J. Animal and Poultry Prod., Mansoura Univ., Vol. 2 (6): 167- 184*, 2011*

EFFECT OF FEEDING RATIONS SUPPLEMENTED WITH CHAMOMILE FLOWERS AND DRIED YEAST ON PRODUCTIVE PERFORMANCE OF SHEEP

Zeid, A.M.M.*; M. K. Mohsen; M.A. Ibrahem** and A.M.E. El-Kamhawy***

1. **Animal Production Research Institute (APRI), Agriculture Research Center (ARC), Giza, Egypt.**
2. **Faculty of Agriculture, Kafr El-Sheikh University.**

ABSTRACT

This work was carried out on ewes and born kids to investigate the effect of feeding concentrate feed mixtures supplemented with dried Yeast or *Matricaria chamomile* on body weight changes, nutrients digestibility's, nutritive values of tested diets and growth performance of growing lambs. Some rumen fermentation parameters and blood constituents as well as economical efficiency were studied.

Forty pregnant crossbred ewes (l/2 Fin. X l/2 Rahmani) at late pregnancy (2 months before lambing) with an average body weight of 53.50 ± 0.84 Kg and age of 2 years were used in this study.

Ewes were distributed into four similar groups (10 ewes each group) and were randomly fed the four experimental rations as follows:

Ration (T1): Consisted of concentrate feed mixture (control).

Ration (T2): Consisted of concentrate feed mixture supplemented with 50 mg dried yeast/Kg L.B.W/day.

Ration (T3): Consisted of concentrate feed mixture supplemented with 50 mg *Matricaria chamomile* (M.C)/Kg L.B.W/day.

Ration (T4): Consisted of concentrate feed mixture supplemented with 100 mg *Matricala chamomile* (M.C)/Kg L.B.W/day.

Wheat straw was offered at 1 % from live body weight as a sole source of roughage for all groups.

After lambing, newly born male and female lambs were taken to study growth performance (12 lambs from each group, 6 males and 6 females) with an average live body weight of 19-20 Kg and were fed the same rations of their dams.

Results obtained revealed that using dry yeast or chamomile as feed additive for growing lambs lead to increase most nutrients digestibility compared to the control ration. Moreover, feeding value expressed as TDN and DCP appeared to be higher ($p < 0.05$) with tested rations, being 52.63, 56.03, 55.17 and 56.26 % TDN for rations T1, T2, T3 and T4, respectively. Corresponding values of DCP % were 10.55, 11.79, 10.66 and 11.51 %, respectively.

Average daily gains of lambs were 122. 30, 140.82, 140.38 and 127g/day for animals fed T1, T2, T3 and T4, respectively. Animals fed tested rations gained 15.14, 14.78 and 4.62 on advantage with rations T2, T3 and T4, respectively.

Feed efficiency expressed as Kg TDN/Kg gain were 5.64, 5.09, 5.40 and 5.78 Kg TDN/Kg gain for animals fed rations T1, T2, T3 and T4, respectively, being the best for the group fed ration T2 (supplemented with dry yeast).

The results also showed that the average of feed cost to produce 1 Kg live body weight were 6.18, 5.50, 5.44, and 6.08 Egyptian Pounds, for groups fed rations T1, T2, T3 and T4, respectively. Consequently, ration T3 attained the cheapest cost to give one Kg gain. The Economic efficiency improved by 20.25, 22.78 and 3.16% for groups fed ration T2, T3, and T4 respectively compared with group fed the control ration.

Results showed that feeding tested rations containing either dry yeast or chamomile were affected fermentation in the rumen. Animals fed ration T2 containing dry yeast attained lower pH value and the highest ammonia-N and total VFA's concentration, while those fed chamomile treatment recorded lower ammonia-N and total VFA's concentration than that fed control ration.

It was also observed that, blood profile was affected by the lasted feed additives. So, total protein and albumin increased with supplemented ration with either dry yeast or chamomile, showing the highest concentration with blood of animals fed ration T4. The same significant trend was observed with other measurements such as glucose, AST and ALT concentrations, while total lipids and cholesterol concentrations tended to be lower with animals fed tested rations, except for those fed T2 with total lipids. Also, it was noticed that the different stages of sampling affected on blood parameters.

Generally, it could be concluded that, using dry yeast and chamomile as feed additives in rations of growing lambs lead to increase most of nutrients digestibility, feeding value and attained higher daily gain. Moreover, the feed additive improved feed efficiency and decreased feed cost per Kg gain with no side effect on ruminal activities and blood parameters.

Keywords: lambs, growth, yeast, chamomile.

INTRODUCTION

Many workers applied chemical substances (antibiotics and hormones) as growth promoters in animal feeding to enhance the growth rate and to provide significant economic income.

The growth promoting agents are commonly pharmaceutical derivatives. Although good results were obtained with this class of production, their use may evoke problems eventually such as the development of environmental pollution caused by residues excreted via feces and other routes. It may also result in production of residue problems in the tissues of birds and animals. A natural biological growth promoter is not accompanied by all these problems.

Using medicinal herbs and plants with humans is well known since the old civilizations times of ancient Egyptians, Chinese and Greek. Drugs industry depends mainly upon medicinal herbs and plants but recently during the last century after the development of chemistry sciences, synthetic chemicals occupied broad area from drugs components. This led to many healthy hazards for humans, animals and plants.

Using medicinal herbs as feed additives for ruminants seems to be a recent trend globally. Many efforts have been done to obtain detailed references concerning this work but the yield was not sufficient to be comparable.

Feeding cost of kids and animals represents about 65-70 % of the total production costs. Improving growth rates and marketing weights in shorter periods contributes to improve the feed efficiency and economic return. Some medicinal herbs seem to have this effect.

Herbal products continue to be popular among the American public for the treatment or prevention of a number of ailments. The medicinal use of herbs is deeply rooted in human history and folklore, and has been incorporated into the traditional medicine of virtually all human cultures.

Strong religious and mystical beliefs have been associated with the healing properties of many herbs. These beliefs, together with the definite physiological and pharmacological effects of various herbs, as well as their economic potential, have been instrumental in the development of human medicine. The present study aimed to use dry yeast and chamomile as feed additives in rations for feeding growing lambs and their effects on digestibility of nutrients, feeding value, performance of growing lambs and some ruminal parameters and blood profiles as well as economical efficiency.

MATERIALS AND METHODS

This study was carried out at Sakha Experimental Station (Kafer El-Sheikh Governorate), Animal Production Research institute, Ministry of Agriculture.

Forty pregnant crossbred ewes (½ Fin. × ½ Rahmani) at the last 8 weeks of pregnancy period with an average body weight of 53.5 ± 0.84 kg and age of 2 years were used to study the effects of feeding concentrate feed mixtures (Table 1) supplemented with either dried yeast (*Saccharomyces cerevisiae*) (DY) at the rate of 50 mg/ 1 kg live body weight (LBW) per/day or *Matricaria chamomile* (MC) at a rate of 50 or 100 mg/ 1 kg body weight per/ day, on nutrients digestibility and nutritive values of tested diets as well as growth performance of growing lambs born, some rumen fermentation parameters such as rumen pH, ammonia-N concentration and total volatile fatty acids, as well as some blood metabolites.

Table (1): Composition of the experimental concentrate feed mixture.

Ingredients	%
Yellow corn	68.00
Soybean meal	16.50
Wheat bran	12.00
Limestone	2.00
Common salt	1.0
*Premix	0.50
Total	100

***premix per 3 kg consist of vit. A, 120000 IU; vit. D_3 22000 IU; vit E. 10 g; vit K, 2 g; Copper, 10 g; Zinc, 50 g; Manganese, 55 g; Iodine, 1 g; Selenium, 0.1 g; and Carrier ($CaCo_3$), 3000 g**

Four experimental rations were formulated:
Ration 1 (T1): Concentrate feed mixture (CFM).
Ration 2 (T2): control + 50 gm. dried yeast/kg L.B.W/ day
Ration 3 (T3): control + 50 gm *Matricaria chamomile* (MC) /kg L.B.W/ day
Ration 4 (T4): control +100 gm *Matricaria chamomile* (MC)/kg L.B.W/ day

In addition, wheat straw was daily offered as 1 % from the animal live body weight as a sole source of roughage for all groups.

The four animal groups were assigned at random to receive the four experimental rations.

The animals were fed to cover their requirements during the last 8 weeks of gestation according to NRC (1985), and weighed at biweekly intervals till 3 months after lambing. After weaning male and female lambs

were taken to study growth performance (12 lambs from each group, 6 males and 6 females) with an average live body weight of 19.00 – 20.20. All animals were weighed at biweekly intervals till the end of the experiment. The same rations, fed to their dams, were offered twice daily at 8 am and 3 pm.

Blood samples were collected from lambs after weaning at the beginning of the experiment (3 months age), then after three months and at the end of the experiment (9 months age). Blood samples were taken from the jugular vein of three animals in each group before feeding. Haematological analysis was directly applied on whole blood samples. Another samples were centrifuged at 4000 rpm for 20 min. Part of the separated serum was directed to enzymes activity determination, while the other part was stored frozen at – 20 C° till the biochemical analysis. Commercial kits were used for all calorimetrical determination.

Before starting the feeding experiment, four digestibility trials were carried out using twelve rams aged 2 years with an average body weight of 50 kg, (three in each trial) to determine the nutrients digestibility coefficients and nutritive value of the tested rations. Each digestibility trial consisted of a 14-days preliminary period followed by a 7-days collection period.

Rumen liquor samples were collected from each animal at the end of digestibility trials by using a stomach tube at three times, before feeding, 3 and 6 hours after the morning feeding. Feed conversion expressed as amounts intake, from DM, TDN or DCP per Kg gain were measured.

Economic efficiency was calculated as total output / total input according to the local prices.

Data were statistically analyzed according to Statistical Analysis System Users Guide, (SAS) (1998). Separation among means was carried out using Duncan's New Multiple Range Test (Duncan, 1955).

RESULTS AND DISCUSSION

Growth rate

The changes in body weight from starting of the trial (3 months age) till 182 days (duration of the trial) of lambs fed different diets are shown in Table (2). Average daily gains were 122.30 $\pm$ 4.44, 140.82 $\pm$ 3.06, 140.38 $\pm$ 3.08 and 127.96 $\pm$ 1.48g/day for (T1), (T2), (T3) and (T4), respectively. Corresponding values of total body weight gain were 22.26 $\pm$ 0.91, 25.63 $\pm$ 0.63, 25.55 $\pm$ 0.63 and 23.29 $\pm$ 0.30 kg, respectively.

These results indicated that the addition of dried yeast (T2) and low level of chamomile (T3) caused a significant ($P < 0.05$) increase in total body weight gain compared to either control (T1) and high level of chamomile (T1). Advantage percentage of total body weight of the experimental groups was found to be 15.14 %, 14.78% and 4.62% for animals fed T2, T3 and T4, respectively compared to the control treatment (T1), as shown in Table (2).

Data presented in Table (2) also, showed that total dry matter intake increased with treatments (T2), (T3) and (T_4) than that of the untreated group (T1) recording 1296, 1295, 1299 and 1274 gm, respectively. This increase may be due to adding dried yeast and chamomile to the diets, these

materials provide factors stimulating to rumen cellulolytic bacteria when high concentrate diet was used.

The results in table (2) indicated that average feed conversion (kg DMI/ kg gain) was 10.41, 9.10, 9.36 and 10.15 for (T_1), (T_2), (T_3) and (T_4), respectively with no significant difference ($P < 0.05$) among all treatment. However, average feed conversion (kg TDN/kg gain) usually seems to be similar (without significant difference) (5.64, 5.09, 5.40 and 5.78) for corresponding treatments. Also, feed conversion expressed as DCP intake / Kg gain was almost similar for treatments (T_1), (T_2), (T_3) and (T_4), being 0.97, 0.84, 0.88 and 0.94 respectively, with no significant differences.

Table (2): Growth performance, feed intake and feed efficiency of lambs fed the experimental diets.

Items	Treatments				SE
	T1	T2	T3	T4	
Duration of trial (day)	182	182	182	182	
No of lambs	12	12	12	12	
Growth performance					
Av. initial body weight, Kg.	19.58 ± 0.73	20.2 ± 0.87	19.0 ± 0.78	19.52 ± 0.62	
Av. final body weight, Kg.	41.85 ± 1.15^{c}	45.83 ± 0.66^{a}	44.55 ± 086^{ab}	42.81 ± 0.61^{bc}	0.888
Av. total weight gain, Kg.	22.26 ± 0.91 ^{b}	25.63 ± 0.63^{a}	25.55 ± 0.63 ^{a}	23.29 ± 0.30^{b}	0.840
Av. daily weight gain, g	122.30 ± 4.44 ^{b}	140.82 ± 3.06 ^{a}	140.38 ± 3.08 ^{a}	127.96 ± 1.48 ^{b}	4.614
Advantage, %	----------	15.14	14.78	4.62	
DM intake (g/h/d)					
Concentrate	948	966	970	966	
Wheat straw	326	330	325	333	
Total DM intake	1274	1296	1295	1299	
TDN	52.63 ± 0.28^{b}	55.17 ± 0.42 ^{a}	56.26 ± 0.10 ^{a}	56.03 ± 0.68^{a}	0.831
DCP	10.55 ± 0.05^{b}	10.66 ± 0.09^{b}	11.51 ± 0.19^{a}	11.79 ± 0.14^{a}	0.308
Feed conversion					
Kg DM intake/kg gain	10.41	9.10	9.36	10.15	
Kg TDN intake/kg gain	5.64	5.09	5.40	5.78	
Kg DCP intake/kg gain	0.97	0.84	0.88	0.94	
Av. feed cost/kg gain (LE)	6.18	5.50	5.44	6.08	
Economical efficiency	1.58	1.90	1.94	1.63	

a, b, c Means within the same row with different superscripts are significantly different at (p < 0.5).

Data also showed that feed cost for producing one kg of weight gain was 6.18, 5.50, 5.44 and 6.08 Egyptian pounds for treatments T1, T2, T3 and T4, respectively. Economical efficiency values wee 1.58, 1.90, 1.94 and 1.63 for the previous respective treatments.

Data presented in Table (2) revealed that using dry yeast or chamomile as feed additive in ration formulation of growing lambs appeared to increase daily gain, decrease feed cost to get one Kg gain and improve feed conversion as Kg DM, TDN and DCP per Kg gain especially using dry yeast and small amount of chamomile. Moreover, the last two mentioned rations supplemented with feed additive had the highest economical

efficiency. These results are in agreement with those obtained by Abd El-Maksoud (1990); Amann (1991) and El-Ayek *et al.* (1999). Many workers found that the addition of yeast culture to diets for sheep caused an increase in average daily gain compared to the control diet (Abd El-Moneim *et al.* 2002; El-Shamaa 2002 and Metwally *et al*. 2002).

Similar results were observed by Allam *et al.* (1999) who recorded that chamomile enhanced feed conversion and nutritive values with goats ration.

El-Hosseiny *et al.* (2000) reported that feed efficiency was improved by adding chamomile for goats ration. The enhancement in feed efficiency might be due to the improvement in digestibility and nutritive values with presence of medicinal herbs, especially chamomile, which may be due to the role of the active ingredients that function as an antiseptic against the antagonistic flora and stimulate the digestive enzymes and digestive digestive processes (Abou-Zeid, 1986 and Khanna *et al,* 1993).

Digestion coefficients of the tested rations

Concerning average daily dry matter intake expressed as gm DM/h and digestibility coefficients (%) during digestibility trial with sheep fed on experimental rations supplemented with dried yeast (*Saccharomyces cerevisiae*) (T_2), *Matricaria chamomile* (T_3), (T_4) beside the untreated control group (T_1) are presented in table (3).

Averages dry matter intake (gm/day) for animals fed the experimental rations were 1275.3 $\pm$ 2.9, 1300.3 $\pm$ 5.9, 1282.1 $\pm$ 11.08 and 1315.3 $\pm$ 5.6 for treatments T_1, T_2, T_3, and T_4, respectively. Both T_4 and T_2 showed superior increase in DM intake followed by T_3 with significant differences ($P < 0.5$) compared with the untreated control group (T_1). This increase may be due to the effect of chamomile and dried yeast on rumen by providing stimulatory factors to rumen cellulytic bacteria and the effect of increased body weight too. The present results were in agreement with those reported by Williams et al. (1991); Wohlt *et al.* (1998); Dann *et al.* (2000); El-Ashry *et al.* (2001) and Mahmoud (2001).

On the other hand, no response of dry matter intake to the yeast supplementation was noticed by Harrison et al. (1988); Swartiz et al. (1994); and Robinson (1997).

Results obtained also, showed that the averages of digestion coefficients of treatment T_1, T_2, T_3 and T_4 for DM were 54.11 $\pm$ 0.24, 56.92 $\pm$ 0.16, 55.66 $\pm$ 0.18 and 57.63 $\pm$ 0.38, respectively. Rations supplemented with both dried yeast and chamomile gave significantly ($P<0.05$) higher values compared to the untreated control ration.

The same previous trend was observed with OM digestibility, recording 56.4 $\pm$ 0.27, 59.14 $\pm$ 0.36, 58.34 $\pm$ 0.32 and 60.1 $\pm$ 0.32 for treatment T_1, T_2, T_3 and T_4 respectively. On the other hand, rations supplemented with yeast or chamomile did not significantly ($P<0.05$) affect CP digestibility except the low level of chamomile which showed significant lower value. Also, it could be noticed that digestibility coefficients of CF and EE for T_3 were significantly ($P<0.05$) higher for supplemented rations. Moreover, digestibility coefficient of NFE significantly ($P<0.05$) increased in rations supplemented with feed additives (dry yeast or chamomile), as shown in Table (3).

Results concerning yeast addition were in agreement with those obtained by Mahmoud (2001); Moloney and Drennan (1994); Metwally *et al.* (2000); El-Ashry *et al.* (2001); Al-Dabeeb and Ahmed (2002) and Metwally *et al.* (2002).

The addition of dried yeast to the ruminant diets improved the digestibility of dry matter, crude protein and hemicelluloses which in term increased degradability of roughage and flow of microbial nitrogen post ruminally (Wiedmeier *et al.,* 1987 and Newbold *et al.,* 1996).

Table (3: The average of dry matter intake and digestion coefficients of the different nutrients in the experimental diets.

Items	Treatments				SE
	T1	T2	T3	T4	
DM intake gm/head/ day	1275.3 ± 2.9^{c}	1300.3 ± 5.9^{ab}	1282.1 ± 1.08^{bc}	1315.3 ± 5.6^{a}	9.048
Digestion coefficient %					
DM	54.11 ± 0.24^{c}	56.92 ± 0.16^{a}	55.66 ± 0.18^{b}	57.63 ± 0.38^{a}	0.773
OM	56.4 ± 0.27^{c}	59.14 ± 0.36^{a}	58.34 ± 0.32^{b}	60.10 ± 0.32^{a}	0.786
CP	65.44 ± 0.33^{a}	65.15 ± 0.82^{a}	60.16 ± 0.56^{b}	66.96 ± 1.10^{a}	1.481
CF	51.65 ± 0.23^{b}	50.72 ± 0.42^{c}	52.63 ± 0.54^{a}	51.09 ± 0.55^{c}	0.416
EE	53.95 ± 0.56^{b}	52.67 ± 0.24^{c}	56.58 ± 0.16^{a}	52.69 ± 0.91^{c}	0.919
NFE	54.75 ± 0.68^{b}	63.26 ± 1.63^{a}	60.33 ± 0.78^{a}	63.25 ± 0.35^{a}	2.005

a, b, c Means within the same row with different superscripts are significantly different at (p <0.5).

The nutritive value of the experimental diets:

The data presented in Table (4) indicated that the nutritive value expressed as TDN (%) of diets T_1, T_2, T_3, and T_4 were 52.63 $\pm$ 0.28, 56.03 $\pm$ 0.68, 55.17 $\pm$ 0.42 and 56.26 $\pm$ 0.10 %, respectively, showing significantly ($P < 0.05$) higher value with tested ration (T1, T2, T3) compared with the control ration (T1). From these results, it could be shown that rations supplemented with either dry yeast or chamomile tended to significantly ($P<0.05$) had higher TDN than unsupplemented control. However, no significant differences in TDN among tested rations were found. The same previous trend was observed with DCP% which increased with tested rations compared to the control ration, but the differences between rations T_1 and T_3 were not significant.

These results may be explained through the increase in favorable nitrogen source for rumen microbes beside the higher available carbohydrates which may lead to more microbial fermentation so that it reduced the dietary energy sources escaping from ruminal degradation.

The results also, indicated a significant effect on DCP, the addition of yeast (T_2) or high chamomile (T_4) to the diet caused a significant ($P<0.05$) increase in DCP compared to the control (T_1) and (T_3).

Similar results were obtained by Metwally *et al.* (2000); El-Ashry *et al.* (2001) and Metwally *et al.* (2002).

Table (4): Average nutritive value of the experimental diets.

Items	Treatments				SE
	T1	T2	T3	T4	
DM intake gm/head/ day	1275.3 ± 2.9^{c}	1300.3 ± 5.9^{ab}	1282.1 ± 1.08^{bc}	1315.3 ± 5.6^{a}	9.048
Nutritive value (%)					
TDN (gm/day)	690.21 ± 2.57^{d}	740.31 ± 1.36^{b}	718.65 ± 2.32^{c}	758.66 ± 6.47^{a}	14.727
DCPI (gm/day)	119.59 ± 067^{b}	121.36 ± 1.11^{b}	118.53 ± 1.34^{b}	124.90 ± 0.81^{a}	1.396
TDN %	52.63 ± 0.28^{b}	56.03 ± 0.68^{a}	55.17 ± 0.42^{a}	56.26 ± 1.10^{a}	0.831
DCP %	10.55 ± 0.5^{b}	11.79 ± 0.14^{a}	10.66 ± 0.09^{b}	11.51 ± 0.19^{a}	0.308

a, b, c Means within the same row with different superscripts are significantly different at (p <0.5).

Rumen parameters

In all cases rumen pH values before feeding were high and decreased after feeding with advancing the sampling time, and then increased again at 6 hours post feeding.

Results showed that pH values of rumen fluid for all treatments at 3 hr. after feeding were the lowest, while the corresponding values at zero time were higher than these recorded at 6 hr. after feeding

Results obtained revealed that there were no significant differences among treatments T1, T3 and T4 while treatment T2 (supplemented with dried yeast) has lower (P< 0.05) rumen pH at 3 hr. after feeding. This change may be due to stimulation of both the bacterial and protozoa activity, increase total retention time of solid particles in the whole digestive tract and increase the rumina11iquid volume as reported by Newbold *et al.* (1995) and Jouany *et al.* (1996).

Obtained results were in agreement with those reported by Harrison *et al.* (1988); Andrighetto *et al.* (1993); Abd El-Ghani *et al.* (1995); Abd El-Khalek *et al.* (2000); Garcia *et al.* (2002); Metwally *et al.* (2000) and Metwally *et al.* (2002). They found that adding yeast culture to diets for lambs decreased rumen pH (P< 0.05) compared with control diet.

Chamomile supplementation for diets of growing lambs did not significantly affect rumen pH values. These results agreed with Youssef *et al.* (1998) and Allam *et al.* (1999) who reported that the pH value of rumen liquor did not significantly affected by medicinal plants (chamomile) supplementation.

Ammonia-N concentration:

High ruminal NH_3-N concentrations were observed before feeding for lambs fed rations supplemented with dried yeast (T2) with no significant differences among different treatment. While the lowest value was found for lambs fed the T3 (12.73 mg/100 ml R.L.). NH_3- N concentrations with all

treatments increased with time after feeding to reach the peak after 3 hrs of feeding and then it started to decline again.

Table (5): Ruminal pH values, Ammonia-N, total volatile fatty acids concentration.

Items	Time after feeding (hr)	Treatments				
		T1	T2	T3	T4	S.E
pH value	0	6.18± 1.03 a	5.92± 1.15 b	6.25 ± 1.08 a	6.31± 1.32 a	0.086
	3	6.11 ± 1.18 a	5.78 ± 1.21 b	6.08 ± 0.92 a	6.10 ± 1.48 a	0.079
	6	6.16 ± 1.32 b	5.89 ± 1.02 b	6.12 ± 0.86 a	6.21 ± 1.23 a	0.071
Ammonia-N (mg/100ml)	0	14.0 ± 0.52 a	14.65 ± 0.29 a	12.73 ± 0.30 a	13.12± 0.52 a	0.433
	3	19.23 ± 0.52 a	21.20 ± 0.51 a	16.97 ± 0.45 a	17.27 ± 0.66 a	0.982
	6	16.51 ± 0.32 a	18.73 ± 0.25 a	14.71 ± 0.33 a	14.48 ± 0.31 a	0.985
Total volatile Fatty acids (meq/100ml)	0	10.14 ± 0.19 a	11.08 ± 0.43 a	10.60 ± 0.53 a	10.31 ± 0.68 a	0.206
	3	13.19 ±0.33 a	15.71 ± 0.34 a	11.05 ± 0.62 a	10.13 ± 0.10 a	1.242
	6	11.15 ± 0.38 a	13.76 ± 0.52 a	10.22 ± 0.23 a	9.82 ± 0.33 a	0.886

a, b, c Means within the same row with different superscripts are significantly different at (p < 0.5).

These results may be attributed to the rapid degradation and deamination of dietary degradable protein in untreated materials.

Many workers showed that there were no significant difference between treatments supplemented with dried yeast and those unsupplemented (Chandeman and Offer, 1990; Putnam *et* al*., 1997*; Onol *et* al*., 1998;* Abd El-Khalek *et al.,* 2000; Al-Dabeeb and Ahmed, 2002; and Metwally *et al.,* 2002). Data of ruminal ammonia-N concentrations indicated opposite trend of pH value with all diets, while NH_3-N concentration increased after feeding and reached its peak at 3 hr and then decreased at 6 hr post feeding. Abdel-Aziz *et* al*.* (1993) found similar trend as affected by sampling time.

Data presented in Table (5), showed that the NH_3-N concentrations of rumen liquor for lambs fed T2 were higher than the others at zero time, while at 3 hr. after feeding the T1 attained the higher concentrate in NH_3-N. At the 6 hr. after feeding, the T2 recorded the highest concentration. High concentrate of NH_3-N not affected by feed additives especially in T3 and T4 (chamomile).

Total volatile fatty acids (TVFA):

The TVF A's concentrations increased with time after feeding and reached the peak after 3 hrs of feeding and started to decline again for all treatments except T4 (Table 5). Dried yeast diet (T2) had high (P< 0.05)

concentration during all different periods, followed by the control diet (T1) at 3 and 6 hr. after feeding and then both levels of Chamomile diet. Low VFA's concentration (9.82 meq/100mg) was obtained by the high level of chamomile (T4) diets at 6 hr. after feeding.

Increasing the ruminal VF A's concentration in (T 2) may be due to the increase in rumen microbial population (Wallace and Newbold 1992), the yeast culture may provide stimulatory factors for cellulotytic bacteria such as vitamins (Metwally *et* al*., 2002).*

Results were in agreement with those reported by Gary and Ryan 1989; Andrighefto *et al.* (1993); Moloney and Drennan (1994); Kumar *et al.* (1994); Abd EI-Khalek *et al.* (2000); EI-Waziry et al. (2000), Mahmoud (2001) and AI-Dabeeb (2002). They reported that added DY to diets for ruminants increased (P< 0.05) concentration of VFA's.

Blood parameters:

Data of blood profile during different stages for different treatments are shown in Table (6) and Table (7).

(a) Total protein and its fraction

Concentration of total protein (TP), albumin (AL) and globulin (GL) in serum of lambs fed the experimental diets and sampling times are shown in Table (6). The present results showed that concentration of total protein, albumin, globulin and AL / GL ratio did not significantly change as affected by T_3 (50 mg/ kg BW chamomile), but T_2 (50 mg/ kg BW dried yeast) showed a significant difference (P< 0.05) in TP and AL than the control group (TI). Percentage of total protein of sheep fed the experimental diets showed insignificant differences due to sampling time.

Comparing the differences among the experimental diets, T 4 showed the highest values for TP, GL and AL / GL ratio being (7.32, 3.77 and 1.08 g %), respectively, versus the lowest values (6.56, 3.24 and 0.99 g % on average for T1 (control). It was observed that the control diet group (T1) recorded the lowest value of serum protein and albumin. Highest (P< 0.05) globulin and highest (P< 0.05) AL/ GL were recorded for sheep fed the high dose of Chamomile (T4). Highest albumin values were recorded for sheep fed diets supplemented with dried yeast (T2) and (T3).

Generally, data presented in Table (6) showed that concentration of total protein and albumin of blood serum were affected by using feed additive such as dry yeast or chamomile in the rate of growing lambs. Moreover, serum of total protein was affected by adding higher level of chamomile than that of low level of addition, which albumin concentration with low level of chamomile (T3) was higher than that of higher level of chamomile (T4). However, the dry yeast additive (T2) gave the highest concentration of blood albumin.

All values are within the normal ranges reported in lambs (Drevjany 1991).

The effect of age, the present data showed that the values of protein, albumin, globulin and AL/GL ratio were greater at the end of the experiment which were in agreement with Shaffer *et al.* (1981) and Metwally *et ai. (1999),* who reported that these parameters significantly increased with advancing age during the early life. The gradual increase in these

parameters may be due to increase of digestive tract, increase digestibility coefficient and absorption rate.

The same results reported by EI-Reweny (1999), EI-Sherbieny (2000), Sayed Ahmed (2000) and Tiwari *et al. (2001).*

Results from this study are supported by many workers, Kovacs *et al.* (1998); MetwalJy *et al.* (2000); EI-Ashry *et al.* (2001); EI-Shamaa (2002); Abd EI-Gawad *et al.* (2002) and Metwally *et al.* (2002). They reported that added yeast culture to diet for ruminants caused an increase in total protein, albumin and globulin.

Matricaria chamomnile additive increased total protein and a1bumin in sheep blood. This increase may be attributed to the improved nitrogen absorption (Kornegay *et al.,* 1997) and reflects no patheological disorders in the liver (EI-Ashry *et al., 1996).*

Table (6): Concentration of blood serum protein and its fraction for animal fed different tested rations.

Items	Stages	Treatments				
		T1	T2	T3	T4	S.E
Total protein (g %)	1	6.50 ± 0.25 [a]	6.71 ± 0.13 [a]	6.54 ± 0.11 [a]	6.89 ± 0.10 [a]	0.089
	2	6.52 ± 0.20 [a]	7. 11 ± 0.26 [a]	6.83 ± 0.09 [a]	7.44 ± 0.09 [a]	0.196
	3	6.67 ± 0.38 [a]	7.19 ± 0.38 [a]	7.02± 23 [a]	7.64 ± 0.31 [a]	0.202
Albumin (g %)	1	3.13 ± 0.06 a	3.68 ± 0.25 a	3.54 ± 0.20 a	3.37 ± 0.18 a	0.118
	2	3.27 ± 0.12 a	3.94 ± 0.21 a	3.78 ± 0.26 a	3.52 ± 0.20 a	0.147
	3	3.54 ± 0.14 a	4.05 ± 0.26 a	3.98 ± 0.27 a	3.67 ± 0.04 a	0.122
Globulin (g %)	1	3.36 ± 0.22 a	3.03 ± 0.30 a	2.99 ± 0.29 a	3.52 ± 0.28 a	0.129
	2	3.25 ± 0.33 a	3.23 ± 0.27 a	3.05 ± 0.31 a	3.91 ± 0.14 a	0.189
	3	3.12 ± 0.48 a	3.14 ± 0.24 a	3.03 ± 0.48 a	3.88 ± 0.40 a	0.197
AL. /GL. Ratio	1	1.07 ± 0.06 a	0.84 ± 0.14 a	0.86 ± 0.12 [a]	1.06 ± 0.14 [a]	0.062
	2	1.00 ± 0.13 [a]	0.83 ± 0.10 [a]	0.82 ±0.14 [a]	1.12 ± 010 [a]	0.072
	3	0.89 ± 0.16 [a]	0.78 ± 0.08 [a]	0.78 ± 0.16 [a]	1.05 ± 0.11 [a]	0.064

a, b, c Means within the same row with different superscripts are significantly different at (p < 0.5).

(b) Glucose concentration

Levels of glucose in blood of lambs as affected by dietary treatments are shown in Table (7) The data indicate that T2, T3 and T4 showed a slight increase in blood glucose concentration compared to the (T l) control, but the differences were not significant.

Kobayashi *et al.* (1995) showed that adding yeast culture in the diet of growing male goats increased (P< 0.01) blood glucose level.

Blood glucose value increased with advancing the sampling time (age) in all group treatments.

(c) Total lipids and cholesterol concentration:

Concentration of total lipids and cholesterol in blood serum of lambs as affected by different treatments and sampling times are presented in Table (7). Male lambs fed rations supplemented with both doses of chamomile (T3) and (T4) (50 and 100 mg/ kg BW) showed a significant decrease in serum total lipids compared with the untreated control group (T1). However, the addition of dried yeast (T2) to the ration of lambs, caused a significant increase in total lipids than either chamomile additive or control groups. These results may be attributed to improve of some enzymes that synthesized and released by the liver, digestibility coefficient and total VFA's (O'kelly, 1987).

These results are in agreement with those obtained by Abdel-Khalek *et al.* (2000); Metwally *et al.* (2000); EI-Ashry *et al.* (2001) and Metwally *et al.* (2002). They reported that adding yeast culture to the diet of ruminants caused an increase (P< 0.05) in total lipids in blood plasma. Metwally *et al.* (2000) and EI-Ashry *et al.* (2002) no any effect on blood plasma cholesterol by adding dried yeast *(Saccharomyces cerevisiae)* to the diet of ruminants.

Total lipids and cholesterol were significantly lower (P< 0.05) with chamomile compared to the control diet. Similar trend was observed with Shehata *et at.* (2004) who used different levels of chamomile with goats and EI-Hosseiny *et al.* (2000) who noticed same results with goats fed chamomile.

Activity of aspartate (AST) and Alanine amino transferase (ALT):

The activity of (AST) and (ALT) in blood serum of lambs as affected by dietary treatments and sampling times are presented in Table (7).

The overall mean activities of (AST) and (ALT) were 39.74, 41.51, 41.34 and 40.85 versus 19.14, 19.33, 19.86 and 19.73 for Tl, T2, T3 and T4 treatments, respectively. The control diet group recorded the lowest value in both (AST) and (ALT), there were no significant differences among all the group treatments.

Results from this study are supported by the findings of Rawia EI-Halawany (1988) and Metwaly and Mohsen (1997) who reported that age has a significant effect on AST but had no significant on ALT enzyme.

Both AST and ALT slightly increased by increasing the stage of growth in all group treatments but the differences were not significant.

The results obtained showed that AST and ALT in blood serum did not differ significantly among dietary treatments. No significant differences were detected in serum AST and ALT values refers no health disorders by using medicinal plants, (chamomile) while all values are within normal ranges which reported by Kanikol (1989).

Table (7) Blood profile of animals fed different tested rations during Different stages

Items	Stages	Treatments				
		T1	T2	T3	T4	S.E
Glucose (mg %)	1	65.95 ± 0.09 [a]	66.02 ± 0.07 [a]	65.94 ± 0.14 [a]	66.01 ± 0.16 [a]	0.020
	2	66.27 ± 0.55 [a]	68.06 ± 0.12 [a]	66.99 ± 0.36 [a]	67.37 ± 0.46 a	0.374
	3	66.88 ± 0.74 [a]	69.82 ± 0.07 [a]	68.11± 0.46 [a]	68.67± 0.30 [a]	0.611
Total lipids (mg %)	1	397.16 ± 5.92 [b]	396.57±1.84 [b]	386.77 ± 2.54 [a]	381.15±0.92 [a]	3.900
	2	396.47 ± 3.41 [b]	406.27 ± 1.55 [a]	381.51 ± 1.42 [b]	380.45 ± 1.50 [a]	6.220
	3	400.44 ± 3.58 [ab]	408.52 ± 0.58 [a]	378.69 ± 1.88 [c]	379.24 ± 1.73 [a]	7.549
Cholesterol (mg %)	1	134.24± 1.37 [a]	131.88 ± 2.89 [a]	131.26 ± 2.77 [a]	129.55 ± 1.59 [a]	0.970
	2	133.90 ± 1.58 [a]	131.53 ± 2.60 [a]	128.51 ± 1.63 [a]	127.40 ± 1.87 [a]	1.474
	3	132.22 ± 2.16 [a]	130.54 ± 1.58 [a]	126.93 ± 1.01 [a]	125.86 ± 0.64 [a]	1.495
AST (IU/L)	1	39.14± 0.54 [a]	41.24± 0.67 [a]	41.00± 0.64 [a]	40.69± 1.27 [a]	0.473
	2	40.04 ± 0.38 [a]	41.39 ± 0.83 [a]	41.56 ± 0.77 [a]	40.90 ± 0.87 [a]	0.341
	3	40.03 ± 0.86 [a]	41.92 ± 1.00 [a]	41.46 ± 0.56 [a]	40.97 ± 0.54 [a]	0.405
ALT (IU/L)	1	18.85 ± 0.12 [a]	19.17 ± 0.33 [a]	19.79 ± 0.49 [a]	19.64 ± 0.49 [a]	0.216
	2	19.15 ± 0.35 [a]	19.18 ± 0.27 [a]	19.74 ± 0.26 [a]	19.79 ± 023 [a]	0.174
	3	19.41 ± 0.85 [a]	19.66 ± 0.27 [a]	20.05 ± 0.14 [a]	19.76 ± 0.06 [a]	0.176

a, b, c Means within the same raw with different superscripts are significantly different at (p < 0.5).

Conclusion:

From these results it could be concluded that using feed additive such as dry yeast or chamomile in ration formulation of growing lamb tended to increase digestibility coefficients for most of nutrients, increasing nutritive value (TDN and DCP) and appeared to higher total and daily gain. Moreover, that feed additive improved feed efficiency and decreased feed cost / kg gain with no side effect on ruminal activities and blood parameters.

REFERENCES

Abd El-Aziz, A.A.,; M.E. Lashin; N. El-Oksh, N.and R.T. Fouad (1993). Effect of using some mechanical treatment and feed Effect of using some medicinal additives on nutritional value of com stalks. 3- Blood and rumen parameters. J. Agric. Sci. Mansolira Univ., l8: 46.

Abd El-Gawad, E. I., G.M. Maharm ; Faten, F. Abou Ammo and Fathia A. Ibrahim (2002). Effect of yeast (Lacto-Sacc) supplementation on growth, some blood parameters and carcass quality of goats. Egyptian J. Applied Sci., 17: 375-388.

Abd El-Ghani, A.A.,; A.A. Barody, A.A. and O.A.O. Saad (1995). Milk yield and composition, blood metabolites and rumen activity as affected by different level of (*Saccharomyces cerevisiae*) plus growth medium supplementation in Egyptian buffaloes. Sci. Conf. Animal Nutrition, I: 115-128, Isma1ia.

Abd El-Khalek, A.E.; A.F. Mehrez, and F.A. Omar (2000). Effect of yeast culture (Lacto sacc) on rumen activity, blood constituents and growth of suckling Friesian calves. Conference on Animal Production in twenty first century challenges and prospects, 18-20 April, 2000, Sakha, Kafr El-Sheikh, Egypt.

Abd El-Maksoud, A.M.S. (1990). Protein solubility and degradability of some treated feedstuffs fed to ruminants. PhD. Thesis, Fac. Of Agric., Fayoum, Cairo Univ., 175 pp.

Abd El-Moneim, M.; I.S. Shamaa and A.M. Metwally (2002). Onset of puberty in ewe lambs as influenced by dietary feed culture supplementation. J. Agric. Res. Tanta Univ., 28: 245-251.

Abou-Zeid, E.M. (1986). Medical plants and herbs. (Textbook in Arabic). Seas house, Beirut.

Al-Dabeeb. S.N. and B.M. Ahmed (2002). Effect of dry yeast (*Saccharomyces cerevisiae*) in sheep rations differing in their roughage to concentrate ratio on digestion, nitrogen balance and rumen fermentation.Egypptian J. Nitrition and Feeds 5 (1): 1-11.

Allam, M., Hoda M. El-Hosseiny,; A.M. Abdel-Gawad, S.A. El-Saadany, and A.M. Zeid (1999). Medicinal herbs and plants as feed additives for ruminants. 1- Effect of using some medicinal herbs and plants as feed additives on Zaraibi goat performance. Proc. of the 7th Sci. Conf. on Anim. Nutr., (19-21 Oct.) The Egyptian Soc. Oof Nutr. Feeds and Fac. of Enivronm. Agric. Sci. Dept. of Fish and Agriculture Univ. of Suez Canal, El-Arish, Egypt.

Ammann, H.M. (1991).Influence of protected fat and protected protein given separately or together on physiology of digestion in the rumen, abomasums and faces of sheep. Institute fur Tieremahrung, Tierarzticke Hockschule Hannover, Germany.

Andrighetto, I; L. Bailoni; G. Cozzi and P. Berzaghi (1993). Effects of yeast culture addition and digestion in sheep fed a high concentrate diet. Small Ruminant Research, 12: 27-54.

Chandeman, I. and N. Offer (1990). The effect of dietary inclusions of yeast culture on digestion in sheep. Anim. Prod., 50 : 483-490.

Dann, H.M.; J.K. Draekley: G.C. Mc Coy: M.F. Hutjens and J.E. Garrett, (2000). Effects of yeast culture (saccharomyces cerevisiae) on prepartum intake and postpartum intake and milk production of Jersy cows. J. Dairy Sci., 83:123-127.

Drevjany, L.A. (1991). Use of by-pass protein and iso-acids in heavy calf diet. Kemptville, Ontario, Canada.

Duncan, D.B. (1955). Multiple range and multiple F-test Biometerics, 11-1.

EI-Ashry, M.A.: A.Z. Elbassiony: H.S. Soliman and H.M. EI-Sayed (1996). Effect of feeding inedible wheat flour and pasta industry waste in combination with broiler litter on the performance and blood serum parameters of buffalo calves. Egypt J. Anim. Prod., 33-91.

EI-Ashry, M.A.; Z.A. Motagally and Y.A. Maareck (2001). Effect of live dried Baker's yeast with or without acidification of milk and of yeast cultural on performance of suckling buffalo calves. Egyptian J. Nutraition and Feeds, 4 (special Issue) : 605-606 (Abstr.).

EI-Ashry, M.A.; H.M. EI-Sayed; M. Fadel; H.M. Metwally and M.M. Khorshed (2002). Effect of chemical and biological treatments of some crop residues on their nutrition value. 2- Effect of biological treatments on chemical composition and in vitro disappearance. Egyptian J. Nutrition and Feeds, 5: 43-54.

El-Ayek, M.Y., A.Z. Mehrez, S.A. El-Ayoty and H.M. El-Shabrawy (1999). Influence of source of protein and protection methods on the performance of lactating Friesian cows. J.Agric. Sci. Mansoura Univ., 24(8): 3891-3903

El-Halawany, R.S. (1988). Influence of breed and age on some blood serum enzyme activities in growing calves. J. Agric. Res. Tanta Univ., 75-91

El-Hosseiny, Hoda M.; S.M., Allam; S.A., El-Saadany; A.M. Abdel-Gawad and A.M.M. Zeid (2000). Medicinal herbs and plants as feed additives for animals. 2-Effect of using some medicinal herbs on growth performance of Zaraibi kids.proc. Conf. of Anim.prod. in the 21th century (18-20, Apri) Anim, prod. Res. Institute, Agric. Res. Center, Sakha, Kafr El-Sheikh, Egypt, pp: 189-199

El-Shamaa, I.S. (2002). Onset of puberty, semen production and blood constituents in crossbred male lambs as affected by dietary yeas culture addition. J. Agric. Sci. Mansoura Univ., 27: 4589-4598.

El-Sherbieny, M.A.S. (2000). Effect of feeding protected protein diets on reproductive performance of Friesian bulls. M.Sc. Thesis, Fac. of Agric., Alexandria Univ., Egypt.

El-Reweny, A.M.S. (1999). Studies on evaluation of feed stuffs "Performance of lambs fed on total mixed rations containing formaldehyde treated soybean meal or linseed mean" M.Sc. Thesis, Fac. Of Agric., Mansoura Univ., Egypt.

El-Waziry, A.M.; H.E.M. Kamel and M.H.M. Yacout (2000). Effect of Baker's yeast (saccharomyces cerevisiae) supplementation to berseem (*Trifoluim alexandrinum*) hay died on protein digestion and rumen fermentation of sheep. Egyptian J.Nutrition and Feeds, 3 :71-82.

Garcia, C.C.G.; M.G.D. Mendoza; M.S. Gonzalez,; P.M. Cobos; C.M.E. Ortega and L.R. Ramirez (2002). Effect of yeast culture (saccharomyces cerevisiae) and monensin on ruminal fermentation and digestion in sheep. Animal Feed Science and Technology, 83: 165-170.

Gary, W.R. and J.P. Ryan (1989). Effect of yeast culture on volatile fatty acid levels in ovine rumen fluid incubated with oats barley and hay. Biochemical Society transactions. 17: 2,390-392.

Harrison, G.A.; R.W. Hemken and K.A. Dawson (1988). Influence of addition of yeast culture supplement to diet of lactating cows on ruminal fermentation and microbial populations. J. Dairy Sci., 71: 2967-2975.

Jouany, J.P.; F. Mathieu; J. Semaud and M. Mercier (1996). The effect of *saccharomyce's 'cerevisiae* and Aspergillus Oryzea on the digestion of the cell wall fraction of a mixed diet in defaunated and refaunated sheep rumen. Reprod. Nutr. Dev., 38-401.

Kanikol, Jiro, J. (1989). Clinical Biochemistry of Domestic Animals. 4th ed., Academic Press, USA.

Khanna, T.; F.A. Zaidi and P.C. Dandiya (1993). Control nervous system and analegetic studies on Nigella sativa, Fitoterapia, 64:707.

Kobayashi, T.; S. Oda; A. Takenaka and H. Ltabashi 1995). Effects of yeast culture supplement on milk protein yield, ruminal fermentation and blood components in early to mid lactation dairy cows. Bulletin of National Institute of animal Industry, 55:13-20.

Kornegay, E.T.; Z. Nang; C.M. Nood and M.D.D. Lindemann (1997). Supplemental chromium picolinate influences nitrogen balance, dry matter digestibility and carcass traits in growing-finishing Pigs. J. of Animal Sci. 75: 1319.

Kovacs, M.; Z. Zomboesky; S. Tuboly; A. Lengyel and E. Horn(1998). The effect ofthermolysised brewer's yeast of high nucleotide content on some blood parameters in sheep. Wool-Technology and Sheep Breeding, 96: 255.

Kumar, D.; V.K. Sareen and S.Singh (1994). Effect of saccharomyces cerevisiae yeast culture supplement on ruminal metabolism in buffalo calves given a high concentrate diet. Animal Production. 59; 2, 209-215.

Mahmoud, M.A.M. (2001). Effect of probiotics on milk production. M.Sc. Thesis, Fac. Of Agric., Alex. Univ., Egypt.

Metwally, A.M.; A. Dhitta and E.M. Abd EI-Raouf (2000). Productive and reproductive performance of lactating Friesian cows supplemented with yeast culture. J. Agric. Res. Tanta Univ., 26: 5244.

Metwally, A.M.; I.S. EI-Shamaa and M. Abd EI-Momin (2002). Changes in some blood constituents, growth rate and rumen fermentation of growing lambs fed yeast culture. Second Int. Conf. on Anim. Prod. And Health in semi arid area. Fac. Of Environmental Agric. Dci. El-Arich, 115-151.

Metwally, A.M. and M.K. Mohsen (1997). Influence of age on certain hematological and biochemical constituents in the blood of growing buffaloe calves. J. Agric. Res. Tanta Univ., 22: 334.

Metwally, A.M.; E.A. Omar and A.Y. Salem (1999). Studies on some blood components, rumen fluids and growth as influenced by addition of volatile fatty acids and age of Sackling Fnesian Calves. J. agric. Res. Tanta Univ., 25-27.

Moloney, A.P. and M.J. Drennan (1994). The influence of the basal diet on the effects of yeast culture on ruminal fermentation and digestibility in steers. Animal Feed Sci. and Technology, 50: 55-73.

Newbold, C.J.; R.J. Wallace; X.B. Chen and F.M. McIntosh (1995). Different strains of *Saccharomyces cerevisiae* differ in their effects on ruminal bacterial numbers in vitro and in sheep. American Society of Animal Sci., 73: 1811-1818.

Newbold, C.J.; P.E. Williams; N.M. Mckain; A. Walker and R.J. Wallace, (1996). The effects of yeast culture on yeast numbers and fermentation in the rumen of sheep. Proc. Nutr. Soc., 49: 474.

N.R.C. (1985). "Nutrient Requirements of sheep 6th ed. The National REs.Cou., Washington D.C., National academy of sci.

0' Kelly, J.E. (1987). Influence of dietary fat on some metabolic responses of cattle to hyper thermia induced head exposure. Compo Biochem. Physiol., 87 A: 677.

Onol, A.G.; S. Yalcin; S. Yasar and A. Sehu (1998). Effect of the supplementation of yeast molasses and barley to barley straw diets on the intake, digestibility and ruminal fermentation in sheep. Turk Veterinerlik Ve Hayvancilik Dergisi, 22: 437.

Putnam, D.E.; C.G. Schwab; M.T. Socla; N.L. Whitehouse; N.A. Hierstead and B.D. Garthwaite (1997). Effects of yeast culture in tile diets of early lactation dairy cows on ruminal fermentation and passage of nitrogen fractions and amino acids to the small intestine. J. Dairy Sci., 80: 374-384.

Robinson, P.H. (1997). Effect of yeast culture *(saccharomyces cerevisiae)* on adaptation of cows to diets postpartum. J. Dairy Sci., 80: 1119-1125.

Sayed Ahmed, M.A. (2000). Physiological studies on reproduction of farm animals. "Effect of feeding protected protein on semen quality". M.Sc. Thesis, Fac. Of Agric., Mansoura Univ., Egypt.

SAS (1998). Statistical analysis system. SAS User's Guide: Statistics. SAS Institute Inc. Editors, Cary, NC.

Shaffer, K.L.; J.D. Roussel and K.L. Koene (1981). Effect of age, temperature, seasons and breads on blood characteristics of dairy cattle. J. Dairy Sci., 64: 67.

Shehata, E.I.; M.E. Ahmed; Ferial H. Abd EI-Rasoul; Faten F. Abou Ammou and R. EI-Ahwal (2004). Effect of feeding a medicinal herbs, chamomile flower on production and hygiene of goat milk production. J. Dairy Sci., (in press).

Swartiz, D.L.; L.D. Muller; G.W. Rogers and G.A. Varga (1994). Effect of yeast culture on performance of lactating dairy cows. A field study. J. Dairy Sci., 77: 3073-3080.

Tiwari, C.M.; A.S. Chandramoni; S.B. Jadhao; S.K. Gowada and M.Y. Khan (2001). Studies on blood biochemical constituents and rumen fermentation growing buffalo calves fed ammoniated straw-based rations supplemented with different protein sources. J.Anim. Sci., 89(1-2).119.

Wallace, R.J. and C.J. Newbold (1992). Probiotics for ruminants. In: R. Fuller (Ed) The Scientific Basis of the Probiotic Concept. Pp: 317. Chapman Hall, London.

Wiedmeier, R.D.; M.J. Arambel and J.L. Walters (1987). Effect of yeast culture and Aspergillus oryzal fermentation extract on ruminal characteristics and nutrient digestibility. J. Dairy sci., 70: 2063.

Williams, P.E.V. (1989). The mode of action of yeast culture in ruminal diets a review of the effect of rumen fermentation patterns. Page 65 in Biotechnology in the Feed Industry, Alltech Tech. Publication, Kentucky.

Williams, P.E.V.; C.A. Tait; G.M. Lnnes and C.J. Newbold (1991). Effects of the inclusion of yeast culture *(saccharomyces cerevisiae)* plus growth medium in the diet of dairy cowson milk yield and forage degradation and fermentation patterns in the rumen of syeers. J. Anim. Sci., 69: 3016-3026.

Wohlt, J.E.; T. Carcione and P.K. Zajac (1998). Effect of yeast on feed intake and performance of cows fed diets based on corn silage during early lactation. J. Dairy Sci., 81: 1345-1352.

Youssef, M.; A.M. Abdiene; R.M. Khattab and S.M. Darwish (1998). Effect of feeding Nigella sativa on productive and reproductive performance of buffaloes. Egyptian J. Nutrition and Feeds, 1:75-85.

تأثير التغذية علي علائق مضاف لها زهرة البابونج و الخميرة الجافة علي الأداء الانتاجي للأغنام

عبدالمنعم محمد مصطفي زيد *، محمد كامل محسن **، مصطفي عبدالرحمن ابراهيم و عادل محمد عبدالمعطي القمحاوي***

*** معهد بحوث الانتاج الحيواني – مركز البحوث الزراعية – الجيزة- مصر**

**** كلية الزراعة – جامعة كفر الشيخ**

تهدف هذه الدراسه لمعرفه تأثير التغذيه علي علائق تحتوي علي الخميره الجافه وزهره البابونج علي معاملات الهضم و القيم الغذائية و الأداءالانتاجي للحملان حتي البلوغ الجنسي بالاضافه إلي تغيرات الوزن وكذلك الكفاءة الغذائية و الاقتصادية.

استخدم في هذه الدراسه 40 نعجه (فنلندي x رحماني) وذلك في الفتره الاخيره من الحمل (قبل الولاده بشهرين) بمتوسط وزن 53.5 كجم.

قسمت عشوائيا هذه النعاج إلي اربع مجموعات في كل مجموعه 10 نعاج غذيت علي أربع علائق مختلفه:

1 - العليقه الاولي : (كنترول) علف مركز.
2 - العليقه الثانيه : تحتوي علي علف مركز مضاف إليه 50 مجم / كجم وزن حي / يوم خميره جافه.
3 - العليقه الثالثه : تحتوي علي علف مركز مضاف إليه 50 مجم / كجم وزن حي / يوم زهره البابونج.
4 - العليقه الرابعه : تحتوي علي علف مركز مضاف إليه 100 مجم / كجم وزن حي / يوم زهره البابونج.

تم تتبع النعاج حتي الولاده والمواليد حتي الفطام ثم تم أختيار 12 حمل من كل مجموعه (6 أناث ، 6 ذكور) وغذيت علي نفس العلائق الاربع المختبره.

أوضحت النتائج بان استخدام الخميره الجافه وزهره البابونج في العلائق ادت إلي زياده معنويه في الماكول من الماده الجافه للمخاليط المركزة. وادت ايضا الي زياده معنويه في مجموع المواد الغذائيه المهضومه (TDN) و (DCP) علي اساس الماده الجافه ، وكان متوسط قيم (TDN) هي 52.63 ، 56.03 ، 55.17 ،=، 56.26 للمعاملات 1 ،2 ,3 ، 4 علي التوالي. وكانت قيم DCP% 10.55 ، 11.79 ، 10.66 ، 11.51 % علي التوالي.

كما أظهرت النتائج ان متوسط النمو اليومي للحملان هو 122.30 ، 140.82 ، 140.38 ، 127 جم / يوم للمعاملات 1 ،2 ،3 ،4 علي التوالي حيث لوحظ زياده متوسط النمو اليومي للمجموعات (2 ، 3 ، 4) بمعدل 15.14 ، 14.78 ، 4.62 % علي التوالي .

اوضحت النتائج ايضا ان متوسط التكاليف اللازمه لانتاج 1كجم وزن حي هي : 6.18 ، 5.5 ، 5.44، 6.08 جنيه مصري للمجموعات 1، 2، 3، 4 علي التوالي. ومن ذلك يتضح ان المعاملة 3 هي الارخص في التكلفه لانتاج 1 كجم.

العامل الاقتصادي زاد بمعدل 20.25، 22.78، 3.16 % للمعاملات 2، 3، 4 علي التوالي بالمقارنه بالمعاملة الكنترول.

بينت النتائج ان العلائق التي تحتوي علي الخميره الجافه او زهره البابونج كان لها تاثيراً علي صفات الكرش. المجموعه 2 التي تحتوي علي الخميره الجافه كانت الاقل في pH و تركيز الامونيا وايضا تركيز الاحماض الدهنيه الطياره.

فيما يتعلق بالتغير في قياسات الدم، تلاحظ زيادة تركيز البروتين الكلي والالبومين سواء مع الخميره الجافه او زهره البابونج وكانت المجموعه 4 لها اعلي تركيز. وايضا سجلت زياده ملحوظه في نسبه كل من السكر و AST و ALT بينما قلت نسبه كل من الدهون الكليه والكوليسترول عدا مجموعه 2 زادت نسبه الدهون الكلية بها.

عموما يمكن استخدام الخميره الجافه وزهره البابونج كاضافه غذائية لعلائق نمو الحملان ليؤدي الي زيادة في معدل الهضم وزياده الوزن اليوميه بالاضافه الي زياده كفاءه التغذيه وخفض التكلفه للكيلو الواحد من النمو مع عدم وجود اي تاثير جانبي علي اي من قياسات الدم وصفات سائل الكرش

قام بتحكيم البحث

أ.د / أحمد زكي محرز	**كلية الزراعة – جامعة المنصورة**
أ.د / كامل عتمان إبراهيم	**مركز البحوث الزراعية**