandencidial; 6-Acetoxy-9-hydroxy-7-drimene-11,12-dial; Cinnamodial)	972
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Himachalanes – Monoesters

4 α -Vanilloxyloxy-2-himachalen-7 β -ol (Xeroferin)	974
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Himachalanes – Diesters

9 β -Angeloyloxy-10 α -(2'',3''-epoxy-angeloyloxy)-2,7-chimachaladien-4-one (9-Angeloyl-10-(2',3'-epoxy-2'-methylbutyroyl)-cinaglabrone)	976
10 α -Angeloyloxy-9 β -(2'',3''-epoxy-angeloyloxy)-2,7-chimachaladien-4-one (10-Angeloyl-9-(2',3'-epoxy-2'-methylbutyroyl)-cinaglabrone)	976
9 β ,10 α -Diangeloyloxy-2,7-chimachaladien-4-one (9,10-Diangeloyl Cinaglabrone)	977

Valerane

14-Acetoxy-valeran-4-one (Hydroxyvaleranone Acetate)	979
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Pseudoguaianes – Monoesters

4 β -Acetoxy-11(13)-pseudoguaian-12-oic Acid (4 β -Acetoxy-4-desoxodamsinic Acid)	981
4 β -Acetoxy-11(13)-pseudoguaian-12-oic Acid Methyl Ester (4 β -Acetoxy-4-desoxodamsinic Acid Methyl Ester)	981
12-Acetoxy-11-hydroxy-pseudoguaian-4-one	982

Sesquisabinenes – Monoesters

12-Acetoxy-sesquisabinene	984
13-Acetoxy-sesquisabinene	984

Other Type

Jugalinone	986
Occidol Acetate	986
Vernoeggersic Acid	986

The Tricyclic Sesquiterpene Esters

Aromadendranes – Monoesters

8 α -Acetoxy-1 β ,6 α ,7 α ,10 β (H)-aromadendr-4-ene (8 α -Acetoxy- α -gurjunen)	992
8 β -Acetoxy-1 β ,6 α ,7 α ,10 β (H)-aromadendr-4-ene (8 β -Acetoxy- α -gurjunen)	992
14-Acetoxy-4 β ,6 α ,7 α (H)-aromadendran-10 β -ol (14-Acetoxy-viridiflorol)	993
8 α -Benzoyloxy-1 α ,5 β ,6 α ,7 α (H)-aromadendr-10(14)-en-4 β -ol (8 α -benzoyloxyspathulenol)	993

Aromadendranes – Diester

12,13-Diacetoxy-4 β ,5 β ,6 α ,7 α (H)-aromadendr-1(10)-en-2-one	996
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2,3-*seco*-Aromadendranes – Monoesters

2 α -Acetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-diene	998
2 α -Acetoxy-2 β ,3 α ;10 β ,14-diepoxy-3 β -methoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-4(15)-ene (10,14-Epoxy-ovalimethoxy I; Methoxyplagiochiline A ₁)	998
2 α -Acetoxy-2 β ,3 β ;10 β ,14 α -diepoxy-3 α -methoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-4(15)-ene (3-Epimer, 10,14-Epoxy-ovalimethoxy I; methoxyplagiochiline A ₂)	999
2 α -Acetoxy-2 β ,3;10 β ,14-diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-en-15-ol (Plagiochiline I)	999
2 α -Acetoxy-2 β ,3 β -epoxy-3 α -methoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-4(15),10(14)-diene ((+)-Ovalimethoxy I)	1000
2 α -Acetoxy-2 β ,3 α -epoxy-3 β -methoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-4(15),10(14)-diene (3-Epimer Ovalimethoxy I; (+)-Ovalimethoxy II; Methoxyplagiochiline C)	1000
2 α -Acetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-diene (Deacetoxyovalifoliene; Plagiochiline H)	1001
2 α -Acetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-dien-15-oic Acid (Plagiochiline L)	1002
2 α -Acetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-dien-15-oic Acid Methyl Ester (Plagiochiline M)	1002

2,3-*seco*-Aromadendranes – Diesters

2 α ,12-Diacetoxy-2 β ,3;13 α ,15-diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-en-10-ol (Plagiochiline F)	1005
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2 α ,13-Diacetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-diene (Plagiochiline S)	1005
2 α ,15-Diacetoxy-2 β ,3;10 α ,14 α -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-ene (10 α ,15-Epoxyovalifoliene)	1006
2 α ,15-Diacetoxy-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-ene (Acetate of Plagiochiline I; Plagiochiline A)	1006
2 α ,15-Diacetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-diene ((+)-Ovalifoliene; Oxaplagiochene A; Plagiochiline C)	1007
2 α ,15-Diacetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,9-dien-14-al ((+)-Ovalifolienal)	1009
2 α ,15-Diacetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,9-dien-8-on-14-al ((+)-Ovalifolienal)	1009
2 α ,15-Diacetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-dien-12-al (Plagiochiline T)	1010
2 α ,15-Diacetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-dien-12-oic Acid Methyl Ester (Plagiochiline U)	1010
2 α ,15-Diacetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-en-14-al (9,10-Dihydroovalifolienal)	1011
 2,3- <i>seco</i> -Aromadendranes – Triesters	
2 α ,15-Diacetoxy-12-decanoyloxy-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-ene (12-Decanoyl-plagiochiline A)	1013
2 α ,15-Diacetoxy-12-(4' <i>E</i> -decaenoyloxy)-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-ene (4' <i>E</i> -Decaenoyl-plagiochiline A)	1013
2 α ,15-Diacetoxy-12-(2' <i>E</i> ,4' <i>E</i> -dodecadienoyloxy)-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-en-13-ol (2' <i>E</i> ,4' <i>E</i> -Dodecadienoyl-13-hydroxy-plagiochiline A)	1014
2 α ,15-Diacetoxy-12-octanoyloxy-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-ene (12-Octanoyl-plagiochiline A)	1015
2 α ,15-Diacetoxy-12-(2' <i>E</i> ,4' <i>E</i> ,8' <i>Z</i> -tetradecatrienoyloxy)-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-en-13-ol (2' <i>E</i> ,4' <i>E</i> ,8' <i>Z</i> -Tetradecatrienoyl-13-hydroxy-plagiochiline A)	1015
2,3,12-Triacetoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-4(15),10(14)-dien-8 β -ol (Plagiochiline P)	1016
2 α ,8 β ,15-Triacetoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-4(15),10(14)-dien-8 β -ol	1017
2 α ,9 α ,15-Triacetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-diene-((+)-9 α -Acetoxyovalifoliene)	1017
2 α ,12,15-Triacetoxy-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-ene (Plagiochiline R)	1018
2 α ,12,15-Triacetoxy-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-en-13-ol (Plagiochiline G)	1019
2 α ,12,15-Triacetoxy-2 β ,3-epoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendra-3,10(14)-dien-8 β -ol (Plagiochiline O)	1019
2 α ,13,15-Triacetoxy-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2,3- <i>seco</i> -aromadendr-3-ene ((+)-Plagiochiline B; 13-Acetoxy, Acetate of Plagiochiline I)	1020

2,3-*seco*-Aromadendranes – Tetraesters

2 α ,12,13,15-Tetraacetoxy-2 β ,3;10 α ,14 α -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2, 3- <i>seco</i> -aromadendr-3-ene (Plagiochiline E)	1023
2 α ,12,13,15-Tetraacetoxy-2 β ,3;10 β ,14 β -diepoxy-1 α ,5 α ,6 β ,7 β (H)-2, 3- <i>seco</i> -aromadendr-3-ene (Plagiochiline D)	1023

Gymnomitranes – Monoesters

11-Acetoxy-10 β ,15 β -epoxy-1 β (H)-gymnomitrane (2,6,7-trimethyl- 10,10-oxymethylenetricyclo[5.3.7.0 ^{2,6}]undecan-11-yl Acetate)	1025
11-Acetoxy-1 β (H)-gymnomitr-10(15)-ene (Gymnomitrol Acetate)	1025
11 β -Acetoxy-1 β (H)-gymnomitr-10(15)-en-9-one (9-Oxogymnomitryl Acetate)	1026
11 β -Acetoxy-9 α -hydroxy-1 β (H)-gymnomitr-10(15)-ene (9 α -Hydroxygymnomitryl Acetate)	1026
11 β -Cinnamoyloxy-9 α -hydroxy-1 β (H)-gymnomitr-10(15)-ene (9 α -Hydroxygymnomitryl Cinnamate)	1027
11-Acetoxy-15-hydroxy-gymnomitr-9-ene (10-Hydroxy-methyl- 2,6,7-trimethyltricyclo[5.3.7.0 ^{2,6}]undec-9-en-11-yl)	1027

Gymnomitranes – Diester

3 β ,11-Diacetoxy-10 β ,15 β -epoxy-1 β (H)-gymnomitrane (2,6,7- Trimethyl-10,10-oxymethylenetricyclo[3.5.7.0 ^{2,6}]undecane-3,11 -Diyl Diacetate)	1029
3 β ,11-Diacetoxy-1 β (H)-gymnomitr-10(15)-ene (2,6,7-Trimethyl- 10-methylenetricyclo[3.5.7.0 ^{2,6}]undecane-3,11-Diyl Diacetate)	1029
3 β ,11-Diacetoxy-15-hydroxy-gymnomitr-9-ene (Methyl-1,2,6- trimethyltricyclo-[5.3.1.0. ^{2,6}]undec-9-ene-3,11-diyl Diacetate)	1030

Longipinanes – Monoesters

7 β -Acetoxy-5 α ,11 α (H)-longipin-3(15)-en-2-one	1032
9 α -Acetoxy-7 β -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one (Longipin-2-ene-7 β ,9 α -diol-1-one-9-monoacetate)	1032
14-Acetoxy-5 α ,11 α (H)-longipin-3(15)-en-2-one ((+)-14- Acetoxymarsupellone)	1033
7 β -Angeloyloxy-8 α ,9 α -dihydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1033
7 α -Angeloyloxy-9 β -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1034
7 β -Angeloyloxy-9 α -hydroxy-5 α ,11 α (H)-longipin-2-ene-1-one	1034
7 α -Seneciolyoxy-9 β -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1035
7 β -Tigloyloxy-5 α ,11 α (H)-longipin-2-en-1-one (7 β -Tigloyloxy- 1-oxo- α -longipinene)	1035

Longipinanes – Diester

7 α -Acetoxy-9 β -angeloyloxy-5 α ,11 α (H)-longipinan-1-one (7 α - Acetoxy-9 β -angeloyloxy-2,3-dihydro-1-oxo- α -longipinene)	1037
9 α -Acetoxy-7 β -angeloyloxy-3 β ,5 α ,11 α (H)-longipinan-1-one	1037
9 α -Acetoxy-7 β -angeloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1037

13-Acetoxy-7 β -angeloyloxy-3 β ,5 α ,11 α (H)-longipinan-1-one	1038
7 α -Angeloyloxy-9 β -(2'',3''-epoxy-angeloyloxy)-5 α ,11 α (H)-longipinan-1-one (7 α -Angeloyloxy-9 β -[2',3'-epoxy-2'-methylbutyroyloxy]-2,3-dihydro-1-oxo- α -longipinene)	1039
7 α -Angeloyloxy-9 β -(2'',3''-epoxy-angeloyloxy)-5 α ,11 α (H)-longipin-2-en-1-one (7 α -Angeloyloxy-9 β -[2',3'-epoxy-2'-methylbutyroyloxy]-1-oxo- α -longipinene)	1039
7 β -Angeloyloxy-8 α -isobutyroyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1040
7 β -Angeloyloxy-8 α -isovaleroyloxy-9 α -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1040
7 α -Angeloyloxy-9 β -(2''-methylacryloyloxy)-5 α ,11 α (H)-longipin-2-en-1-one	1041
7 β -Angeloyloxy-8 α -(2''-methylbutyroyloxy)-9 α -hydroxy-3 β ,5 α ,11 α (H)-longipinan-1-one (Longipinane-7 β ,8 α ,9 α -triol-1-one-7-angelate-8-methylbutyrate)	1041
7 β -Angeloyloxy-8 α -(2''-methylbutyroyloxy)-9 α -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1042
7 α -Angeloyloxy-9 β -tigloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1043
8 α -Angeloyloxy-9 α -isovaleroyloxy-7 β -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1043
8 α -Angeloyloxy-9 α -(2''-methylbutyroyloxy)-7 β -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one (Longipin-2-ene-7 β ,8 α ,9 α -triol-1-one-8-angelate-9-methylbutyrate)	1044
9 α -Angeloyloxy-8 β -isovaleroyloxy-7 β -hydroxy-3 α ,5 α ,11 α (H)-longipinan-1-one	1045
9 α -Angeloyloxy-8 β -isovaleroyloxy-7 β -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1045
9 β -Angeloyloxy-7 α -(2''-methylacryloyloxy)-5 α ,11 α (H)-longipin-2-en-1-one	1046
9 β -Angeloyloxy-8 α -(2''-methylbutyroyloxy)-5 α ,11 α (H)-longipin-2-en-1-one	1046
9 β -Angeloyloxy-8 α -(2''-methylbutyroyloxy)-7 α -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1047
9 β -Angeloyloxy-7 α -seneciroyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1047
9 β -Angeloyloxy-7 α -tigloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1048
9 α -Angeloyloxy-13-tigloyloxy-3 β ,5 α ,11 α (H)-longipinan-1-one	1049
7 β ,8 α -Diangeloyloxy-9 α -hydroxy-3 β ,5 α ,11 α (H)-longipinan-1-one (Rastevione; Longipinane-7 β ,8 α ,9 α -triol-1-one 7,8-Diangelate)	1049
7 β ,8 α -Diangeloyloxy-9 α -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one (2-Dehydrastevione; Longipin-2-ene-7 β ,8 α ,9 α -triol-1-one 7,8-Diangelate)	1050
7 β ,9 α -Diangeloyloxy-3 β ,5 α ,11 α (H)-longipinan-1-one (8-Desacyloxyrastevione Angelate)	1051
7 α ,9 β -Diangeloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1052
7 β ,9 α -Diangeloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1052
7 β ,9 α -Diangeloyloxy-8 α -hydroxy-3 β ,5 α ,11 α (H)-longipinan-1-one (Longipinane-7 β ,8 α ,9 α -triol-1-one-7,9-diangelate)	1053
7 β ,9 α -Diangeloyloxy-13-hydroxy-3 β ,5 α ,11 α (H)-longipinan-1-one	1053
7 β ,13-Diangeloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1054

8 α ,9 β -Diangeloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1054
8 β ,9 α -Diangeloyloxy-7 β -hydroxy-3 α ,5 α ,11 α (H)-longipinan-1-one	1055
8 α ,9 β -Diangeloyloxy-7 α -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1056
8 β ,9 α -Diangeloyloxy-7 β -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one	1056
8 α ,9 α -Diangeloyloxy-7 β -hydroxy-3 β ,5 α ,11 α (H)-longipinan-1-one (Longipinane-7 β ,8 α ,9 α -triol-1-one 8,9-diangelate)	1057
8 α ,9 α -Diangeloyloxy-7 β -hydroxy-5 α ,11 α (H)-longipin-2-en-1-one (Longipin-2-ene-7 β ,8 α ,9 α -triol-1-one 8,9-diangelate)	1058
9 α ,13-Diangeloyloxy-3 β ,5 α ,11 α (H)-longipinan-1-one	1058
7 α ,9 β -Di(2'-methylacryloyloxy)-5 α ,11 α (H)-longipin-2-en-1-one	1059
7 α ,9 β -Diseneciolyoxy-5 α ,11 α (H)-longipin-2-en-1-one	1059
7 α ,9 β -Ditigloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1060
7 β ,8 α -Ditigloyloxy-9 α -hydroxy-3 β ,5 α ,11 α (H)-longipinan-1-one (Triflorestevione)	1060
7 α -(2'-Methylacryloyloxy)-9 β -tigloyloxy-5 α ,11 α (H)-longipin- 2-en-1-one	1061
9 β -(2'-Methylacryloyloxy)-7 α -seneciolyoxy-5 α ,11 α (H)-longipin- 2-en-1-one	1061
9 β -(2'-Methylacryloyloxy)-7 α -tigloyloxy-5 α ,11 α (H)-longipin- 2-en-1-one	1062
7 α -Seneciolyoxy-9 β -tigloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1062

Longipinanes – Triesters

8 α -Acetoxy-7 β ,9 α -diangeloyloxy-3 β ,5 α ,11 α (H)-longipinan-1-one	1065
8 α -Acetoxy-7 β ,9 α -diangeloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1065
9 α -Acetoxy-7 β ,13-diangeloyloxy-3 β ,5 α ,11 α (H)-longipinan-1-one	1066
13-Acetoxy-7 β ,9 α -diangeloyloxy-3 β ,5 α ,11 α (H)-longipinan-1-one	1066
7 β ,9 α ,13-Triangeloyloxy-3 β ,5 α ,11 α (H)-longipinan-1-one	1067
7 β ,9 α ,13-Triangeloyloxy-5 α ,11 α (H)-longipin-2-en-1-one	1067

Silphinenes – Monoesters

5 α -Acetoxy-14 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1069
5 α -Angeloyloxy-14 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1069
5 α -Angeloyloxy-3 β -hydroxy-14 β (CH ₃),7 α ,9 β (H)-silphin-1-ene	1070
5 α -Angeloyloxy-11 β -hydroxy-14 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1070
13-Isobutyroyloxy-14 α (CH ₃),7 β ,9 α (H)-silphin-1-en-3-one	1071
5 α -Isovaleroyloxy-4 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1071
5 α -Isovaleroyloxy-4 α (CH ₃),7 β ,9 α (H)-silphin-1-en-3 α -ol (3 α -Hydroxy-5 α -isovaleryloxy-silphinene)	1072
5 α -Propionyloxy-4 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1072
5 α -Seneciolyoxy-4 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1073
5 α -Tigloyloxy-4 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1073

Silphinenes – Diesters

11 β -Acetoxy-5 α -angeloyloxy-4 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1075
11 β -Acetoxy-5 α -isobutyroyloxy-4 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1075
11 β -Acetoxy-5 α -propionyloxy-4 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1076
11 β -Acetoxy-5 α -tigloyloxy-4 β (CH ₃),7 α ,9 β (H)-silphin-1-en-3-one	1076

Isocedranes – Monoesters

3 α -Angeloyloxy- α -isocedr-4-ene-14,15-dial	1078
3 α -Angeloyloxy-14 β -hydroxy-15 α -methoxy-14 α ,15 β -epoxy- α - isocedr-4-ene	1078
8 α -Isovaleroyloxy-14-hydroxy- α -isocedr-4-en-14,15-olide	1079
14 α -Isovaleroyloxy-14,15-epoxy- α -isocedr-3,5(15)-dien-13- oic Acid Methyl Ester (Trixi-paradoxin Isovalerate)	1079
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Shakhnoza S. Azimova
Editor

Natural Compounds

Triterpene Glycosides

Plant Sources, Structure and Properties

With 698 Figures and 747 Tables

 Springer

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Editor

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Co-Editor

Natural Compounds

Alkaloids

Plant Sources, Structure and Properties

With 1410 Figures and 362 Tables

 Springer

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Editor

Natural Compounds

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Plant Sources, Structure and Properties

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