University of Zabol
Graduate School
Faculty of Sciences
Department of Biology

The Thesis Submitted for the Degree of M.Sc
(in the field of Genetic)

Title

Effect of gibberellic acid on *SQS* (squalene synthase) gene expression and physiological characteristics of Glycyrrhiza glabra

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Abstract

Glycyrrhiza is one of the important medicinal plants that is in danger of extinction. that is taken into consideration for its valuable compounds such as glycyrrhizin. squalene synthase is an important enzyme in phenylpropanoid pathway. The literature indicated that plant hormones affect gene expression in plants and increase the production of secondary metabolites. In addition, the hormones stimulate the immune system through transcriptional activation of defense related genes, and in turns, increase induced resistance of plants. Therefore, in order to evaluate, the effect of gibberellic acid on SQS (squalene synthase) gene expression and physiological characteristics of Glycyrrhiza glabra, a experiment in a completely randomized design with three replications was conducted in University of Zabol. The data obtained from the physiological, and molecular measurements were analyzed using SAS v. 9/1. The results showed that the use of gibberellic acid increased the amount of chlorophyll a and b, carotenoid, anthocyanin, total flavonoid and SQS gene expression. So that with the increase in foliar spraying concentration, the amount of the above traits increased compared to the control level, and the highest amount of chlorophylls a and b, carotenoid, anthocyanin, total flavonoid and SQS gene expression was obtained during the application of gibberellic acid concentration of 70 ppm.

Keywords: Gibberellic acid, SQS gene, Glycyrrhiza glabra, Physiological traits