Effect of exogenous putrescine on growth, photosynthesis and alkaloid compounds of Datura (*Datura stramonium* L.) in response to salinity stress under hydroponic conditions

M. Niakan[1]*, Sh. Rezapour Mahjoob[1] and M. Ghorbanli[1]

(Received: Dec. 19-2013 ; Accepted: Jun. 22-2014)

Abstract

Nowadays, cultivation of medicinal plants in the greenhouse and use of appropriate strategies to improve the response to environmental stresses has been under consideration. In this research, effect of exogenous putrescine on resistance of *Datura stramonium* plant to salinity stress was evaluated through studying growth parameters, amount of chlorophyll a, b, soluble carbohydrates and alkaloid compounds in roots and shoots of this plant. Seeds of Datura plant were grown in a mixture of soil and sand. After 35 days, the plants were transferred to Hoagland solution. Different concentrations of NaCl (0, 20, 40 and 60 mM) and putrescine (0.01 and 0.05 mM) were added to Hoagland solution, depending on the treatment type, in the form of 10 independent and combined treatments, based on randomized complete blocks design. After 15 days, shoots and roots of treated plants were evaluated. Results showed that with increasing salt concentration, the shoot length, fresh and dry weight of roots and chlorophyll a, b content were decreased. On the other hand, dry and fresh weight of shoots, chlorophyll a, b, soluble carbohydrates and alkaloid compounds were significantly increased with putrescine application in the treatments which contained salt. This research confirmed the positive role of exogenous putrescine in improving the growth, chlorophyll pigments, soluble carbohydrates and alkaloid compounds of Datura medicinal plant in saline conditions.

Keywords: Polyamine, Salinity, Photosynthesis, Alkaloids.

1. Dept. of Biol., Islamic Azad Univ., Gorgan Branch, Gorgan, Iran.
*: Corresponding Author, Email: mnniakan@yahoo.com

[DOR: 20.1001.1.20089082.1394.6.1.10.9]
[DOI: 10.18869/acadpub.ejgcst.6.1.111]