

Effect of Thermal Treatment on Phenolic Content, Antioxidant, and Alpha-Amylase Inhibition Activities of *Moringa stenopetala* Leaves

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Abstract : *Moringa stenopetala* is a socioeconomic valued tree that is widely available and cultivated in the Southern part of Ethiopia. The leaves have been traditionally used as a food source with high nutritional and medicinal values. The present work was carried out to evaluate the effect of thermal treatment on the total phenolic content, antioxidant and alpha-amylase inhibition activities of aqueous leaf extracts during maceration and different decoction time interval (5, 10 and 15 min). The total phenolic content was determined by the Folin-ciocalteu methods whereas antioxidant activities were determined by 2,2-diphenyl-1-picryl-hydrazyl (DPPH) radical scavenging, reducing power and ferrous ion chelating assays and alpha-amylase inhibition activity was determined using 3,5-dinitrosalicylic acid method. Total phenolic content ranged from 34.35 to 39.47 mgGAE/g. Decoction for 10 min extract showed ferrous ion chelating (92.52), DPPH radical scavenging (91.52%), alpha-amylase inhibition (69.06%) and ferric reducing power (0.765), respectively. DPPH, reducing power and alpha-amylase inhibition activities showed positive linear correlation ($R^2=0.853$, $R^2=0.857$ and $R^2=0.930$), respectively with total phenolic content but ferrous ion chelating activity was found to be weakly correlated ($R^2=0.481$). Based on the present investigation, it could be concluded that major loss of total phenolic content, antioxidant and alpha-amylase inhibition activities of the crude leaf extracts of *Moringa stenopetala* leaves were observed at decoction time for 15 min. Therefore, to maintain the total phenolic content, antioxidant, and alpha-amylase inhibition activities of leaves, cooking practice should be at the optimum decoction time (5-10 min).

Keywords : alpha-amylase inhibition, antioxidant, *Moringa stenopetala*, total phenolic content

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