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P1.36 - Yerba Mate (*Ilex paraguariensis*) extraction using CO₂ and hydrated ethanol as cosolvent

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ABSTRACT

Yerba mate is a plant that grows in subtropical South America that exhibit many health beneficial properties. In particular, the bio-extracts obtained from this plant find applications in the manufacture of functional foods due to their stimulating and antioxidants properties. In this work, extract products were obtained from the extraction of yerba mate (*Ilex paraguariensis*) by different high pressure technologies using liquid and supercritical CO₂. Extractions were carried out in a high pressure Soxhlet apparatus with liquid CO₂ at 291 K and 55 bar. Also, supercritical CO₂ extractions were performed at pressures between 175 bar and 260 bar and temperatures between 313 K and 333 K. Yerba mate was previously impregnated with ethanol or an ethanolic solution with 30 wt.% water (0.15 g/g to 1 g/g solution/yerba mate) to enhance the extraction of the main active principles. A wide range of global extraction yields (between 0.74 wt.% and 26.14 wt.%) were obtained in the experiments. Also, HPLC/MS-MS analyses of the extract products were performed to assess the selectivity of the different extraction conditions and cosolvents towards components like caffeine, theobromine, theophylline, caffeic acid and chlorogenic acid. Bioactive extracts obtained in this work show a high concentration of methylxanthines and chlorogenic acid, making these products valuable for functional food and nutraceutical applications.

Keywords: methylxanthines, extraction, CO₂, water, ethanol.