

Supercritical Extraction of *Chrysobalanus icaco* oil with CO₂: a Preliminary Study

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Chrysobalanus icaco L., also known as "abajeru", is a plant native to regions with hot and humid climates. Abajeru leaf extract is often used in folk medicine as hypoglycemic, diuretic, and antiangiogenic agent. Among the promising compounds for the production of drugs present in this plant, pomolic acid and lupenone were selected to be studied in this work. In this context, the process of extraction with supercritical fluid using CO₂ as solvent is an alternative to obtain bioactive compounds, and has been shown to be more efficient presenting numerous advantages over extraction with common solvents. The estimation of the thermophysical properties plays an important role, once there is a shortage of these properties for high value-added bioactive components. Therefore, the objective of this work was to perform the thermodynamic modeling of the liquid-vapor equilibrium of binary systems, involving components of abajeru (pomolic acid and lupenone) and supercritical CO₂. The equations of state of Soave-Redlich-Kwong, Peng-Robinson, and modified Soave-Redlich-Kwong with the van der Waals mixing rules were used. Moreover, the critical properties were obtained using group contribution methods. The results showed that the predicted critical properties with different methods influenced the precision of the solubility values estimated. These predicted data will be used to establish a range of temperature and pressure for the extraction experiments.