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Essential Oil Composition of *Bacopa axillaris* (Benth.) Standl.

Maria das G.B. Zoghbi* and Eloisa H.A. Andrade
Departamento de Botânica, Museu Paraense Emílio Goeldi, CP 399, 66040-170 Belém, PA, Brasil

Abstract

The volatiles of *Bacopa axillaris* were obtained by hydrodistillation and analyzed by GC and GC/MS. The major components identified in the oil of the whole plant were camphor (30.6%) and methyl eugenol (28.3%).

Key Word Index

Bacopa axillaris, Schrophulariaceae, essential oil composition, camphor, methyl eugenol.

Plant Name

Bacopa axillaris (Benth.) Standl. [syn. *Caconapea axillaris* (Benth.) Pennell, *Herpestis axillaris* Benth., *Monniera axillaris* (Benth.) Kuntze]; common names: beliscão, trevo-do-mar, colônia.

Source

The samples of the whole plant were obtained in the free market Ver-o-Peso, in the city of Belém (PA), Brasil, May 2002. Voucher specimen (#167599) has been kept in the João Murça Pires Herbarium in the Museu Paraense Emílio Goeldi.

Plant Part

The whole plants were dried in an air-conditioned room for seven days, ground and hydrodistilled (3 h) using a Clevenger-type apparatus to produce oil in 0.6% yield.

Previous Work

A survey of the literature reveals no previously published studies about chemical composition of *Bacopa axillaris*. The whole plant is used by the native peoples for aromatic baths, mostly on the St. John annual festivity (1).

Table I. Volatiles (%) identified in the essential oil of *Bacopa axillaris*

Component	RI*	%	Component	RI*	%
α-thujene	932	0.1	methyl thymol	1236	0.1
α-pinene	937	1.0	thymol	1291	0.5
camphene	946	3.4	eugenol	1357	1.6
sabinene	967	1.9	7-epi-sesquithujene	1393	0.2
1-octen-3ol	978	0.5	methyl eugenol	1405	28.3
myrcene	988	0.6	β-caryophyllene	1418	4.3
3-octanol	994	0.1	*trans*-α-bergamotene	1438	0.4
α-phellandrene	1007	0.1	α-humulene	1454	0.3
limonene	1029	6.9	γ-curcumene	1481	0.2
γ-terpinene	1065	0.2	ar-curcumene	1483	1.1
terpinolene	1090	0.1	β-curcumene	1514	5.6
linalool	1096	0.8	(E)-nerolidol	1564	0.1
α-campholenal	1124	0.1	ar-turmerol	1580	t
camphor	1149	30.7	caryophyllene oxide	1579	0.9
borneol	1162	6.2	humulene epoxide II	1606	t
terpinen-4-ol	1179	0.1	caryophylla-4(14),8(15)-dien-5α-ol	1641	0.1
α-terpineol	1190	0.1	α-bisabolol	1678	0.7
methyl chavicol	1197	0.3			
nerol	1230	0.3			

*RI on DB-5MS; t = trace (< 0.1%)

*Address for correspondence

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Present Work

GC-FID: Analysis of volatile components were performed on a HP5890-II instrument, equipped a silica capillary column (DB-5MS; 30 m x 0.25 mm, 0.25 μm film thickness). H_2 was used as the carrier gas (linear velocity of 32 cm/s, measured at 100°C); split flow: 20:1 ratio; septum sweep: 10 mL/min; injection: splitless (1 μL, of a 2:1000 hexane solution); injector and detector temperature: 250°C; oven temperature programmed: 60°-240°C at 3°C/min. The GC was connected with an eletronic integrator HP 3396 Series II. The percentage composition of the oil samples were computed from the GC peak areas without using correction for response factors.

GC/MS: GC/MS was performed on a Finnigan Mat INCOS XL GC/MS system in the same conditions as above, except the carrier gas (He was used). EIMS: electron energy, 70 eV; ion source temperature and connection parts: 180°C. Individual components were identified by comparison of both MS and RI data with those of authentic compounds previously analyzed and stored in the data system, and by comparison of MS with those cited in the literature (2). Components, retention indices and percentages are listed in Table I.

Results and Discussion

Thirty-six components were identified accounting for 99.0% (monoterpenes: 52.4%; sesquiterpenes: 14.5%; phenylpropanoids: 31.5%; aliphatic alcohols: 0.6%). The major components identified were camphor (30.6%) and methyl eugenol (28.3%). In the group of the sesquiterpenes, β-curcumene (5.6%) was the most abundant.

Acknowledgments

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