

# BODY MEASUREMENTS AND ITS COEFFICIENT OF CORRELATION WITH THE PERFORMANCE INDEX OF SEXED RABBITS SLAUGHTERED AT DIFFERENT AGES

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## ABSTRACT

Body measurements are important to estimate carcass and body weight. One hundred New Zealand White rabbits were used, fifty males and fifty females. They were slaughtered at 75 and 90 days of age. The experimental design was the randomized blocks in a factorial arrangement 2 x 2, with four treatments and five replications. Both, commercial diet and water, were given *ad libitum*. At 75 and 90 days of age, the animals were weighed and body weight, feed intake and feed: gain ratio were obtained. The body measurements evaluated were: body length and chest, abdominal and thigh circumferences. After a 12 hours fasting the animals were slaughtered and carcasses were also weighed. No differences for body measurements were obtained with respect to sex but slaughter age affected thigh circumference ( $P < 0.001$ ). Body length was negatively correlated ( $P < 0.04$ ) with daily weight gain. Thigh circumference was positively correlated with body weight ( $P < 0.003$ ), daily feed consumption ( $P < 0.003$ ), feed: gain ratio ( $P < 0.003$ ), carcass weight ( $P < 0.003$ ) and negatively correlated with daily weight gain ( $P < 0.0003$ ). It was concluded that the rabbits slaughtered at 90 days showed better meat deposition (higher thigh circumference) than the ones slaughtered at 75 days of age and positive correlation between thigh circumference and body weight, daily ration consumption, feed: gain ratio and carcass weight.

**Key words:** body measurements, carcass, growing rabbits.

## INTRODUCTION

Carcass and body measurements can vary among strains (BERNARDINI *et al.*, 1995), rearing systems (DAL BOSCO *et al.*, 2000), slaughter ages (LUZI *et al.*, 2000) but not due to the sex (BERNARDINI *et al.*, 1995; LUZI *et al.*, 2000).

Body measurements have been used in large animals to compare variation in size and shape and to estimate carcass (PACI *et al.*, 1997) or body weight (SHAHIN & HASSAN, 2000).

According to LUZI *et al.* (2000) body length, chest and thigh circumference were higher and the abdominal circumference was lower in rabbits slaughtered at 120 days of age comparing to the ones slaughtered at 90 days.

Slaughter age effects on carcass measurements were showed by LUZI *et al.* (2000). The dorsal length and lumbar and chest circumference was higher in rabbits slaughtered at 120 days of age instead of 90 days.

## MATERIAL AND METHODS

The experiment was conducted in the experimental rabbitary of the Fundação do Ensino Superior de Rio Verde and lasted 5 months (January-May).

One hundred New Zealand White rabbits were used, fifty males and fifty females, weaned when they were 35 day old. They were slaughtered at 75 and 90 days of age. The experimental design was the randomized blocks in a factorial arrangement 2 x 2 with four treatments and five replications. The treatments (T) were: T<sub>1</sub>= five males slaughtered at 75 days of age; T<sub>2</sub> = five females slaughtered at 75 days of age; T<sub>3</sub> = five males slaughtered at 90 days of age; T<sub>4</sub>= five females slaughtered at 90 days of age.

Animals were fed a commercial diet with the following characteristics: crude protein 17%, crude fiber 15%, ether extract 3.37% and digestible energy 2,300 kcal/kg. Both, commercial diet and water, were given *ad libitum*.

At 75 and 90 days of age, the animals were weighed and body weight, feed intake and feed: gain ratio were obtained. The evaluated body measurements were: body length and chest, abdominal and thigh circumferences (PACI *et al.*, 1997). After a 12 hours of fasting the animals were slaughtered. The carotid arteries and jugular veins were cut, the blood was drained and the skin, digestive tract, genital organs and bladder were removed and the carcasses were also weighed.

Statistical analyses were done using the SAEG procedure (SAEG/UFV, 1997) and the statistical significance of differences was assessed by the Tukey test.

## RESULTS AND DISCUSSION

No variations on body measurements (Table 1) were obtained with respect to sex but the slaughter age affected thigh circumference ( $P < 0.0003$ ).

There was no difference on body length, chest and abdominal circumferences of younger and older rabbits or male and female rabbits. This is because the animals were slaughtered before they reached puberty when, probably, they would show differences due the sex and slaughter age. According to OUHAYOUN (1984), sexual dimorphism is expressed by a higher body weight and this does not happen before 15 weeks of age.

The thigh circumference was higher in rabbits slaughtered at 90 days of age and this was already expected because older rabbits are generally heavier and the thigh is a part of the body where there is a greater meat deposition.

**Table 1 – Body measurements (cm) of sexed rabbits slaughtered at different ages**

Characteristic	Sex	Slaughter age (days)		Mean
		75	90	
Body length	Male	35.4 ± 2.0	36.9 ± 3.0	36.1 ± 2.5
	Female	35.3 ± 2.1	36.0 ± 3.3	35.6 ± 2.6
	Mean	35.3 ± 2.0	36.4 ± 3.0	
Chest circumference	Male	27.9 ± 1.3	28.7 ± 0.3	28.3 ± 1.0
	Female	28.3 ± 2.2	28.9 ± 1.6	28.6 ± 1.8
	Mean	28.1 ± 1.7	28.8 ± 1.1	
Abdominal circumference	Male	27.3 ± 1.4	30.2 ± 2.6	28.1 ± 2.7
	Female	27.2 ± 1.2	29.5 ± 0.7	28.3 ± 1.5
	Mean	26.6 ± 1.3	29.8 ± 1.8	
Thigh circumference	Male	14.7 ± 1.1	16.7 ± 0.4	15.7 ± 1.3
	Female	14.8 ± 1.0	16.7 ± 0.4	15.7 ± 1.2
	Mean	14.7 ± 1.0 <sup>B</sup>	16.7 ± 0.4 <sup>A</sup>	

Means followed by different letters differ by Tukey test ( $P < 0.01$ ).

The coefficients of correlation between body measurement and rabbit productive performance at 90 days of age are shown in the Table 2.

**Table 2 – Coefficient of correlation between body measurements and body weight (kg), daily weight gain (g), daily feed consumption (g), feed: gain ratio and carcass weight (g)**

	Body length	Chest circumference	Abdominal circumference	Thigh circumference
Body weight	0.0365	0.2040	-0.3190	0.5917 <sup>**</sup>
Daily weight gain	-0.4055 <sup>*</sup>	-0.2151	-0.1012	-0.6962 <sup>***</sup>
Daily feed consumption	-0.1131	0.1213	-0.0397	0.6142 <sup>**</sup>
Feed: gain ratio	0.1996	0.1744	0.0358	0.7380 <sup>***</sup>
Carcass weight	0.2169	0.2053	-0.2051	0.6710 <sup>***</sup>

\* $P < 0.04$ , \*\* $P < 0.003$  and \*\*\* $P < 0.0003$ .

Body length is negatively correlated ( $P < 0.04$ ) with daily weight gain and this means that the much longer is the body (or how much bigger is the animal) the lower will be its daily weight gain. It reflects the reduction of the metabolism rate that occurs when the age is augmented. The thigh circumference is positively correlated with body weight ( $P < 0.003$ ), daily feed consumption ( $P < 0.003$ ), feed: gain ratio ( $P < 0.003$ ), carcass weight ( $P < 0.003$ ) and negatively correlated with daily weight gain ( $P < 0.0003$ ). The thigh is the area where there is a highest muscle deposition in the rabbit body, so if body weight increases it means that the animal is eating a higher amount of feed (because of it the feed: gain ratio can be higher too) and its carcass will be heavier but, since the heavier animal is an older animal, its metabolism rate is slower and then the daily weight gain is reduced day by day. That's why the correlation between daily weight gain and thigh circumference is negative.

## CONCLUSIONS

It was concluded that the rabbits slaughtered at 90 days showed better meat deposition (higher thigh circumference) than the ones slaughtered at 75 days of age.

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