

**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,  $\alpha$ -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  $\pm$  0.15 mg/L) compared to the positive control: ascorbic acid ( $IC_{50}$  1.97  $\pm$  0.02 mg/L), whereas *A. pavonina* ( $IC_{50}$  248.64  $\pm$  0.02 mg/L) and *D. volubilis* ( $IC_{50}$  361.40  $\pm$  0.09 mg/L) extracts showed moderate activities. Compared to the FRAP of positive control, Trolox (12.07  $\pm$  0.03  $\mu$ mol of FeSO<sub>4</sub>/mg of the sample), the highest FRAP was observed in *C. cauliflora* (4.28  $\pm$  0.02  $\mu$ mol of FeSO<sub>4</sub>/mg) followed by *A. pavonina* (0.05  $\pm$  0.03  $\mu$ mol of FeSO<sub>4</sub>/mg) and *D. volubilis* (0.04  $\pm$  0.03  $\mu$ mol of FeSO<sub>4</sub>/mg). *Cynometra cauliflora* ( $IC_{50}$  134.29  $\pm$  5.24 mg/L) and *A. pavonina* leaves ( $IC_{50}$  365.03  $\pm$  4.57 mg/L) have strong  $\alpha$ -amylase inhibition potential compared with the  $IC_{50}$  of positive control: acarbose (45.99  $\pm$  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  $\pm$  0.15 mg/L, 1900.42  $\pm$  0.08 mg/L, and 109.95  $\pm$  0.13 mg/L respectively. K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> ( $LC_{50}$  35.16  $\pm$  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  $\pm$  0.35 mg/L, root inhibition  $IC_{50}$  1.11  $\pm$  0.50 mg/L), only *C. cauliflora* resulted a moderate root inhibition (523.22  $\pm$  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  $\alpha$ -amylase enzyme.

**Keywords:** *Adenanthera pavonina*,  $\alpha$ -Amylase inhibition, Antioxidant activity, *Cynometra cauliflora*