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Development of SNP marker set for discriminating among Korean rice varieties and imported rice in Korea

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Abstract

In accordance with the opening of the Korean rice market, this study was focused on establishment of database for discriminating the Korean rice varieties and imported brand rices using DNA markers. In this study, the SNP markers were developed using single nucleotide polymorphisms between the reference sequences of japonica and them of 40 brand rices which collected in Australia, China, Thailand, United States and Vietnam. The developed SNP markers were screened to a total of 360 rices including 320 Korean rice varieties and 40 imported brand rices. We selected polymorphic markers among Korean bred rice varieties and imported brand rices. The selected markers were classified into 3 grades. The markers of A grade produced DNA band in 360 rices of 30~40%, B grades produced in 40~60%, and C grades produced bands over 60% rices. First, we tried to set-up the discriminating system using the minimum SNP markers of A grade. Especially, a set of sixteen SNP markers could identify among Korean bred rice varieties and imported brand rices. Additionally, some SNP markers like NSb for *Pib* gene, JJ80-T for *Pi5* and YL155/YL87 for *Pita* which linked to resistance genes to blast were used to fingerprinting system. These markers were set-up as multiplex set for enhancing the identification efficiency among rice varieties. Finally, the selected SNP markers would be used to the fluidigm assay to construct the database for elaborate discrimination of rice varieties.

Keywords: rice, imported rice, SNP, discrimination, fluidigm

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