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Screening of three selected medicinal plant extracts for *in vitro* antioxidant activity

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Medicinal plants have long been used for the management of chronic kidney disease (CKD) in Sri Lanka. Oxidative stress has been recognized as one unifying mechanism in the pathogenesis of CKD. Medicinal plant derived natural antioxidants, which act in the form of crude extracts, are known to be beneficial in the reduction of cellular oxidative stress. The objectives of the present study were to determine the total antioxidant activity, total polyphenol content and total flavonoid content of three selected medicinal plants widely used in Ayurvedic medicine for the treatment of kidney diseases in Sri Lanka. The medicinal plants selected were *Asparagus falcatus* (*Hathawariya*, Family: Liliacea), *Plectranthus amboinicus* (*Kapparawalliya*, Family: Lamiaceae) and *Vetiveria zizanioides* (*Savendara*, Family: Gramineae). The plants were collected from the natural habitat in the Southern region. Hot water refluxed (4 h) leaf extracts of *A. falcatus* and *P. amboinicus,*and theroot extract of *V. zizanioides* were used in the study. The antioxidant activity was determined by ferric reducing antioxidant power (FRAP) assay. L-Ascorbic acid was used as the reference compound. Total polyphenol content and total flavonoid content were estimated using the Folin-Ciocalteu method (reference compound: gallic acid) and aluminum chloride method (reference compound: quercetin), respectively. The samples were analyzed in triplicate. The FRAP values of the three plant extracts were in the descending order of*P. amboinicus* (18.0 ± 0.2 µM), *A. falcatus* (14.3 ± 0.8 µM) and *V. zizanioides* (8.1 ± 0.2 µM). The total polyphenol contents of the three plant extracts were 3.9 ± 0.03, 5.7 ± 0.05 and 1.8 ± 0.03 µg $GAEg^{-1}$ dryplant material respectively. The highest and the lowest total flavonoid contents were obtained from the extracts of *P. amboinicus* (1.9 ± 0.05 µg QE g^{-1} dryplant material) and *V. zizanioides* (0.57 ± 0.01 µg QE g^{-1} dryplant material). Positive correlations were obtained for total polyphenol content vs. FRAP value (r = 0.99) and total flavonoid content vs. FRAP value (r = 0.99). The results revealed that the selected plant extracts exert considerably high antioxidant activity. In addition, polyphenol compounds and flavonoids present in the plant extracts contribute significantly to its antioxidant activity. The three medicinal plant extracts exert promising antioxidant activity justifying further experiments on the development of novel pharmaceutical agents or neutraceutical products targeting the diverse free radical pathologies of CKD.

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