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Effect of Sex and Slaughter Weight on Pork Quality of Swine Received Tuna Oil During Growing and Finishing Period

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Abstract

The objective of this study was to increase ω -3 unsaturated fatty acid content in pork by evaluating the effects of diet, sex and slaughter weight of growing-finishing pigs. The experiment was conducted in a 2x2x3 factorial arrangement of treatments in Randomized Complete Block Design (RCBD) which included diet (0 vs. 2% tuna oil inclusion), sex (barrows and gilts) and slaughter weight (90, 100 and 110 kg). Ninety-six crossbred swine were randomly divided into 12 groups of 8 pigs each and used in the study. The pigs were fed individually giving 8 replications per treatment. According to treatment the pigs were slaughtered as they attained weights of either 90, 100 or 110 kg and the meat quality was assessed. Meat quality in terms of pH of *M. longissimus dorsi* and at 45 minute post mortem of the control group was higher than that of the tuna oil group across slaughter weights and sex (6.55, 6.40 and 6.58, 6.46 respectively; $p < 0.05$). Meat redness score (a*) of *M. longissimus dorsi* of swine slaughtered at 90 kg was less than those slaughtered at 100 and 110 kg (6.34, 7.12 and 7.33 respectively; $p < 0.01$). The fat percentage of the tuna oil group was higher than that of the control group (1.86 vs. 1.66; $p < 0.05$) across slaughter weight range and sex. In addition, fat percentage of barrows was higher than that of gilts (1.86 vs. 1.65; $p < 0.05$) across the slaughter weight range.

Meat from the slaughter weight group of 110 kg had higher shear force value than those of 100 and 90 kg (42.32, 39.23 and 37.24 N respectively; $p < 0.001$) irrespective of sex and diet group. Sensory evaluation of barrows was better than that of gilts in terms of tenderness (6.18 vs. 5.89; $p < 0.001$) and juiciness (5.82 vs. 5.62; $p < 0.05$) across diet and slaughter weight groups. Thiobarbituric acid (TBA) values of meat from the tuna oil group at day 6 and 9 was higher than that of the control group ($p < 0.01$) irrespective of sex. Meat obtained at a slaughter weight of 110 kg tended to be rancid irrespective of sex and diet. Triglyceride content of barrows was higher than that of gilts (1.87 vs. 1.57 g/100 g; $p < 0.05$) at all slaughter weights. In conclusion, barrows fed with tuna oil from 30-100 kg gave a favourable meat quality.

Keywords: Carcass quality, fish oil, growing-finishing pig, ω -3, productive performance