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Diurnal shifts in the reactive oxygen species regulation in the bromeliad Guzmania monostachia as a response to drought

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The production of reactive oxygen species (ROS) varies according to the nature and severity of the stress, as the antioxidant system response depends partly on the type of plant photosynthesis. Here, we aimed to study the oxidative stress markers and the antioxidant response in the epiphytic tank bromeliad, *Guzmania monostachia,* in response to drought. *G. monostachia* plants showed significant differences of ROS between light and dark periods in drought and control conditions. They also demonstrated diurnal oscillations of H2O2 levels and activity of anti-oxidative enzymes in leaves exposed to water limitation. In addition, increases of the ROS generation levels and H2O2 content can be correlated with an enhanced lipid peroxidation in the apex leaf portion. All this seems to prove the influence of diurnal shifts on the redox replies in *G. monostachia* plants in response to drought, which may be seen as one of its strategies to avoid oxidative damage.

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Effect of dormancy regulating compounds on seed dormancy and germination of some desert annuals of the United Arab Emirates

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To survive and perpetuate under harsh desert conditions, seeds of many annual plants adopt the strategy of acquiring innate dormancy and wait for favorable conditions for germination. Treatment of seeds with certain dormancy regulating compounds (DRCs) is considered as an effective tool in breaking innate dormancy and improving seed germination of desert plants. We assessed the effects of four DRCs (gibberellic acid, nitrate, thiourea and kinetin) and light and their interaction on alleviating innate dormancy of seeds of 16 UAE desert annuals belonging to eight families. Results showed that three-month-stored seeds of all species had very deep dormancy. In four *Plantago* species, kinetin alleviated seed germination in three, nitrate in two and thiourea in only one species. In three grass species, the alleviation was partial (≤50 of the seeds germinated) and was greater in light, compared to darkness. The different DRCs had limited effects on the alleviation of seed dormancy in two species of Brassicaceae, but great effect on a third species. In two Residaceae species, none of the DRCs succeeded to alleviate innate dormancy. In *Senecio desfontainei* (*Asteraceae*) and *Silene villosa* (*Caryophyllaceae*), the different DRCs partially alleviated the dormancy in both light and dark. Seeds of Viola cinerea (*Violacea*) treated with the different DRC were able to germinate in darkness. It could be concluded that treating seeds of these species with DRCs would help in using them in different restoration and rehabilitation programs in desert ecosystems.

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