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FEEDING STUDIES ON FATTENING OF MERINO LAMBS IN NORTH WESTERN AREA OF EGYPT

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ABSTRACT

One hundred and twenty growing Merino lambs were used in six comparative feeding trials to evaluate the effect of two types (high energy or high protein) end levels (2.5, 3 and 3.5%) of concentrate feed mixture (CFM) in rations on their growth performance, carcass quality and some rumen and blood parameters. Rice straw was used ad lib for all groups. Six digestion trials were carried out to determine the feeding value of the experimental rations. Results indicated that, digestion coefficients, nutritive value, blood protein and glucose and some of rumen parameters were significantly higher for CFM2 ration than CFM1. But the value of daily gain and dressing percentage were not influenced by two type of CFM. On the other hand, increasing the level of CFM in rations did significantly affect digestibility of all nutrients, feeding values, blood protein and glucose, daily gain and dressing percentage.

This study suggests that Merino finishing mala lambs is successful way for red meat production particularly under Egyptian environmental conditions. It could also be concluded that, the increase in level of CFM in rations gave higher total gain, daily gain, dressing percentage, and lower cost to give one Kg gain or meat with merino lambs.

Keywords: Concentrate feed mixture, Merino lambs, growth rate, carcass traits

INTRODUCTION

Average annual animal protein consumption per capita in Egypt is low (11 Kg/year) compared to the world average (18 Kg/year). The ever increasing population in Egypt makes the development in animal production appear to be invisible. On one hand, the private sector is not able to cope up with the increasing demands over animal protein especially the red meat. On the other hand, there is always an obligation towards the government to confront this increasing demand. Import of livestock was one of the alternatives. Australia is considered one of the main exporters of Australian Merino sheep. Animals were brought to stay a period for finishing and to get the taste of the final product (red meat) meet the Egyptian consumer demands. Animal average weight ranges from 33 to 35 Kg. They are finished at around 55 Kg. Large numbers of animals are brought every year.

Because the import of animals imposes high cost, it is necessary to finish these animals economically. Knowingly, the cost of nutrition composes around 70 – 75% of the total cost Cotton seed meal (CSM) is one of the most expensive feed ingredients. It is usually the most common supplement used in animal feeding in Egypt (Bechai, 2001).

This study was conducted to compare between high energy and high protein diets formulated in three different concentrate feed mixtures. The comparison included digestibility coefficients, animal performance, and carcass traits.

MATERIALS AND METHODS

This study was carried out at the Agro–Industrial Compound, Horticultural Services Unit, Agriculture Research Center, North Western area of Egypt, Ministry of Agriculture.

Animals and management:

This study was carried out during winter season (the average ambient temperature and relative humidity were 18 °C and 44%, respectively). One hundred and twenty castrated male Merino lambs (33.66 ±0.11 Kg. average initial body weight) were randomly assigned to six balanced groups. The experimental animals were kept under similar managerial and hygienic conditions, and weighed individually on biweekly basis. Concentrate feed mixture (CFM) was offered twice daily. Rice straw was offered ad lib and water was available for lambs all times. Amount of feed not consumed by animals were weighed and taken into account for determination of actual feed intake. Six digestibility trials were conducted simultaneously on the animals of the feeding trials at the 9th week (3 each), to determine the feeding values of the experimental rations. Acid insoluble ash (AIA) method was used as a natural marker as described by Van Keulen and Young (1977) to calculate digestion coefficients. Rumen fluid samples were collected during the collection period before feeding and at 4 hrs post feeding using a stomach rubber tube. Blood samples were withdrawn from the left Jugular vein, before feeding during the collection period, centrifuged at 4000 rpm for 20 minutes and the resultant serum was frozen for later analysis.

Experimental rations

Two types of concentrate feed mixture (CFM1 and CFM2) containing different percentages of total protein and total digestible nutrients were used to feed growing lambs. Lambs were randomly assigned to six balanced groups to evaluate the following rations: -

R1 – Rice straw ad-lib and CFM1 at 2.5% of L.B.W.
R2 – Rice straw ad-lib and CFM1 at 3.0% of L.B.W.
R3 – Rice straw ad-lib and CFM1 at 3.5% of L.B.W.
R4 – Rice straw ad-lib and CFM2 at 2.5% of L.B.W.
R5 – Rice straw ad-lib and CFM2 at 3.0% of L.B.W.
R6 – Rice straw ad-lib and CFM2 at 3.5% of L.B.W.

Chemical composition of the ration ingredients is shown in Table (1). Five lambs of each group were slaughtered after they were prevented from feed and water for 16 hr, at the finishing fattening period (126 day). Dressing percentage was calculated according to Abou-Ammo, (1992).

Analysis

Samples of feeds and feces were analyzed according to A. O. A. C. (1990). Fiber fractions of ration ingredients were analyzed according to Georing and Van Soest, (1970). Hemicellulose and cellulose contents were calculated as the difference between NDF and ADF and between ADF and ADL, respectively. Rumen fluid samples were analyzed for ammonia-N and TVFA's by (Conway, 1962 and Kromann et. al. 1967, respectively). The pH values were immediately measured with pH meter. Serum total protein, albumin and glucose concentrations were determined according to Peters, (1968), Doumas et. al. (1971) and Hyvarnen and Nikklia, (1962), respectively. Globulin was estimated by difference. The data were analyzed statistically at factorial design using GLM procedures of SAS (1992).

RESULTS

Digestibility trials

The chemical compositions of the two experimental concentrate feed mixturs (1 and 2) are presented in Table (1). It could be seen that there are differences among the two CFM. The differences might be due to the types and percentage of the ingredients used in formulating CFM. The CFM1 had higher OM and NFE content as a result of containing high amount of corn grain (68%) which contained high NFE and lower ash (83% and 2%, respectively) (APRI, 1997). The CFM2 had higher CF, NDF and ADF contents as a result of containing undecorticated cotton seed meal (30%), which has high CF content (23%) (APRI, 1997). On the other hand, increasing percentage of CFM from 2.5 to 3.0 to 3.5% in rations led to a slight increase in OM, CP, EE, and NFE contents in rations, while CF, NDF, ADF, and ash contents decreased. This is may be due to decreased percentage of roughage portion (rice straw) in diets.

Table 1. Chemical composition of ingredients and calculated rations

Items	DM	OM	CP	CF	EE	Ash	NFE	NDF	ADF	ADL	Hemi	Cell
		DM basis,%										
CFM1 *	86.44	93.93	14.08	4.38	3.19	6.07	72.28	28.74	10.84	2.58	17.90	8.26
CFM2 **	86.61	92.25	18.89	10.69	3.72	7.75	58.95	38.90	19.24	4.26	19.66	14.98
R.S.	88.33	83.97	4.04	36.21	1.19	16.03	42.53	73.85	46.21	4.60	27.64	41.61
Rations (calculated)												
R1	86.97	92.07	12.20	10.31	2.82	7.93	66.74	37.15	17.44			
R2	86.70	92.54	12.68	8.82	2.91	7.46	68.13	35.04	15.77			
R3	85.97	92.82	12.97	7.92	2.97	7.18	68.96	33.82	14.77			
R4	86.93	90.72	16.14	15.42	3.25	9.28	55.91	45.37	24.23			
R5	86.85	91.09	16.82	14.26	3.37	8.91	56.64	43.79	23.01			
R6	86.81	91.29	17.17	13.64	3.43	8.71	57.05	42.94	22.36			

*** CFM1, was comprised of 68%yellow corn, 26% linseed meal, 3% molasses, 2% limestone and 1% salt (calculated TDN = 73.73%) .**

****CFM2, was comprised of 30%yellow corn, 30% linseed meal, 30% undecortecated cotton seed meal,7% molaeses, 2% limestone and 1% salt (calculated TDN = 66.65%)**

Table (2). Apparent digestibility and feeding values of the experimental diets.

Item	Nutrient digestibility, %							Feeding value, %	
	DM	OM	CP	CF	EE	NFE		TDN	DCP
Type of CFM									
CFM1	67.49	72.75^{a}	63.48^{b}	53.09^{b}		73.69^{b}	77.03^{a}	69.91^{a}	8.01^{b}
CFM2	67.68	71.17^{b}	67.62^{a}	54.78^{a}		74.45^{a}	76.17^{b}	67.88^{b}	11.30^{a}
±SE	0.156	0.143	1.237	1.851		2.761	2.942	2.856	1.347
Level of CFM									
2.5 %	66.82^{b}	71.22^{c}	64.91^{b}	53.83		73.41^{b}	76.13	67.88^{c}	9.24^{c}
3.0 %	67.54^{ab}	71.93^{b}	65.49^{b}	53.92		74.15^{a}	76.52	68.88^{b}	9.70^{b}
3.5 %	68.40^{a}	72.74^{a}	66.25^{a}	54.06		74.66^{a}	77.15	69.92^{a}	10.04^{a}
±SE	3.512	2.746	3.215	3.412		2.341	2.153	3.450	1.401
Interaction (Type X Level)									
	NS	P<0.05	P<0.05	NS		NS	NS	P<0.05	P<0.05

a,b and c ; Means within column for each category bearing different letters differ significantly (P< 0.05).
NS = Not significant

Digestibility coefficients of dietary nutrients and the nutritive values of experimental rations are present in Table (2). Digestibilities of OM, NFE and TDN values were significantly increased (P<0.05) in CFM1 rations compared to CFM2 rations. On the other hand, DM, CP, CF and EE digestibilities and DCP values improved (P<0.05) with CFM2 rations compared to CFM1 rations. Digestibility coefficients for all nutrients and values of TDN and DCP were significantly (P<0.05) increased with increasing CFM percentage in rations.

Rumen liquor parameters

Table (3) shows the average values of rumen liquor parameters at zero and four hrs post feeding. Some variations (P<0.05) in ruminal fermentation parameters are noticed. The CFM1 rations had lower pH values; higher concentrations of TVFA's and lower ammonia-N concentrations at 4 hrs post feeding than did CFM2 rations. On the other hand, pH values decreased, ammonia-N, and TVFA's concentrations increased at four hrs post feeding with increasing the level of CFM in the rations.

Blood serum metabolites

The values of serum glucose (Table 4) were higher (P<0.05) in CFM1 rations than in lambs fed CFM2 rations. The values of serum total protein, albumin, and globulin were higher in lambs fed CFM2 rations (high protein percentage) compared with CFM1 rations. The values of serum total protein and its fraction and glucose were numerically higher when percentage of CFM in diet increased.

Table (3) Influence of diets containing different levels of CFM on some rumen liquor parameters

ITEM	pH value		TVFA's mg/ 100 ml		Ammonia-N mg%	
	0	4	0	4	0	4
Type of CFM						
CFM1	6.83	6.23^{b}	9.04	16.70^{a}	10.31	18.35^{b}
CFM2	6.86	6.27^{a}	8.97	16.52^{b}	10.33	19.34^{a}
±SE	0.105	0.141	2.173	2.815	3.416	3.725
Level of CFM						
2.5%	6.87^{a}	6.29^{a}	8.90^{b}	16.50^{b}	10.32	18.60^{c}
3.0%	6.85^{a}	6.26^{a}	9.00^{ab}	16.59^{b}	10.32	18.81^{b}
3.5%	6.82^{b}	6.22^{b}	9.11^{a}	16.75^{a}	10.33	19.12^{a}
±SE	0.106	0.125	2.246	2.752	3.271	3.516
Interaction (Type *X* Level)						
	NS	P<0.05	NS	NS	NS	P<0.05

a,b and c ; Means within column for each category bearing different letters differ significantly (P< 0.05).
NS = Not significant

Table (4) Influence of diets containing different levels of CFM on some blood serum metabolites

Item	Total protein mg %	Albumin gm%	Globulin gm%	Glucose mg%
Type of CFM				
CFM1	6.09^{b}	4.07^{b}	2.02	61.68^{a}
CFM2	6.38^{a}	4.22^{a}	2.16	58.87^{b}
±SE	1.823	1.421	0.426	3.548
Level of CFM				
2.5%	6.13^{b}	4.09	2.04	59.08^{c}
3.0%	6.27^{ab}	4.17	2.10	60.40^{b}
3.5%	6.31^{a}	4.18	2.13	61.35^{a}
±SE	1.341	1.802	0.386	2.986
Interaction (Type X Level)				
	P<0.05	NS	NS	P<0.05

a,b and c ; Means within column for each category bearing different letters differ significantly (P< 0.05).
NS = Not significant

Productive performance

Growth performance data are shown in Table (5). No significant differences were observed in daily gain, total DM intake, TDN intake and feed efficiency (DM, TDN, or DCP/Kg gain) between CFM1 and CFM2 ration. Cost per Kg live weight decreased and economical efficiency improved with CFM1 than with CFM2.On the other hand, daily gain, total DM intake, TDN intake, DCP intake and feed efficiency (DM, TDN, or DCP/Kg gain) improved (P<0.05) with increasing the level of CFM in the experimental rations. Improvement in cost per Kg gain (LE) and economical efficiency were found with increasing CFM in rations.

Carcass characteristics

The slaughter characteristics data are presented in Table (6). Generally, the most tested carcass parameters were affected by type and level of CFM in rations. The average of fasting weight, carcass weight, and dressing percentage with or without edible offal weight relative to fasting weight were higher with CFM2 rations and with increasing CFM level in rations than those of other rations. The results indicated that, there were no significant differences among total offal weight of lambs fed the tested rations. On the other hand, the pelt, head, and four legs weight did not show remarkable change between type and level of CFM in rations. Cost/Kg carcass with edible offal relative to fasting weight decreased with CFM1 and with increasing CFM percentage in rations.

Discussion

The NDF of the testec six rations (Table 1) ranged from 33.82 to 45.37%, which would represent good quality diets (Van Soest, 1965).
Differences in nutrient digestibilities (Table 2) were a direct reflection for differences in level and source of protein and energy in the six rations (Table 1). The values presented in Table (2) are similar to those found by Hafez, (2001) with Merino lambs.

Crude protein digestibility significantly ($p<0.05$) increased with CFM2 rations over that of CFM1 rations. This is mainly due to the high level of protein intake (Table 1). The improvement in CP digestibility could be due either to increase microbial protein synthesis in the rumen caused by more degradable nitrogen in form of NH3–N (Table 3); being available to rumen microflora (Mehrez, 1981 and 1992) or to the complementary effect of undegradable dietary protein and microbial protein (Orskov, 1982). On the other hand, the increase in CF digestibility of high protein rations (G4 to G6) could be associated with higher cellulolytic bacteria activity in the rumen (Saleh *et al.*, 2001).

The improvement in nutrient digestibility with increasing level of CFM in rations could be fairly attributed to better synchronization between energy and nitrogen sources available in the rumen media at an appropriate time of fermentation (El- Badawi *et al.*, 2001). On the other hand, the high concentrate rations of lambs had resulted in increasing CP digestibility and tented to increase CF digestibility. This may due to increasing the total number of bacteria and cellulolytic bacteria (El- Ashry et. al. 2001). Generally, the Increase in TDN values may be due to increasing digestibilities of CP, CF, EE, and NFE, while improving DCP values may be due to increased CP digestibility (Kirilov and Burikhonov, 1993).

Influence of feeding the experimental diets on ruminal pH, TVFA's, and NH_3-N concentrations of lamb's rumen liquor are present in Table (3). The recorded pH values were within the reported ranges for normal rumen function (Abou –Akkada and Blackburn, 1963); being 6 to 7. On the other hand, the pH values were within range of 6 to 7 given by (Mertens, 1977) for optimum cellulolytic bacteria activity. Minimum pH values were noticed at four hrs post feeding, which were negatively interrelated with the highest total VFA's concentration (Table 3) (Shafie and Ashour, 1997). These results are

in agreement with those of (Carro *et al.*, 2000 and El-Fadaly *et al.*, 2001). Increasing CFM level in the rations caused a decrease in the pH value. These results were in agreement with those of Makled and Mohamed, (2000) and Mehrez *et al.* (2001). They reported that as the proportion of CFM increased in the diet of ruminant farm animals, pH values decreased as well as for the effect of sampling time. In all cases, the obtained values were always above 6.0. This could have an implication on cellulolytic bacteria counts and activity (Hungate, 1966).

The lowest TVFA's values were obtained at zero time of sampling (before feeding) and increased at four hrs post feeding with all tested rations. Similar results were observed by (Hussein *et al.*, 1995 and Mehrez *et al.*, 2001). The pattern of VFA's values revealed that there was a reversal relationship with pH values at all times and reflected the pattern of fermentation in the rumen (Mehrez, 1992). Generally, the values of TVFA's concentration in the rumen in the present study lie in the range observed by Bruggemann and Gieseck, (1967) and Borhami *et al.* (1995).

The prefeeding NH3 nitrogen values increased at four hrs after feeding (Table 3). These values would satisfy microbial needs for nitrogen and hence maximize rate of fermentation of the experimental rations in the rumen. The optimal NH3-N concentration was recorded to be 23.5 mg /100 ml rumen liquor for concentrated diets (Mehrez et. al. 1977). However, it depends on the ratio between concentrate and roughage of the ration (Mehrez 1992 and Mehrez *et al.*, 2001). On the other hand, reduction of NH3-N in the lambs fed ration containing CFM1 (high energy) is not due to a reduction in the proteolytic, peptidolytic or deaminative activity of rumen microorganisms, but it is likely due to the increase in bacterial growth (Newbold, 1990). Generally, the interaction between carbohydrates and protein during fermentation in rumen is one of the most important factors, which regulate the concentration of ammonia–N in the rumen (Smith, *et al.*, 1978).

The effects of experimental rations on some blood parameters are presented in Table (4). Measurement of serum protein serves as indicator of normal health. On the other hand, glucose is the major form in which carbohydrates are available to the cells of the body to work together (Devlin, 1992).

The results indicated that total protein and its fractions (%) and glucose (mg %) were affected by type and level of CFM in the rations. The higher ($P<0.05$) serum total protein, albumin and globulin (%) were obtained with Merino lambs groups fed the experimental CFM2 diet compared to those fed CFM1. Such trend may be related to the higher feed intake and hence, nitrogen intake (Table 1). This is in accordance with the conclusion of Kumer et. al. (1980), who reported a positive correlation between dietary protein and blood protein concentration. On the other hand, the higher glucose value (mg %) in blood with CFM1 rations (high energy) may be related to rapid rate of hydrolysis and absorption of the dietary carbohydrates in the alimentary tract (Abdel-Khalek *et al.*, 2000).

The gradual increase in these parameters with increasing level of CFM in rations (Table 4), may be related to the increase in dry matter intake,

improvement of some enzymes was that synthesized (O'Kelly, 1987), increase rate of passage or flow of nutrients out of rumen and stabilize rumen environment (Hutjens, 1993), and increased digestibility coefficients (Table 2) and absorption rate (Metwally *et al.*, 2001).

Generally, values of total protein and its fractions were in the normal range reported by El-Reweny. (1999). This indicated that biosynthesis of albumin and globulin in the liver was normal. This clearly indicates that no harmful effects of rations were detected on the liver tissue (Salem et. al. 2001), and good developed immunity status (Kitchennham *et al.*, 1975). On the other hand, William (1997) reported that the normal blood of sheep has a range of 40 to 80 gm/100 ml for glucose, while protein values ranged from 6 to 8 gm/100 ml.

The results (Table 5) revealed an increase ($P<0.05$) in average daily gain with increasing concentrate proportion in rations of Merino lambs during the growth period. This increase might be due to the increase in fermentation capacity of the rumen (Hughes, 1988), and increased rate of ration degradation, ability to digest, absorb and metabolize, consequently improved efficiency conversion (Hutjents, 1993). On the other hand, the increase in growth rate with high protein rations could be resulted from an increased incorporation and utilization of amino acids and nuclear protein synthesis (Weser and Koolman, 1969) and nitrogen retention (Kornegay et. al. 1997).

The values of average daily gain for Merino lambs in the present study were higher than those reported by other investigators in Egypt when lambs fed CFM + rice straw. Abdel-Rahman *et al.* (1997) reported (125 g/h/d for crossbred Suffolk–Ossimi), El-Hosseiny *et al.* (1997) (92 g/h/d for Rahmani); Salem et al, (2001) (100 g/h/d for Ossimi); Mohamed et al (2001 (108 g/h/d for Frafra), and El-Badawy et al (2001) (114 g/h/d for Barki lambs).

The effect of type and level of CFM in tested diets on carcass and dressing percentage of merino lambs are present in Table (6). The results show that animals fed on CFM2 (High protein) and 3.5% level of CFM in rations were higher in fasting body weight, hot carcass weight and dressing percentage expressed as hot carcass with or without offal based on fasting body weight than those of other rations. These results are in agreement with the results of Taie (1997) who reported that sheep fed high protein diets had more dressing percentage. El- Hommosi and Abel- Hafiz (1979) and Abou-Ammo and EL-Hosseiny (1999) found that increasing CFM content in ration led to a rise in dressing percentage. Values of dressing percentage in Table (6) were higher than those reported by Allam et al (1999) using CFM and rice straw in crossbred Chios X Ossimi) male lambs, Awadalla et al (2000) with Ossimi male lambs fed CFM and rice hulls, and El-Ayek (2001) using CFM and rice straw in Rahmani male lambs.

In conclusion, this study suggests that Merino finishing male lambs is successful way for red meat production particularly under Egyptian environmental conditions. On the other hand, it could be concluded on the light of the present findings that, the increase in level of CFM in rations gave higher total gain, daily gain, dressing percentage, and lower cost to give one Kg gain or meat with merino lambs.

Table (5) performance of lambs fed experimental rations

Items	Type of CFM		±SE	Level of CFM			±SE	Interaction
	CFM1	CFM2		2.5 %	3.0 %	3.5 %		Type X Level
No. of animals	60	60		40	40	40		
Ave.initial BW (Kg)	33.63	33.68	3.512	33.58	33.73	33.68	3.425	
Ave.final BW (Kg)	55.26	55.64	2.912	50.96	55.24	60.16	2.541	
Ave. BW change (Kg)	21.63	21.96	2.135	17.38	21.51	26.48	1.967	
Ave. relative growth rate, %	64.32	65.20	2.145	51.76	63.77	78.62	1.988	
Ave daily gain, gm	171.67	174.29	42.315	137.94^{c}	170.71^{b}	210.16^{a}	45.216	P<0.05
Daily feed intake (g/ h/ d)								
CFM	1114	1119	100.213	888	1107	1356	120.583	
Rice Straw	340	347	21.351	353	346	3131	25.451	
Total DMI.	1454	1466	131.258	1241^{b}	1453^{ab}	1687^{a}	129.581	NS
TDNI.	1018	996	23.496	843^{b}	1001^{ab}	1179^{a}	33.412	NS
DCPI.	116^{b}	167^{a}	12.015	115^{c}	141^{b}	168^{a}	10.012	P<0.05
Feed efficiency								
Kg DM/Kg gain	8.47	8.41	1.324	9.00^{a}	8.51^{ab}	8.03^{b}	0.992	NS
Kg TDN/Kg gain	5.93	5.71	0.151	6.11	5.86	5.61	0123	NS
Kg DCP/Kg gain	0.68^{b}	0.96^{a}	0.023	0.83	0.83	0.80	0.025	NS
Cost/Kg gain (LE)	6.58	7.07	1.341	6.86	6.85	6.77	1.055	NS
Economical efficiency **	1.63	1.52	0.152	1.57	1.57	1.59	0.0986	NS

a,b and c ; Means within column for each category bearing different letters differ significantly (P< 0.05).

*Based on the assumption that the price of one ton of CFM1, CFM 2 and rice straw (595), (648) and (61) L E respectively, the price of 1 Kg body weight gain was7.5 LE

**Economical efficiency (as a ratio between price of the weight gain and cost of feed consumed). NS = Not significant

Table (6) Carcass characteristics and dressing percentage of lambs fed the experimental rations.

Items	Type of CFM		Level of CFM			Interaction
	CFM 1	CFM 2	2.5 %	3.0 %	3.5 %	Type X Level
Fasting wt., Kg	54.17	54.53	50.30^{c}	54.95^{b}	57.70^{a}	NS
Carcass wt., Kg	26.57	27.21	24.20^{c}	27.21^{b}	29.27^{a}	NS
Liver wt., Kg	0.763	0.744	0.748	0.740	0.772	NS
Heart wt., Kg	0.230	0.242	0.238	0.235	0.234	NS
Kidney wt., kg	0.111^{b}	0.138^{a}	0.123^{b}	0.113^{c}	0.138^{a}	P<0.05
Spleen wt., Kg	0.075^{b}	0.102^{a}	0.085	0.086	0.096	NS
Total offal organs, Kg	1.179	1.226	1.194	1.174	1.240	NS
Dressing (1) %	49.05^{b}	49.90^{a}	48.11^{c}	49.52^{b}	50.73^{a}	P<0.05
Dressing (2) %	51.23^{b}	52.81^{a}	50.49^{c}	51.65^{b}	52.88^{a}	P<0.05
Pelt, Kg	10.17	10.17	10.30	10.00	10.20	NS
Head, Kg	3.70	3.68	3.70	3.78	3.60	NS
Leg, Kg	1.83	1.90	1.83	1.88	1.90	NS
Cost/ Kg. Carcass 2, LE	12.88	13.57	13.61	13.28	12.80	NS

1- Carcass weight without edible offal relative to fasting weight.

2- Carcass weight with edible offal ralative to fasting weight

a,b and c ; Means within column for each category bearing different letters differ significantly (P< 0.05).

NS = Not significant

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دراسات غذائية على تسمين الحملان المارينو في مصر

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تم إجراء تجربة تغذيه مقارنه باستخدام ١٢٠ حولى مارينو قسمت إلى ٦ مجاميع متماثلة لدراسة التغذية على نوعين من العلف المركز احدهما عالى الطاقة والثانى عالى البروتين مع استخدامها بثلاث مستويات مختلفة ٢,٥ – ٣ – ٣,٥% من وزن الحملان مع قش الأرز كماده مالئه ومعرفة تأثير ذلك على أداء الحملان وبعض مقاييس التخمر فى الكرش ومكونات الدم وصفات الذبيحة و تم إجراء تجربة هضم لتقييم الغذاء.

أوضحت النتائج أن هناك اختلافات معنوية فى معاملات الهضم والقيم الغذائية وبروتين وجلوكوز الدم وبعض مقاييس الكرش بين نوعى العلف. وانه لم تكن هناك فروق معنوية بينها فى معدل النمو وصفات الذبيحة. كما أوضحت النتائج انه بزيادة نسبة العلف المركز فى العليقة تتحسن معنويا معاملات الهضم والقيم الغذائية وبروتين وجلوكوز الدم وأمونيا وأحماض دهنية طياره الكرش ومعدلات النمو ونسبه تصافى الذبائح.

تحت ظروف هذه الدراسة يمكننا القول بامكانية استخدام الحملان المارينو بنجاح فى انتاج اللحوم الحمراء تحت الظروف المصرية... مع ملاحظة انه بارتفاع نسبة العلف المركز بالعليقة تزداد كمية اللحوم المنتجة وتنخفض تكاليف انتاج كيلو اللحم