

Comparative evaluation of antioxidant activity in flower and leaf extracts of *Tagetes lemmonii* assessed by DPPH radical scavenging method

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Tagetes lemmonii, commonly known as Lemmon's Marigold, is a perennial herbaceous plant native to Mexico and the southwestern United States. This plant can also be cultivated and is found in certain regions of Asia. Although it has garnered attention for its potential medicinal properties, its antioxidant activity remains relatively underexplored in scientific literature. Given the increasing demand for natural antioxidants in therapeutic and nutraceutical formulations, this study aimed to evaluate and compare the antioxidant activity of methanol:water (4:1) extracts obtained from the flowers and leaves of *T. lemmonii* using the DPPH radical scavenging assay. Flower and leaf extracts were prepared by macerating 5 g of air-dried flowers and 14.09 g of dried leaves for 72 hours in the methanol:water (4:1) solvent system, with identical material-to-solvent ratios. Extracts were filtered and concentrated by rotary evaporation. The effective concentrations of the samples required to scavenge the DPPH free radicals by 50% (EC₅₀) were obtained by linear regression analysis of the dose response curves. All experiments were performed in triplicate. Both flower and leaf extracts of *T. lemmonii* exhibited antioxidant activity, with the leaf extract (EC₅₀: 48.9 ± 9.4 µg/mL) being more potent than the flower extract (EC₅₀: 64.11 ± 5.66 µg/mL), though both were less potent than ascorbic acid (9.02 ± 1.17 and 32.63 ± 0.87 µg/mL, respectively), highlighting *T. lemmonii* as a promising source of natural antioxidants, with the leaf extract showing higher potency than the flower extract. The study did not determine the phytochemical composition of the extracts, limiting attribution of activity to specific compounds. Literature suggests that other *Tagetes* species exhibit antioxidant activity in both leaves and flowers, supporting the potential of *T. lemmonii* as a natural antioxidant source. Future work incorporating phytochemical profiling would clarify the compounds responsible for the observed activity.

Keywords: *Tagetes lemmonii*, Antioxidant activity, DPPH assay, Methanol extract