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Cloning of albino-associated genes from rice (Dongjinbyeo) by cDNA-representational difference analysis

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Objectives

We have tried to specify candidate genes for albino phenomenon through cDNA-RDA from each of albino phenotype Dongjinbyeo (tester) / normal phenotype one (driver) and vice versa.

Materials and Methods

1. Material
   - Plant : normal phenotype and albino phenotype Dongjinbyeo
   - Sampling at 3~4 leaf stage (about 3 weeks after seeding)
2. Methods
   - Preparation of tester and driver : total RNA extraction, mRNA extraction, double stranded cDNA synthesis, restriction of cDNA with *Dpn* II, adaptor ligation to tester and driver, generation of amplicons
   - cDNA-RDA: by the methods of Lisitsyn *et al.* (Science 259 : 946-951, 1993) and Hubank and Schatz (Nucleic Acids Res. 22 : 5640-5648, 1994)

Results and Discussion

Albino phenomenon occurring naturally deteriorates the seedling purity. Especially, the tendency of albino occurrence is increased in high temperature during the seed germination. The albino emerging ratio germinated 10 days old seedling at 40℃ was increased almost 2 times higher than that at 25℃. This phenomenon occurs through the most of all cultivars and tends to be unstably regulated by expressed genes. In our study, we analyzed albino phenotype plants occurring spontaneously and normal phenotype plants by cDNA-representational difference analysis (RDA). Total mRNA was extracted from albino and normal phenotype rice (Dongjinbyeo). And then, to specify candidate genes for albino phenomenon, the cDNA fragments through cDNA-RDA were obtained and analyzed from each of albino phenotype Dongjinbyeo (tester) / normal phenotype one (driver) and vice versa, respectively. Finally, several cDNA clones in each experiment were obtained and now we are investigating these genes to identify and reveal the function of albinism.

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