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EXTRACTION AND PHYTOCHEMICAL CHARACTERIZATION OF COFFEA ARABICA L. OIL FROM BAHIA

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Vegetable oils are widely used in the pharmaceutical and cosmetic industries due to their therapeutic and bioactive properties, making them indispensable for promoting human health. In this context, coffee, one of the most widely consumed natural products worldwide, has attracted growing interest. Green seeds, especially from the species *Coffea arabica* L., enable the extraction of an oil rich in phenolic compounds and sterols. According with this, the present study aimed to characterize the physicochemical and phytochemical profile of the oil extracted from green seeds of *Coffea arabica* L. cultivated in the Southwestern region of Bahia, Brazil. For this purpose, 10 samples (SisGen A4142D9) were collected from different producers in the region for lipid extraction, followed by physicochemical analyses (pH, density, refractive index, and acid value) and phytochemical characterization by gas chromatography coupled to mass spectrometry (GC-MS), with the aid of the Global Natural Products Social Molecular Networking (GNPS) platform. The physicochemical results showed mean values of pH 5.6 (CV = 9%), density 0.9503 g/cm³ (CV = 3.09%), refractive index 1.475 (CV = 0.10%), and acid value 12.85 mg KOH/g (CV = 40%). The low coefficients of variation for density and refractive index indicate good stability among the samples and confirm characteristics consistent with high-quality vegetable oils. The slightly acidic pH is in agreement with the presence of phenolic compounds. However, the high acid value suggests possible lipid degradation, which may be associated with deficiencies in storage, seed maturation, or a lack of standardization in grain processing. This underscores the need for stricter control of processing conditions. Phytochemical analysis revealed the presence of unsaturated fatty acids, such as linoleic and oleic acids, as well as palmitic acid and compounds from the diterpene group. These components are known for their antioxidant, anti-inflammatory, and emollient properties, reinforcing the functional and therapeutic potential of the oil. Therefore, this study will serve as a basis for the use of green coffee oil in the cosmetics sector, while also providing data for the development of pharmaceutical products.

Keywords: *Oil, GNPS, Coffea arabica L, Molecular networks.*