

Effect of Different Cooking Methods on the Antioxidant properties of Bitter gourd (*Mormodica charantia*) Cultivated in Jaffna District

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Abstract

Purpose: Bitter gourd (*Mormodica charantia*) is a widely cultivated vegetable crop in Jaffna. It is well-known to possess medicinal properties, mainly because of its antioxidant properties. Changes in the antioxidant properties of vegetables during different cooking methods have an influence on dietary nutrition. Therefore, this study is aimed at determining the effect of three cooking methods on the antioxidant properties of bitter gourd.

Research Method: Fresh bitter gourds were cut into small pieces and subjected to three different cooking methods (boiling, microwave cooking and stir-frying). The conditions of the cooking methods were; boiling at 100°C for 14 min, microwave cooking at 560W for 4 min and stir-frying at 230°C for 15 min. Ethanol (70 %, v/v) was used to extract the antioxidants from fresh and cooked samples and antioxidant properties were determined as total phenolic content (TPC), total flavonoid content (TFC), antioxidant capacity and DPPH radical scavenging activity. Results were analyzed using oneway analysis of variance using Statistical Analysis System (SAS 9.1).

Findings: TPC, TFC, antioxidant capacity and DPPH radical scavenging activity (IC₅₀ value) of fresh bitter gourd were 27.47±1.52 mg gallic acid equivalent/g dry matter, 19.36±2.01 mg catechin equivalent/g dry matter, 103.55±3.60 mg ascorbic acid equivalent/g dry matter and 0.210±0.008 mg/mL respectively. Compared to the antioxidant properties of fresh bitter gourd, boiling has significantly (p<0.05) increased TPC (by 48.63%) and TFC (by 42.77%) while, antioxidant capacity was reduced (by 17.84%). However, TPC, TFC, and antioxidant capacity of bitter gourd were reduced by 38.70%, 40.13% and 23.55%, respectively, after microwave cooking and 77.94%, 75.88% and 67.77%, respectively, after stir-frying. Thus, it can be concluded that boiling found to be the better method than other two methods to retain antioxidant properties of the bitter gourd.

Originality/ Value: This study could be useful to create the awareness among the people on different cooking methods to retain as much of the antioxidant as possible in order to get benefited by the consumption of bitter gourd.

Keywords: Bitter gourd, Flavonoid content, Phenolic content