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Characteristics of plant regenerated through Anther Culture using GM rice

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[Introduction]

Anther culture technique offers a great opportunities for accelerating breeding progress and improves grain quality characters. Comparing to the conventional method, the production of the double haploids through anther culture is a rapid approach to homozygosity, shortening the timeline required for the development of a new rice cultivars. Haploids are also valuable for the detection and repair of desirable recessive traits to introduced mutation or hybridization. This study was done to characterize gene pool derived from anther culture.

[Materials and Methods]

The materials HV8, HV23 with drought gene and control Ilmi were grown during the summer of 2015 on the field of Kyungpook National University Research Facilities in Gun-wi, Gyeongbuk, Korea. Spikes with flag leaf sheath of these plants were sampled 18 to 20 days before heading. Cutting and inoculating aseptically when anthers of spikelet in the middle spikes and cultured on N6-Y1 medium. Rice anthers cultured using both one-step and two-step culture methods. The regenerated plantlets were placed in a box of 1 g/L HYPOneX® Professional 20-20-20 (HYPOneX COPERATION, USA) for 7 days for root growth. Haploid plantlets derived from anther culture were treated with 0.2 % colchicine for 1 day.

[Results and Discussions]

Rice anthers cultured using both one-step and two-step culture methods. Callus induction rate was Ilmi, HV8, and HV23 to 17.8, 7.0, 2.8 % in one-step culture, respectively and 23.0, 14.2, 22.3 % in two-step culture, respectively. Plant regeneration rate was Ilmi, HV8, and HV23 to 16.2, 9.5, 2.3 % in one-step culture, respectively, and 13.9, 2.8, 8.7 % in two-step culture, respectively. It takes time plant regeneration 30 days. On average, acclimation treatment for two weeks was enough to adapt to the outside environment. After 60 days, heading is started. From then after 45 days, plants successed colchicine treatment were produced seed. The plants were transferred to field Ilmi, HV8, and HV23 to 186, 49, 200. We have successful to developing of global GM rice on the large-scale raising system for excellent events.

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