

Systematics of Water Lilies (Genus *Nymphaea* L.) Using 18S rDNA Sequences

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Abstract : Water lily (*Nymphaea* L.) is the largest genus of Nymphaeaceae. This family is composed of six genera (*Nuphar*, *Ondinea*, *Euryale*, *Victoria*, *Barclaya*, *Nymphaea*). Its members are nearly worldwide in tropical and temperate regions. The classification of some species in *Nymphaea* is ambiguous due to high variation in leaf and flower parts such as leaf margin, stamen appendage. Therefore, the phylogenetic relationships based on 18S rDNA were constructed to delimit this genus. DNAs of 52 specimens belonging to water lily family were extracted using modified conventional method containing cetyltrimethyl ammonium bromide (CTAB). The results showed that the amplified fragment is about 1600 base pairs in size. After analysis, the aligned sequences presented 9.36% for variable characters comprising 2.66% of parsimonious informative sites and 6.70% of singleton sites. Moreover, there are 6 regions of 1-2 base(s) for insertion/deletion. The phylogenetic trees based on maximum parsimony and maximum likelihood with high bootstrap support indicated that genus *Nymphaea* was a paraphyletic group because of *Ondinea*, *Victoria* and *Euryale* disruption. Within genus *Nymphaea*, subgenus *Nymphaea* is a basal lineage group which cooperated with *Euryale* and *Victoria*. The other four subgenera, namely *Lotos*, *Hydrocallis*, *Brachyceras* and *Anecphya* were included the same large clade which *Ondinea* was placed within *Anecphya* clade due to geographical sharing.

Keywords : nrDNA, phylogeny, taxonomy, waterlily

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