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BIOACTIVITY AND CHEMICAL PROFILE OF THE OPTIMIZED EXTRACT OF EUGENIA STIPITATA FRUITS

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The araçá-boi (*Eugenia stipitata* McVaugh - Myrtaceae) is a fruit species native to the Amazon and cultivated in some countries such as Brazil, Peru, Bolivia, Ecuador, and Colombia, which has great agro-industrial importance. Considering the growing search for bioactives from plant sources, this work proposed to optimize ultrasound-assisted extraction and evaluate the chemical profile and bioactivity of araçá-boi fruits. The experimental design was applied using a 2^3-factorial design to construct a mathematical model and response surface. The input factors were ethanol (%) in water, solid/liquid ratio - SLR (m/v), and time (min), and the responses: total phenolics content (TPC) and antioxidant activity by DPPH radical inhibition (%DPPH). The SRL factor showed a significant effect for TPC and DPPH ($p < 0.05$), and a correction was observed between TPC and antioxidant activity (Persona's R = 0.843, $p < 0.001$). The regression model was significant and predictive for both responses by the ANOVA F test ($p < 0.05$). The optimized parameters were EtOH 65%, solid/liquid ratio 1:5 and time of 25 min, resulting in 196.53 mg EAG/g of TPC and 86.03% DPPH inhibition. For the optimized extract, the total contents of flavonoids (131.20 mg EQ/g) and carotenoids (66.84 µg/g) were determined. In addition, the extract displayed inhibition of lipid peroxidation in the system β-carotene/ linoleic acid (IC50, 19.16 µg/mL), Sun protection factor (7.0) and bacteriostatic effects against *Escherichia coli* (MIC, 62.5 µg/mL) and *Staphylococcus aureus* (MIC, 125 µg/mL). In annotation of the compounds present in the fruit of *E. stipitata* by HPLC-DAD-MS/MS, only the data obtained in negative mode were used, indicating that the majority was ellagic acid and the presence of its derivatives (ellagic acid glucoside, methylellagic acid, ellagic acid-rhamnoside, methylellagic acid rhamnoside) and other compounds (valoneic acid dilactone, trihydroxycinnamic acid-O-glucoside).

Keywords: *bioactive, extract, process optimization, phenolic compounds, antioxidant activity, ellagic acid, antimicrobial activity*