

**PJN**

ISSN 1680-5194

PAKISTAN JOURNAL OF  
**NUTRITION**

**ANSI***net*

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## Effect of Replacement of Groundnut Cake with Decorticated Sunflower Cake on the Performance of Sudanese Desert Lambs

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**Abstract:** Twelve Sudanese desert lambs of age less than one year and of average weight 18.5 Kg were utilized for this study. These lambs were divided into three groups of the equal number and initial weight to study the effect of replacing Groundnut meal by decorticated Sunflower meal on the performance of Sudanese desert lambs. The study was conducted at Small Ruminant Research pens, Faculty of Agricultural Technology and Fish Sciences, Al-Neelain University, Jabel Awlia, Sudan. Three iso-nitrogenous and iso-caloric diets were formulated. These diets contained 0.00%, 50% and 100% Sunflower meal instead of Groundnut meal respectively. These diets were randomly assigned to the experimental groups. Feeding was on *ad libitum* base for 35 days from 2 April to 14 May, 2007. Replacement of groundnut meal with decorticated sunflower meal had no significant effect on the final body weight, weight gain and feed conversion efficiency. But this replacement induced significant ( $p < 0.05$ ) effect on feed intake.

**Key words:** Sunflower cake, performance, Sudanese desert lambs

### Introduction

World demand for animal protein is growing continuously (Jasiorowski, 1975). Increasing human population and improve standards of living, together with increased animal protein consumption in some developing countries, necessitated increasing animal production throughout the world. The main reason for the present low consumption of animal protein is the low live stock productivity rather than the low livestock numbers (Jasiorowski, 1975; FAO, 1994). Sheep population is estimated 49,797 million heads (Ministry of Animal resources, 2005). In recent years, Sudanese sheep namely Sudan desert type, has received great interest as an export commodity to the Arab countries. Protein is an expensive component in animal rations and one that may be in short supply especially in developing countries. This shortage is very critical in both human and animal nutrition. One of the critical pressing problems today is how to augment the shortage of protein in diets (Oyenuga and Fetuga, 1975). Oil seeds, cereals grains and pulses are the three groups of the plants which supply most of the protein in the world. Among the different vegetables and crops known oil seeds are the most promising, economic, acceptable and safe type crops for protein production. In fact, oil seeds by-product of the oil industry require a minimum of processing, have good biological value and relatively free from anti-nutritive factors and fermentable sugars (American Chemical Society, 1978). The nutritional quality of sunflower meal (metabolizable energy, fibre content and protein quality) is affected by the processing method of oil extraction (Mandarino, 1997). In the Sudan, Sunflower grain output increased sharply by 71.4% to reach 12 thousand tons in, 2004/05

seasons compared with 7 thousand tons in the previous season. This was due to the increase of 73.3% in area under cultivation from 15 thousand feddans in, 2003/04 to 26 thousand feddans in, 2004/05 seasons (Central Bank of Sudan, 2005). The objective of this study was to study the effect of replacement of groundnut cake with decorticated sunflower cake on the performance of Sudanese desert lambs.

### Materials and Methods

Twelve Sudanese desert lambs with an average live weight of 18.5 kg and age range 9-12 month were used in this study. Lambs were kept for an adaptation period of two weeks during which they were sprayed with an acaricide and drenched for endoparasites. A mixture containing equal proportions of experimental diets was fed to the lambs. At the end of the adaptation period lambs were individually weighed and divided into three groups of equal number and weight. Each group was separately kept in a pen provided with watering and feeding facilities. Three iso-nitrogenous and iso-caloric diets, contains decorticated sunflower meal instead of groundnut meal with percentages 0.00%, 50% and 100% were formulated, Table 1. The diets were randomly assigned to the lamb groups and offered *ad libitum* in one morning meal throughout the feeding period. Green fodder (*Medicago sativa*) was also offered at a rate of 1 kg/head/week as a source of vitamin A. Clean water and salt lick were available throughout the feeding period which lasted for 35 days. Feed intake, live weight and feed conversion ratio were determined. Data was statistically analyzed according to the analysis of variance applicable to complete randomized design as described by Snedecor and Cochran (1980).

## Yagoub and Talha: Groundnut Cake with Decorticated Sunflower Cake

Table 1: Ingredients proportion and chemical composition of experimental diets

Item	A	B	C
Sorghum grain	350	350	350
Wheat bran	200	200	230
Groundnut meal	180	095	Zero
Groundnut hulls	180	190	160
Sunflower meal	Zero	095	180
Molasses	70	50	60
Lime stone	10	10	10
Common salt	10	10	10
Calculated metabolizable Energy ( Mj/kgDM)*	10.56	10.51	10.90
Crude protein	17.08	17.28	17.08

\*Calculated according to Ministry of Agriculture, Fisheries and Food, London, U.K. (1975)

Table 2: Performance characteristics of Sudanese desert Lambs

Item	A	B	C	S.E.	S.L.
Number of animals/lot	4	4	4	-	-
Feedlot period (days)	35	35	35	-	-
Initial live weight (Kg)	18.5	18.5	18.5	8.33	N.S
Final live weight (Kg/head)	24.5	21.5	25.3	0.94	N.S
Total live weight gain (Kg/head)	6	3	6.8	1.52	N.S
Total dry matter intake (Kg/head)	93.4	94.2	128	1.72	**
Conversion ratio (Kg/DMI/Kg gain)	14.91	37.18	15.71	9.93	N.S

In this table means in the same row having different subscripts are significantly different, \* = P < 0.05, \*\* = P < 0.01, \*\*\* = P < 0.001, N.S.: Not significant, S.E.: Standard error and S.L.: Significant level

### Results and Discussion

Performance characteristics of Sudanese desert lambs were presented in Table 2. Replacement of groundnut meal with decorticated sunflower meal had no significant effect on the final body weight, weight gain and feed conversion efficiency. But this replacement induced significant ( $p < 0.05$ ) effect on feed intake. Utilization of sunflower cake by itself or as a replacer of other cakes has been studied by many workers around the world e.g. Fielding and Kyomo (1979) studied the effect of sunflower or cottonseed meal as supplement for steers on molasses/urea based diets and found no significant differences in terms of live weight gain between the treatments. Sharma *et al.* (2003) checked the replacement value of Undecorticated Sunflower meal as a supplement for milk production from cows. They replaced a crude protein in the control diet with 25% and 50% of sunflower cake. They found that the low inclusion rates had no significant effect on the feed intake, also daily milk yield and its composition did not differ among the dietary treatments. Mlay *et al.* (2005) on their research of the effect of maize bran (MB) or maize bran mixed with sun flower cake (MBS) on the performance of small holder dairy cows in urban and peri-urban areas in Morogoro, Tanzania, found that MBS fed cows had significantly higher ( $P < 0.001$ ) milk yield compared to MB fed cows. They observed no differences in milk composition parameters, body weights and body conditions changes. They concluded that using sunflower meal mixed with maize bran was effective and economically profitable in increasing the milk yield. Present results are in line with the above mentioned researches. It could be concluded that sunflower meal was a good replacer for groundnut meal.

### Acknowledgment

Authors would like to thank Mr. Alrasheed Mohammed Yonnis, Mrs. Sawsan Suliman, Mrs. Aisha Haidar and Mrs. Khadiga Alsheen for their help on collecting the data.

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**Yagoub and Talha: Groundnut Cake with Decorticated Sunflower Cake**

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