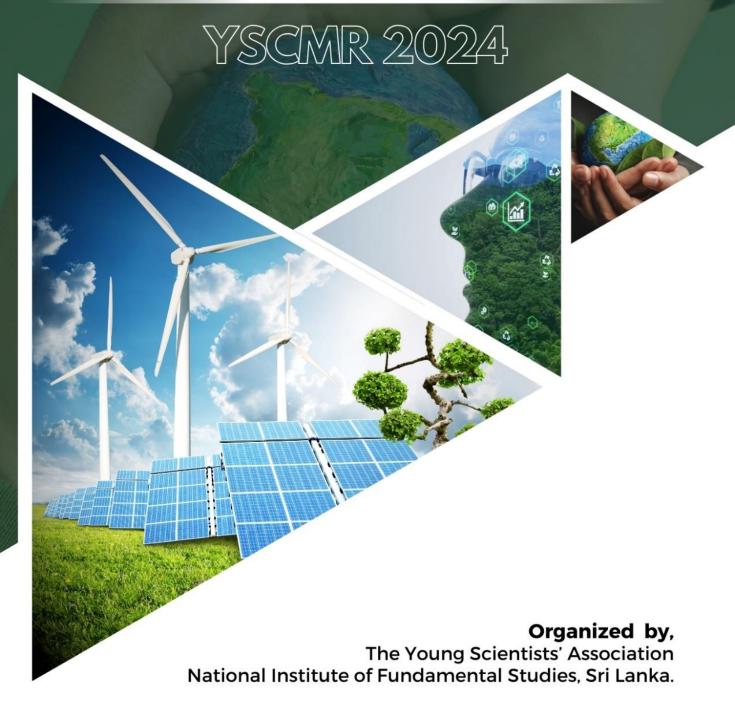




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Comparative study of the bioactivity of methanolic leaf extracts from Anacardium occidentale L. and Morus alba L.

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Exploring medicinal plants for bioactive compounds is vital due to their potential health benefits. This study explored the selected bioactivities of leaf extracts from Anacardium occidentale ('cashew') and Morus alba ('white mulberry') collected from the Central Province, of Sri Lanka. The leaves were dried, ground, and extracted with methanol. The extracts were tested for antioxidant activity using 2,2-diphenyl-1-picrylhydrazyl (DPPH) and Ferric Reducing Antioxidant Power (FRAP) assays, antidiabetic activity via α-amylase inhibition, and anti-obesity potential through lipase inhibition. Additionally, cytotoxicity was tested using the brine shrimp lethality assay and phytotoxicity by lettuce seed germination assay. A. *occidentale* showed strong antioxidant activity, with an IC₅₀ of 7.78 ± 0.08 mg L⁻¹ in the DPPH assay and a FRAP value of $3.53 \pm 0.01 \mu$ mol FeSO₄/mg, compared to the positive control's ascorbic acid and Trolox, which had IC₅₀ values of 1.97 ± 0.02 mg L⁻¹ and 12.07 ± 0.03 µmol FeSO₄/mg, respectively. *M. alba* had moderate antioxidant effects, with an IC₅₀ of 189.52 \pm 5.26 mg L⁻¹ in the DPPH assay and a FRAP value of 0.62 ± 0.01 µmol FeSO₄/mg. A. occidentale was excellent in inhibiting α -amylase (IC₅₀ of 6.79 ± 0.24 mg L⁻¹), surpassing the positive control acarbose (IC₅₀ 45.99 \pm 3.97 mg L⁻¹), while *M. alba* had weak α -amylase inhibition. Both extracts demonstrated weak lipase inhibition, compared to Orlistat (IC_{50} 3.05 \pm 1.71 mg L⁻¹). A. occidentale extract exhibited weak cytotoxicity and phytotoxicity, whereas *M. alba* showed considerable cytotoxicity (LC₅₀ 637.78 mg L^{-1}) and phytotoxicity (IC₅₀ 584.06 mg L^{-1} for shoot inhibition and 780.55 mg L^{-1} for root inhibition). Results of this study indicated that A. occidentale leaf extract shows promising antioxidant properties, as well as excellent antidiabetic properties with low toxicity, suggesting the need of special attention for future investigations, including the isolation and characterization of chemical compounds.

Keywords: A. occidentale, antidiabetic activity, antioxidant activity, M. alba