

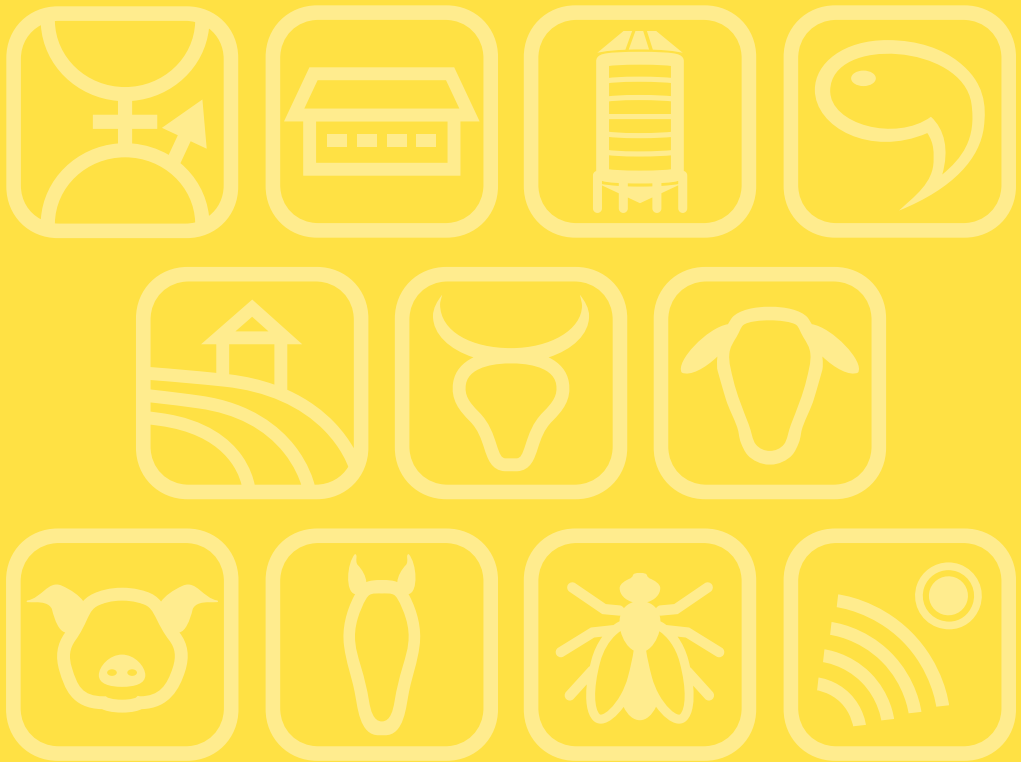
Meat and fat quality of pigs intended for Spanish cured ham: effect of male castration and feeding

L. Pérez-Ciria¹, F.J. Miana-Mena¹, G. Ripoll² and M.A. Latorre¹

¹IA2- Universidad de Zaragoza, C/ Miguel Servet 177, 50013, Spain, ²IA2-CITA de Aragón, Av. Montañana 930, 50059, Spain; leticiapcgm@gmail.com

Currently, the castration is necessary in heavy male pigs such as those intended for dry-cured ham elaboration. Immunocastration could be an alternative to surgical castration, considering the animal welfare, but the maintenance of the product quality should be also guaranteed. A total of 90 Duroc × (Landrace × Large White) male pigs was used to assess the impact of the type of castration (surgical castration vs immunocastration) and of different diets on meat and fat quality of pigs intended for Teruel ham, which is a Spanish label of high quality dry-cured hams. Surgical castration was carried out at the first week of age and immunocastration consisted of three injections of Improvac[®] at 56, 101 and 122 days of age. The diets tested were: A=control, B=high net energy level (NE) and C=low standardized ileal digestible Lysine level (Lys SID). During the growing period (80 to 109 kg body weight-BW), the diet A contained 2,330 kcal NE/kg and 0.77% Lys SID, the diet B included 2,480 kcal NE/kg and 0.77% Lys SID and the diet C provided 2,330 kcal NE/kg and 0.67% Lys SID. During the finishing period (109 to 137 kg BW), the diet A contained 2,330 kcal NE/kg and 0.63% Lys SID, the diet B included 2,480 kcal NE/kg and 0.63% Lys SID and the diet C provided 2,330 kcal NE/kg and 0.54% Lys SID. A sample of meat from each carcass (n=15) and 48 samples of subcutaneous fat chosen at random (n=8) were taken to be analysed. Meat from immunocastrated males (ICM) showed lower intramuscular fat content and lightness, but higher moisture than that from surgical castrated males (SCM) (P<0.05). The diet C carried out the highest cooking losses (P=0.003). Fat from ICM presented a lower proportion of total monounsaturated fatty acids than that from SCM (P=0.028). Besides, in ICM, diets B and C decreased the total polyunsaturated fatty acids (P=0.012). We can conclude that immunocastration of male pigs provides lower intramuscular fat content and fat less monounsaturated than surgical castration. Also, the diet has to be considered in ICM, because those with high energy content or low Lys level can affect the fat composition and therefore the product quality.

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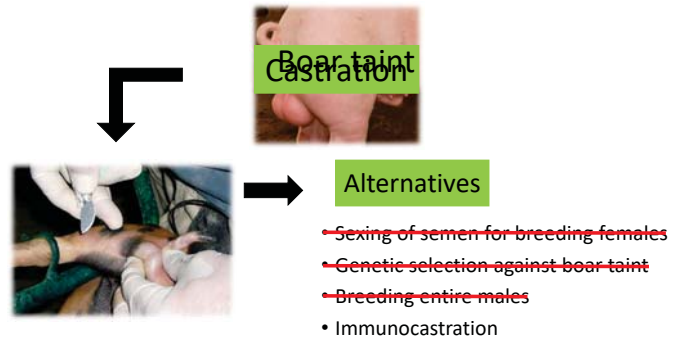
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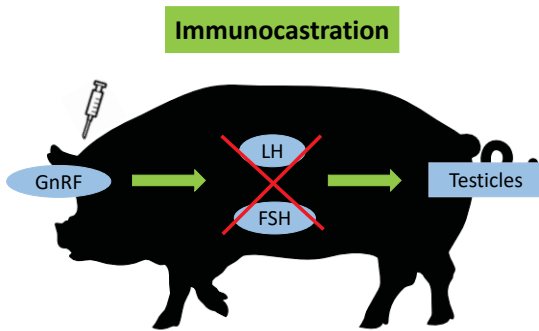


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Introduction

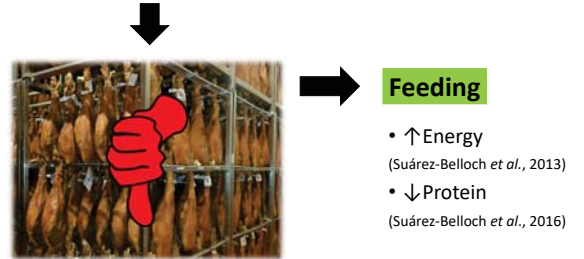


Introduction



Introduction

Level of fat deposition (Batorek *et al.*, 2012):
Immunocastrated < Surgical castrated



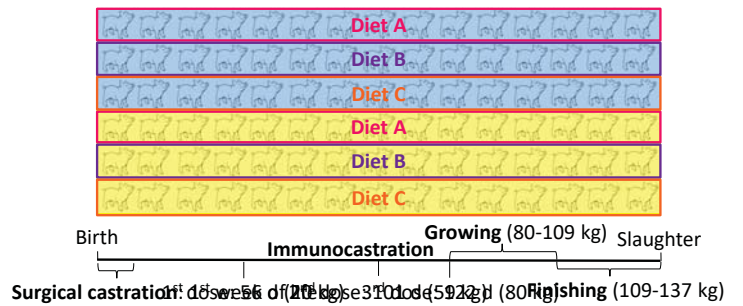
Objective

Assess the impact of the type of castration and different diets on meat and fat quality of male pigs intended for Teruel ham.



Material and methods

90 DU x (LD x LW) male pigs of 35.3 ± 4.10 kg



Material and methods

	DIET		
	A	B	C
Growing (80-109 kg)			
Net energy, kcal/kg	2,330	2,480	2,330
Crude protein, %	16.0	16.0	14.0
Lysine SID, %	0.77	0.77	0.67
Finishing (109-137 kg)			
Net energy, kcal/kg	2,330	2,480	2,330
Crude protein, %	14.5	14.5	12.5
Lysine SID, %	0.63	0.63	0.54

Material and methods

Slaughter weight: 137 kg



Material and methods

Statistical analysis

- Factorial design (2 types of castration x 3 diets).
- GLM procedure of SAS.
- Main effects: type of castration and diet.
- Interaction.
- Experimental unit: animal.



Results

Impact of the type of castration on meat quality

	Type of castration		SEM (n=45)	P-value
	Surgical	Immune		
Chemical composition, %				
Moisture	71.6	72.2	0.16	0.008
Protein	23.1	23.1	0.09	NS
Intramuscular fat	4.19	3.33	0.203	0.003

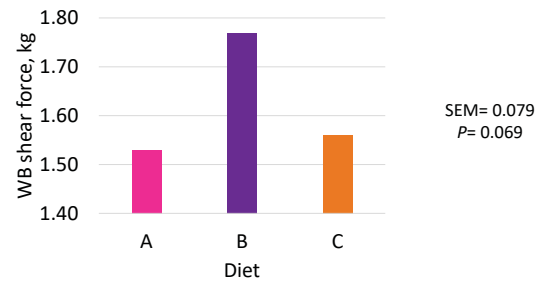
Results

Impact of the type of castration on meat quality

	Type of castration		SEM (n=45)	P-value
	Surgical	Immune		
Colour traits				
Lightness, L^*	34.9	32.1	0.82	0.020
Redness, a^*	3.81	4.37	0.301	NS
Yellowness, b^*	14.8	14.1	0.33	NS
Hue angle, H°	75.6	72.5	1.22	0.079
Chroma, C^*	15.4	14.9	0.31	NS

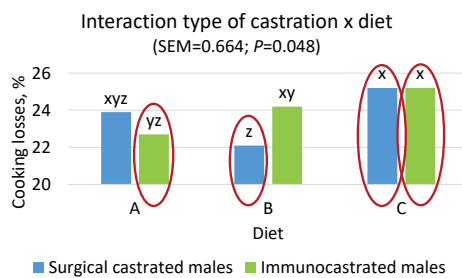
Results

Impact of the diet on meat quality



Results

Meat quality



Results

Effect of the type of castration on fat quality

	Type of castration		SEM (n=24)	P-value
	Surgical	Immune		
C18:1n-9	42.4	41.7	0.23	0.042
C18:4n-3	0.047	0.037	0.0033	0.038
Total monounsaturated fatty acids	47.3	46.5	0.24	0.028

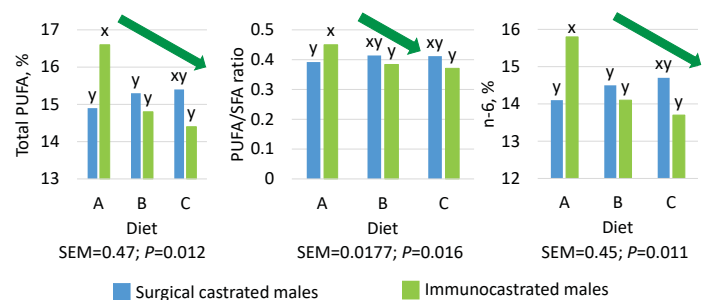
Results

Effect of the diet on fat quality

	Diet			SEM (n=16)	P-value
	A	B	C		
C15:0	0.054 ^x	0.051 ^x	0.042 ^y	0.0024	0.003
C15:1	0.008 ^x	0.008 ^x	0.007 ^y	0.0004	0.023
C17:0	0.334 ^x	0.286 ^y	0.271 ^y	0.0139	0.009
C17:1	0.302 ^x	0.235 ^y	0.232 ^y	0.0115	<0.0001
C18:1n-7	1.76 ^x	1.59 ^y	1.79 ^x	0.055	0.020
C18:3n-3	0.698 ^x	0.645 ^y	0.632 ^y	0.0154	0.010

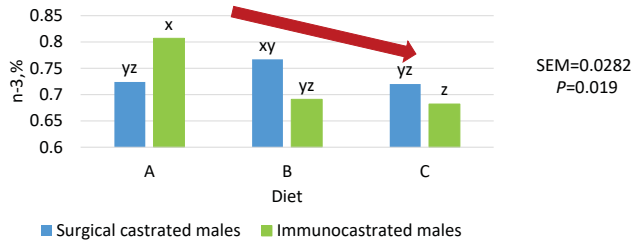
Results

Fat quality interactions



Results

Fat quality interactions



Conclusions

- Immunocastration of male pigs provides meat with **lower intramuscular fat content** and **less monounsaturated fat** than surgical castration.
- The **diet had scarce effect on pork quality** but, in the case of **immunocastrated male pigs, high energy levels or low lysine content could affect** the fat quality and, in consequence, **the quality of the end product.**



Thank you for your attention!



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