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***Arabidopsis* HOS15, a human TBL1-like WD-40 repeat protein, modulates plant stress tolerance and flowering**

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Objectives

We identified and characterized one mutant, *hos15-1* (for high expression of osmotically responsive genes), which displays the super-induction of luminescence by low temperature, exogenous abscisic acid (ABA), or osmotic stress (NaCl).

Materials and Methods

1. Material

Plant-*Arabidopsis thaliana* plants (ecotype C24) expressing *RD29A* promoter:luciferase (provided by Jian-Kang Zhu). Tagging vector-pSK1015 (provided by Prof. Detlef Weigel)

2. Methods

Arabidopsis plants were mutagenized with an *Agrobacterium tumefaciens*-mediated T-DNA transformation using the activation tagging. Seeds from T2 plants which are resistance to bialaphos (30mg/L) were used for screening mutants sensitive to NaCl.

Results and Discussion

The expression of the endogenous *RD29A* and other stress responsive genes but not the stress-induced transcription regulator, CBF, was super-induced in the *hos15-1* mutant plants compared to wild type plants. The *hos15-1* plants are more sensitive to freezing treatment. The seed germination of *hos15-1* appears to be more sensitive to inhibition by ABA or NaCl. The *HOS15* encodes a protein with sequence identity to the human WD-40 repeat protein *TBL1* which is a component of the chromatin repression complex. It is well documented that the chromatin repression complex interacts with histone protein. In the yeast two hybrid assay we found that HOS15 interacts with H4. Introducing the genomic fragment, containing the wild type *HOS15* gene, into *hos15-1* mutant plants complemented *hos15-1* mutant phenotype. HOS15 is localized to the nucleus. Together, these results suggest that HOS15 is an important component of the stress signaling and flowering regulatory system of plant.

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