Phylogeny of Ten Kenyan Plectranthus Species in the Coleus Clade Inferred from Leaf Micromorphology, Rbcl and MatK Genes

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Abstract

Plectranthus species are difficult to taxonomically delimit due to lack of clear-cut morphological synapomorphies. This study is aimed at bringing insights into classification of ten Plectranthus species in the Coleus clade by using leaf micromorphology and molecular data. Stomatal counts and observation of microtome leaf sections generated leaf micromorphology data, while molecular data was obtained from sequencing MatK and Rbcl genes from each species. Phylogeny based on the MatK and Rbcl gene sequences clustered four species P. caninus, P. otostegioides, P. barbatus, and P. lanuginosus together (Clusters A and D, respectively), while P. pseudomarrubioides, P. ornatus, and P. aegyptiacus were grouped together into Clusters B and E, respectively, and P. montanus and P. amboinicus were grouped together (Cluster C). A dendrogram was generated through a cluster analysis of the leaf micromorphological characters grouped together, P. caninus, P. ornatus, P. otostegioides, P. montanus, and P. pseudomarrubioides (Cluster F). The dendrogram also grouped together P. aegyptiacus, P. amboinicus, P. edulis, P. barbatus, and P. lanuginosus (Cluster G). The present study has grouped the ten studied Plectranthus species using molecular and leaf micromorphology characters into phylogenies, which are supported by previous studies, and proved that these characters can aid in plant identification and phylogenetic studies.

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