



## Myrtaceae species growing in the Rio de Janeiro Botanical Garden: preliminary characterization of their essential oil composition

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Keywords: Myrtaceae, essential oil, Rio de Janeiro Botanical Garden.

The family Myrtaceae, with 120 genera and more than 3800 species, is very representative and important in all the Brazilian ecosystems. This study presents the first part of the overall analysis of the Myrtaceae species growing in the Research Institute Botanical Garden of Rio de Janeiro (IPJB/RJ) campus. Between July 2010 and June 2011, twenty-one species, native and exotics, were collected and their leaf essential oils were obtained by hydrodistillation from fresh material, using a Clevenger apparatus during 4h. The species were comprised in the genera *Campomanesia* (3), *Eugenia* (10), *Gomidesia* (1), *Melaleuca* (2), *Myrcia* (1), *Myrciaria* (1), *Plinia* (1), *Tristania* (1) and *Ugni* (1). The oils were analyzed by GC/MS in an Agilent 6890N equipped with a MSD Productivity ChemStation software, with HP-5MS fused silica capillary columns (30 m X 0.25 mm X 0.25 µm). Helium was used as carrier gas with a flow rate of 1.0 mL/minute. Oven temperature was 70 (held for 5min) to 250°C at 3°C/min. EI-mass detector at 70 eV and acquisition mass range 10-400 *m/z* (3.66 scan/sec). The injections were standardized to 1.0 µL from a 3 mg/mL CH<sub>2</sub>Cl<sub>2</sub> solution. As a mean to obtain a qualitative indication of the oils' main composition, the chromatogram threshold was conveniently adjusted to allow registering up to 15 main signals in each analysis, and their relative areas were registered. Oil components were identified by comparison of both mass spectra and linear retention indices with spectral library and literature. Considering all the samples, the oil yields ranged between 0.02% (*Plinia edulis*) to 1.0% (*Campomanesia phaea*). Content of monoterpenes ( $\alpha$ - and  $\beta$ -pinene, limonene, linalool) were variable (30-58%) in two *Campomanesia* species, but *C. guazumifolia* presented exclusively sesquiterpenes ( $\beta$ -caryophyllene, germacrenes and guaiol-type alcohols). Monoterpenes were relevant in 5 *Eugenia* species (pinenes, ocimenes, 1,8-cineole) but were absent in *E. feijoi*, *E. velloziana* and *E. luschnatiana*. Sesquiterpene alcohols were relevant in the former (50%  $\alpha$ -cadinol and 7-epi- $\alpha$ -eudesmol, 92% total alcohols) and in the second (51% guaiol-type, 72% total alcohols), whilst the latter was characterized by the cadinol-type (34%) along with 66% hydrocarbons (40%  $\beta$ -caryophyllene). (*E*)- $\beta$ -ocimene (61%) was predominant in the oil of *E. kiaerskovana*, nerolidol (80%) in *Melaleuca armilaris*, and caryophyllenols in *E. crenata* (64%) and *E. sulcata* (58%). *E. itaguahiensis* showed 50% of phenolic compounds besides 30%  $\beta$ -caryophyllene. *Myrciaria tenella* presented 43% pinenes, 18%  $\beta$ -elemene and 10% aspidinol (phloroglucionol derivative). Sesquiterpenes were exclusive in *P. edulis* (42%  $\beta$ -caryophyllene and its oxide, 29% guaiol-type alcohols) and *Ugni molinae* (55%  $\beta$ -elemene in 73% hidrocarbons). Quantitative CG-FID analysis are presently ongoing.

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Acknowledgements: To Ricardo C. C. Reis, curator of the Living Collections of IPJB/RJ during 2010-11, for authorizing the collections.