

Abstract

Low temperature is an important environmental barrier for plants survival, and limitation in their production. Plants adapted to low temperate by activation of a mechanism that will result in increased tolerance to frost. This adaptation is dictated by is the expression of some genes that responsible for a reaction to stress. In this study, the expression patterns of CBF1 gene in 16 selected tomato genotypes were studied, cold stress and treated with thiofer a natural plant antifreeze together with control, were used as treatments, and the expression of CBF1 gene was treatment using Real Time PCR. In all samples of 18sRNA gene was used as reference gene For normalization of gene expression. The experiment was factorial design based on randomized block design complete with three replications. The ANOVA was performed using SAS software and cluster analysis was performed by NTSYS software and treatment comparison test was done by Duncan multiple range test at 5% level. These results suggest that cold stress and natural antifreeze has a positive effect on the expression of genes involved in the CBF1 in response to cold stress. Among the genotypes studied, the highest level of gene expression in the two treatment, cold stress and natural plan antifreeze. In genotypes 950, equivalent to 4.2 and 5.7 higher than the control, respectively. The lowest CBF1 gene expression in the two treatment cold stress and natural antifreeze, in genotype Cheffalat, the equivalent 1.07 and 2.01, respectively, higher than the control. Results suggest that antifreeze treatment improves frost tolerance disregarding of the genotype.

Keywords: CBF1, cold stress, natural antifreeze plant, tomato, Real Time PCR.



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**Effect of natural antifreeze plant
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level in different tomato cultivars
using Real Time PCR**

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