

The Volatile Leaf Oil of *Juniperus saltuaria* Rehd. & Wils. from China

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ABSTRACT: The leaf essential oils of *Juniperus saltuaria* Rehd. & Wils. were analyzed by GC and GC/MS. Major components are sabinene (38.2%), elemol (7.6%), 8- β -hydroxyisopimarene (5.3%), α -eudesmol (4.3%), terpinen-4-ol (3.9%) and cedrol (3.2%). Both cis- and trans-sabinol are also present, which is unusual.

KEY WORD INDEX: *Juniperus saltuaria*, Cupressaceae, sabinene, monoterpenes, sesquiterpenes, diterpenes.

PLANT NAME: *Juniperus saltuaria* Rehd. & Wils., common name: Fangzhi-bai (square branch juniper), Mu-Xiang.

SOURCE: Foliage was collected on the Duoer River, Gansu (R. P. Adams, 6788-6790). Voucher specimens are deposited at BAYLU and the Herbarium, Northwest Normal University.

PLANT PART: Fresh leaves were steam distilled in a circulatory Clevenger apparatus (1) for 2 h. Oil yield was 3.1%.

PREVIOUS WORK: None.

PRESENT WORK: The components were identified by combined GC retention and Ion Trap Mass Spectroscopy (2). The oil is dominated by sabinene (38.2%) (Table I). Other major components are elemol (7.6%), 8- β -hydroxyisopimarene (5.3%), α -eudesmol (4.3%), terpinen-4-ol (3.9%) and cedrol (3.2%). The presence of both cis- and trans-sabinol is very unusual (only two references to naturally occurring cis-sabinol were found in the literature). It might be noted that cis- and trans- refers to the relationship between the OH and the isopropyl groups for sabinol. Two of the unknowns (at RT1068 and RT2717) have also been found in the oils of *J. przewalskii* (3) and *J. convallium* (4). Cedrol was again found in the leaf oil as in other junipers of section *Sabina* in the eastern hemisphere.

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Table I. The steam volatile leaf oil of *Juniperus saltuaria* from Gansu, China*

RT	Compound	Percent total oil
307	α -thujene	1.3
319	α -pinene	2.2
379	sabinene	38.2
386	β -pinene	0.2
408	myrcene	2.1
435	α -phellandrene	0.1
457	α -terpinene	1.2
471	p-cymene	0.9
481	limonene	2.0
482	β -phellandrene	0.1
545	γ -terpinene	1.9
560	trans-sabinene hydrate	1.6
608	terpinolene	0.7
614	2-nonanone	0.8
629	cis-sabinene hydrate	2.0
632	linalool	0.7
642	α -thujone	0.3
667	β -thujone	1.3
682	cis-p-menth-2-en-1-ol	0.2
692	α -campholenal	t
726	trans-sabinol	0.2
796	cis-sabinol	t
820	terpinen-4-ol	3.9
837	p-cymen-8-ol	0.1
852	α -terpineol	0.1
865	cis-piperitol	t
990	methyl carvacrol	t
1068	aromatic, FW162	0.9
1099	bornyl acetate	0.1
1117	trans-sabinyol acetate	t
1119	undecanone	0.2
1195	aromatic, FW164, C ₁₁ H ₁₆ O	0.8
1679	γ -cadinene	0.2
1700	δ -cadinene	0.3
1759	elemol	7.6
1820	germacrene D-4-ol	0.6
1876	cedrol	3.2
1951	γ -eudesmol	0.5
1973	epi- α -cadinol (= τ -cadinol)	t
1993	β -eudesmol	1.8
2000	α -eudesmol	4.3
2034	(elemol acetate)	1.8
2306	8- α -acetoxyelemol	0.3
2525	rimuene	0.2
2535	8- α -isopimar-9(11),15-diene	0.2

Table I. (cont.)

RT	Compound	Percent total oil
2556	diterpene	1.0
2660	epi-13-manool	2.5
2717	diterpene	0.5
2841	abietatriene	0.3
2972	8- β -hydroxyisopimarene	5.3
3297	trans-totarol	0.7

Compounds are listed in order of their elution from a DB5 column.
 Compounds in parenthesis are tentatively identified
 * average from three trees
 t = trace (<0.01%), unidentified components <0.5% are not reported

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