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YOUNG SCIENTISTS' CONFERENCE ON MULTIDISCIPLINARY RESEARCH- NIFS

Proceedings of the

YOUNG SCIENTISTS' CONFERENCE ON MULTIDISCIPLINARY RESEARCH

VIRTUAL INTERNATIONAL CONFERENCE

2025

Organized by
The Young Scientists' Association
National Institute of Fundamental Studies, Sri Lanka.

ISSN 2815-0260
Proceedings of the Young Scientists' Conference on Multidisciplinary Research-2025
Young Scientists' Association, National Institute of Fundamental Studies, Sri Lanka
27th November 2025

Paper ID: CMT_247

Assessment of the biological activities of methanolic extract of *Flueggea leucopyrus* Willd. and *Eryngium foetidum* L.

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Sri Lanka is renowned for its rich diversity of medicinal plants, many of which possess significant potential for the development of novel therapeutics. The present study evaluated the biological activities of leaf extracts from *Flueggea leucopyrus* (Katupila) Willd. and *Eryngium foetidum* L. (Andu). Methanolic extracts of the leaves were subjected to a series of bioassays, including the 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay, the ferric reducing antioxidant power (FRAP) assay, the brine shrimp lethality assay, and the lettuce seed germination assay for phytotoxicity. Plant materials were collected from the Matale District, Sri Lanka, and healthy, mature leaves were authenticated prior to extraction. Following shade drying and pulverization, the leaves were extracted with methanol to obtain crude extracts. In the DPPH assay, *F. leucopyrus* exhibited strong antioxidant activity, with an IC_{50} value of 22.75 ± 0.12 mg L^{-1}, while *E. foetidum* showed moderate activity with an IC_{50} of 94.47 ± 1.03 mg L^{-1}. Both were less potent than the reference compound, ascorbic acid (IC_{50} = 7.90 ± 0.10 mg L^{-1}). The FRAP assay further confirmed the antioxidant capacities of *F. leucopyrus* and *E. foetidum,* displaying FRAP values of 899.37 ± 11.11 µmol Fe^{2+} g^{-1} and 328.23 ± 11.52 µmol Fe^{2+} g^{-1}, respectively, compared to the positive control Trolox (1260 ± 10.00 µmol Fe^{2+} g^{-1}). In the brine shrimp lethality assay, *F. leucopyrus* and *E. foetidum* demonstrated moderate cytotoxic activity, with LC_{50} values of 605.22 ± 1.47 µg mL^{-1} and 415.19 ± 10.74 µg mL^{-1}, respectively. These were markedly less toxic than the positive control, potassium dichromate (LC_{50},7.97 ± 0.97 µg mL^{-1}). Neither extract exhibited significant phytotoxicity at 1000 µg mL^{-1} in the lettuce seed germination assay. Overall, the results suggest that both *Flueggea leucopyrus* and *Eryngium foetidum* possessed promising antioxidant and moderate cytotoxic properties, indicating their potential for future pharmaceutical and pharmacological applications.

Keywords: *Cytotoxicity, DPPH, FRAP, phytotoxicity*