

The effect of dietary fatty acid level on the fatty acid composition of the adipose and lean tissues of immunocastrated male pigs

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At a given supply of unsaturated dietary fatty acids (FA) the degree of unsaturation of adipose tissue (AT) lipids increases with decreasing carcass fat deposition. Because carcasses of immunocastrated male pigs (IC) fed standard grower-finisher diets are leaner than those of barrows one can expect higher levels of unsaturated FA in the AT, which then might negatively affect its oxidative stability and firmness. The goal of this study was to determine the effects of castration method and dietary FA supply on the lipid composition of the AT and intramuscular fat (IMF). Forty-eight Swiss Large White male pigs were blocked by litter and assigned by BW to 4 experimental groups: barrows were fed a grower-finisher diet with a PUFA-MUFA-Index [PMI=1.3 × MUFA (g/MJ DE)+PUFA (g/MJ DE)] of 1.7 (C), IC pigs were fed a grower-finisher diet with a PMI of 1.7 (IC17), 1.5 (IC15) or 1.3 (IC13). All pigs had ad libitum access to the diets from weaning to 107 kg BW. Compared with C, IC17 tended ($P<0.10$) to grow slower but consumed less ($P<0.01$) feed, were more ($P<0.001$) feed efficient and their carcasses were leaner ($P<0.01$). The lower saturated fatty acid (SFA) concentration of the AT ($P=0.12$) and IMF ($P<0.05$) in IC17 than C was compensated by the higher PUFA level (AT: $P<0.01$; IMF: $P<0.05$). The PMI-level had no ($P_1>0.05$) effect on growth performance and carcass composition of IC17, IC15 and IC13 whereas total feed intake linearly decreased ($P_1<0.05$) with decreasing PMI level. In the AT, but not the IMF, the SFA ($P_1<0.01$) and MUFA ($P_1<0.10$) concentration linearly increased and that of PUFA linearly decreased ($P_1<0.001$) with decreasing dietary PMI level. These results confirmed that the lower lipid deposition in carcasses of IC markedly increased the degree of unsaturation of AT and IMF lipids. To insure a comparable processing quality of the AT like that found for barrows the dietary MUFA and PUFA supply for IC must be restricted.

The effect of castration method and dietary raw potato starch supply on sensory quality of pork

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The most common method to avoid boar taint, which is an off-odour and –flavour of pork, is surgical castration. The aim of the study was to assess by trained panellists the effects of feeding raw potato starch (RPS) and applying different castration methods on boar odour, boar flavour, tenderness and juiciness of loin and neck chops from Swiss Large White pigs. In experiment 1 and 2, 18 pigs from 6 litters (1 barrow, 1 entire male [EM] and 1 EM fed additionally RPS the last week prior to slaughter) and 33 pigs from 11 litters (1 barrow, 1 immunocastrate (IC) and 1 EM), respectively, were selected based on the androstenone (A: <1.9ppm) and skatole (S: <0.24ppm) levels in the adipose tissue. In both experiments, neck chops had a stronger boar odour and flavour, were more tender and juicier than loin chops ($P<0.05$ for each). In experiment 1, A levels in the adipose tissue of barrows were lower ($P<0.05$) than in EM with and without RPS supply. On contrary, S levels were lower ($P<0.05$) in barrows and EM fed RPS than in EM without RPS supply. Nevertheless pork from both EM groups had stronger ($P<0.01$) boar odour and flavour than barrows, probably due to the higher A tissue concentration. The pork from EM without RPS was more ($P<0.05$) tender than the pork from barrows and EM fed RPS. Although A but not S level was higher ($P<0.05$) in the adipose tissue of EM compared with barrows and IC, boar odour and flavour intensities did not ($P>0.05$) differ between groups. However, pork from IC and EM was less ($P<0.05$) juicier than from barrows. In conclusion, the discrepancy between the well recognized boar taint compounds A and S and the sensory perception indicate that other factors affected the panellist's perception for boar taint.