CONSUMER ACCEPTABILITY OF PORK LOIN FROM CROSSBRED PIGS SIRED BY PAKCHONG 5 BOAR AND DUROC BOAR

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Abstract – We compared consumer acceptability on quality of pork loins from purebred Pakchong 5 (PP), crossbred Pakchong 5 (CP) and crossbred Duroc (CD). Each group consisted of 8 gilts and 8 barrows. All crossbred pigs were mated with Large White x Landrace hybrid sows. *Longissimus dorsi* muscles (LD) were used to evaluate consumer acceptability. No difference (P>0.05) on juiciness and flavor of LD from all breeds was found. Consumers preferred flavor of gilts slightly more than (P<0.05) that of barrows. LD from CP was as tender as those from CD (P>0.05), but more tender (P<0.05) than that from PP barrows. Consumer acceptability on quality of pork loins was similar among the two crossbreds, while purebred Pakchong 5 barrows were the least preferred.

Key Words – terminal boar, fattening pig, sensory evaluation

I. INTRODUCTION

Consumers prefer high quality meat. Tenderness, juiciness and flavor of pork are the major quality attributes influencing overall eating quality judged by consumers and their overall acceptability. Pig breed is an important factor for improving pork quality, especially the use of terminal boar [6]. Pakchong 5 pig, a genetic combination of 62.5% Duroc and 37.5% Pietrain, has been developed by Department of Livestock Development (DLD), Thailand. Pakchong 5 pig was proposed to be utilized as terminal boar for producing high growth rate and lean type crossbred pigs for small scaled pig farms in Thailand, replacing a Duroc boar, which is widely used to produce crossbred pigs [3]. Hence, the objective of this study was to compare consumer acceptability of pork loins obtained from purebred Pakchong 5 (PP), crossbred pigs sired by Pakchong 5 boar (CP), and crossbred pigs sired by Duroc boar (CD).

II. MATERIALS AND METHODS

Each experimental group, including PP, CP, or CD, consisted of 16 pigs (8 gilts and 8 barrows). All crossbred pigs were mated with hybrid sow (Large White x Landrace). At about 99.08 kg body weight, all pigs were slaughtered and their *Longissimus dorsi* (LD) muscles were collected for consumer acceptability evaluation. Each LD was cut into 3.50-cm thick steak, vacuum packaged, and stored at -20°C until further evaluation. All LD samples were thawed overnight at 0-4°C, and cooked in electric broiler ovens at 180°C until core temperatures reached 71°C. Then cooked samples were cut into 1.30-cm^3 cubes, and kept warm in a closed container placing in water bath at 54°C until serving [1, 2, 5]. Consumers evaluated tenderness, juiciness, flavor, and overall acceptability of pork samples, using a nine-point hedonic scale, where 9 is extremely like, 5 is neither like nor dislike, and 1 is extremely dislike. The experiment was a 3 x 2 factorial treatment structure in completely randomized design. The influence of breed and gender were analyzed using Analysis of Variance.

III. RESULTS AND DISCUSSION

In Table 1, no breed main effect (P>0.05) was observed on juiciness and flavor of pork loins. But gender significantly influenced (P<0.01) pork flavor evaluation, where gilt (5.83) was more preferred than boar (5.38). No difference (P>0.05) in juiciness scores was found among the treatments. The interaction effects (P<0.05) of breed and gender were found on consumer ratings on both tenderness and overall acceptability (Table 1 and 2). In Table 2, for tenderness evaluation, pork loins from CD gilts were similarly tender (P>0.05) to those from CD barrows, CP gilts, and PP gilts. But they were

more tender (P<0.05) than the barrows from CP and PP. Duroc-sired progeny has been reported to accumulate more fat content than Pietrain-sired progeny [4], which might affect the tenderness observed in CD. For overall acceptability, all treatments were similarly accepted (P>0.05) by consumers, except for PP barrows, which obtained the lowest score (P<0.05).

Table 1 Effects of breed and gender on consumer acceptability evaluation on pork loin quality

Parameters	Breed (B)			Gender (G)		SEM	P-value		
	PP	CP	CD	Gilt	Barrow		B	G	B*G
Tenderness	5.26[b]	5.54[b]	5.97[a]	5.79[c]	5.39[d]	0.12	<0.01	0.01	0.02
Juiciness	5.21	5.29	5.57	5.53	5.18	0.13	0.09	0.12	0.10
Flavor	5.45	5.55	5.80	5.83[c]	5.38[d]	0.12	0.06	<0.01	0.25
Overall	5.41[b]	5.63[ab]	5.84[a]	5.85[c]	5.40[d]	0.13	0.03	<0.01	0.02

[a,b] Means within breed in the same row with different letters are different at P<0.05.
[c,d] Means within gender in the same row with different letters are different at P<0.05.
PP = purebred Pakchong 5; CP = crossbred Pakchong 5; CD = crossbred Duroc
SEM = Standard Error of Mean

Table 2 Interaction between breed and gender effects on consumer tenderness evaluation and overall acceptability of pork loins.

Parameters	PP		CP		CD		SEM	P-value
	Gilt	Barrow	Gilt	Barrow	Gilt	Barrow		
Tenderness	5.75[ab]	4.78[c]	5.59[ab]	5.49[b]	6.03[a]	5.91[ab]	0.24	0.02
Overall	5.87[a]	4.95[b]	5.64[a]	5.61[a]	6.03[a]	5.64[a]	0.22	0.02

[a,b,c] Means within the same row with different letters are different at P<0.05.
PP = purebred Pakchong 5; CP = crossbred Pakchong 5; CD = crossbred Duroc \
SEM = Standard Error of Mean

IV. CONCLUSION

Tenderness of pork loins obtained from crossbred Pakchong 5 gilts and barrows was comparable to that of crossbred Duroc gilts and barrows, as well as purebred Pakchong 5 gilts, while barrows from purebred Pakchong 5 were the least tender. In addition, gilts tended to be slightly more flavorful. Thus, barrows from purebred Pakchong 5 obtained the lowest overall acceptability scores.

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