**Title:**  **Effect of different solvents on extraction of phenolic and flavonoid compounds and antioxidant activity of *Citrullus colocynthis***

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**Introduction**

Medicinal plants are main sources of natural antioxidants. Natural antioxidants increase the antioxidant capacity of the plasma and reduce the risk of certain diseases such as cancer, heart diseases and stroke. Synthetic antioxidants that are commonly used in processed foods have side effects and are toxic. Therefore, there is a need for more effective, less toxic and cost effective antioxidants derived from medicinal plants. Due to the antioxidant properties of *Citrullus colocynthis*, optimizing the extraction of phenolic compounds and antioxidant activity is important. The objective of this research was to study effect of different solvents in the extraction efficiency of phenolic and flavonoid compounds from different parts of *C. colocynthis*.

**Methods**

The plant was collected from Zabol, Sistan and Balouchestan province and identified in Herbarium of University of Zabol. Then, different parts of plant were dried at room temperature and powdered to prepare the extract. To prepare extract, 0.2 g of powdered of the plant was dissolved in 10 ml of various solvents (methanol 70%, acetone, hexane, ethyl acetate and chloroform) and placed on a shaker for 24 hours. After 24 hours, the extract was filtered with Watten paper and kept in a refrigerator at 4 ° C. Phenolic and flavonoid contents were measured byFolin–Ciocalteu and Aluminum chloride methods respectively. Antioxidant activity of extracts was determined using Diphenyl Picrylhydrazyl(DPPH) and Hydrogen peroxide (H2O2) and (FRAP) assays.

**Results**

The methanol extract of *C. colocynthis* leaf, showed the highest phenolic content (27.01 mg/g DW). The extraction of fruit pulp with chloroform yielded the least amount of phenolic compounds (1.11 mg/g DW). Significant amount of phenolic and flavonoid content was observed in leaf methanol and acetone extract. Methanol and acetone extract had highest antioxidant activity in all antioxidant assays. Overall, the results show that methanol and acetone are more effective solvents for phenolic compounds extraction. There is a positive correlation between the amount of phenolic compounds and flavonoids with antioxidant activity. Base on the results of this study, *C. colocynthis* leaves due to the high levels of phenolic compounds, suggest as supplement rich in natural antioxidants.