

Utilization Efficiency of Sewan Grass (*Lasiurus indicus*) and Groundnut (*Arachis hypogaea*) Haulm Based Feed in Rathii Calves

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Abstract: Ten Rathii female calves of about 88.5 kg body weight (BW) were randomly divided into two groups and fed *ad libitum* sewan (*Lasiurus indicus*) grass (G1) and groundnut (*Arachis hypogaea*) haulm (G2) along with 0.5 kg concentrate mixture animal⁻¹ day⁻¹ to all the animals for 100 days. Average daily BW gains were 225.0±32.27 and 421.0±26.77 g in G1 (sewan grass fed) and G2 (groundnut haulm fed), respectively, where as DMI were 2.46±0.15 kg and 3.06±0.08 per 100 kg BW in G1 and G2, respectively. Digestibility of nutrients in experimental animals were 40.67±0.36, 45.88±0.43, 44.82±0.33, 46.25±2.75, 61.79±1.12, 37.74±0.92 and 38.42±1.27% in G1 and 60.73±1.84, 63.83±1.69, 65.06±1.74, 50.62±2.06, 61.55±2.86, 49.06±2.07 and 53.43±2.46% in G2, respectively, for dry matter (DM), organic matter (OM), total carbohydrate (TCHO), crude protein (CP), ether extract (EE), neutral detergent fiber (NDF), acid detergent fibre (ADF). The digestible crude protein (DCP) and total digestible nutrients (TDN) values of the feed were 3.30 and 45.89% in G1 and 4.86 and 57.34% in G2, respectively. Groundnut haulm based feed was more palatable than sewan grass-based feed to Rathii calves and supported body weight gain during experimental periods.

Key words: Rathii calves, sewan grass, groundnut haulm, nutrient utilization.

Sewan grass (*Lasiurus indicus*) is an important grass component in Thar desert and plays a unique role in livestock production. In recent years, due to continuous drought in Rajasthan, the necessity of its cultivation as fodder has increased. In winter season, it is generally cut and preserved for use as dry fodder for farm animals. In most of the areas, the preserved grass is poor in quality as the grass is harvested when it is over ripped and has shed the seeds. Feeding in the form of hay as sole feed is not sufficient to meet the maintenance requirements of animals because of low availability of nitrogen and energy (Bohra, 1982). Further, at present, many farmers around Bikaner district having irrigation source (tube well) are cultivating groundnut crop resulting in production of enough groundnut haulm (Ratan, 1999). The fodder and seed yield ratio is about 4:1 (Ramteke *et al.*, 2002) and its crop residues are palatable and rich source of nitrogen (Shukla *et al.*, 1985). Farmers are using sewan grass and groundnut haulm to feed ruminants like cattle, buffalo, sheep, goat with little amount of concentrate mixture/ingredients, particularly for milch animals. Rathii is the main cattle breed in Bikaner district and is fed mainly the locally available feed resources. Present

communication is an attempt to evaluate the nutrient utilization of sewan grass and groundnut haulm-based feed by Rathii calves.

Materials and Methods

Ten Rathii female calves of about 88.5 kg. BW were randomly allotted to two groups of five each. Group 1 (G1) was fed with sewan grass fodder and Group 2 (G2) with groundnut haulm *ad libitum* along with 0.5 kg concentrate mixture to both groups. The feeding trial was continued for 100 days. Body weight was recorded at weekly interval for 15 weeks and a digestion trial with 6 days collection periods at the end of the feeding trial was also undertaken. The collected samples of feed offered, residues left and faeces voided were duly processed, preserved and analyzed for proximate principles (AOAC, 1980) and for fibre fractions (Goering and Van Soest, 1970).

Results and Discussion

Sewan grass contained 4.55% CP, 1.45% EE, 79.31% NDF and 54.30% ADF (Table 1). Ratan *et al.* (2003) reported a higher CP in sewan grass hay, but similar organic matter and ether extract content. Groundnut haulm contained 8.75% CP, 2.14% EE, 55.89% NDF and 49.03% ADF. Ramteke *et al.* (2002) also reported a slightly higher CP values in groundnut haulm (TMV-2). Average daily gain (ADG) in sewan grass-fed calves was

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Table 1. Chemical composition of feeds (% DM)

Feed	OM	CP	EE	TCHO	NDF	ADF
Sewan grass fodder	91.33	4.55	1.45	85.33	79.31	54.30
Groundnut haulm	93.00	8.75	2.14	82.11	55.89	49.03
Concentrate mixture	84.48	24.12	3.08	57.28	43.74	19.56

225.0±32.27 g (Table 2) with a voluntary DMI of 2.46±0.15 kg/100 kg BW, while the average daily gain was 421.0±26.77 g with a voluntary DMI of 3.06±0.08 kg/100 kg BW in groundnut haulm-fed calves. The intake of CP (189 g day⁻¹) in G1 was not sufficient for supporting optimum body weight gain while the intake of CP (363 g day⁻¹) in G2 was sufficient for supporting at least 400 g daily gain in body weight. The TDN (1172 g day⁻¹) and DM (2784 g day⁻¹) intake in G1 was as per the requirement for supporting at least 400 g daily gain in body weight (NRC, 1989) and in G2 the TDN (2210 g day⁻¹) and DM (3884 g day⁻¹) intake were more than the requirement for the same amount of gain in body weight (NRC, 1989) which indicate that by supplying more nitrogen and energy in the similar type of feed, higher body weight gain may be recorded. The concentrate intake was 16.52% of the total DM intake in G1 animals as against 11.46% in G2 animals. The DM intake as observed in the present study was similar as reported by Ratan *et al.* (2003) in sheep fed on sewan grass supplemented with clusterbean seed meal, but it was higher in groundnut haulm than reported by Ramteke *et al.* (2002) in buffaloes. It may be due to the fact that in present study, concentrate mixture was also given along with the groundnut haulm, to make the diet comparable to one practiced in village conditions particularly for growing young animals

Digestibility of ingested nutrients in experimental animals were 40.67±0.36, 45.88±0.43, 44.82±0.33, 46.25±2.75, 61.79±1.12, 37.74±0.92 and 38.42±1.27% in G1 and 60.73±1.84, 63.83±1.69, 65.06±1.74, 50.62±2.06, 61.55±2.86, 49.06±2.07 and 53.43±2.46% in G2 for DM, OM, TCHO, CP, EE, NDF and ADF, respectively (Table 3). Ratan *et al.* (2003) observed a higher nutrient digestibility in sheep fed sewan grass hay plus cluster bean seed meal which may be due to the fact that the fodder used in the present experiment was mature enough as evident from its chemical composition (containing only 4.55% CP) that reduced the efficiency of nutrient utilization. Ratan (1999) also reported a similar nutrient utilization pattern in sheep fed groundnut haulm. The nutritive value of fodder declines as the plant matures (Ranjhan, 1993).

The DCP and TDN values of the feed were 3.30 and 45.89% in G1 and 4.86 and 57.34%, respectively in G2 (Table 3). A higher DCP values but similar TDN values were also reported in sheep fed *Lasiurus indicus* along with clusterbean seed meal (Ratan *et al.*, 2003). It was inferred that the sewan grass and groundnut haulm was palatable to Rathi calves and supported a moderate body weight gain when fed with some amount of concentrate mixture.

Table 2. Dry matter intake and body weight changes in Rathi calves fed sewan grass and groundnut haulm based feed

Attributes	Body weight changes	
	Sewan grass	Groundnut haulm
Initial BW (kg)	88.50±8.27	87.75±4.03
Final BW (kg)	111.0±10.11	129.75±3.54
Total gain (kg)	22.5±3.50	42.0±2.68
ADG (g/d)	225.0±32.27	421.0±26.77
Intake		
Daily DM intake (g)	2784	3884
DMI/100 kg BW (kg)	2.46±0.15	3.06±0.08
DMI/kg W ^{0.75} (g)	80.01±6.09	100.93±2.70
Conc. Intake (% DMI)	16.52	11.46

ADG: Average daily gain, DM: Dry matter, DMI: Daily dry matter intake.

Table 3. Digestibility of nutrients and nutritive value of feeds

Nutrients	Digestibility (%)	
	Sewan grass	Groundnut haulm
DM	40.67±0.36	60.73±1.84
OM	45.88±0.43	63.83±1.69
TCHO	44.82±0.33	65.06±1.74
CP	46.25±2.75	50.62±2.06
EE	61.79±1.12	61.55±2.86
NDF	37.74±0.92	49.06±2.07
ADF	38.42±1.27	53.43±2.46
Nutritive value*		
DCP	3.30	4.86
TDN	45.89	57.34

* kg/100 kg feed.

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