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Rapid Release of Generation by Anther Culture of Transformed Rice

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In the previous study the transgenic rice plants over-expressing the *Arabidopsis* H⁺/Ca²⁺ antiporter *CAX 1* gene were selected 11 lines transformed plants. This study was carried out to investigate effects of a rapid breeding scheme which is connected with conventional breeding method and anther culture. To development of cultivars, regenerated plants were had from the anther culture using T₃ transformed lines. After PCR and Southern analysis, we selected 2 plants with *CAX 1* gene out of 29 regenerated plants. These plants will be study the agronomic characters in the field. This breeding scheme proved to be a development of cultivars by method of anther culture. This study was performed with the support of "Site Joint Cooperating Agricultural Research-promoting Project (Project No. 20070501-080-004- 001-01-00)", RDA, Republic of Korea.

Key words: Rice, *CAX 1*, anther culture, transformed plants, breeding

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Development of New Cultivars of Transformed Rice by Molecular Breeding

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This study was carried out to develop new cultivars using the T₅ generation of transformed rice by PCR analysis with DNA marker in each generation (from T₃ to T₅). In the previous study, we successfully developed the transgenic rice plants over-expressing the *Arabidopsis* H⁺/Ca²⁺ antiporter *CAX 1* (accession no. U57411) gene. The major agronomic traits such as culm length, panicle length and panicle number of 7 lines at transgenic plants (T₅) were similar to wild type. Also these lines appeared to have cold resistance compared with wild types. Marker assisted selection (MAS) will not only reduce the labor and cost in developing new rice cultivars, but evaluate the application of molecular markers to real breeding programs. This study was performed with the support of "Site Joint Cooperating Agricultural Research-promoting Project (Project No. 20070501-080-004-001-01-00)", RDA, Republic of Korea.

Key words: Rice, molecular breeding, *CAX 1*, MAS