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Comparative evaluation of antioxidant, enzyme inhibitory, cytotoxic, and phytotoxic activities of *Olax zeylanica* and *Hygrophila auriculata* leaf extracts

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Sri Lanka has a vast variety of medicinal plants. Among them, *Olax zeylanica* (Mella) and *Hygrophila auriculata* (Neeramulliya/Ikiriya) are used for various treatments in traditional medicine. This study comparatively evaluated the antioxidant, α-glucosidase inhibitory, cytotoxic, and phytotoxic activities of the methanol leaf extracts from these two species. The leaves of the plants were collected from the Kegalle District, Sri Lanka. The collected samples were thoroughly cleaned, air-dried, and ground into a fine powder. The powdered samples were extracted into methanol by ultrasonication, and the solvent was evaporated to dryness. These crude extracts were evaluated for their antioxidant activities with 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay and ferric reducing antioxidant power (FRAP) assays., Enzyme inhibitory activity against α-glucosidase, cytotoxicity with brine shrimp lethality assay, and phytotoxicity with lettuce seed (*Lactuca sativa*) germination assay. *O. zeylanica* demonstrated a stronger antioxidant activity (IC50 = 4.65 ± 0.42 ppm) than the positive control, ascorbic acid (IC50 = 7.90 ± 0.10 ppm), while *H. auriculata* showed comparatively moderate activity (IC50 = 40.75 ± 1.03 ppm). In the FRAP assay, both extracts showed high reducing power of 1666.19 ± 21.53 µmol $FeSO_4$/g for *O. zeylanica* and 1674.61 ± 15.43 µmol $FeSO_4$ g-1 for *H. auriculata* compared to the positive control, Trolox 1692.19 ± 0.10 µmol $FeSO_4$ g-1. *O. zeylanica* demonstrated a strong α-glucosidase inhibitory activity of 98.99 ± 0.13% at 1000 ppm, whereas *H. auriculata* showed a moderate inhibition of 52.97 ± 2.89% at the same concentration. In the brine shrimp lethality assay, *H. auriculata* exhibited weak toxicity, whereas *O. zeylanica* showed moderate activity with an LC50 of 824.97 ± 1.75 ppm. At of 1000 ppm, *H. auriculata* exhibited lettuce root growth inhibition at 39.22 ± 8.83 %, whereas *O. zeylanica* demonstrated comparatively lower inhibition at 14.88 ± 3.96 %. Neither extract showed notable inhibitory effects on shoot growth. These findings suggest that *O. zeylanica* has strong antioxidant potential with possible anticancer benefits. *O. zeylanica* exhibited potent α-glucosidase inhibition activity, which has potential as an antidiabetic agent. Future studies will focus on isolating and characterizing the bioactive compounds responsible for these activities.

Keywords: *Antidiabetic, antioxidant, cytotoxicity, Hygrophil auriculata, Olax zeylanica*