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Volatile constituents from the leaves of two Myrtaceae species

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Highlights

- The volatile extract of *Myrciaria tenella* leaves presented mostly non-oxygenated terpenes (66.85%).
- For the extract of *Eugenia copacabanensis*, the values of caryophyllene oxide (43.79%) and oxygenated sesquiterpenes (66.96%) were highlighted.

Abstract

The Myrtaceae family presents great importance in Brazilian biodiversity for its high rate of endemism and great cultural and economic importance.¹ In Rio de Janeiro, some species are present in areas of restingas, which has been endangered due to the expansion of real estate, such as *Myrciaria tenella* (DC.) O.Berg, popularly known as "murta-do-campo" or "cambuí", and *Eugenia copacabanensis* Kiaersk., known as "princesinha-de-Copacabana". The objective of this work was to determine the profile of the volatile constituents of leaves of these two Myrtaceae species.

The leaves were collected in March 2018 at Marambaia restinga (Rio de Janeiro - RJ), with confirmation of the taxonomic identifications by the botanist Marcelo da C. Souza (ICBS-UFRJ). The leaves were dried for 7 days at room temperature and protected from sunlight and then ground in a blender. The extraction was carried out in triplicate by hydrodistillation using Clevenger apparatus for 4 h, using 25 g of dry leaves and 300 ml of distilled water. Due to the emulsified product, 5 partitions were made with 6 mL of dichloromethane. The new product was concentrated in a rotary evaporator under vacuum (without heating) to similar viscosity to that of an essential oil. Drying with sodium sulfate was performed to remove excess water. The substances were identified by gas chromatography (stationary phase of medium polarity - 5% phenyl and 95% dimethylpolysiloxane) with flame ionization detector and mass spectrometry and comparison of the obtained data (linear retention index and spectra of mass) with literature.

The yield of the volatile fractions of *M. tenella* and *E. copacabanensis* leaves were respectively $1.58 \pm 0.67\%$ and $1.93 \pm 0.58\%$. In volatile fraction of *M. tenella*, 30 terpenes of 39 detected components were identified: 8 hydrocarbon monoterpenes (total relative percentage of 33.98%), 4 oxygenated monoterpenes (4.10%), 13 hydrocarbon sesquiterpenes (32.87%) and 5 oxygenated sesquiterpenes (12.65%). The major compounds were α -pinene (16.95%) and β -pinene (14.71%), similar to the result of Schneider et al.²; and *E*-caryophyllene (12.60%), also present mainly in studies by Andrade et al. and Apel et al.^{3,4}, and aromadendrene (10.43%). For *E. copacabanensis*, 40 terpenes were identified from a total of 43 components detected. 4 hydrocarbon monoterpenes (total relative percentage of 5.99%), 8 oxygenated monoterpenes (4.08%), 19 hydrocarbon sesquiterpenes (15.80%), 8 oxygenated sesquiterpenes (66.96%) and 1 hydrocarbon diterpene (0.53%) were identified, with caryophyllene oxide was the major constituent (43.79%). This result differs from that found by Arruda & Victório⁵, in which hydrocarbon monoterpenes were predominated in leaves collected in the Marambaia restinga, but using solid-liquid extraction with dichloromethane for 90 min. Analysis of the extracts of the dried leaves of *M. tenella* and *E. copacabanensis* allowed determining their volatile constituents, favoring the study of the application in biological tests.

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¹FORZZA, R. C. et al. INSTITUTO DE PESQUISAS JARDIM BOTÂNICO DO RIO DE JANEIRO. Catálogo de plantas e fungos do Brasil [online]. Rio de Janeiro: Andrea Jakobsson.

²SCHNEIDER, N. F. Z. et al. Revista Brasileira de Farmácia, **2008**, 89, 131.

³ANDRADE, E. H. A. et al. Journal of Essential Oil Research, **2006**, 18, 93.

⁴APEL, M. A. et al. Pharmaceutical Biology, **2010**, 48, 433.

⁵ARRUDA, R. C. O.; VICTÓRIO, C. P. Journal of Essential Oil Research, **2011**, 23, 1.