Antioxidant Properties and α-Amylase Inhibition Activities of Four Different *Curcuma* Species in Sri Lanka

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The genus *Curcuma* belongs to the family Zingiberaceae comprises rhizomatous annual or perennial herbs. *Curcuma* has a long history of traditional uses ranging from folk medicine to its culinary uses. This study was undertaken to study the biological activities of rhizomes and leaves of four *Curcuma* species available in Sri Lanka namely, *Curcuma albiflora*, *Curcuma aromatica*, *Curcuma longa*, and *Curcuma zedoaria*. Fresh rhizomes and leaves of four *Curcuma* species were collected from their natural habitats in Wet and Dry Zones of Sri Lanka. Rhizomes and leaves were cleaned and cut into small pieces and oven-dried at 45 °C and 40 °C respectively for 12 hrs. Dried samples were ground into a fine powder. Methanol extracts from rhizomes and leaves were screened for total polyphenol content (TPC), antioxidant activity, and α-amylase inhibition activities. The TPC of dried rhizomes of *Curcuma longa* was the highest of all tested as 5.530 ± 0.012 g of GA equivalents per 1 g of the dried rhizome. The Methanol extracts of the rhizome and leaf samples of four species showed moderate antioxidant activity in the DPPH radical scavenging assay with IC50 values ranging from 150.253 ± 0.273 ppm to 389.051 ± 0.426 ppm. Interestingly the rhizome extracts of *Curcuma aromatica*, *Curcuma longa*, and *Curcuma zedoaria* exhibited higher α-amylase inhibitory activities (13.915 ± 0.023, 6.455 ± 0.117 and 9.492 ± 0.024 respectively) than the Acarbose drug which is an anti-diabetic drug (28.273±0.615 ppm). The results revealed that the Sri Lankan *Curcuma* species have a potency to be used as a source of antioxidant and anti-diabetic agents and it is important to increase the value of the unexplored medicinal herbs available in Sri Lanka.

Keywords: Antioxidant, Anti-diabetic, Biological Activities, *Curcuma*