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COMPARISON BY GC-MS OF *Bixa orellana* L. (BIXACEAE) SEED OILS OBTAINED BY DIFFERENT EXTRACTION METHODS

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Bixa orellana L**.** (Bixaceae), commonly known as annatto, is a plant native to tropical America and part of Brazil's biodiversity. Previous studies have identified several bioactive compounds in this species, including flavonoids and carotenoids, which confer a variety of pharmacological properties such as anti-inflammatory, antimicrobial, insect-repellent, antileishmanial, antioxidant, and antihyperlipidemic activities. In Brazil, the seeds of *B. orellana* are primarily used as a natural red food dye, largely due to the presence of the apocarotenoid bixin - comprising approximately 80% of the total carotenoids in the seeds - along with norbixin and other compounds. This study aimed to compare the extraction yield, phytochemical profile, and gas chromatography–mass spectrometry (GC-MS) results of oil extracted from *B. orellana* seeds with those of a commercially available oil. Seeds were collected in Itarana, Espírito Santo, Brazil, and fixed oil (FO) extraction was performed using the method described in the 7th edition of the Brazilian Pharmacopoeia. The process involved solvent extraction under reflux in a Soxhlet apparatus using petroleum ether at 35°C for 4 hours. For comparison, one commercial oil (CO), obtained by cold pressing, was purchased. Phytochemical screening revealed the presence of flavonoids, steroids, triterpenes, and coumarins in the FO, whereas only coumarins were detected in the commercial oil. GC-MS analysis identified linoleic, linolenic, oleic, and eicosanoic acids in both samples. However, the FO also contained a broader range of compounds, including terpenes such as β-selinene, (+)-aromadendrene, α-humulene, d-nerolidol, geranylgeratriene, farnesene, farnesol and farnesyl acetate. These results underscore the importance of selecting appropriate extraction methods and implementing quality control procedures to ensure the chemical integrity and potential efficacy of the final product.

Keywords**:** *Bixa orellana L.,* extraction, phytochemical, CG-MS