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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^{-1} to 31.25 mg L^{-1}. CH_2Cl_2 extract of *G. superba* (GSC) showed considerable lipase inhibition (IC_{50}= 782± 6.31 mg L^{-1}). MeOH extract of *A. calcarata* (ACM) showed the highest antioxidant activity (IC_{50}= 0.14 ± 0.24 mgL^{-1}). CH_2Cl_2 extract of *A. calcarata* (ACC), MeOH extract of *G. superba* (GSM), and GSC also showed strong antioxidant activities (IC_{50}= 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 mg L^{-1} and 122 mg L^{-1} respectively). ACC and ACM also showed a moderate lethality against brine shrimp (IC_{50}= 300.54 mg L^{-1} and 428.95 mg $L^{-1,}$ respectively). GSC extract 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– IC_{50}=338.12 mg L^{-1}, Shoot-IC_{50}= 217.93 mg L^{-1}). The results suggest that leaves of *A. calcarata* and *G. superba* can be used as promising sources to isolate therapeutic compounds.

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