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BIOPROSPECTION OF SECONDARY METABOLITES FROM Eugenia uniflora L. AND EVALUATION OF ANTIOXIDANT ACTIVITY AND TOXICITY AGAINST Artemia salina

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The excessive production of reactive oxygen species (ROS) is associated with inflammation in diseases such as cancer, diabetes, and arthritis. Thus, exploring new sources of natural antioxidants is a promising strategy for developing therapeutic alternatives. *Eugenia uniflora* L. is a plant traditionally used in folk medicine due to its antioxidant and anti-inflammatory properties; however, studies are needed to validate its pharmacological effects and assess its toxicity. This study aimed to perform the bioprospecting of secondary metabolites from *E. uniflora* L. cultivated in Lagarto – SE and evaluate its antioxidant activity and toxicity against *Artemia salina*. From the leaves of *E. uniflora*, the organic extract was obtained by maceration (83% ethanol), followed by turbolysis and liquid-liquid partitioning using petroleum ether, dichloromethane, and ethyl acetate. The extract and fractions were analyzed by High-Performance Liquid Chromatography (HPLC) under exploratory gradient conditions, using flavonoid chemical standards. Assays were performed to determine Total Flavonoid Content (TFC) and Total Phenolic Content (TPC). The antioxidant potential was evaluated using 2,2-diphenyl-1-picrylhydrazyl (DPPH) and Ferric Reducing Antioxidant Power (FRAP) assays. The toxicity of the extract and fractions was tested against *Artemia salina* larvae at different concentrations (1000 – 0.1 µg/mL), using a 1% potassium dichromate solution (positive control) and a 1% dimethyl sulfoxide solution (negative control). The flavonoid quercetrin was identified in the dichloromethane fraction (DF) and the ethyl acetate fraction (EAF). The EAF showed the highest TPC (416.01 mg GAE/g) and TFC (39.16 mg QE/g) values, followed by the organic extract with 273.32 mg GAE/g and 17.40 mg QE/g. Both the EAF and the organic extract exhibited the highest antioxidant activity, with 95% and 73% DPPH inhibition and 565.27 and 500.93 µmol TE/g in the FRAP assay, respectively. The organic extract and petroleum ether fraction were classified as non-toxic (LC50 > 1000 µg/mL), while the dichloromethane fraction (LC50 732.1 µg/mL) and EAF (LC50 961 µg/mL) showed low toxicity. Based on the results, the presence of flavonoids and phenolic compounds was confirmed in the extracts and fractions of the plant species from the region, along with antioxidant activity and low toxicity, making it a promising candidate for future studies.

Keywords: *Pitanga; TFC; TPC; DPPH; FRAP; Artemia salina.*