

Effects of the halothane gene on muscle quality and carcass composition of pigs

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Abstract

Consumers and carcass-value marketing systems continue to demand the efficient production of lean pork from today's swine producers. Halothane reactor pigs (nn) are known to have a higher percent of carcass lean when compared to non-carriers (NN) of the halothane gene, making the halothane gene a source of interest to the commercial swine industry. However, nn pigs are also more susceptible to stress and have poorer muscle quality. The muscle quality and carcass characteristics of halothane-carrier (Nn) pigs has not been well defined. This study examined the effects of the halothane gene on muscle quality and carcass composition traits.

Materials and Methods

Two genotypes which have different rates of lean growth and fat deposition were identified. Line 1 is a European Large White Landrace which represents the upper 5th percentile for percent lean. Line 2 is a commercial terminal cross which represents average U.S. pigs for percent lean. Forty-eight pigs of each genotype (24 barrows and 24 gilts) were selected at 132 lbs. liveweight from a population reared using segregated early weaning procedures. Three of the four genotype x sex combinations consisted of both halothane-carrier (Nn) and non-carrier (NN) pigs (Table 1). The pigs were fed a conventional corn-soybean meal diet which was offered on an ad-libitum basis. At liveweights of 231, 264, and 297 lbs., eight pigs of each sex x genotype combination were slaughtered.

Results and Discussion

Halothane negative (NN) pigs received higher color scores ($P < .05$) and higher firmness scores ($P < .001$) than carrier (Nn) pigs (Table 2). Carrier pigs had small but nonsignificant advantages for carcass composition. No significant effect of the halothane gene was detected for marbling or any of the carcass composition traits.

Table 1. Number of halothane carrier (Nn) and non-carrier (NN) pigs.

	<u>Nn</u>	<u>NN</u>
Line 1 Barrows	0	24
Line 1 Gilts	6	18
Line 2 Barrows	12	12
Line 2 Gilts	6	18

Table 2. Least squares means for meat quality and carcass composition.

Trait	Carriers	Non-carriers	Significance
Pork Quality Scores^a			
Color	2.33	2.59	P<.05
Firmness	2.22	2.90	P<.001
Marbling	1.92	2.25	not significant
Backfat			
Last rib (in.)	1.14	1.14	not significant
10 th rib (in.)	1.01	1.09	not significant
Optical Probe			
Percent Lean	48.55	47.59	not significant
Fat Depth (in.)	.98	1.07	not significant
Lean Depth (in.)	2.20	2.17	not significant
Other Composition			
Loin eye area (in. ²)	6.71	6.32	not significant
% fat-free lean ^b	51.00	49.95	not significant

^a 1-5 NPPC Scoring System, evaluated on the loin at the 10th rib.

^b Estimated using NPPC (1991 equation) and adjusted to lean containing 0% fat.