

Phylogenetics Assessment of Two Unidentified Species of Capparis L. in Sri Lanka

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Capparis L. is a highly diverse genus that has spread across the Old World and belongs to the family Capparaceae. The genus is notable for its nutritional and medicinal values. However, the phylogenetic relationships of most *Capparis* species remain questionable. According to the Revised Handbook to the Flora of Ceylon (1980), ten *Capparis* species are recorded in Sri Lanka. They are locally known as *Kaluwellangiriya*, *Wellangiriya*, *Waldehi* (Sinhala), *Adonai* (Tamil), and Capper (English). Encountering of different morph groups questions the proper identification of the Sri Lankan species. The present study was initiated to address this gap. Morphological and molecular analyses were performed for five *Capparis* samples found in Sri Lanka, including *C. zeylanica*, *C. brevispina*, *Kaluwellangiriya 2* (from Royal Botanical Gardens-Peradeniya), *C. moonii* (from Ritigala), and *Kaluwellangiriya 1* (from Kiribathkumbura). The chloroplast gene, *matK*, was used for molecular phylogenetic analysis. Maximum likelihood and Bayesian inference were performed with IQTree and MrBayes, respectively along with five sequences from NCBI nucleotide database. Nineteen vegetative characters were used in a morphometric analysis where a Cluster Analysis (CA) and Principal Component Analysis (PCA) were performed, using PAST4.03. Both CA and PCA analyses gave consistent results. Morphological and molecular clustering were congruent for *C. zeylanica*, and *C. brevispina*. The dendrogram clustered *C. moonii* with *Kaluwellangiriya 2* while *Kaluwellangiriya 1* stood apart. In contrast, in the molecular analysis, *C. moonii* and *Kaluwellangiriya 1* formed a clade. Inconsistencies were observed in the *matK* sequences of *C. moonii* generated for this study from Ritigala, Sri Lanka and the NCBI nucleotide database. This may be due to false identification of the locally collected specimen. In conclusion, the results of this study suggest that *Kaluwellangiriya 1* and *Kaluwellangiriya 2* may represent new or previously undocumented species in Sri Lanka. Further studies are recommended for the precise identification of these species.

Keywords: *Capparis* Spp., DNA Barcoding, *Matk*, Phylogenetics