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RESPONSE OF RED SOKOTO GOATS FED *ANNONA SENEGALENSIS* LEAVES SUPPLEMENTED WITH VARYING LEVELS OF CONCENTRATE MIX CONSISTING OF MAIZE BRAN AND COWPEA SHELL

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ABSTRACT

This experiment was carried out to investigate the response of six growing red Sokoto goats aged 9-12 months with an average weight of 10.83 kg fed *Annona senegalensis* leave supplemented with varying levels of concentrate mix consisting of maize bran (MB) and Cowpea shell (CPS) in 1:2 ratio. The complete randomized design (CRD) was used as the experimental design. The goats were randomly assigned to three treatment groups, designated as T_1, T_2 and T_3 each comprising of two animals with each animal standing a as replicate. Fresh *Annona senegalensis* leaves was cut and dried at room temperature for 12 hours. Feeding regime was twice daily for all the treatment groups. The dried *Annona senegalensis* leave were supplied in the morning for all the treatment groups and supplementary diet was given to T_2 and T_3 while *Annona senegalensis* leave were supplied to T_1 (control) without supplementation. Four litres of water was given daily throughout duration of the study that lasted 56 days. Data were collected on feed intake and growth performance parameters. The result showed that there were no significant ($P > 0.05$) differences statistically between the supplemented treatment and un-supplemented treatment groups. However, supplemented treatment groups, had higher values for all the parameters measured. Based on the results of the present study, it was recommended that concentrate mixture of Maize bran (MB) and Cowpea shell (CPS) in ratio 1:2 at 300 g can be used to supplement *Annona senegalensis* leaves and improve goats' performance.

Keywords: Annona senegalensis leave; Body weight; Feed intake; Red Sokoto goats

INTRODUCTION

Feeding has been known to constitute about 80 percent of the total cost in animal production. The increasing need to minimize the finishing cost of animal product has culminated in sourcing alternative feed stuffs for livestock production. (Adeloye, 1994). Tijjani, *et al*, (2013) reported that the protein content in *Annona senegalensis* leaves could have supplementary effect for the daily protein requirement of the body. Furthermore they reiterated that the presence of important nutrient like carbohydrate, protein means that leaves could be used as a nutritionally valuable and healthy ingredients to improve poultry health and growth performance. It is on this premise that, this study was therefore conducted to investigate the response of red Sokoto goats fed *Annona senegalensis* leaves supplemented with varying levels of concentrate mix consisting of maize bran and cowpea shell.

MATERIALS AND METHODS

The experiment was conducted at sheep and goat unit of teaching and research farm of Niger State College of Agriculture, Mokwa. The experimental design used was complete randomized design (CRD). Six red Sokoto goats aged between 9-12 months with average weight of 10.83 kg were used for this study. The goats were randomly assigned to three treatments designated T1-T3 comprising of two animals with each as a replicate. The animals were kept in individual pens. Prophylactic protocol was observed.

The feeding trial lasted for 56 days. The animals were raised in individual compartment under confinement. The experimental animals were fed at 3% of their body weight (BW). The treatment included feeding

Annona senegalensis, leaves (T_1, control), *Annona senegalensis* leave and supplementation with 200 g (T_2) and 300 g (T_3) CM dry matter (DM) concentrate mix. The proximate constituents of experimental feeds and supplemental diet are presented in Table 1 and 2 respectively. Feed intake, body weight gain and water intake were monitored. All data collected were subjected to Analysis of Variance (ANOVA) using the General Linear Model (GLM) procedure of SAS (2008). Means were separated Using Least Significant Difference (LSD) test of the same package.

Table 1: Proximate composition of experimental feed (%DM basis)

	Maize bran %	Cowpea shell %	*A. senegalensis* leave %
Dry matter	95.56	98.23	23.3
Moisture	4.44	1.78	76.70
Ash	7.94	7.44	1.48
Crude fat	5.24	0.98	6.38
Crude protein	8.30	9.19	8.84
Crude fibre	6.04	5.66	4.40
CHO	68.05	74.96	2.21
Energy value	152.30	124.52	98.96

DM=Dry Matter, CHO=Carbohydrate

Table 2: Proximate composition of Supplementary diet (%DM basis)

Parameter	T_1	T_2	T_3
Dry matter	23.31	97.31	96.90
Moisture	76.70	2.70	3.10
Ash	1.48	11.14	13.40
Crude fat	6.38	3.31	5.74
Crude protein	8.84	10.90	10.90
Crude fibre	4.40	8.47	10.44
CHO	2.21	63.49	56.17
Energy value	98.96	14.80	155.05

RESULT AND DISCUSSION

There were no significant (P>0.05) differences in forage feed intake among the goats fed with or without supplementation throughout the period of evaluation (Fig. 1). However, for the first 13 days of the study, 200g supplementation (T2) enhanced the highest feed intake, followed by no supplementation treatment (T1). Between 23 and 25 days, 200g supplementation (T2) resulted in the highest feed intake. Thereafter,

feed intake generally declined regardless of the treatment. The result of current study is in consonant with the work of Bello and Tsado, (2013).

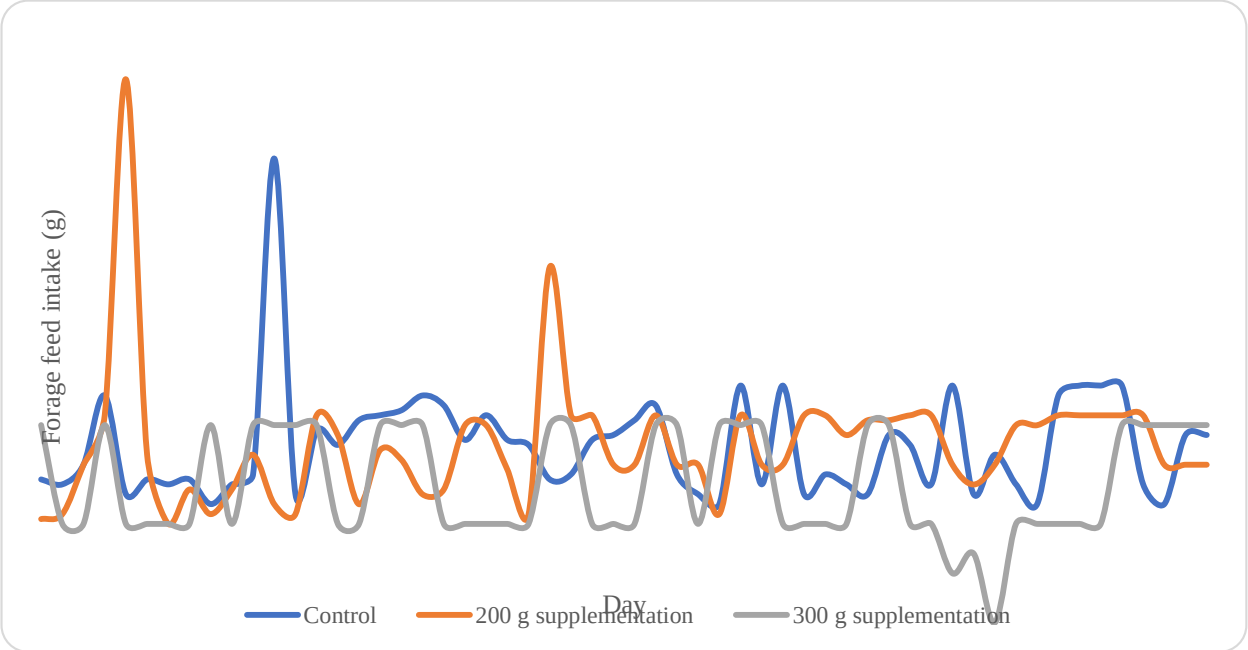


Fig.1: Forage feed intake from day 1 -56

The differences in concentrate feed intake among the animals was also not significant (P>0.05) (Fig. 2). In most instances, the highest concentrate feed intake was observed in the animals fed with 300g supplementation (T3), followed by those fed with 200g supplementation (T2). The result of current study is in consonant with the work of Avomyo, *et.al*, (2020)

There were significant (P<0.05) differences in the initial body weights of the animals and at 1 week of the study (Table 3). The body weight of the animals fed without supplementation (T1) decreased from the initial value of 11.5kg to 10kg after 8 weeks of the study. In the animals fed with 200g supplementation (T2), the initial body weight of 11 kg was maintained after 8 weeks of the evaluation. On the other hand, 300g feed supplementation (T3) resulted in increased body weight from an initial value of 9.5kg to 11kg after 8 weeks of the study. This present study concur with the work of Bello and Tsado, (2014)

Table 3: Body Weight Gain of the experimental goats

	Body Weight Gain								
Treatment	Initial	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
T1	11.50a	11.50a	11.20a	10.50a	10.45a	10.30a	10.25a	10.30a	10.00a
T2	11.00ab	11.00ab	10.75a	10.55a	10.60a	10.75a	10.80a	10.95a	11.00a
T3	9.50b	9.50b	9.75a	10.55a	10.15a	10.20a	10.35a	10.95a	11.00a
SEM	0.62	0.62	0.59	0.96	0.53	0.58	0.62	0.44	0.35

Means followed by similar alphabet letter within the column do not differ significantly at p=0.05, according to the Lest Significance Difference (LSD)

T1 = Control (Without supplementation); T2 = 200 g supplementation; T3 = 300 g supplementation

CONCLUSIONS

Results of the study revealed that goats fed *Anonna senegalensis* leaves supplemented with varying levels of concentrate had higher feed intake and final body weight gain as compared with control treatment group. Based on findings of the study, it was recommended that concentrate mixture of maize bran (MB)

and Cowpeas Shell (CPS) at 300g in ratio 1:2 could be used to supplement *Anonna senegalensis* leaves and improve goat's performance

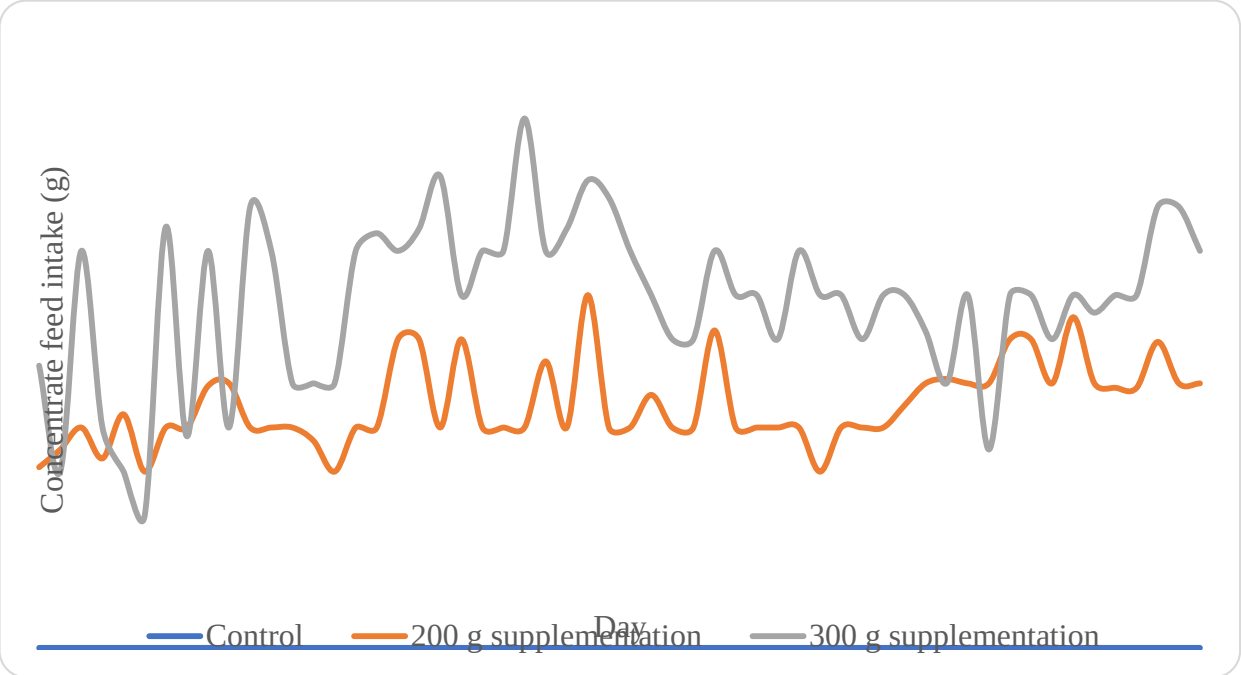


Fig. 2: Concentrate feed intake from day 1 -56

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