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Dry matter consumption and body weight changes in West African Dwarf (WAD) sheep exposed to modified fistulation technique

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Introduction

Rumen fistulation has been extensively used in the temperate countries for rumen studies involving more of cattle and sheep than goats (Leng, 1990; Alexander et al, 1991). Several methods of achieving this (fistulation) have been described (Jareth, 1948, Memanus et al, 1962 Ash, 1962)

These methods have consistently presented problems with our local or indigenous ruminant 'stock' but have however appeared to be more suited for temperate breeds. Due to post-surgery complications, attempts have been made in the past to develop leak pro of fistula for goats (Mba, 1971; Mba *et al*, 1973) and cattle (Oladosu, 1987). A few published reports however exist on rumen fistulation of an indigenous small ruminant breed (Oladosu and Akpokoje 1975, 1992). An attempt therefore was made in this paper to describe a modified technique which has been demonstrated by the authors and found adoptable for rumen studies in WAD Sheep. It is a combination of a few recommended techniques (Jareth, 1948; Ash, 1962) in use.

Recovery rate viewed as a measure of dry matter consumption pattern and body weight changes in post fistulated animals and which has been variously reported to increase (Oladosu and Akpokodje, 1992) or decrease (Memanus *et al.*,1962) with time after surgery, was also used in this study to evaluate the feed intake response and hence the dry matter consumption in this indigenous sheep breed exposed to this modified fistulation technique

Materials And Methods

Surgery Preparation

Three healthy mature West African dwarf rams aged 24 months and averaging 19kg in weight were dewormed and given acaricide bath 14 days prior to surgery. They were each housed individually in well ventilated concrete floored pens at the University of Nigeria Veterinary Teaching Hospital, Nsukka. Each pen was provided with a feeder and waterer. Feed and drinking water were withdrawn 24 and 12 hours respectively prior to surgery.

Surgical Procedure

Each animal was restrained in right lateral recum and the entire left flank routinely prepared for a surgery. Local anaesthesia was achieved using inv L- method by administration of 10ml subcutaneously. A vertical skin incision on the was made using scalpel blade just about 2.5c from the transverse process of the lumbe exposing the subcutaneous and muscle lay latter were cut by blunt incision exp peritoneum. Mosquito tissue forceps were use the sub- cutaneous and muscle layers and retractor put in place. The peritoneum was th to expose the rumen. A pouch of the ru carefully exteriorised and supported with s A purse-String suture was inserted into the rumen so exteriorised and corresponding to th of the cannula to be inserted. A small incisio made within the area of the purse string usin scissors. A pliable rubber cannula as de Oladosun and Akpokodje (1992), was inser the rumen. With manipulation, the broader cannula was retained in the rumen with the the rumen through the small incision which Pen –strep (20,000IU) was instilled into th peritoneal abdominal muscle layers were sutured lambert suture pattern using 2.0. Chromic skin was sutured using 2.0 silk in a simple suture pattern. No feed was offered the f after surgery. Subsequently however increasing quantities of forage (Table 1) *Panicum maximum*, and occasio *pubescens* and *Calopogonium mucu* offered to each of the animal in exce weight dry matter intake. Daily intrave 20,000IU procaine and strepto administered for 3 days after s antiseptic (Savlon) was used for cleansing of the surgery site. The primary incision line was also fou after surgery. The data on week average daily dry matter consumpti – 4 weeks were subjected to analysis and Torrie, 1980)

Table 1. Proximate constituents of forage grazed (*)

Components	%Composition
Dry matter	45.72
Crude Protein	6.50
Crude fibre	32.70
Ether extract	6.91
Nitrogen free extract	46.10
Ash	7.79

Table 2. Mean weekly drymatter intake and body weight changes in rumen fistulated rams.

	Weeks after surgery					
Parameters	0	1	2	3	4	SEM
Body weight (kg)	[illegible]18.10	[illegible]17.45	[illegible]18.07	[illegible]18.55	[illegible]18.80	0.45
Dry matter intake (g/d)	[illegible]512.2	[illegible]420.33	[illegible]515.33	[illegible]537.00	[illegible]562.66	50.00
Intake as %Body wt	[illegible]2.8	[illegible]2.40	[illegible]2.84	[illegible]2.89	[illegible]2.97	0.30

[illegible] Means on the same row with different superscripts differ significantly ($p<0.05$).

ts And Discussion

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e implanted cannulae appeared to be well tolerated by e rams as the level of discomfort exhibited by the animals was noticeably minimal. The primary incision line also healed satisfactorily. There was no post operative complications as could be occasioned by dehiscence, pericanula or myasis, periodically observed in rumen fistulated animals. These findings were also collaborated by Oladosu and Akpokodje (1992). Mental alertness as well as general well being of animals stabilized in week 1 after surgery. Feed consumption for all animals also tended to drop in week 1, but however showed remarkable improvement in subsequent weeks.

Dry matter consumption/body weight changes.

The average DM consumption of the fistulated animals (Table 2) declined significantly ($p<0.05$) from 512 g daily in the week of surgery (designated as week 0) to 420 g/day in week 1, but rose subsequentially in weeks 2 (515 g/day), 3 (537 g day) and 4 (560 g day) after surgery. Average daily DM consumption values for weeks 0 and 2 were similar ($p>0.05$) and differed ($p<0.05$) from values obtained for weeks 1 and 4, while figures for weeks 3 and 4 did not differ ($p>0.05$) statistically. Save for week 1 which witnessed a sudden drop, there was a progressive trend in DM consumption for all animals with time (weeks) after surgery, albeit reflecting gradual restoration of normal appetite within the experimental animals. While appetite restoration was gradual in this study that is improving from week 2 it was almost immediate (week 1) in a similar study (Oladosu and Akpokodje, 1992) using same breed of sheep but was however depressed up to week 3 in esophageal fistulated sheep (Memanus et al., 1962).

This appetite depression and indeed the significant low DMI recorded for animals in week 1 could be attributed to the inconveniences and discomfort arising from the 'fitted' cannula. In fact rather feed, the animals were most often than not seen 'nibbling' at the cannula or rubbing it against the wall of the pen. The drop in weight recorded for all animals during this period (week 1) may be as a consequence of this depressed appetite and the concomitant low dry matter consumption.

Body weight changes also followed roughly similar pattern as in DMI, confirming that the latter was dependent on the former. Average body weight values were similar ($p>0.05$), for animals during week 0 and 2 but differed ($p<0.05$) from weights recorded on weeks 1 and 3 and 4 (Table 2). The least values recorded in week 1 was probably a confirmation of a shift in DM consumption status of the animals from the recommended normal range of 2.5-3% of body weight (Devendra and Mcleroy, 1982), attained by the animals on weeks 0, 2, 3 and 4, to a significantly low 2.4% in week 1. This suggests, however, that the animals were on negative DM balance during this periods and could further explain the obseived weight losses recorded for all animals during same period.

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