

## **A COMPARATIVE STUDY ON ANTIOXIDANT ACTIVITY AND SKIN COLOUR OF BRINJAL (*SOLANUM MELONGENA*)**

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*Solanum melongena* is one of most common vegetables consumed all around the world and is believed to be a rich source of ascorbic acid and anthocyanins. Water extracts of brinjal with five different skin colours: purple with no lines (S1), light purple with lines (S2), dark purple with lines (S3), pink coloured (S4) and purple with green lines (S5) were tested for their antioxidant and radical scavenging activities. The total phenolic content (TPC) was quantified using Folin Ciocalteu's method. The antioxidant and radical scavenging activities were assessed by DPPH radical scavenging efficacy, ferrous reducing antioxidant power (FRAP) and Total Antioxidant Capacity (TAC). The effectiveness of brinjal extracts in inhibiting membrane damage was also determined. The antioxidant and radical scavenging efficacies of brinjal samples were compared with those of reference antioxidants, L-ascorbic acid and Butylated Hydroxyl Toluene (BHT). There was a significant difference ( $p < 0.001$ ) between the skin colour and antioxidant activity. Total phenolic content (TPC) and FRAP values of brinjal extracts varied from  $48.67 \pm 0.27$  -  $61.11 \pm 0.26$  (mg GAE/100 g fresh weight) and  $4.19 \pm 0.11$  -  $7.46 \pm 0.26$  (mmol of FeSO<sub>4</sub>/g of fresh weight), respectively. Brinjal with S3 skin colour showed the highest TPC and antioxidant activity measured by FRAP while, S2 showed the least while S1 displayed the highest percentage of DPPH radical scavenging activity with an IC<sub>50</sub> value of  $3.51 \pm 0.62$  mg/ml, followed by S3 ( $3.78 \pm 0.90$ ), S5 ( $3.96 \pm 1.28$ ), S2 ( $4.78 \pm 0.65$ ) and S4 ( $4.87 \pm 1.47$ ). Moreover, S3 demonstrated the strongest total antioxidant capacity with an inhibition percentage of  $40.45 \pm 1.17$ , while S2 showed the lowest activity ( $17.78 \pm 0.38$ ). Inhibition of membrane damage was assayed in terms of lipid peroxidation assays; ferric thiocyanate (FTC) and TBARS. In the FTC assay, the percentage of linoleic acid oxidation inhibition ranged from  $26.74 \pm 2.85$  to  $5.37 \pm 1.08$  for both standard and fruit extracts of *S. melongena*. Extracts of S3 extract showed moderate antioxidant activity in inhibiting lipid peroxidation in an egg yolk system whereas S2 extract showed the lowest inhibition percentage of  $4.19 \pm 0.11$ . All the extracts showed moderate to potent antioxidant activity, among which S3 and S1 demonstrated better antioxidant activity which may be attributed to the higher phenolic content since a linear relation was observed between the TPC and the antioxidant parameters.