(05-1-20)

The promoter of the gene encoding extensin like protein drives root-specific expression in transgenic plants

Young-Yun Gu, Hwa-Ran Kim, Sang-Ho Kang, Theresa Lee, Jung-Myung Bae[1], and Young-Mi Kim*

Gene Expression Team, National Institute of Agricultural Biotechnology, Suwon 441-707, Korea
[1]School of Life Sciences and Biotechnology, Korea University, Seoul 136-701, Korea

Objectives

Isolation and functional characterization of root-specific promoter in transgenic plants

Materials and Methods

1. Material

Plant - *Arabidopsis thaliana* Columbia

Agrobacterium strain - GV3101

2. Methods:

The promoter region(2kb) of gene encoding extensin-like protein was amplified by PCR and cloned into binary vector pBGWFS7 using gateway cloning system and transformed into *Arabidopsis* by floral spray. The T1 transformants were obtained after basta treatment and T2 seedlings were subject for GFP/GUS expression analysis. Total RNA was isolated from roots, leaves, stem, flower, and silique and cDNA was made from total RNA using the SuperScript first-strand synthesis system(Gibco BRL).

Results and Discussion

The promoter region of the gene encoding extensin like protein was isolated by PCR using whole genome databases of *Arabidopsis thaliana*. The promoter region was fused to a reporter gene encoding green fluorescent protein(GFP) and beta-glucuronidase(GUS) in a binary vector pBGWFS7 using gateway cloning system and was introduced into *Arabidopsis* plants. GUS staining was detected in root tissue of *Arabidopsis* T2 seedlings. The transient expression assays in carrot and sweet potato indicated that GUS activity of this promoter is comparable to its activity of CaMV 35S promoter in root. RT-PCR revealed that the extensin-like protein gene was specifically expressed in roots of *Arabidopsis* plant. A series of 5'-deletions of this promoter were cloned to GFP/GUS reporter vector and transformed into *Arabidopsis*. We are now going to find potentail cis elments that account for the tissue-specificity of this promoter.

* *Corresponding author* : Young Mi Kim, TEL: 031-299-1703, E-mail: ymk1205@rda.go.kr