

Comparative Study of Solvent Systems for enhancing their phytochemical from *Boesenbergia rotunda*.

Saowalak Rotamporn^{1,2*}, Rachadaporn Benchawattananon¹, Chiramet Auranwiwat²

¹ Department of Integrated Science, Faculty of Science, Khon Kaen University, Khon Kaen, Thailand, 40002

² Expert Centre of Innovative Herbal Products, Thailand Institute of Scientific and Technological Research, Phatum Thani, Thailand, 12120

*Corresponding Author Email: saowalak.rot@kkumail.com

Abstract

This study aimed to evaluate and optimize the extraction of bioactive compounds from *Boesenbergia rotunda* (fingerroot), including extraction yield and pinostrobin content. Various solvents, including water, ethanol, methanol, acetone, ethyl acetate, dichloromethane, and hexane, were investigated for their extraction efficiency. The results showed that, water extraction provided the highest yield as 9.31 %w/w while hexane extract provided the highest pinostrobin content about 56.20±1.02% w/w. Response Surface Methodology (RSM) was further applied to optimize the extraction conditions for enhancing extraction yield and pinostrobin content. The evaluating the effects of solvent-to-material ratio, ultrasonic power, and extraction time. The quadratic model was statistically significant ($p < 0.05$) and showed good agreement with the experimental data ($R^2 = 0.970$). The optimal conditions were solvent-to-material ratio of 1:4 (w/v), ultrasonic power of 50%, and extraction time of 20 min, respectively. These findings demonstrate that optimization of extraction parameters can enhance the recovery of pinostrobin from fingerroot and highlight its potential application in pharmaceutical and nutraceutical industries

Keyword: *Boesenbergia rotunda*; Pinostrobin; Extraction optimization; Response Surface Methodology (RSM)