



Comparison of Essential Oil Profile of Spontaneous and Cultivated Individuals of *Bidens pilosa* L. (Asteraceae)

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Bidens pilosa (Asteraceae) is a shrub distributed throughout the pantropical regions of the globe and commonly used in Brazil in the treatment of malaria and inflammations in general. This plant is also known to be a producer of polyacetylenes and phenolic compounds (mainly flavonoids and phenylpropanoids). The completely cultivated and spontaneous individuals (about 500g of fresh plant) were submitted to simultaneous hydrodistillation in modified Clevenger apparatus for 6h. The extracts were then partitioned each with 50mL of methylene chloride (HPLC grade), further dried in a rotational evaporator at 40°C, and then kept in freezer. The analyses of the volatile fraction were performed in a QP-2010 Shimadzu GC-MS equipment. The DB-5MS column was 30m in length, 0.25mm i.d. and 0.25µm thick (Agilent Technologies, J&W Scientific Products). Helium was used as carrier gas and the operating temperature conditions ranged from 50°C (5min.) to 280°C (5min.) 5°C/min. The injector and detector temperatures were both set at 250°C. The compounds were identified by comparison of their retention times and mass fragmentation patterns to the standards and MS spectra library (Shimadzu Solution Software v. 2.4). Identification of compounds was done by comparison of mass spectra to the database Wiley Library Software 59943B and by Kovats Indexes (a mixture of linear alkanes from C₇ to C₂₆, C₂₈ and C₃₀ were injected in the chromatograph in the same conditions of the samples) (1). Quantitation was made by peak area measurement. Oil yields were 0.3 and 0.2% w/w for individual cultivated and spontaneous respectively. In the oil from aerial parts of from cultivated *B. pilosa* 39 compounds were identified (78%), whereas in the oil from the spontaneous plant 23 were detected, corresponding to 90.5% of the oil. Both cultivated and spontaneous *B. pilosa* showed as major constituents the sesquiterpenes germacrene D (44.98% and 56.40%), bicyclogermacrene (10.01% and 7.82%), β-caryophyllene (14.19 and 7.66%) and α-humulene (3.12 and 2.09%) respectively. These results, obtained for both individuals harvested in the winter 2014 and from the same site (with identical geographical coordinates), shows a clear different production of monoterpenes: the oil from individual spontaneous was rich in α-pinene (6.36%) and β-phellandrene (3.65%), while the cultivated plant showed traces of this substance. This study generated data that must always be taken into consideration when studies on biological activity or production/validation of essential oil medicinal plants are concerned.

1. Adams, R.P. Identification of Essential Oil Components by Gas Chromatography/Mass Spectrometry. 4th ed. Illinois: Allured Publishing Corporation. 2007

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