03-1-45

Isolation and characterization of low temperature-induced Ca^{2+} binding protein cDNA clones in hot pepper(Capsicum annuum L.)

Ji Youn Lim , Sihyun Kim , Ji Seon Baek, Kwang-woong Lee*

Scool of Biological Sciences, Seoul National University, san 56-1 Shillim-dong, Kwanak-gu, Seoul 151-747, KOREA

Objective

To elucidate the relationship between the Ca^{2+}-binding protein and abiotics stress in hot pepper.

Material and Methods

1. Material

Plant::hot pepper (*Capsicum annuum* L. cv. Nockkwang)

2. Methods

Microarray for isolating clones that differentially expressed in cold stress

RNA isolation and RNA blot analysis for measuring the expression level

Results and Discussion

The cDNA microarray using 2.304 hot pepper (*Capsicum annuum* L.) cDNAs is analyzed to identify genes that were related to low temperature . By the result of sequencing analysis, Cabp is a 879bp nucleotide encoding 187amino acid -long peptide. Cam3 is 1060bp nucleotide encoding 148 amino acid -long peptide. TCH2 is 1022bp nucleotide encoding 169amino acid -long peptide. Using Southern blot analysis, these cDNA clones were existed as small copy number in genome. The result of Northern hybridization showed that mRNA level was gradually increased salt and osmotic stress with various concentraion of NaCl and PEG treatment, transcription level was gradually increased. It showed that the Ca^{2+}-binding protein have strong relation to water and salt stress mechanism. But, there is no evidence that they response to a plant phyto hormone abscisic acid (ABA). Therefore, it can be inferred that these genes are associated with ABA independent signal transduction cascade pathway containing the initial signal of drought stress and the expression of specific genes. And by the time course of cold stress (4°C) treatment, the expression of these genes did not have significant effects.

* Corresponding auther : Kwang-Woong Lee, TEL:880-6634, E-mail:kwlee @plaza.snu.ac.kr