

## **Abstract**

Drought is one of the abiotic stresses that plants have to fight with from the beginning of their transition to land. However, there is a systematically incoherent group of plants that can solve extreme water scarcity and still effectively prosper. A high degree of dehydration involves a number of problems including osmotic stress, the accumulation of reactive oxygen species (ROS), or protein degradation. However, drought-tolerant plants have evolved mechanisms to deal with these problems. For protection against ROS they activate antioxidant enzymes and accumulate non-enzymatic antioxidants, which can quench ROS. These plants use a wide spectrum of amino acids and carbohydrates against the osmotic stresses, ranging from the ubiquitous and abundant carbohydrates like sucrose, till the trehalose scarce in plants. None of the plants relies on a single substance, instead, plants depend on species-specific cocktails of protective agents, through which they acquire their tolerance. The studies of those plants and their mechanisms of tolerance seem to be a perspective way for selection of preferable target genes suitable for the development of crops tolerant to desiccation.

**Key words:** antioxidant systems, dehydration, drought, LEA, octulose, polyols, RFO, resurrection plants, sucrose, trehalose