

EFFECT OF FEEDING DIFFERENT LEVELS OF DECORTICATED SUN FLOWER CAKE (Abad Alshames) (*Helianthus nnuus L.*) ON PERFORMANCE OF SUDAN DESERT GOATS

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ABSTRACT: This experiment was conducted to study the effects of replacing groundnut cake with sunflower cake in ruminants feed. The replacement was done at three levels, 0%, 15% and 25%, which were incorporated in three isocaloric, isonitrogenous diets A, B, and C, respectively. Nine male kids of Sudan desert goats at 3-4 months of age and average body weight 18.14 kg were used in this experiment. The kids were randomly assigned to three treatments (3 animals each), then the animals in each treatment was subdivided into three groups of one animal (replicates). The study showed a significant difference ($P < 0.05$) between treatments for average daily weight gain (ADG) and feed conversion rate (FCR), on the other hand, the study showed that there was no significant difference ($P > 0.05$) between treatments for average feed intake, average final body weight gain and average of total gain. According to the results, sunflower cakes meal had no deleterious effects on ruminant's performance; it may be used up to 25% in kids feeding with satisfactory results. Also sunflower cakes meal could be used for growing kids and fattening of mature goats.

Keywords: Abad Alshames .body weight, kids, feed conversion, Nubian

INTRODUCTION

Human population in developing countries (Africa, Asia and the Americas) is increasing rapidly (Allen, 1983). Jasiorowski (1975) stated that world demand for animal protein is growing continuously. The main reason for the present low per capita consumption of animal protein is the low livestock productivity rather than the low livestock numbers (Jasiorowski, 1975; FAO, 1994). The Sudan is a vast country of great animal wealth in the continent, which estimated at about (140.5), of which 41.84, 52.24, 43 and 4.4 million head of cattle, sheep, goats and camels respectively (MARF, 2008). Goat is one of the most important livestock species in rural areas. In Sudan, Pakistan, Turkey, Egypt and Tunisia researches showed that goat are reared for their meat, milk or both meat and milk (Darcan et al., 2005; Arain et al., 2010; El-Hassan El-Abid et al., 2008; Mousa, 2011; Gaddour et al., 2007). Many authors mentioned that goat meat has received little attention and as a result knowledge of yield and quality of goat meat is limited when compared to sheep and cattle (Warmington and Kirton 1990; Anous and Mourad, 1993). Protein is the most expensive feed ingredient in animal ration and there was always shortage in its supply particularly in developing countries. This shortage is very critical in both human and animal nutrition (Yagoub and Talha, 2009). Traditionally, the farmers have been using cottonseed cakes for feeding their livestock as a source of vegetable protein and its prolonged use can affect the fertility of these animals (Zahid et al., 2003). Earlier investigations (Ahmed et al., 2004; Garcia et al., 2004) indicated that sunflower meal was equally good in performance, yet the cost of sunflower meal based rations was the lowest. The nutritional quality of sunflower meal is dependent on the processing method of oil extraction (Mandarino, 1997). Abbas and Yagoub (2008) concluded that sunflower cake can replace up to 100% of groundnut cake in broiler chicks. In its annual report, CBS (2005) mentioned that sunflower grain output reached 12 thousand tons in, 2004/05 seasons compared with 7 thousand tons in the previous season. The objective of this research was to investigate the effects of replacing sunflower meal with groundnut cake in fattening of goats.

MATERIALS AND METHODS

Site of study

This study was conducted at the Rural Development and Extension Center (RDEC), Faculty of Animal Production–Almanagil-University of Gezira, 76 kilometers west to Wad Medani, Gezira state. The experiment extended for 45 days, it started at 15/4/2010 and ended at 31/5/2010.

Experimental feed (rations)

The experimental rations were shown in Table 1. Sunflower cake was added at three different levels (0, 15 and 25%). Rations were isonitrogenous and isocaloric and contain, in addition to Sunflower cake, groundnut cake, wheat bran, sorghum grain, molasses, gasses and urea.

| Item | Treatments | | |
|------------------|----------------|-----------------|-----------------|
| | Ration A 0% | Ration B 15% | Ration C 25% |
| sunflower cake | 0.00 | 15.00 | 25 |
| Ground nut cake | 20.00 | 00.00 | 0.00 |
| Wheat bran | 25.00 | 23.00 | 23.00 |
| Sorghum gain | 30.00 | 30.00 | 30.00 |
| Molasses | 10.00 | 12.00 | 10.00 |
| Ground nut hulls | 11.00 | 16.00 | 8.00 |
| Oyster shell | 2.00 | 2.00 | 2.00 |
| NaCl | 2.00 | 2.00 | 2.00 |
| Total | 100.00 | 100.00 | 100.00 |

Experimental animals

Nine male kids of Sudan desert goat were used at 3-4 months of age and their average body weight of 18.14 kg. Animals were vaccinated against anthrax and hemorrhagic septicemia. They were ear tagged, drenched with (ELbendazol -25) to treat internal parasites. Acaricides were applied externally after giving a path to the animals, with soap and water, aiming to remove against external parasites. Oxytetracycline injections were also given to treat subclinical infections. Animals were allowed 14 days as adaptation period. In this period groundnut hay and experimental concentrate rations were given.

Housing

The experimental animals were housed in semi open pens built from corrugated steel sheets supported by bamboo poles and steel bars of about three meters high. The pens were covered with zinc sheet. Each pen was provided with water and feed troughs.

Feeding management

The ration ingredients were mixed manually and left to dry by air and then packed in labeled sacks (A, B and C). Roughage (groundnut hay) was available ad libitum, green fodder (*Cyndon dactylon*) was also offered at week interval at amount of one kg/head as to avoid vitamin "A" deficiency.

Data collection

Feed Intake: The rations were given to the kids daily every morning at 8:00 am and the refusal part was collected in the next morning at 7:00 am, weighed and subtracted from the daily offered amount to calculate the actual feed intake.

Body weight: The experimental animals were weighed weekly using small ruminant's balance (0 - 50 kg capacity), following an overnight fasting. Body weights were used to calculate the daily weight gain and feed conversion ratio (FCR).

Statistical analysis

Data was statistically analyzed by analyses of variance applicable to randomized complete block designs using Minitab Statistics software (Steel and Torrie, 1980). Means were compared at a level of significance equal to 0.05.

RESULTS AND DISCUSSION

Live body weight of kids at 3-4 month of age was found to be 13.90 ± 0.06 to 14.43 ± 0.23 kg (Table 2). There were no differences ($P < 0.05$) between treatments due to differences in the level of dietary sunflower cake. Final body weights in this study (after 45 days) range from 17.00 ± 0.06 to 17.20 ± 0.11 kg. No significant differences ($P < 0.05$) were notice between treatments. Entire Kid weights were higher than estimates reported by Kebede et al., (2008) in Ethiopia.

Table 2 shows that the level of sunflower cake did not significantly ($P > 0.05$) affected average daily feed intake. Average daily feed intake ranged from 0.82 ± 0.08 to 0.85 ± 0.04 kg/ d. This result was higher than that reported by Atay et al. (2011) for Anatolian Black kids in Turkey, but lower than that indicated by Yagoub and Babiker (2009) for Nubian goats in Sudan at 9 month of age. It was clear that feed intake increased as the level of

substitute cake increased in the diet. This agreed with Beshir (1996), Salih and Abdel-whab (1990) and Bakheit (1993). On the other hand Mohammed and Idris (1991) found opposite situation.

Daily weight gains in this study were 0.06 ± 0.01 , 0.07 ± 0.01 and 0.08 ± 0.04 kg/d in treatments A, B and C, respectively. There were significant differences ($P < 0.05$) between treatments, and daily gain increases as the percent of sunflower cake increased. Obtained estimates agreed with the findings of Wildeus et al. (2007) and Johnson et al. (2010), but were higher than results reported by El-Hassan El-Abid et al., (2008) for post weaning daily weight gain of Sudanese kids under traditional pastoralism. These estimates were lower than those reported by Memisi et al. (2009) for post weaning daily gain till six month of age in Serbia.

Feed conversion ratios in this experiment were found to be 14.33 ± 0.18 , 11.43 ± 0.15 and 13.33 ± 0.19 Kg DMI/kg gain in the three treatments respectively. There were significant differences ($P < 0.05$) between treatments. These estimates were in agreement with Yagoub and Babiker (2009) who reported $13.36 - 7.75$ (Kg DMI/kg).

Table 2 - Feedlot performance values (means \pm S.E) of experimental Kites fed different levels of sun flower cake

| Item | Treatments | | | L.S |
|---|-------------------|-------------------|-------------------|-----|
| | Ration A 0% | Ration B 15% | Ration C 25% | |
| Ave. initial body weight, (kg). | 14.43 \pm 0.23 | 13.90 \pm 0.06 | 14.30 \pm 0.04 | N.S |
| Ave. final body weight, (Kg). | 17.00 \pm 0.06 | 17.10 \pm 0.28 | 17.20 \pm 0.11 | N.S |
| Ave. total live weight gain, (kg). | 2.86 \pm 0.36 | 2.52 \pm 0.61 | 3.25 \pm 1.07 | N.S |
| Daily feed intake, kg DM/head/day) | 0.82 \pm 0.08 | 0.83 \pm 0.04 | 0.85 \pm 0.04 | N.S |
| D Daily weight gain, (g/head/day). | 0.06 \pm 0.01a | 0.07 \pm 0.01a | 0.08 \pm 0.04a | * |
| Daily weight gain, as (%) of empty body weight. | 0.51 \pm 0.1a | 0.50 \pm 0.1a | 0.47 \pm 0.00b | * |
| Feed conversion ratio, (Kg) DMI/kg gain. | 14.33 \pm 0.18a | 11.43 \pm 0.15b | 13.33 \pm 0.19c | * |

*= Means are significantly different ($P < 0.05$); Ration (control), B, C Treatments Containing 0, 15 and 25% sunflower cake.

CONCLUSION

The inclusion or the use of sun flower cake for goat fattening showed a positive effect on the performance as the highest levels of sun flower cake resulted in high daily gain and feed conversion efficiency. Thus sun flower cake may gain solid ground in the future as a supplement for goat and sheep fattening.

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