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Determining the full sequence of the chloroplast genome of *Wolffia arrhiza* (Lemnoideae) and analyzing its evolution to other members of the Araceae family

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Lemnoideae, commonly referred to as the duckweed, are aquatic plants found worldwide. *Wolffia* species are known for their extreme reduction in size and complexity, lacking both roots and leaves, and they hold the distinction of being the smallest plants among angiosperms. Interestingly, it belongs to the Araceae family, despite its apparent morphological differences from land plants in the same family. Traditional morphological methods have limitations in classifying these plants, making molecular-level information essential. The chloroplast genome of *Wolffia arrhiza* is revealed that a total length of 169,602 bp and a total GC content of 35.78%. It follows the typical quadripartite structure, which includes a large single copy region (LSC, 92,172 bp), a small single copy region (SSC, 13,686 bp), and a pair of inverted repeat regions (IRs, 31,872 bp each). There are 131 genes characterized, comprising 86 Protein-Coding Genes (PCGs), 37 Transfer RNA (tRNA) genes, and 8 ribosomal RNA (rRNA) genes. Moreover, 48 simple sequence repeats (SSRs) and 32 long repeat sequences were detected. Comparative analysis between *W. arrhiza* and six other Lemnoideae species identified 12 hotspots of high nucleotide diversity. In addition, a phylogenetic analysis was performed using 14 species belonging to the Araceae family and one external species as an outgroup. This analysis unveiled *W. arrhiza* and *Wolffia globosa* as closely related sister species. Therefore, this research has revealed the complete chloroplast genome data of *W. arrhiza*, offering a more detailed understanding of its evolutionary position and phylogenetic categorization within the Lemnoideae family.