(05-1-32)

The *Arabidopsis* SUMO E3 ligase negatively regulates the salicylic acid-mediated defense pathway

Jiyoung Lee[1], Kenji Miura[2], JingBo Jin[2], Chan Yul Yoo[2], Ray A.Bressan[2], Paul M. Hasegawa[2], Jaesung Nam[3], and Dae-Jin Yun[1,*]

[1]Division of Applied Life Science, Graduate School of Gyeongsang National University, Jinju 660-701;
[2]Center for Plant Environmental Stress Physiology, Purdue University, West Lafayette, IN 47906, USA;
[3]Faculty of Plant Biotechnology, Dong-A University, Busan, 604-714, Korea

Objectives

To find the function of *Arabidopsis* SUMO E3 ligase (*AtSIZ1*) in the plant defense response pathway.

Materials and Methods

1. Material

   Plant-*Arabidopsis thaliana* plants (ecotype C24), and T-DNA insertional mutated alleles of *AtSIZ1*

2. Methods

   Pathogen test, Northern and microarrary analysis, RT-PCR analysis

Results and Discussion

Small Ubiquitin-like Modifier (SUMO) family proteins covalently attached to other proteins as post-translational modifications. SUMO modifies many proteins that participate in diverse cellular processes including transcriptional regulation, nuclear transport, maintenance of genome integrity, and signal transduction. Systemic acquired resistance (SAR) is a plant immune response induced after a local infection by necrotizing pathogen. Here, we show that the *Arabidopsis* SUMO E3 ligase (*AtSIZ1*) regulates pathogen defense response. Mutation in the *SIZ1* gene showed resistant to virulence bacteria strain *pseudomonas syringae* DC3000. Northern and microarrary analysis reveals that pathogenesis-inducible genes are constitutively expressed in *siz1* seedlings without pathogen treatment. However, jasmonate induced the expression of PDF1.2 to the same extent in *siz1* and W.T seedlings. High temperature (28?) suppresses SAmediated defense response pathway. When *siz1* plants were grown at 28?, they show similar morphology to that of wild-type and PR gene expression level. Together, these results suggest that *AtSIZ1* regulates SA-mediated defense pathway.

[Supported by EB-NCRC and Biogreen 21 program]

* *Corresponding author* : Dae-Jin Yun, TEL: 055-751-6256, E-mail: djyun@gsnu.ac.kr