A novel polymorphism of the myogenin gene is associated with body measurement traits in native Chinese breeds

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ABSTRACT. Using PCR-SSCP and DNA sequencing technology, we examined the association of single nucleotide polymorphisms (SNPs) in the bovine MyoG gene with body measurement traits in 779 individuals of six native Chinese cattle breeds, namely Luxi, Luxi × Simmental crossbred, Nanyang, Xia’nan, Jiaxian red, and Qinhuang. A novel SNP, T314C, was detected. Allelic frequencies of MyoG-T/C in the six breeds were 0.8308/0.1692, 0.8774/0.1226, 0.8021/0.1979, 0.8209/0.1791, 0.8630/0.1370, 0.8044/0.1956, respectively. Least squares analysis revealed a significant (P < 0.05) association of the MyoG SNP with rump length in four breeds (Luxi, Xia’nan, Jiaxian red, and Qinhuang), with hucklebone width in three breeds (Luxi × Simmental crossbred, Nanyang and Xia’nan), with waist height in two breeds (Luxi × Simmental crossbred and Nanyang) and with body length in the Luxi breed. We conclude that the MyoG SNP has potential as a genetic marker for economically relevant body measurement traits in native Chinese cattle breeds.

Key words: Cattle; MyoG; Polymorphisms; Body measurement traits