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Study on two abiotic stress related genes from Chinese cabbage

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Objectives

To provide useful genes for stress-resistant crop plants, stress-induced genes are isolated and characterized from Chinese cabbage.

Materials and Methods

1. Material

Plant - *Brassica rapa* L. spp. *pekinensis* Inbred line Chiifu

Agrobacterium strain - GV3101

2. Methods

Stress-exposed Chinese cabbage → mRNA isolation → cDNA library construction → EST experiment → selection of highly expressed gene → expression study → transgenesis → functional study

Results and Discussion

Two small-size genes showing remarkable change in its expression upon cold treatment were isolated from cDNA microarray experiments. *BrUspA* (*Brassica rapa* L. ssp. *pekinensis* universal stress protein *UspA* homolog) belongs to multigene family and its transcript was observed only in leaf under normal condition. The accumulation of *BrUspA* transcripts was induced by low temperature below 4C and also increased under 50mM NaCl treatment and a high light flux of 500 $molm^{-2}s^{-1}$. In addition, the accumulation of *BrUspA* mRNAs was induced by heat shock above 37C. *BrCaEF* (calcium-binding EF-had protein homolog) was expressed in all organs and induced under the cold stress. We prepared *BrUspA*-overexpressing and *BrCaEF*-supressing transgenic *Arabidopsis* plants. We will further discuss transgenic *Arabidopsis* plants in the poster. [This work was supported by a grant from BioGreen 21 Program, Rural Development Administration, Republic of Korea]

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