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PAPER

Phenetic analysis and phytochemical screening of *Albizia lebbbeck* and its substitute plants in Sri Lanka

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Albizia lebbbeck (vern: Suriya mara) is a tree belonging to the family, Fabaceae. It is native to tropical Southern Asia, and found widely in India. It has been used in traditional therapeutic systems of Ayurveda, Sidhdha and Unani, for preparation of drugs for many diseases. Due to the limited distribution of *A. lebbbeck* in Sri Lanka, substitute plants are used in the drug manufacturing industry.

A questionnaire survey was carried out on a sample population of hundred Ayurvedic physicians, traditional Ayurvedic practitioners, drug suppliers, drug manufacturers and the general public, in order to collect traditional knowledge in the medicinal uses of these plants. The survey revealed that *A. odoratissima*, *Adenathera pavonina* and *Samanea saman* are commonly used substitute plants for *A. lebbbeck* in traditional medicinal systems.

To evaluate the phenetic diversity, a morphometric study and cluster analysis were carried out using floral and vegetative characters of *A. lebbbeck* and its substitute plants. Variations in the bark, inflorescences, floral colour and type, texture and colour of pods are found as the important diagnostic characters of these species. Cluster analysis clearly indicated the morphological variation in population samples of all four plant species.

Stem bark of the four species were subjected to sequential solvent extraction using hexane, chloroform, methanol and water. Weights of each crude sample were obtained after evaporation of the solvent. Highest yield was obtained from the methanolic extracts which revealed the presence of polar compounds in the species. The extracts were subjected to the preliminary phytochemical screening for carbohydrates, proteins, amino acids, glycosides, tannins, phenolics, alkaloids and saponins,

Phytochemical analysis has confirmed the presence of glycosides, flavonoids, tannin, phenolics and phytosteroids in methanolic extracts of the four species. The results of the present study reveal the presence of saponin, tannins and phenolic compounds in the water extracts of the four plants. The distribution of classes of phytochemicals in the four plants was similar to each other except alkaloids as it was found only in *Adenathera pavonina* and *Samanea saman*.

Therefore, this study has provided supportive evidence for the possibility of the presence of similar medicinal properties in *A. lebbbeck*, *A.odoratissima*, *Adenathera pavonina* and *Samanena*

saman. These findings can be considered as valuable facts in the recommendation of the use of these three plants as substitutes of *A. lebbeck* in medicinal preparations. Further investigation on the similarity in bioactivity of the four plants is needed to confirm this recommendation.

Keywords: *Albizia lebbeck*, Substitute Plants, Morphometrics, Phenetic, Bark Extracts, Phytochemicals