

## Expression of lipid metabolism-related genes in different muscles and different breeds of Taiwan black pigs

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The intramuscular fat (IMF) in meat can affect the tenderness, juiciness and flavor of the meat. During slaughter, it is often found that the IMF of Taiwan black pigs is higher than Duroc, while previous studies on the relationship between pig gene expression and meat quality often focus on the *M. Longissimus Dorsi* (*MLD*). Therefore, this study not only compared the expression differences of lipid metabolism-related genes in the *MLD* of Taiwan black pigs and Duroc, but also included the analysis expression of lipid metabolism gene in the *M. Semispinalis Capitis* (*MSC*) and *M. Rectus Femoris* (*MRF*), to explore IMF fat of different pig breeds and different muscles. The test pigs consisted of 10 KHAPS black pigs from LRI of the C.O.A., and 10 Duroc and 16 black pigs from private pig farm (Pin-Pu, PP). The muscle samples of the 10th to 11<sup>th</sup> intercostal *MLD*, scapular *MSC*, and hind *MRF* were collected to extract RNA, and real-time PCR SYBR method was used to detect the lipid metabolism related gene expression, including *SREBP1c*, *CPT1b*, *FAS*, *Leptin*, and *H-FABP* gene. The results showed that the expression levels of *SREBP1c* and *H-FABP* in Duroc were the lowest of all ( $P < 0.05$ ), and were similar in K/PP. However, the expression level of *FAS* was significantly higher in *MSC* of K than Duroc ( $P < 0.05$ ), which suggested that the lipid synthesis and fatty acid transportation were higher in K and PP compared with Duroc. The expression levels of *Leptin* in Duroc pigs were the highest of all ( $P < 0.05$ ), and were similar in K/PP. In KHAPS Black Pigs, the expression levels of *H-FABP*, *FAS*, and *SREBP1c* were the lowest in *MRF* ( $P < 0.05$ ); but there were no significant difference between *MLD* and *MSC*. The expression levels of *H-FABP* and *CPT1b* in *MRF* were the lowest of all ( $P < 0.05$ ), and were similar in *MLD*/*MSC*. *FAS* in *MLD* was the highest of all ( $P < 0.05$ ), and there were similar in *MSC*/*MRF*. The expression levels of *SREBP1c* were in following order: *MLD*, *MRF* and *MSC*; *MLD* was the highest ( $P < 0.05$ ). *Leptin* was the highest in *MRF* ( $P < 0.05$ ), but not significantly difference between *MLD* and *MSC*. In black pigs, *MRF* showed the highest expression levels of *SREBP1c* ( $P < 0.05$ ), but was similar in *MLD* and *MSC*. The expression levels of *H-FABP* in *MRF* was the lowest of all ( $P < 0.05$ ), but there were no significant difference between *MLD* and *MSC*.

In conclusion, high potential of IMF accumulation could be expected in loin, shoulder and ham in K and PP than in comparison of the expressions of lipid metabolism-related genes to exotic pigs. However, we need more information like carcass trait to analysis the association between phenotype and mRNA expressions.

**Key words:** Intramuscular fat, Lipid metabolism-related genes, *M. Longissimus Dorsi*, *M. Semispinalis Capitis*, *M. Rectus Femoris*, Taiwan black pig.