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과제 일련번호: 7

## Transgenic Kongdae watermelon is produced with enhanced expression of a plant defensin gene, *J1-1*

Song-Mi Cho<sup>1,2</sup>, Soo-Jin Chung<sup>2</sup>, Sun-Jin Moon<sup>2</sup>, Kwang-Sang Kim<sup>2</sup>, Young-Cheol Kim<sup>1</sup>, Baik-Ho Cho<sup>1\*</sup>

<sup>1</sup>Department of Plant Biotechnology, College of Agriculture & Life Sciences, Chonnam National University, Gwangju 500-757, Korea; <sup>2</sup>PhytoCareTech Co., LTD.  
(\*chobh@chonnam.ac.kr)

Agricultural yield tends to be reduced constantly by various soil-borne pathogens. It was recently reported that *Fusarium oxysporium* f. sp. *lagenaria* infects gourd plant, a root stock for the growth of watermelon, and therefore alternative control methods are demanding to protect root stock against the new outbreaking pathogen. In order to develop disease-resistant root stock, a plant defensin-type protein gene, *J1-1*, is introduced into the genome of Kongdae watermelon under the control of CaMV 35S promoter by *Agrobacterium*-mediated transformation in this experiment. Using the cotyledon explants excised from germinated seedlings *in vitro*, an efficient plant regeneration system via organogenesis was established for Kongdae watermelon. Maximum shoot regeneration was obtained when the proximal parts of cotyledons from 5-day-old seedlings were cultured on MS medium with 3mg/L zeatin and 0.3mg/L IAA. Putative transgenic plants were selected in medium containing 100mg/L kanamycin, and then integration of the gene into the genomic DNA was demonstrated by PCR analysis. Successful integration of the gene in regenerated plants was again confirmed by PCR, genomic Southern blot, RT-PCR, and Northern blot analysis. Several T<sub>1</sub> lines were produced, and disease resistance of the T<sub>1</sub> lines are under estimation. The T<sub>1</sub> and T<sub>2</sub> lines of transgenic plants are under cultivation for the mass propagation in collaboration with Kochang Watermelon Experiment Station, Agricultural Technology Administration. Our preliminary results showed that some of the T<sub>1</sub> lines are more resistant to the infection with *Cladosporium cucumerium* than non-transgenic plants.

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† 주관과제명 (과제책임자): 형질전환에 의한 병 저항성 수박 대목 개발 (전남대학교 조백호)

‡ 총연구기간 (년차): 2002년 - 2006년 (4년차)