



Two novel SNPs of the 3-hydroxy-3-methylglutaryl coenzyme A reductase gene associated with growth and meat quality traits in the chicken

Y. Wei¹, S.K. Zhu¹, S. Zhang¹, R.L. Han^{1,2}, Y.D. Tian^{1,2}, G.R. Sun^{1,2} and X.T. Kang^{1,2}

¹College of Animal Science and Veterinary Medicine, Henan Agricultural University, Zhengzhou, China

²Henan Innovative Engineering Research Center of Poultry Germplasm Resource, Zhengzhou, China

Corresponding author: X.T. Kang
E-mail: xtkang2001@263.net

Corresponding author: Y. Wei
E-mail: weiyang614@163.com

Genet. Mol. Res. 11 (4): 4765-4774 (2012)

Received January 19, 2012

Accepted June 8, 2012

Published November 12, 2012

DOI <http://dx.doi.org/10.4238/2012.November.12.10>

ABSTRACT. The enzyme 3-hydroxy-3-methylglutaryl coenzyme A reductase (HMGCR) is rate-limiting for metabolism of cholesterol; it plays an important role in endogenous cholesterol biosynthesis. We used DNA sequencing technology and created restriction site PCR-RFLP to detect *HMGCR* SNPs in an F₂ resource population of Gushi chicken and Anka broilers. We found a G/T mutation (Gln/His) in exon 17 and a T/C mutation (Pro/Pro) in exon 18. Based on association analysis of these *HMGCR* polymorphisms in 864 Gushi/Anka F₂ hybrids, these two mutations have significant effects on growth, carcass, meat quality, and lipid concentration.

Key words: *HMGCR* gene; Single nucleotide polymorphisms; Chicken; Growth and meat quality association; Economic traits