

Abstract No: BP-07

Comparison of total chlorophyll, carotene and phenolic contents between species/varieties of Sri Lankan green leafy vegetables *Sesbania grandiflora*, *Centella asiatica* and *Ipomea aquatica*

L. W. Dahanayaka¹, C. C. Kadigamuwa² and Mapa S. T. Mapa^{*1}

¹Department of Biosystems Technology, University of Sri Jayewardenepura, Sri Lanka

²Department of Chemistry, University of Kelaniya, Sri Lanka
sumudu.mapa@sjp.ac.lk*

Green Leafy Vegetables (GLVs) are rich sources of phytochemicals which are beneficial to reduce chronic non-communicable diseases due to their therapeutic properties such as antioxidant activity. Among numerous dietary supplements of phytochemicals, GLVs are under spotlight as they are rich sources of phenolics and natural pigments including chlorophylls and carotenoids. Availability and the amount of these phytochemicals may vary depending on many factors including the variety of GLVs. The aim of this study is to quantitatively analyze the phytochemical contents; total phenol, chlorophyll and carotene among 3 selected GLV species and 2 varieties of each, *Sesbania grandiflora*, *Centella asiatica* and *Ipomea aquatica*. Each home garden grow variety was acquired from same geographical location which have similar growth conditions. Edible parts of each sample were well washed, air dried at room temperature under shade, and oven dried at 45 °C to obtain a constant weight. Dried samples were ground and tests were carried out using homogenous sample powder. Total chlorophyll and carotene contents were determined by measuring the absorbance (at the wavelengths of 470 nm, 645 nm and 662 nm) of methanolic extracts and using formulas. Total chlorophyll content in leafy vegetables ranged from 13.75 to 35.56 µg/g dry weight of the sample. The highest chlorophyll content was observed in *S. grandiflora* variety 1 (V1), whereas the lowest chlorophyll content was observed in *I. aquatica* variety 2 (V2). The carotene content of studied leaf samples was within the range of 1.08 to 3.89 mg/g dry weight of the sample. *S. grandiflora* V1 had the highest carotene content whereas the lowest carotene content was observed in *C. asiatica* V1. Total Phenolic Content (TPC) was determined by the Folin-Ciocalteu method by measuring the absorbance at 760 nm using the methanolic extracts of leaf samples. TPC were within the range of 3.62 to 18.19 mg GAE/g dry weight of the sample. *S. grandiflora* V1, leaves showed the highest TPC as 18.19 mg GAE/g dry weight of the sample and the lowest TPC was observed in *C. asiatica* V2 as 3.62 mg GAE/g dry weight of the sample. The results were analyzed in one-way analysis of variance ANOVA test, which showed a statistically significant difference between species/varieties ($p < 0.05$). The Tukey post hoc test showed that the 2 varieties in each species showed statistically significant differences in each aspect ($p < 0.05$) (The standard alpha level = 0.05). Overall, *S. grandiflora* V1 showed the highest amount of phenolic, chlorophyll and carotene contents. These results suggest total phenolic, chlorophyll and carotene contents may vary depending on the variety of GLV. This study can be used to refine GLV selection processes in agriculture and advance their applications within the food industry, paving the way for enhanced nutritional and health benefits.

Keywords: Green leafy vegetables, Phytochemicals, Variety

Acknowledgment

We greatly acknowledge the financial support provided by the University of Sri Jayewardenepura (Research Grant ASP/01/RE/TEC/2022/61).