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Fast-tracking ANIMAL AGRICULTURE in a Challenged Economy

Held at

UNIVERSITY OF IBADAN, NIGERIA

Edited by:

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O. J. Babayemi, O. A. Abu and E. O. Ewuola

DEPARTMENT OF ANIMAL SCIENCE
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MORPHOMETRIC AND CARCASS QUALITY OF CHINCHILLA RABBITS SLAUGHTERED AT DEFINED AGE

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ABSTRACT

A total of twelve (90 days old) Chinchilla rabbits with an average live weight of 1.28-1.30kg were used to evaluate the effect of sex on morphometric, carcass and meat quality of rabbits. Two treatment groups of male and female were employed and each treatment was replicated thrice in a completely randomized design. The rabbits were stunned mechanically, exsanguinated and properly bled. After bleeding the rabbits were skinned and cut into two equal halves. Body morphometric indices such as body length, forelimb length, head length, head width and chest depth were measured and it's result showed that apart from the head width, chest depth and pelvis depth that were significantly higher in female, other body measurement were similar (p>0.05) in both sexes. Water holding capacity was higher in males than in females with values of 76.33 to 70.00 % for shoulder in male and female respectively. The thigh of the male has a value of 80.00 as against 75.00% for the female. The dressing percentage were higher in male (p>0.05) with a value of 45.50% to 41.99% in the female. The taste panelists rated meat from both sexes similar (p>0.05) in all parameters.

INTRODUCTION

Low intake of animal protein by man is a major problem in developing countries and it becomes necessary to find a lasting solution to this problem hence the production of mini livestock.

Meat is the edible part of animal flesh that is acceptable for human consumption. Meat quality is defined as a combination of traits that provide an edible product that is attractive, appetizing, nutritious and palatable after cooking (Kauffmann *et al.*, 1969). The eating quality of meat is related to its palatability and acceptability to the final consumer. In animal science, information about carcass or body composition is an important tool for studies of nutrition, physiology and genetics. Meat composition varies according to the age and feeding system. The carcass quality depends on the animal's weight, carcass yield, cutting yield and muscular mass. Rearing rabbits for meat is an established industry in many countries of the world. Rabbit meat is of high quality, being high in protein and low in fat content. Rabbits have been recognized to have a very important role to play in the supply of animal protein to Nigerians especially in the rural and peri-urban areas. The carcass quality and meat chemical composition of broiler rabbits are influenced by breed and sex (Ouhayoun 1998; Singh and Prasad 2005). Meat from rabbits of any age is highly appreciated for human consumption; it is a product that fits any taste. The present study therefore aimed at evaluating the effects of sex on meat and carcass characteristics of Chinchilla rabbits slaughtered at defined age.

MATERIAL AND METHODS

A total of twelve 90 days old Chinchilla rabbits were used for the experiment.

The rabbits were raised at the Rabbitry Unit of the Teaching and Research Farm, University of Ibadan and the experiment was carried out under humid tropical environment. The experiment was carried out at the Meat Science Laboratory, Department of Animal Science, University of Ibadan.

The live weight of the animals were taken before the commencement of slaughtering with a sharp knife at the ventral part of the neck and then suspended vertically with their head facing the ground for the blood to drain. Bled weight was taken after exsanguinations and draining of blood. Blood weight was obtained by subtracting live weight from bled weight. Body measurement was done by placing the rabbit carcass on the table right side down. A tape rule that was graduated in cm was used for measuring the various parts.

Water holding capacity

Thigh and shoulder muscles were used in determining the water holding capacity of the meat. The press method as modified by Tsai and Ockerman (1981) was employed. One gramme of meat samples were weighed into a 9cm Whatman No.1 filter paper and pressed between two 10.2cm by 10.2cm plexi glass for 1 minute using a vice.

Taste panel evaluation

Cooked rabbit meat samples from the thigh muscle were cut into equal sizes of about 5g and served in odourless plastic plates. The samples were blind coded. A 10 member panel was used to rate samples

Table 1 Carcass and dressing percentage of rabbits slaughtered at defined age

Parameters	MALE	FEMALE
Live weight	1283±14.43	1300±25.15
Bled weight	1146±28.87[b]	1216.67±5.77[a]
Blood (% of live weight)	3.93±0.3.	3.86±0.42
Warm carcass weight	583.33±14.43	550±26.71
Carcass length	5[illegible]7.33±4.62[b]	43.33±20.21[a]
Whole carcass weight	903.33±5.77	850.00±17.71
Length/live weight(mm/kg)	271.99±11.04	263.10±6.94
Dressing percentage	45.5±4.21	41.99±1.48

Means in the same row with similar superscripts are statistically similar (p<0.05).

across the treatments for colour, texture, juiciness, tenderness, aroma and overall acceptability on a nine-point hedonic scale.

Statistical analysis

Analysis of variance was carried out on all data generated during the research. . Least significance difference (LSD) was used to test level of significance.

RESULTS AND DISCUSSION

Table 1 shows the effect of sex on carcass characteristics of Chinchilla rabbit slaughtered at 90 days of age. The mean live weight ranged between 1283.33 and 1300.00g, with the female having higher (p>0.05) value than the males. The value obtained is lower than what was recorded by Ramez *et al.* (2006) and could be due to the age because younger rabbits were used. There was no significant difference between the live weight of male and female. .Male rabbits has a numerical higher values (p>0.05) than females in both the whole carcass weight (903.33 g for male and 850.00 g for female) and warm carcass weight with values of 583 g and 550 g for male and female respectively. The result showed that there was no significant difference (p>0.05) in the dressing out percentage between the male and female rabbits used in this study. The values of 41.99 - 45.50% obtained by Adewumi *et al.* (2004) for pre-pubertal New Zealand male rabbits compares well with the values obtained in the present study.

Carcass length to live weight ratio of male is higher than female with values of 271.99:1 to 263.10:1mm/kg. A low length/ live weight ratio is an indication of greater muscularity/unit length. The results show that the female rabbits in this study tend to be more muscular than the males however; the difference in muscularity was not statistically pronounced.

Morphometric measurement of Chinchilla rabbits at 90 days of age is shown on table 2. The body length, forelimb length, and heart girth were higher (p>0.05) in male rabbits with values of 435, 170 and 243 mm in males and 425, 156, and 240 mm in females respectively. Female rabbits however, have higher (p>0.05) head width than the males with values of 116.67 to 93.33mm. Chest depth of the females (115.00 mm) was significantly higher (p<0.05) than those of the males (89.00mm). The female also has higher (p<0.05) pelvis (56.67mm) than the males (40.00mm). The higher pelvis value in the female could be as a result of physiological preparation for reproduction. Table 3 shows the result of the taste panel evaluation. Evaluation for flavour, juiciness, tenderness and overall acceptability was higher in females than in males and there was no significant difference in each of the characteristics (p>0.05).

Table 2 Morphometric indices of Chinchilla rabbits slaughtered at defined age as affected by sex

Parameters (mm)	MALE	FEMALE
Body length	435.00±22.14	425.33±8.66
Forelimb length	170.00±18.03	156.67±15.28
Head length	116.00±10.41	121.67±5.29
Head width	93.33±2.89[b]	116.67±2.89[a]
Thorax diameter	103.33±5.77	118.33±7.64
Heart girth	243.33±15.28	240.00±13.23
Chest depth	89.00±2.65[b]	115.00±8.66[a]
Pelvis length	40.00±2.32[b]	56.67±5.77[a]
Hind limb	162.33±2.08	163.33±2.88

Means in the same row with different superscripts are significantly different from each other (p<0.05).

Table 3 Sensory characteristics of ninety day old Chinchilla rabbits as influenced by sex

Organoleptic characteristics	MALE	FEMALE
Aroma	4.70±2.67	4.10±2,08
Colour	7.30±0.82	7.00±0.54
Flavour	4.30±1.57	4.60±2.67
Juiciness	5.30±1.70	6.70±2.36
Tenderness	6.50±1.08	7.50±0.85
Overall acceptability	6.90±1.29	7.00±1.41

Means in the same row with similar superscripts are not significantly different from each other (p>0.05)

Table 4 Water holding capacity as influenced by sex

Primal cuts	MALE	FEMALE
Shoulder	76.33±3.21	70.00±5.66
Thigh	80.00±1.73	75.00±0.71

Means in the same row with similar superscripts are not significantly (P>0.05) different from each other.

For aroma and colour, evaluation was higher in males than in females with no significant differences (p>0.05).

CONCLUSION

This study showed that no significant sex effects were found for carcass quality characteristics except for bled weight and carcass length where males were statistically different from the females (p<0.05). In morphometric evaluation the sex effects were found in head width, chest depth and pelvis length.

Sex has no effect on the organoleptic characteristics and water holding capacity of Chinchilla rabbits slaughtered at ninety days.

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