



Polymorphisms in the bovine *CIDEA* gene are associated with body measurement traits and meat quality traits in Qinchuan cattle

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Genet. Mol. Res. 14 (3): 9013-9023 (2015)

Received December 18, 2014

Accepted May 28, 2015

Published August 7, 2015

DOI <http://dx.doi.org/10.4238/2015.August.7.10>

ABSTRACT. Previous studies have shown that the cell death-inducing DFF45-like effector-C (*CIDEA*) gene is involved in lipid storage and energy metabolism, suggesting that it is a potential candidate gene that affects body measurement traits (BMTs) and meat quality traits (MQTs). The aim of this study was to identify polymorphisms of the bovine *CIDEA* gene and analyze their possible associations with BMTs and MQTs in 531 randomly selected Qinchuan cattle aged between 18 and 24 months. DNA sequencing and polymerase chain reaction-restriction fragment length polymorphism were employed to detect *CIDEA* single nucleotide polymorphisms (SNPs). We found five SNPs: two in exon 5 (SNP1, g.9815G>A and SNP2, g.9924C>T) and three in the 3'-untranslated region (SNP3, g.13281C>T; SNP4, g.13297A>G; and SNP5, g.13307G>A). SNP1 was a missense mutation that resulted in an arginine to glutamine amino acid change, and exhibited two genotypes (GG and AG). SNP2 was a synonymous mutation that exhibited three

genotypes (CC, CT, and TT). SNP3, 4, and 5 were completely linked, and only exhibited two genotypes (CC-AA-GG and CT-AG-GA). We found significant associations between these polymorphisms and BMTs and MQTs ($P < 0.05$); GG, CT, and CT-AG-GA appeared to be the most beneficial genotypes. Therefore, *CIDEC* may affect BMTs and MQTs in Qinchuan cattle, and could be used in marker-assisted selection.

Key words: *CIDEC*; Single nucleotide polymorphism; Body measurement trait; Meat quality trait; Qinchuan cattle