Chemical Composition of the Leaf and Branch Oils of *Perymenium grande* Hemsl. var. *nelsonii* (Robins. & Greenm.) Fay (Asteraceae-Heliantheae) from Costa Rica

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Table 1. Composition of the leaf and branch oils of *Perymenium grande* var. *nelsonii* from Costa Rica

RI[a]	Compound[b]	Percent Composition		Identification Method[c]
		Leaf	Branch	
737	4-Methylcyclohexene	0.2	-	1, 2
800	Hexanal	t	-	1, 2
849	(*E*)-2-Hexenal	0.1	-	1, 2
853	(*E*)-2-Hexenol	0.1	-	1, 2
856	Hexan-1-ol	t	-	1, 2
893	Heptanal	t	t	1, 2
923	Tricyclene	t	t	1, 2
926	α-Thujene	0.1	t	1, 2
936	α-Pinene	8.9	7.4	1, 2, 3
943	α-Fenchene	t	t	1, 2
949	Camphene	0.3	0.1	1, 2
954	Thuja-2,4(10)-diene	t	0.2	1, 2
958	Benzaldehyde	t	t	1, 2
958	Heptan-1-ol	-	t	1, 2
971	Sabinene	0.6	0.1	1, 2
976	β-Pinene	12.4	4.3	1, 2, 3
983	Octan-3-one	-	t	1, 2
989	2-Pentylfuran	t	-	1, 2
990	Myrcene	0.7	0.7	1, 2
993	Dehydro-1,8-cineole	t	-	1, 2
1004	*m*-Mentha-1(7),8-diene	-	0.6	1, 2
1005	α-Phellandrene	0.5	0.2	1, 2
1005	δ-2-Carene	-	t	1, 2
1008	*p*-Mentha-1(7),8-diene	0.2	-	1, 2
1009	δ-3-Carene	t	-	1, 2
1016	α-Terpinene	t	0.1	1, 2
1019	*p*-Cymene	-	t	1, 2
1023	*o*-Cymene	0.1	0.2	1, 2
1024	Limonene	t	2.0	1, 2, 3
1026	β-Phellandrene	9.8	2.0	1, 2
1033	(*Z*)-β-Ocimene	-	3.3	1, 2
1034	2-Heptylacetate	-	t	1, 2
1045	(*E*)-β-Ocimene	t	-	1, 2
1058	γ-Terpinene	0.1	0.2	1, 2
1067	(*E*)-2-Octen-1-ol	-	t	1, 2
1068	Octan-1-ol	-	0.1	1, 2
1068	*cis*-Sabinene hydrate	t	-	1, 2
1072	*p*-Mentha-3,8-diene	t	t	1, 2
1075	Benzyl formate	-	t	1, 2
1086	Terpinolene	-	t	1, 2
1089	*p*-Cymenene	0.1	0.2	1, 2
1095	6-Camphenone	-	t	1, 2
1099	Linalool	0.1	-	1, 2, 3
1102	Perillene	-	t	1, 2
1103	Nonanal	-	t	1, 2
1114	α-Fenchol	-	0.1	1, 2
1120	*cis*-*p*-Menth-2-en-1-ol	t	t	1, 2
1124	α-Campholenal	t	0.1	1, 2
1129	1-Terpineol	-	0.2	1, 2
1138	*iso*-3-Thujanol	-	0.8	1, 2

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RI[a]	Compound[b]	Percent Composition		Identification Method[c]
		Leaf	Branch	
1142	*trans*-Verbenol	t	0.4	1, 2
1144	Camphor	0.8	0.1	1, 2
1161	Pinocarvone	0.1	0.2	1, 2
1165	Borneol	0.9	-	1, 2
1171	*trans*-2-Caren-4-ol	-	0.1	1, 2
1172	*cis*-Pinocamphone	t	0.2	1, 2
1176	Terpinen-4-ol	0.2	0.6	1, 2
1181	(*E*)-Isocitral	-	t	1, 2
1185	Cryptone	0.1	0.3	1, 2
1189	α-Terpineol	0.1	-	1, 2, 3
1194	Myrtenol	0.2	0.1	1, 2
1195	Myrtenal	-	0.6	1, 2
1196	Safranal	t	-	1, 2
1206	*n*-Decanal	0.1	-	1, 2, 3
1210	Verbenone	-	0.1	1, 2
1210	*trans*-Piperitol	t	0.1	1, 2
1214	*trans*-Carveol	t	0.1	1, 2
1224	*m*-Cumenol	-	t	1, 2
1239	Cumin aldehyde	0.1	0.3	1, 2
1244	Carvone	-	0.1	1, 2, 3
1253	Piperitone	-	t	1, 2
1245	*cis*-Myrtanol	t	-	1, 2
1255	Carvenone	-	t	1, 2
1258	*trans*-Myrtanol	-	0.1	1, 2
1271	Perilla aldehyde	t	-	1, 2
1276	Dihydro-linalool acetate	0.1	-	1, 2
1280	Phellandral	-	2.7	1, 2
1283	α-Terpinen-7-al	t	t	1, 2
1285	2-Caren-10-al	-	0.1	1, 2
1290	*p*-Cymen-7-ol	-	0.1	1, 2
1296	*trans*-Pinocarvyl acetate	-	t	1, 2
1312	4-Hydroxy-cryptone	t	t	1, 2
1326	Silphiperfol-5-ene	t	0.2	1, 2
1334	Presilphiperfol-7-ene	-	0.1	1, 2
1336	δ-Elemene	0.1	-	1, 2
1344	Silphinene	0.1	2.2	1, 2
1348	α-Cubebene	0.1	-	1, 2
1351	α-Longipinene	-	0.3	1, 2
1352	Eugenol	0.1	-	1, 2, 3
1367	Cyclosativene	0.2	0.4	1, 2
1375	α-Copaene	0.4	0.6	1, 2
1382	Modheph-2-ene	-	2.5	1, 2
1384	β-Cubebene	0.2	-	1, 2
1387	α-Isocomene	-	13.8	1, 2
1388	β-Elemene	0.6	-	1, 2
1400	Sesquithujene	0.3	-	1, 2
1406	Longifolene	-	t	1, 2
1407	β-Isocomene	t	5.2	1, 2

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Table 1. Composition of the leaf and branch oils of *Perymenium grande* var. *nelsonii* from Costa Rica (cont.)

RI[a]	Compound[b]	Percent Composition		Identification Method[c]
		Leaf	Branch	
1410	α-Cedrene	-	0.1	1, 2
1421	β-Caryophyllene	30.5	4.3	1, 2, 3
1430	β-Copaene	-	0.2	1, 2
1436	β-Gurjunene	-	0.1	1, 2
1449	*cis*-Muurola-3,5-diene	0.2	-	1, 2
1453	α-Humulene	1.4	2.1	1, 2, 3
1461	*allo*-Aromadendrene	-	t	1, 2
1462	9-epi-(*E*)-Caryophyllene	0.2	-	1, 2
1469	*cis*-Muurola-4(14),5-diene	-	t	1, 2
1473	γ-Gurjunene	-	0.1	1, 2
1477	γ-Muurolene	t	0.5	1, 2
1481	γ-Curcumene	-	0.9	1, 2
1484	Germacrene-D	10.0	2.9	1, 2
1489	δ-Selinene	0.1	-	1, 2
1491	*cis*-β-Guaiene	-	0.4	1, 2
1500	γ-Amorphene	0.3	-	1, 2
1505	Bicyclogermacrene	3.6	0.1	1, 2
1507	α-Muurolene	t	t	1, 2
1511	Germacrene-A	t	-	1, 2
1513	γ-Cadinene	t	0.4	1, 2
1519	Cubebol	0.4	t	1, 2
1525	δ-Cadinene	0.7	1.1	1, 2, 3
1528	*cis*-Calamenene	t	0.1	1, 2
1533	*trans*-Cadina-1,4-diene	0.3	-	1, 2
1535	α-Cadinene	0.2	-	1, 2
1545	α-Calacorene	0.4	-	1, 2
1561	Germacrene B	0.4	-	1, 2
1564	(E)-Nerolidol	0.2	-	1, 2, 3
1580	Spathulenol	0.7	2.1	1, 2
1590	Caryophyllene oxide	1.4	2.3	1, 2
1591	Globulol	0.4	-	1, 2
1596	Viridiflorol	0.2	-	1, 2
1597	Salvial-4(14)-en-1-one	-	0.4	1, 2
1607	β-Oplopenone	0.6	1.6	1, 2
1610	Humulene epoxide II	-	1.6	1, 2
1617	Junenol	0.9	-	1, 2
1625	1-*epi*-Cubenol	-	0.5	1, 2
1631	γ-Eudesmol	-	0.2	1, 2
1634	*cis*-Cadin-4-en-7-ol	0.2	-	1, 2
1637	β-Acorenol	t	-	1, 2
1639	Caryophylla-4(12),8(13)-dien-5-β-ol	t	0.4	1, 2
1643	α-Muurolol	0.2	0.3	1, 2
1647	Cubenol	0.3	-	1, 2
1652	α-Cadinol	0.1	0.3	1, 2
1654	3-Thujopsanone	-	0.8	1, 2
1658	Selin-11-en-4-α-ol	0.2	t	1, 2
1662	*cis*-Calamenen-10-ol	t	-	1, 2
1666	14-Hydroxy-(*Z*)-caryophyllene	-	0.4	1, 2

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RI[a]	Compound[b]	Percent Composition		Identification Method[c]
		Leaf	Branch	
1667	(*E*)-Bisabol-11-ol	t	-	1, 2
1672	14-Hydroxy-9-epi-(*E*)-caryophyllene	0.2	-	1, 2
1674	Andro encecalinol	-	t	1, 2
1677	Guaia-3,10(14)-dien-11-ol	0.3	-	1, 2
1680	Khusinol	t	0.4	1, 2
1685	Eudesma-4(15),7-dien-1β-ol	-	0.3	1, 2
	Compound Classes	**Leaf (%)**	**Branch (%)**	
	Monoterpene hydrocarbons	33.8	21.6	
	Oxygenated monoterpenes	2.7	8.8	
	Sesquiterpene hydrocarbons	50.3	38.3	
	Oxygenated sesquiterpenes	6.5	11.6	
	Others	0.6	-	
	Total oil composition	**94.9**	**79.3**	

[a] RI= Retention index relative to a homologous series of *n*-alkanes. [b] Compounds listed in order of elution from poly(5% phenyl-95% methylsiloxane) column. [c] Method: 1 = Retention index on poly(5% phenyl-95% methylsiloxane) column; 2 = MS spectra; 3 = Standard; t = traces (<0.05%).