

COMPARATIVE ANALYSIS OF γ -AMINO BUTYRIC ACID, ANTIOXIDANT CAPACITY, AND TOTAL PHENOLIC CONTENT IN COMMON EDIBLE LEAFY PLANTS OF SRI LANKA

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The γ -aminobutyric acid (GABA) is the principal inhibitory neurotransmitter in the central nervous system, regulating neuronal excitability and reducing anxiety. Antioxidants protect cells from oxidative stress by neutralising free radicals, lowering the risk of chronic diseases. This study evaluated the GABA content and antioxidant properties of six edible leaves: *Murraya koenigii* (Karapincha), *Asparagus racemosus* (Hathawariya), *Ipomoea aquatica* (Kankun), *Centella asiatica* (Gotu Kola), *Moringa oleifera* (Murunga), and *Pinacia oleracea* (Nivithi). GABA content was determined using the Kitaoka and Nakano spectroscopic method. Antioxidant capacity was assessed using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay and the ferric reducing antioxidant power (FRAP) assay. Total phenolic content (TPC) was measured using the Folin-Ciocalteu method. Methanol extracts (0.156 to 5.00 mg mL⁻¹) were prepared for all assays, and the activity at 1 mg mL⁻¹ was extrapolated from the dose-response curves. *M. koenigii* had the highest GABA content (0.175 mg mL⁻¹), followed by *A. racemosus* (0.124 mg mL⁻¹), *I. aquatica* (0.065 mg mL⁻¹), *P. oleracea* (0.051 mg mL⁻¹), *M. oleifera* (0.043 mg mL⁻¹) and *C. asiatica* (0.022 mg mL⁻¹). The highest radical scavenging activity as measured by DPPH assay, was observed in *M. koenigii* (IC₅₀ = 1.49), while *I. aquatic*, *M. oleifera*, *C. asiatica*, *A. racemosus* and *P. oleracea* exhibited IC₅₀ values 4.80, 4.92, 6.32, 19.46 and 80.50 mg mL⁻¹, respectively compared to vitamin C (IC₅₀ = 0.16 mg mL⁻¹). The highest FRAP value of 2.08 μ mol trolox equivalents mL⁻¹ was recorded for *C. asiatica* followed by of *M. koenigii* (1.66 μ mol mL⁻¹) and *M. oleifera* (0.48 μ mol mL⁻¹). *M. koenigii* also showed the highest TPC (0.20 mg mL⁻¹ of gallic acid equivalents) followed by *M. oleifera* (0.09 mg mL⁻¹). Among the tested edible leaves, *M. koenigii* demonstrated the highest levels of GABA, antioxidant activity, and total phenolic content, indicating its strong potential as a functional food with neuroprotective and antioxidant properties.

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Keywords: Antioxidant Activity, DPPH, FRAP, GABA, Phenolic Content