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Preliminary studies of antioxidant and anti-inflammatory activities in methanol extracts of mistletoe (*Pilula*) in guava

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Mistletoe has been found to possess antioxidant and anti-inflammatory properties, which are attributed to various bioactive compounds such as phenolic acids, flavonoids, and tannins. These properties make mistletoe a potential candidate for developing natural remedies for various ailments related to oxidative stress and inflammation. In the current study, the antioxidant and anti-inflammatory potential of *Dendrophthoe falcata*, a mistletoe species, parasitic on its host plant, *Psidium guajava* (guava) was evaluated. Cold extraction at lower temperatures was used to obtain a higher yield of bioactive compounds responsible for antioxidant and anti-inflammatory properties as they are sensitive to heat. Methanol was selected as the solvent due to its high-yielding capacity towards the above compounds. Three host guava (*Psidium guajava*) containing mistletoe in species of *Dendrophthoe falcata* were selected and guava host leaf samples (S₁L, S₂L, S₃L) and mistletoe leaf samples (S₁M, S₂M, S₃M) were obtained from each tree. To determine the antioxidant activity of the mistletoe, Total Phenolic Content (TPC), Total Flavonoid Content (TFC), DPPH radical scavenging activity, and Ferric-Reducing Antioxidant Power (FRAP) were analyzed. The highest TPC and TFC were resulted as 169.46 ± 2.06 GAE mg/g and 46.16 ± 1.15 CE mg/g respectively for the mistletoe leaf sample (S₃M) obtained from the host 03. S₃M has shown 0.091 ± 0.001 mg/mL as its IC₅₀ value for DPPH test which is the lowest IC₅₀ values from all mistletoe samples, while giving 0.523 ± 0.010 mg/g BHT equivalent value for FRAP assay. The correlation between TPC and TFC was analyzed using the Pearson's correlation analysis, and a robust positive correlation was detected between the TPC, TFC, and antioxidant activities. The study evaluated the anti-inflammatory activity by examining the heat-induced hemolysis. The mistletoe leaf samples demonstrated significant values for the heat-induced hemolysis assay (IC₅₀ = 488.302 ± 23.407 µg/mL by S₃M), indicating potential anti-inflammatory activity. Diverse physical properties and growth conditions of mistletoe leaves can contribute to variations in the samples, resulting in inconsistent outcomes. Nonetheless, this limitation did not impede the evaluation of antioxidant and anti-inflammatory properties associated with the presence of mistletoe. As a result, it can be inferred that methanol extracts of mistletoe (*Dendrophthoe falcata*) contain antioxidant and anti-inflammatory activity, which leads for future research endeavors.

Keywords: Anti-inflammatory activity, Antioxidant activity, Cold extraction, Guava, Methanol extract

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