

**ANTIOXIDANT ACTIVITY OF PODS: A COMPARATIVE STUDY OF
THREE ACCESSIONS OF *VIGNA UNGUICULATA*
(YARD LONG BEAN)**

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Vigna unguiculata sub sp. *sesquipedalis* (Yard Long Bean, YLB) is widely cultivated and consumed vegetable crop throughout the subtropical/tropical countries including Sri Lanka. In recent times, natural antioxidants have attracted considerable interest among nutritionists, food manufacturers and consumers due to health benefits. Bean varieties with dark reddish pod colour are known to exhibit greater antioxidant activity than less coloured varieties. The objective of this study was to compare the antioxidant activity of three accessions of YLBs; 'Gannoruwa Hawari' (dull green pods), 'HORDI Red 1' (green pod with dark red tip) and 'Kalpitiya' (dark purple pod), developed by the Horticultural Crops Research and Development Institute at Gannoruwa. Antioxidant activity of YLB pods (harvested at 14 days after full bloom) was analyzed using 1-1diphenyl-2-picrylhydrazyl (DPPH) assay based on free radical scavenging activity. A series of ethanolic extracts from pods, ranging from 0.1 to 20.0 mg/ml, and standard L-ascorbic acid (a strong antioxidant) from 0.1 to 1.0 mg/ml were treated with stable radical DPPH and the absorbance was measured by UV-spectrophotometer at 517 nm. The level of inhibition of radical activity by the test solutions was calculated using absorbance data, and the IC₅₀ value (the concentration of the test solution needed for 50% inhibition of radical activity) was calculated using regression curves plotted against different concentrations of pod extracts. To test any relationship between pigments and free radical scavenging activity, carotenoids, chlorophyll a, chlorophyll b and anthocyanin levels of the acetone extracts of YLB pods were analyzed using spectrophotometry. Six replicates from each YLB accession were used for each assay and the statistical analysis of data was done through ANOVA using Minitab software.

There was a strong positive correlation between the concentration of the pod extract and radical inhibiting activity in all three YLB accessions. 'Kalpitiya' with reddish violet pods exhibited the highest free radical scavenging activity as indicated by the lowest IC₅₀ value. The lowest free radical scavenging activity was detected with 'Gannoruwa Hawari' pods. Although the levels of anthocyanin and carotenoid pigments (which are known to contribute for antioxidant activity) in 'Kalpitiya' pods were apparently higher, the values were not significantly different ($P \geq 0.05$) compared to those in other two accessions. Some compounds other than the above pigments, which contribute to the overall antioxidant activity may be present in YLB pods.