

## QUANTIFICATION OF ANDROGRAPHOLIDE AND ITS DERIVATIVES FROM SAMBILOTO EXTRACTS AND FRACTIONS USING HPLC AND COMPARISON TO THEIR BIOACTIVITY

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### ABSTRACT

*Sambiloto* is a plant with an active compound of andrographolide and its derivatives which have various bioactivity. In this study, andrographolide and its derivatives were quantified from the extract and fraction of *sambiloto* using HPLC and compared the bioactivity of each fraction as antioxidant, anti-inflammatory, anticancer, antihypertensive, and antimalarial. In this study, a small-scale extraction (screening) of *sambiloto* will be carried out to determine the appropriate solvent for large-scale extraction. Then, large-scale extraction was carried out with a solvent based on the screening results. The extract obtained was fractionated using solid phase extraction. Furthermore, the extract and fraction of *sambiloto* were determined for the content of andrographolide and its derivatives using HPLC and total phenol-flavonoid assay, followed by antioxidant assay, ACE (Angiotensin-converting enzyme) inhibition, NO production inhibition, and cytotoxicity against colon cancer cells (Caco-2). The highest content of andrographolide and its derivatives were found in the 50% methanol fraction (F2), while the lowest was in the 100% methanol fraction (F3). F2 showed the highest biological activity in cytotoxicity against Caco-2 cells with  $IC_{50}$  value = 32.46 g/mL, inhibited NO production in Raw 264.7 cells by 98.36%, and inhibited ACE enzyme activity by 94.19%. However, the highest antioxidant activity in EM was 0.35 and 0.47 mmol TE/g dry weight, while the highest antimalarial activity was F3 by inhibiting Heme polymerization by 6.45%.

Keywords: Andrographolide, Antioxidant, Anticancer, Antihypertensive, Anti-Inflammatory, HPLC