

Antioxidant properties and toxicity assessment of the *Crescentia cujete* extracts in brine shrimp (*Artemia salina*)

ABSTRACT

Crescentia cujete has traditionally been used to treat various ailments. The present study attempted to determine the antioxidant activities of 100% ethanol, 50% ethanol and aqueous extracts of the leaves, bark and fruit of the herb. Additionally, the toxicity of the extracts was investigated in brine shrimp. The results showed that 100% ethanol leaf extract had the highest antioxidant activity with an IC₅₀ value of 261.97 ± 0.57 g/mL according to the 2,2-diphenyl-1-picrylhydrazil (DPPH) radical scavenging assay. Estimation of the total phenolic content (TPC) using the Folin-Ciocalteu reagent showed that the leaves extracted with 100% ethanol had the highest concentration of TPC compared to the extracts prepared with other solvents of all parts of the plant. Analysis of the minerals using inductively coupled plasma atomic emission spectroscopy (ICP-OES) showed that the parts of the plant primarily consist of high levels of phosphorus, magnesium and calcium. Titration analysis of vitamin C showed that the highest concentration of the vitamin is present in the bark. High performance liquid chromatography (HPLC) analysis of vitamin E indicated that the content is the highest in the fruit, and the content of vitamin A was the highest in the leaves. Brine shrimp lethality assay (BSLA) results showed that 50% ethanol extract of the leaves is the most toxic during a 24 h treatment. Thus, the leaves and bark exhibit excellent antioxidant effects and can be potentially developed as functional food ingredients. The findings of the present study suggest further research in cell lines and in vivo.

Keyword: Calabash; Minerals; Polyphenol; Toxicity; Vitamins