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A comparative study of screening and quantitative determination of phytochemical compounds in different parts of the antidiabetic medicinal plant Psidium guajava L. in Sri Lanka

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Abstract

The prevalence of diabetes is increasing worldwide, especially in developing countries. Diabetes mellitus, a metabolic disorder and, if long-standing, too late complications leading to a reduced life expectancy. *Psidium guajava* L. (Myrtaceae) is commonly known as *Guavas* which are good snacks for diabetic patients due to the low calorie and high soluble fibre content. Foods with low glycaemic load and high fibre content are good for the control of blood glucose. Guava cultivars and variants abound in Sri Lanka. However, there is a scarcity of scientific evidence on guava leaves, bark, fruits, and seeds. The goal of this study was to compare the phytochemical properties of ethanolic, methanolic, and aqueous extracts of different parts of the *Psidium guajava* used in the management of diabetes.

The different parts as leaves, bark, fruits, and seeds of *Psidium guajava* were collected, and their identification was authenticated at the National Herbarium, Royal Botanic Gardens Peradeniya. The shade dried each part were powdered and extracted with ethanol, methanol and water using the cold extraction technique separately. Standard methods were followed while screening for phytochemicals. The total content of phenols, flavonoids, tannins and alkaloids was evaluated by the colorimetric method using the spectrophotometer. The findings indicated that the presence of tannins, glycosides, phenols and flavonoids did not indicate the presence of anthocyanin and carboxylic acid in the ethanolic, methanolic, and aqueous extracts of leaves, bark, fruits, and seeds of this plant. Methanolic leaf extract showed the maximum total phenolic (131.33±0.577 µg/ml) and flavonoid contents (33.20±0.794 µg/ml); ethanolic bark extract was highest tannin content (1150.7±0.871 µg/ml) and the bark showed the highest alkaloid content (296.8 mg/g). Seeds of this plant has lowest phenolic, tannin, flavonoid and alkaloid contents. Based on these findings, the leaves and bark of *Psidium guajava* have higher levels of phenolics, tannins, flavonoids and alkaloids than the fruits and seeds of this plant. Numerous studies reported that guava is the great supplementary for the control and management of diabetes. This study offered a complete assessment of the phytochemical properties of leaves, bark, seeds, and fruits of the *Psidium guajava* growing in Sri Lanka and this plant can be used as a potential basis for the management of diabetes in the traditional system of medicine.

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