Salinity Induced Anti Oxidative Response of *Urginea indica* (Roxb.) Kunth: A Medicinally Important Bulbous Plant of Indian Thar Desert

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ABSTRACT

The present study describes the effect of different concentrations of NaCl (0.0, 50, 100 and 200 mM) on the activities of key antioxidative enzymes, lipid peroxidation and content of metabolites in roots, bulb and leaves of *in-vivo* grown plants of *Urginea indica*. Chlorophyll pigments (Chl. a & b) and CSI% were estimated in leaves which gradually decreased with increasing concentration of NaCl. Salinity has negatively influenced the protein content in all the studied organs. Roots have been showed the maximum (50%) decrease in protein content followed by leaves and bulb. Proline content increased remarkably with increasing salt concentration however, maximum % increase in proline was recorded in roots and leaves respectively. In all examined organs of the plant, salt stress gradually enhanced the activities of superoxide dismutase (SOD), peroxidase (POD), and catalase (CAT) as compared to control. Leaves showed the higher level of these enzymes than roots and bulb under salinity. However, compared to SOD and POD, CAT activity was lower in all the studied organs. Salt stress also increased the malondialdehyde (MDA) and total phenolic content. The obtained results suggest that SOD-POD-CAT system protects *U. indica* plants from oxidative damage during salt induced stress, but the individual enzymatic activity was depend on concentration of NaCl as well as plants parts exposed to stress such as roots, bulb and leaves of *U. indica.* Similarly, biochemical parameters also showed organ specific responses to salinity, as maximum accumulation of proline and phenol content were observed in roots, leaves and bulbs respectively. To the best of our knowledge this is the first report describing the differential physiological response of roots, bulb and leaves of *Urginea* plants under salinity.

Keywords: Antioxidative enzyme, CSI, Lipid peroxidation, Malondialdehyde, Proline, Salt stress.