

Hypor pigs need more lysine to express growth potential than currently recommended

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Continuing genetic selection of pigs may affect the protein deposition potential, which in turn impacts the lysine needed to express that potential. The growth potential may vary among sexes and litters. Our objective was to study protein and energy metabolism in Hypor Duroc-Genex Manor pigs given a non-limiting diet. This is a preliminary report of the first complete replicate (n = 9) of the experiment (n = 18).

Nine pigs, one male, one castrated male and one female pig from each of 3 litters, were housed individually and offered a wheat-soybean meal based diet ad libitum. The diet contained 22.6% protein (as analyzed), 1.56% true ileal digestible (TID) lysine and 14.7 MJ ME (calculated). Free amino acids were added to achieve an ideal protein balance. Pigs were adapted to the diets for 10 d, before a 6-d N-balance determination followed by a 24-h measurement of energy expenditure by indirect calorimetry. Mean body weight (37.2kg \pm 0.8), feed intake (1855 g \pm 72), daily gain (967 g \pm 35) and gain to feed (0.516 \pm 0.019) were not different ($P > 0.1$) among sexes and litters. Mean protein deposition (214 g \pm 8) was lower ($P = 0.04$) than supportable by the TID lysine intake (241.2 g/d \pm 9). Protein deposition did not differ among sexes but was greater ($P < 0.04$) for litter #2 (240 g/d \pm 10) than the other litters (201g/d \pm 4). Lipid and energy deposition and heat production were not different among litters. Lipid deposition (35.6 g/d) and energy retention (6.3 MJ/d) in males were lower than in castrated males, 214.4 g/d and 13.8 MJ/d energy respectively. Lipid deposition (144.2 g/d) and energy retention (10.9 MJ/d) in females was intermediate from males or castrated males. Heat production did not differ among sexes or litters ($P > 0.1$).

Implications: These data are critical for accurate diet formulation. The protein deposition potential of Duroc-Genex Manor pigs was within the limits of appetite and did not differ among sexes for pigs 30 to 40 kg live weight. NRC (1998) recommends 0.83% TID Lysine and 13.7 MJ ME for 35 kg pigs eating 1855 g/d. However, these 37 kg pigs, eating 1855 g/d, needed a diet containing 1.3% TID lysine and 13 MJ ME to express their growth potential. (Supported by ALIDF, CARC, Alberta Pork)