

EFFECTS OF DIFFERENT INCLUSION LEVELS OF *Albizia labbeck* FLOWER ON NUTRIENT INTAKE, DIGESTIBILITY AND NITROGEN BALANCE IN RED SOKOTO BUCKS FED A COMPLETE DIET

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ABSTRACT

The work was carried out to study the intake, nutrient digestibility and nitrogen study of Red Sokoto bucks fed grade levels of *Albizia labbeck* flower meals in a complete diet. 16 Red Sokoto bucks average weight 13.40kg $\pm$ 2 were randomly assigned into four groups with four bucks per group in a completely randomized design. Involving four dieting treatments T1, T2, T3 and T4 containing 0, 10, 20 and 30% levels of inclusions of *Albizia labbeck* flower meals. The result of the trial showed that animals fed 30% *Albizia labbeck* flower meals had highest ($p < 0.05$) intake of all the nutrients. The result indicated that the apparent digestibility of Dry Matter (70.96%) and crude Protein (76.58%) was high ($p < 0.05$) in animals fed 30% *Albizia labbeck* flower meals level of inclusion and had the best digestibility of almost all the nutrients. the Nitrogen balance and the Nitrogen retained percent were significantly higher in Bucks fed T₄. It can be concluded that *Albizia labbeck* flower can be included in the diets of Red Sokoto buck up to 30% without adverse effect on intake and digestibility of nutrients.

Key words: Bucks, *Albizia labbeck*, Digestibility, Sorghum panicle and Maize offal

INTRODUCTION

The nutrition of goat is the most important factor affecting performance. Poor nutrition results in low rates of production. It is however an accepted fact during dry season of the year, that grassland in the tropics does not supply sufficient nutrients to stock for greater productivity. Moreover, Range is declining due to increase in land use for crop production, overgrazing, urbanization and population increase (Lamidi, 2005).

Tree fodder maintain higher protein and animal contents during growth than do grasse, which decline rapidly in quality with progress to maturity. Gupta (1980) found inter alia that siris leaves had a dry matter digestibility of 68.5%. A subsequent paper concerning with the effect of molasses supplementation on nitrogen retention for small ruminants on a diet of siris leaves appears to be regard to the plant as a standard feed. Flowers contain no adverse constituents but pods contain saponins which may limit intake but appear to have no other adverse effect. Protein and neutral detergent fibre contents are as follows: green leaf, 16-23 and 41-35%; fallen leaf, 10 and 49%; fallen flower, 23 and 51%; pods, 19 and 55 %.(Varshney *et al.*, 1971)

. Therefore, the objectives of this study were to evaluate the intake, digestibility and nitrogen balance in Red Sokoto bucks fed with *albizia labbeck* flower meal

MATERIALS AND METHODS

The experiment was conducted at the Department of Animal Science Farm; Ahmadu Bello University. Experimental animals were sourced from Tudun Sebu market in Soba Local Government Area. The *Albezia Labbeck* flowers were harvested In GRA Zaria and Main campus, A.B.U., Zaria, The animals were dewormed and dipped in ascaride solution. The diets consisted of *Albezia Labbeck* flowers, Cotton seed cake, Sorghum panicle, Salt and Bone meal. Included at the levels of 0, 10, 20 and 30% levels of inclusion.

Digestibility and Nitrogen balance studies were carried out using 16 Red Sokoto bucks average weight 13.40kg $\pm$ 2 were randomly assigned into four groups in a completely randomized design. Last for 21 days in which 14 days were for adaptation, 7 days for Data collection. The diets were offered to the animals daily at 0800hr. 3% of their body weight. Chemical compositions of the feed and faeces samples were analyzed according to AOAC (2001). Data collected during the trials were subjected to one-way ANOVA SAS (1998) .Duncan multiple range tests (DMRT) was used to compare treatment means (Duncan, 1955).

RESULTS AND DISCUSSION

Chemical composition and Feed Intake

Table 1 shows the proximate composition of the *Albizia labbeck* flowers used in the study. The *Albizia labbeck* had crude protein (CP) 21.00% The crude protein (CP) 21.00% obtained in this study was higher than the values For a feed stuff to be regarded as a potential protein source and this finding confirms with various reports that legumes are. It was observed that the flowers had low lipid contents, a necessary factor in preventing rancidity in the flower for a long period of time. The variation in the crude protein level could be attributed to the season and the soil upon which is growing.

Table 2 presents the results of effect of varied levels of nutrient intake in Red Sokoto bucks. T4 had the highest nutrients intake and statistically ($P<0.05$) differed across the treatments. This was likely due to increase in protein and palatability of the diet.. This was similar to the finding reported by Nguyem *et al.* (2008). The dry matter intake increased with concentrate supplementation due to increase in supply of protein and readily available energy to the rumen microbes which speed up digestion and create more space for intake (Njwe and Olubajo,1992). The increase in TDMI in the supplemental group may be due to palatability of concentrate supplemental diets which agrees with finding of Jamie *et al.*(2009).

DIGESTIBILITY AND NITROGEN STUDY

The results of nutrient digestibility of Red Sokoto goats fed diets containing different levels of *Albizia Labbeck* flower meals are presented in Table 3. The result showed that the nutrient digestibility across the treatments differed significantly ($P<0.05$) and were improved ($P<0.05$) in the supplementary group (T3 and T4) and agreed with the report of Adamu (2013). The current result could be attributed to the additional protein source in the supplemental diet that may have increased protein availability to the rumen micro organisms to speed up the digestion process (Jamie et al, 2009). The dry matter digestibility values obtained T3 and T4 (66% to 71%) were indicated as high digestible level though T2 and T1 (50% to 60%) digestibility were still within the range regarded as moderately accepted for average animal production performance (Devendra and McLeory, 1982).

The results of nitrogen utilization of Red Sokoto goats fed diets containing different levels of *Albizia Labbeck* are presented in Table 4. The results showed that nitrogen utilization across the treatments differed significantly ($P< 0.05$). The nitrogen intake increased as the inclusion level of *Albizia Labbeck* increased across the dietary treatments. The nitrogen loss in urine was higher in T4 (30%) this report agreed with the report of Ibeawuchi *et al.* (1993) which says that “Urine nitrogen is a function of nitrogen ingested, the more nitrogen intake, the more nitrogen excreted in the urine. Nitrogen absorbed (g day^{-1}) was higher in T4 (30%)

CONCLUSION

Based on the results of this study, it can be concluded that *Albizia labbeck* flower meals can be included in the diets of Red Sokoto buck up to 30% without adverse effect on intake and digestibility of nutrients.

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Table 1: Proximate composition of experimental flower *Albizia labbeck*

Parameters	Percentage
Dry matter	88.07
Organic matter	11.93
Crude protein	21.31
Crude fibre	13.33
ASH	5.36
NFE	47.04
Ether extract	1.03

Table 2: Effects of *Albizia labbeck* inclusion levels on nutrient intake in growing Red Sokoto bucks.

Parameters(g/d)	<i>Albizia labbeck</i> inclusion level (%)				
	TRT1 (0)%	TRT2 (10)%	TRT3 (20)%	TRT4 (30)%	SEM
DM	252.67 ^b	224.34 ^c	245.03 ^a	258.48 ^a	10.49
OM	238.23 ^b	212.28 ^c	232.26 ^c	272.94 ^a	9.92
CP	31.84 ^{ab}	28.61 ^c	30.75 ^b	33.65 ^a	1.28
CF	52.42 ^b	43.19 ^c	53.27 ^b	64.40 ^a	2.23
EE	10.61 ^{ab}	8.45 ^c	10.46 ^b	11.24 ^a	0.42
NFE	143.35 ^b	132.01 ^b	137.78 ^b	163.76 ^a	5.98

^{abc} mean values with different superscripts within a row differ significantly (p<0.05) SEM = standard error of mean .DM: Dry matter OM: Organic matter CP: Crude protein CF: Crude fibre EE: Ether Extract NFE: Nitrogen free extract.

Table 3: Effects of *Albizia labbeck* flower inclusion levels on nutrient digestibility in growing Red Sokoto bucks.

Parameters (%)	<i>Albizia labbeck</i> inclusion levels (%)				SEM
	T1(0)%	T2 (10)%	T3 (20)%	T4 (30)%	
DM	60.74 ^c	51.76 ^d	66.93 ^b	71.96 ^a	1.24
OM	60.06 ^c	51.06 ^d	66.61 ^b	71.54 ^a	1.25
CP	68.69 ^c	64.96 ^d	73.90 ^b	76.68 ^a	0.95
CF	86.42 ^c	83.98 ^d	90.31 ^b	92.42 ^a	0.34
EE	88.02 ^c	84.31 ^d	90.06 ^a	89.90 ^b	0.42
NFE	46.00 ^d	48.57 ^c	54.06 ^b	61.16 ^a	1.28

^{abc} mean values with different superscripts within a row differ significantly (p<0.05)

SEM = standard error of mean .DM: Dry matter OM: Organic matter CP: Crude protein CF: Crude fibre EE: Ether Extract NFE: Nitrogen free extract

Table 4: Nitrogen utilization in Red Sokoto Bucks fed different levels of *Albizia labbeck* flower inclusion levels of *Albizia labbeck* (%)

Parameters (g/d)	T1 (0)%	T2 (10)%	T2 (20)%	T3 (30)%	SEM
N Intake	31.84 ^{ab}	28.61 ^c	30.75 ^{bc}	33.65 ^a	1.28
N Loss In Faeces	10.16 ^a	8.55 ^b	8.27 ^b	8.59 ^b	0.40
N Loss In Urine	0.65	0.02	0.95	0.73	0.07
Total N Loss	10.81 ^a	9.57 ^a	9.22 ^b	9.32 ^b	0.39
N Absorbed	21.58 ^b	20.06 ^b	22.48 ^b	37.90 ^a	1.42
N Balance	21.02 ^b	19.04 ^c	21.52 ^b	24.32 ^a	0.98
% Nitrogen	67.17 ^c	63.01 ^b	64.29 ^b	71.97 ^a	2.197

^{abc} mean values with different superscripts within a row differ significantly (p<0.05).

N = Means Nitrogen SEM = standard error of mean