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SCREENING OF ETHANOLIC EXTRACTS OF VARRONIA CURASSAVICA JACQ. FOR COSMETIC APPLICATIONS: DEREPLICATION AND ENZYMATIC INHIBITION ASSAYS

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Varronia curassavica Jacq. is a Brazilian native plant widely recognized for its anti-inflammatory activity, primarily attributed to α-humulene present in its essential oil. Although the essential oil has been extensively studied, the alcoholic extracts remain relatively underexplored [1]. To address this gap and better understand its potential applications, this study aims to chemically characterize the ethanolic extracts of Erva-baleeira and evaluate their activity in enzymatic inhibition assays with relevance to cosmetic applications. The extracts were obtained from leaves collected in Goiás using different extraction methods and analyzed by UHPLC-ESI(+)-HRMS/MS for chemical characterization. Raw data were processed using MZmine 4, employing dereplication tools such as GNPS and *in silico* platforms like SIRIUS. Enzyme inhibition was evaluated spectrophotometrically against porcine pancreatic elastase (EC 254-453-6) and mushroom tyrosinase (*Agaricus bisporus,* EC 1.14.18.1), with kojic acid and quercetin used as positive controls, respectively. The extracts exhibited strong elastase inhibition, reaching up to 96.41% at 100 µg/mL. On the other hand, tyrosinase inhibition was limited, with a maximum of 5.94%. Dereplication indicated the presence of flavonoid molecules, including artemetin (*m/z* 389.1248), casticin (*m/z* 375.1082), and kaempferol-3-*O*-hexoside (*m/z* 449.1076). Since flavonoids are known to inhibit elastase [2], these compounds likely may contribute to the observed enzymatic activity. To further correlate structure with enzymatic activity, liquid-liquid partitioning of the most active extract was performed, and additional LC-MS analyses and enzymatic assays will be conducted for the fractions. While weak tyrosinase inhibition suggests minimal depigmenting potential, the strong elastase inhibition highlights the ethanolic extracts of *V. curassavica* as promising candidates for anti-aging strategies aimed at preserving dermal matrix integrity. The authors would like to acknowledge the support of the University of Wuppertal and Livealoe, as well as funding agencies such as FINEP, FAPEG, CNPQ, and CAPES.

Keywords: *Erva-baleeira, elastase, dereplication, mass spectrometry.*

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