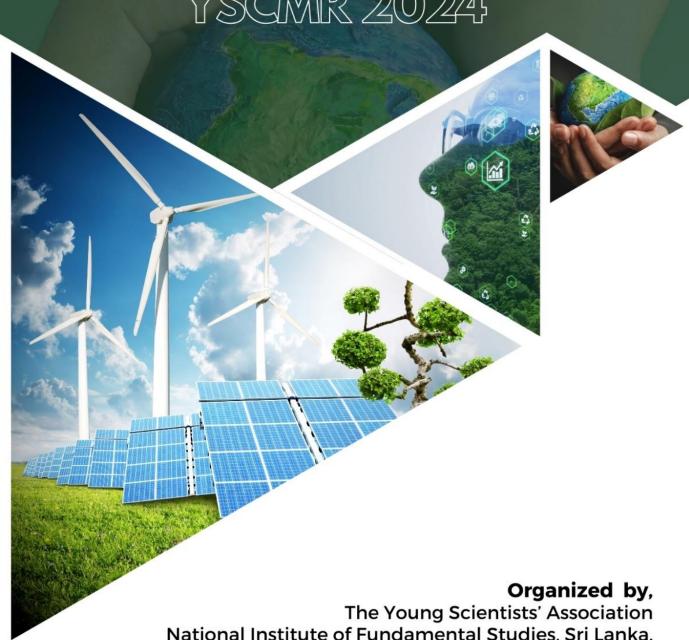


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## Exploring the diverse selected bioactivities of *Terminalia catappa L.*, *Plectranthus amboinicus*, and *Cedrus deodara* plants extracts

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Sri Lanka possesses vast biodiversity, which encompasses a range of natural resources and medicinal plants with several therapeutic potentials. In this study, methanol extracts from Cedrus deodara (dewadara in Sinhala), Plectranthus amboinicus (kapparawalliya in Sinhala), and Terminalia catappa L. (kottamba in Sinhala) were screened for bioactivities. Fresh mature leaves of these plants were collected from the central province of Sri Lanka, then air-dried, powdered, and extracted into methanol by sonication. The crude extracts were assessed for antioxidant activity using 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity, ferric reducing antioxidant power (FRAP) assay, antidiabetic activity by  $\alpha$ -amylase inhibitory assay, phytotoxicity using lettuce seed germination assay, and their cytotoxicity was screened by a log concentration series (1000 mgL<sup>-1</sup>- 31.25 mgL<sup>-1</sup>) brine shrimp lethality assay. In the DPPH radical scavenging assay, Terminalia catappa L. demonstrated exceptional antioxidant potential, with an IC<sub>50</sub> value of  $7.36 \pm 0.24$  mgL<sup>-1</sup>. This performance is noteworthy when compared to the IC<sub>50</sub> value of the positive control, Ascorbic acid, which stands at  $1.97 \pm 0.06$ mgL<sup>-1</sup>. Meanwhile, Cedrus deodara, Plectranthus amboinicus showed IC<sub>50</sub> values of 47.36 ± 18.62 mgL<sup>-1</sup> and 227.04  $\pm$  72.52 mgL<sup>-1</sup>, respectively. In the FRAP assay positive control; Trolox (12.07 ± 0.30 µmol FeSO<sub>4</sub>/mg) and FRAP values of *Cedrus deodara*, *Plectranthus* amboinicus, and Terminalia catappa L. were 0.977 µmoldm<sup>-3</sup> of FeSO<sub>4</sub>, 0.239 µmoldm<sup>-3</sup> of FeSO<sub>4</sub>, and 1.025 µmoldm<sup>-3</sup> of FeSO<sub>4</sub>, respectively. In the α-amylase inhibitory assay, the extract of Terminalia catappa L. leaves exhibited high anti-diabetic activity with an IC<sub>50</sub> of  $391.11 \pm 4.34 \text{ mgL}^{-1}$  compared to other extracts, while the positive control: Acarbose had an  $IC_{50}$  of 45.991  $\pm$  3.97 mgL<sup>-1</sup>. According to the root inhibition, selected plant extracts displayed weak root inhibition properties. In the phytotoxicity assay, only P. amboinicus displayed a shoot inhibition with an IC<sub>50</sub> value of 15.07 mgL<sup>-1</sup> compared to the positive control, Abscisic acid (0.25 mgL<sup>-1</sup>). In the brine shrimp lethality assay, only *Plectranthus amboinicus* exhibited toxicity, with an LC<sub>50</sub> value of 68.92 mgL<sup>-1</sup>. This was markedly higher than the LC<sub>50</sub> of the positive control, K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>, which stood at 35.16 mgL<sup>-1</sup>. The findings resulted in the crude extract of Terminalia catappa L. having remarkable antioxidant qualities, while the leaves of Plectranthus amboinicus have a high potential for suppressing shoot growth.

**Keywords:** α-Amylase, cytotoxicity, DPPH, FRAP, phytotoxicity