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ESSENTIAL OIL CONSTITUENTS OF *Psychotria leiocarpa*

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The Rubiaceae family is composed mostly of trees, shrubs, or infrequently herbs and comprises about 450 genera and 6.500 species with a complex taxonomy. For *Psychotria leiocarpa* Cham. & Schltdl., leaves were analyzed for their alkaloid and iridoid content [1–5]. A number of studies have reported different pharmacological effects of *Psychotria* alkaloids, such as inhibition of the aggregation of human platelets [6], cytotoxicity [7], and analgesic activity [8]. The crude ethanolic extract of *P. leiocarpa* leaves yielded a nonspecific analgesic activity in the tail flick test [9]. To the best of our knowledge, there are no previous studies dealing with the volatiles of this species. As part of our research on Rubiaceae species [1–5], we now report the chemical composition of the essential oil.

Leaves of *P. leiocarpa* were collected in Osorio, Rio Grande do Sul, South Brazil, in July 2008. A voucher specimen (Carlos 6) was deposited at the herbarium of the Universidade Federal do Rio Grande do Sul (ICN, SOBRAL 7898).

The oil was obtained from 100 g of fresh leaves by hydrodistillation using a Clevenger-type apparatus for four hours. The oil obtained had a yield of 0.1%.

Analysis of the oil was performed using a Shimadzu GC-17A equipped with Shimadzu GC 10 software, using a DB-5 fused silica capillary column (25 m, 0.25 mm; film thickness 0.25 μm). The oven temperature was programmed from 60–300°C at 3°C/min, with helium as carrier gas at an inlet pressure of 80 kPa (1 mL/min). Injector (split mode) and detector temperatures were set at 220°C and 250°C, respectively. The percentage compositions were obtained from electronic integration measurements using flame ionization detection (FID, 250°C). The sample was analyzed by GC/MS in the same chromatographic conditions as described above, using a Shimadzu QP-5000-quadrupole MS system, operating with an ionization energy of 70 eV and an interface temperature of 250°C, with a scan time of 1.25 scans/s and an acquisition mass range of 40.0–650.0 Da.

The identification of the oil components was accomplished by comparison of their GC retention indices as well as their mass spectra with corresponding data of authentic compounds or of components of reference oils; some mass spectra were compared with those of the NIST (National Institute of Standards and Technology) computer data library or with spectral data given in the literature [10–13].

Thirty-three compounds were identified, comprising 95.9% of total volatiles for *Psychotria leiocarpa* leaves (Table 1). The essential oil was characterized exclusively by sesquiterpenes. *P. leiocarpa* oil consists of a large amount of sesquiterpene hydrocarbons with germacrane and cadinane skeletons, such as bicyclogermacrene (35.6%) and germacrene D (17.6%), respectively.

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TABLE 1. Percentage Composition of the Essential Oil of *Psychotria leiocarpa* Leaves

Compound	RI*	%	Compound	RI*	%
δ-Elemene	1320	5.5	Germacrene A	1484	1.1
α-Cubebene	1331	0.1	γ-Cadinene	1495	0.5
Cyclosativene	1345	0.2	δ-Cadinene	1502	5.3
α-Copaene	1356	2.8	Cadina-1,4-diene	1511	0.1
β-Bourbonene	1364	0.5	Elemol	1531	0.1
β-Cubebene	1369	0.3	Germacrene B	1536	0.4
β-Elemene	1372	1.5	*E*-Nerolidol	1547	1.5
β-Caryophyllene	1397	7.2	Spathulenol	1562	3.8
β-Gurjunene	1406	0.3	Caryophyllene oxide	1565	1.5
Aromadendrene	1416	0.9	Globulol	1568	1.3
α-Guaiene	1420	0.2	Humulene oxide I	1607	0.3
α-Humulene	1431	1.7	10-epi-γ-Eudesmol	1612	0.3
allo-Aromadendrene	1438	1.8	*iso*-Spathulenol	1626	0.3
Germacrene D	1461	17.6	*tau*-Cadinol	1633	0.5
β-Selinene	1465	1.8	β-Eudesmol	1638	0.6
Viridiflorene	1469	0.2	Nonadecanal	2108	0.1
Bicyclogermacrene	1479	35.6	Total		95.9

*Retention indices on DB-5 capillary column.

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