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Preliminary study of antioxidant and anti-inflammatory properties of mistletoe (*Dendrophthoe falcata*) on mango host plant (*Mangifera indica*).

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Dendrophthoe falcata is a common mistletoe plant that has widespread use in Sri Lankan traditional medicines. With the escalating incidence of cancer, asthma, and chronic inflammatory ailments among patients, the exploration of natural remedies in developing nations has become increasingly important. Despite existing research focusing on the chemical composition and biological activities of mistletoe plants in general, a critical gap exists in understanding the specific anti-inflammatory and antioxidant properties of *Dendrophthoe falcata* when it thrives on its particular host, *Mangifera indica*. This preliminary study aims to investigate the antioxidant and anti-inflammatory properties of mistletoe, *Dendrophthoe falcata* leaves grown on the host, *Mangifera indica* in Sri Lanka. The methanolic extracts of *Dendrophthoe falcata* and *Mangifera indica* leaf samples were prepared using the cold extraction method. The antioxidant activity was assessed through the Folin-Ciocalteu assay, ammonium colourimetric method, 2,2-diphenylpicrylhydrazyl (DPPH) assay, and ferric-reducing power assays. Anti-inflammatory action was evaluated using heat-induced hemolysis and albumin denaturation assays. Pearson's correlation test was performed to determine whether there is a linear relationship between total phenolic content (TPC), total flavonoid content (TFC), and antioxidant activity, anti-inflammatory properties of *Dendrophthoe falcata* and *Mangifera indica*. A two-sample t-test was done to compare the results of TPC and anti-inflammatory and antioxidant properties of *Dendrophthoe falcata* and *Mangifera indica* to identify whether these values of mistletoe significantly vary from the host. TPC and TFC of mistletoe were determined to be 1531.0 ± 44.3 mg of gallic acid equivalents per g of extract and 210.7 ± 15.9 mg of catechin equivalents per g of extract through Folin-Ciocalteu assay, ammonium colourimetric method respectively. Mistletoe exhibited an IC_{50} of 239.70 ± 27.99 $\mu\text{g/mL}$ for DPPH scavenging activity and an EC_{50} of 6921.0 ± 2419.0 $\mu\text{g/mL}$ for ferric-reducing power. Additionally, mistletoe demonstrated an IC_{50} of 554.1 ± 42.4 $\mu\text{g/mL}$ for antihemolytic activity and 0.45 ± 0.05 mg/mL for protection against albumin denaturation. Pearson's correlation analysis revealed that phenols contribute to antioxidant activities. Furthermore, the presence of phenols and flavonoids contributed to the anti-inflammatory properties. A t-test comparison between mistletoe and its host plant for bioactive compounds, antioxidants, and anti-inflammatory properties indicated that mistletoe's bioactive compounds and their antioxidant and anti-inflammatory properties are significantly different from host plants. *Dendrophthoe falcata* leaves emerge as a promising source of anti-inflammatory and antioxidant properties. This avenue of study bears substantial potential for unlocking novel therapeutic benefits and can be further pursued by determining the chemical structure of the specific bioactive compounds responsible for anti-inflammatory and antioxidant properties.

Keywords: Anti-inflammatory, Antioxidant, *Dendrophthoe falcata*, *Mangifera indica*