

OR-6**Optimization of SC-CO₂ Extraction OF *Alpinia Galangal* (L.) Wild and Estimation of Cost of Manufacturing (COM) Via SIMULATION Process**

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In this study, the rhizome of a ginger plant, *Alpinia galangal* (L.) Wild, was subjected to supercritical fluid carbon dioxide (SC-CO₂) extraction at 150-250 bar and 40-60°C. Influence of the operating parameters; temperature and pressure on the yield extract was investigated as well the evaluation of 1-acetoxy-chavicol acetate (1'ACA) content in the best extraction condition by Gas Chromatograph (GC) and Gas Chromatograph/Mass Spectrum (GC/MS). Density of CO₂ (kg/L) was calculated using Bender correlation based on the pressure and temperature, therefore solubility of solute in SC-CO₂ (g/L) can be determined. PRO/II® software was used to simulate the extraction process at large scale and to estimate the cost of manufacturing (COM) at the best extraction condition. For simulation process, correlation between solubility of solute in SC CO₂ and SC CO₂ density was calculated based on Chrastil correlation and Peng Robinson was used as the thermodynamic model. The aim of this work is to determine the best SC-CO₂ extraction condition for *A.galangal* rhizome based on yield extract and perform the economical evaluation of the extraction via simulation process.

Keywords: Supercritical fluid carbon dioxide, Extraction, *Alpinia galangal*, Simulation.
