

SHORT NOTE

The effects of different levels of mesquite (*Prosopis chilensis*) pods on the performance of Shugor lambs in Halfa Elgageda, Kassala State, Sudan

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Sheep production is very important in the Sudan due to high population, wide distribution and contribution to self sufficiency and meat exports. The demand for Sudanese sheep meat is increasing as they depend on natural pastures with no feed additives or growth promoters affecting human and animal health. Nutrition is one of the main constraints for sheep production due to pastures deterioration and seasonal fluctuations in pastures productivity and quality affecting animal health and performance (Hamed, 2007). Agro-industrial by- products and browses are important in filling the nutritional gap, especially in the dry season (Mohmed, 2001). It is therefore, important to exploit new feed resources for efficient animal production.

Mesquite (*Prosopis ch.leases*) is a legume tolerant to harsh environments and is considered a hope for developing arid and semi arid areas (Riveros, 1992). It was introduced into the Sudan in 1919 in afforestation programmes and as animal feed (Khan, 1966) and was introduced in Halfa Elgageda in 1966 (Abdelnour, 1999). It is widely distributed in the country and is considered a hazard in irrigated schemes (El Amin, 1990).). Pods and leaves have high CP

(Ibrahim and Gaili, 1983; Elimam and Modawi, 1999; Elimam and Babiker, 2000; Elimam *et al.*, 2011). Pods are highly palatable and leaves are unpalatable and this was attributed to alkaloids (Elimam *et al.*, 2011). Pods average yield was 307.3 kg/ ha, are produced from December to June (Ballal, 1986) and are valuable feeds in the dry season. In Omani goats, feeding *P. juliflora* pods up to 20% in diets improved feed intake, feed conversion and body weight gain without affecting carcass yield or quality and they decreased sharply at 30% level (Mahgoub *et al.*, 2005). Body components and carcass chemical composition were not affected by diets containing pods up to 30%. Abdelgabar (1986) fed pods to goats in the Sudan and they resulted in weight gains when supplemented with concentrates. There is no available information on using mesquite pods as sheep feed in Halfa Elgadedda. Therefore, the objective of this study was to find out the effects of different mesquite levels on the performance of Shugor lambs in Halfa Elgadedda.

The experiment was conducted in the Animal Production Farm, Faculty of Agriculture and Natural Resources, Kassala University, Halfa Elgadedda, Sudan. Fifteen Butana Shugor lambs were bought from Halfa Elgadedda livestock market at 6-12 months old and weighing 19.35kg on average. They were housed in individual shaded pens constructed from corrugated iron sheets and feed and water troughs were provided. The animals were ear tagged, treated against internal and external parasites and injected with oxytetracyclin. They were divided at random into 3 groups and the groups were then allocated at random to the experimental diets. The animals were weighed at the beginning of the experiment and then weekly till the end of the experiment.

Three diets were used in the experiment with different percentages of crushed mesquite pods (0, 10 and 20) and the diets were isonitrogenous and isocaloric. Table I shows the experimental diets

Different levels of mesquite pods performance of Shugor lambs

ingredients and composition. The animals were fed groundnut haulms *ad libitum* and the experimental diets were introduced gradually and were fed *ad lib.* in a single meal at 7.0 am for 42 days. Green *Barseem* and *Abu Sebeen* were fed once weekly as a source of vitamin A. The offered feeds and refusals were recorded daily for each animal and intake was calculated by difference. Dry matter intake (DMI) and daily weight gain were calculated from data collected. Efficiency of feed conversion was calculated by dividing daily DMI by weight gain. The data were statistically analyzed according to Snedecor and Cochran (1980).

Table1. The ingredients (%) of rations with different mesquite pods.

Ingredients	Rations		
	A	B	C
Groundnut cakes	18	17	16
Sorghum grains	16	15	11
Molasses	19	17	20
Wheat bran	18	17	16
Groundnut hulls	27	22	15
Mesquite pods	00	10	20
Salt	01	01	01
Lime	01	01	01
ME (Mj/kg)	10.86	10.88	10.84
Crude protein (%)	16.11	16.06	16.16

A= 0% mesquite pods, B= 10% mesquite pods, C= 20% mesquite pods

ME= Metabolizable energy.

Table 2. The performance of Shugor lambs fed different levels of mesquite pods. □

Parameters	Rations			SE
	A	B	C	
Initial weight (kg)	19.4	19.36	19.29	0.98
Final weight (kg)	25.68	27.60	27.84	2.09
DMI (kg)	1.17 ^c	1.27 ^b	1.31 ^a	0.04
Weight gain (kg)	6.28	8.24	8.56	1.38
Daily weight gain (g)	149.52 ^c	196.19 ^b	203.81 ^a	24.27
Efficiency of feed conversion	10.44 ^a	7.13 ^b	6.37 ^c	1.66

A= 0% mesquite pods, B= 10% mesquite pods, C= 20% mesquite pods Means within a row with different letters are significantly different at ($P \leq 0.05$).

Dry matter intake increased with increasing pod level in rations, but not significantly. This could be because pods were palatable and preferred by the animals (Elimam and Babikir, 2000). Similar results were reported by Abdelgabar (1986) and Mahgoub *et al.* (2005). Sheep final weight increased with increasing pod level in rations, but not significantly. This was in line with the findings of Abdelgabar (1986) and was mainly due to increased weight gain with increasing pod levels in rations. Daily weight gain increased with increasing pod percentages, but not significantly. This effect was mainly due to increased feed intake associated with increasing pod percentages. Similar results were reported in Omani goats fed up to 20% pods in rations (Mahgoub *et al.*, 2005). The efficiency of feed conversion was improved with pods percentages in rations, but not significantly different. Similar results were found by Abdelgabar (1986) and Mahgoub *et al.* (2005). This was mainly due to improved weight gain associated with increasing pod percentages in rations.

The results showed that increasing pods percentages upto 20% in rations in Shugor lambs increased final weight, DMI, weight gain, daily weight gain and efficiency of feed conversion. This showed that mesquite pods can form up to 20% of sheep rations with no adverse effects on performance.

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أثار المستويات المختلفة من ثمار المسكيت في العليقة على أداء حملان
الشقر في حلفا الجديدة ، ولاية كسلا، السودان

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الخلاصة

تمت دراسة أثار المستويات المختلفة من ثمار المسكيت في العليقة
المركزة على أداء حملان الشقر في حلفا الجديدة ، ولاية كسلا، في السودان.
قسمت 15 حملا ذكرا عشوائيا إلى ثلاث مجموعات، وأعطيت المجموعات
عشوائيا ثلاثة أعلاف متساوية النتروجين والطاقة مع اختلاف النسب
المتوية لثمار المسكيت في العليقة المركزة (0، 10 و20) لمدة 42 يوما.
إزدادت المادة الجافة المأكولة والوزن المكتسب والوزن المكتسب يوميا
وكفاءة تحويل العلف بزيادة مستوى الثمار في العليقة ، ولكن ليس بشكل
معنوي. أوضحت الدراسة امكانية أن تمثل ثمار المسكيت حتى 20% من
العليقة المركزة دون تأثيرات ضارة على الحملان.