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In-vitro antioxidant properties of leaf, bark, fruit and seed of Ceylon olive, *Elaeocarpus serratus*

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Reactive oxygen species (ROS) and free transition metal ions cause oxidative damage to various biomolecules. This oxidative damage could lead to cardiovascular and neuro degenerative diseases and cancer. Antioxidants play an important role in scavenging ROS and preventing such diseases. The biological imbalance between ROS and antioxidant causes oxidative stress. The objective of this study was to evaluate the anti-oxidant activity of the extracts of *Elaeocarpus serratus* commonly known as Ceylon olive which is a tropical fruit indigenous to Sri Lanka.

Air-dried and powdered plant materials were extracted with ethanol following a cold extraction protocol. Plant extracts were evaluated by DPPH (1, 1-diphenyl-2-picrylhydrazyl) free radical scavenging, ferric ion antioxidant potential (FRAP) activity and oxygen radical absorbance capacity (ORAC) assays. Total phenolic content (TPC) was determined using Folin-Ciocalteu method.

E. serratus bark extract showed a higher DPPH radical scavenging activity with IC_{50} value of 3.31 ± 0.05 µg/mL compared to the IC_{50} values of leaves, fruit and seed extracts (IC_{50} 15.81 ± 1.91, 68.93 ± 2.80, 77.3 ± 2.51 µg/mL respectively). DPPH free radical scavenging activity in leaves and bark was significantly different compared to those of fruit and seed. *E. serratus*bark showed a higher FRAP value of 6497.9 ± 25.66 mg TE/g with respect to leaves (3201.2 ± 123.38 mg TE/g) while the fruit and seed showed moderate FRAP activities (755.5 ± 33.48, 405.0 ± 24.94 mg TE/g). *E. serratus*bark showed the highest ORAC (1771.72 ± 47.75 mg TE/g) while the fruit exhibited the lowest ORAC (482.33 ± 55.14 mg TE/g). *E. serratus* leaves and seed showed ORAC activity of 721.10 ± 38.99 mg TE/g and 816.61 ± 38.92 mg TE/ g, respectively. The bark showed the highest TPC value of 175.78 ± 8.89 mg GAE/g. In addition fruit and seed indicated lower TPC (8.75 ± 0.36 mg/g and 8.60 ± 1.32 mg GAE/g) compared to those of bark and leaves (64.7 ± 1.92 mg GAE/g).

DPPH, FRAP, ORAC data indicated a high antioxidant activity in the bark compared to that of the leaf, seed and fruit extracts. Further experiments will be carried out in order to evaluate the bio-active ingredients of *E. serratus.*

Keywords: Antioxidants, DPPH, *Elaeocarpus serratus,* FRAP, ORAC, TPC

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