

Exogenous Ascorbic Acid Increases Resistance to Salt of *Carthamus tinctorius*

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Abstract : Salinity stress has negative effects on agricultural yield throughout the world, affecting production whether it is for subsistence or economic gain. This study investigates the inductive role of vitamin C and its application mode in mitigating the detrimental effects of irrigation with diluted (10, 20 and 30 %) NaCl + water on *carthamus tinctorius* plants. The results show that 10% of salt water exhibited insignificant changes, while the higher levels impaired growth by reducing seed germination, dry weights of shoot and root, water status and chlorophyll contents. However, irrigation with salt water enhanced carotenoids and antioxidant enzyme activities. The detrimental effects of salt water were ameliorated by application of 100 ppm ascorbic acid (vitamin C). The inductive role of vitamin was associated with the improvement of seed germination, growth, plant water status, carotenoids, endogenous ascorbic acid and antioxidant enzyme activities. Moreover, vitamin C alone or in combination with 30% NaCl water increased the intensity of protein bands as well as synthesized additional new proteins with molecular weights of 205, 87, 84, 65 and 45 kDa. This could increase tolerance mechanisms of treated plants towards water salinity.

Keywords : salinity, stress, vitamin c, antioxidant, NaCl, enzyme

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