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Differential expression and effect of the porcine *ANGPTL4* gene on intramuscular fat

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ABSTRACT. In a previous study, we investigated differences in gene expression in backfat between Meishan and Large White pigs and their F1 hybrids, Large White x Meishan, and Meishan x Large White pigs. One potential differentially expressed sequence tag from the mRNA differential display was a homolog of the human *angiopoietin-like 4* (*ANGPTL4*) gene, which encodes a protein that is secreted by both liver and white adipose tissues and can inhibit lipoprotein lipase activity and stimulate white adipose tissue lipolysis. Here, *ANGPTL4* mRNA was found to be upregulated in the backfat of Large White compared with that in the Meishan pigs and the F1 hybrids, Meishan x Large White and Large White x Meishan, whereas expression was lowest both in the longissimus dorsi and the heart, as shown by the tissue distribution profile. Only one mutation, a G/A transition located in the third intron, was found. The

ANGPTL4 G/A polymerase chain reaction-single strand conformation polymorphism (PCR-SSCP) showed a significant effect on intramuscular fat (IMF), water moisture of the longissimus dorsi, meat marbling of the longissimus dorsi, and pH of the longissimus dorsi ($P < 0.05$). This site seemed to be significantly ($P < 0.05$) additive in its actions on IMF, water moisture, and pH, whereas it showed significant dominance in its action on meat marbling ($P < 0.05$). This locus can be potentially considered as a marker for IMF improvement.

Key words: *ANGPTL4*; Differential expression; Association analysis; Intramuscular fat; Pigs

