

Phytochemical Screening of Selected Medicinal Plants in Sri Lanka

Randika Silva¹, Ruwani N. Nugara^{1*}, Pathmalal M. Manage², Lanka Undugoda¹, Dhanushka Udayanga¹ and Renuka Nilmini³

¹ Department of Biosystems Technology, Faculty of Technology, University of Sri Jayewardenepura, Sri Lanka

² Department of Zoology, Faculty of Applied Science, University of Sri Jayewardenepura, Sri Lanka

³ Department of Engineering Technology, Faculty of Technology, University of Sri Jayewardenepura, Sri Lanka

Abstract

Medicinal plants are used in Ayurvedic medicines for treating health problems in many countries including Sri Lanka. Secondary metabolites in these plants are responsible for different therapeutic properties such as anti-inflammatory, anti-tumor, anti-diabetic and anti-bacterial activities. Present study was carried out to identify phytoconstituents in the crude extracts of commonly used fifteen medicinal plants in Ayurvedic medicines in Sri Lanka. Ethanol, hexane and water extracts were prepared using powder of (1 g) fresh leaves, flowers, bark, stem or tubers of the selected plant species dissolved in 25 mL of 100% ethanol, hexane or distilled water, in triplicates. Leaves of *Aerva lanata* (Polpala), *Cassia auriculata* (Ranawara), *Centella Asiatica* (Gotukola), *Alysicarpus vaginalis* (Aswantha), *Justicia adhatoda* (Adhatoda), *Averrhoa bilimbi* (Bilin), *Hemidesmus indicus* (Iramusu), *Ipomoea aquatica* (Kankun), *Murraya koenigii* (Karapincha), *Asparagus gonocladus* (Hathavariya) and *Morus alba var. indica* (Ambilla), bark of *Salacia reticulata* (Kothalahimbutu), stem of *Tinospora cordifolia* (Rasakinda), flowers of *Averrhoa bilimbi* (Bilin), *Aegle marmelos* (Beli) and tubers of *Cyperus rotundus* (Kalanduru) were collected from the dry zone in Sri Lanka. Phytochemical analysis confirmed the presence of flavonoids, tannin, saponins, terpenoids, alkaloids, steroids, anthocyanins, coumarins, and leucoanthocyanins. Considering three different crude extracts of the tested plants, phytochemicals except saponins, anthocyanins and leucoanthocyanins were present in the water extract, however, only alkaloids and coumarins were found in the hexane extract. Coumarins, which has broad range of biological activities was strongly present in the water extracts of *H. indicus*, *T. cordifolia*, *A. lanata*, *A. bilimbi*, *I. aquatica*, *C. asiatica*, *S. reticulata* and *J. adhatoda*. Almost all tested plants indicated presence of alkaloids and tannin showing the possibility of anti-cancer, anti-diabetic and anti-microbial activities. However, saponins and leucoanthocyanins were not found. As many locals utilize the crude water extracts of these plants in Ayurvedic medication and to make beverages, it is reasonable to obtain the health benefits of these active compounds. Therefore, the medicinal plants with flavonoids (Bilin flowers, Kalanduru, Kothalahimbutu and Gotukola), coumarins (Rasakinda and Bilin leaves) and alkaloids (Hathavariya, Iramusu, Rasakinda, Beli, Gotukola and Kalanduru) are highly potential to be utilized in treating diabetes, obesity, rheumatoid arthritis, and cancers under Ayurvedic medications.

Keywords: Alkaloids, Coumarins, Medicinal plants tannins, Phytochemicals

*Corresponding Author: nilushinug@sjp.ac.lk