The effect of auxin and cytokinin on the biochemical parameters and peroxidase activity (H_2O_2) of stevia (*Stevia rebaudiana* Bertoni) under salinity stress

R. Sarami[1], H. Omidi[1*] and A. Bostani[2]

(Received: 24 Feb. 2016 ; Accepted: 2 Oct. 2016)

Abstract

This research was conducted to investigate the effects of external application of auxin and cytokinin on biochemical characteristics of Stevia (sweet variety), as a factorial experiment with randomized complete blocks design, in Shahed University, Tehran, Iran. Treatments were four levels of NaCl (without salinity (2 mM), 40, 80 and 120 mM) and hormonal factor (0.1 mg/L auxin (IAA) and combined treatment (0.1 mg/L IAA+1.5 mg/L PBA)), that were conducted as hydroponic culture. Results showed that salinity reduced the amount of biomass. Increased salinity, along with hormones, initially decreased the content of potassium and then showed a steady trend. The highest membrane electrolyte leakage, soluble sugars and protein content of shoots was measured at 120 mM salinity level with 0.1 mg/L IAA and the highest sodium content in shoots was measured in 120 mM NaCl with hormonal treatment of 0.1 mg/L IAA+1.5 mg/L PBA. Also, hydrogen peroxide reached its highest value in 80 mM NaCl. Proline accumulation increased with increasing salinity. Results indicated that using appropriate concentrations of auxin and cytokinin hormones (especially 0.1 mg/L IAA treatment) in Stevia can be effective in increasing plant resistance to salinity and its application in similar circumstances is recommended for Stevia.

Keywords: Auxin, Protein, Proline, Cytokinin, Hoagland.

1. Dept. of Agron. and Plant Breed.,College of Agric. Sci., and Med. Plant Res. Center, Shahed Univ., Tehran, Iran.
2. Dept. of Soil Sci., College of Agric. Sci., Shahed Univ., Tehran, Iran.
* Corresponding Author, Email: omidi@shahed.ac.ir