

P 82

Analysis of Freezing Tolerance based on expression of a freezing Tolerance- related genes in Rye (*Secale cereale* L.)

Dae In Kim, Cheol Ho Hwang*, Jung Gon Kim¹¹School of BioResource Sciences, Dankook University, NCES RDA

Objectives

This study was aimed to overcome the unstable variables inherent to environmental conditions in the field tests to analyze freezing tolerance in Rye. In order to measure a freezing tolerance, the Ion-leakage test and western blot analysis were performed with two cultivars of Rye, Kodiak and Paldanghomil and one Tapdongmil and Dongbori 1ho for comparison since the previous studies had shown the degree of freeze tolerance of the wheat and the barley. The results will be used for molecular markers for freeze tolerance in overwintering crops including Rye.

Materials and Methods

1. Materials: Rye (Kodiak and Paldanghomil), Wheat (Tapdong-

mil) and Barley (Dongbori 1ho) before or after being treated at 6/4°C for 8/16hrs (day/night) for cold acclimation.

2. Methods: Ion Leakage Test, Western blot analysis

Results and Discussion

- The ion leakage test had shown the higher levels of freezing tolerance as increasing times of exposure to low temperatures and different levels of freezing tolerance according to four cultivars examined.
- Western analyses using the CLP and Dhn5 antisera had shown no direct correlations to what we had obtained from the field test for freezing tolerance in the four plants
- Because the antibodies used for examination were raised with the antigen originated from barley, the highest signal shown with barley may be explained.

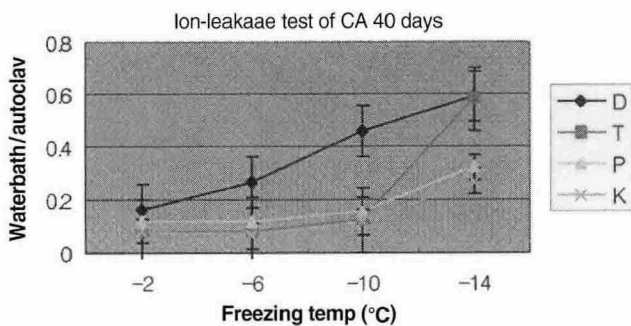


Figure 1. Ion leakage test at 40 days for cold acclimation. D (Dongbori 1ho), T (Tapdongmil), P (Paldanghomil), Ko (Kodiakhomil)

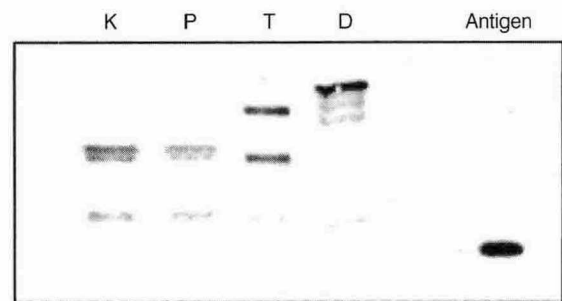


Figure 2. Western analysis of the total proteins from the leaf after 10 days of cold acclimation probed with Dhn5 antiserum. D (Dongbori 1ho), T (Tapdongmil), P (Paldanghomil), K (Kodiakhomil)