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Effect of Castration on Livebody Weight and Certain Carcass Traits in Ossimi and Rahmani Lambs

A.A. Younis[1], S. Kotby[2] and G.A.R. Kamar

Animal Production Department, Faculty of Agriculture, Cairo University, Giza, A.R.E.

Twenty two Ossimi and eighteen Rahmani lambs were used in this trial to study the effect of castration on livebody weight and ceratin crarcass traits. Castration was carried out at birth for almost half the number of lambs of each breed group. All lambs were slaughtered at an eaverage age of 6 months.

Both breed and castration had no significant effect on final livebody weight, empty body weight and hot carcass weight. Dressing percentage based on livebody weight was significantly affected by castration ($P<0.01$). castrated lambs had higher values. The estimates obtneid for entire lambs were 43.4 and 43.9 % for Ossimi and Rahmani resprectively. The corresponding figures for thecastrated lambs were 48.0 and 47.4%. Dressing percentage based on empty body weight showed no significant difference due to breed or treatment. Weights of either tail or edible organs (heart + liver + kidneys) showed no significant different among breeds or treatments. However, castrated lambs had significantly ($P<0.01$) heavier omentum as compared to entire lambs.

Castration is widely used all over the world as a means of improving meat quality. Turton (1969) has recently reviewed the effect of castration on meat production from sheep and concluded that the effect of castration on sheep has not yet sufficiently studied on different carcass and meat traits to draw general conclusions.

In Egypt, although shepherds practice castaration on newly born lambs yet published work concerning its effect on Egyptian breeds of sheep is limited. It is therefore, that this trial was undertaken to study the effect of castration in Ossimi and Rahmani lambs on livebody weight and different carcass traits.

Material and Methods

Twenty two Ossimi and eighteen Rahmani lambs born and readed on the Faculty of Agriculture farm, Cairo University were used in this study. Castration was carried out at birth for almost half the number of lambs of each

1. Animal Prod. Dept., Desert Institute, Mataria, Cairo, Egypt.
2. Animal Prod. Dept., Faculty of Agric., Ain Shams University, Shubra Al-Khaima, Cairo, Egypt.

breed by rupturing the spermatic cord using Burdizzo castration instrument. The treatment groups corresponded to 12, 10, 11 and 7 Ossimi entire, Ossimi castrated, Rahmani entire and Rahmani castrated lambs respectively. Lambs were kept with their mothers up to weaning which took place at 4 months old. Dams were provided with concentrates (either broad beans or a mixture of corn and barely, at the rate of $\frac{1}{4}$ kg. daily plus roughages provided *ad. lib.* After weaning lambs were fed on the same concentrate mixture at the rate of $\frac{1}{2}$ kg. per head per day plus roughages (1 kg. of hay) and Egyptian clover.

All lambs were weighed and killed at an average age of 6 months, lambs were fasted for almost 18 hrs. before killing. After killing, the weights of the hot carcass as well as the weights of the different organs and offals were recorded.

Analysis of variance was carried out to study the effect of breed, treatment and their interaction on all traits studied. However, the weight of the omentum, tail and edible organs (liver + heart + kidneys) were reanalysed after adjusting each of them for livebody weight by a covariance analysis.

Since numbers in different subclasses were unequal analysis of variance was performed by the method of unweighted means (Snedecor, 1959).

Results and Discussion

Means of different traits studied are shown in Table 1. Entire Ossimi lambs exceeded wether lambs in final livebody weight by 4.1 kg. while entire Rahmani lambs were inferior in the same trait to wethers by 0.9 kg. Differences due to either breed or treatment were not significant Table 2. It is evident that the response of livebody weight to the treatment in both breeds was in the opposite direction. However, the magnitude of the difference was not enough to cause a significant breed x treatment interaction. Most of the literature as reviewed by Turton (1969) indicates that entire males grow faster and acheive heavier final livebody weights as compared to wethers. The superiority of rams tends to increase with age and for sheep above one year old it is very marked.

Lambs of this study were killed at a relatively young age (6 months)and this might explain why entires were not significantly heavier than wehters in final livebody weight. Badreldin (1951)working on the same breeds found that the entire lambs were supeior to the castrated ones in final livebody weight at 11 months old. However, differences were not statistically significant.

In this study castrated Ossimi lambs had almost an equal value for empty body weight compared to entire ones of the same breed (31.5 vs. 31.3 kg.), inspite of the fact that both treatment groups were different in livebody weight by a value of 4.1 kg. This indicates that entire lambs had, on the average,

TABLE 1. Unadjusted Means of Different Traits

Trait studied	Ossimi			Rahmani		
	Entire	Castrated	Mean	Entire	Castred	Mean
Number of lambs . . .	12	10	—	11	7	—
Livebody Weight (kg.) .	39.5	35.4	37.4	35.4	36.3	35.8
Empty bodyweight (kg.).	31.3	31.5	31.4	29.6	30.9	30.3
Hot Carcass weight (kg.)	17.2	17.1	17.2	15.6	17.2	16.4
Dressing % 1	43.4	48.0	45.7	43.9	47.4	45.6
Dressing % 2	54.9	54.2	54.5	52.7	55.5	54.1
Weight of tail (kg) . . .	1.119	1.008	1.063	1.323	1.609	1.466
Weight of Omentum (gm)	150	917	533	3.6	956	631
Weight of edible organs (heart + liver + kidneys) (gm)	1040	1065	1052	973	987	980

1 Based on livebody weight

2 Based on empty body weight (EBW).

TABLE 2. Means of squares of the analysis of variance for livebody weight, EBW, hot carcass weight and dressing percentage

Source of variation	d.f.	Livebody wt.	EBW	Hot carcass wt.	Dressing % 1a	Dressing % 2b
Breed	1	2.56	1.357	0.585	0.007	0.143
Treatment	1	2.56	0.601	0.540	16.524**	1.113
B. × T.	1	6.25	0.242	0.702	0.276	3.151
Within.	36	1.78	1.252	0.746	0.746	0.993

The harmonic mean of subclass number (no.) = 9.8.
(*a*) Based on livebody weight.
(*b*) Based on BEW.
(**) $P < 0.01$.

more of the digestive tract contents. This pattern was different in the other two Rahmani groups, since difference in either livebody weight or empty body weight among entire and castrated lambs was in the same magnitude and direction. Non of the factors studied showed any significant effect on empty body weight.

Dressing percentages based on livebody weight were significantly higher in castrates compared to entire ones. The difference was found to be 4.6% in Ossimi and 3.5% in Rahmani breeds. The entire Rahmani lambs were slightly superior to the entire Ossimi ones while the castrated Rahmanis were slightly inferior to the castrated Ossimis. When dressing percentage based on EBW was calculated, differences due to castration in Ossimi lambs decreased while castrated Rahmani lambs exceeded the entire ones in this respect by 2.8%. However, none of the factors studied showed any significant effect on this trait. The dressing percentage based on EBW is considered to be a more accurate estimate for measuring the carcass percentage in an animal than dressing percentage based on live body weight since the former estimate eliminates the digestive tract contents (fill). Entire Ossimi lambs of this trial seem to have more of the digestive tract content in comparison to other experimental groups. This contributed to the nonsignificant effect of castration on dressing percentage when based on EBW. The dressing percentage values based on livebody weight were in full accordance with those obtained by Badreldin (1951), who reported values of 48.1, 43.5, 47.4 and 43.9% for Ossimi wethers, Ossimi rams, Rahmani wethers and Rahmani rams respectively. Most of the work done on foreign breeds indicated that wherthers were superior to entires in dressing percentage, although the superiority was not so marked (Bradford and Spurlock, 1964 and Prescott and Lamming, 1964).

The tail and omentum are usually considered as fat stores in the animal's body. In this study Rahmani lambs had significantly heavier ($P < 0.01$) tail as compared to Ossimi ones Table 1 and 3 which is a breed inherent character. Castration had no significant effect on the weight of the tail, though Rahmani castrated lambs scored heavier weights for the tail compared to the entire ones. In both breeds, castrated lambs had heavier weight for the omentum compared to entire lambs and differences were highly significant when analysis was carried out on either unadjusted or adjusted basis Table, 3. These results indicate that castrated lambs were more able to deposit more fat in the omentum than entire ones. Previous reports have indicated that wethers usually have more fat cover on their carcasses (Bradford and Spurlock,1964) and more weight of fat trim (Ray and Mandigo, 1966) compared to the entire ones.

Liver, heart and kidneys are considered as edible organs. Ossimi lambs were slightly heavier in the weight of those edible organs compared to Rahmani ones. However, this difference was not statistically significant. Likewise, castration was of no significant effect in this respect.

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TABLE 3. Analysis of variance and covariance of the omentum, tail and Edible Organs

Source of variation	Unadjusted mean squares				Adjusted (‡) mean squares			
	d.f.	Omentum	Tail	Edble organs	d.f.	Omentum	Tail	Edible organs
Breed	1	0.010	0.1619**	0.0052	1	0.018	0.2600**	0.0020
Treatment	1	0.502**	0.0077	0.0004	1	0.536**	0.0416	0.0020
B × T	1	0.003	0.0395	0.0000	1	0.009	0.00001	0.0000
Within.	36	0.013	0.0242	0.0445	35	0.012	0.0145	0.0078

The harmonic mean of subclass number (no.) = 9.8

(**) $P < 0.01$

(‡) Adjusted for livebody weight.

تأثير الخصى على الوزن الحى وبعض صفات الذبيحة فى حوالى الأوسيمى والرحمانى

درست فى هذه التجربة تأثير الخصى على الوزن الحى عند متوسط عمر ٦ شهور على بعض الصفات فى الذبائح لحوالى ، واستعمل فى تلك التجربة ٢٢ حولى أوسيمى و ١٨ حولى رحمانى . أجرى الخصى عند الميلاد لعشرة حوالى أوسيمى وسبعة حوالى رحمانى بواسطة آلة البرديزو .

وقد تم ذبح جميع حيوانات التجربة عند متوسط عمر ٦ شهور وكانت النتائج كالآتى :

١ ـ لم يتأثر الوزن الحى ، الوزن الفارغ ووزن الذبيحة تأثيرا معنويا بسلالة الحيوان أو بعملية الخصى .

٢ ـ أثر الخصى تأثيرا معنويا على نسبة التصافى (المحسوبة على أساس الوزن الحى) حيث كانت نسبة التصافى ٤٣ر٤ ، ٤٣ر٩ ٪ فى الحيوانات الغير مخصية لكل من الأوسيمى والرحمانى على التوالى فى حين كانت نسبة التصافى للحيوانات المخصية ٤٨ر٥٪ ، ٤٧ر٤٪ لكلا السلالتين على التوالى .

٣ ـ لم يؤثر الخصى تأثيرا معنويا على نسبة التصافى (المحسوبة على أساس الوزن الفارغ) .

٤ ـ لم يتأثر وزن الذيل ووزن القلب والكبد والكلاوى بالسلالة ولا بعملية الخصى .

٥ ـ الحوالى المخصية زاد وزن المنديل فيها زيادة معنوية بالمقارنة بالحيوانات الغير مخصية .