



NUTRITIONAL PERFORMANCE OF WEST AFRICAN DWARF (WAD) GOATS FED WILD SUNFLOWER (*TITHONIA DIVERSIFOLIA*) LEAF MEAL SUPPLEMENTED DIET



***ODEDIRE J.A AND OLOIDI F.F**

**Department of Animal Sciences, Obafemi Awolowo University, Ile-Ife*



SUMMARY

In a 16 week experiment, twenty young WAD goats 6.94kg± 0.37 were randomly allotted to a concentrate diet containing graded levels of wild sunflower leaf meal (WSLM) at 0, 10, 20 and 30% levels of inclusion, in a completely randomized design. Results obtained indicate no difference (P>0.05) in the dry matter intake (DMI), weight gain and dry matter digestibility of the goats on the different diets. However, the crude protein digestibility and nitrogen utilization of goats on 0% and 10% WSFLM inclusion were higher (P<0.05) than those on 20% and 30% WSLM diet.

INTRODUCTION

The major constraint to ruminant livestock production in the tropics is the availability of cheap and quality feedstuffs, especially in periods of drought. Although, grasses abound in the tropics, seasonal changes in their palatability and nutritive values have been a major challenge in ruminant animal production (Aokan, 1998). There is therefore the need for alternatives to conventional feed resources, hence this study.



RESULTS

Table 1: Gross Composition of the experimental diets

Ingredients	Control	10%WSLM	20%WSLM	30%WSLM
WSLM	-	10.00	20.00	30.00
Maize	45.00	45.00	45.00	45.00
Soya bean	30.00	20.00	10.00	-
Palm Kernel	18.00	18.00	18.00	18.00
Cake				
Groundnut	4.50	4.50	4.50	4.50
Cake				
Bone meal	1.50	1.50	1.50	1.50
Salt	0.50	0.50	0.50	0.50
Vitamin	0.50	0.50	0.50	0.50
Total	100	100	100	100

Control: Concentrate diet without wild sunflower leaf meal; WSLM: wild sunflower leaf meal inclusion

Table 2: Performance characteristics of WAD goats fed experimental diets

Parameter	Control	10%WSLM	20%WSLM	30%WSLM	SEM	PROB
Dry matter intake (g/day)						
Concentrate	208	208	206	205	3.59	0.9233
Panicum	103.5	102.5	100.4	100.2	1.26	0.2340
Total	311.5	310.5	306.4	305.2	3.87	0.6949
Digestibility	71.24	70.57	70.66	70.98	2.42	0.7935
Crude protein intake (g/day)						
Concentrate	35.75 ^a	32.45 ^b	31.93 ^b	31.69 ^b	0.38	0.0001
Panicum	8.36	8.30	8.13	8.12	1.10	0.0622
Total	44.11 ^a	40.75 ^b	40.06 ^b	39.81	1.01	0.0001
Digestibility	68.53 ^a	68.11 ^a	62.62 ^b	57.97 ^b	1.75	0.0164
Weight (kg)						
Initial weight	6.94	6.94	6.94	6.94	1.06	1.0000
Final weight	9.65	10.05	9.60	9.50	1.53	0.9933
Total weight gain	2.71	3.11	2.66	2.56	0.02	0.1403
Ave. daily gain (g)	27.65	31.73	27.14	26.12	5.86	0.9145
FCR	11.27	9.78	11.28	11.68	0.57	0.2322

^{a, b}: Means within row with different superscript are significantly different (P< 0.05); Control: Concentrate diet without WSLM; WSLM: wild sunflower leaf meal inclusion; FCR: Feed conversion ratio

Table 3: Mean nitrogen utilization of WAD goats fed experimental diets

Parameter (g/day)	Control	10%WSFLM	20%WSFLM	30%WSFLM	SEM	PROB
Nitrogen intake	7.59 ^a	6.84 ^a	5.83 ^b	5.76 ^b	0.03	0.0210
Faecal Nitrogen	2.39	2.18	2.16	2.42	0.39	0.6340
Urinary Nitrogen	1.10 ^a	1.01 ^a	0.66 ^b	0.36 ^c	0.04	0.0012
Nitrogen balance	4.10 ^a	3.65 ^a	3.01 ^b	2.98 ^b	0.37	0.0032
Nitrogen utilization (%)	54.02 ^a	53.36 ^a	51.62 ^b	51.74 ^b	2.72	0.0223

MATERIALS AND METHOD

The experiment was conducted at the Sheep and Goat Unit of the Teaching and Research Farm, Obafemi Awolowo University, Ile-Ife.

Twenty growing West African Dwarf (WAD) goats weighing approximately 6.94kg ± 0.37 were used for this study.

Wild sunflower leaves were harvested prior to flowering and air dried for seven days before milling and incorporation into concentrate diet at 0, 10, 20 and 30% levels of inclusion (Table 1).

Concentrate diets were fed to the WAD goats as supplement to a basal ration of *Panicum maximum* for a period of 112 days in a completely randomized design.

Digestibility and Nitrogen utilization study was conducted at 14th and 16th week of the growth trial.

Feeding was done at 5% of their body weight.

Proximate analysis of feeds and faeces was done according to the procedure of AOAC (1990) and data obtained were subjected to statistical analysis of SAS (2008).

DISCUSSION

The feed value of wild sunflower is suitable as a livestock feed, with crude protein values above the 8% CP minimum requirement for ruminants (Norton, 1994). {Figure 1}.

Similar Intake values (P>0.05) obtained for the animals indicates that the goats were well adjusted to the experimental diets. (Table 2). Crude protein intake was observed to reduce with increasing level of WSLM in the concentrate diet, probably because its saponin content (Odedire and Oloidi, 2011). Saponin has been indicated to reduce methane production in ruminants (Babayemi *et al.*, 2004).

Nitrogen utilization was better (P<0.05) for animals on Control diet and 10% WSFLM (Table 3) Average daily gain of the goats were similar (P>0.05) across the treatments compared well with the report of Ajayi *et al.* (2005). But lower than that of Oni *et al.*, (2010). {Table 2}.

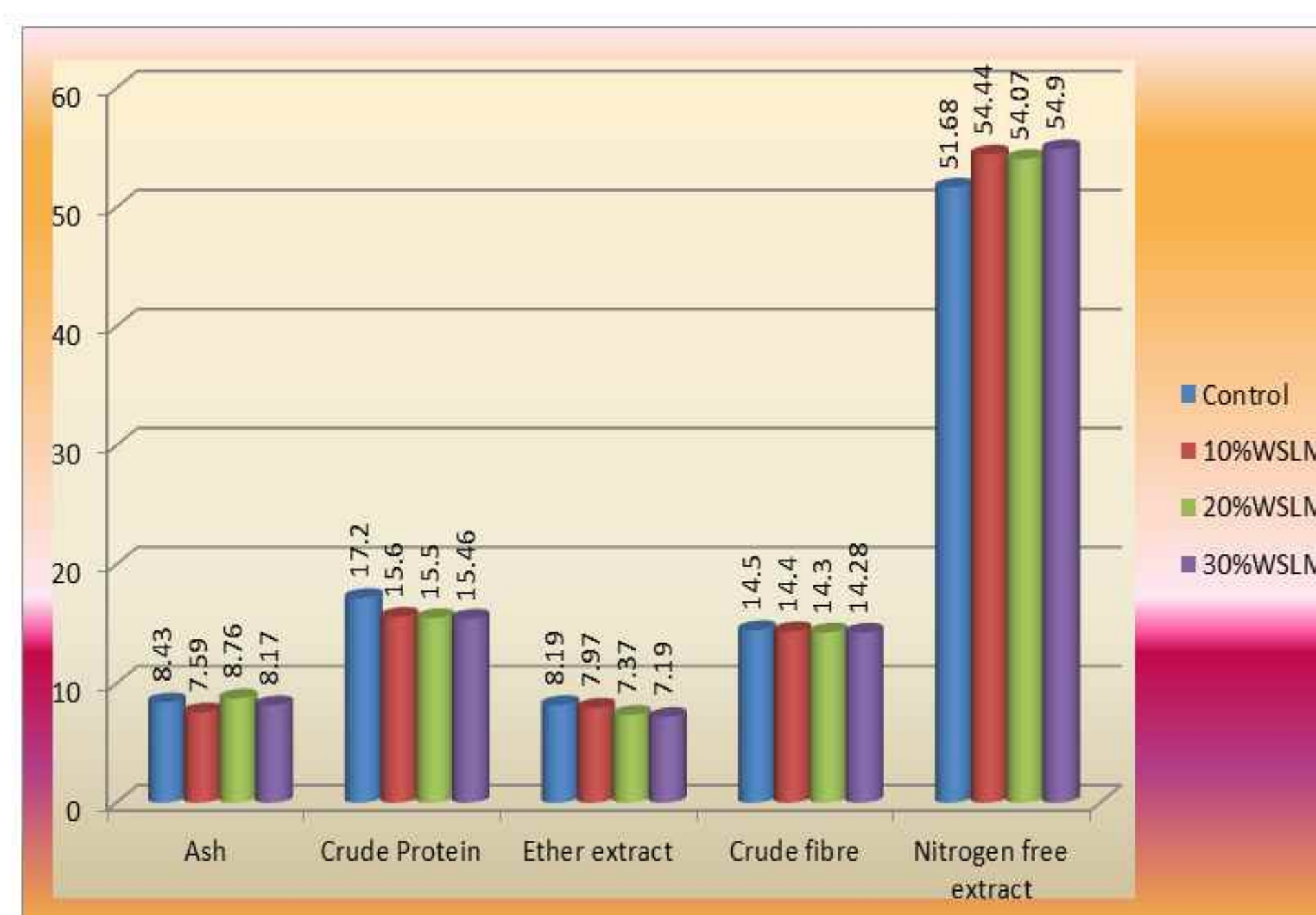


Figure 1: Chemical composition of the experimental diets (g/100g DM) fed to the WAD goats

CONCLUSION

Wild sunflower (*Tithonia diversifolia*) possesses adequate nutritive value as to support good growth of West African Dwarf goats, especially during the period of drought.

Wild sunflower can effectively serve as alternative feed ingredient in the WAD goats' diet with inclusion level of up to 30 % without any deleterious effect.

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