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BIOACTIVE POTENTIAL OF Cariniana rubra LEAVES: QUANTIFICATION OF SECONDARY METABOLITES AND OPTIMIZATION OF ULTRASOUND-ASSISTED EXTRACTION

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Cariniana rubra Gardener ex Miers, known as jequitibá-vermelho, is a native species of the Brazilian Cerrado, whose bark is traditionally used in folk medicine for the treatment of inflammations, infections, and disorders of the urinary and reproductive tracts. Although some biological activities have been described for bark extracts, phytochemical studies remain scarce, and to date, there are no records involving the leaves. This study aimed to quantify phenolic compounds and flavonoids present in the leaves of *C. rubra*. For this purpose, ultrasound-assisted extraction (UAE) was employed, optimized by a central composite rotatable design (CCRD), evaluating ethanol concentration and extraction time. Response surface methodology (RSM) was applied to determine the optimal conditions of the process. Extractive yield was evaluated, and the total phenolic and flavonoid contents were determined using the Folin–Ciocalteu and AlCl3 methods, with gallic acid and rutin as reference standards, respectively. For yield, the model was statistically significant ($p = 0.02416$), with an R^2 of 92.65% and optimal conditions at 50% (v/v) ethanol and 132 min of extraction. In contrast, the models for phenolics and flavonoids were not statistically significant ($p > 0.05$), presenting R^2 values of 55.81% and 73.37%, respectively. However, the desirability analysis associated with experimental validation indicated ideal conditions at 90 min and 50% ethanol, resulting in 440.56 ± 3.10 mg GAE g^{-1} for phenolics and 169.22 ± 4.20 mg RE g^{-1} for flavonoids, both with a desirability index equal to 1. The levels obtained exceeded those previously reported for the bark, suggesting a high antioxidant potential and highlighting the leaves as a promising source of bioactive metabolites, while reinforcing the relevance of optimization in the phytochemical investigation of underexplored native species.

Keywords: *Phenolic compounds, Flavonoids, Response surface methodology, Cerrado medicinal species*