EFFECT OF HYDRO- AND OSMO-PRIMING ON MEMBRANE DETERIORATION, PROLINE ACCUMULATION AND H₂O₂ SCAVENGING ENZYMES IN TWO SALT STRESSED CHICKPEA CULTIVARS

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Abstract

Seed priming has been reported to be a simple technique for enhancing seedling establishment in environment and crop production under stressed condition. In this study, we investigated osmo and hydropriming effect in two salt stressed chickpea cultivars. This research monitors the changes in growth factors, proline content, lipid peroxidation and H₂O₂ scavenging enzymes activities in osmo (mannitol 4%) and hydro (water) primed plantlets of two salt stressed chickpea cultivars (Arman and Bivanich) under salt treatment (100 mM). Our result shows that osmo and hydropriming under salt stressed, caused improvement in shoots and roots weights in both plantlets cultivars. In both osmo and hydropriming, activities of three major H₂O₂ scavenging enzymes guaiacol peroxidase (POX), ascorbate peroxidase (APX) and catalase (CAT) and proline content were enhanced significantly but lipid peroxidation was reduced. High concentrations of proline accumulation were observed in the Bivanich and had higher H₂O₂ scavenging enzymes activity improvement than the cv. Arman. Our results show that salt stress causes growth reduction, membrane disorganization, generation of reactive oxygen species and biochemical change.

Key words: H₂O₂, lipid peroxidation, priming, proline, salinity stress, scavenging enzymes

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