

## **Molecular phylogenetics and comparative anatomy of succulent species of *Senecio***

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*Senecio* is one of the largest genera of flowering plants and presents an immense range of growth forms, including about 80 succulent species. The succulence can be observed in the stem, in the leaves and/or in the underground parts of the plants. Morphological and anatomical data from 37 different species of *Senecio* have been investigated using a dissecting microscope. Cross-section slides of leaves and stems were the basis for analyses of where the water-storage tissue is located and how distinctive it is among the different species. Leaf-shape, distribution of chlorophyll and vascular bundles in cross-sections of leaves and stems are some of the most significant characteristics analysed for describing morphological and anatomical diversity. Molecular data from nuclear ITS sequences were used to reconstruct the phylogenetic relationship of the succulent species and to clarify the evolution of different characteristics of succulent *Senecio*. The greatest diversity in stem-succulence is found in a well-supported clade mainly found in North/East Africa and Arabia, and leaf succulence is most diverse in a clade distributed in South/Southwest Africa.