

Effects of Cooking and Drying on the Phenolic Compounds, and Antioxidant Activity of Cleome gynandra (Spider Plant)

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Abstract : Cleome gynandra (spider plant) is an African green leafy vegetable categorized as an indigenous, underutilized and has been reported to contain essential phenolic compounds. Phenolic compounds play a significant role in human diets due to their proposed health benefits. These compounds however may be affected by different processing methods such as cooking and drying. Cleome gynandra was subjected to boiling, steam blanching, and drying processes and analysed for Total Phenolic Content (TPC), Total Flavonoid Content (TFC), antioxidant activity and flavonoid composition. Cooking and drying significantly ($p < 0.05$) increased the levels of phenolic compounds and antioxidant activity of the vegetable. The boiled sample filtrate exhibited the lowest TPC followed by the raw sample while the steamed sample depicted the highest TPC levels. Antioxidant activity results showed that steamed sample showed the highest DPPH, FRAP and ABTS with mean values of 499.38 ± 2.44 , 578.68 ± 5.19 , and 214.39 ± 12.33 μM Trolox Equivalent/g respectively. An increase in quercetin-3-rutinoside, quercetin-rhamnoside and kaempferol-3-rutinoside occurred after all the cooking and drying methods employed. Cooking and drying exerted positive effects on the vegetable's phenolic content, antioxidant activity as a whole, but with varied effects on the individual flavonoid molecules. The results obtained help in defining the importance of African green leafy vegetable and resultant processed products as functional foods and their potential to exert health promoting properties.

Keywords : Cleome gynandra, phenolic compounds, cooking, drying, health promoting properties

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