

Impact of *kunnan* on Feedlot performance and carcass traits of Sudan desert sheep

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Abstract- Fourteen male lambs of average weight of 14.46 kg were allotted randomly in two groups. One group (A) was *kunnaned*- a traditional Sudanese method used to control mating which involves application of a double loop cord around the scrotum and the pendulous part of the ram's prepuce sheath, affecting mechanically normal penetration of the penis in the female genital tract, thus preventing conception. The other group (B) left entire. The two groups were fed on concentrate diet comprised of 15.24% crude protein and 10.48 MJ/kg metabolizable energy for 100 days. Feedlot performance and carcass characteristics were measured. *Kunnan* lambs had significantly ($p < 0.01$) increased feed consumption than entire, but *kunnan* had no significant effect ($p > 0.05$) on growth rate, feed conversion ratio and slaughter weight.

Index Terms- *kunnan*, feedlot, carcass, growth rate, slaughter weight.

I. INTRODUCTION

There are several methods used to obtain certain characteristics and benefits from animals such as dehorning, docking and castration (Harold, 2000). Lamb castration is commonly practiced to control breeding and to increase fat deposition in the animal. *Kunnan* is however a method used mainly to control breeding in sheep as a local method in Sudan (Mohammed, 1997). In Sudan rams are *kunnaned* except during the breeding season to have the lambs dropped during the rainy season (McLeroy, 1961). Nothing has been found in the literature about the effect of *kunnan* on the external genitalia of rams during or after its application nor on the possible effects on spermatogenesis or sperm maturation but it is obvious that *kunnan* alters the thermo-regulatory mechanism of the testes which is important for spermatogenesis (George, 1969). Some findings indicated certain pathological changes in pampiniform plexus, cremaster muscle and appendage (Mohammed, 1997).

II. MATERIALS AND METHODS

Experimental animals: Fourteen male lambs were purchased of average age of seven months treated against internal and external parasites and injected with antibiotic as a prophylactic dose. The animals were grouped into two groups at random selection basis.

III. FEEDS AND FEEDING

The fed diet was comprised of groundnut hulls 30%, molasses 25%, wheat bran 18%, groundnut cake 15%, dura grain 10%, salt 1% and lime stone powder 1%.¹

The animals were fed on ad-lib basis and the feed intake of each group was recorded daily as the difference between amount offered and refusals, the dry matter values were used to calculate the dry matter intake. Group feed intake and individual feed conversion efficiency were calculated weekly.

Slaughter procedure and slaughter data: after the feedlot period (100 days) three lambs from each group were randomly selected for slaughter. The six animals were slaughtered after an overnight fast except for water. The animals were slaughtered according to Muslim practices. The carcasses were chilled at 5 °C for 24 hours. Each carcass was split along the vertebral column into left and right sides. The left side was weighed and dissected to obtain the percentages of muscle, bone and fat.

Statistical procedure: Data were analyzed for a completely randomized design (Steel and Torrie, 1980), mean separation was done according to Gomez test. Means were separated using least significant difference LSD.

IV. RESULTS AND DISCUSSION

Table (1) . Feedlot performance of experimental sheep

| Item | Group A | Group B | LS.D | Level of significance |
|---|---------|---------|-------|-----------------------|
| Number of animals | 7 | 7 | - | - |
| Feed lot period (Days) | 100 | 100 | - | - |
| Average initial weight (Kg) | 14.50 | 14.43 | 2.60 | NS. |
| Average final weight (Kg) | 29.29 | 30.71 | 5.70 | NS. |
| Average total weight gain (Kg/head) | 14.79 | 16.29 | 3.82 | NS. |
| Average daily weight gain (gm/head/day) | 147.86 | 162.86 | 15.30 | NS. |
| Average total feed intake (Kg/head) | 98.14 | 104.39 | 2.81 | ** |

| | | | | |
|---|------|------|------|------|
| Average daily feed intake (Kg/head/day) | 0.98 | 1.04 | 0.02 | ** |
| Average daily dry matter intake (KgDM/head/day) | 0.87 | .92 | 0.03 | ** |
| Feed conversion ratio(KgDM/Kg gain) | 5.86 | 5.65 | 0.56 | N.S. |

N.S. and **: Not significant and significant at (p<0.01) respectively

Table (2). Carcass weight and dressing percentage

| Item | Group A | Group B | LS.D | Level of significance |
|---------------------------|---------|---------|------|-----------------------|
| Slaughter weight (Kg) | 31.50 | 32.70 | 3.03 | N.S. |
| Hot carcass weight (Kg) | 15.70 | 15.50 | 3.49 | N.S. |
| Cold carcass weight (Kg) | 15.30 | 15.30 | 2.70 | N.S. |
| Shrinkage % | 1.63 | 1.66 | 4.57 | N.S. |
| Dressing % | | | | N.S. |
| Hot carcass wt/live wt. | 49.60 | 47.40 | 6.17 | N.S. |
| Cold carcass wt./live wt. | 48.60 | 46.60 | 4.08 | N.S. |

N.S. Not significant (p<0.01)

Table (3). Carcass performance of experimental animals

| Item | Group A | Group B | LS.D | Level of significance |
|--------------------|---------|---------|------|-----------------------|
| Total muscle % | 57.44 | 58.49 | 2.66 | N.S. |
| Total bone % | 19.05 | 21.77 | 0.46 | ** |
| Total fat % | 23.51 | 19.74 | 2.91 | * |
| Muscle/bone ratio | 3.02 | 2.69 | 0.15 | * |
| Muscle / fat ratio | 2.44 | 2.96 | 0.56 | N.S. |
| Gut fill % | 14.38 | 13.72 | 6.57 | N.S. |

N.S.,* and **: Not significant and significant at (p<0.05) and (p<0.01) respectively.

As shown on table (1) there were no significant differences on growth rate between the two group and this is supported by the findings of Elshafie (1965) who recorded almost the same growth rate values for castrated and entire Butana calves. The results obtained also agree with Fisher et.al. (2001) in calves from 9 months old to 56 days period during which surgically

castrates were not differing from either entire male bulls or banded castrates, but banded were lighter in weight.

The results also revealed that there was significant (p< 0.01) reduction in feed intake for entire male lambs, and this is comparable with the findings of Muhikambele et.al. (1994) who observed a significant (p< 0.05) reduction in feed intake for entire male Saanen goats, but Eldaw (2001) stated that there were no significant differences between entire and castrated lambs in feed consumption.

Feed conversion ratio results expressed no significant differences between the two groups and this coincides with Schoonmaker et.al. (1999) and Schoonmaker (2002).

On the other hand Klosterman et.al. (1954) in cattle, Nitter (1975) in goats and Kiyama et. al. (2000) in sheep reported reduction effect of castration on feed conversion ratio. No significant differences were reported for carcass weight and dressing percentage between the two groups and this coincides with Abdula et. al. (1994) who reported that hot and chilled carcass weights were similar for rams, wethers and cryptorchids. On the other hand Klosterman et.al. (1954), Shelton et.al.(1984) in cattle and goats respectively indicated that entire males had heavier carcasses than castrates. It is obvious that kunnan does not interfere with the function of the testicles, but castration suppresses completely the testicular function resulting marked reduction in serum testosterone (Kiyama et. al. 2000) which is considered as a muscle builder and plays a role in the growth, body conformation and behavioral characteristics of the male animal.

There were no significant differences between the treatments on hot and cold dressing percentages on slaughter base and these results are in agreement with the results reported by Elshafie (1965), Shelton et.al. (1984), Babiker et.al. (1985) in sheep.

No significant differences appeared in table (3) between the two groups in the percentage of total muscle, bone and fat. The ratios between components of the carcass and the gut fill percent were also not significant between the two groups. Parameters shown on table (3) agree with the findings of Koohmarai et. al. (1996) who reported no significant differences between wethers and intact lambs with respect to total muscle weight.

V. CONCLUSION

The study confirms that kunnan had no role in improving carcass quality of lambs, although it improved slightly dressing percent and fat deposition in the carcass.hereby it can be stated that kunnan is not a dependable method in improving carcass characteristics as castration can do, but still it can be recognized as a cheap, safe and easy way to control sheep mating specially in rural areas.

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