



Role of Tryptophan or Prozac (5-hydroxytryptamine) on some Osmolytes and Antioxidant defense system of Sunflower cultivars grown in Saline soil

H.M.S. El-Bassiouny*, A.A. Abdel-Monem

Botany Department, Agriculture and Biology Division, National Research Centre
33 El Bohouth St., Dokki – Giza - Egypt- P.O. 12622

Abstract : A field experiment was conducted during two successive seasons in different saline soil levels (EC 1.56, 4.68 and 7.83 ds/m) on two sunflower (*Helianthus annuus L.*) cultivars (Hysun 336 and Euroflor). Seeds were soaked prior to sowing in saline soil with tryptophan or Prozac (5-hydroxytryptamine) at different concentrations (0.0, 2.5 and 5.0 mg/l), to improve tolerance. Generally salinity stress increased total soluble sugars, proline, free amino acids and total phenol contents in both sunflower cultivars. On the other hand, the antioxidant enzymes activities catalase, peroxidase, polyphenol oxidase and Phenylalanine ammonialyase decreased with increasing salinity level. The macroelements (N, P, K and Mg) and some microelements (Fe, Mn, Zn and Cu) contents were decreased while; the sodium content was gradually increased with increasing salinity levels of both cultivars. Pretreatment of sunflower seeds with different concentrations of tryptophan or prozac could improve the adverse effects of salinity stress by increasing the solute and antioxidant enzyme. Moreover, in shoots of Hysun 336 was a higher osmolytes concentration contributing to osmotic adjustment and the higher antioxidant enzymes activity than those of Euroflor under salinity stress.

Key words: Antioxidant enzymes, Osmolytes, Prozac, Salinity, Sunflower, Tryptophan.