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Evaluation of total phenolic content and antioxidant activities of ten plants used in Ayurvedic medicine in Sri Lanka

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Physiological and biochemical processes in the human body may result in overproduction of free radicals leading to oxidative damage to biomolecules (e.g. lipids, proteins, DNA). Usage of medicinal plant products has increased recently due to their beneficial properties such as antioxidant, anticancer, hypoglycaemic and hypolipidaemic activities. The present study was designed to assess the *in vitro* antioxidant activity and free radical scavenging capacity of ten medicinal plants; Belimal (*Aegle marmelos*), Iramusu (*Hamidesmus indicus*), Ranawara (*Cassia auriculata*), Walkottamalli (*Scoparia dulcis*), Nelli (*Phyllanthus emblica*), Rasakinda (*Tinospora cordifolia*), Polpala (*Aerva lanata*), Babila (*Sida rhombifolia*), Beligeta (*Aegle marmelos*) and Venivel (*Coscinium fenestratum*), which are extensively used in the *Ayurvedic* system in Sri Lanka. Water extracts were used to evaluate the antioxidant and free radical scavenging activity by different methods; DPPH, ABTS and FRAP. The total Phenolic (TPC) and Total Flavonoid Content (TFC) were also assessed. There was a significant difference ($P<0.05$) between the antioxidant activities of the tested extracts. The TPC and TFC values of the extracts varied from 5.22 ± 0.08 - 295.94 ± 3.65 mg Gallic Acid Equivalent (GAE)/g dry weight and 0.97 ± 0.002 - 115.01 ± 1.69 mg Catechin Equivalent (CE)/g dry weight respectively. The DPPH and ABTS radical scavenging activity was higher for the Nelli extract while the least activity was observed in the Venivel extract. As per the $DPPH^{\cdot}$ and ABTS radical scavenging activities, the Nelli extract exhibited the highest FRAP activity while the polpala extract showed the least activity. A positive, significant linear relationship between antioxidant activity and TPC and TFC content showed that phenolic compounds and flavonoids were the dominant antioxidant components in the tested medicinal plants.

Keywords: Antioxidant activity, medicinal plants, phenolic compounds, radical scavenging

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