

ANTIOXIDANT ACTIVITY OF PROPOLIS OF THE ENDEMIC STINGLESS BEE, *TETRAGONULA PRAETERITA*, FROM DIFFERENT CLIMATIC ZONES OF SRI LANKA

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Tetragonula praeterita (Walker) is the only endemic stingless bee species found in Sri Lanka. Propolis is a sticky lipophilic resinous substance produced by a mixture of bee wax, plant resins, pollen and exudates, including organic and inorganic earth components and salivary secretions of stingless bees. The bioactivity of propolis depends on its chemical composition, which varies with the bee species, food source, ecosystem, climatic zone, season and vegetation. This study aimed to compare the antioxidant activity of propolis samples obtained from Kandy (KAN), Kurunegala (KUR) and Batticaloa (BAT) belonging to wet, intermediate and dry climatic zones of Sri Lanka, respectively. Ethanol extracts prepared by Soxhlet extraction were assessed for antioxidant capacity by 1,1-diphenyl-2-picrylhydrazyl (DPPH) assay, ferric reducing antioxidant power (FRAP) assay, Folin-Ciocalteu method (for assaying total polyphenolic content, TPC) and aluminium chloride colorimetric method (for assaying total flavonoid content, TFC). The IC₅₀ values of DPPH radical scavenging assay were 155.75±8.19 (KAN), 538.89±16.14 (KUR) and 1,191.67±2.92 mg L⁻¹ (BAT) and the corresponding FRAP values were 102.46±0.01, 71.30±0.01 and 60.17±0.01 mmol g⁻¹ dm⁻³. The TPC values of KAN, KUR and BAT samples were 37.0±3.1, 16.8±1.5 and 14.4±1.1 mg (gallic acid equivalent) g⁻¹, respectively. The antioxidant activities correlated with the TPC values but not with the TFC values, 179.2±31.8 (BAT), 135.2±1.1 (KAN) and 111.3±3.9 (KUR) mg (quercetin equivalent) g⁻¹. Therefore, it can be concluded that the antioxidant capacity of *T. praeterita* propolis depends on the climatic zones from which the samples are collected and that the TPC contributes to the antioxidant capacity of the bee propolis.

Keywords: Antioxidant activity, Bee propolis, Climatic zones, Endemic, *Tetragonula praeterita*