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EFFECT OF SLAUGHTER WEIGHT ON GROWTH PERFORMANCE AND CARCASS TRAITS OF IMMUNOLOGICALLY CASTRATED PIGS FED RACTOPAMINE

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RESUMO

Foi conduzido um experimento com o objetivo de avaliar o efeito do peso de abate sobre o desempenho e características de carcaça de suínos machos imunocastrados (MIC) alimentados com ractopamina. Foram utilizados 45 suínos (23,16±1,64 kg e 59,83±3,49 dias) para avaliar três diferentes pesos de abate: 120, 130, e 140 kg de peso vivo. Não houve efeito do peso de abate sobre o ganho de peso diário, eficiência alimentar, espessura de toucinho e porcentagem de carne magra. Foi concluído que, aumentando-se o peso de abate de suínos MIC alimentados com ractopamina, de 120 para 140 kg não afetou negativamente o desempenho e a qualidade da carcaça e dos cortes em relação à proporção de carne magra. O peso de abate com maior lucro para o produtor depende do custo da ração e do sistema de pagamento.

INTRODUCTION

The slaughter of heavy pigs (140 kg) shows advantages compared to the slaughter of pigs at lighter weight, due to the greater meat quantity produced per animal, which increases industrial yield. However, the impairment of feed efficiency and the increased fat deposition in the carcass may pose barriers to the increase of slaughter weight. The MIC keep partially the advantages of boars regarding to growth performance and carcass quality, without the problems of meat quality caused by sexual odor (Zamaratskaia *et al.*, 2008; Brunius

et al., 2011). In addition, ractopamine is a feed additive that induces the improvement of feed efficiency and lean meat percentage in the carcass in an additive manner with immunologically castration (Lowe *et al.*, 2014), broadening the possibilities of slaughtering heavy pigs. Therefore, the aim of this study was to evaluate the effect of slaughter weight on growth performance and carcass traits of MIC pigs fed ractopamine.

MATERIAL AND METHODS

Forty five entire male pigs (genotype MS-115xF1), weighing 23.16±1.64 kg and aged 59.83±3.49 days were used. The pigs were allotted in number of three per pen (experimental unit) according to the initial weight (block), in an experiment with completely randomized block design and five pens per treatment. Three target slaughter weight were evaluated: 120, 130 and 140 kg of live weight. The pigs were immunologically castrated using two doses (2 mL each) of specific vaccine (Vivax, Pfizer Animal Health), at 56 and 28 days before slaughter. The diets were supplemented with 5 and 10 ppm of ractopamine in the final two 14-day periods, respectively, before slaughter. The animals were fed ad libitum until 80 kg live weight. After this weight the feed was controlled at the level of 90% of ad libitum intake. The slaughter was done in a commercial slaughterhouse after 18 hours of fasting and three hours of lairage. The lean meat percentage was estimated according to the equation (Guidoni *et al.*, 2007): LMP = 58.408 – (0.5886 * backfat thickness) + (0.1739 * loin depth) – (0.0189 * hot carcass weight). Six carcasses per slaughter weight were selected for evaluation of weight and yield of cuts (ham, shoulder, loin, and belly) and its fractions: meat (including part of subcutaneous fat), fat (subcutaneous), skin and bones. The data were submitted to the variance analysis using the GLM procedure of SAS, including the effects of block and slaughter weight. Polynomial contrasts of first and second order were tested ($P>0.10$), using as independent variable the observed average slaughter weight.

RESULTS AND DISCUSSION

There was no effect ($P>0.10$) of slaughter weight on average daily gain and feed efficiency, however, average daily feed intake increased linearly ($P<0.04$) with increasing slaughter weight (Table 1). When evaluating the effect of slaughter weight in gilts and barrows from the same genotype, Bertol *et al.* (2014) observed the same results for daily gain and feed intake, however, in that study, feed efficiency was significantly decreased with increasing slaughter weight. There was no effect ($P>0.10$) of slaughter weight on backfat thickness, loin depth, and lean meat percentage. These results differ from other authors, which found reduction of lean meat percentage in boars (Fàbrega *et al.*, 2011) or barrows and gilts (Bertol *et al.*, 2014) with increasing slaughter weight, which can be imputed to the range of weight evaluated, nutri-

tional composition of the diets, effect of ractopamine, and sex. These results demonstrate the potential of immunologically castrated pigs for maintaining carcass quality even when slaughtered in heavy weights. The weight of cuts and its fractions increased linearly (P<0.01 to P<0.0001) with increasing slaughter weight, but the yield of the pooled cuts and its fractions were not affected (P>0.10). Therefore, increasing slaughter weight from 120 to 140 kg increased the quantity of meat in the carcass without affecting its yield. Despite the heavy weight, none of the carcasses from this study was condemned by the Federal Service of Inspection regarding the size of testicles or sexual odor. For the prices effective in March 2015 in Santa Catarina, the highest profit per kg was obtained with pigs slaughtered at an average weight of 132.30 kg. The reduction of 15% in the price of feed increases the slaughter weight with the best profit to 145.5 kg.

CONCLUSIONS

Increasing the slaughter weight from 120 to 140 kg did not negatively impact growth performance and the proportion of lean meat in the carcass. Therefore, it is possible to slaughter immunologically castrated pigs fed ractopamine at heavy weights without impairing growth performance and carcass quality. The weight of slaughter with best profit for the producer depends on the cost of feed and the payment system.

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Table 1: Effect of slaughter weight on performance and carcass traits of immunologically castrated pigs (mean ± standard error).

Variable	Target slaughter weight, kg	Prob. F				
	120	130	140	Treat	Lin	Quad
Initial weight, kg	23.11 ± 0.79	23.10 ± 0.65	23.29 ± 0.72	0,43	-	-
Final weight, kg	119.6 ± 3.28	132.3 ± 3.23	145.4 ± 1.79	-	-	-
Final age, days	162.8 ± 0.49	176.2 ± 0.53	190.9 ± 0.32	0,0001	0.0001	0.003
Average daily gain, kg	0.938 ± 0.017	0.935 ± 0.019	0.934 ± 0.010	0,98	-	-
Average daily feed intake, kg	2.13 ± 0.039	2.21 ± 0.019	2.30 ± 0.051	0,07	0,04	0,23
Feed efficiency	0.441 ± 0.010	0.424 ± 0.009	0.408 ± 0.012	0,23	-	-
Hot carcass weight, kg	86.47 ± 1.88	94.17 ± 2.68	101.6 ± 1.50	0,001	0,0002	0,80
Hot carcass yield, %	71.08 ± 0.46	71.06 ± 0.32	71.61 ± 0.14	0,54	-	-
Backfat thickness P2, mm	14.27 ± 0.85	14.11 ± 0.84	16.29 ± 0.40	0,19	-	-
Loin depth, mm	60.99 ± 3.12	61.51 ± 2.11	67.28 ± 1.00	0,12	-	-
Lean meat percentage	58.99 ± 1.01	59.01 ± 0.75	58.61 ± 0.29	0,93	-	-
Weight of pooled cuts, kg	79.41 ± 1.18	86.29 ± 1.15	95.30 ± 1.26	0,0001	0.0001	0.28
Yield of pooled cuts, %	93.26 ± 0.28	93.87 ± 0.41	92.82 ± 0.42	0,49		
Meat yield of cuts, %	68.68 ± 0.63	69.32 ± 0.97	67.15 ± 0.93	0,44	-	-
Cost/kg of live pig, R$/kg	2.878	2.850	2.855		-	-
Profit per year[1], R$	6.039,01	13.597,05	12.021,19			

[1]Simulation with lots of 750 pigs Treat= treatment; Lin= linear; Quad = quadratic

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