

THE ADDITION OF RACTOPAMINE TO THE FEED OF LIGHT AND HEAVY SWINE AND ITS IMPACTS ON MEAT QUANTITATIVE CHARACTERISTICS

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Introduction

In the last years, the search for better efficiency in meat production has been the most important challenge faced by swine producers and the scientific community, leading to the application of technological innovations in animal production. Reproduction, health care, management, genetic selection and the use of nutrient repartitioners in swine feed have been evaluated.

With the approval of ractopamine hydrochloride as a feed additive by the Brazilian Ministry of Agriculture and Food Supply, swine producers have an excellent alternative to increase meat production and benefit the swine production chain.

Several studies have demonstrated that ractopamine hydrochloride increases the amount of muscle, depresses fat deposition, besides increasing weight gain and improving feed conversion without interfering with the pork quality. In this context, detailed studies on the effect of ractopamine on meat quantity should be carried out in our country to prove the benefits of this type of feed additive on the swine herd.

Objectives

The aim of the present work is to evaluate the effect of different levels of ractopamine (5 and 10mg/kg) on some slaughter traits like live and carcass weight, lean meat and fat percentage in the carcass and meat quantity in some main cuts.

Methodology

Animals. A total of 80 animals were randomly divided into the eight experimental groups: 4 control groups with different finishing feed consumption periods and 4 experimental groups with different ractopamine and lysine levels. 40 females with an initial weight of 68 kg (light animals) - T1 (n=10); T2 (n=10); T5 (n=10); T7 (n=10), and 40 females with an initial weight of 88 kg (heavy animals) - T3 (n=10); T4 (n=10); T6 (n=10); T8 (n=10) were used in this experiment. The animals came from the same farm and same genetic origin.

Evaluation station building. The building consists of 80 individual pens with semi-automatic feeders, nipple drinkers and an area of 2.50 m²/animal.

Slaughter. The light and heavy animals were kept in the station the period necessary to reach 100 and 120 kg, respectively. Then they were slaughtered in a commercial abattoir. The chilled carcasses were transported to the Meat Technology Center and prepared for boning purposes according to the methodology described by WALSTRA & MERKUS, 1996.

Results & Discussion

Tables 1 and 2 contain the statistical results of the meat quantitative evaluations from the light and heavy animals, respectively.

In Table 1 it can be seen a significant increase ($p < 0.05$) in the meat quantity of the ham, loin and shoulder as the level of ractopamine increases. This additional amount of meat in these cuts represents an economical advantage for the pork industry since both markets, fresh and further processed products, are reached simultaneously. Increases in meat amounts considered as expressive were found in ham (1.88kg and 2.51kg), loin (0.92kg and 0.77kg), belly (0.96kg and 0.42kg) and shoulder (0.75kg and 0.87kg) by adding 5mg/kg and 10mg/kg ractopamine, respectively. The present study showed an average increase in live weight (4.53kg and 2.44kg), and percentage of lean meat (3.57% and 4.17%) with the addition of 5mg/kg and 10mg/kg ractopamine to the feed, respectively. The high advantage of ractopamine was evident in relation to the percentage of lean meat present in the carcass.

The effect of ractopamine on the meat amount in cuts from heavy animals is presented in Table 2. The statistical results showed the same tendency than for light animals, the meat quantity in ham, loin and shoulder was significant higher as the level of ractopamine increased. An average increase in the meat of cuts with high commercial value as ham (1.98kg) and shoulder (0.76kg) was found by adding 10mg/kg ractopamine to the feed. The percentage of lean meat (3.26%) increased significant ($p < 0.05$) with the addition of 10mg/kg ractopamine to the feed.

The results of the present study corroborate with Zagury et al., (2001) that reported a significant increment ($p < 0.05$) in the percentage of meat in the groups of animals that received ractopamine. In another experiment Zagury (2002) concluded that the addition of 5mg/kg of ractopamine resulted a profit of 3,31kg in the weight of slaughter; 2,82kg in the weight of carcass; 0,75% in the percentage of lean meat; 2,12mm in the backfat depth and 2,98kg in the total meat considering the main cuts.

Conclusions

The addition of 5 or 10 mg/kg ractopamine to the feed contributes to increase the amount of meat and decrease fat in both light and heavy animals. Thus, the percentage of lean meat, the weights of the ham, shoulder, loin and belly had been benefited with the ractopamine. This fact has an important technological meaning for the processing of cooked ham (ham), salami (shoulder) and bacon (belly), as the higher yield obtained in the industrial production of these products assures their economical.

References

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Table 1. Mean weight values of live animals, meat quantity in the main cuts, fat and percentage of lean meat in light animals.

	T1	T2	T5	T7
Live weight (Kg)	96,30 ^b ± 5,01	101,82 ^a ± 6,19	100,83 ^{ab} ± 4,70	98,74 ^{ab} ± 5,01
Ham (Kg)	12,93 ^b ± 1,43	14,62 ^a ± 0,74	14,81 ^a ± 1,81	15,44 ^a ± 1,17
Loin (Kg)	7,27 ^b ± 0,69	7,27 ^b ± 0,61	8,19 ^a ± 0,90	8,04 ^a ± 0,73
Belly (Kg)	4,54 ^b ± 0,88	5,02 ^{ab} ± 0,57	5,50 ^a ± 0,43	4,95 ^{ab} ± 0,33
Shoulder (Kg)	5,59 ^b ± 0,65	6,02 ^{ab} ± 0,23	6,34 ^a ± 0,61	6,46 ^a ± 0,67
Fat (Kg)	15,77 ^a ± 1,14	16,63 ^b ± 1,23	14,61 ^a ± 1,06	14,30 ^a ± 1,02
Lean meat (%)	55,41 ^c ± 2,40	56,46 ^{bc} ± 2,27	58,98 ^{ab} ± 2,62	59,58 ^a ± 1,88

Lines with different letters indicate significant differences ($p < 0,05$) between treatments.

Mean ± standard deviation.

T1: basic finishing feed during 28 days.

T2: basic finishing feed during 32 days.

T5: feed with addition of 5mg/Kg ractopamine and 1,15% lysine during 28 days.

T7: feed with addition of 10mg/Kg ractopamine and 1,15% lysine during 28 days.

Table 2. Mean weight values of live animals, meat quantity in the main cuts, fat and percentage of lean meat in heavy animals.

	T3	T4	T6	T8
Live weight (Kg)	120,32 ^a ± 7,64	124,35 ^a ± 7,70	124,16 ^a ± 3,92	121,81 ^a ± 8,45
Ham (Kg)	16,36 ^b ± 1,63	16,78 ^{ab} ± 1,24	17,58 ^{ab} ± 1,55	18,34 ^a ± 1,42
Loin (Kg)	8,52 ^b ± 0,70	9,13 ^{ab} ± 1,01	9,63 ^a ± 0,77	9,60 ^a ± 0,68
Belly (Kg)	5,82 ^a ± 0,92	6,31 ^a ± 0,74	6,45 ^a ± 0,84	6,50 ^a ± 0,65
Shoulder (Kg)	6,70 ^b ± 0,65	7,23 ^{ab} ± 0,55	7,33 ^{ab} ± 0,38	7,46 ^a ± 0,72
Fat (Kg)	21,19 ^a ± 1,58	20,01 ^a ± 1,45	20,24 ^a ± 1,51	18,97 ^a ± 1,41
Lean meat (%)	55,49 ^b ± 2,97	55,49 ^b ± 2,05	57,17 ^{ab} ± 1,96	58,75 ^a ± 1,79

Lines with different letters indicate significant differences ($p < 0,05$) between treatments.

Mean ± standard deviation.

T3: basic finishing feed during 48 days.

T4: basic finishing feed during 52 days.

T6: feed with addition of 5mg/Kg ractopamine and 1,04% lysine during 28 days.

T8: feed with addition of 10mg/Kg ractopamine and 1,04% lysine during 28 days.