



### Comparative analysis of volatile fractions from *Piper tectoniifolium* Kunth (Piperaceae)

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The Piperaceae family consists of 12 genera with about 2.000 species with a great distribution in the world. A wide range of volatile components can be found in *Piper* species including monoterpenes, sesquiterpenes, arylpropanoids, aldehydes, ketones and others. Essential oils (EO) comprise a complex mixture of volatile products of low molecular weight, lipophilic, usually odoriferous liquid and extracted from plants. This work is the first chemical profile investigation of the *P. tectoniifolium* volatiles from its different organs (leaves, stems and inflorescences) obtained by hydrodistillation (HD) and SPME. The fresh plant materials were fragmented and submitted separately to HD in a Clevenger-type apparatus for 2h. The essential oil obtained was collected, stored at low temperature, and finally analyzed by (GC-MS) using a chromatograph Shimadzu QP 5000. Identification of the components was achieved through the retention index (RI) for the constituents and comparison with literature and spectrometer database. At the same time, leaves, stems and inflorescences were reduced to small pieces and extracted by HS-SPME, with CAR-DVB and PDMS fibers, at 60°C, and sample/headspace equilibration time of 15 min. The extracted materials were also analyzed by GC-MS. The EO obtained from the leaves and stems *P. tectoniifolium* presented chromatographic profiles with their respective components at different concentrations. The EO from leaves presented as major component germacrene D (15.71%), followed by  $\beta$ -elemene (8.34%) and  $\alpha$ -caryophyllene (7.26%), and from stems, more complex than the leaves, a greater number of substances was found, such as the (*E*)-asarone (10.10%) followed by  $\alpha$ -muurolol (5.62%) and hinesol (4.88%). The EO, despite having a large number of substances, consist primarily of sesquiterpenes, highlighting the germacrene D as major constituent. The SPME technique exhibited the patterns: PDMS fiber for leaves: germacrene D (18.82), *trans*- $\beta$ -guaiene (15.97%) and  $\beta$ -elemene (6.57%); for stems: germacrene D (18.14%),  $\alpha$ -humulene (8.62%) and  $\beta$ -bisabolene (7.87%); and for inflorescences:  $\beta$ -pinene (17.24%), germacrene D (14.67%) and  $\alpha$ -pinene (13.77%). CAR-DVB fiber for leaves: *trans*- $\beta$ -guaiene (16.20%), germacrene D (14.28%) and  $\alpha$ -humulene (5.67%); for stems: germacrene D (10.02%),  $\alpha$ -humulene (8.38%) and  $\alpha$ -copaene (7.43%); and for inflorescences:  $\beta$ -pinene (13.78%), germacrene D (12.57%) and  $\alpha$ -pinene (11.13%). The results obtained from SPME revealed the occurrence, among the three analyzed organs (leaves, stems and flowers), of relevant amounts of the sesquiterpene germacrene D (>10%) for both fibers (CAR-DVB and PDMS).

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