P045

Gemination Rates and Changes in Carbohydrate and Proline Contents in NaCl-treated Rice Seeds

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Objectives

The aim of the present work was to study the effects of salinity(NaCl) on the metabolism of carbohydrate. An additional aim was to observe germination rate under salt stress.

Materials and Methods

- Rice (cv. Gancheokbyeo)
- NaCl treatment : Rice seeds was treated with different NaCl concentration (0, 100, 150 mM) for 0, 3, 5 days.
- Carbohydrate analysis : Anthrone method (UV-spectrophotometer)
- Proline analysis : [(ug proline/ml × ml toluene)/115.5ug/umole]/[g sample)/5]
  = umole proline/g of fresh weight material

Results and Discussion

Proline were highly accumulated with an increase in NaCl concentration.. Carbohydrates metabolism was remarkably influenced by NaCl concentration; that is, sugar contents were increased, whereas starch contents were decreased due to the decomposition to soluble sugars during germination. It was concluded that high saline conditions strongly inhibited soluble sugars to be used for synthesizing main metabolites such as amino acids, organic acids, etc.

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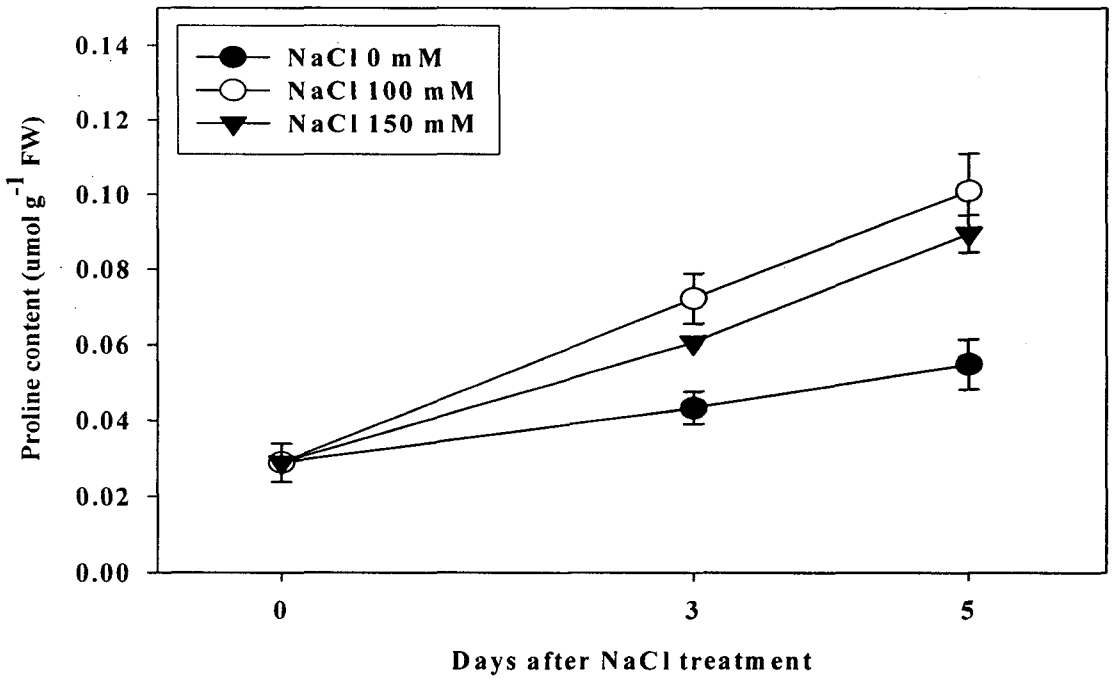

Fig. 1. Change in proline contents in germinating rice seeds under different NaCl concentrations

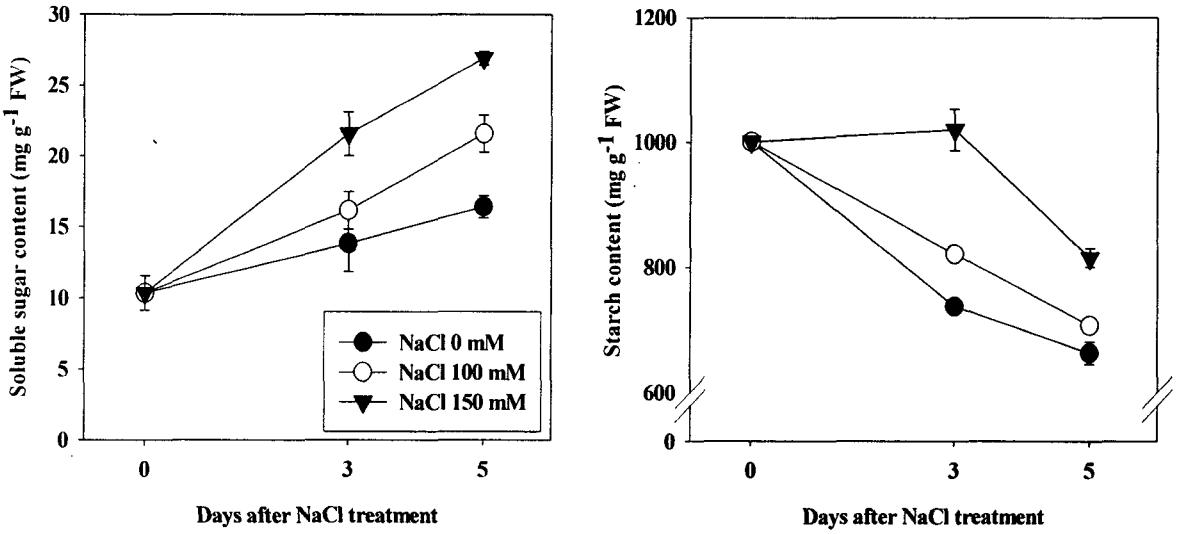

Fig. 2. Daily changes in soluble sugar and starch contents in germinating rice seeds under different NaCl concentration.