Conformation and Component Parts of the Carcass of Philippine Native Goat

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ABSTRAK

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Penelitian tentang potensi kambing khususnya kambing lokal Filipina berdasarkan konformasi dan komponen karkasnya masih sangat jarang dilakukan. Oleh karenanya, suatu penelitian yang dilaksanakan di Institute of Animal Science, University of the Philippines Los Banos bertujuan untuk mengetahui komponen karkas dan rasio daging-lemak-tulangnya. Hasil penelitian menunjukkan bahwa di antara potongan besar karkas kambing, bahu mempunyai daging lebih banyak (8,80% bobot hidup) dibandingkan dengan potongan karkas lainnya (kaki, pinggang, iga, dan leher). Akan tetapi berdasarkan persentase potongan besar karkas, kaki nyata memiliki nilai yang lebih tinggi (69,18%) dibanding potongan karkas lainnya. Pinggang mempunyai lemak yang nyata lebih banyak (1,67% bobot hidup) dibandingkan dengan potongan karkas lainnya. Bahu mempunyai tulang yang lebih banyak (4,62% bobot hidup), meskipun berdasarkan persentase potongan besar karkas (*wholesale cut*) iga mempunyai tulang yang lebih banyak (53,36%) dibandingkan dengan potongan karkas lainnya. Bahu mempunyai *boneless recovery* yang nyata lebih banyak (9,39% bobot hidup) dibandingkan potongan karkas lainnya.

K**ata Kunci:** Daging Kambing, Karkas, Bobot Hidup, Potongan Besar Karkas

ABSTRACT

TAMBUNAN, R.D., N.P. ROXAS and D. PAMUNGKAS. 2005. Conformation and component parts of the carcass of Philippine native goat. *JITV* 10(2): 113-117.

Only limited work has been done to assess the potential of Philippines native goat in terms of conformation and component parts of the carcass. Thus, an experiment has been conducted at Institute of Animal Science, University of the Philippines Los Baños, Philippines to determine carcass and lean-fat-bone yield of different cuts of chevon from Philippine native goat. Result showed that among the wholesale cuts of chevon, shoulder had significantly higher separable lean content (8.80% of LW) than leg, loin, rib, and neck. Based on % wholesale cuts (WC), however, the leg had significantly higher value (69.18%) than the other chevon cuts. Loin had significantly higher separable fat (1.67% of LW) than the other chevon cuts. Shoulder had significantly higher separable bone (4.62% of LW). Based on %WC, however, rib had significantly higher separable bone (53.36%) than the other cuts. The shoulder had significantly higher boneless recovery (9.39% of LW) than other chevon cuts.

Key Words: Chevon, Carcass, Live Weight, Wholesale Cut

INTRODUCTION

Goat (*Capra hircus*) is used as a source of meat and other products (skin, milk, horns, hair, etc). All goats, even those selected for milk production, eventually are used for meat unless they are disposed off for other reasons. Mention must also be made of the varied and numerous miscellaneous functions that goats serve in the tropics. These include their value as a source of income, investment against the failure of cash crops, the prestige inherent in their ownership and their place in custom, religion and festive occasions (DEVENDRA and BURNS, 1983).

Goat farming forms an important and integral part of smallhold agriculture in the Philippines (DAR and FAYLON, 1996), where more than 99% of goats and buffalos populations and 92% of cattle populations are found (SEVILLA, 2002). Traditionally, goats in the Philippines are not looked after, with no attention given to their feed, water, and shelter. They are allowed to tethered throughout day on noneconomic vegetations or are let loose in vacant lots otherwise nonproductive for agriculture. The animals are normally not given any additional feeds aside from crop residues (IBARRA, 1988).

The Philippine native goat is a small, stocky animal with a mature weight ranging from 15-30 kg. It is red, white or black or a combination of these colors. It is primarily raised for meat and seldom for milk (ABILAY, 1985). Most goats in the Philippines are marketed in the live per head basis. Marketing of live goats for meat is generally channeled from the raisers to the consumers

with a few being sold by the raisers through traders, middlemen, retailers or institutional buyers. Pricing practices are generally based on weight, size and breed (ROQUE, 2002).

Despite the obvious importance of chevon, only limited work has been done to assess the potential of goats in terms of conformation and component parts of the carcass. Thus, this experiment aims to determine carcass and lean-fat-bone yield of different cuts of chevon from Philippine native goat. The study was conducted at the Animal Products Processing Division (APPD), Institute of Animal Science, College of Agriculture, University of the Philippines Los Baños, College, Laguna, Philippines.

MATERIALS AND METHODS

A total of twelve heads of male Philippine native goats, almost of the same age (11-12 months), were used in the study and subjected to similar feed and management practices. They were kept in individual pens and were fed elephant grass and commercial concentrated feed in 60:40 ratio, based on dry matter requirement. Grasses were given twice a day, at 08.00 and 16.00 h while concentrated feed was given an hour before grasses, at 07.00 and 15.00 h, respectively. Water was provided *ad libitum*. The goats are fed for 30 days before slaughtered. At slaughter time, these goats underwent fasting for 12 hours but had free access to water before slaughter.

Slaughtering procedures followed the method of IBARRA (1983). The animal was decapitated, while the blood was drained into a bucket after which its weight was measured. The decapitated animal was flayed by gentle tearing of the skin from the carcass. The head was removed at the atlas joint, while the hind and forefeet were separated at the tarso-metatarsal and carpo-metacarpal junctions. The dressed carcass was without kidneys, kidney fat and pelvic fat. Hot carcass weight and the weights of the head, skin, some visceral organs (heart, liver, lungs, gastro-intestinal tract and kidneys) and fat depots were recorded. Empty body weight (EBW) was calculated by deducting the weight of stomach contents from the fasted live weight at slaughter. Dressing percentage was obtained by dividing hot carcass or chilled carcass weight with EBW or liveweight (LW).

After chilling the carcass for 24 hours, cold carcass weight was recorded. Carcass was split down the dorsal midline. The right and left side from each carcass was cut into five wholesale cuts (leg, loin, rib, shoulder and neck) and weighed. Based on IBARRA (1983), the leg was separated by a cut at the tip of the pelvic bone perpendicular to the underline when the carcass is extended. The posterior portion of the carcass is the leg. The loin is the region of the carcass from the tip of the pelvic bone to the 12th rib. The rib is cut from the point where the loin is separated and between the 3rd and 4th rib. The shoulder includes regions from the 3rd rib and 2nd *cervical vertebra*. The shank portion is included in this cut. The neck is the portion with remaining parts of the carcass after the leg, loin, rib and shoulder have been removed.

After weighing, each cut was dissected into knife-separable components of muscle, fat (subcutaneous fat, intermuscular fat, and internal fat) and bone (including large ligaments) to determine the physical composition. Percentages of lean, fat, and bones were obtained from each cut and expressed as percent cut, percent chilled carcass, and percent live weight. Boneless recovery is the yield of the carcass devoid of bones (IBARRA, 1983).

RESULTS AND DISCUSSIONS

Whole carcass yields

Means of carcass yield of Philippine native goat are presented in Table 1. Among the wholesale cuts of chevon, shoulder was the heaviest. The shoulder had an average weight of 2.16 kg while the leg, loin, rib, and neck had 1.66, 1.23, 1.09, and 0.59 kg, respectively.

Table 1. Carcass yield of Philippine native goat

Item	Mean ± standard deviation
Number of observations	12
LW (kg)	15.43 ± 0.09
Wholesale cuts:	
Leg	
Weight (kg)	1.66 ± 0.03
% of LW	10.79 ± 0.21
% of chilled carcass	24.67 ± 0.51
Loin	
Weight (kg)	1.23 ± 0.02
% of LW	8.01 ± 0.11
% of chilled carcass	18.31 ± 0.26
Rib	
Weight (kg)	1.09 ± 0.03
% of LW	7.03 ± 0.24
% of chilled carcass	16.09 ± 0.53
Shoulder	
Weight (kg)	2.16 ± 0.03
% of LW	14.01 ± 0.14
% of chilled carcass	32.05 ± 0.29
Neck	
Weight (kg)	0.59 ± 0.02
% of LW	3.81 ± 0.10
% of chilled carcass	8.71 ± 0.22

The shoulder represents 14.01% of LW or 32.05% of chilled carcass while the leg represents 10.79% of LW or 24.67% of chilled carcass. The loin, rib and neck represent 8.01, 7.03, and 3.81% of LW or 18.31, 16.09, and 8.71% of chilled carcass, respectively. These findings differ from the study of MALABANAN (1976) where the weights of shoulder, leg, loin, rib, and neck were found to be 2.30, 2.41, 1.10, 1.30, and 0.59 kg, respectively. The leg was the heaviest, representing 12.60% of LW, while shoulder represents 12.10% of LW. The goats in this study had an average slaughter weight of 15.43 kg while MALABANAN (1976) reported an average liveweight of Philippine goat at 18.97 kg. The differences between the 2 reports may be due to the age and sex of animals. In this study, about 12 months old male goats were used while MALABANAN (1976) used about 18 months old, both male and female goats. According to RAGHAVAN (1988), at a given liveweight males are generally heavier than females; and in most trials, older goats were noted to have heavier carcasses compared with younger goats.

Table 2 presents the means of the lean, fat, and bone yields of the goats used in this study. Philippine goats in this study had an average total separable lean, fat, and bone of about 4.11, 0.30, and 2.32 kg, respectively. The total lean represents 26.62% of LW or 60.88% of chilled carcass. The total separable fat represents 1.97% of LW or 4.51% of chilled carcass, and the total separable bone represents 15.06% of LW or 34.43% of chilled carcass. These results differ from the study of MALABANAN (1976) which reported an average total separable lean, fat, and bone of about 5.26, 1.14 and 1.62 kg, respectively or 27.60, 9.00, 4.60% of LW, respectively. The boneless recovery of the animals in this study was 4.41 kg or 28.59% of LW while in MALABANAN (1976), the value reported was 6.40 kg or 32.22% of LW. As described before, the differences between 2 findings could be caused by differences in age and sex.

Based on weight, % LW and % CC, the shoulder had the heaviest separable lean content of 1,356.33 g, 8.80 and 20.11%, respectively (Table 3). This is higher than that of the leg, loin, rib, and neck. Based on % WC, however, the leg had the heaviest percent separable lean (69.18%). This value is higher than that of the neck, shoulder, loin, and rib. These results differ from the study of IBARRA (1983) which indicated that the leg had the greatest lean content (7.10% of LW, 16.45% of CC, and 56.38% of %WC). In his study, IBARRA (1983) used about 18 months old and both male and female goats.

Comparing the separable fat content of the different wholesale cuts based on weight, %LW, %CC and %WC, the loin had the highest separable fat with 112.67 g, 0.73, 1.67, and 9.11%, respectively. The loin had higher separable fat over the other chevon cuts while the leg was not insignificantly different from the weight, %LW, and %CC of the rib. Based on %WC, rib was insignificantly different from that of the shoulder. The results of this study were similar to the findings of MALABANAN (1976) which reported that the loin contains the highest percent fat among all the wholesale cuts of chevon.

Table 2. Mean weight and as % of LW and % chilled carcass of the lean, fat and bone of the Philippine native goat

Item	Mean ± standard deviation
Number of observations	12
LW (kg)	15.43 ± 0.09
Chilled carcass	
Weight (kg)	6.74 ± 0.05
% of LW	43.72 ± 0.15
Total lean	
Weight (kg)	4.11 ± 0.04
% of LW	26.62 ± 0.23
% of chilled carcass	60.88 ± 0.58
Total fat	
Weight (kg)	0.30 ± 0.02
% of LW	1.97 ± 0.14
% of chilled carcass	4.51 ± 0.36
Total bones	
Weight (kg)	2.32 ± 0.02
% of LW	15.06 ± 0.11
% of chilled carcass	34.43 ± 0.22
Boneless recovery	
Weight (kg)	4.41 ± 0.03
% of LW	28.59 ± 0.22
% of chilled carcass	65.39 ± 0.51

Furthermore, shoulder had the heaviest separable bone with 713 g, 4.62% of LW, and 10.57% of CC. This is higher than that of the rib, leg, loin, and neck. Based on %WC, rib had the highest separable bone (53.36%) than other cuts. Rib had higher value than that of shoulder, neck, loin, and leg. These findings differ from the study of MALABANAN (1976) who reported that percent separable bone of the leg, loin, neck, and shoulder were not different to that of the whole carcass but lower than the rib.

Table 3. Mean yields of the different wholesale cuts of Philippine native goat

Trait	Leg	Loin	Rib	Shoulder	Neck
Lean:					
Weight (g)	1,150.83	751.50	468.17	1,356.33	388.00
% LW	7.46	4.87	2.98	8.80	2.52
% CC	17.06	11.14	6.81	20.11	5.75
% WC	69.18	60.86	42.79	62.76	66.08
Fat:					
Weight (g)	46.50	112.67	42.17	92.17	10.67
% LW	0.30	0.73	0.27	0.60	0.07
% CC	0.69	1.67	0.62	1.37	0.16
% WC	2.80	9.11	3.85	4.26	1.82
Bone:					
Weight (g)	466.33	370.67	583.67	713.00	188.67
% LW	3.02	2.40	3.79	4.62	1.22
% CC	6.91	5.49	8.65	10.57	2.80
% WC	28.02	30.02	53.36	32.99	32.10
Boneless recovery:					
Weight (g)	1,197.33	864.17	510.33	1,448.50	398.67
% LW	7.76	5.60	3.25	9.39	2.58
% CC	17.75	12.82	7.43	21.48	5.91
% WC	71.98	69.98	46.64	67.01	67.90

LW = live weight, CC = chilled carcass, WC = wholesale cuts

According to KIRTON (1988), several factors may account for the different reported values. Different measurement techniques will affect bone contents: some authors may clean the bones more thoroughly than others. The level of nutrition can also influence the bone content. Moreover, sex differences may contribute to some of the variations in bone contents.

Comparing the boneless recovery of the different wholesale cuts of chevon based on weight, %LW, and %CC, the shoulder had the heaviest values with 1,448.50 g, 9.39, and 21.48%, respectively (Table 3). This is higher than that of the leg, loin, rib and neck. On the other hand, based on %WC, the leg had the highest percent boneless recovery (71.98%) than that of other wholesale cuts. This is higher than that of the loin, neck, shoulder, and rib.

CONCLUSIONS

The average dressing percentage of the Philippine native goats in this study based on chilled carcass weight was 43.72% of LW. Among the wholesale cuts of chevon, shoulder had significantly higher separable lean content (8.80% of LW) than that of the leg, loin, rib, and neck. Based on % WC, however, the leg had higher value (69.18%) than that other chevon cuts. Comparing the separable fat content, loin had higher separable fat (0.73% of LW) than the other chevon cuts. Shoulder had a higher separable bone (4.62% of LW) than that other cuts. Based on % WC, however, rib had significantly higher value (53.36%) than those other cuts. Comparing the boneless recovery, the shoulder had higher values (9.39% of LW) than other cuts.

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