CARCASS CHARACTERISTIC OF SOME NIGERIAN BREEDS OF SHEEP

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ABSTRACT
An experiment was conducted to evaluate the effect of breed on carcass characteristics of some Nigerian breeds of sheep. A total of nine (9) mature rams of 12 months of age (25 Kg) managed on the same system were used. The animals were kept for 24 hours where only water was provided to clear the gut content before slaughter. The result indicated that there was significant (P<0.05) effect of breed on carcass characteristics in which Balami breed of sheep had higher value for live weight (39.90 kg), slaughter weight (36.7 kg) and dressed carcass weight (21.0 kg), followed by Uda and Yankasa. Dressing percentage was not significantly (P>0.05) different among breeds. Breed significantly (P<0.05) affected the visceral components in which Balami recorded higher value followed by Uda and Yankasa. The result of prime cut revealed significant (P<0.05) breed effect in which the rack (6.00 kg), rib (2.67 kg), loin (3.10 kg), thigh (3.77 kg), flank (3.19 kg) and breast (2.27 kg) were higher for Balami, followed by Uda and Yankasa. It was concluded that Balami breed of sheep was superior to Uda and Yankasa breeds in terms of carcass characteristics, visceral components and prime cuts. It was therefore recommended that Balami should be used when one is interested in carcass characteristics, visceral components and prime cuts.

Keywords: Breed, carcass and sheep

INTRODUCTION
Sheep contributes about 50% of the total domestically produced meat in Nigeria (Bourn *et al.,* 1994). There are four main breeds of sheep native to Nigeria and these are Balami, Uda, Yankasa and West African Dwarf. Balami and Uda are kept in the semi-arid regions; West African Dwarf sheep in the south and Yankasa throughout the country (Bourn *et al.,* 1994). These four breeds differ considerably in size, coat colour and other characteristics (Adu and Ngere, 1971).

A carcass is made up of various proportions of muscle, bone and fat. The ideal carcass can be described as one that has a minimum amount of bone, a maximum amount of muscle and an optimum amount of fat (Marinova *et al*., 1992; Ameha, 2006). Market requirements differ in size of carcass and level of fatness acceptable. A certain proportion of fat is desirable to reduce drying out of the carcass. On the other hand, too much fat is undesirable. Water makes up 74% of the total muscle weight. The remainder of the muscle is protein, lipid, minerals and some vitamins. Bone provides the rigid support to which the muscles are attached. The hard, calcified cells give bone the strength needed to support the weight of the animal (Marinova *et al*., 1992; Ameha, 2006).

An understanding of carcass characteristics and meat quality traits of these sheep breeds has been over time neglected due to the focus on beef quality, butcher`s expectation and consumer demand for superior quality meat with optimum food value as well as the importance of protein in human diet has however made mutton quality important (Osuhor *et al.,* 2009). Hence, the need to evaluate the carcass characteristics of some Nigerian breeds of sheep.

MATERIALS AND METHODS

Experimental site

The study was conducted at the Animal Products Laboratory of the Department of Animal Science, Ahmadu Bello University, Zaria.

Experimental design and management of animals

The experiment was carried out in a Complete Randomized Design using three breeds of sheep (Balami, Uda and Yankasa). A total of nine (9) matured rams of twelve (12) months of age with an average body weight of 25 kg raised on the same diets and the same system of management were used. The animals were sorted according to the three breed (Balami, Uda and Yankasa) groups comprising of three (3) rams per group. The animals were inspected for diseases and disabilities. The animals were fasted for 24 hours without feed but water was made available before slaughtering.

SLAUGHTER AND CARCASS DISSECTION

The animals were slaughtered according to the *Halal* standard procedure by severing the jugular vein and carotid arteries. The hair was removed by flaying as described by Fasae and Adelegan (2011). The internal organs (kidney, liver, heart and spleen) were carefully excise and weighed. The carcass was cut into primal cuts (shoulder, rack, loin, breast shank and flank) and each part was weighed. The dressing percentage was calculated as the ratio of dressed carcass weight to live weight in percentage.

STATISTICAL ANALYSIS

Data generated were subjected to ANOVA using General Linear Model Procedure of SAS (2005). Significant means will be compared using the Duncan's Multiple Range Test (Duncan, 1955).

RESULTS AND DISCUSSIONS

Carcass Characteristic of Nigerian Breeds of Sheep

There was significant ($P<0.05$) effect of breed on carcass characteristics of sheep (Table 1). The higher values obtained in Balami breed for live weight, slaughter weight and dressed carcass weight might be attributed to the large body size of Balami over Uda and Yankasa. The dressing percentage obtained in this study was lower than the values reported by Osuhor *et al*. (2009) for Yankasa rams fed dried poultry litter plus maize offal supplement. Carcass weight is the main factor affecting the composition of the carcass and is closely related to age at slaughter. As animals mature, they normally gain weight resulting in a heavier carcass. Much of the weight gain of a mature animal is fat rather than muscle. Thus, at heavier live weight, an animal's carcass will have lower proportions of muscle and bone and a higher proportion of fat.

Table 1: Carcass characteristic of Nigerian breeds of sheep

	Breed			
Component	Balami	Uda	Yankasa	SEM
Live weight (kg)	39.90[a]	30.00[b]	27.00[b]	2.22
Slaughter weight (kg)	36.70[a]	27.60[b]	24.84[b]	4.45
Dressed carcass weight (kg)	21.00[a]	16.00[b]	15.00[b]	1.70
Dressing %	52.60	53.00	55.00	3.00

[abc] means within rows having different superscripts differed significantly (P<0.05), SEM = Standard error of mean

Edible and Non-edible By-products Components of Nigerian Breeds of Sheep

Breed significantly (P<0.05) affected the edible and inedible by-products components (Table 2). The lower values obtained in Yankasa, followed by Uda for the edible and inedible by-product components might be due to the small size of Yankasa followed by Uda compared to the higher values obtained in Balami breed. Some breeds mature earlier than others and the main breed differences may be related to the rate of fat deposition during the later stages of growth (Marinova *et al*., 1992; Ameha, 2006). To achieve a similar level of fatness with breeds of different maturity types, it is necessary to market earlier maturing lambs at lighter weights than later maturing lambs.

Table 2: Edible and non-edible by-products components of Nigerian breeds of sheep

	Breed			
Component (kg)	Balami	Uda	Yankasa	SEM
Head	2.40[a]	2.10[b]	1.85[c]	0.03
Leg	1.3[a]	1.0[b]	0.85 [c]	0.01
Heart	0.60[a]	0.25[b]	0.16[c]	0.01
Kidney	0.42[a]	0.27[b]	0.20[c]	0.01
Lung	0.59[a]	0.51[b]	0.47[c]	0.03
Liver	0.83[a]	0.66[b]	0.37[c]	0.01
Spleen	0.11[a]	0.08[b]	0.07[b]	0.01
Testes	1.06[a]	0.98[b]	0.70[c]	0.01
Full gut	4.00[a]	2.70[b]	2.27[c]	0.01
Empty gut content	2.00[a]	1.75[b]	1.70[c]	0.01
Small intestine	0.69[a]	0.62[b]	0.53[c]	0.01
Large intestine	0.36[a]	0.31[b]	0.27[c]	0.01
Blood loss	3.20[a]	2.40[b]	2.26[c]	0.03
Hide and skin	2.80[a]	2.10[b]	1.98[c]	0.03
Pancreas	0.02[a]	0.01[b]	0.01[b]	0.00
Bile duct	0.02[a]	0.01[b]	0.01[b]	0.00

[abc] means within rows having different superscripts differed significantly (P<0.05), SEM = Standard error of mean

Prime Cuts of Nigerian Breeds of Sheep

The results revealed significant (P<0.05) breed effect on the prime cuts (Table 3). The conformation of a carcass refers to its shape. Carcasses that are short in the leg and plump or 'blocky' in appearance are said to have 'good' conformation (Marinova *et al*., 1992; Ameha, 2006). Carcasses with a longer 'leggy' appearance are said to be of 'poor' conformation. Carcasses having good conformation generally contain more fat and less protein than those of poor conformation (Marinova *et al*., 1992; Ameha, 2006). The higher values obtained in Balami over Uda may be due to breed difference. The effect of nutrition on carcass composition is not a simple one as it involves the interactions among

level of intake, the composition of the feed, and nutrient needs of the animal. As more food energy is required to produce a kilogram of fat than a kilogram of muscle, one has to be conscious of the type of market targeted during the feeding operation (Marinova *et al*., 1992; Ameha, 2006).

Table 3: Prime cuts of Nigerian breeds of sheep

Component (kg)	Breed			SEM
	Balami	Uda	Yankasa	
Rack	6.00[a]	5.00[b]	4.70[b]	0.25
Rib	2.67[a]	2.02[b]	2.00[b]	0.14
Loin	3.10[a]	2.53[b]	2.15[b]	0.22
Round/ thigh	3.77[a]	2.47[b]	2.33[b]	0.15
Flank	3.19[a]	2.43[b]	2.37[b]	0.06
Breast	2.27[a]	1.55[b]	1.50[b]	0.06

[abc] means within rows having different superscripts differed significantly (P<0.05), SEM = Standard error of mean

CONCLUSION

It was concluded that Balami breed of sheep was superior to Uda and Yankasa breeds in terms of carcass characteristics, visceral components and prime cuts. It was therefore recommended that Balami should be used for better carcass characteristics, visceral components and prime cuts.

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