

SOME CARCASS TRAITS OF RED SOKOTO GOAT OF NIGERIA

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SUMMARY

A study was conducted to investigate the meat producing potential of the Red Sokoto goat of Nigeria. The twelve Red Sokoto male goats used were slaughtered at an average age of 3 years and liveweight of 27.63kg. The dressing out percentage was 49.3%. The bone to meat ratio of the leg and loin cuts was 0.28. The *longissimus dorsi* muscle (loin eye) area was 10.53 cm.² It is concluded that the Red Sokoto goat has a good potential for meat production. More detailed studies are, however, needed in order to exploit the fattening ability of the breed under range and feedlot conditions.

INTRODUCTION

About 80% of the total world population of 377 million goats are found in the tropical and subtropical regions. Of this number, about 46% or 170 million are found in Africa. Nigeria has the largest population (29.3 million) of goats in Africa (Devendra and Burns, 1970). The Red Sokoto goat accounts for about 59% of this population in Nigeria (Adu, Buvanendran and Lakpini, 1979). The socio-economic importance of the Red Sokoto goat in relation to two other breeds of goat in Nigeria had been described (Adu *et al.*, 1979).

Since Red Sokoto goats are of numerical importance, there is need to quantify their carcass traits to fully appraise their meat — producing ability. This study was therefore conducted to provide primary information on some carcass characteristics of the Red Sokoto goat of Nigeria.

MATERIALS AND METHODS

Twelve male Red Sokoto goats aged between 2½ and 3 years were used in the study. The animals were herded and grazed shrub-savanna between the hours of 8 a.m. and 5 p.m. each day, after which they were fed 450g/head of a mixture of ½ groundnut cake and ½ guinea corn in houses where the animals spent their nights. Water and mineral licks were made available to the bucks *ad libitum*.

The animals were starved of food for 24 hours before slaughtering at the Animal Products Laboratory of Ahmadu Bello University. After slaughter, the animals were skinned, the head and feet removed and the carcass eviscerated. The head, feet, internal organs, the full and empty gut were weighed. The hot carcass was weighed and immediately transferred into a chilling room at 2°C for 24 hours. After chilling, the carcass was weighed and a cut was made between the 12th and 13th rib, without completely separating the carcass into two, to trace the loin eye area. The carcass was split down the vertebral column into two using an electric meat, band saw. Each half was weighed. The left half was jointed into cuts following a slightly modified procedure of the United State's National Livestock and Meat Board (1969). Each cut was weighed. The leg and loin cuts were dissected into edible meat (muscle plus fat) and bone. The heart, kidney, liver and meat from leg and loin were homogenised separately, minced and analysed for chemical composition following the procedures of A.O.A.C. (1970).

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TABLE 1
Some body composition of Mature Red Sokoto Goats.

Component	Weight ^a	As % E.B.W ^b
Slaughter weight, kg	27.63 ± 3.07	
Empty body weight, kg	24.03 ± 1.12	
Drainable blood, kg	1.03 ± 0.01	4.27
Warm carcass, kg	13.65 ± 1.58	56.80
Cold Carcass, kg	13.28 ± 1.56	55.27
Head kg	1.69 ± 0.12	7.03
Skin kg	2.15 ± 0.22	8.95
Feet ^c g	817.63 ± 0.11	3.40
Heart g	118.36 ± 14.26	0.49
Lung + Trachea, g	415.18 ± 25.97	1.73
Liver g	569.00 ± 14.54	2.37
Kidney g	91.13 ± 10.55	0.38
Spleen g	64.50 ± 21.09	0.27
Testes g	182.25 ± 64.32	0.76
Empty gut ^d kg	2.42 ± 0.29	10.07
Kidney fat ^e g	450.38 ± 106.00	1.87
Abdominal fat, g	911.50 ± 189.00	3.79

^aMean ± Standard deviation

^bE.B.W. = Empty body weight (i.e. Slaughter weight-gut fill).

^cUnskinned

^dAs % of Slaughter weight

^ePerirenal + pelvic fat.

TABLE 2
Carcass yield of mature Red Sokoto goats.

Component	Mean	S.D ^a
Dressing, %	48.4-51.2	49.3
Loin eye area, cm ²	8.9-13.0	10.5
Meat ^b in leg cut, g	905.1-1279.6	1144.25
Bone in leg cut, g	239.0-365.0	310.1
Meat ^b in loin cut, g	555.0-818.0	698.9
Bone in loin cut, g	118.0-340.0	222.3

^aS.D. = Standard deviation

^bMeat = Muscle + fat.

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TABLE 3
Weight (g) and percentage^a of Cuts from Mature Red Sokoto goats.

Component	Mean	S.D. ^a	% ^b
Leg	1452.50	191.31	22.71
Loin	918.38	159.17	14.34
Shoulder ^c	1040.25	96.04	16.25
Rack ^d	946.38	142.59	14.79
Set (Breast + Neck)	1303.25	147.53	20.35
Shank and Flank	711.75	143.94	11.13
Jointed half, kg	6.4	0.74	

^aS.D. = Standard deviation

^b% = based on weight of chilled jointed half.

^c5 - rib shoulder.

^dIncluded 6 - 12 ribs.

RESULTS

Slaughter and carcass weights as well as the weights of some body components are given in Table 1. Liveweight at slaughter ranged from 22.9 to 30.3kg with a mean of 27.63 ± 3.07 kg. Gut content accounted for 12.7% while drainable blood accounted for 4.3% of the slaughter weight. Chilling loss was 0.53kg or 3.9% of the warm carcass weight. Visceral organs made up 5.2% of the ingesta-free weight. The amount of internal fat varied considerably between the carcasses.

Carcass yield of the Red Sokoto goat is presented in Table 2. Dressing out percentage ranged between 48.4 and 51.2% with an average of 49.3%. The loin eye area ranged between 8.9 and 13 cm² in the carcasses. Bone in the leg and loin cuts contributed 27 and 32% respectively.

The weight of cuts and the weights as percentages of chilled left half carcass weight are presented in Table 3. Jointing resulted in loss of about 0.28kg of the chilled carcass. The 4 prime cuts (leg, loin, shoulder and rack) made up 68.1% of the chilled carcass weight. The hind

saddle (leg and loin) yield was 37.0% while the fore saddle yield was 62.5% of the chilled carcass.

The chemical composition of some visceral organs and meat from leg and loin cuts are presented in Table 4. Kidney had lower dry matter and fat contents than the liver and heart while meat from the leg cut had lower dry matter, but higher crude protein content than meat from loin cut. The difference in fat content between the 2 sample joints was not considerable. Generally, the ash content of the organs and meat samples showed little differences.

DISCUSSION

This study is an attempt to evaluate the meat potential of the indigenous Red Sokoto goat which because of its number and distribution provide a substantial proportion of meat consumed particularly within the rural communities of Nigeria.

Chilling loss which is a function of surface area of the carcass, relative humidity in the chiller and fat cover on the carcass is basically due to surface dehydration. The loss may be reduced by

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TABLE 4

Chemical Composition (%) of some organs and meat from Mature Red Sokoto goats.

Component	Moisture	Crude-Protein	Fat	Ash
Heart	69.6 ± 5.0 ^a	62.00 ± 15.1	32.8 ± 3.5	0.99
Liver	66.00 ± 5.3	58.1 ± 10.3	24.6 ± 4.2	1.00
Kidney	79.7 ± 0.9	67.3 ± 6.8	17.00 ± 2.3	0.88
Meat ^b from leg	67.2 ± 3.2	64.1 ± 10.5	25.7 ± 4.6	1.04
Meat from loin	58.7 ± 18.1	55.2 ± 8.1	29.5 ± 8.2	1.04

^aMean ± Standard deviation

^bMeat ± Muscle + fat.

providing adequate slaughtering facilities and environment.

The dressing out percentages reported in this study were much higher than those obtained for unfattened Sudan desert goats (Gaili, Ghanem and Mukhtar, 1972) and the indigenous Malawi goats (Owen, 1974), but were less than figures of 51.2 and 50% obtained for fattened West African dwarf goat (Akinsoyinu, Mba and Olubajo, 1975). The loin eye area was larger than the 9.03 cm² reported for mature fattened Sudan desert goat (Gaili *et al*, 1972), but smaller than 11.2 cm² obtained for the unfattened indigenous Malawi goats aged between 15 and 24 months (Owen, 1975). The percentage of bone of joint samples are similar to those reported for fattened Sudan desert goat (Gaili *et al*, 1972).

The results of this study showed that the Red Sokoto goat has carcass yield and characteristics that are similar to those of the West African dwarf goat (Akinsoyinu *et al*, 1975), Malayan goat (Owen, 1974 and 1975) and the Sudan desert goat (Gaili *et al*, 1972). It is plausible to conclude that the Red Sokoto goat has high meat — producing potential which can further be improved through in-depth studies on the fattening ability of the breed under range and feedlot conditions.

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