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BIOACTIVITIES OF METHANOLIC LEAF EXTRACTS OF *Adenanthera pavonina*, *Cynometra cauliflora* AND *Dregea volubilis*

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This study determines the bioactivities of the leaves of three abundantly distributed plants in Sri Lanka. Healthy leaves of *Cynometra cauliflora* (Fabaceae: "Naminan"), *Adenanthera pavonina* (Fabaceae: "Madatiya") and *Dregea volubilis* (Apocynaceae: "Anguna") were collected from Kandy District. The collected leaves were shade-dried, ground and extracted into methanol by sonication. Antioxidant ability by 2-2–Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging and Ferric Reducing Antioxidant Power (FRAP) assays, α-Amylase inhibitory activity, cytotoxicity against brine shrimps and phytotoxicity against lettuce seed germination were assessed for a concentration series ranging from 2000 mg/L to 31.25 mg/L. All assays were triplicated. Results of the DPPH radical scavenging assay revealed *C. cauliflora* has relatively strong activity (IC_{50} 7.19 ± 0.15 mg/L) compared to the positive control: ascorbic acid (IC_{50} 1.97 ± 0.02 mg/L), whereas *A. pavonina* (IC_{50} 248.64 ± 0.02 mg/L) and *D. volubilis* (IC_{50} 361.40 ± 0.09 mg/L) extracts showed moderate activities. Compared to the FRAP of positive control, Trolox (12.07 ± 0.03 µmol of $FeSO_4$/mg of the sample), the highest FRAP was observed in *C. cauliflora* (4.28 ± 0.02 µmol of $FeSO_4$/mg) followed by *A. pavonina* (0.05 ± 0.03 µmol of $FeSO_4$/mg) and *D. volubilis* (0.04 ± 0.03 µmol of $FeSO_4$/mg). *Cynometra cauliflora* (IC_{50} 134.29 ± 5.24 mg/L) and *A. pavonina* leaves (IC_{50} 365.03 ± 4.57 mg/L) have strong α-amylase inhibition potential compared with the IC_{50} of positive control: acarbose (45.99 ± 3.97 mg/L) whereas, *D. volubilis* resulted a weak activity (> 2000 mg/L). In the brine shrimp lethality assay, *C. cauliflora*, *A. pavonina*, and *D. volubilis* showed LC_{50} of 880.07 ± 0.15 mg/L, 1900.42 ± 0.08 mg/L, and 109.95 ± 0.13 mg/L respectively. $K_2Cr_2O_7$ (LC_{50} 35.16 ± 0.03 mg/L) was used as the positive control. In lettuce seed germination assay, compared to the inhibition of abscisic acid (shoot inhibition IC_{50} 0.99 ± 0.35 mg/L, root inhibition IC_{50} 1.11 ± 0.50 mg/L), only *C. cauliflora* resulted a moderate root inhibition (523.22 ± 0.05 mg/L) while other two extracts showed a weak inhibition (> 2000 mg/L). None of the crude extracts resulted an inhibition in the shoot elongation. Results from all assays were significantly different from the positive controls. However, as crude leaf extracts of *C. cauliflora* and *A. pavonina* may contain potent anti-diabetic compounds due to the strong potential to inhibit α-amylase enzyme.

Keywords: *Adenanthera pavonina*, α-Amylase inhibition, Antioxidant activity, *Cynometra cauliflora*