IS THERE ANY DIFFERENCE BETWEEN PORK MEAT QUALITY FROM (NOT FREE-RANGING) ORGANIC AND CONVENTIONAL PIGS?

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Abstract
Husbandry system effects on meat quality are normally assessed by comparing free-range fattening of heavy pigs from local breeds with the conventional indoor system. However, few data are available concerning commercial lighter pigs reared according to not free-ranging organic standards (2.2 m²/pig of space allowance combining deep litter plus concreted outdoor area, protein sources composed by full oilseeds or mechanically yielded, feed without synthetic amino acids and straw supply as roughage) and used for fresh pork production (approximately 76 kg carcass). This study evaluated the influence of husbandry system and gender on pork meat quality. A total of sixty L. thoracis pork muscle samples (organic n=29 vs. conventional n=31; barrows n=22 vs. gilts n=38) from different three-way crossbred genotypes were chosen randomly from a commercial abattoir. Instrumental meat quality was measured at 24 h postmortem and muscle fatty acid composition was analysed. Ultimate pH was lower in organic than in conventional pork meat (P<0.01) but drip loss was unaffected by husbandry system (P>0.05). All meat colour attributes except lightness (L*) differed between husbandry systems (P<0.05). Redness index (a*) was lower while yellowness (b*), hue angle (H*) and chroma (C*) were greater in organic than in conventional pork loin (P<0.05). Concerning meat chemical composition, moisture and crude protein content were lower (P<0.01) whereas intramuscular fat content was greater in organic than in conventional pork meat (P<0.001). Overall, total SFA, MUFA, PUFA and PUFA n-6 contents did not differ between husbandry systems (P>0.05), but total PUFA n-3 were greater in organic than in conventional pork (P<0.01). There were no differences ultimate pH or meat colour attributes between sexes (P>0.05). However, meat from barrows showed lower moisture (P<0.05) and greater intramuscular fat (P<0.01) than meat from gilts (P>0.05). The sex did not affect total SFA and MUFA content of meat (P>0.05) but all the detected PUFA (both n-6 and n-3) were lower in barrows than in gilts (P<0.05). In conclusion, the loin from organic pigs at 24 h of retail display had lower pH, but it had no detrimental effects on drip loss. Concerning meat colour, it was more yellow and had more colour intensity (chroma index) than that of conventional pigs. Likewise, organic pork showed more intramuscular fat and polyunsaturated fatty acids n-3 content (mainly C18:3 n-3) than conventional pork muscles.
INFLUENCE OF FEED FORM AND ENERGY CONCENTRATION OF THE DIET ON PRODUCTIVE PERFORMANCE AND DIGESTIVE TRACT TRAITS OF BROWN-EGG LAYING PULLETS FROM 1 TO 35 DAYS OF AGE.

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Abstract
The effects of feed form and energy concentration of the diet on productive performance and the development of the gastrointestinal tract (GIT) were studied in 3,000 Lohmann Brown pullets from 1 to 35 d of age. The experiment was completely randomized with 10 treatments arranged factorially with 2 feed forms (mash vs. crumbles) and 5 levels of energy (2,850, 2,900, 2,950, 3,000, and 3,050 kcal/AMEn kg). Each treatment was replicated 6 times and the experimental unit was a cage with 40 pullets. From d 1 to 35, pullets fed crumbles had higher BWG and better FCR ($P < 0.01$) than pullets fed mash. Also in this period an increase in the energy content of the diet reduced ADFI and increased feed efficiency linearly when pullets were fed crumbles, but no effects were observed when pullets were fed mash ($L; P < 0.01$ for the interaction). The relative weights of the gizzard and GIT were lower ($P < 0.01$) and gizzard pH was higher ($P < 0.05$) for pullets fed crumbles than for pullets fed mash. Also, an increase in the energy content of the diet increased gizzard digesta content ($L; P < 0.05$). It is concluded that crumbling improved performance and reduced the weight of the GIT of the pullets at 35 d of age. An increase in the energy content of the diet improved FCR when pullets were fed crumbles, but no effects were detected for BWG or GIT traits. Therefore, crumbles might be preferred to mash during the starter phase of the rearing period. Pullets respond to increases in energy content of the diet with decreased feed intake when the feed is offered as crumbles but not when offered in mash form.

Key words: crumble feed, digestive traits, energy concentration, pullets.
THE EFFECT OF LYSINE RESTRICTION DURING GROWING PERIOD ON PRODUCTIVE PERFORMANCE, SERUM PARAMETERS AND CARCASS AND MEAT QUALITY OF HEAVY BARROWS AND GILTS

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Abstract
Two hundred Duroc x (Landrace x Large White) pigs, 50% barrows and 50% gilts, of 26.3 ± 0.55 kg of body weight (BW) were used to study the effect of lysine (Lys) restriction in the grower feed on the subsequent performance, carcass composition and meat quality. Four diets with total Lys contents of 1.10, 0.91, 0.78 and 0.52% of fresh matter were offered to animals during the growing period (45 days) in a 2 (sex) x 4 (diet) randomised block factorial design with five pens (replicates) per treatment and five pigs per pen. At the end of the period with Lys restriction, one pig per pen (5 pigs per treatment) was slaughtered and the rest of them offered a common finishing feed with 0.9% total Lys until slaughter with an average BW of 123 kg ± 2.35 kg. During the growing phase, the Lys restriction reduced ADG (P<0.0001) and ADFI (P<0.008) and increased FCR (P<0.0001). The responses were quadratic and similar for both sexes, allowing estimating the minimum content of dietary Lys to maximize ADG (0.97 ± 0.02%) or minimize FCR (0.93 ± 0.03%). At the end of the growing period, protein undernourished pigs showed lower backfat thickness (P<0.0001), because were lighter (47 vs 63 ± 0.7 kg BW), but had higher serum concentrations of triglycerides (P<0.001) and cholesterol (P=0.04). Serum albumin decreased quadratically (P=0.004) with Lys restriction while serum urea was not affected, except for an increase in diet containing 0.5% Lys, reflecting the lower ratio of Lys/crude protein in this treatment. During the finishing phase, ADG increased (P<0.0001) in response to Lys reduction in the grower diet. The response was linear and was associated to the trend for a higher ADFI (P=0.09), giving as a result a linear decrease of the FCR (P=0.002). However, the compensation was not complete and, during the overall growing period, there was a quadratic reduction of ADG (P=0.04) as Lys content decreased in the grower feed, while FCR and fat coverage at the level of Gluteus medius muscle increased linearly (P<0.05). This entailed a delay to reach the slaughtering weight of 1.8 ± 0.43 days per each g Lys restriction/kg diet which was associated with a worsening of the FCR of 0.033 ± 0.009, but also with increasing thickness of fat at the Gluteus medius by 0.51 ± 0.168 mm. The dietary Lys restriction at early age had scarce effect on the rest of carcass traits studied but affected meat quality, increasing all the color parameters (L*, b* and H° P=0.01 quadratic and a* and C* P=0.001 linear), cooking loss (P=0.03) and intramuscular fat content (P=0.07), whereas hardness (P=0.03) and protein content of loin (P=0.02) were decreased. These results confirm that incomplete compensatory growth promoted by Lys restriction of the grower feed may be a useful strategy in production systems of heavy pigs to improve the fatness and meat quality albeit with a cost in terms of FCR.

Keywords: lysine; restriction; requirements; performance; meat quality.