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ONLINE ISSN : 1349-0486

PRINT ISSN : 1346-7395

The Journal of Poultry Science

Vol. 46 (2009) , No. 3 pp.180-187

[\[PDF \(338K\)\]](#) [\[References\]](#)

## Study on Association of Single Nucleotide Polymorphism of MC3R and MC4R Genes with Carcass and Meat Quality Traits in Chicken

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(Received: December 12, 2008)

(Accepted for publication: March 3, 2009)

Body composition, fat deposition and meat quality are important traits in chickens. Melanocortin receptor (*MCR*) plays an important role in central melanocortin system (CMS) and muscle cells. The purpose of the present study was to analyze association of the *MC3R* and the *MC4R* genes with chicken carcass and meat quality traits. Using eight meat-type chicken populations constructed with 5 pure lines (developed from Chinese local breeds) and 3 crossbreeds (S01×D99, S01×S05, S01×S10), the association of 3 single nucleotide polymorphisms (SNP: *MC3R*-A1424G, *MC4R*-G923T and *MC4R*-C944T) of *MC3R* and *MC4R* gene with carcass and meat quality traits was studied. The results showed as follows: (1) the *MC3R*-A1424G genotypes were significantly associated with most carcass traits except for semi-eviscerated percentage and leg muscle percentage (LMP), the *MC4R*-G923T genotypes were significantly associated with live weight, carcass weight, leg muscle weight (LMW) and LMP, and the *MC4R*-C944T genotypes were not significantly associated with most carcass traits except for LMW and LMP; (2) to meat quality, the *MC3R*-A1424G genotypes significantly affected muscle crude protein (GP) value, and the allele A had positive additive effects on slaughter traits. The *MC4R*-G923T and the *MC4R*-C944T sites significantly affected muscle GP value and glutamic acid (Glu) value; (3) the haplotypes based on the 2 SNP of *MC4R* gene were also significantly associated with meat quality traits, but had no significant associations with carcass traits.

The research built the base for further analysis on relation between genetic variation of *MC3R* and *MC4R* genes and the carcass and meat quality traits, and molecular marker's application in breeding.

**Keywords:** [carcass traits](#), [chicken](#), [MC3R/MC4R](#), [meat quality](#), [polymorphism](#)

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To cite this article:

Yan Wang, Yi Su, Xiaosong Jiang, Yiping Liu, Xiaocheng Li, Zengrong Zhang, Huarui Du and Qing Zhu "Study on Association of Single Nucleotide Polymorphism of MC3R and MC4R Genes with Carcass and Meat Quality Traits in Chicken" J. Poult. Sci., Vol. 46: 180-187. (2009) .

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doi:10.2141/jpsa.46.180

JOI JST.JSTAGE/jpsa/46.180

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