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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 IC_{50} of 7.78 ± 0.08 mg L^{-1} in the DPPH assay and a FRAP value of 3.53 ± 0.01 μmol $FeSO_4$/mg, compared to the positive control's ascorbic acid and Trolox, which had IC_{50} values of 1.97 ± 0.02 mg L^{-1} and 12.07 ± 0.03 μmol $FeSO_4$/mg, respectively. *M. alba* had moderate antioxidant effects, with an IC_{50} of 189.52 ± 5.26 mg L^{-1} in the DPPH assay and a FRAP value of 0.62 ± 0.01 μmol $FeSO_4$/mg. *A. occidentale* was excellent in inhibiting α-amylase (IC_{50} of 6.79 ± 0.24 mg L^{-1}), surpassing the positive control acarbose (IC_{50} 45.99 ± 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 ± 1.71 mg L^{-1}). *A. occidentale* extract exhibited weak cytotoxicity and phytotoxicity, whereas *M. alba* showed considerable cytotoxicity (LC_{50} 637.78 mg L^{-1}) and phytotoxicity (IC_{50} 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*