Study of the chemical composition of essential oils obtained from three *Piper* genus species

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Plants of the *Piper* genus are the most representative and abundant plant species of the Piperaceae family (1), which is distributed in the pan-tropical zone, located in the subtropical forests in America, Africa and the South Pacific (2). They arouse interest because of their many applications, such as their use in traditional medicine for their antiparasitic, antifungal, anti-inflammatory, and food-flavoring properties (1,2). The species under study, *Piper medium* (COL 582360), *Piper holtonii* (COL 582357) and *Piper cf. subflavum* (COL 582361), were collected in Palmira and Dagua, Valle del Cauca, and their essential oils were obtained by steam distillation. Essential oils analyses were carried out by gas chromatography (*Agilent Technologies 6890N)* with mass spectrometric detection (AT 5975 Inert XL, EI, 70 eV), using two capillary columns: non-polar 5% phenyl methylsiloxane (DB-5MS) 60m X 0.25mm DI X 0.26 µm, df; and polar polyethyleneglycol (DB-WAX) 60 m X 0.25 mm X 0.25 µm stationary phases. Helium was used as the carrier gas at 1 mL min^{-1}. The identification of compounds was performed by comparing linear retention indices and their mass spectra with a built-in library database. Oils from *P. medium* and *P. holtonii* species, both collected in Palmira, showed avery similar chemical composition, with germacrene D (11 % and 10 %, respectively), dillapiole (14 % and 55 %, respectively) as main components. β-phellandrene (21 %) appeared in *P. medium*, and (*E*)-caryophyllene (9 %) in *P. holtoni*. For *P. cf. subflavum*, collected in Dagua, the essential oil chemical composition was very different, featuring 1,8-cineole (21 %), piperitone (17 %) and apiole (14 %) as major components. Research on the chemical composition and antioxidant activity of this *Piper* species essential oils is relatively new, however, the chemical constituents of *P. medium*, *P. holtonii* and *P. cf. subflavum* have not been described. The antioxidant activity (expressed as µmol Trolox g^{-1} substance) of the obtained essential oils were: 1410 ± 20 (*P. holtonii*), 1610 ± 50 (*P. cf. subflavum*) and 1820 ± 50 (*P. medium*). The results obtained by the ORAC method showed that all essentials oils studied presented antioxidant activity higher than that of BHT (459 ± 10) and α-tocopherol (550 ± 10), typical standard antioxidants which were used as reference compounds.

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2. Flores, N. et al. Phytochemistry, 2009, **70**, 621-627.

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