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

**E.M.T.A. Ekanayaka, U. Siriwardhane, N.K.B. Adikaram, J.M.N. Marikkar and
L. Jayasinghe***

*Natural Products Project, National Institute of Fundamental Studies, Kandy, Sri Lanka
lalith.ja@nifs.ac.lk*

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 (CH₂Cl₂) 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. CH₂Cl₂ extract of *G. superba* (GSC) showed considerable lipase inhibition (IC₅₀= 782 \pm 6.31 mg L⁻¹). MeOH extract of *A. calcarata* (ACM) showed the highest antioxidant activity (IC₅₀= 0.14 \pm 0.24 mg L⁻¹). CH₂Cl₂ extract of *A. calcarata* (ACC), MeOH extract of *G. superba* (GSM), and GSC also showed strong antioxidant activities (IC₅₀= 158.73 \pm 12.41 mg L⁻¹, 25.03 \pm 2.68 mg L⁻¹, 192.24 mg L⁻¹ respectively). GSC and GSM both showed the highest lethality against brine shrimp (IC₅₀= 41.45 mg L⁻¹ and 122 mg L⁻¹ respectively). ACC and ACM also showed a moderate lethality against brine shrimp (IC₅₀= 300.54 mg L⁻¹ and 428.95 mg L⁻¹ respectively). GSC extract showed the highest phytotoxicity ability (Root – IC₅₀= 203.84 mg L⁻¹, Shoot- IC₅₀=97.58 mg L⁻¹) and GSM extract also showed a considerable phytotoxicity ability (Root– IC₅₀=338.12 mg L⁻¹, Shoot-IC₅₀= 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.