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Cloning and Expression Profiling of Polycomb Gene, RETINOBLASTOMA-RELATED (RBR) from Tomato *Solanum lycopersicum* L

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Abstract

Cell cycle regulation mechanisms appear to be conserved throughout eukaryotic evolution. One of the important proteins that involved in the regulation of cell cycle processes is RETINOBLASTOMA-RELATED protein (RBR), which is a negative regulator of the cell cycle progression controlling the G1/S transition in plants and animals. Here, we present the cloning, characterization and expression of a putative *SlRBR* gene in tomato *Solanum lycopersicum* L. by isolating cDNA clones correspond to *SlRBR* gene from tomato using primers designed from Solanaceae available ESTs based on conserved sequences between PcG genes in *Arabidopsis thaliana* and tomato. The *SlRBR* cDNAs were cloned into pBS plasmid and sequenced. Both 5' and 3' RACE were generated and sequenced. The flcDNA for *SlRBR* gene of 3,554 bp, was composed of a 5'UTR of 140 bp, ORF of 3,054 bp and a 3'UTR of 360 bp. The translated ORF encodes a polypeptide of 1,018 amino acids. Alignment of deduced amino acids indicated that there are highly conserved regions between tomato *SlRBR* predicted protein and plant hypothetical RBR gene family members. Both unrooted phylogenetic trees, constructed using maximum parsimony and maximum likelihood methods indicated that there is a close relationship between *SlRBR* predicted protein and RBR protein of *Nicotiana benthamiana*. QRT-PCR indicated that *SlRBR* gene expression was abundant in the closed floral bud tissues, where dividing, and pro weak in the unripe fruit tissues, and between these levels the expression at flower tissues.

Biography

Dr. Zainab Almutairi has completed her Ph.D in 2012 from Princess Noura bint Abdul Rahman University in Saudi Arabia. She is the vice head of Biology department in College of Science and Humanities in Salman bin Abdulaziz University. She is interested in plant genomics and has published sequences of three epigenes of tomato plant in NCBI GenBank in 2012.