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In-vitro antioxidant and anti-inflammatory activities of methanol extracts of semi-parasitic mistletoe *Dendrophthoe falcata* on host *Punica granatum* (pomegranate plants)

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This study examined the potential antioxidant, and anti-inflammatory properties of the mistletoe species (*Dendrophthoe falcata*), a semi-parasitic plant on the host, pomegranate (*Punica granatum*). Soxhlet extraction used methanol as the solvent to obtain mistletoe extracts in species of *Dendrophthoe falcata*, with higher yields. Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) were tested for all mistletoe leaf samples. DPPH radical scavenging activity and Potassium Ferricyanide Ferric-Reducing Power (PFRAP) were used to determine the antioxidant activities. In this study, the anti-inflammatory activity was determined by examining the heat-induced hemolysis. The correlation between TPC and TFC with the radical scavenging activity was analyzed using Pearson's method. The highest TPC value of 108.542 ± 11.510 mg GAE/g was obtained from the mistletoe leaf sample, S₂D from the host plant 02. The highest TFC was 34.927 ± 0.996 mg CE/g for the mistletoe leaf sample, S₁D obtained from host 01. The lowest IC₅₀ value from all mistletoe samples was shown by the mistletoe leaf sample (S₃D), obtained from host 03 (0.189 ± 0.049 mg/mL). The highest BHT equivalent value for the PFRAP assay was obtained from the mistletoe sample (S₃D), taken from host 03 (150.032 ± 31.829 mg BHTE /g). A strong positive correlation was detected between the TPC, TFC, and antioxidant activities. For TPC, the correlation value was 0.941, and for TFC, the correlation value was 0.912. In the heat-induced hemolysis, the lowest IC₅₀ value, 0.892 ± 0.008 mg/mL was shown by the mistletoe sample (S₃D), obtained by the host plant 03. The biological properties of mistletoe leaf samples may vary due to differences in physical characteristics and growth conditions of different locations. However, this limitation did not hinder the assessment of antioxidant and anti-inflammatory properties by their presence. In conclusion, this study has identified that the methanol extracts of mistletoe (*Dendrophthoe falcata*) have potential antioxidant and anti-inflammatory activity that can be used for future therapeutic developments.

Keywords: Anti-inflammatory, Antioxidant, Mistletoe, Pomegranate, Soxhlet extraction

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