Meat Science (2009), doi:10.1016/j.meatsci.2009.04.009

Perilipin, C/EBPa, and C/EBPb mRNA abundance in longissimus muscle and different adipose tissues of Holstein and Charolais cattle

J.X. Xu a,1, E. Albrecht b,*, T. Viergutz b, G. Nürnberg b, R.Q. Zhao a, J. Wegner b

a Nanjing Agricultural University, Nanjing 210095, PR China
b Research Institute for the Biology of Farm Animals, Wilhelm-Stahl-Allee 2, 18196 Dummerstorf, Germany

A b s t r a c t

Possible regulators of intramuscular fat deposition were investigated in longissimus muscle (LM) and adipose tissues of 18 months old Holstein and Charolais bulls. The mRNA abundance of perilipin and transcription factors C/EBPa and C/EBPb was analyzed by real-time RT-PCR. Carcass traits and marbling traits were recorded and relationships among adipogenic genes and tissue traits were determined. Charolais cattle were heavier ($P < 0.001$) and had less body fat ($P < 0.001$). Holstein bulls accumulated more fat in the LM ($P = 0.02$), but the number and size of marbling flecks did not differ ($P > 0.7$) between breeds.

Perilipin, C/EBPa, and C/EBPb mRNA abundance was influenced by tissue but not by breed. Relationships between mRNA abundance and marbling traits could not be confirmed, however relationships among adipogenic genes. The transcriptional activity of adipogenic genes in LM suggests that intramuscular adipose tissue is still developing and differentiation still occurs.

Keywords: Adipose tissue, Cattle, C/EBPa, C/EBPb, Perilipin