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A phylogenetic study of tribe euphorbieae (*Euphorbiaceae*)¹

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Abstract:

A phylogenetic investigation of a monophyletic lineage of spurge plants, tribe Euphorbieae, was conducted to elucidate evolutionary relationships, to clarify biogeographic patterns, and to reexamine the previous classification of Euphorbieae. Cladistic analyses of the 52 morphological characters of 61 species resulted in 2922 equally most parsimonious trees of 193 steps with a consistency index of 0.34. The strict consensus tree indicates genus *Anthostema* of subtribe Anthosteminae as a likely sister group to all other members of tribe Euphorbieae. The morphological data support a monophyletic origin of subtribe Euphorbiinae, but the subtribes Anthosteminae and Neoquillauminiinae did not form monophyletic groups. Although the previous taxonomic treatments within tribe Euphorbieae have supported the generic status of *Pedilanthus*, *Monadenium*, *Synadenium*, *Chamaesyce*, and *Elaeophorbia*, the results of this analysis do not support generic placement of them based on cladistic principles. Recognition of these groups as genera results in *Euphorbia* becoming a paraphyletic group. One solution to this problem in Euphorbieae is to divide the largest genus *Euphorbia* into several monophyletic genera and to keep the generic ranks for previously recognized genera. The distribution of basal endemic genera in Euphorbieae showed African and east Gondwanan affinities and strongly indicated that the ancestor of Euphorbieae originated prior to the breakup of Gondwanaland from an old group in Euphorbiaceae. However, some recent African taxa of *Euphorbia* should be interpreted by transoceanic dispersal from the New World ancestors.

Keywords:

Phylogeny, Euphorbieae, morphology.

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