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Effects of Cold-Dark Treatment on Fructan Metabolism in Barley

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Abstract:

To clarify the relationship between fructans and snow tolerance in barley (*Hordeum vulgare* L. cv. Minorimugi), changes in fructans and fructan hydrolase were studied at 3°C in darkness and after the treatment.

Concentration of fructans in basal stem decreased under the treatment, while activities of phleinase (β -2, 6 fructan hydrolase) and inulinase (β -2, 1 fructan hydrolase) remained constant. Inulinase activity was higher than phleinase. During the recovery at 20°C under light condition after the cold-dark treatment, phleinase activity increased rapidly and decreased thereafter. The concentration of fructans was inversely related to the activity of phleinase, while inulinase remained at a low level. Functions of inulinase and phleinase under snow and after thaw were discussed.

Keywords:

Barley, Fructan, Fructan hydrolase, *Hordeum vulgare* L. Inulinase, Nonstructural carbohydrate, Phleinase, Snow tolerance

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