

**ANTIMICROBIAL AND ANTIOXIDANT ACTIVITIES OF STINGLESS BEE
(*TETRAGONULA PRAETERITA* AND *T. IRIDIPENNIS*) PROPOLIS FROM RATNAPURA
DISTRICT, SRI LANKA**

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Propolis is a biologically active, resinous substance produced by stingless bees by mixing their saliva and wax excretions with substances collected from botanical sources. Accordingly, the bioactivity of propolis depends on many factors, including geographical region, vegetation, and bee species. According to literature, ethanolic extract of *Tetragonula iridipennis* (TI) stingless bee propolis collected from Kandy, Sri Lanka, shows a remarkable in vitro antioxidant activity against 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical and antibacterial activity against Gram-positive bacteria [Minimum Inhibitory Concentration (MIC) values of 16 - 32 mg L⁻¹]. The bioactivities of propolis collected from other districts of Sri Lanka have not been reported. Therefore, the current study aimed to investigate the antimicrobial and antioxidant activities of *Tetragonula praeterita* (TP) and TI stingless bee propolis sourced from Ratnapura, Sri Lanka. The ethanol extracts of propolis were obtained using the Soxhlet method. The antioxidant and antimicrobial activities of extracts were determined using the DPPH radical scavenging assay and agar dilution method by determining the MIC, respectively. The TI extract showed a higher antioxidant activity (IC₅₀=253.707±6.075 mg L⁻¹) compared to the TP extract (IC₅₀=737.493 ± 8.451 mg L⁻¹) while that of L-ascorbic acid was IC₅₀ = 8.140 ± 0.093 mg L⁻¹. Antimicrobial activity was tested against three Gram-negative (*Escherichia coli*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*), two Gram-positive (*Staphylococcus aureus* and Methicillin-Resistant *Staphylococcus aureus*-MRSA) bacterial strains and the fungus, *Candida albicans* within the concentration range of 16 to 1,280 mg L⁻¹. TI extract showed remarkable antimicrobial activity, with MICs of 16 mg L⁻¹. In contrast, the MICs of TP extracts were ≥ 320 mg L⁻¹. Our results, compared with the previous findings, emphasize the dependence of the propolis bioactivity on the bee species and vegetation from which the bees source their food and hive-construction material.

Financial assistance from the University of Peradeniya Research Grant (Grant No URG/2021/35/S) is acknowledged.

Keywords: Antimicrobial activity, Antioxidant activity, Propolis, Sri Lankan stingless bees