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Effects of Different Rations on the Slaughter and Carcass Characteristics of Ak Keçi (White Goat) Male Kids

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Abstract: Aim of this study was to determine the slaughter and carcass characteristics of Akkeçi (White Goat) male kids which were fed on a standard mixture and vitamin-mineral enriched barley. Flank joints ratio in left half carcass weight was 13.62±0.734% at only barley group and 11.69±0.367% at standard group. Only flank joints between the two groups were found to be significantly different. At the end of this study, it was determined that differences between barley and standard mixture rations on slaughter data and carcass characteristics in Akkeçi male kids were insignificant.

Key words: Dressing percentage, omental and mesenteric fat, carcass joints

Introduction

In Turkey, goat rising has an extensive characteristic due to the social and economical conditions of the farmers, natural conditions and environmental factors which are supplied to goat production. As a result of this extensive farming and the restricted genotypic capacities of our native goat races, yields per goat are extremely low. However, goat stocks across the different parts of Turkey still have an important place in both living of many farmers and in Turkey's economy.

Although fattening performance of goats is not as enough as other ruminants, there has been increasing interest towards farming of goats because of both their increasing importance in meat production and their high lactation capacity per body weight. Therefore, it would be appropriate to choose the best goat farming methods in order to positively affect this interest.

In general information about goat farming and its products is limited in spite of all efforts. Knowledge accumulation by doing various researches will help to both goats farming to be done more rationally and to realize the value of goat products.

Aim of this study was to determine the slaughter and carcass characteristics of Akkeçi (White Goat) male kids which were fed with a standard mixture and vitamin-mineral enriched barley.

Materials and Methods

A total of 16 heads Akkeçi male kids which were weaned at 2.5 month-old age and then fed with different mixtures given at Table 1 for 75 days were obtained from the Research and Experiment Farm of Ankara University and constituted the animal materials.

Table 1: Composition of mixtures and their analytical values

	Rations	
Materials	Barley (%)	Standard (%)
Barley	96.65	32.30
Maize	--	27.40
Soybean pulp	--	8.00
Cotton seed pulp	--	6.00
Sunflower seed pulp	--	12.20
Wheat bran	--	10.45
$CaCO_3$	1.80	2.80
DCP	0.70	--
Salt	0.50	0.50
Preliminary vitamin mixture	0.25	0.25
Preliminary mineral mixture	0.10	0.10
Total	100.00	100.00
Analytical values		
Protein (CP, %)	11.66	17.66
Energy (NB/kg)	724.87	669.89

Male kids were separated into two groups, each has 8 kids. One of the groups was fed on vitamin-mineral enriched barley; the other was fed with standard mixture ad-libitum. Moreover, kids were fed on minced clover as 1% of their body weight twice a day. Fresh and clean water was supplied to the kids during the trial.
Live measurements of all kids were taken before slaughter (Ertugrul, 1996). Hot carcass, hearth, lungs-livers, spleen, omental fat, hide, four feet and head were weighted soon, after slaughter. Carcasses were then placed in a chiller operating at 4 °C for 24 hours. After chilling cold carcasses were measured and weighted (Hankins, 1959), then separated into joints according to a proposed standard method for goats in Mediterranean Countries (Colomer-Rocher *et al.*, 1987). Each joint were also separately weighted.
Means of groups were compeered with 't-test' in using SAS (1998).

Results and Discussion

Pre-slaughter body and 24h after slaughter carcass measurements of kids are given at Table 2.
As it seen Table 2, there is a significant similarity between kids fed on barley and standard mixture in terms of body and carcass measurements ($P>0.05$). Values obtained in this study were in line with those other studies (Kor and Ertugrul, 2000; Kor, 1997; Eker *et al.*, 1976; Elicin *et al.*, 1976; Akman *et al.*, 1991; Daskiran, 1992 and Keles, 1995).
Slaughter characteristics and its proportion at slaughterhouse and hot carcass weight data are given in Table 3 and Table 4.
In this study, slaughter characteristics of male kids fed with two different rations were not significantly different. On the other hand, omental and mesenteric fat, one of the important slaughter parameters, was higher in the subjects fed with standard mixture than that of barley group. This is in favor of male kids fed with barley mixture because omental fat is not utilized with carcass. Moreover, slaughter characteristics determined in this study were in agree with those of other researches (Kor, 1997; Guney *et al.*, 1984 and Yargici and Yener, 1991). However, omental and mesenteric fat in those of this study was lower than those of some studies (Bayraktaroglu *et al.*, 1988 and Hogg *et al.*, 1992), and was higher than those of some studies (Kor and Ertugrul, 2000 and Kor, 1991). There were no significant differences between two groups of kids fed on different rations on the proportion of slaughter by-products to body weight and hot carcass weight.
Carcass composition of 24hrs chilled (at +4 °C) kid carcasses of research materials are seen at Table 5.
As seen at Table 5, there were no significant differences between two groups of kids fed on different rations on carcass composition and weights of left-half carcass joints. However, similar to omental and mesenteric fat, there was more accumulation of kidney knob and channel fat in kids fed on standard mixture.
Carcass loss which was calculated as 100*(cold carcass weight-hot carcass weight)/cold carcass weight was reported as 4.00 ± 0.668 % for kids fed with barley mixture and 3.60 ± 0.190 % for kids fed with standard mixture. Although this was not significantly different, the low carcass loss in later group was due to lower omental and kidney-pelvis fat amount of them.

Table 2: Body and carcass measurements (cm)

	Barley Group	Standard Group
Body measurements (n = 8)	$\bar{X} \pm S_{\bar{X}}$	$\bar{X} \pm S_{\bar{X}}$
Wither height	57.25 ± 0.790	56.00 ± 0.790
Body length	58.13 ± 1.080	58.31 ± 1.080
Heart girth depth	24.38 ± 0.350	24.94 ± 0.350
Heart girth width	15.13 ± 0.470	15.75 ± 0.470
Heart girth circumference	70.38 ± 1.350	71.00 ± 1.350
Leg circumference	61.38 ± 1.350	62.38 ± 1.350
Carcass measurements		
Leg depth	9.13 ± 0.160	9.00 ± 0.160
Leg width	5.63 ± 0.240	5.88 ± 0.240
Leg length	24.50 ± 0.380	24.50 ± 0.380
Rump width	14.25 ± 0.530	14.63 ± 0.530
Heart girth depth	23.50 ± 0.247	24.13 ± 0.247
Heart girth width	15.75 ± 0.547	15.50 ± 0.547
Shoulder width	14.25 ± 0.371	14.44 ± 0.371
Carcass length	59.25 ± 0.873	58.50 ± 0.873

Table 3: Slaughter characteristics

Characteristics (n = 8)	Barley Group $\bar{X} \pm S_{\bar{X}}$	Standard Group $\bar{X} \pm S_{\bar{X}}$
Slaughter weight (kg)	26.05 ± 0.990	27.85 ± 0.990
Hot carcass weight (kg)	13.01 ± 0.667	13.86 ± 0.667
Dressing percentage (%)	49.89 ± 0.950	49.50 ± 0.950
Head weight (kg)	1.75 ± 0.092	1.98 ± 0.092
Pelt weight (kg)	1.95 ± 0.120	1.98 ± 0.120
Four feet weight (g)	712.50 ± 34.395	787.50 ± 34.395
Omental fat weight (g)	376.90 ± 47.050	494.40 ± 47.050
Heart, lungs, liver weight(kg)	1.03 ± 0.035	1.03 ± 0.035
Spleen weight (g)	36.25 ± 2.950	38.75 ± 2.950

Table 4: Proportions of slaughter by-products to body and hot carcass weight (%)

	In Body Weight		In Hot Carcass	
Characteristics	Barley Group $\bar{X} \pm S_{\bar{X}}$	Standard Group $\bar{X} \pm S_{\bar{X}}$	Barley Group $\bar{X} \pm S_{\bar{X}}$	Standard Group $\bar{X} \pm S_{\bar{X}}$
Head	6.72 ± 0.167	7.07 ± 0.167	--	--
Four feet	2.74 ± 0.093	2.84 ± 0.093	--	--
Pelt	7.49 ± 0.348	7.06 ± 0.348	--	--
Omental fat	1.45 ± 0.145	1.77 ± 0.145	2.93 ± 0.291	3.56 ± 0.291
Heart, lungs, liver	3.96 ± 0.121	3.72 ± 0.121	7.97 ± 0.350	7.55 ± 0.350
Spleen	0.14 ± 0.008	0.14 ± 0.008	0.28 ± 0.017	0.28 ± 0.017

Table 5: Various carcass characteristics and weights of left-half carcass joints

Characteristics (n = 8)	Barley Group $\bar{X} \pm S_{\bar{X}}$	Standard Group $\bar{X} \pm S_{\bar{X}}$
Cold carcass weight (kg)	12.48 ± 0.640	13.36 ± 0.640
Cold dressing percentage (%)	47.87 ± 0.903	47.73 ± 0.903
Carcass loss (%)	4.04 ± 0.490	3.60 ± 0.490
Testicle weight (couple) (g)	160.00 ± 22.420	213.13 ± 22.420
Kidney weight (couple) (g)	78.13 ± 2.900	81.88 ± 2.900
Kidney-knob and pelvis fat (g)	330.00 ± 43.765	405.63 ± 43.765
Left-half carcass weight (kg)	6.05 ± 0.230	6.23 ± 0.230
Carcass joints weights (kg)		
Shoulder	1.28 ± 0.067	1.36 ± 0.067
Hind leg	1.81 ± 0.095	1.93 ± 0.095
Neck	0.57 ± 0.084	0.69 ± 0.084
Flank	0.82 ± 0.049	0.73 ± 0.049
Back loin	1.30 ± 0.120	1.50 ± 0.120

Proportions of carcass joints are presented at Table 6 in order to explain the distribution of these joints.
Only flank joints between the two groups found to be significantly different ($P<0.05$).
Carcass composition of this study was similar to those of most other researchers, but higher than some researchers (Kor and Ertugrul, 2000; Keles, 1995; Guney and Cayan, 1987 and Ertugrul, 1994).
In various studies were stated that muscles amounts of carcass in sheep and goats are correlated with *musculus longissimus dorsi* (MLD) area which is taken between 12th and 13th ribs, and MLD areas of 20 kg weighted various goat genotypes from 4.03 to 16.12 cm^2 (Devendra and Owen, 1983). In Turkey, MLD areas were found to be ranged 8.36 to 10.05 cm^2 (Kor and Ertugrul, 2000; Kor, 1997; Akman *et al.*, 1991 and Daskiran, 1992). MLD area of this study was in the range of Devendra and Owen (1983), but was higher than those of other studies (Kor and Ertugrul, 2000; Kor, 1997; Akman *et al.*, 1991 and Daskiran, 1992).
This study was conducted to determine the slaughter data and carcass characteristics of Akkeçi male kids fed with two rations with different content and cost. Findings support that ration with barley can supply adequate performance for lamb feeding (Alarslan, 1993; Celik, 1993 and Isik *et al.*, 1987). However, there was no study

Table 6: Proportions of carcass joints (%)

Characteristics (n=8)	Barley Group $\bar{X} \pm S_{\bar{X}}$	Standard Group $\bar{X} \pm S_{\bar{X}}$
In left-half carcass weight		
Shoulder	21.12±0.280	21.86±0.280
Hind leg	29.88±0.380	31.02±0.380
Neck	9.57±1.190	10.91±1.190
Flank	13.62±0.580	11.69±0.580
Back loin	23.53±1.570	24.08±1.570
In cold carcass weight		
Testicle (couple)	1.27±0.169	1.61±0.169
Kidney (couple)	0.63±0.028	0.62±0.028
Kidney-knob and pelvis fat	2.63±0.280	3.04±0.280
MLD area (cm^2)	11.28±0.880	10.51±0.880

* $P<0.05$

on the effects of barley ration to slaughter data and carcass characteristics in kids.

In conclusion, it was determined that differences between barley and standard mixture rations on slaughter and carcass characteristics in Akkeçi male kids were not statistically different. Moreover, results obtained in this study were in agreement with the other studies worked on slaughter and carcass characteristics. Therefore it would be appropriate and economic for farmers to use vitamin-mineral added barley mixture instead of standard mixture.

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