

Identifying factors contributing to slow growth in pigs

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Pigs that grow slower than their contemporaries can cause complications for animal welfare and profitability. This study was conducted to investigate factors that may contribute to slow growth of pigs. Pigs ($n = 440$) farrowed by 65 sows were monitored from birth to market. Pigs were categorized as slow, average, and fast growers based on market weight adjusted to 170 d of age (slow growers < 105 kg, average growers between 105 and 125 kg, and fast growers > 125 kg). Blood samples were collected from 48 focal pigs at 9 wk and 21 wk of age, respectively, and analyzed for hormone and free amino acid concentrations. Data were analyzed using the Mixed and Logistic Procedures of SAS. Slow growing pigs accounted for 10%, average growers for 49%, and fast growers for 41% of pigs marketed. Compared with fast growers, slow growers were lighter at birth ($P < 0.01$), at weaning ($P < 0.01$) and at nursery exit ($P < 0.01$), had less backfat ($P < 0.01$) and smaller loin muscle area ($P < 0.01$) at marketing at 21 wk of age. Slow growers had lower plasma concentrations of IGF-1 ($P = 0.03$) and insulin ($P < 0.001$) during the nursery period, and lower concentrations of leptin ($P < 0.001$) and insulin ($P < 0.001$) during the finishing period compared with average and fast growers. Serum concentrations of several essential, non-essential, and total free AA were less for slow growers during both the nursery and finishing period compared with average and fast growers. Gilts were more likely to become slow growers than barrows (odds ratio = 2.17, CI = 1.19 to 3.96; $P = 0.01$). Litter size and parity of the pigs' dam were not associated with slow growth. These results suggest that low concentrations of IGF-1, insulin, leptin, and AA may contribute to or be associated with slow growth in pigs.