

Characterization and effect of extraction solvents on the yield and total phenolic content from *Vernonia amygdalina* leaves

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Abstract

In this study, the effects of extraction solvents on the yield and total phenolic content of *Vernonia amygdalina* leaf were examined. The considered solvents were water, 20% v/v ethanol, 40% v/v ethanol, 60% v/v ethanol, 80% v/v ethanol, and 100% v/v ethanol using Soxhlet extraction technique. Highest extraction yield ($19.45 \pm 0.22\%$ g/g) and total phenolic content (96.25 ± 2.52 mg GAE/g d.w.) were achieved using 60% v/v aqueous ethanol solution. In addition, there exist a significant correlation between total phenolic content and antioxidant activities using DPPH ($R^2 = 0.9397$, $p < 0.05$) and ABTS scavenging activity ($R^2 = 0.7700$, $p < 0.05$). More so, the FTIR analysis confirmed the presence of functional groups attributed to its antioxidant property. There was a significant damage in the cell wall of *V. amygdalina* leaf after extracted with 60% v/v ethanol solution. Therefore, *V. amygdalina* leaf can be a good source of antioxidants.

Keywords *Vernonia amygdalina* · Solvent · Antioxidant · Extraction · Phenolic · Characterization