Responses of glycolytic, fermentative and antioxidant enzymes to hypoxia in barley. (C02-yun064133-Poster)

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Abstract:

Barley plants growing in the paddy field suffer from wet injury especially during the rainy season in Korea. To understand roles of glycolytic, fermentative and antioxidant enzymes under wet-injury conditions, we examined enzyme activities and isozyme profiles in young barley plants under hypoxia. Activity of alcohol dehydrogenase (ADH) increased over 200% in roots and shoots of plants under hypoxia for 2 weeks. Activity of lactate dehydrogenase (LDH) increased 33 and 5%, respectively, in roots and shoots under hypoxia. Activity of sucrose synthase (SuSy) increased about 200% in roots under hypoxia. However, activities of fructokinase (FK), glucokinase (GK) changed little both in roots and shoots under hypoxia. Activities of catalase (CAT) and peroxides (POX) increased from 4 to 23% in roots and shoots under hypoxia. There was no indication of isozyme induction in CAT and POX in response to hypoxia. Highly sensitive response of ADH and SuSy to hypoxia may indicate their possible roles in resistance mechanism to wet-injury in barley. (This work was supported by grant from Rural Development Administration, Korea).

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Presentation Information:

Presentation Date: Monday, November 11, 2002
Presentation Time: 10:00 am-12:00 pm
Poster Board Number: 1130L

Keywords:

barley, hypoxia, fermentation, antioxidant enzymes