

(05-1-89)

Breeding and molecular characterization of transgenic cabbage (*Brassica rapa*) by using antimicrobial peptide (LL-37), gaegurin

Kang Kwon Kyoo^{1*}, Yu Jin Jung¹, Jin Heui Park¹, Soon Youl Lee² and Il Sup Nou³

¹Department of Horticulture, Hankyong National University, 67 Seokjeong-dong, Ansong city, Kyonggi-do 456-749, South Korea, ²Department of Genomic Engineering, Hankyong National University, 67 Seokjeong-dong, Ansong city, Kyonggi-do 456-749, South Korea ³Faculty of Plant Science and Production, Suncheon National University, Suncheon 540-742, Korea

Objectives

We have tried to isolate antimicrobial peptide, gaegurin, construct Ti-plasmid vector and conduct transformation to cabbage. Transgenic cabbage plants were exhibited significant enhancement of resistance to important bacterial diseases.

Materials and Methods

1. Materials : T1 generation transgenic cabbage plants (Osome).

2. Methods :

- Breeding of transgenic cabbage using *Agrobacterium tumefaciens*
- Molecular characterization (Southern blot, RT-PCR analysis, RealTime PCR, Northern blot)
- Disease screens of transgenic plants

Results and Discussion

An antimicrobial peptide (LL-37), gaegurin was introduced into cabbage (*B. rapa* L.) cotyledons via *Agrobacterium tumefaciens*-mediated transformation. Transgenic lines carrying the transgene were confirmed for integration into the cabbage genome using Southern blot hybridization. Transcription of the transgene in various transgenic lines was determined using RT-PCR or Northern blot analysis. Plants of selected transgenic lines were inoculated with a $2-3 \times 10^4$ conidial spores/ml suspension of the fungal pathogen *Alternaria brassicae*, the causal agent of cabbage black spot. Compared to control (non-transformed) plants, two transgenic lines showed enhanced resistance to black spot disease.