

Two-Level Factorial Design for the Extraction of Phenolics and Flavonoids from *Chromolaena odorata* Leaves

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EXTENDED ABSTRACT

*Chromolaena odorata* (Bitter bush) belongs to the family Asteraceae. It is used as a source of medicine especially in Asia and West Africa countries [1]. Phenolic compounds are mostly distributed group of phytochemicals that possess a wide range of physiological activities like anti-inflammatory, anti-cancer, vasodilatory effects, antioxidant, and among others [2]. Several phenolic compounds have been extracted and isolated from this plant, including vanillic acid, p-coumaric, protocatechuic, quercetin, luteolin, kaempferol, and among others [3]. The effects of microwave-assisted extraction (MAE) variables on the recovery yields of total phenolic content (TPC) and total flavonoid content (TFC) from *Chromolaena odorata* leaves were investigated using single factor experiment and two-level factorial design. The examined MAE variables were irradiation time, A (1-5 min), microwave power level, B (400-800 W), temperature, C (60-80 °C), solvent-feed ratio, D (8-14 ml/g) and ethanol concentration, E (20-60%). The obtained results showed that irradiation time (3.90 %), microwave power level (14.93 %) and ethanol concentration (17.21 %) significantly contributed to the recoveries of TPC and TFC from *Chromolaena odorata* leaves (Fig. 1). This implies that irradiation time, microwave power and ethanol concentration were significant ( $p < 0.05$ ) in obtaining higher recoveries. Thus, the significant variables will be considered for the optimization process.

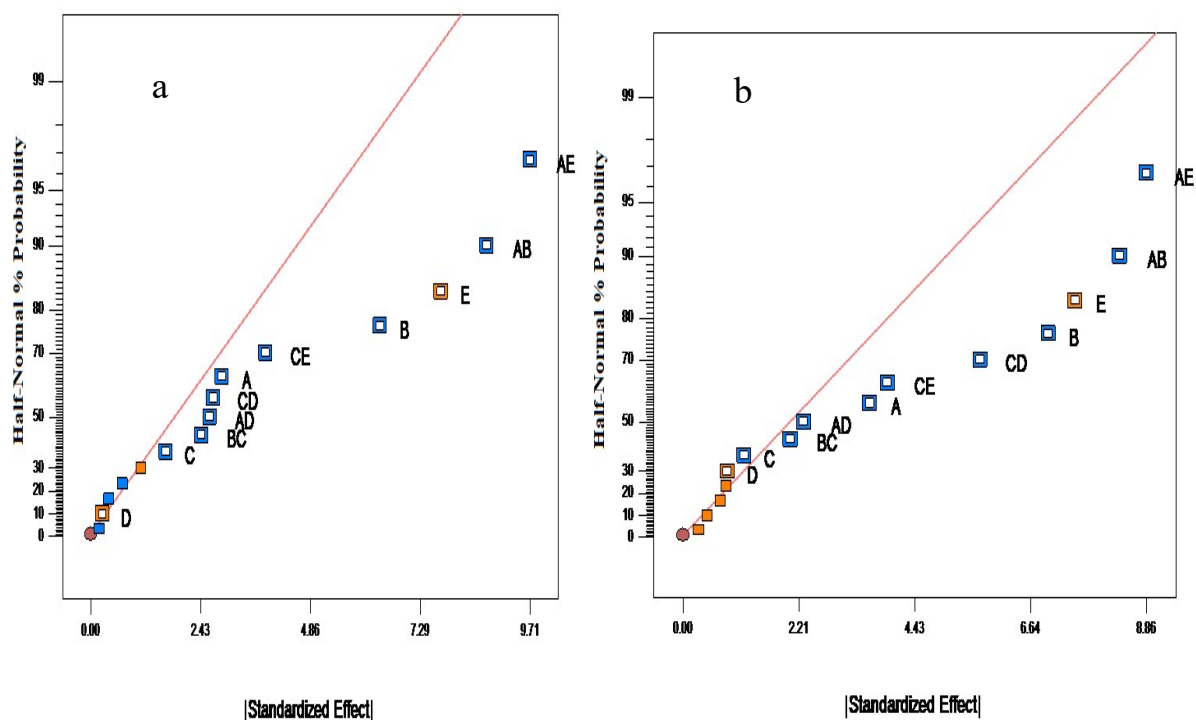


Fig. 1: Half-normal plots showing the significance level of each variable on the recovery yield of TPC (a) and TFC (b).

Keyword: *Chromolaena odorata*; Phenolics; Flavonoids; Microwave-assisted extraction.

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#### References

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