

Phytochemical Screening, Quantitative Analysis and *In Vitro* Cytotoxic Potential of *Justicia adhathoda* Leaf Extracts

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Justicia adhathoda L., also known as “*Adhathoda*” is one of the widely used medicinal plants in indigenous medicinal systems in Sri Lanka and India. Previous studies have found several beneficial effects of different solvent extracts of this plant. However, the best solvent to extract much of the phytoconstituents has not been studied. Therefore, the present study was focused on identification, quantification of phytoconstituents in different crude extracts and *in vitro* cytotoxic effect of *J. adhathoda*. Plant leaves were collected from Ambilipitiya, Sri Lanka. Ethanol (EE), hexane (HE) and water (WE) extracts were prepared by adding 1 g of powdered leaf samples to 25 mL of ethanol (99.9%), *n*-hexane and distilled water, separately in triplicates. Preliminary phytochemical screening was performed according to the Harborne method. Total phenolic content (TPC) was measured spectrophotometrically by Folin-Ciocalteu assay and total flavonoid content (TFC) was determined using aluminum chloride colorimetric assay. To identify the toxicity level of *J. adhathoda*, different concentration of the WE were exposed to 3T3-L1 cells, a well-established cell culture model that is extensively used to study adipogenesis. The treatment was carried out for 8 days and performed MTS assay to determine the suitability of the WE consumption. Phytochemical screening results showed the availability of flavonoids, terpenoids, steroids, anthocyanins, alkaloids and coumarins in the WE. In contrast, tannin and alkaloids were abundant in the EE. TPC in the WE was 8-fold higher than the EE. The TFC in the EE was 20-fold higher than HE, and marked the highest. Collectively, the best solvent to extract the maximum amount of phytoconstituents was found as distilled water. The WE showed no toxicity below 500 µg/mL against 3T3-L1 adipocytes. The presence of high content of different phytoconstituents in WE of *J. adhathoda* is a great advantage to gain the health benefits as herbal tea or herbal porridges. These results provide referential information to identify the medicinal value of *J. adhathoda* and to be utilized in screening novel target compounds to treat various diseases.

Keywords: *Justicia adhathoda*; phytochemical analysis; Medicinal plant; TFC; TPC; 3T3-L1