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Effect of castration of male pigs on fat quality

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In 2010, castration of young male piglets without pain relief will be prohibited in Switzerland. Because castration influences fat deposition the fatty acid composition of the adipose tissue will also be affected. Therefore, oxidative stability and firmness of the adipose tissue of uncastrated male pigs could be impaired.

THE OBJECTIVE

Evaluate the effects of immunological and surgical castration on the fatty acid composition of the backfat.

THE CONCLUSIONS

- ✓ Fattening entire males will result in lower fat deposition which will increase the degree of unsaturation of the deposited fat.
- ✓ The impact on the fatty acid profile will be slightly less dramatic due to higher fat deposition in immunocastrated compared with entire males.

Omitting surgical castration will affect fat firmness and oxidative stability of pork fat. Thus, feeding strategies or fatty acid composition of the diets need to be adapted.

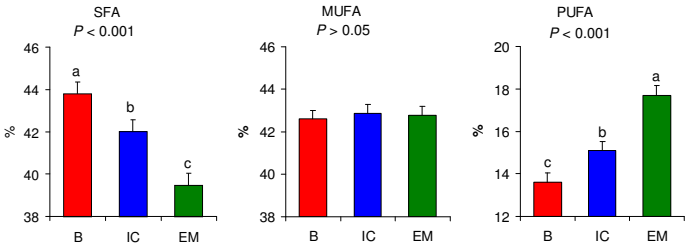
MATERIALS & METHODS

39 Swiss Large White male pigs originating from 12 litters (11 litters = 3 siblings/litter; 1 litter six siblings/litter) were allocated to three experimental groups:

- 13 Barrows (**B**)
- 13 Immunocastrated male pigs (**IC;** Improvac®, Pfizer Ltd., Zürich)
- 13 Entire male pigs (**EM**)

Initial BW:	27.7 ± 0.5 kg
Final BW:	107.0 ± 1.3 kg
Feeding strategy:	a grower (27-63 kg BW) and finisher diet (63-107 kg BW) with a DE content of 15.8 and 15.4 MJ/kg DM, and a CP content of 18.6 and 16.6 g/100 g DM, respectively, were offered to all pigs *ad libitum*
Measured parameters:	daily feed intake (ADFI), daily gain (ADG), carcass composition, fatty acid profiles of the backfat
Statistical analysis:	on individual basis with the MIXED procedure of SAS experimental group as fixed and litter as random effect

Figure 1. Concentration of total saturated (SFA), monounsaturated (MUFA) and polyunsaturated (PUFA) fatty acids in the adipose tissue from barrows (B), immunocastrated (IC) and entire male pigs (EM) (expressed as g/100 g total fatty acids)



[a,b,c] within a graph, least square means for experimental treatments without a common superscript differ ($P < 0.05$)

Comments on Figure 1:
The concentration of SFA in the adipose tissue increased from EM to IC to B and, concomitantly, that of PUFA decreased.

RESULTS

Table 1. Growth performance and carcass characteristics of barrows (B), immunocastrated (IC) and entire male pigs (EM)

	B	IC	EM	SEM
ADG, g/d	931[d]	920[de]	883[e]	19.7
FCR, kg/kg	2.54[a]	2.41[b]	2.34[c]	0.025
Total feed intake, kg	202[a]	191[b]	185[b]	4.3
Lean meat, %	54.5[c]	56.3[b]	57.5[a]	0.35
Subcutaneous fat, %	15.3[a]	13.8[b]	12.8[c]	0.32
10th rib fat thickness, mm	24.9[a]	19.3[b]	17.8[b]	0.94

[a,b,c] within a row, least square means for experimental treatments without a common superscript differ ($P < 0.05$); [d,e] within a row, least square means for experimental treatments without a common superscript differ ($P < 0.10$)

Comments of Table 1:
Although B consumed more feed than IC and EM, ADG was not affected. The lower efficiency of B compared to EM and IC resulted in higher backfat accretion.

Table 2. Fatty acid composition of the adipose tissue from barrows (B), immunocastrated (IC) and entire male pigs (EM) (expressed as g/100 g total fatty acids)

	B	IC	EM	SEM
14:0	1.44[a]	1.37[b]	1.34[c]	0.028
16:0	26.20[a]	25.45[b]	24.14[c]	0.298
18:0	15.21[a]	14.34[b]	13.15[c]	0.284
16:1n-7	2.55	2.62	2.70	0.069
18:1n-9	38.76	39.08	38.96	0.389
18:2n-6	11.48[a]	12.77[b]	15.01[c]	0.378
18:3n-3	1.02[b]	1.09[b]	1.29[a]	0.035

[a,b,c] within a row, least square means for experimental treatments without a common superscript differ ($P < 0.05$)

Comments on Table 2:
The differences in the fatty acid profile resulted mainly from changes in the levels of palmitic, stearic and linoleic acid.

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