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CHEMICAL COMPOSITION OF THE ESSENTIAL OIL OF *Xenophyllum poposum*

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Several species of the genus *Xenophyllum* of the family Asteraceae are reported to be used in folk medicine in Tarapaca, Chile as treatment for hepatic diseases, rheumatism, hypertension, and mountain sickness [1–6]. From the genus *Xenophyllum* many species and taxa exist in Chile (South America), but *Xenophyllum poposum* (Phil.) V. A. Funk, known as ‘‘poposa’’ or ‘‘puposa’’, is a species that had been incorrectly designated *Werneria poposa* Phil. However, the correct name is unequivocally *Xenophyllum poposum*, already assigned in the year 1997 [7].

TABLE 1. Composition of the Essential Oil from the Leaves and Stems of *Xenophyllum poposum*, %

Compound	RI	Leaves	Stems	Compound	RI	Leaves	Stems
α-Pinene	925	1.40	2.13	Citronellyl acetate	1335	0.36	0.52
β-Pinene	971	6.27	4.87	Methyl cinnamate	1348	1.28	0.97
Myrcene	979	0.21	Tr.	α-Longipinene	1352	Tr.	1.09
α-Terpinene	1012	0.99	0.36	Decanoic acid	1360	–	0.34
p-Cymene	1014	0.60	0.76	α-Copaene	1382	0.23	0.37
β-Phellandrene*	1024	1.42	2.29	β-Caryophyllene	1427	0.22	0.32
Limonene*	1024	0.49	0.59	α-Humulene	1461	Tr.	0.51
γ-Terpinene	1050	0.53	0.39	Alloaromadendrene	1468	0.23	0.51
cis-Linalool oxide	1059	0.22	Tr.	γ-Muurolene	1478	0.22	0.24
α-Terpinolene	1080	0.27	0.22	α-Amorphene	1490	0.32	0.43
Linalool	1083	0.73	0.66	α-Muurolene	1501	1.15	1.12
cis-Rose oxide	1096	Tr.	0.65	γ-Cadinene	1516	1.11	1.53
Methyl octanoate	1104	1.47	0.30	δ-Cadinene	1523	6.58	4.42
trans-Rose oxide	1114	Tr.	0.29	α-Calacorene	1532	Tr.	0.60
Isopulegol*	1133	0.37	2.53	α-Cadinene	1544	1.19	2.11
Citronellal*	1133	1.73	1.25	Spathulenol	1572	0.62	0.66
Neoisopulegol	1146	0.80	0.89	Cubenol	1649	0.66	1.34
4-Terpineol	1165	2.21	1.81	*T*-Muurolol *	1637	2.97	3.04
α-Terpineol	1177	0.82	0.85	*T*-Cadinol*	1637	3.67	4.57
Estragole	1181	1.00	0.45	β-Eudesmol	1643	1.04	1.48
β-Citronellol	1211	11.21	10.44	α-Cadinol	1650	9.42	7.12
Neral	1217	1.04	0.46	Alcohol, $C_{15}H_{24}O$	1665	1.93	3.44
Geraniol	1235	0.95	0.81	Vulgarol B	1701	2.31	3.10
Geranial	1245	1.84	0.78	Tremetone	1704	9.49	6.90
Methyl *cis*-4-decenoate	1300	0.60	Tr.	Tetradecanoic acid	1737	Tr.	0.46
Methyl decanoate	1307	0.56	Tr.	Hydroxytremetone	1769	8.32	8.89

RI: kovats retention index on a OV-101 column; Tr.: components found as traces (< 0.2%); %: area percent; *these compounds were separated on a Wax 10 column.

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Some species of *Xenophyllum* have been investigated for incisol, β-pinene [8]. The essential oil derived from the aerial plant of *Werneria poposa* from Argentina shows a variation in its chemical composition; this species describes a high content of β-pinene (21.8%); other important components were found to be α-pinene (5.5%), terpinen-4-ol (5.3%), α-terpinene (5.2%), β-phellandrene + 1,8-cineole (4.8%), isopulegol (4.8%), and β-citronellal (4.6%) [9]. 2*R*-(–)-6-hydroxytremetone is also present in the hexane extract of the aerial parts of *Xenophyllum poposum* [10].

Herein, we report on the oil analysis of aerial parts of *X. poposum* collected in March 2008 from Colchane, a small town located at 4800 m.a.l.s., in the region of Tarapaca, Chile, during the flowering period. A sample of the plant was authenticated by Professor Rose Fuentes. A voucher specimen (PN-069) was deposited in the "Herbario de Laboratorio de Productos Naturales de la Universidad Arturo Prat".

Air-dried aerial parts (leaves and stems) of the plant material (100 g) were subjected to hydrodistillation using a Clevenger-type apparatus for 3 h. The oil yields on a moisture-free basis were 2.2% (w/w) and 1.0% (w/w) respectively. The oil were subsequently dried over anhydrous sodium sulfate and stored at 4°C in the dark until analysis.

The results of the GC and GC-MS analyses are listed in Table 1. Chromatographic analysis was carried out on a Hewlett Packard 5890 series II GC linked to two injector modules. For general comments, see the literature [11]. The GC analysis of the essential oils of *X. poposum* showed that β-citronellol is the most abundant monoterpene with 11.2% and 10.4% in leaves and stems respectively. Other major compounds in the essential oil from leaves and stems of this plant were α-cadinol, tremetone, and hydroxytremetone.

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