Polymorphism in the 5'-UTR of the insulin-like growth factor I gene associated with production traits in Chinese cattle


College of Animal Science and Technology, Northwest A & F University, Yangling, Shaanxi, China

Corresponding author: H. Chen
E-mail: qinten306@163.com

Received July 12, 2013
Accepted October 29, 2013
Published August 29, 2014
DOI http://dx.doi.org/10.4238/2014.August.29.12

ABSTRACT. The insulin-like growth factor I (IGF-1) gene plays important roles in the growth and body composition of animals. Serum IGF1 concentration has been associated with growth traits in many livestock species. We found a polymorphism of cattle IGFl-TasI locus and analyzed the distribution of alleles in three cattle breeds, including Qinhuang, Nanyang, and Chinese Holstein. PCR-RFLP analysis showed that allele A was the dominant allele. The frequencies of allele A varied from 0.84 to 0.97. Distributions of genotypic and allelic frequencies were significantly different among breeds. Polymorphism of the IGFl gene was significantly affecting hucklebone width at 6 months in the Nanyang breed and protein and fat yield of the third lactation in Chinese Holstein cattle. Individuals with allele C had a significantly higher performance in production traits.

Key words: IGF1 gene; PCR-RFLP; Dairy performance; Chinese cattle