

Genotyping of buffalo major histocompatibility complex DRB3 genes using high resolution melting point analysis

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Abstract

Major histocompatibility complex (MHC) play a major role in immune responses. Polymorphisms at MHC molecules are associated with the recognition and response to non-self-peptides. Among Bovinae MHC genes, DRB3 is currently used for population genetic and disease association studies. In the present study, the second exon of Bubu-DRB3 was amplified by polymerase chain reaction (PCR), and polymorphisms were detected by three methods of High-resolution melting (HRM), restriction fragment length polymorphisms (RFLP) and direct sequencing. We aimed at genotyping of buffalo DRB3 gene, investigating the feasibility and compatibility of HRM with the current methods. Results of HRM analysis was in concordance with RFLP and direct sequencing. HRM analysis can be used as an analytical method for a large number of buffalo samples. We have concluded that HRM analysis can be used for genotyping of DRB3 and MHC diversity as well as genotype and phenotype association studies. However, lack of allelic discrimination is a notable limitation in HRM method.

Keywords: Major histocompatibility complex, Buffalo, Genotyping, Melting point

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