

CHEMICAL COMPOSITION AND ANTIOXIDANT CAPACITY OF ESSENTIAL OILS AND SUPERCRITICAL CO₂ EXTRACTS OF AROMATIC SPECIES GROWN IN COLOMBIA

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Samples of 30 aromatic plants growing in the wild were collected in the state of Santander, Colombia. Their botanical identification was performed at the Colombian National Herbarium, where a witness sample of each species was deposited. Essential oils were obtained by microwave-assisted hydrodistillation and were characterized by means of GC-MS analysis. Supercritical CO₂ extraction of all samples was carried out on a Thar SFE 2000-2-FMC-50 instrument for 2 h at 60 °C, 300 bar, and CO₂ flow of 37 g/min. Extraction yields between 0,1 and 2% were obtained from dry (moisture < 10%) and ground (particle size <0,5 mm) plant material. Extracts were analyzed on an Agilent Technologies 1200 liquid chromatograph equipped with a diode array detector. Essential oils and extracts' anti-radical capacity was determined with the oxygen radical absorption capacity (ORAC) and the ABTS* radical bleaching assays. Limonene, 1,8-cineol, *epi*- α -cadinol, carvacrol, thymol, *p*-cymene, α -pinene, *trans*- β -charyophyllene, caryophyllene oxide, germacrene D, and β -bisabolene, were the typical main constituents of the essential oils obtained. Carvacrol- and thymol-rich essential oils exhibited the highest anti-radical capacities, which in some cases surpassed those of reference, well-known antioxidants such as BHT and α -tocopherol. HPLC analysis showed the presence of pinocembrin and ursolic acid in several extracts.

Keywords: Antioxidant, ORAC, ABTS, carvacrol, pinocembrin.

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