

**GC × GC-qMS analysis of the essential oil of *Piper xylosteoides* and *Piper hemmendorffii***

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The Piperaceae family comprises from 2,400 to 3,600 species, mostly in tropical and subtropical areas from both hemispheres, divided in five genera: *Peperomia*, *Manekia*, *Zippelia*, *Verhuelia* and *Piper* (1). The latter genus is the largest one, comprising about 1000 species worldwide, from which 260 are found in Brazil (2). Thirty grams of leaves (LPx) and branches (BPx) from *P. xylosteoides* and 30 g of leaves (LPh) and stems (SPh) from *P. hemmendorffii* were subjected to hydrodistillation separately and in duplicate in a modified Clevenger-type apparatus for 4 h each, yielding 7.0, 3.5, 1.7 and 1.0 % of oil, respectively. The oils were analyzed by GC/MS and GC × GC-qMS in Shimadzu GC-2010 systems, both coupled with a mass spectrometer detector Shimadzu GCMS-QP2010 Plus. GC chromatograms were obtained with a Rtx-5MS fused silica column (5 % phenyl methylpolysiloxane) of 30 m X 0.25 mm X 0.25 µm and helium was used as carrier gas with a flow rate of 1.02 mL min⁻¹. For the two-dimensional analysis, the first column was the same as the one-dimensional and the second one was a more polar (DB-Wax, filled with polyethylene glycol) of 1.0 m X 0.10 mm X 0.10 µm. It was used a 2 jets modulator with modulation time of 5 s. The same oven temperature (60-250 °C at 3 °C min⁻¹) and ionization power of mass detector (70 eV) was used. Oil components were identified by comparison of both arithmetical index (based on an homologous series of hydrocarbons from 9 to 22 carbons analyzed in the same conditions) and mass spectra with literature and spectral library resulting in the identification, by GC/MS and GC × GC-qMS respectively, of 8 and 40 substances from LPh, 4 and 40 substances from SPh, 9 and 61 substances from LPx and finally 7 and 36 substances from BPx. The main composition of *P. xylosteoides* is phenylpropanoids while the essential oil from *P. hemmendorffii* is mostly composed of sesquiterpenes. This study indicates that two-dimensional gas chromatography has a superior sensitivity and resolution, making it possible to identify a larger number of compounds. This is the first study of essential oil of *Piper hemmendorffii* and the first GC × GC-qMS study reported of both species.

1. Schubert, H.K. et. al. Syst. Bot., 2012, **37**, 587-598.

2. Guimaraes, E.F. et. al. Rodriguesia, 2004, **55**, 21-25.

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