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Effect of Water: Ethanol Ratio on Extraction Yield, Total Polyphenol Content and Total Flavonoid Content of Selected Sri Lankan Medicinal Plants

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Plant polyphenols and flavonoids are of great interest for the development of nutraceuticals targeting the management of chronic disease. Composition of the extraction solvent is an important determinant for the preparation of polyphenol rich plant extracts. Pure organic solvents, aqueous-organic solvents and distilled H_2O are commonly used for the extraction of plant polyphenols and flavonoids. H_2O and ethanol are considered as solvents suitable for human consumption hence commonly used in extraction of bioactive compounds. This study aims to investigate the effect of water: ethanol ratio on extraction yield, total polyphenol content (TPC) and total flavonoid content (TFC) of selected medicinal plants using *in vitro* colorimetric assays. Leaves of *Coccinia grandis* (L.) Voigt (Kovakka), *Gymnema sylvestre* (Retz.) Schult (Masbedda), *Murraya koegnii* (L.) Spreng. (Karapincha), *Costus speciosus* (Koenig) Smith. (Thebu), flowers of *Cassia auriculata* L. (Ranawara) and aerial parts of *Scoparia dulcis* L. (Wal koththamalli) were collected and oven dried (40 °C). Dried plant materials (6 g each) were extracted using ethanol (EtOH) (100% v/v, 60 mL), EtOH (70% v/v, 60 mL) and distilled H_2O (60 mL) under ultrasonication (40 kHz, 40 ^{0}C for 30 min). Resulting organic phases were concentrated *in vacuo* and aqueous extracts were freeze dried. TPC and TFC were analyzed by Folin Ciocalteu and aluminium chloride assays respectively, in triplicates. The highest extraction yield was obtained for the aqueous extracts except for the *C. auriculata* and *G. sylvestre* extracts where the highest yield was given by EtOH (70% v/v). The TPC and TFC of the plant extracts were in the range of 22.79 ± 1.06 − 196.06 ± 14.83 mg gallic acid equivalent (GAE)/g and 4.26 ± 0.10 − 128.13 ± 9.34 mg quercetin equivalent (QE)/g respectively. TPCs were high in EtOH (100% and 70% v/v) extracts. The EtOH (100% v/v) extracts exhibited the highest TFC. The results revealed that EtOH (100% and 70% v/v) is suitable for the extraction of polyphenols and flavonoids from the selected medicinal plant extracts.

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