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A novel polymorphism of the *lactoferrin* gene and its association with milk composition and body traits in dairy goats

B.L. Guo[1], Y. Jiao[1], C. He[1], L.X. Wei[1], Z.H. Chang[1], X.P. Yue[1], X.Y. Lan[1], H. Chen[1,2] and C.Z. Lei[1]

[1]Shaanxi Key Laboratory of Molecular Biology for Agriculture, College of Animal Science and Technology, Northwest A & F University, Yangling, Shaanxi, P.R. China
[2]Institute of Cellular and Molecular Biology, Xuzhou Normal University, Xuzhou, Jiangsu, P.R. China

Corresponding author: C.Z. Lei
E-mail: leichuzhao1118@126.com

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ABSTRACT. Milk composition and body measurement traits, influenced by genes and environmental factors, play important roles in value assessments of efficiency and productivity in dairy goats. Lactoferrin (LF), involved in the efficient expression of protein in milk, is also an anabolic factor in skeletal tissue and a potent osteoblast survival factor. Therefore, it is an important candidate gene for milk composition and body measurement trait selection in marker-assisted selection. We employed PCR-SSCP and DNA sequencing to screen the genetic variations of the *LF* gene in 549 Chinese dairy goats. A novel single-nucleotide polymorphism (SNP) (G198A in exon II) of the *LF* gene was detected. The frequencies of the AA genotype were 0.0285 and 0.0261 in GZ and SN populations, respectively. Both populations were found to have low levels of polymorphism and were in Hardy-Weinberg disequilibrium ($P < 0.05$). We found significant ($P < 0.05$) associations

of the SNP marker with milk protein and acidity in the total population; animals with the AA genotype had higher mean values for milk protein than those with the GA genotype. Animals with genotype AA had higher mean values for withers height than those with genotype GG ($P < 0.05$). We concluded that this SNP of the *LF* gene has potential as a genetic marker for milk composition and body traits in dairy goat breeding.

Key words: Goat; *LF* gene; SNP; PCR-SSCP; Milk composition; Body measurement traits

