

THE PERFORMANCE OF BALAMI RAMS FED DIFFERENT SUPPLEMENTAL PROTEIN SOURCES AND A BASAL DIET OF SIGNAL GRASS (*Brachiaria decumbens*) HAY

Mohammed, A¹, Umar, A. M.³ Nyako, H. D.² Nuhu, S. H¹., Yaro, S. S¹., Oyeniran, J. O¹. & Ahmad, S⁴.

¹Dept. of Animal Health and Production, Federal Polytechnic, Bauchi, Nigeria, ²Department of Animal production and Range Management, ModibboAdama University of Technology Yola. ³Dept. of Animal Health and Production, Bilyaminu Usman Polytechnic Hadeja, Jigawa State, Nigeria, ⁴Bauchi State Ministry of culture and Rural Devt.

Corresponding author: amoh881@yahoo.com 08027091937

ABSTRACT

The influence of different supplemental protein sources on the performance of Balami Rams was conducted using twenty (20) experimental Rams. The rams were allocated to four treatments with five animals per treatment as replicates. Supplementary diets A, B, C and D were allocated as one supplement per treatment. The supplementary diet containing Cotton Seed Cake and Maize offal was fed to group A, Group B animals were fed supplementary diet containing Poultry litter and Maize offals. Diets containing Moringa olifera and Maize offals was fed to C treatment and D group was the Control treatment with only maize offal (Table I), while Signal grass (*Brachiaria decumbens*) as the basal diet, water, and salt blocks were provided ad libitum throughout the feeding trial of ninety (90) days. The result showed that the average daily feed intake shows significant ($P<0.05$) difference between the treatments with a value of 996.00g/d in treatment C to 888.00 g/d in treatment D (control). The total weight gain (TWG) indicate significant ($P<0.05$) difference between the treatments. The mean total weight gain of 4.52kg was obtained in treatment C followed by 4.12 and 3.56kg for treatment A and B respectively while treatment D (2.68kg) had the lowest weight gain. The highest average daily weight gain (50.22g/d) was recorded in treatment C ($P<0.05$), while treatment D (Control) had the least value of 29.78g/d. Feed conversion ratio (FCR) was highest (27.75) in treatment D and lowest in treatment C (19.82) However, supplementing Balami lambs with Moringa olifera mixed with Maize offals performed better than poultry litter and cotton seed

KYE WORDS: Supplement, Basal, Weight gain, Balami

INTRODUCTION

Animal protein consumption in Nigeria and other developing countries has been reported to be comparatively low (Ayorinde and Aromolaran, 1998). Livestock feeding on poor quality native pasture and cereal straws, result in perpetual low productivity (Maigandi *et al.*, 2003). Magaji (2004) reported that finding an effective way of utilizing the available feed resources and storage devices of feeds remain the subject of interest to many animal nutritional scientists in order to meet up the nutrients quality and availability at a lower cost. Adegbola (2002) reported that in the dry season, ruminant livestock cannot meet their nutritional requirements on grass alone.

Signal grass (*Brachiaria decumbens*) is one of the tropical grasses with tolerance to low soil fertility, relative freedom from pest and diseases, withstand heavy grazing and remain green long into the dry season (Ndikumana and Leeuw de, 1996), but its potential as feed resource is not well recognized in the ecological zone. *Brachiaria decumbens* is the most high-yielding species of the genus *Brachiaria*. Unlike Congo grass, it has no or very few diseases and can be used as permanent pasture. It is palatable to sheep and goats and withstands heavy grazing. Signal grass can be grazed, it can be fed fresh or to be made into hay. Signal grass is also used as a cover crop and in the control of weeds (AFRIS, 2015). However, ruminant animals cannot survive and produce on this grass alone, therefore supplementation has to be provided.

Therefore, this study is designed to assess the influence of supplemental protein sources on the performance of Balami rams fed *Brachiaria decumbens* as basal diet.

MATERIAL AND METHODS

Composition of Supplementary Diets

Composition of the supplementary diets is shown in Table 1. The diets containing CSC + MO is treatment A. The one containing PL + MO is treatment B that of C treatment is made up of MRL + MO while D served as control with MO only as was the case in Table I. The maize offals (MO) mixed with the other supplemental protein sources served as a booster.

Table 1: Gross Composition of the Supplementary Diets

Ingredients	Treatments			
	A	B	C	D
MO	100	100	100	100
CSC	200	00	00	00
PL	00	200	00	00
MRL	00	00	200	00
Total	300g	300g	300g	100g

MO=Maize offal, CSC= Cottonseed cake, MRL= *Moringa olifera* leaves, PL= Poultry litter

Experimental Design and Treatments

Twenty (20) experimental Rams were balanced for weight and allocated to four treatments with five animals per treatment. Each of the experimental Rams was randomly assigned to a treatment. Complete Randomized Design (CRD) was used for the experiment.

Management of the Experimental Animals

Twenty (20) Balami rams between 7 to 10 months (average of 17.5 kg) of age were used for the experiment. They were procured from Dambam local Livestock market, Dambam, Bauchi State. They were quarantined for fourteen days in which animals were fed groundnut haulms. They were ear tagged and given a prophylactic treatment with a broad spectrum antibiotic, dewormed and vaccinated against *Pest Des Petis Ruminant*. Each of the rams was kept in individual pen of 1 by 2M size for proper record keeping.

The experimental animals were fed with *Brachiaria decumbens* as basal diet, water, and salt blocks were provided *ad libitum* throughout the feeding trial. The feeding trial was conducted for 90 days after the adaptation period. Three hundred grams (300g) of supplements was offered for each experimental animal except those in the control treatment where they were offered 100g between 08.00 and 09.30 am before the basal diet i.e. at least 30 minutes before giving the basal diet. Feed offered and refusals were weighed every day before daily morning feeding.

DATA COLLECTION

The data collected during the feeding trials were supplementary, basal and total daily feed intake and water intake on daily basis. The weight gain for each animal was taken weekly throughout the feeding trials.

Feed intake was calculated by measuring daily offered and refusal of each treatment diet throughout the experiment. Daily feed intake was determined as the difference between the feed offered and the residue for both the supplement and the basal feed for each of the experimental Ram. Feed conversion ratio was determined as a ratio between total feed consumed and the total weight gain.

$$\text{Feed conversion ratio} = \frac{\text{Average daily feed intake} \dots\dots\dots 1}{\text{Average daily weight gain}}$$

The animals were weighed individually using weighing scale before the commencement of the experiment and then at weekly intervals between 8: 00 and 9:00 am after overnight fasting. The changes in weight of each of the animals was monitored throughout the period of feeding trial. Average daily weight gain (ADG) was calculated using the following formular as cited by Venkateswarlu *et al.* (2013).

$$\text{ADG} = \frac{\text{Final weight (g)} - \text{Initial weight (g)} \dots\dots\dots 2}{\text{Number of days}}$$

RESULTS AND DISCUSSION

The supplementary feed intake showed significant ($P < 0.05$) difference across the treatments. The control diet (D) recorded the least supplementary feed intake of 92 g/a/d while rams fed diet C recorded the highest mean intake of 275 g/a/d. Treatment A and B had mean daily feed intake of 251 and 242 g/a/d (gram per animal per day) respectively. There was significant ($P < 0.05$) difference among the dietary treatments on daily basal feed intake. Animals on diet B had the least value of 698 g/a/ d while animals fed diet D (control) had the highest mean daily basal feed intake of 796 g/a/d followed by treatment A (736 g/a/d) and C (721 g/a/d),. The average Daily feed intake shows significant ($P < 0.05$) difference among the treatments. The intake ranged from 888 g/a/d in treatment D (control) as the least value to 996 g/a/d in treatment C as the highest. Treatment A and B recorded the mean values of 987 and 940 g/a/d respectively. This is within the range of 848.50 to 982 g/a/d reported by Muhammad *et al.* (2016) when the authors fattened Uda sheep with Fore-stomach digesta as supplement.

Mean final body weight showed significant ($P < 0.05$) difference among the treatments with the least value of 26.28 kg recorded for animals on the control diet (D) and highest mean body weight of 27.96 kg for animals on diet C. Rams on diets A and B had mean values of 27.54 and 27.16 kg weights respectively.

The range tally with 28.75 to 30.38 kg obtained by Muhammad *et al.* (2016) when the authors fattened Uda sheep with Fore-stomach digesta as supplement.

The total weight gain showed no significant ($P > 0.05$) difference across the treatments with the rams fed the control diet (D) as the least mean value of 2.68 kg weight gain and the highest mean value of

4.52 kg weight in treatment C followed by A and B with mean total weight gain of 4.12 and 3.56 kg respectively. Mean daily weight gain showed significant ($P<0.05$) difference across the treatments with the least value of 29.78 g/a/d for rams fed diet D (control) and the highest daily mean weight gain of 50.22 g/a/d for rams fed diet C. Diet A recorded 45.78 g/a/d while rams fed diet B had the mean daily weight gain 39.56 g/a/d. Dry matter intake as percentage body weight had no significant ($P>0.05$) difference across the treatments with treatment D as the lowest (3.11%) and the highest value of 3.29% recorded for treatment A. Feed conversion ratio (FCR) ranged from 19.82 for treatment C to 27.75 for animals fed diet D (Control).

Table 2: Performance of Fattened Balami Rams fed a Basal Diet of *Brachiaria decumbens* Supplemented with different Protein Sources

Parameters	Treatment				
	A	B	C	D	LSD
D FI (supplementary) (g)	251.00 ^b	242.00 ^b	275.00 ^a	92.00 ^c	11.361
DFI (Basal) (g)	736.00 ^b	698.00 ^b	721.00 ^b	796.00 ^a	2.463
Average daily feed intake (g)	987.00 ^a	940.00 ^b	996 ^a	888 ^c	2.106
Initial body weight (kg)	23.42	23.60	23.44	23.60	1.244
Final body weight (kg)	27.54 ^a	27.16 ^a	27.96 ^a	26.28 ^b	0.858
Total weight gain (kg)	4.12 ^{ab}	3.56 ^{ab}	4.52 ^a	2.68 ^b	1.543
Average daily weight gain (g)	45.78 ^{ab}	39.56 ^{ab}	50.22 ^a	29.78 ^b	17.155
DM%BW	3.29	3.18	3.27	3.11	3.632
Feed conversion ratio	21.56	23.76	19.82	27.89	1.362

Means in the same row with different superscript are significantly different ($P<0.05$) DFI=Daily feed intake, DM%BW= Dry matter intake as % body weight, LSD= Least significant difference

CONCLUSION

In conclusion, it was observed that Signal grass had better performance when supplemented with *Moringa oleifera* than other supplemental protein sources used in this experiment in terms of feed intake and weight gain.

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