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Analysis of mRNA expression of TCP gene family transcription factors using real Time PCR method in chromium (VI) stressed common bean (*Phaseolus vulgaris L.*)

Seda Keskın, Ilker Buyuk, Ekrem Bolukbası and **Sumer Aras**
Ankara University, Turkey

Plants can easily be exposed to abiotic and biotic stresses because of their sessile nature. Consequently, they have to cope with stress factors at genetic level. TCP proteins are one of the important transcription factor families, having important roles in plant growth and development, such as leaf growth, organogenesis and lateral branching. TCPs consist of four gene families and a 59-amino acid basic helix-loop-helix (bHLH) motif that allows DNA binding and protein-protein interactions. Teosinte Branched 1 (TB1) and Cycloidea (CYC), genes are the major determinants and negative regulators of floral symmetry and lateral branching. Proliferating Cell Factor 1 and 2 (PCF1 and PCF2) have roles in the control of cell proliferation and specifically bind to Proliferating Cell Nuclear Antigen (PCNA) promoter elements. On the other hand, hexavalent chromium is not necessary in plant growth and development and it is harmful for plants. In this study we aimed to investigate the changes in TCP gene expressions in *Phaseolus vulgaris* under chromium (VI) stress at mRNA level. For this purpose *Phaseolus vulgaris* cv. Zulbiye seeds have been grown in climate chamber and were exposed to various concentrations chromium for 3 and 24 hours. Then leaf and root samples of exposed and control plants were homogenized immediately using liquid nitrogen and RNAs were extracted by NucleoSpin® RNA Kit. cDNA synthesis was performed with 3 µL of RNA and BioLab cDNA Synthesis Kit. RT-PCR reactions were performed with Light Cycler® Nano System (Roche). Analysis of 5 Phvul-TCP gene expressions was conducted using reference gene of actin as a control for $2^{-\Delta\Delta Ct}$ normalization method. Consequently, results showed that TCP gene expression levels change under chromium stress. Data obtained from the study suggest that, TCP genes play a role in the stress response mechanism.

Biography

Seda Keskın is currentely persuing her Phd from Ankara University, Turkey. She has published her various journals in various international Journal.

ssedakeskinn@gmail.com

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