A RE-ASSESSMENT OF SPECIES BOUNDARIES OF THE GENUS *MONOCHORIA* (PONTEDERIACEAE) IN SRI LANKA USING PHYTOCHEMICAL DATA

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The genus *Monochoria* C. Presl. (Pontederiaceae) is represented by two species in Sri Lanka, *Monochoria vaginalis* (Burm. f.) Presl. and *M. hastata* (L.) Solms-Laub. However, recent morphometric studies using morphological data and molecular studies conducted using RAPD data, have recognised three phenetic groups within *M. vaginalis.* Therefore, the present study was conducted with the aim of re-assessing the species boundaries of the genus using phytochemical data.

Live plants material of *M. hastata* and *M. vaginalis* including the three phenetic groups were collected, air-dried and grounded. Extractions were made using three solvent systems, hexane, ethyl acetate, and methanol. Thin Layer Chromatography (TLC) was performed for the three extracts of all four plant groups and the separated spots on TLC plates were detected under UV 254 nm and UV 366 nm, before and after spraying with anisaldehyde, vanillin/H_2SO_4, and Dragendorff's reagent. Other chemical properties, antioxidant activity, brine shrimp toxicity, antifungal activity, α-amylase inhibitory activity, and phytotoxicity were studied using the standard procedures. Ninety nine phytochemical characters were coded into character states and entered into a data matrix using the Microsoft Office Excel (2007). A multivariate analysis was carried out using PAST (version 2.17) computer software.

The dendrogram that resulted from the cluster analysis, initially produced two primary groupings of Operational Taxonomic Units (OTUs), separating one phenetic group of *M. vaginalis*. In the clustering solution, *M. hastata* and *M. vaginalis* including the three phenetic groups were separated into four distinct clusters. All plants exhibited antioxidant activity, α-amylase enzyme inhibitory activity and phytotoxic effects. However, the phenetic group of *M. vaginalis* that showed early separation in the dendrogram showed extremely high brine shrimp toxicity.

Cluster analysis using phytochemical data corroborates the recognition of three phenetic groups within *M. vaginalis* populations in Sri Lanka. Both *M. hastata* and *M. vaginalis* are used in traditional medicine. The results would enhance the interpretation of their medicinal properties. However, in the medicinal use of *M. vaginalis*, the present study stresses the importance of the correct identification of non-toxic groups to reap the benefits of their medicinal properties.