An overview of the mechanisms of desiccation tolerance using resurrection plants as models: from the molecular to whole plant physiology

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Desiccation tolerance is common in seeds but rare in the vegetative tissues of most angiosperms. Some 350 species of angiosperm (0.2% of total flora) tolerate desiccation in their vegetative tissues and are termed resurrection plants. My research is aimed at gaining an understanding of the mechanisms of desiccation tolerance in general and the similarities and differences among species and between vegetative tissues and seeds. The research is conducted at several levels, from the molecular to the whole plant physiological level. Comparative data showing protection mechanisms upregulated during drying and rehydration in vegetative tissues of four different resurrection plants (*Craterostigma wilmsii, Eragrostis nindensis, Xerophyta humilis* and *Myrothamnus flabellifolius*) will be presented. In this paper Using *Xerophyta humilis* as a model, aspects of the transcriptome, proteome and metabolome will be presented and these, in turn, will be related to mechanisms present their seeds and those of other species that show orthodox behaviour.