GMR Genetics and Molecular Research
Online Journal
ISSN:1676-5680

Polymorphism of somatostatin gene and its association with growth traits in Chinese cattle

L. Gao[1], L.S. Zan[1,2], H.B. Wang[1,2], R.J. Hao[1] and X. Zhong[1]

[1]College of Animal Science and Technology, Northwest A&F University, Yangling, Shaanxi, P.R. China
[2]National Beef Cattle Improvement Center of Northwest A&F University, Yangling, Shaanxi, P.R. China

Corresponding author: L.S. Zan
E-mail: zanls@yahoo.com.cn

Genet. Mol. Res. 10 (2): 703-711 (2011)
Received August 23, 2010
Accepted December 3, 2010
Published April 19, 2011
DOI 10.4238/vol10-2gmr1029

ABSTRACT. Somatostatins play a crucial role in the regulation of growth and development in vertebrates, especially muscle growth. We assessed the association of somatostatin gene polymorphisms with growth traits by PCR-SSCP (polymerase chain reaction-single strand conformation polymorphism) and DNA sequencing methods in 694 individuals from six Chinese cattle breeds. A novel single nucleotide polymorphism, G126A, was detected, and significant associations were found with body length, body height, hip width, heart girth, and hucklebone width index. Polymorphism of the somatostatin gene was found to be highly associated with growth traits in the Qinchuan breed at various ages. Gene frequency analysis showed significant differences among the breeds. Individuals with genotype AA had significantly lower body height, body length, hip width, and hucklebone width values compared to AG at 1.5 years old, and had significantly lower hip width, body length and hucklebone width compared to AG at 2 years old. At 2.5 years old, populations with genotype AA had significantly lower body length, hip width

and hucklebone width than AG individuals, with the exception of the Luxi breed, in which two genotypes were found. The Luxi and Ximentaer crossbreed had the lowest frequency of the G allele, while the highest G allele frequencies were found in the Luxi breed.

Key words: Cattle; SST gene; PCR-SSCP; Growth traits; SNPs

