

Evaluation of antioxidant properties and alpha-amylase inhibitory activities of some medicinal plants

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Antioxidant compounds are claimed to have an impact in disease prevention. The objective of this study was to evaluate the total phenolics content, antioxidant and alpha-amylase inhibitory activities of the leaf extracts of *Averrhoa bilimbi* (AB), *Argyrea populifolia* (AP), *Costus speciosus* (CS), *Desmodium gangeticum* (DG), *Solanum nigrum* (SN), *Spondias dulcis* (SD), *Wattakaka volubilis* (WV) and *Ziziphus rugosa* (ZR) which are consumed in traditional and Ayurvedic medicine in Sri Lanka.

The dried plant materials were sequentially extracted with n-hexane, ethyl acetate and methanol. The total phenolics content (TPC) was quantified in the ethyl acetate extracts using the Folin-Ciocalteu method and values were expressed as milligrams gallic acid equivalents per gram (mg GAE/g). Oxygen Radical Absorbance Capacity (ORAC) and Ferric ion Reducing Antioxidant Power (FRAP) was evaluated using a trolox standard curve, and both values were expressed as μmol Trolox Equivalents per gram ($\mu\text{mol TE/g}$). Activity of α -amylase inhibition was assessed using 3, 5-dinitrosalicylic acid reagent and values were expressed as IC_{50} (ppm). TPC values were highest in SD (12.5 ± 0.54 mg GAE/g) while SN had the lowest value (1.33 ± 0.01 mg GAE/g). ORAC values varied between 404.8 ± 32.80 and 2613 ± 191.3 $\mu\text{mol TE/g}$ and decreased in the order of SD > DG > AP > WV > SN > ZR > AB > CS. FRAP values were highest in SD (521 ± 25.0 $\mu\text{mol TE/g}$) while the lowest was reported for SN (66.9 ± 1.45 $\mu\text{mol TE/g}$). Statistical analysis was conducted using SPSS version 20 (USA). FRAP values were linearly correlated to TPC values with an R^2 of 0.936. However, there was no significant correlation between TPC and ORAC values ($R^2=0.392$). SD had the highest values for TPC, ORAC and FRAP assays. The IC_{50} for α -amylase inhibitory activities was above 1000 ppm for all extracts. It may be concluded that some of these herbs are potent antioxidants and contain a considerable amount of phenolic compounds. Hence, further evaluation of their therapeutic potential may be carried out through activity fractionation.

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