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# PROCEEDINGS

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**COMPARATIVE BIOACTIVITY ASSESSMENT OF *Garcinia mangostana* PERICARP AND *Gymnema sylvestre* LEAVES: ANTIOXIDANT POTENTIAL, ENZYME INHIBITION AND CYTOTOXICITY**

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Plants are a rich source of bioactive compounds that can help prevent non-communicable diseases by neutralizing free radicals in the body and acting as enzyme inhibitors. This study evaluated the bioactivity of methanolic extracts from *Garcinia mangostana* pericarp, and *Gymnema sylvestre* leaves. Crude extracts were investigated for antioxidant activity using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging assay and ferric reducing antioxidant power (FRAP) assay. In addition,  $\alpha$ -amylase inhibitory assay, brine shrimp lethality assay, and lettuce seed germination assay were performed to assess their potency as pharmaceuticals. The DPPH assay demonstrated higher free radical scavenging activity for *G. mangostana* with a lower IC<sub>50</sub> value of  $8.76 \pm 0.06$  mg/L, and *G. sylvestre* had a lower activity with an IC<sub>50</sub> value of  $264.97 \pm 3.51$  mg/L, compared to ascorbic acid as the positive control (IC<sub>50</sub> =  $1.90 \pm 0.01$  mg/L). *Garcinia mangostana* showed higher antioxidant activity by the FRAP assay with a value of  $2290.91 \pm 3.67$   $\mu$ mol FeSO<sub>4</sub>/g, while *G. sylvestre* showed a lower antioxidant capacity ( $393.91 \pm 8.15$   $\mu$ mol FeSO<sub>4</sub>/g) compared to Trolox as the positive control ( $12070.12 \pm 0.30$   $\mu$ mol FeSO<sub>4</sub>/g). Furthermore, *G. mangostana* showed high amylase inhibitory activity, with an IC<sub>50</sub> value of  $61.46 \pm 2.55$  mg/L while *G. sylvestre* showed comparable activity with an IC<sub>50</sub> value of  $75.40 \pm 2.00$  mg/L compared to acarbose as the positive control (IC<sub>50</sub> =  $15.97 \pm 0.58$  mg/L). A higher brine shrimp lethality was observed for *G. mangostana* extracts with an LC<sub>50</sub> of  $38.32 \pm 1.53$  mg/L, whereas *G. sylvestre* showed lower lethality with an LC<sub>50</sub> of  $583.25 \pm 23.33$  mg/L against K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> as the positive control ( $34.40 \pm 0.30$  mg/L). Only *G. mangostana* showed phytotoxicity by the lettuce seed germination assay with an IC<sub>50</sub> of  $462.22 \pm 4.84$  mg/L and  $221.41 \pm 23.09$  mg/L for root and shoot, respectively. These results highlight a higher antioxidant potential and effective enzymatic inhibition of *G. mangostana* compared to *G. sylvestre*. However, the higher brine shrimp lethality of *G. mangostana* necessitates consideration of its dosage and application in pharmaceutical formulations.

**Keywords:** Amylase inhibition, DPPH assay, FRAP assay, Methanolic extract