

(05-1-62)

Characterization of *DRL1* and *AtELPs* gene

Cho, Kiu-Hyung, Choi, Hoonsung, Jun, Sang Eun¹, Yi, Young Byung,
Tsukaya, Hirokazu, Kim, Gyung-Tae*.

Faculty of Plant Biotechnology, Dong-A University, Busan 604-714, Korea.,

¹ University of Tokyo, Hongo 7-3-1, Bunkyo-ku 113-0033, Japan

Objectives

This study was carried out to find the direct factor, which is related to genetic interaction between meristem and differentiation of leaf organ.

Materials and Methods

1. Material

Plant *Arabidopsis thaliana*

Yeast strain - MaV203 strain (Genotype: *MAT*, *leu23*, 112, *trp1901*, *his3200*, *ade2101*, *gal4*, *gal80*, *SPAL10::URA3*, *GAL1::lacZ*, *HIS3_{UAS}* *GAL1::HIS3@LYS2*, *can1^R*, *cyh2^R*)

2. Methods

All process of yeast two hybrid analysis and the b-galactosidase assay was carried out according to the manufacture's protocol (Clontech Japan, Tokyo, Japan). SD medium (-Trp Leu His) containing 10 mM 3-amino-1,2,3-triazole (3-AT) was used for test of interaction between the prey and the bait.

Results and Discussion

Leaves are indeterminate organs and possess genes that are involved in establishing leaf dorsoventrality. These polarities are established relatively early during leaf development and are defined relative to the SAM. However, no direct factor has been found in the genetic interaction between meristem and differentiation of leaf organ. Here we identified the *Arabidopsis Deformed Root and Leaf1 (DRL1)* gene by transposon-tagging. This mutant had narrow and filamentous leaves with defective meristems. The phenotype of mutant leaves was abaxialized suggesting that *DRL1* gene is involved in the regulation of leaf differentiation. Analysis of double mutant with *filamentous flower*, which is defective in dorsoventral patterning of lateral organs, suggested that *DRL1* might regulate *YABBY* gene family. The *DRL1* gene was found to encode a novel protein that shows homology to Elongator-associate protein of yeast KTI12. The expression of *DRL1* gene of *Arabidopsis* can complement the yeast KTI12 suggesting that *DRL1* may act as an Elongator-associate protein in higher organism. To characterize the function of Elongator-associate protein, we have identified the genes encoding RNA polymerase II (RNAPII) Elongator subunits (*AtELPs*) of *Arabidopsis*. The molecular architecture of *DRL1* and *AtELPs* has investigated by the use of yeast two-hybrid system. Based on these results, we will discuss the putative function of *DRL1* and *AtELPs*.

* Corresponding author : Kim, G.-T., TEL: 051-200-7519, E-mail: kimgt@donga.ac.kr