High-resolution melting curve analysis of the *ADSL* and *LPL* genes and their correlation with meat quality and blood parameters in chickens

X.D. Zhang[1], Q.H. Li[1], L.F. Lou[1], J. Liu[2], X.H. Chen[3], C.X. Zhang[3] and H.H. Wang[1]

[1]Hangzhou Academy of Agricultural Sciences, Hangzhou, China
[2]China Jiliang University, Hangzhou, China
[3]Zhejiang Guangda Poultry Breeding Company, Hangzhou, China

Corresponding author: X.D. Zhang
E-mail: bigzhengliang@hotmail.com

ABSTRACT. Adenylosuccinate lyase (ADSL) and lipoprotein lipase (LPL) are key enzymes in the metabolism of inosine monophosphate (IMP) and fat mass, which are important factors in meat quality evaluation. In this study, we selected 50 hens from the ISA B-line layers and Guangxi Yellow chickens, slaughtered the chickens at 120 days old, and analyzed polymorphisms in the *ADSL* and *LPL* genes using the high-resolution melting curve method. Blood lipid parameters, intramuscular fat (IMF), and IMP content were higher ($P < 0.05$) in Guangxi Yellow chickens than in ISA B-line layers, while LPL activity was lower ($P < 0.05$). In exon 2 of the *ADSL* gene, a C3484T mutation was identified. In both breeds, the CC genotype showed the highest IMP, and IMP was the lowest in the TT genotype. In the 5' regulatory region of the *LPL* gene, a C293T mutation was identified. In both breeds, the CC genotype showed the lowest LPL and IMF, while IMF was the highest in the TT genotype. The percentages of individuals with the TT type in the *ADSL*

gene, which was associated with the lowest IMP, were 16.0 and 52.0% in Guangxi chickens and ISA layers, respectively. The percentages of individuals with the CC type of the *LPL* gene, which was associated with the lowest LPL and IMF, were 28.0 and 44.0%, respectively. The *ADSL* and *LPL* gene mutations are correlated with differences in meat quality in different chicken breeds, and high-resolution melting curve is an effective prediction technology for these mutations.