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DETERMINATION OF ANTIOXIDANT AND ENZYME INHIBITORY ACTIVITIES OF *Osbeckia octandra* L., *Cissus quadrangularis*, AND *Vitex negundo* IN SRI LANKA

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Medicinal plants have gained much attention for their therapeutic properties and diverse pharmacological effects. They are widely used in herbal healthcare practices for treating diseases. This study investigated three selected medicinal plants in Sri Lanka, traditionally used for digestive issues, bone ailments, and inflammatory conditions, to assess their *in vitro* bioactive potential: antioxidative, anti-hyperglycaemic, anti-obesity, and cytotoxic properties. Dried powdered samples of leaves from three medicinal plants, namely *Osbeckia octandra* L. ("Heen bovitiya"), *Cissus quadrangularis* L. ("Heeressa"), and *Vitex negundo* L. ("Nika") was extracted with methanol (MeOH) via ultrasonication, followed by rotary evaporation to obtain crude extracts. The extracts were evaluated for total phenolic content (TPC) and total flavonoid content (TFC), which were separately quantified using the Folin Ciocalteu method [pyrogallol equivalent (PE)] and $AlCl_3$ colorimetric method [quercetin equivalent (QE)] respectively. Among the extracts, *O. octandra* possessed the highest TPC (291.69 ± 11.41 mg of GAE/g) and TFC (2.48 ± 0.17 mg of CE/g) values. Further, *O. octandra* exhibited the highest antioxidant activity in both FRAP assay (7268.00 ± 95.6 mmol $FeSO_4$/g), positive control Trolox (13447.00 ± 19.80 mmol $FeSO_4$/g) and the DPPH radical scavenging assay (IC_{50} = 11.43 ± 0.79 mg/L; positive control ascorbic acid; IC_{50} = 3.46 ± 0.45 mg/L). Furthermore, of the three plants, only *O. octandra* exhibited minor inhibitory activity against α-amylase (IC_{50} = 1129.8 ± 140.2 mg/L, positive control acarbose, IC_{50} = 8.51 ± 0.67 mg/L). All three extracts showed significant α-glucosidase inhibitory activity at a concentration of 1000 mg/L, in which the *O. octandra* extract showed the highest inhibition of 99%. However, none of the extracts showed lipase inhibitory activity or brine shrimp lethality. Based on the findings, *Osbeckia octandra* L. demonstrated the most promising antioxidant potential among the three medicinal plants studied, which has the potential to be developed as an ingredient in functional foods and as an alternative remedy for managing non-communicable diseases.

Keywords: Antioxidant activity, Bioactivities, Enzyme inhibition, "Heen bovitiya", Medicinal plants