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In vitro antioxidant activity and phenolic activity of water extract of selected plants with antidiabetic properties

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Many medicinal plants used in Ayurveda in the treatment of diabetes mellitus contain different phenolic compounds with antioxidant properties. The objective of the present study was to determine antioxidant activity of some medicinal plants used to make medicinal preparations for treating diabetics. The plants selected were *Syzygium cumini* (Madan, bark), *Cassia auriculata* (Ranawara, flower) and *Scoparia dulcis* (Walkottamalli, whole plant). Plant materials grown in different locations were collected for the analysis. Commercially available dried samples were also collected from an outlet specially intended for selling medicinal herbs. Samples were cleaned, washed and dried in a dehydrator at 55 ^{0}C for 24 hours, ground to obtain a fine powder. Water extracts were prepared by boiling 60 g powdered sample in 960 mL of water over a low flame, (final volume 240 mL) filtered and freeze-dried. The total phenolic content of each extract was determined using Folin-Ciocalteu reagent and evaluation of free radical scavenging activity was assessed using DPPH assay.

The total phenolic content of plants collected from various locations ranged from 163 – 883 mg GAE/g. The water extracts of *S.cumini* had the highest total phenolic activity (817 – 883 mg GAE/g) with no significant difference ($p < 0.05$) among the phenolic contents of the plants collected from different areas. However, commercial sample of *C. auriculata* contained a higher total phenolic content (458 mg GAE/g) compared to freshly collected counterparts (214 – 268 mg GAE/g). This may be due to the differences in the drying method used or the maturity of the samples used.

The highest antioxidant activity was observed in *S. cumini* (30–68 ug/ml) which had the highest phenolic content. The IC_{50} value of *S.cumini* was one third that of butylated hydroxy tolune (BHT) which is the standard (20 ug/ml). *C. auriculata* (247– 523 ug/ml) followed by *S.cumini* had decreasing antioxidant potentials which correlated with the total phenols. Thus *S. cumini* having the highest total phenolics and the antioxidant potential followed by *C. auriculata* may have successful application in the treatment of diabetes.

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