

Changes in organic and inorganic solutes of an invitro tomato cultivars under NaCl stress.

ABSTRACT

Osmotic adjustment plays an important role in plants to address the growing conditions under different environmental stresses and particularly saline conditions. Changes of carbohydrate, soluble protein, proline and ions content (Na^+ , K^+ , Ca^{+2} , and Mg^{+2}) were studied under salt stress in shoots of Pearl and Beril in vitro cultivars induced from hypocotyls and cotyledons explants. The explants were cultured in MS + 2mg BAP, supplemented with different levels of NaCl (0, 25, 50 and 75 mM) for eight weeks and the carbohydrates, protein, proline and elements were determined. The carbohydrates, proline contents and Na^+ were increased in tomato cultivars with increasing NaCl levels, whereas the protein, K^+ , Ca^{+2} and Mg^{+2} were decrease with rising of the NaCl level. Significant differences were observed between tomato varieties for various salt tolerance-associated traits under salinity stress. Regarding physiological parameters, higher accumulation in organic and inorganic solutes was determined in Beril cv. compared to Pearl cultivar. The type of explant showed a difference in their content of organic and inorganic solutes, in which the cotyledons was superior than hypocotyl in physiological traits. This might be an indication of higher salt tolerance of cotyledons.

Keyword: Carbohydrate; In vitro; Proline; Salt stress; Tomato.