

Management strategies to reduce backfat in pigs: impact on pork eating quality

DN D'Souza, M Trezona, CR Hagan, JA Hooper, RR Nicholls, BP Mullan,

Agriculture Western Australia, 3 Baron-Hay Court, South Perth, WA 6151

Pork from castrates is generally accepted as having better eating quality compared to boars, although, castrates are fatter compared to boars. Current management strategies used to control backfat in pigs include porcine somatotropin (pST) administration (1) and the use of dietary conjugated linoleic acid (CLA) supplementation (2). However, the influence of pST or CLA on pork eating quality from castrates is largely unknown. The aim of this experiment was to determine the impact of pST administration and dietary CLA supplementation on eating quality of pork from surgical and immunological castrates.

Three hundred and seventy eight crossbred pigs were allocated to a 2x3x3 factorial design experiment. The main treatments were genotype (A – 50% Duroc bloodlines and lean, and B – <25% Duroc bloodlines and a propensity for fat deposition), sex (females- F, surgical castrates – SC, and immunological castrates - IC) and management strategy (control, pST, CLA). Four pigs per treatment (5 steaks per loin muscle) were randomly selected. The pork steaks were cooked for 5 minutes at 190°C (internal temperature 75°C; medium/well done) using a Silex flat-plate grill. Each steak was halved after cooking and tasted by two consumers. A total of 144 consumers (10 consumers per treatment) assessed the loin steaks for eating quality attributes.

	Genotype (G)		Sex (S)			Management Strategy (MS)			l.s.d.	Significance ²
	A	B	F	SC	IC	Control	CLA	pST		
Odour ¹	59	60	61	59	59	61	60	57	3.06	
Flavour ¹	54	56	54	56	56	58	53	55	3.29	MS*
Tenderness ¹	45	51	44	49	49	54	45	46	3.93	G***, S***, MS***
Juiciness ¹	47	48	46	47	47	54	42	48	3.66	MS***
Acceptability ¹	52	55	52	54	54	58	51	51	3.32	G*, MS***

¹Acceptability score, 0 = dislike extremely and 100 = like extremely; ² *P<0.05, **P<0.01, ***P<0.001

Pork from Genotype B pigs was more tender and had better overall acceptability compared to pork from Genotype A pigs. Pork from castrates was more tender compared to pork from female pigs. Pork from control pigs had better flavour, tenderness, juiciness and acceptability compared to pork from CLA fed and pST administered pigs. These results highlight the potential negative impact of effective management strategies to reduce carcass fatness on pork eating quality. It is possible that CLA supplementation and pST administration may influence pork eating quality by affecting intramuscular fat levels, muscle fibre proportions and/or connective tissue composition and this warrants further investigation.

Supported in part by the Pig Research and Development Corporation.

1. Dunshea FR, Cox ML, Borg MR, Harriss DR. Porcine somatotropin (Reporcin®) improves growth performance and decreases backfat in pigs under commercial conditions. In: Cranwell PD, ed. Manipulating pig production VII, Werrabee, Aust Pig Sci Assoc 1999;123.
2. Dunshea FR, Ostrowska E, Muralitharan M, Cross R, Bauman DE, Pariza MW, Skarie C. Dietary conjugated linoleic acid decreases backfat in growing gilts. J Anim Sci 1998;131.