

SUPERCRITICAL FLUID EXTRACTION OF *Psidium guajava*, *Salvia officinalis* and *Rosmarinus officinalis*: EFFECT OF EXTRACTION PARAMETERS, ANTIOXIDANT ACTIVITY AND COMPOSITION

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In the present work the extraction of leaves of *Psidium guajava*, *Salvia officinalis* and *Rosmarinus officinalis*, was performed with supercritical CO₂. A central composite design (CCD) based on a 2³ factorial was applied to evaluate the effects of pressure (30 – 50 MPa), time (0.5 – 2 h) and CO₂ flow rate (1.5 – 3 kg/h). The bed apparent density and temperature were maintained constant at 310 kg/m³ and 323 K, respectively. The effect of time exhibited a positive and significant effect on the global yield of the vegetal material from the three plants. CO₂ flow rate had a negative quadratic effect on the *P. guajava* and *R. officinalis* extraction yield, while the interaction between time and CO₂ flow rate had a positive effect. Pressure showed a positive lineal effect on the extraction yield. The largest yield was obtained at 50 MPa, 3 kg/h and 2 h for *R. officinalis* (1.9% d.b.) and *S. officinalis* (2.3% d.b.), while for *P. guajava* it was at 30 MPa, 3 kg/m³ and 2h. The chemical composition of the extracts was determined using GC-MS (volatile fraction) and HPLC-DAD. Carnosic acid was detected in the three extracts. The antioxidant activities were determined by the ORAC method and by measuring the inhibition of lipid peroxidation induced by UV radiation. The largest antioxidant activity determined by ORAC method was 3.2 μmol Trolox®/mg extract (*S. officinalis*), and the largest inhibition of lipid peroxidation registered was 89.7 ± 3.5% (*R. officinalis*).

Keywords: *Salvia officinalis*, *Rosmarinus officinalis*, *Psidium guajava*, carnosic acid, ORAC.

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