

PHYLOGENETIC RELATIONSHIPS IN SELECTED MONOCOTS AND BASAL ANGIOSPERMS: MORPHOMETRICS AND FLAVONOID DISTRIBUTION

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Phylogenetic systems, introduced by Dahlgren in 1981 and Angiosperm Phylogenetic Group II System in 2003 had stated that there is a close relationship between basal angiosperms and some monocot taxa. Basal angiosperms are the evolutionary early angiosperms that diverge from the ancestral angiosperms. Therefore, the objective of this study was to interpret phylogenetic relationships of selected monocot taxa with basal angiosperms with respect to the morphometrics and flavonoid distribution.

Nymphaea stellata, *Piper betle*, *P. nigrum*, *P. longum*, *Aristolochia indica*, *Apama siliquosa* and *Annona muricata* were selected as basal angiosperms and *Anthurium undraeanum*, *Alocasia macrorrhiza*, *Aponogeton crispus* and *Dioscorea alata* were selected as monocot taxa for the present study. Fifty seven morphological, anatomical, flavonoid glycoside and pollen characters were analysed using SYNTAX 2000 to interpret phylogenetic relationships.

The phylogenetic relationships were reasonably represented in the analysis of combination of both morphological and flavonoid characters. This indicates that basal angiosperms are closely related with the monocots taxa used in the present study. Therefore, the splitting of angiosperms into main two groups as dicots and monocots as sister groups in the early phylogenetic systems is not in agreement with the present findings. Further, it supported the view of both systems; Dahlgren in 1981 and Angiosperm Phylogenetic Group II in 2003, which have identified that some monocot taxa shared common characters with basal angiosperms such as reticulate venation in monocot taxon *Dioscorea alata*, *Anthurium undraeanum* and *Alocasia macrorrhiza*; scattered vascular arrangement in basal angiosperm taxa *Nymphaea stellata*; circular vascular arrangement in monocot taxon *Dioscorea alata*.

Further, it demonstrated that family Piperaceae displays a closer phylogenetic relationship compared to the other selected basal angiosperms. A multi-access key was constructed using DELTA (Description Language for Taxonomy) software that can be used for future taxonomic purposes.