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Evaluation of antioxidant and bioactivity potential of *Saraca indica* and *Erythrina subumbrans* flowers

K.R.D.A.K. Kahandawa[1], S.A.D. Chathurangi[1], D.S. Jayaweera[1], K.G. Nelum P. Piyasena[1*], N.K.B. Adikaram[1], L. Jayasinghe[1]

[1]*National Institute of Fundamental Studies, Kandy, Sri Lanka*

[*]*nelum.pi@nifs.ac.lk*

The exploration of the bioactivity potential of medicinal plants is essential for understanding their therapeutic properties; however, the research studies on the flowers of *Saraca indica* (Asoka) and *Erythrina subumbrans* (December Tree) remain limited. This study addresses the gap by focusing on the bioactivity of the flowers collected from Central Province, Sri Lanka. The samples were shade-dried, ground into a fine powder, and extracted with methanol using an ultra-sonication technique. The resulting extracts were concentrated using a rotary evaporator followed by drying in a vacuum oven. The crude methanolic extracts were subsequently evaluated for their antioxidant potential using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay and the Ferric Reducing Antioxidant Power (FRAP) assay. Additionally, the extracts were assessed for cytotoxic activity via the brine shrimp (*Artemia salina)* lethality assay, phytotoxic activity through the lettuce (*Lactuca sativa*) seed germination assay, and α-glucosidase inhibitory activity. The results demonstrated that *S. indica* flowers possess significant antioxidant activity, as evidenced by a DPPH radical scavenging IC_{50} value of 32.29 ± 5.00 mg L^{-1}, compared to the positive control (7.90 ± 0.10 mg L^{-1}). The extracts also exhibited strong ferric reducing capacity, with a FRAP value of 1693.51 ± 27.05 µmol $FeSO_4$ g^{-1}, closely comparable to the positive control (1692.19 ± 0.01 µmol $FeSO_4$ g^{-1}). Furthermore, *S. indica* showed remarkable α-glucosidase inhibitory activity, $99 \pm 0.33\%$ inhibition at a concentration of 1000 mg L^{-1}. *E. subumbrans* flower extracts exhibited weak antioxidant activity, with a FRAP value of 310.98 ± 8.18 µmol $FeSO_4$ g^{-1} and DPPH IC_{50} value of 469.49 ± 10.54 mg L^{-1}, when compared to the respective positive controls. In the cytotoxicity assay, *S. indica* exhibited weak cytotoxic potential, with an LC_{50} value of 696.01 ± 30.66 mg L^{-1}, compared to the positive control, potassium dichromate ($K_2Cr_2O_7$), which had an LC_{50} of 7.93 ± 1.06 mg L^{-1}. Similarly, *E. subumbrans* also displayed weak cytotoxic activity in this assay. In the lettuce seed germination assay, both *S. indica* and *E. subumbrans* flower extracts exhibited weak phytotoxic activity at a concentration of 1000 mg L^{-1}. In conclusion, the notable antioxidant capacity and strong α-glucosidase inhibitory activity suggest that *S. indica* flowers warrant further investigation for potential applications in pharmaceutical development.

Keywords: *Antidiabetic, DPPH, FRAP, Medicinal flowers*