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Effect of Heat Stress on the Physiology of the Cork Oak

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Abstract : Our study shall focus on the ability of trees cork oak that showed vis-à-vis sensitivity to climate change, including late spring frosts. The combination of these factors resulted in damage alarmed, therefore forest ecosystems weakened trees that can affect their ability to support other abiotic and biotic stresses, For this we tested its tolerance to thermal variations and cold weather conditions by estimating some stress markers (quantification of proteins, RNA, soluble sugars) that are quantified to evaluate the cold tolerance of seedlings. Sowing of cork oak (Quercus suber L.) is grown in controlled conditions at 25° C ± 2° C in long days 16h. These seedlings are transferred at low temperatures between 5° C and -6° C for a period of 3 hours. Biochemical analyzes were performed in the various organs of the cork oak seedlings. Cool temperatures induced a significant accumulation of proline in different organs of seedlings and the optimum concentrations were observed in the roots with very high concentrations (4 times larger than those of the control). The accumulation of soluble sugars is significantly in stems and roots at 0° C. Protein concentrations are very high in leaves of both growth and high waves in rod at -4° C to -2° C. Tolerance cork oak seems to be at the thermal limit of -2°C. The concentration of these metabolites in the various organs showed the ability oak cork hardening during the winter.

Keywords : climate change, thermal change, semi-aride, biochemical markers, heat stress
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