Characterization of plant orthologue of *ABCA1* in *Arabidopsis thaliana*

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ATP-binding cassette (ABC) proteins constitute a large superfamily, which occur all organisms inverstigated to date ranging from bacteria to human. In plant, cloning of ABC proteins were reported time to time, and *Arabidopsis thaliana* research has revealed that plants are a big resourse of this protein family, i.e. *Arabidopsis* genome contains a total of ca. 120 open reading frames (ORFs) that encode ABC proteins, which are more than doubleof human ones. AtABCA1 of *Arabidopsis*, the counterpart of human ABCA1 functioning as a regulator of cellular cholesterol homeostasis, is a single copy gene in the genome, whereas its orthologue is not found in yeast and even in rice. This occurrence of hull size ABCA1 suggests that AtABCA1 has physiological functions specific to dicots, or other half size members of ABCA memberes may complement the roles of ABCA1 in rice.

In this study we isolated full-length *AtABCA1* cDNA and carried out the detailed expression analysis of AtABCA1 gene in *Arabidopsis*. Northern analysis of *AtABCA1* in *Arabidopsis* revealed that *AtABCA1* was expressed in all organs, especially higher expression was observed in the stem and the root than leaves. GUS plant analysis showed that AtABCA1 was only expressed in the vascular tissues of root, stem, and leaf through out the growth stage from seedling to adult plant. These results suggest that AtABCA1 is involved in the long-distance transport of endogenous substances. In addition, strong expression was also observed in mature pollen. We determined the subcellular localization of AtABCA1 by use of GFP-fusion prote that was stably expressed in *Arabidopsis* transformant.

When the response of *AtABCA1* gene expression to various plant hormone and related compounds was analyzed with northern blot, its mRNA level increased by abscisic acid treatment, whereas auxin and cytokinin as well as gibberellin did not storongly influence the gene expression. The positive response to abscisic acid was further analyzed in the time course expreriment to show that the expression sharply induced in half a day and was kept at high level up to 7 days. Further investigation on the phenotype analysis under various stress conditions has been done.