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Generation of Male-sterilized Transgenic Tobacco Using Tapetum-specific Promoter and Diphtheria Toxin-A

Kyuho Song, Jeongmin Lee[1], Moosik Kwon, Taeyoung Chung*

Department of Genetic Engineering, Sungkyunkwan University, Suwon 440-746, Korea
[1]The Institute of Life Science and Technology, Sungkyunkwan University, Suwon 440-746, Korea

Objectives

Male sterility plays an important role in plant breeding for the production of hybrid seed. The advantages of hybrid seeds are hybrid vigor, such as improved performance, enhanced disease resistance, increased uniformity, and higher crop yields compared to the parental lines.

Materials and Methods

Transgenic tobacco were generated by *Agrobacterium*-mediated transformation and selected by kanamycin selective media. Transgenic plants were screened by PCR.

Tapetum-specific gene, Bc9p was isolated from Chinese cabbage, and plant expression vector pGR011 was constructed by fusing the Bc9p promoter, the cytotoxic diphtheria toxin A-chain (*DTx*-A) gene and bar gene (Lee YH *et al.*, Plant Cell Rep 22: 268-73, 2003)

Results and Discussion

About 35 explants resistant to kanamycin were obtained by selective media. Some 15 transgenic plants were screened by PCR using specific primer sets to D*Tx*-A(500bp), Bc9p promoter(860bp) and NOS terminator(250bp). The copy numbers and expression of the gene, the phenotypical changes of the putative transgenic lines have been investigated. After confirmation these transgenic lines will be used as basic materials for study on the genetically engineered hybrid seed system and their genetics.

Corresponding author : Tae Young Chung, TEL: 031-290-7867, E-mail: chung@skku.ac.kr