

## Antioxidant Capacity of Water and Methanol Extracts of *Vigna mungo* (Black Gram) Cultivated in Sri Lanka

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A diet with high antioxidant content is recommended for the protection of the human body from oxidative stress-related diseases. Legumes are one of the top nutrient-rich foods which exhibit comparatively higher antioxidant activity. Therefore, the present study aimed to assess the antioxidant activity of seeds of locally available commonly consumed *Vigna mungo* cultivar called Anuradha. The seeds were collected from the Field Crops Research and Development Institute of Sri Lanka at Mahailuppallama. The 20% water and methanol extracts of finely ground seeds were evaluated for antioxidant capacity by the means of DPPH free radical scavenging and nitric oxide scavenging activity. The total phenolic content (TPC) and total flavonoid content (TFC) were estimated by standard methods. DPPH scavenging activity in methanol extract ( $23.80 \pm 0.2$   $\mu\text{g}/\text{mL}$ ) was slightly higher ( $p > 0.05$ ) than the water extract ( $21.40 \pm 1.20$   $\mu\text{g}/\text{mL}$ ). The NO scavenging activity ( $4.30 \pm 0.03$   $\text{mgGAE}/\text{g}$ ), TPC ( $2.50 \pm 0.05$   $\text{mg GAE}/\text{g}$ ) and TFC ( $1.20 \pm 0.09$   $\text{mgQE}/\text{g}$ ) in water extract were significantly higher ( $P < 0.05$ ) compared to methanol extract (NO scavenging activity:  $3.70 \pm 0.04$   $\text{mgGAE}/\text{g}$ , TPC:  $1.1 \pm 0.01$   $\text{mg GAE}/\text{g}$ ; TFC:  $0.058 \pm 0.009$   $\text{mg QE}/\text{g}$ ). The solubility of secondary metabolites such as phenols and flavonoids depend on the polarity of the compound. The results of the present study indicate that majority of active antioxidant compounds present in the tested seed sample are water soluble while a certain amount of methanol soluble antioxidant compounds attributes for DPPH activity. In addition, nitric oxide scavenging activity in local black gram is exerted mainly by water soluble compounds.

**Keywords:** antioxidant capacity, *Vigna mungo*, black gram