Growth of carcass and carcass component of different slaughter weights of local ram

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ABSTRACT: Quantity and quality of carcass which composed of lean (red meat), bone and fat can be evaluated after the animal has been slaughtered, eviscerated and split into cuts. Accuracy in visually appraising slaughter weight of carcass can be used as a tool in producing red meat animals with a more desirable carcass composition of lean to fat at certain body weight. Eighteen local ram were used in this study. They were slaughtered at 6 categories of slaughter weight, i.e. 7.5 kg, 9.98 kg, 12.5 kg, 15.1 kg, 17.4 kg and 20.2 kg. The objective of the study was to evaluate the growth of carcass and its components (lean, bone and fat) of ram used allometric equation: $Y = aX^b$. The results showed that local ram with those 6 categories body weight yielded carcass in the range from 47.12 to 49.33 % which consisted of lean from 61.99 to 66.47 %, bone from 15.51 to 26.71 %, and fat from 7.07 to 22.66 %. The growth of carcass components in relation to body weight and carcass weight showed that either carcass percentage or lean were fixed, while bone was decreased, and fat was increased with the increasing body weight and carcass weight. The rate of fat deposit was increased with the increasing body weight. It is concluded that local ram generated body weight and simultaneously increases fat content of carcass. Slaughter weight of local ram ranged from 7.6 to 17.4 kg is the best to slaughter for human consumption.

Key words: growth, carcass components, local ram

INTRODUCTION

Goats are kept primarily for meat production in Indonesia. The contribution of goat in the farming for Indonesian small ruminant is substantial. They play an important role as an income generating activity and being a source of animal protein to support Indonesian demand for meat. The unique in favor and palatability of goat meat meets today's demand for goat meat with less fat (Nurgiartiningsih et al., 2006). In general, red meat animals have three productive stages: (a) breeding (reproduction), (b) feeder (growth) and (c) slaughter (carcass or product). With regard particularly the latter, carcass of any species of animal composed of lean (red meat), bone and fat. The carcass is evaluated after the animal has been slaughtered, eviscerated and split into cuts. Accuracy in visually appraising slaughter weight of red meat animals can be used as one tool in producing red meat animals with a more desirable carcass composition of lean to fat at certain body weight (Bogart and Taylor, 1983). Working with sheep, Hasnudi (2004) appraised the carcass components of sheep using the allometric equation of Huxley as follows: $Y = aX^b$. This allometric regression was used in cattle by Coleman et al. (1992) and reported that older cattle produced heavy body weight had higher fat accretive rates than the younger one. The objective of the study was to evaluate the growth of carcass and its components (lean, bone and fat) of ram slaughter at different body weight used the same allometric equation of $Y = aX^b$.

MATERIALS AND METHODS

Eighteen local ram with average body weight of 7.6 to 20.2 kg were slaughtered at six categories slaughter weight, i.e. 7.5 kg, 9.98 kg, 12.5 kg, 15 kg, 17.4 kg and 20.2 kg. Each category consisted of

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three animals. They slaughtered according to Muslim way after fasted for 24 h. Carcasses were wrapped in plastic and chilled at 2-3^{o}C overnight and separated into carcasses components the next day. The separation of the carcasses into lean, bone and fat using procedures similar to those outlined by Soeparno (2005). The variables measured were carcasses and their components (lean, bone and fat). Chemical composition of lean (ash, protein, fat and cholesterol) also measured. Weight of carcasses and its components were transformed logarithmically and fit the following general allometric equation of Huxley : Log Y = log a + b log X (Hasnudi, 2004), where Y represents the weight of carcasses and its components, X represents empty body weight, a represents intercepts and b represents coefficients.

RESULTS AND DISCUSSION

The results of the present study are shown in Table 1. The lowest percentage of carcass production was at slaughter weight of 7.4 kg and followed by 9.98 to 12.3 kg and then relatively fixed from 15.1 to 20.2 kg. The values for fat content were generally increased with the accelerated of growth rate. The percentage of carcass of the 6 categories were in the range from 47.12 to 49.33 % which consisted of lean ranged from 61.99 to 66.47 % and fat ranged from 7.07 to 22.66 %. This implies that the accelerated growth rate and the gain contained an increase proportion of fat as suggested by Byers (1982). Whereas, the percentage of bone were highest at slaughter weight of 7.4 kg and then continued to the lowest one at 20.2 kg with their percentage ranged from 26.71 to 15.51 %. These figures generally followed the s-shaped growth curve illustrated by Bogart and Taylor (1983). These authors also explained that the vital organs (brain and central nervous system, heart, lungs and digestive system) are the first organs to develop and are well developed at birth. After these organs begin developing, they are followed in order by bone, muscle and fat tissue.

Table 1. Mean carcasses production of each group of slaughter weight.

	Slaughter weight, kg					
Variables	7.4	9.98	12.3	15.1	17.4	20.2
Carcass, %	47.12	48.19	49.33	48.79	48.29	48.18
Lean, %	64.90	65.19	61.99	66.47	63.51	65.68
Bone, %	26.71	25.34	22.94	21.31	21.84	15.51
Fat, %	7.07	7.45	13.94	11.53	14.27	19.71

Tabel 2. Chemical composition of lean at different slaughter weight.

	Slaughter weight, kg					
Chemical	7,6	9,98	12,3	15,1	17,4	20,2
Moisture, %	74,89	76,01	73,59	75,51	75,18	74,86
Ash, %	1,13	1,09	0,96	1,05	0,99	1,04
Protein, %	19,15	20,17	19,34	19,90	19,59	19,63
Fat, %	4,43	4,50	4,66	4,89	4,95	5,54
Choleterol,mg/100g	47	49	52	60	63	80

In the present study, the allometric equation for relating carcass components to empty body weight showed coefficient growth of lean, bone and fat were 0.992 (b=1), 0.776 (b<1) and 2.077 (b>1) respectively. This means that the growth of carcass components in relation to body weight and carcass weight showed that either carcass percentage or lean were fixed, while bone was decreased, and fat was increased with the increasing of body weight and carcass weight. The rate of fat deposit was increased with the increasing of body weight. The same allometric regression was used in cattle by Coleman et al. (1992) and they reported that older cattle which produced heavy body weight had higher fat accretive rates than the younger one. Table 2 showed that there is no significant different (P> 0.05) among any variable measured for chemical composition at different slaughter weight of ram. The percentage of moisture content as well as protein were constant in the range of 75% and 16 – 22% respectively (Lawrie, 1995) and also protein of red meat do not affected by age and diet (Soeparno, 2005). Wheeler et al. (1987) reported that fat tissue were fixed with the increase of body

weight and age of animal. It has generally been recognised that goat meat with the level of cholesterol below 70 mg/100 g is good for human health (Lawrie, 1995; Soeparno, 2005). Therefore, slaughter weight of local ram ranged from 7.6 to 17.4 kg is the best to slaughter for human consumption.

CONCLUSIONS

From the results obtained during the experiment, it can be concluded that local ram generated body weight and simultaneously increasing fat content of carcass. Slaughter weight of local ram ranged from 7.6 – 17.4 kg is the best to slaughter for human consumption.

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