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TURNING BY-PRODUCTS INTO BIOACTIVE ASSETS: DRYING EFFECTS ON Campomanesia adamantium ESSENTIAL OIL FOR COSMETIC APPLICATIONS

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Known as guavira, *Campomanesia adamantium* (Cambess.) O. Berg (Myrtaceae) is the symbolic fruit of Mato Grosso do Sul state, where it represents both cultural identity and economic potential. The pulps are widely exploited for food purposes, whereas peels and seeds are often discarded due to large volumes generated and storage limitations requiring low temperatures. Considering the high potential of these residues, our Research Group PRONABio/UFMS has developed dermocosmetic formulations derived from *C. adamantium* residues (INPI, 2024). Within this context, the present study aimed to evaluate the influence of two distinct drying methods on the chemical composition and yield of the essential oils (EO) obtained from *C. adamantium* residues, as a strategy to overcome the challenges associated with its storage and refrigeration requirements. The residues (peels and seeds) were subjected to two drying treatments: in an oven at 40 °C and at room temperature (RT, ~22 °C). Extractions of OEs were performed at five different points (1, 2, 4, 6, and 8 days), with day 0 serving as the control. EOs were obtained by hydrodistillation, and the chemical composition was analyzed by gas chromatography coupled with mass spectrometry. The results showed a significant increase in EO yield from oven-dried samples, with fresh residues yielding 1.405 mg/g of plant material compared to 2.431 mg/g after drying, representing a 72.57% increase. The highest yields were observed after 6 and 8 days (81.79% and 81.43%, respectively). In both treatments, the main compounds identified were the monoterpenes *D*-limonene (31.40% RT; 23.55% oven) and β-pinene (12.01% RT; 11.22% oven), compared to control values of 29.14% and 7.46%, respectively. Notably, eucalyptol was absent in control but appeared in high concentrations in both treatments (18.99% RT; 18.38% oven). Other compounds also exhibited considerable variation compared to the control, including linalool (2.71% control; 6.39% RT; 8.02% oven), α-terpineol (2.66% control; 5.06% RT; 5.26% oven), and *D*-germacrene (1.21% control; 0.77% RT; 0.40% oven). In conclusion, both drying methods proved effective: oven drying significantly increased EO yield, while room temperature drying better preserved volatile compounds. Overall, thermal drying of the residues eliminates the need for refrigeration while maintaining EO quality, providing a sustainable approach for processing and value addition of this valuable raw material.

Keywords: *Guavira, residue, GC-MS, chemical profile, monoterpenes*