

Abstract

Peppermint with Scientific name of *Menth piperita L.* from the Lamiaceae family is a herbaceous and perennial herb which is the most commonly used for the preparation of essential oils. In order to investigate of jasmonic acid and nitroxin on the expression of lim3h gene and essential oil of peppermint herb in salinity stress conditions, a factorial experiment was conducted in a completely randomized design with three replications at the Biotechnology Center of Zabol University in 2016. Salinity treatments consisted of three levels of salinity stress (control), 5 and 10 dS / m sodium chloride as factor A. Jasmonic acid was used as factor B in two concentrations: 100 µm concentrations and control treatment (no foliar application). Nitroxin treatment was also done by root infusion, which was given to each pot in equal volume as factor C in two levels (inoculation and non-inoculation). The results of analysis of variance showed that different levels of salinity, jasmine acid and nitroxin and their interaction on the growth and development of peppermint plants were effective. By applying salt stress, proline content showed a significant increase. Also, the comparison of the mean of data showed that the highest percentage of peppermint herb essential oil (4.24%) was obtained in combination treatment of salinity levels of 5 dS / m sodium chloride and absence of foliar application of jasmonic acid and in inoculation with nitroxin. The highest amount of antioxidant activity of catalase (0/218 g / fresh weight) was obtained in 10 dS / m sodium chloride treatment. The comparison of the mean of data also showed that the highest expression of limonene 3 hydroxylase gene (2.5) obtained in salinity treatment was 5 dS / m sodium chloride and 100 µm jasmic acid solution and in inoculation with nitroxin.

Keywords: essential oil percentage, Salinity stress, Antioxidant enzymes, Gene expression.



**University of Zabol
Graduate school
Faculty of Agriculture
Department of Plant Breeding and Biotechnology
The Thesis Submitted for the Degree of Master of Science
in the field of Plant Breeding**

**The effects of jasmonic acid and nitroxin on
lim3h Gene expression and essential oil of
peppermint under salt stress**

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Oct 2017