

# Comparison of Growth Performance, Blood Lipids, Carcass Characteristics and Activities of lipogenic Enzymes Between TLRI Black Pig No. 1 and LYD Pigs at Different Slaughter Weight

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The aim of this study was to investigate the influence of slaughter weight (SW) on chemical composition, adipocyte size, fatty acid composition, and lipogenic enzyme activities of subcutaneous fat tissue, and carcass characteristics of TLRI black pig No.1 (TBP) and compare with LYD [(Landrace♀ × Yorkshire♂)♀ × Duroc♂, LYD] at different slaughter weights. A total of 96 TBP and 48 LYD pigs, half barrows and gilts respectively, were used in this experiment. Pigs were assigned to three groups of SW (i.e. 90, 105, and 120 kg) when their body weight (BW) was 50 kg and their blood sample was collected and analyzed in the initial and in the end of feeding period. Growth and feed conversion rate (gain/feed, FCR) were measured. Once pigs reached the SW, half of the pigs each group were randomly chosen and slaughtered. The Longissimus dorsi muscle (LM) at 10/11th rib and tenderloin muscle (TM) were collected for meat color, proximate chemical, and fatty acid composition analysis. The subcutaneous fat tissue at 10/11th rib was collected for measuring adipocyte size and lipogenic enzyme activities. The LYD had larger growth performance than the TBP. The blood lipid HDL and cholesterol of TBP had significantly different ( $P < 0.01$ ) at final experiment than LYD pigs. The TBP had higher carcass fat percentage ( $P < 0.05$ ) and larger backfat thickness (BFT;  $P < 0.1$ ) than the LYD pigs, and smaller loin eye area (LEA;  $P < 0.01$ ) and lower lean meat percentage ( $P < 0.01$ ) when compared with LYD. The ash content of TBP's LM was lower than LYD's ( $P < 0.05$ ). Crude fat content of TBP's LM ( $P < 0.01$ ) and TM ( $P < 0.05$ ) was higher than that of LYD. The LYD pigs had higher Hunter L value of LM ( $P < 0.01$ ) and TM ( $P < 0.05$ ) and Hunter b value, but lower in Hunter a value. The total monounsaturated fatty acid (MUFA) content of LM from TBP was higher ( $P < 0.05$ ), while the total polyunsaturated fatty acid (PUFA) content was lower ( $P < 0.01$ ) than the LYD pigs. The content of total saturated fatty acid (SFA) was similar for both breeds. The SFA content and lipid saturate index (SFA/MUFA+PUFA, S/U) of TM from TBP was higher ( $P < 0.01$ ), but PUFA content lower ( $P < 0.01$ ) than the LYD pigs. The TBP had larger adipocyte diameter ( $P < 0.01$ ) of subcutaneous fat tissue than LYD pigs. The activities of fatty acid synthetase, glucose-6-phosphate dehydrogenase ( $P < 0.01$ ), ATP-citrate cleavage enzyme and NADH-malate dehydrogenase ( $P < 0.01$ ) were higher in TBP than the LYD pigs. Both TBP and LYD had been inferior FCR, ADFI and ADG as slaughter weight (SW) increased. The blood lipid HDL and VLDL had significantly different ( $P < 0.05$ ) among SW groups. The heavier SW pigs had higher dressing percentage ( $P < 0.1$ ), longer carcass length ( $P < 0.01$ ), thicker BFT ( $P < 0.1$ ) and bellyfat thickness ( $P < 0.1$ ), smaller LEA ( $P < 0.01$ ) and higher carcass fat percentage ( $P < 0.1$ ), but lower lean meat percentage ( $P > 0.05$ ) in carcass characteristics were increased as the SW. The crude fat content ( $P < 0.01$ ) in LM had increased as the SW. The Hunter L value of LM was lower ( $P < 0.05$ ) as the SW increased, but Hunter a value and b value were very close. The PUFA content in the LM had decreased, but the SFA content and S/U of LM had increased as SW increased. The longer adipocyte diameter and higher lipogenic enzyme activities as SW increased. In conclusion, the ADG and FCR of TBP had significantly lower than LYD pigs, and TBP had thicker BFT, and higher lipogenic enzyme activities than LYD. The result indicated that TBP accumulated fat more easily than LYD during

the BW 90 to 120 kg.