



**University of Zabol
Graduate school
Faculty of Agriculture
Department of Aquiculture**

**The Thesis Submitted for the Degree of Master of Science
Plant Breeding and Biotechnology**

**Assessment of expression pattern of *TaMYB73* gene encoding
transcription factor in irradiated bread wheat cultivars under salinity
stress**

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Abstract

Due to the increase in water salinity and its damages on plant production, evaluation of salinity effects on crop plants, is very important. The study of Molecular and physiological variations under salinity stress is a suitable solution that can help to identify the effective factors in tolerating this stress and selecting resistant cultivars. In this experiment, in order to study the effect of different dose of gamma rays (control, 150, 200 and 250 G) on physiological and *MYB* gene expression in four different cultivars of wheat, Sistan (Camel teeth, Kalk afghani, Bolanian brown and white) under salt stress conditions, an experiment was conducted in a research greenhouse of the Faculty of Agriculture, University of Zabol. Firstly, irradiated wheat seeds from a Sistan field research center were cultivated in a pot in a factorial arrangement in a completely randomized design with three replications. After emergence of seedlings to the 4-5 stage, salt stress was applied at 4 levels (0, 100, 200 and 300 dS/m). After harvesting, the traits were physiological traits (malondialdehyde and hydrogen peroxide) and as well as the pattern of expression of *MYB* gene was studied. The results indicated that different gamma-ray dosages had a significant effect on the promotion of traits related to salt tolerance in wheat, so that by increasing the dose of gamma treatments and salt stress, the resistance levels of the samples Compared to control, the highest expression of the studied genes was observed in 250g radionuclide treatment and salt stress of 300 ds/m. The lowest amount of malondialdehyde and hydrogen peroxide was obtained during the application of 250 g of radiation and no salinity, So that the highest expression of *MYB* gene and the lowest amount of MAD and H₂O₂ during the application of radiation under salinity stress conditions was related to wheat cultivar. Finally, it can be said, that among the cultivars studied, the camel's genotype showed a better response to salt and irradiation treatments, which was introduced as a resistant cultivar in this experiment.

Keywords: Gamma ray, Wheat cultivars of Sistan region, Real-time PCR technique