

COMPOSITION OF THE ESSENTIAL OIL OF *Indigofera microcarpa* FROM THE NORTHEAST OF BRAZIL

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Indigofera microcarpa Desv. (Fabaceae) is an endemic herb, widely distributed in the Northeast of Brazil, where it is popularly known as “anil do mato” and used as a forage producer [1]. Previous phytochemical investigations of leaves from *Indigofera microcarpa* revealed the presence of 3-aryl-3-methylbenzofurans with antimicrobial activity [2, 3]. However, to the best of our knowledge, there are no studies on its essential oil composition.

The aerial parts of *Indigofera microcarpa* Desv. yielded 0.15% (v/w) of a pale yellowish oil with an aromatic odor. The essential oil from aerial parts of *I. microcarpa* Desv. was analyzed using GC and GC-MS. The identified components, the percentage composition of each constituent, and the retention indices are listed in Table 1. The compounds are arranged in order of elution on a DB-5 column. Nine constituents were identified in the oil of leaves from *I. microcarpa* representing 99.5 % (area %) of the total oil fraction. The major constituents were β -caryophyllene (56.0%) and humulene (25.1%) The results indicate that its chemical composition was essentially characterized by a large percentage of sesquiterpenes hydrocarbons (83.7%) and devoid of monoterpenes.

Plant Material. *Indigofera microcarpa* Desv. was collected in February 2005 at the flowering stage in Pentecoste-Ceara State (Northeast of Brazil). A voucher specimen, No. 34816, has been deposited in the Herbarium Prisco Bezerra (EAC) from the Universidade Federal do Ceara- Brazil.

Extraction. Fresh leaves, 510 g, of *I. microcarpa* Desv. were cut into small pieces and hydrodistilled in a Clevenger-type glass hydrodistillation apparatus for 4 h to produce oil in 0.15 % yield on a fresh weight basis. The sample oil, which had a pale yellowish color, was dried over sodium sulfate and stored in sealed glass vials at a low temperature before analysis.

Gas Chromatography (GC). GC analysis was performed on a Shimadzu GC-17A gas chromatograph equipped with flame ionization detector using a non-polar DB-5 fused silica capillary column (30 m \times 0.25 mm i.d., 0.25 μ m film thickness). Hydrogen was used as carrier gas at a flow rate of 1 mL/min and 30 psi inlet pressure; split ratio 1:30. The column temperature was programmed from 35°C to 180°C at a rate of 4°C/min, then heated at a rate of 17°C/min to 280°C and held isothermal for 10 min; both injector temperature and detector temperature were 250°C.

Gas Chromatography-Mass Spectrometry (GC-MS). The GC-MS analysis was carried out on a Hewlett-Packard Model 5971 GC/MS using a non-polar DB-5 fused silica capillary column (30 m \times 0.25 mm i.d., 0.25 μ m film thickness); carrier gas helium, flow rate 1 mL/min, with split mode. The injector temperature and detector temperature were 250°C and 200°C, respectively. The column temperature was programmed from 35°C to 180°C at 4°C/min and then 180°C to 250°C at 10°C/min. Mass spectra were recorded from 30–450 m/z . Individual components were identified by matching their 70 eV mass spectra with those of the spectrometer data base using the Wiley L-built library and the other two computer library MS searches using retention indices as a preselection routine [4, 5], as well as by visual comparison of the fragmentation pattern with those reported in the literature [6, 7].

The chemical components identified in the essential oil of *I. microcarpa* Desv. are presented in Table 1.

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TABLE 1. Chemical Composition of the Essential Oil from Leaves of *Indigofera microcarpa* Desv., %

Constituents	RI	Leaves oil, %
β -Bourbonene	1388	0.7
β-Caryophyllene	1419	56.0
α-Humulene	1455	25.1
α -Selinene	1498	0.5
δ -Cadinene	1523	1.4
Germacrene D-4-ol	1576	1.0
Caryophyllene oxide	1583	4.7
Humulene epoxide II	1608	1.4
(E)-Sesquilandulol	1633	8.7
Total		99.5

RI - retention indices on DB-5 capillary column.

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