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## PROCEEDINGS





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## ANTIOXIDANT, ANTIDIABETIC, CYTOTOXIC AND PHYTOTOXIC PROPERTIES OF TWO MEDICINAL PLANTS, Buchanania axillaris AND Curcuma longa

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Medicinal plants are a rich source of bioactive compounds with potential applications in pharmaceuticals, nutraceuticals, and agrochemicals. This study aimed to assess the bioactivities of extracts from Buchanania axillaris leaves and rhizomes of Curcuma longa. They were collected domestically within the Kandy District, Sri Lanka. Plant material was air-dried and ground to obtain a homogenous powder using a grinder. The powdered samples were extracted into methanol by sonicating for 30 min. This procedure was repeated twice, and the filtrates were combined and evaporated to dryness using a rotary evaporator. The crude extracts were evaluated for antioxidant activity using triplicates for 2,2-diphenyl-1picrylhydrazyl (DPPH) radical scavenging assay, enzyme inhibitory activity against  $\alpha$ -amylase,  $\alpha$ -glucosidase, and lipase, and 10 nauplii for cytotoxicity through the brine shrimp lethality assay, and 10 seeds for phytotoxicity by the lettuce seed germination assay. The results demonstrated that *B. axillaris* exhibited potent antioxidant activity, with an  $IC_{50}$ value of  $0.03 \pm 0.07$  mg/L for DPPH radical scavenging activity, than C. longa (61.49  $\pm 0.57$ mg/L). Positive control was ascorbic acid (IC<sub>50</sub> =  $3.47 \pm 0.45$  mg/L). Both extracts displayed  $\alpha$ -glucosidase inhibitory activity, with 100% inhibition at 1000 mg/L, indicating their potential in managing diabetes. Curcuma longa showed moderate  $\alpha$ -amylase inhibitory activity, with an IC<sub>50</sub> of 465.81  $\pm$  23.31 mg/L (Positive Control-Acarbose IC<sub>50</sub> = 8.87  $\pm$  1.21 mg/L). Neither extract exhibited significant lipase inhibitory effects within the tested concentration range. The cytotoxicity assay revealed potent brine shrimp lethality for C. longa, with a LC<sub>50</sub> of 20.01  $\pm$  3.14 mg/L, against the positive control, atropine, LC<sub>50</sub> = 88.60  $\pm$  8.11 mg/L. *Buchanania axillaris* exhibited phytotoxic potency with IC<sub>50</sub> values of 520.97  $\pm$  15.14 mg/L and 665.14  $\pm$  20.54 mg/L, while C. longa exhibited IC<sub>50</sub> values of  $625.29 \pm 12.76$  mg/L and  $586.53 \pm 9.32$  mg/L, compared to the positive control, abscisic acid  $(IC_{50} = 1.46 \pm 0.19 \text{ mg/L} \text{ and } 1.85 \pm 0.31 \text{ mg/L})$  for root and shoot inhibition, respectively, suggesting potential applications as natural herbicides. The findings indicate promising bioactivities of *B. axillaris* and *C. longa* extracts, suggesting further exploration for potential applications in pharmaceuticals, nutraceuticals, and agriculture.

**Keywords:** Antioxidant activity, *Buchanania axillaris, Curcuma longa*, Cytotoxicity, Enzyme inhibition