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Preliminary studies on antioxidant and anti-inflammatory properties in methanol leaf extracts of mistletoe *Dendrophthoe falcata* in *Citrus crenatifolia* (Heen naran)

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Dendrophthoe falcata is a common mistletoe species containing diverse bioactive compounds such as phenolic acids, flavonoids, and tannins, which was widely used to treat various diseases in traditional and folk medicine associated with inflammatory responses and oxidative stress. This study aims to assess the antioxidant and anti-inflammatory activities in methanol leaf extracts of mistletoe (*Dendrophthoe falcata*), parasitic on its Heen naran (*Citrus crenatifolia*) host plant. Three Heen naran (*Citrus crenatifolia*) host plants with the mistletoe (*Dendrophthoe falcata*) were selected from three different locations. Matured mistletoe leaf samples (S₁M, S₂M, S₃M) and Heen naran host leaf samples (S₁L, S₂L, S₃L) were collected from each tree. Soxhlet extraction was used to extract valuable bioactive compounds responsible for antioxidant and anti-inflammatory properties. Methanol was used as the solvent because it has a high extraction yield for these compounds. The extracts of the mistletoe and host leaf samples were investigated for their antioxidant potential using total phenolic content (TPC), total flavonoid content (TFC), total condensed tannins (TCT), DPPH radical scavenging activity, and ferric reducing antioxidant power assay (FRAP). In this study, anti-inflammatory activity was determined by heat-induced hemolysis. Each mistletoe leaf sample (*Dendrophthoe falcata*) has shown more potent antioxidant and anti-inflammatory activities than Heen naran host leaf samples (*Citrus crenatifolia*). The mistletoe leaf sample (S₁M) obtained from host 01 showed the highest TPC (47.39 ± 0.214 GAE mg/g), TFC (260.73 ± 3.22 CE mg/g), and TCT (136.74 ± 7.89 CE mg/g). S₁M had the lowest IC₅₀ value (0.131 ± 0.011 mg/mL) for DPPH assay compared to other mistletoe leaf samples, while it showed 0.518 ± 0.022 mg/g BHT equivalent value for FRAP assay. The host leaf sample from host tree 01 (S₁L) displayed the highest TPC (36.07 ± 2.19 GAE mg/g) and exhibited the lowest IC₅₀ value (0.834 ± 0.048 mg/mL) in the DPPH test. Heen naran leaves obtained from host 02 (S₂L) showed the highest TFC (114.31 ± 2.21 CE mg/g), and TCT (68.04 ± 5.28 CE mg/g). The FRAP assay yielded a value of 0.220 ± 0.068 mg/g BHT equivalent for S₁L. The correlation between TPC, TFC, and TCT was analyzed using Pearson's correlation method, and a strong positive correlation was detected between the TPC, TFC, TCT, and antioxidant activities for mistletoe leaf samples. In heat-induced hemolysis, S₂M had the lowest IC₅₀ value (278.92 ± 16.62 μg/mL) compared to other mistletoe leaves, and S₂L showed the lowest IC₅₀ value (477.99 ± 13.07 μg/mL) than other host samples. Due to the different physical properties and the growth conditions, mistletoe and host leaf samples were distinct from each sample, leading to non-uniform results. However, this limitation was not a barrier to determining the presence of antioxidant and anti-inflammatory properties. It can be concluded that methanol leaf extracts of *D. falcata* and *C. crenatifolia* possess antioxidant and anti-inflammatory activities, which can be used for studies in the future.

Keywords: Anti-inflammatory activity, Antioxidant activity, Heen naran, Methanol leaf extracts, Mistletoe

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