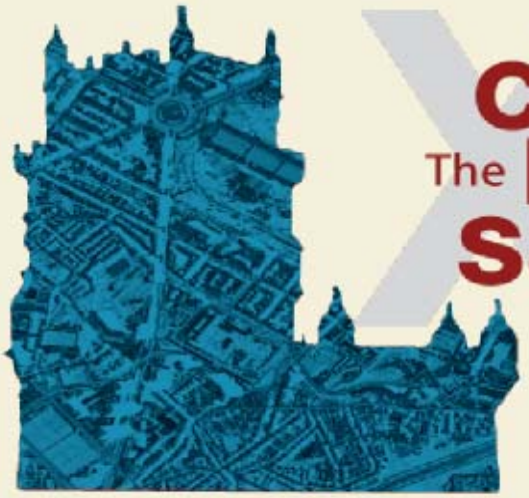

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PLASTICITY OF ANTIOXIDANT DEFENCE RESPONSES TO ABIOTIC STRESS IN NATURAL POPULATIONS OF *IRIS PUMILA*

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For plants, sunlight is not only the major source of energy for photosynthesis, but also a powerful evolutionary force that shapes the evolutionary trajectories of many traits. The aim of this study was to examine seasonal- and habitat-dependent variations in the specific activities of different antioxidants in the leaves of *Iris pumila* clones expressed under contrasting light conditions in the wild. Two populations were selected in the Deliblato Sands: one experiencing full sunlight and one from a woodland understory. Leaf samples were collected in spring, summer and autumn from the same clones in each population. The specific activities of the antioxidative enzymes, SOD, APX, CAT, GR and POD, and the contents of non-enzymatic antioxidants, anthocyanins and phenolics, were determined. All of the examined antioxidants were observed to be upregulated in summer-harvested leaves when compared to their spring or autumn counterparts. This suggests that reinforcement of the antioxidants might be the key mechanism for acclimatization of *I. pumila* leaves to seasonal variations in light intensity. In both populations, the antioxidative enzymes SOD, GR and POD expressed a greater mean seasonal plasticity than the other antioxidants. However, the between-population difference was significant only for POD. To elucidate whether variations in antioxidants reflect adaptations to local environments, a reciprocal transplant experiment was conducted in the wild. The higher activities of antioxidative enzymes were accompanied by increased contents of non-enzymatic antioxidants in both populations in the open habitat in comparison to clones in the shaded habitat. This could be a reflection of adaptive plasticity to the synergistic effect of strong light and high temperature. In contrast to seasonal plasticity, habitat-dependent plasticity peaked for APX and CAT in both populations. Apart from the phenolic content, a significant between-population difference was not observed.