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Antioxidant Activities of Supercritical and Conventional Extracts of Clove (*Eugenia caryophyllus*)

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Clove is a plant that presents antimicrobial, antioxidant and anesthetic properties. The objectives of this study were to evaluate extraction yield and antioxidant activities of clove bud (*Eugenia caryophyllus*) extract. Extraction was performed using supercritical fluid extraction with carbon dioxide (CO_2), hydrodistillation and ultrasound. Supercritical extract of clove was obtained at a pressure of 100 bar and temperature of 50ºC for 90 minutes of extraction with CO_2 flow rate of 0.2 kg/h. Extraction curve was modeled by the Sosová and Martinéz models. Extract yields reached values of 22±1% (w/w) for ultrasound extraction with ethanol, 13±2% (w/w) for ultrasound extraction with water, 12.5±0.5% (w/w) for supercritical extraction and 3,6±0.6% (w/w) for hydrodistillation. Antioxidant activity of extracts obtained by different techniques were evaluated by DPPH (2,2-diphenyl-1-picrilidrazina). Best results of EC_{50} were obtained for clove extracts obtained by ultrasound using ethanol as solvent (26 μg/mL) and hydrodistillation (27 μg/mL). Total phenolic content was measured by Folin-Ciocalteau method and the best result was obtained for the supercritical extraction of clove (448±38 mg GAE/g). The method of bleaching system β-carotene/linoleic was also performed, and the best result was obtained for the extract obtained by supercritical extraction (94±4%).