

# A COMARATIVE PHYLOGENIC ANALYSIS OF SELECTED SPECIES OF *Exacum* OF SRI LANKA WITH *Osbeckia octandra*

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The *Exacums* are members of the family Gentianaceae. These annual species are grown as flowering pot plants in the Western hemisphere for its beautiful and profuse blue or white flowers. There are eight *Exacum* species found wild in Sri Lanka: *Exacum axillare*, *Exacum macranthum*, *Exacum pallidum*, *Exacum trinervium*, *Exacum walkerii*, *Exacum pedunculatum*, *Exacum petiolare* and *Exacum sessile* of which four are designated as threatened species. This study was conducted to determine the phylogenetic relationships of four of the endemic Sri Lankan *Exacum* species, *E. trinervium*, *E. macranthum*, *E. walkerii* and *E. pedunculatum* which show the potential for application in the floricultural industry with the non-endemic, commercial species *E. affine*, to compare their sequences of the Internal Transcribed Spacer (ITS) region of 18S-26S rDNA for use as a possible DNA typing target and to compare the *Exacums* of Sri Lanka with the morphologically similar species *Osbeckia octandra*.

DNA was isolated from younger leaves of the plants; the ITS region was amplified by Polymerase Chain Reaction (PCR), and the nucleotide sequences of the PCR products were determined. The amplified products of the ITS region of different species were estimated to be 554-720 bp. Multiple sequence alignment of the ITS sequences were carried out using ClustalW program and phylogenetic relationship of the species was determined by using Mega 4.0.2 package. The two endemic species *E. macranthum* and *E. trinervium* clustered together in the phylogenetic tree while *E. walkerii* and *E. pedunculatum* formed a separate cluster. The exotic species *E. affine* diverged from the cluster and branched separately. *Osbeckia octandra* did separate from all *Exacum* species.

