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Analysis of Physiological Responses to Salt Stress in Soybean Mutant Lines

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[Introduction]
It has been estimated that more than 20% of the world's agricultural land would be affected by salt. Soybean [*Glycine max* (L.) merr.] is a moderately salt-sensitive crop; therefore, soil salinity causes severe yield reduction. The objective of this study was to select a mutant line with high salt resistance and evaluate physiological responses to salt stress.

[Materials and Methods]
In this study, salt sensitive cultivar 'Gwangan' and 'Daepung', and salt-tolerant S100, PI483463 (*Glycine soja*), and mutant were used. Soybean genotypes were planted in 50 port plastic trays in the greenhouse. At the V2 stage,150mM of sodium chloride (NaCl) were applied for 10 days. Chlorophyll fluorescence, chlorophyll content (SPAD), and ETR curves were measured by using Monitoring pen and SPAD-502 instrument. For chloride content measurement, soybean plants were separately sampled into leaves, stems, and roots. Oven-dried samples were ground into powder and then mixed dissolving with distilled water. The supernatant solution was used to measure CL- content with an ion-selective electrode.

[Results and Discussion]
Salt accumulation inhibits plant growth. In this study, we evaluated NaCl accumulation between salt susceptible genotypes and salt tolerant genotypes including mutant line. In leaves, the mutant, S100 and PI483463 had 10.79 mg/g, 10.33mg/g, and 10.47 mg/g of chloride contents, respectively. However, Daepung had 21.30mg/g of chloride content. In roots, the mutant had higher chloride content than those of the others. Also, salt tolerant genotypes had lower Na+ contents than salt susceptible Daepung in leaves, stems, and roots. PI483463 had the lowest content of NA+ in stems and roots. Based on the results, we plan to identify the candidate gene associated with salt tolerance in soybean mutant.

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