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ALTERNATIVE AVAILABLE FEED INGREDIENTS IN FATTENING DIETS OF BARKI LAMBS AND KIDS REARED BY BEDOUINS IN THE NORTH WESTERN COAST OF EGYPT.

SALEM, A. M. M.
Department of Animal and Poultry Nutrition, Desert Research Center, Mataria, Cairo, Egypt.

ABSTRACT

Twenty-seven -5- month old male Barki lambs weighing 28.57±3.18 kg and twenty-seven -4- month desert male kids weighing 18.13±1.55 kg were reared in shaded pens at Bedouins premises where *Acacia saligna*, barley and beans are available at El-Kasr, (Matroah Government).

The objectives of this study were to include the relatively available feed resources in replacement of feed concentrate mixture (CFM) and clover hay in the fattening diets of lambs and kids.

Animals within each species were divided into three equal groups and were assigned at random to receive one of three dietary treatments. The control group received the traditional fattening diet composed of berseem hay and CFM. Barley grains and small amount of bean seeds replaced CFM in diet 2, while Acacia replaced berseem hay and barley grains and bean seeds replaced CFM in diet 3.

The experiment lasted for 95 days. Three animals from each treatment and species were slaughtered by the end of the experiment for carcass evaluation.

The results revealed that average daily gain was 195, 252 and 254g for lambs fed rations in treatments TS_1, TS_2 and TS_3, respectively. Daily gain for kids was 121, 106 and 116g fed rations in treatments TG_1, TG_2 and TG_3, respectively.

Corresponding values for the feed conversion utilization (kg TDN/kg gain) for lambs were 3.73, 3.51 and 3.36 while that for kids was 4.53, 6.02 and 5.49, respectively.

Feeding lambs and kids on *Acacia saligna* phyllodes, caused an appreciable reduction in feeding cost for producing one kg body weight.

The average dressing percentages based on fasting body weight were 48.33, 41.67 and 44 for lambs in TS_1, TS_2 and TS_3, respectively. The corresponding averages for kids were 28.83, 27.33 and 29.16 for rations in TG_1, TG_2 and TG_3,. Boneless meat percentages for lambs were 2.71, 2.31 and 2.26 with higher values for kids 2.67, 2.55 and 2.89.

The use of *Acacia saligna* and barley grains, which are available in the area, with small amounts of bean seeds to replace either hay or CFM for fattening lambs and kids may be recommended.

Keywords: acacia, beans, sheep, goats, feed intake, feeding value, growth, carcass quality)

INTRODUCTION

Africa and Middle East countries have wide areas of arid and semi arid lands that cannot be cultivated, but are used for raising livestock, mainly sheep and goats. At the same time, animal performance is poor due to lack of adequate dietary protein and energy intake mainly during the dry season. For

example, CP content of Acacia becomes less than 2% of forage DM and also digested protein is less than 1 g/day of DM consumption (Degen, 1995). Furthermore, the forages are characterized by a high content of fiber and are of low quality as well as the high livestock mortality can limit raising livestock due to these previous constraints (Benjamin, 1992). In addition to that, the herbaceous is fibrous and low quality especially during the drought seasons, so there is an increase in livestock mortality (Topps, 1992).

Acacia saligna was used in feeding sheep and goats as reported by Dumancice and Le Houerou, (1980) and Armstrong, (1992).

Acacia saligna is a fast growing tree and has multiple benefits; for example it is used as firewood (NAS, 1980), or wind breaks (Crompton, 1992). In Egypt, *Acacia saligna* is grown in arid areas of Western and Eastern deserts. *Acacia saligna* was used for feeding goats and sheep in different research works (Abou El-Nasr, et al. 1996; and 1998 and Kandil and Shaer, 1990).

Non-traditional feeds are used in animal feeding to help in decreasing the cost of feeding. This may lead to decrease the production costs.

Therefore, the present work aimed at studying the effect of replacing clover hay by *Acacia saligna* phyllodes as a roughage for fattening Barki lambs and desert kids along with suitable feed supplements, which are available in Matrouh Governorate (El-Kasur area) on animals' performance and their carcass quality.

MATERIALS AND METHODS

This experiment was carried out in Matrouh Government (El-Kaser area) Northern west coast. Twenty seven Barki lambs of about 5 months old and weighing on average 28.57 ±3.18 kg and twenty seven desert male goat kids of 4 month old weighing 18.13 ±1.55 kg kept at Bedouins premises were used to study the effect of feeding different rations on fattening lambs and goats performance. Attempt was made to replace the expensive CFM by barley grains and bean seeds and the use of fresh *Acacia saligna* phyllodes to replace berseem hay. The experimental treatments for both species were as follows:

TS_1. Concentrate feed mixture (CFM) to cover maintenance requirements + Berseem hay *ad lib.*(control).

TS_2 Barley gains (BG) and bean seeds (BS) to cover maintenance requirements + berseem hay *ad lib.*

TS_3 Barley gains (BG) and bean seeds (BS) to cover maintenance requirements + fresh *Acacia saligna* phyllodes *ad-lib.*

Each treatment was applied at one of the Bedouins premises according to the availability of *Acacia saligna* trees and water. Lambs of TS_1 and kids of TG_2 were put at Kelian Abu El-Kasem, lambs of TS_2 and kids of TG_3 were put at Hemada, Abed Arehem Henash, kids of TG_1 were put at Guida Abed Arehem Henesh and lambs of TS_3 were put at Ibrahim Selab Uonis.

Group feeding of animals was practiced throughout this experiment. Fresh *Acacia saligna* phyllodes or berseem hay was offered *ad lib* twice daily. The residual were weighed for each group to calculate the daily feed intake. Concentrate feed mixture (CFM), barley grains, bean seeds were given twice daily. During the experiment, all animals were given free access water and mineral blocks (complete mineral mixture). Each individual's body weight was measured every ten days before the daily feed and water were offered.

During the experimental period, the animals of both species were fed on CFM or barley grains plus crashed bean seeds to cover approximately their maintenance requirements according to (Salem, 1990) for Barki sheep, being 27.7g TDN per Kg $W^{0.73}$ and 2.33g DCP per Kg $W^{0.73}$, since the maintenance requirements of goats (30.0g TDN per Kg $W^{0.73}$ and 2.93g DCP per Kg $W^{0.73}$ (Alan Mowlem, 1992) are close to those of sheep. Every 10 days the amount of CFM or Barley grains plus been seeds offered were adjusted according to total body weight changes.

The roughages were fed *ad lib* (Fresh cut *Acacia saligna* phylloder or berseem hay) twice daily to supply the growth requirements.

The, fattening period lasted for 95 days. Slaughter test was undertaken with three animals (having around the overall body weight mean) from each group.

The animals to be slaughtered were kept 16 hrs off feed before slaughtering and were skinned after complete bleeding, the dressed out and the hot carcasses were weighed. The four compartments of the stomach were weighed either full or empty. Samples of the eye muscles were measured as the area of its cross section between the 11^{th} and 12^{th} rib in cm^2 according to Henderson et al (1966).

Approximate constituents of feed offered, feed refusals and samples of eye muscle were analyzed according to AOAC (1990) procedures.

The Economical efficiency was expressed as a ratio between the price of total live weight gain and that of feeds consumed.

The analysis of variance (ANOVA) was used to analyze the obtained data using the general linear model procedure (SAS, 1982). Differences among treatment means were tested by multiple range test (Duncan, 1955).

RESULTS AND DISCUSSION

Results of the chemical composition of the experimental feedstuffs are presented in Table I. The DM, CP, CF and NFE of Acacia saligna were 36, 16.00, 17.90 and 48.32%, respectively on other hand the DM, CP, CF and NFE of clover hay was 87, 13.50, 22.50 and 47.60% respectively. However the CP% of *Acacia saligna* was 16 which was higher than the CP of clover hay.

During the experimental period, the animals were able to consume twice and triple their maintenance requirements for TDN and DCP, respectively as recommended by Salem (1990).

Table (1): Chemical analysis of ingredients used in formulating the experimental rations.

Items	% DM basis					
	DM	CP	CF	EE	NFE	Ash
Acacia saligna	36	16.00	17.90	1.88	48.32	15.90
Clover hay	87	13.50	22.50	2.4	47.60	14.00
CFM*	90.5	14.0	10.20	4.6	60.40	10.80
Barley grains	90.3	11.10	4.70	2.00	78.70	3.50
Bean seeds	90.4	23.0	5.00	1.8	65.30	4.90

* Composed of 55% cotton seed cake, 30% wheat brain 10% rice brain, 1% common salt, 2% limestone and 2% molasses.

Data of dry matter intake are present in Table (2). Since animals were group fed; comparisons regarding feed and dry matter intakes and feed efficiency were made on a relative rather than on a statistical basis. The daily DM intake was almost similar for all groups since the range was from 1.34 to 1.40 Kg for lambs and from 0.92 to 0.97 for kids.

Data presented in Table 2 indicated that the average of total body weight gain were 18.56, 23.93 and 24.16 kg for lambs fed in treatments TS_1, TS_2 and TS_3, respectively. While in case of kids were 11.45, 22.92 and 24.34 for kids fed in treatments TG_1, TG_2 and TG_3, respectively. Statistical analysis showed significant differences ($P<0.05$) in daily gain among treatments in case of lambs (TS_1, TS_2 and TS_3). The daily gain of lambs fed ration-containing *Acacia saligna* phyllodes plus barley grain and small amount of bean s eeds TS_3 (254 g/day) and those of TS2 containing hay, barley grain and beans (252 g/day) had significantly ($p<0.05$) higher body weight gain than those fed clover hay + CFM (195 g/day). Average daily gains were higher by 30 .17% in TS_3 and 28.97% TS_2 than the control treatment TS_1.

Statistical analysis showed no significant different ($P>0.05$) in daily gain among treatments in case of kids (TG1, TG2 and TG3). On the other hand, the kids fed ration containing fresh *Acacia saligna* phyllodes plus barley grain and small amount of bean seeds had the ADG of 116 g/day (TG_3) but the control treatment (TG_1) had ADG of 120.53 g/day and TG_2 had ADG of 106 g/day.

The daily gain of kids in TG3 and TG2 were only lower by 3.8% and 12.5% of the control treatment TG1, respectively. The DCP intake by lambs and kids from the experimental rations was 8.8, 9.57, 9.43 and 8.87, 9.46, 9.43 as percent of feed intake. These values fall within the range given by Shehata (1970) being 8-10% DCP for fattening rations.

Results of feed conversion (kg DMI/kg gain) for the lambs fed treatment (TS1) was highest efficient, as compared to lambs fed other rations (TS2 and TS3), but results of fed conversion (kg DM/kg gain) for kids fed in TG2 was highest efficient as compared to lambs fed other ration (TG1 and TG2).

Results of feed conversion (kg TDN /kg gain) for the lambs fed treatment (TS1) lambs was the highest compared to lambs fed other rations

Table (2): Average live body weight, daily gain (X ± SD), feed intake and economic efficiency for animals fed different rations.

Items	TS1	TS2	TS3	TG1	TG2	TG3
No. of animals	9	9	9	9	9	9
Initial body WT (Kg)	28.61 ± 3.29	29.44 ± 3.12	27.67 ± 2.93	17.67 ± 1.72	17.89 ± 1.52	18.83 ± 1.41
Final body WT (Kg)	47.17 ± 4.01	53.37 ± 4.67	51.83 ± 5.86	29.12 ± 2.76	27.95 ± 2.82	29.85 ± 2.05
Total gain (Kg)	18.56 ± 2.54	23.93 ± 3.89	24.16 ± 5.37	11.45 ± 1.94	10.06 ± 3.07	11.02 ± 1.28
Daily gain (g)	195.0 ± 26.76 b	252 ± 35.36 a	254 ± 56.56 a	121± 22.05 c	106 ± 32.34 c	116±14.33 c
DMI (Kg/day/head):						
Barley grain (1)		0.525	0.680		0.500	0.500
Con. mix (2)	0.720			0.670		
Bean seeds (3)		0.190	0.185		0.135	0.135
Hay (4)	0.620	0.675		0.300	0.293	
Acacia (5)			0.540			0.330
Total	1.34	1.39	1.40	0.970	0.928	0.965
TDNI (g/day/head)	728	885	885	546	638	637
DCPI (g/day/head)	118	133	132.00	86.1	88.00	91
Calculated feeding value of rations consumed (%)						
TDN	54.33	63.67	63.21	56.29	68.75	66.01
DCP	8.80	9.57	9.42	8.88	9.48	9.43
Feed conversion, kg/kg gain						
DMI	6.86	5.52	5.54	8.05	8.52	8.32
TDNI	3.73	3.51	3.36	4.53	6.02	5.49
DCPI	0.60	0.53	0.52	0.71	0.83	0.78
Economical Efficiency (6)	2.07	2.31	2.97	1.66	1.40	1.80
Feed cost/kg gain (piasters)	399	389	303	542	858	500

a,b,c : Means in the same row for the same species bearing different superscripts differ (P<0.05).
The feeding values of ingredients 1, 2, 4 as TDN and DCP were calculated according to Farid *et al* (1979).
The feeding values of bean seeds as TDN and DCP were calculated according to Kearl, (1982).
(5) The feeding values of Acacia as TDNI and DCPI were calculated according to Hendawy (1995).
(6) Economical efficiency = price of total live weight gain/price of feed consumed.
The price of feed ingredients in Egyptian pound (LE) per ton: (1) BG = 600 L.E. (2) CFM = 530 L.E. (3) BS = 1000 L.E., (4) hay = 500 L.E. and (5) Acacia = 150 L.E. Price of one kg body weight = 9 L.E.

(TS2 and TS3), but results of feed conversion fed TG2 was the highest compared to kids fed other rations (TG1 and TG3).

It is well known that *Acacia saligna* contains high content of tannin (Degen *et al.*, 1997). Tannins make a complex compound with protein (Robbins et al, 1987; Vaithiyanathan and Kumar, 1993 and WoodWard and Reed, 1997) and lead to decrease intake from Acacia (Degen *et al.*, 1997) and results in negative nitrogen balance when fed alone to small ruminants. (Becker *et al.*, 1995 and Degen *et al.*, 1997) For this reason barley grains plus small amount of bean seed as supplements were used for fattening lambs and kids when fed fresh Acacia. It is known that feeding on barley grains helps to supply slow and constant release of VFA's in the rumen, which saves a good fraction of wasted energy. Givens *et al.*, (1993) suggested that barley grains with slower rates of degradation might be superior for ruminants feeding than other ingredients with fast rate. Also, Owens *et al.*, (1986) suggested that starch digested in the small intestine provides 42% more energy to the animal than starch digested in the rumen provided that it is in small amounts. It looks that adding barley has prevented the synthesis of the Tanin-protein indigestible complex through its effect decreasing the pH of the rumen (Kumar and D'Mello, 1995). There are some benefits from condensed Tannins, it protects labile plant protein in the rumen and consequently increase the supply of high quality proteins entering the duodenum (Barry and Manley 1986). It is beneficial to all bean seeds for rations of fattening lambs and kids when fresh *Acacia saligna* phyllodes are used as roughage, since bean seeds contain high quality protein (Barry and Manley, 1986 and Mangon, 1988). This protected protein from degradation in the rumen by tannins increases the amount of high quality protein entering the duodenum.

Economical efficiency was 2.07, 2.31, 2.97 for lambs and 1.66, 1.40, 1.8 for kids for treatments TS1, TS2, TS3 and TG1,TG2 and TG3 respectively.

Results indicated that lambs fed on control treatment (TS1) had the lowest economical efficiency, as compared to the lambs on other two treatments, TS2 and TS3. The better-feed utilization attained by feeding animals on TS2 and TS3 may be due to high TDN intake (g)/kg $W^{0.73}$ (58.42, 60.16) and DCP intake (g)/ kg $W^{0.73}$ (8.78, 8.97) higher than the control treatment (TS1) TDN (g)/kg $W^{0.73}$ 51.27 and DCP (g)/kg $W^{0.73}$ 8.31. This is an indication of higher metabolizable energy in the dry matter of ration in treatments TS2 and TS3, which would be more efficiently utilized for growth (Blaxter, 1967).

The data in Table (2) indicated that the cost of feeding for producing one kg of weight gain was 399, 389 and 303 piasters for rations TS1, TS2 and TS3 of lambs, respectively. These results pointed out that feeding lambs on *Acacia saligna* plus barley grains and small amount of bean seeds (185g/day) in treatment (TS3) reduced the cost of feeding by 24.31% of control treatment (TS1). Moreover, the ration in treatment (TS3) seemed to have the least feed cost/kg weight gain and produced the highest efficiency. On the other hand, in case of kids the cost of feeding for producing one kg of weight gain was 542, 658 and 500 piaster for rations in treatments TG1, TG2

and TG3, respectively These results indicated that feeding kids on *Acacia saligna* plus Barley and small amount of bean seeds (135g/day) reduced the cost feeding by 8 4% when compared to rations of TG1 (control). When comparing the cost of rations in treatment TG1 with TG2, it was clear that the price of ration (TG2) is higher than the price of rations TG1 and TG3. This pointed out that the ration in treatment (TG3) seemed to have the lowest feed cost/kg weight gain, producing the highest efficiency.

Regarding the economical efficiency and feed cost/kg gain, it was found that the highest economical efficiency (2 97) and lower price of feed cost/kg gain (303 piaster) was recorded for lambs fed on *Acacia saligna* phyllodes plus barley grain and bean seeds (TS3). On the other hand, when kids were fed on *Acacia saligna* phyllodes plus barley grain (TG3), they showed lower economical efficiency (1.80) and higher price of feed cost/kg gain (500 paisters). It was clear that the fattened lambs were more economically efficient than kids mainly in terms of lower feed cost /kg gain.

The results of carcass dressing percentages, organ offal percentages, wholesale cut percentage, and physical composition of 9- 10- 11 ribs cut and chemical composition of eye muscle lambs and kids fed on different treatments are presented in Table 3

It is evident from the results that lambs fed on ration (TS3) have the highest values in dressing percentage either related to fasting or empty live weight, while the lambs fed on control rations (TS1) and (TS2) were the lowest. In case of the fattened kids, the results indicated nearly equal values in dressing percentage either related to fasting or empty live weight in TG3 and TG2, but in the two cases, it is higher than the control treatment TG1.

The boneless meat percentage was higher in treatment (TS1) than the other two treatments (TS2 and TS3), but this percentage was nearly equal in TS2 and TS3. Also the lambs carcass having the highest meat, bone ratio in treatment (TS1), while this ratio was lower in treatment (TS3), but in the case of (TS2) the meat bone ratio was lowest when compared between TS2 and TS1.

Results in Table (3) of organs and offal's (as % of empty live body weight) showed no great differences in (liver, heart, kidneys and spleen) and (Pelt, head and legs) It was noticed that the smallest value of abdominal fat percentage was recorded in TS2. The fats of kidneys as percentage from the empty live body weight were highest in TS3 (animals fed on Acacia) than TS1 and TS2

The data in Table 3 indicates that the whole sale cuts as percentage from chilled carcass weight in the case of fattened lambs. In this table it was found that the percentage of neck was highest in TS3 than TS1 and TS2. The Racks as percentage from chilled carcass weight were highest in TS1 than in TS3 and TS2 The loin as percentage from the chilled carcass weight was highest in TS1 compared to TS3 and TS2 The legs as percentage from the chilled carcass weight were equal in TS1 and TS2 while TS1 and TS3 had the same tail percentage but TS2 was smaller

Table (3): Average measurements of carcass traits (X ± SD) for sheep and goats fed different treatments.

Items	TS1	TS2	TS3	TG1	TG2	TG3
Carcass traits:						
Fasting live body WT (kg)	48.33±6.35a	41.67±4.16a	44.00±3.60a	28.83±1.04b	27.33±3.51b	29.16±2.75b
Empty live body WT (kg)	42.64±6.82a	36.98±3.85a	39.34±3.7a	25.23±0.79b	24.58±2.91b	25.24±1.28b
Hot carcass WT (kg)	21.67±4.93a	18.50±2.29a	20.83±2.02a	12.30±0.52b	12.00±2.12b	12.26±1.35b
Chilled carcass WT (kg)	21.38±4.90a	18.13±2.24a	20.57±1.93a	12.02±0.53b	11.45±2.20b	12.00±1.34b
Dressing (%)* (1)	44.41±4.77a	44.33±1.16a	47.33±1.70a	41.96±0.51b	43.73±2.16b	42.07±0.59b
(2)	50.41±4.13a	49.96±1.1a	52.95±0.68a	47.98±0.95b	48.62±2.79b	46.61±3.36b
Organs and offals (% of empty live body WT):						
Pelt	11.96±0.46a	12.53±0.84a	12.11±0.61a	8.8±1.64b	9.42±0.63b	9.66±0.44b
Head	6.23±1.11a	6.38±0.43a	6.36±0.35a	7.02±0.38b	7.08±0.61b	7.52±0.19b
Feet	2.33±0.31a	2.50±0.09a	2.98±0.62a	2.93±0.05b	2.93±0.31b	3.05±0.13b
Liver	1.00±0.19a	1.03±0.05a	0.96±0.11a	1.95±0.7b	1.48±0.14b	1.29±0.09b
Heart	0.36±0.02a	0.38±0.01a	0.35±0.01a	0.43±0.03b	0.45±0.03b	0.48±0.10b
Kidneys	0.27±0.06a	0.31±0.07a	0.24±0.03a	0.34±0.01b	0.33±0.01b	0.32±0.02b
Spleen	0.12±0.01a	0.15±0.03a	0.12±0.02a	0.18±0.02b	0.14±0.02b	0.15±0.03b
Lungs and trachea	1.04±0.11a	1.32±0.17a	1.27±0.11a	1.58±0.26b	1.37±0.38b	1.22±0.29b
Testis	0.79±0.22a	0.78±0.07a	0.6±0.16a	1.10±0.11b	1.09±0.11b	1.02±0.06b
Abdominal fat	2.23±0.36a	1.35±0.27a	1.8±0.31a	2.17±0.7b	1.34±0.62b	1.93±0.46b
Kidney fat	0.85±0.25a	0.62±0.04a	1.00±0.38a	0.35±0.29b	0.82±0.54b	1.09±0.29b
Whole sale cuts (% of chilled carcass):						
Neck	7.96±0.54a	4.03±0.12a	8.42±0.391a7.	9.63±1.03b	10.44±1.41b	10.22±1.03b
Shoulders	18.16±0.95a	8.81±0.02a	23±0.76a	21.83±0.46b	21.98±0.37b	18.41±5.66b
Racks	27.16±0.64a	11.25±0.19a	23.04±1.52a	25.20±1.54b	25.39±2.08b	25.42±0.68b
Flank	6.22±2.09a	3.81±0.35a	6.95±0.14a	6.39±0.2b	6.17±0.39b	6.37±0.65b
Loin	8.05±0.76a	4.11±0.52a	7.45±0.61a	8.33±0.34b	7.90±0.87b	9.05±0.5b
Legs	29.38±0.86a	13.70±0.65a	29.54±2.10a	27.96±0.19b	28.19±0.65b	27.68±0.43b
Tail	5.39±1.19a	3.37±0.92a	5.78±1.11a	0.3±0.04b	0.34±0.07b	0.41±0.90b

Table (3): Cont.

Items	TS1	TS2	TS3	TG1	TG2	TG3
Physical composition of 9-10-11 rib cut:						
9-10-11 rib cut	0.88±0.23a	0.75±0.19a	0.86±0.09a	0.49±0.20b	0.4±0.04b	0.57±0.1b
Lean meat (%)	50.37±3.3a	0.38±0.10a	0.42±0.02a	67.86±1.93b	72.72±9.63b	68.16±5.04b
Bone (%)	19.50±5.14a	0.16±0.03a	0.19±0.00a	25.46±1.13b	21.07±10.08b	27.51±1.61b
Fat (%)	30.25±4.39a	0.20±0.06a	0.25±0.09a	6.68±1.00b	6.40±0.22b	8.48±6.11b
Meat: Bone ratio:	2.71±0.77a	2.31±0.44a	2.26±0.11a	2.67±0.19b	2.55±0.87b	2.89±0.15b
Eye muscle area (cm^2)	15.01±1.95a	15.42±1.9a	15.44±4.82a	10.13±0.67b	11.23±0.66b	10.31±0.66b
Chemical composition of eye muscle on dry matter basis (%)						
Moisture	66.0±2.33a	73.60±1.66a	67.45±0.56a	68.07±0.57b	68.14±0.88b	68.22±1.07b
CP	62.62±1.30a	67.31±1.80a	67.7±1.50a	66.01±1.63b	66.00±1.49b	63.56±0.17b
EE	25.32±1.0a	19.22±0.80a	19.63±1.62a	20.00±1.40b	21.58±3.42b	27.23±1.13b
Ash	2.59±0.4a	3.45±0.35a	3.67±0.2a	3.23±0.1b	3.42±0.38b	3.07±0.13b

1) Based on fasting live body weight. 2) Based on empty live body weight. * Hot carcass weight.
Sheep: TS1: Berseem hay + concentrate mixture (CFM). TS2: Berseem hay + Barley grains (BG) + Bean seeds (BS).
TS3: Fresh *Acacia saligna* phyllodes + BG + BS.
Goats: TG1: Berseem hay + (CFM). TG2: Berseem hay + (BG) + (BS). TG3: Fresh Acacia saligna phyllodes + (BG) + (BS).
a, b, c,: Means in the same row for the same species bearing different letters differ (P<0.05).

The data in Table 3 shows the wholesale cuts as percentage from the chilled carcass weight in the case of fattened kids. The percentages of neck, racks and legs were nearly equal in the three treatments. The shoulders percentages were nearly equal in two treatments TG1 and TG2 but this percentage was smaller in TG3 than the other two treatments. The loin percentage was highest in TG3 compared to TG1 and TG2, but this percentage was nearly equal in TG1 and TG2

The physical traits and chemical analysis of produced meat are shown in table (3). The average area of eye muscles of fattened lambs was (15.01, 15.42 and 15.44 cm^2) for treatments (TS1, TS2 and TS3), respectively. In the three treatments, the averages of eye muscles were approximately equal. On the other hand, the average area of eye muscles was higher in the carcasses of kids fed on treatment TG2 (11.23 cm^3) than in treatment TG1 (10.13cm^2), which were approximately equal. The differences between treatments in area of eye muscles (*Longissimus dorsi*) might be attributed to the variation in carcass weight and the edible meat percentage.

Results of the chemical composition of *Longissimus dorsi* muscle in the case of the fattened lambs in table (3) indicated that there was a small variation in percentage of moisture and protein due to dietary treatments. Percentages of ether extract were high in treatment TS1 (28%), lower in treatment TS2 (11%) and moderate in TS3 (19.60%) that happened when lambs were fed on fresh *acacia saligna* phyllodes. Ash Percentage was higher in TS3 than TS2 and TS1.

As shown in Table 3. results of the chemical composition of *longissimus dorsi* muscle of fattened kids indicated that, there was a small variation in percentages of moisture between treatments. The highest protein percentage was in TG1, but in TG2 and TG3 the protein percentages were approximately equal Percentages of ether extract are then highest in treatment TG3 than TG1 and TG2, which were approximately equal in the last two.

It should be pointed out that the statistical analysis did not reveal any significant differences among treatment within each species for all studied carcass traits

On bases of nutritional and economical results of the present work, the treatment TS3 is preferable to the other two rations in (TS1 and TS2) for fattened lambs. In addition in the case of fattened kids, ration TG3 is preferable to the other two rations in (TG1 and TG2).

It is therefore recommended to use fresh *Acacia saligna* as roughage for fattening lambs and kids and to replace CFM by BG and BS, since this proved to slightly improve their performance and reduces feeding cost without affecting carcass quality

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استخدام مكونات أعلاف بديلة ومتاحة فى علائق تسمين الحملان البرقي والماعز بواسطة البدو في الساحل الشمالي الغربي لمصر

عادل محمد محمود سالم

قسم تغذية الحيوان و الدواجن بمركز بحوث الصحراء

استخدم في هذه الدراسة ٢٧ حولي برقي عمر ٥ شهور متوسط أوزانهم ٢٨,١٢ كجم، و٢٧ ذكر ماعز متوسط أوزانهم ١٨,١٣ كجم وضعت هذه الحيوانات عند البدو طبقا لتوفر الأكاسيا عندهم في منطقة القصر في محافظة مطروح.

وكان الهدف من هذه الدراسة هو استخدام الأغذية المتاحة في هذه المنطقة مثل الأكاسيا بدل من الدريس في تسمين الحملان والماعز كما تهدف هذه الدراسة إلى استخدام الشعير والفول بدل من العلف المُصنع.

وقسمت الحيوانات من كل نوع إلى ثلاثة معاملات المعاملة الأولى هي مجموعة المقارنة غذيت على دريس البرسيم + العلف المصنع، استبدل الشعير والفول بدل من العلف المصنع في المعاملة الثانية، وفى المعاملة الثالثة غذيت الحيوانات على الأكاسيا + الشعير + الفول. هذه التجربة استمرت لمدة ٩٥ يوم وكانت الحيوانات تعطى ضعف الاحتياجات الحافظة من الطاقة وثلاثة أضعاف الاحتياجات الحافظة من البروتين وذبحت ثلاثة حيوانات من كل معاملة في نهاية التجربة لتقييم خواص الذبيحة.

وكان متوسط الزيادة في وزن الحملان ١٩٥. ٢٥٢. ٢٥٤ جرام / اليوم في المعاملة الأولى والثانية والثالثة على التوالي وكذلك كان متوسط الزيادة في الوزن في الماعز في اليوم ١٢١، ١٠٦، ١١٦ جرام / اليوم في المعاملة الأولى والثانية والثالثة على التوالي وكان معامل الاستفادة من الغذاء (كيلو جرام مركبات مهضومة كلية لكل ١كجم زيادة في الوزن للحملان) في المعاملات الثلاثة على التوالي ٣,٧٣، ٣,٥١، ٣,٢٦ بينما كانت في الماعز في تلك المعاملات على التوالي٥,٤٩، ٦,٠٢، ٤,٥٣ ولقد أوضحت النتائج أن تغذية الحملان والماعز على الأكاسيا أدى إلى انخفاض تكاليف الغذاء لكل ١كجم زيادة في الوزن.

وكانت نسبة التصافي على أساس وزن الحيوان الصائم في الحملان٤٨,٣٣، ٤١,٦٧، ٤٤,٠٠ % للمعاملات الأولى والثانية والثالثة على التوالي بينما كانت هذه النسبة في الماعز ٢٨,٨٣،٢٧,٤٤،٢٩,١٦% على التوالي في المعاملات الأولى والثانية والثالثة بينما كان متوسط نسبة الشافي في الحملان للمعاملات الثلاثة على التوالي ٢,٧١، ٢,٢٦، ٢,٣١ وكانت نسبة الشافي في الماعز في المعاملات الثلاثة على التوالي ٢,٦٧، ٢,٥٥، ٢,٨٩ .

وعلى ذلك يمكن التوصية باستخدام الأكاسيا والشعير وكمية صغيرة من الفول بدلا من دريس البرسيم والعلف المصنع في تسمين الحملان والماعز في الساحل الشمالي الغربي لمصر.