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α- AMYLASE, ANTIOXIDANT, CYTOTOXICITY, LIPASE, AND PHYTOTOXICITY STUDIES OF *ALPINIA CALCARATA* AND *GLORIOSA SUPERBA* LEAVES EXTRACTS

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Many natural sources, such as plants, fungi, bacteria, and algae, have been proven to possess pharmaceutical values with fewer adverse effects. Both medicinal and non-medicinal plants have been proven to contain pharmaceutical properties with low toxicity and high efficiency. This study was conducted to determine the bioactivities of the leaves of Alpinia calcarata (Zingiberaceae) and *Gloriosa superba* (Colchicaceae) (GS). The plants were collected from home gardens of Kandy district, central province, Sri Lanka. Plant samples were washed, air-dried, and ground into a fine powder. Extracts were obtained using dichloromethane (CH_2Cl_2) and methanol (MeOH) by sonication. α - amylase inhibitory activity, cytotoxicity against brine shrimp, and 2-2-Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging antioxidant activity, lipase inhibitory activity, phytotoxicity against germination of lettuce seeds were assessed for dilution series of each crude extract ranging from 1000 mg L L^{-1} . CH₂Cl₂ extract of G. superba (GSC) showed considerable lipase ¹ to 31.25 mg $(IC_{50} = 782 \pm 6.31 \text{ mg})$ L ⁻¹). MeOH extract of A. calcarata (ACM) showed inhibition the highest antioxidant activity $(IC_{50}=0.14\pm0.24 \text{ mgL}^{-1})$. CH₂Cl₂ extract of A. calcarata (ACC), MeOH extract of G. superba (GSM), and GSC also showed strong antioxidant activities (IC₅₀= 158.73 ± 12.41 mg l⁻¹, 25.03 ± 2.68 mg L ⁻¹, 192.24 mg L⁻¹ respectively). GSC and GSM both showed the highest lethality against brine shrimp $(IC_{50} = 41.45 \text{ mg})$ L⁻¹ respectively). ACC and ACM also showed a moderate lethality ⁻¹ and 122 mg L (IC₅₀= 300.54 mg L⁻¹ and 428.95 mg L⁻¹, respectively). GSC extract against brine shrimp showed the highest phytotoxicity ability (Root – IC_{50} = 203.84 mg L⁻¹, Shoot- IC_{50} =97.58 mg L⁻¹) and GSM extract also showed a considerable phytotoxicity ability (Root- L^{-1} , Shoot-IC₅₀= 217.93 mg L^{-1}). The results suggest that leaves of A. IC₅₀=338.12 mg calcarata and G. superba can be used as promising sources to isolate therapeutic compounds.

Keywords: α- amylase, Antioxidant, Cytotoxicity, Lipase, Phytotoxicity.