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Comparison of Three Slaughtering Methods of Goat on Carcass and Prime Cuts Recovery

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ABSTRACT: *Procedures employed on slaughtering of goat varies due to lack of information on the effect of each process such as scalding, flaying and singeing on the different slaughter parameters and prime cut recovery. Using fifteen male Anglo-nubian goats at 8months old, the effect on slaughtering weight, hot carcass, chilled carcass, dressing percentage and drip loss as well as in the prime cut production was documented. Results show that on slaughter weight, there is no significant difference obtained due to the uniform management production system used in raising the animals. On hot and chilled carcass weights, significant difference was found (p=0.01). Difference on dressing percentage revealed that singeing has the highest recovery rate at 59.92%, and values obtained is significantly different (p=0.05). Drip loss is also highly significant (p=0.05). On the prime cut recovery, highly significant differences were obtained on percentage (%) shoulder, loin and flank, offals and the skin and other cuts did not vary significantly from each other. It can therefore be concluded that each of procedures employed has an effectto the differentparameters considered in goat slaughtering and in prime cut recovery.*

Keywords*: goat, slaughtering procedures, carcass recovery*

I. Introduction

In the past decade, small ruminant production especially goat raising has given importance as livelihood option in the rural areas due to economic advantages as compared to other livestock. Comparing goat and sheep investments with cattle, small ruminant requires considerably less capital per head, while monetary returns are comparable to other livestock enterprises[1]. In support to rural-based enterprise, the raisers were encourage to improve their production by adopting proven technologies.Thus, capital investment is divided for the production of breeders and stocks that are source of meat and milk.[1][2][3][4]

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Goat meat or chevon is regarded as healthy food and known to be high source of protein[5][6], low cholesterol content at 40mg/100g[7]and has lower fat content as compared to other red meat[8][9]. Because of these, chevon became popular food for health conscious people. In the past, research conducted for goat was focused on breeding, production, and productivity improvement and few were conducted on post- product and product development[10][11][12]. These activities are vital in transforming method of marketing the animals from per head to retail.

In the Philippines, demand for chevon is steadily increasing. However, there is no standard practice in slaughtering goat and different procedure are being employed due to little information. Hence, this study was conducted to determine which among the procedures will give better carcass recovery.

II. Materials And Methods

Fifteen male purebred Anglo-nubian goats at 8-month of age raised under uniform production management were used in the study. These animals completely confined; they were given at least five kilograms of grasess and legumes with 200g concentrate daily; given access to water and mineral licks and they were dewormed twice following standard recommendations. The animals undergo fasting overnight to remove unwanted materials in the guts. The animals were group into three for the slaughtering using scalding (T1) which is the process of hair removal by soaking the goat in hot water, flaying (T2) defined as complete removal of the skin and singeing, which is the application of heat o burn the hair of the goat (T3). Five animals were slaughtered per process or treatment. The carcass were then stored inside the freezer before fabricating the prime cuts to be used in the every products developed.

The data were laid-out in a Complete Random Design (CRD). The analysis of variance (ANOVA) was also analyzed at 1% and 5% level of confidence.

III. Results And Discussion

Slaughtering parameters

The difference on the slaughter weight obtained is not significant from all treatments. On hot carcass weight, significant differences were noted at 5% level. Among the three treatments applied, the singeing method obtained the highest hot carcass weight of 23.07kg which was not significantly different from the scalding method which obtained a mean value of 21.90kg. The lowest value was obtained by the flaying method which got an average of 19.27 kg. As with the hot carcass weight, the chilled carcass weight showed significant differences at 5% level, wherein singed animal got the highest value of 22.10 kg which is comparable with the scalded animal which got an average of 20.37kg. The lowest chilled carcass weight registered on the flayed animal with a value of 18.23kg. The different treatments used significantly affected the dressing percentage obtained at 1% level. The singed animal obtained the highest value of 59.92%, followed by the scalded animal with 55.98% and the lowest was on the flayed animal with an average of 51.23%. On drip loss, the data shows that the treatments significantly affected the drip loss at 1% level. The highest value was obtained on the scalded animal with a mean value of 7.00%, followed by the flayed animal with mean value of 5.38%. The singed animal got the lowest drip loss of 4.17% which is comparable with the flayed animal.

Table 1. Slaughter Weight, Hot Carcass Weight, Chilled Carcass Weight, Dressing Percentage and Drip Loss of Goats as Affected by the Different Treatments

PARAMETERS	T1- Scalding	T2- Flaying	T3- Singeing	Mean	Result
Slaughter weight (kg)	36.40	35.67	36.87	36.31	Ns
Hot carcass weight (kg)	21.90[ab]	19.27[a]	23.07[b]	21.41	*
Chilled carcass weight (kg)	20.37[ab]	18.23[a]	22.10[b]	20.23	*
Dressing percentage (%)	55.98[b]	51.23[a]	59.92[c]	55.71	**
Drip Loss (%)	7.00[b]	5.38[a]	4.17[a]	5.52	**

Note: Means followed by a common letter are not significantly different from each other
* - significant
** - highly significantly
NS – Not significant

Prime cut recovery percentage

The results show that highly significant differences were obtained on percentage (%) shoulder, loin and flank, offals and the skin. All other cuts did not vary significantly from each other.

In terms of the % shoulder, analysis of variance revealed that the flayed animal registered a higher percentage of 26.69% compared with both the scalded and singed animal which had comparable mean values of 23.04 and 24.68, respectively. In terms of rib and rack the singed animal obtained the highest percentage of 15.25 compared with that of flayed and scalded animal with comparable values 11.88 and 11.42, respectively. With regards to the other cuts, offals showed a significant difference with the scalded animal getting the highest percentage of 24.05 which is comparable with the obtained value in flayed animal with 23.47%. The lowest value was obtained in the singed animal with a value of 21.03%. Lastly, skin registered a highly significant difference on the flayed animal having the highest value of 16.86 %. This was followed by the singed animal with 11.50% and lastly by the scalded animal with 9.59%. The reason for the high percentage of skin obtained in the flaying method was due to the extent of deskinning wherein some subcutaneous tissues have been taken off.

Table 2. Percentage Weight of Prime Cuts and Other Cuts (%)

Prime Cuts (w/o skin)	T1- Scalding	T2- Flaying	T3- Singeing	Mean	Result
Neck	4.55	4.72	4.58	4.62	Ns
Shoulder	23.04[a]	26.69[b]	24.68[a]	24.80	**
Plate	7.43	8.52	9.71	8.55	Ns
Rib / rack	11.42[a]	11.88[a]	15.25[b]	12.85	*
Loin & flank	7.76[a]	10.13[b]	8.64[a]	8.84	**
Leg and shank	26.28	30.35	31.18	29.27	Ns
Fore shank	6.06	6.44	6.54	6.35	Ns

Note: Means followed by a common letter are not significantly different from each other

The values slaughter weight obtained did not vary from each of the treatment under study since the experimental animals came from uniform production management system. On hot and chilled carcass weight, flaying obtained the lowest due to the removal of the skin. The dressing percentage obtained from the different methods

of scalding, flaying and singeing were higher compared with the industry's estimate of 40%. They are also higher than the dressing percentage of 47% obtained from native and two-way crossbred, an indication that following standard procedure will lead to better carcass recovery. The result of the present study was in contrary to 48% dressing percentage reported [13] with 5 to 7% above or below difference is expected depending on type and source of the goat.On the effect of drip loss, the lowest value obtained in singed animal may be due to the drying effect of heat applied during the process which may had removed the residual moisture on the surface of the carcass. Moreover, the heat may have caused coagulation of proteins which prevented the dripping of water from the tissues of the carcass. As it has been said, protein has the capacity to retain moisture in the skin.In terms of the flayed animal the removal of the skin may have made the drip loss relatively low because much of the moisture present on the outer portion of the carcass may have been taken off with the skin. The consequence of poor subcutaneous cover and leggy conformation of goat carcasses is that they are susceptible to high moisture losses during chilling. The losses tend to be higher for smaller than the larger carcasses. However the results obtained is contrary with the statement that goats less than 35 kg has about 3% losses, while the losses in the heavier goats were only 2.3%.

Furthermore, the recovery percentages obtained on shoulder, rib/rack and loin and flank cuts can be attributed to the carcass recovery, wherein animals treated with singeing has the highest hot carcass weight as well as dressing percentage.

It can therefore be concluded that slaughtering procedures has effect on carcass and later on the prime cut recovery. These slaughtering procedures when applied also leads to better carcass recovery as compared when goats are slaughtered in traditional way. As procedure leads to different product, these processes should be given consideration to maximize the full potential of the animal being slaughtered.

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