

Extraction and characterization of bioactive compounds in Vernonia amygdalina leaf ethanolic extract comparing Soxhlet and microwave-assisted extraction techniques

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Abstract

The bioactive compounds in Vernonia amygdalina leaf were extracted using ethanol through Soxhlet and microwave-assisted extraction (MAE) techniques. The phytochemical analysis was carried out on the ethanolic extracts using the standard techniques. This analysis revealed the presence of flavonoids, alkaloids, steroids, terpenoids, glycosides, tannins, phenols, saponins, and the absence of anthraquinones. Furthermore, gas chromatography-mass spectroscopy (GC-MS) analysis results revealed the presence of more phytochemicals in the extract obtained through MAE compared to Soxhlet extraction technique, whereby phytol was present in a higher percentage. Fourier transform infrared spectroscopy analysis confirmed the presence of phytochemicals in the extracts. Moreover, the IC50 values of the extracts antioxidant activities were evaluated using DPPH and ABTS assays. There exists a clear correlation between total phenolic content, total flavonoid content and antioxidant activity of the extracts. Therefore, this study suggested that higher phenolic compounds responsible for natural antioxidant could be obtained from V. amygdalina leaf using the microwave-assisted extraction technique.

Keywords

Author Keywords: Vernonia amygdalina leaf; extraction; phytochemicals; scanning electron microscopy; gas chromatography-mass spectroscopy

KeyWords Plus: PHENOLIC-COMPOUNDS; ANTIOXIDANT ACTIVITY; CINEREA LEAVES; OPTIMIZATION

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