

Analysis of Salt Tolerant Mechanism in *Suaeda japonica*

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Summary

Suaeda japonica Makino is a halophyte and grows at the shore of Ariake sea in Japan. The seeds maintained 75% germination rates on the medium containing 0.7 M NaCl. We have previously been reported that very high levels of glycinebetaine (betaine), compatible solute, were kept in the seedlings under salt stress. It is synthesized from betaine-aldehyde by betaine-aldehyde dehydrogenase (BADH). The decrease in germination rates by NaCl was cancelled by simultaneous addition of betaine-aldehyde and/or betaine. The seeds of *S. japonica* could be germinated on the medium with relatively high concentrations of polyethylene glycol (PEG), as substitute for drought stress, and endogenous contents of betaine also increased. Although some drought stress-related gene expression was known to be induced by ABA, application of ABA did not affected seed germination under salt stress in *S. japonica*. Effectiveness of betaine-aldehyde for seed germination under salt stress was disappeared by simultaneous addition of inhibitors for mRNA and/or protein synthesis. Therefore, salt stress may be induced gene expression for BADH. The cDNA library was synthesized from mRNAs isolated from seedlings cultivated on medium with NaCl and tried to isolate BADH cDNA clone. Using two primers synthesized and genomic DNA from *S. japonica* as template, PCR was carried out, and about 300bp fragment was produced. Using this fragment as probe, cDNA library was screened. However, the BADH cDNA clone could not be isolated. Because the fragment contained intron sequence. Efforts are directed to obtaining gene encoding BADH from cDNA and genomic DNA library in *S. japonica*.