J. Animal and Poultry Prod., Mansoura Univ., Vol.3 (5): 215 - 226, 2012

EFFECT OF DIETARY LACTURE YEAST SUPPLEMENT ON PRODUCTIVE PERFORMANCE OF EGYPTIAN RAHMANI EWES AND THEIR LAMBS.

Abdel-Gawad, A. M.

Sheep and Goat Research Department, Animal Production Research Institute (APRI), Agricultural Research Center (ARC), Giza, Egypt.

ABSTRACT

This study was carried out on Rahmani sheep to investigate the effect of using Lacture yeast supplement diet on feed dry matter intake, some blood constituents and productive performance of ewes, such as, changes in live body weight, still birth, abortion, litter size, lambing rate, daily body gain of lambs, kilograms of lambs produced per ewe in addition to productive performance of their lambs. Thirty three pregnant Rahmani ewes at the third parity, of 56.73 ± 1.54 kg average live body weight, and at 105 days of pregnancy were divided according to age and weight into three equal groups (G1, G2 and G3) and fed according to NRC allowances, where diets contained 0, 1 and 2 g Lacture/head/day, respectively. After ewes weaned their lambs, eighteen out of the 19 born male lambs were allotted according to weight and litter size, and divided into three equal treatments (T1, T2 and T3), and were fed the same treatments as their dams, until 180 days of age.

The feed dry matter intake (DM) was better in G2 and G3 supplement groups compared with control (G1). Changes in live body weight of ewes during late pregnancy and suckling period was not significantly affected by treatments, but with numerically positive effect with supplement groups, G2 (9.27 kg) and G3 (9.46) compared with control (G1) (10.0 kg), respectively. Results indicated that yeast supplemented groups had significantly higher serum glucose, cholesterol, total lipids, total protein, albumin, globulin, urea-N and both GOT and GPT than the control. Therefore, the present blood parameters of supplemented treated groups may indicate the beneficial effect of the supplements on metabolism and the present data were within the normal ranges for healthy sheep. No abortion, still birth and mortality cases were recorded in all groups. The data indicated that litter size was increased (1.0, 1.09 and 1.27) with increasing the level of Lacture (0, 1 and 2 g/head/day) in three groups G1, G2 and G3, respectively.

Results indicated that birth weight was significantly higher in G2 and G3 Lacture supplemented diets being, 2.92 kg and 3.11 kg (1 and 2 g/h/d) compared with control (2.68 kg), respectively. Also, weaning weight was significantly higher with supplement groups G2 and G3 (12.88 kg and 13.82 kg) compared to 11.45 kg with control (G1), respectively. This was reflected on daily body gain (DBG), being 165.9 g and 178.6 g with G2 and G3 compared 146.2 g with G1, respectively. The improvements in DBG by treatment G2 and G3 were 13.5% and 22.2%, respectively. Thus, out put measured as kilograms born and weaned per ewe significantly improved with Lacture supplementation (G2 and G3), being 3.18 kg/ewe and 3.95 kg/ewe *vs.* 2.68 kg/ewe with G1 (control), and as kilograms weaned per ewe, being 14.05 kg/ewe and 17.8 kg/ewe with G2 and G3 *vs.* 11.45 kg/ewe with G1, respectively.

Moreover, results indicated a significant effect of treatment of supplemented Lacture on lambs performance. Data indicated that the live body weight of lambs at 180 days of age were significantly higher 27.0 kg and 28.08 kg with Lacture supplementation 1 g/head/day and 2 g/head/day (T2 and T3) compared with control (T1) (25.92 kg). Therefore, daily body gain of lambs was increased (105.6 g, 114.6 g and 123.6 g) with increasing the level of Lacture (0, 1 and 2 g/head/day) in T1, T2 and

T3, respectively. Accordingly, the economic efficiency was higher due to using Lacture at levels of 1 and 2 g/head/day compared with the control one (0g).

Keywords: Rahmani sheep, Lacture yeast, Lambs performance, Feed intake, Mortality rate, Litter size, Lambing rate.

INTRODUCTION

Rahmani breed is the most popular and widespread sheep in Egypt. It is characterized by being the most prolific known breed in Egypt (1.3 litter size, Salama, 1983). Output per ewe as number of lambs produced per ewe per year is the component of the role on the ewe gain. In this respect, Rahmani ewes produce three lambing every two years. Therefore, Rahmani ewes require sufficient amounts of energy, protein, amino acids, enzymes, vitamins and minerals, especially during phases of reproductive stress such as late pregnancy and suckling their born lambs (Abdel-Gawad, 1996).

Yeasts are known as rich sources of vitamins, enzymes, nutrients and other cofactors (Dawson, 1992) and are used as feed additives. Yeast products have been shown to modify rumen fermentation (Wiedmeier *et al*., 1987 and Harrison *et al*., 1988), to stimulate the number and growth of rumen bacteria (Dawson *et al*., 1990 and Erasmus *et al*., 1992) and to increase rate of feed digestion in the rumen which is reflected on the productive performance of farm animals (Higgibotham *et al*., 1994; Besong *et al*., 1996; Putnam *et al*., 1997; El-Badawi *et al*., 1998; EL-Ashry *et al*., 2002; Abou'l Ella, 2007 and Ahmed *et al*., 2008). Addition of yeast culture, as growth promoter, to the diets resulted in increasing rumen pH, total bacteria and protozoa culture count, total volatile fatty acids, total N and microbial protein with decreasing ammonia-N concentration and improving digestion of cellulose and DM disappearance (Kumar *et al*., 1994).

Thus, much attention has been recently focused on the use of as a dietary yeast supplement to improve animal performance. In this respect, Ahmed *et al*. (2008) reported that microbial supplement of Lacture yeast to Zaraibi goats ration during late pregnancy and lactation periods had a positive role in improving milk yield and its composition, especially milk protein and lactose, without any adverse effect on milk quality or general health. These improvements were reflected on born kids performance and production of robust kids at weaning and consequently reduced mortality rate for born kids. They also added, that output measured as kilograms kids produced per doe per year was significantly improved due to the treatment. Therefore, the present study was carried out to investigate the effect of a commercial microbial supplement (Lacture) on productive performance of Egyptian Rahmani ewes during late pregnancy and suckling periods and their lambs.

MATERIALS AND METHODS

This study was conducted at El-Serw Experimental Research Station belonging to Animal Production Research Institute, Agriculture Research Center, Ministry of Agriculture, located in the north-eastern part of the Nile Delta, Demietta Governorate, Egypt.

Thirty three pregnant Rahmani ewes at the third parity, of 56.73 ± 1.54 kg average live body weight, were allotted according to age and weight into three similar groups (11 ewes each). Animals were weighed at the beginning of the experiment (105 days of pregnancy) and biweekly thereafter until they weaned their born lambs at two months post-lambing. The three groups were assigned at random to receive the three treatments in group feeding. The three groups received a basal ration consisting of concentrate feed mixture (CFM) and roughage (berseem hay + bean straw) at the ratio of 1 CFM : 1 roughage. The CFM consisted of 26% undecorticated cottonseed meal, 38% yellow corn, 20% wheat bran, 7% rice bran, 5% molasses, 2.5% limestone, 1% common salt and 0.5% mineral mixture. Amounts of concentrate and roughage fed were based on Feed Allowance of NRC (1975). Rahmani ewes in groups G1, G2 and G3 received a daily feed supplement of 0g., 1g. and 2g. Lacture yeast/head, respectively. After ewes weaned their lambs, eighteen out of the 19 born male lambs were allotted according to weight and litter size, and divided into three treatment (T1, T2 and T3) 6 lambs each take. They were fed the same diets as their dams until 180 days of age.

Feed additive (Lacture dried yeast) was mixed with approximately 10 g. of ground concentrate and spread daily as powder over the concentrate feed mixture as reported by Chiquette *et al*. (1993). The dried Lacture yeast supplements consisted of *Saccharomyces cervisiae* (5 x 10^3 cfu/g), *Bacillus subtilis* (2.2 x 10^7 cfu/g), *Lactobacillus acidophilus* (7.7 x 10^3 cfu/g), *Streptococus faecium* (4.4 x 10^7 cfu/g) and contained (*Aspergillus oryzae* fermentation extract-amylase–cellulose–protease). The Lacture dried yeast supplements was purchaser from Algomhuria company-Mansoura-Dakahlia-Egypt. Samples of feed were analyzed according to the procedure of A.O.A.C (1988). The chemical composition of feed stuffs consumed by Rahmani sheep is shown in Table (1).

Table (1). Chemical composition of the ingredients used to formulate the basal ration.

Ingredients	Chemical composition, %						
	DM	OM	CF	CP	EE	NFE	Ash
Concentrate feed mixture(CFM).	91.5	93.0	16.1	14.5	3.5	58.9	7.0
Berseem hay (BH).	88.3	87.3	30.0	11.3	2.4	43.6	12.7
Bean straw (BS).	89.0	86.2	37.0	5.5	1.5	42.2	13.8

DM: Dry matter, OM: Organic matter; CF: Crude fiber; CP; Crude protein; EE: Ether extract and NEF: Nitrogen free extract.

Feed allowances were offered twice daily at 8 a.m. and 3 p.m.. Drinking water was available all times. Changes in live body weight were recorded individually for the ewes and their born lambs every two weeks. Litter size, lambing rate were calculated. Economic efficiency was also calculated, as total output/total input according to the local prices at the year of the study (where 1 ton of BH costs 500 L.E, 1 ton BS costs 300 L.E, 1 ton of CFM costs 1500 L.E and yeast lecture cost L.E 20 per kg, while selling

prices of 1 kg live body weight of lambs was 25 L.E.. Blood sample were collected through the jugular vein just before feeding once at the end of the experimental period from 3 ewes of each group. Samples were centrifuged at 400 rpm for 20 minutes. Sera were collected and stored at - 20ċ until analysis for glucose (Siest *et al.*, 1981), cholesterol (Kostner *et al*., 1979), total lipids (Postma and Stroes, 1968), total protein (Armstrong and Carr 1964), Albumin (Doumas *et al.,* 1971), globulin was calculated by difference, urea-N (Patton and Crouch, 1977) and transaminases: glutamic – oxaloacetic - transaminase and glutamic – pyruvate – transaminase (GOT and GPT) by the method of (Reitman and Frankel, 1957). Data were statistically analyzed by the least squares methods described by Likelihood program of SAS (1994). Differences among means were determined by Duncan's New Multiple Range Test (Duncan. 1955).

RESULTS AND DISCUSSION

Average daily feed intake by ewes during late pregnancy and suckling periods are presented in Table (2). The daily feed intake was affected by the experimental treatments, where DM intake was increased with increasing of level of Lacture supplement diet during late pregnancy (1593 g DM/h, 1609 g DM/h and 1617 g DM/h) and suckling period (1950 g DM/h, 1971 g DM/h and 1993 g DM/h) for groups G1, G2 and G3, respectively. Similar results were observed by El-Ashry *er al*. (2001); Kholif and Khorshed (2006) and Ahmed *et al*. (2008). However, Olson *et al*. (1994); Yousef *et al*. (1996) and Putnam *et al*. (1997) reported a significant improvement in dry matter intake when yeast culture was given to lactating animals. Also, Abou'l Ella (2007) reported that total dry matter intake was significantly higher with addition of dried yeast to lactating ewe's rations. He added that the enhanced intake is most likely related to improvement of the rate of breakdown of feed staffs in the rumen.

Table (2). Average daily dry matter (DM) intake* by Rahmani ewes during different experimental periods (late pregnancy and suckling periods).

Items	Groups		
	G1	G2	G3
Daily DM intake (g/d) during late pregnancy			
From CFM, gm	801	805	809
From BH, gm	401	403	405
From BS, gm	391	401	403
Total DM intake, gm	1593	1609	1617
DM intake, % of BW	2.73	2.76	2.73
DM intake, g/kg$^{0.75}$	75.57	76.29	75.77
Roughage/concentrate ratio (R/C)	50:50	50:50	50:50
Daily DM intake (g/d) during suckling period			
From CFM, gm	990	995	1001
From BH, gm	525	529	531
From BS, gm	435	447	461
Total DM intake, gm	1950	1971	1993
DM intake, % of BW	3.94	3.95	4.01
DM intake, g/kg$^{0.75}$	104.5	105.1	106.5
Roughage/concentrate ratio (R/C)	49:51	50:50	50:50

***Group feeding; CFM: Concentrate Feed Mixture; BH: Berseem Hay; BS: Bean Straw; DM: Dry Matter and BW: Body Weight.**

Changes in live body weight of ewes (LBW) are presented in Table (3). The means of initial LBW (at 105 days of pregnancy) were approximately equal in the three groups, where they were 56.82 kg, 56.45 kg and 56.91 kg in G1, G2 and G3, respectively. The LBW of ewes increased to the maximum just before lambing (at 150 days of pregnancy) being, 59.63 kg, 60.09 kg and 61.55 kg in G1, G2 and G3, respectively and sharply decreased (post-lambing) to the minimum at 60 days post-lambing (weaning) in all groups (46.52 kg in G1, 47.27 kg in G2 and 47.46 kg in G3, respectively). Concerning the effect of the treatment during two months of pregnancy and also two months post-lambing, the obtained results indicated that LBW of Rahmani ewes was not significantly affected as a result of using Lacture at level of 1 g/h/d (G2) and 2 g/h/d (G3) as shown in Table (3). Generally, changes in LBW of Rahmani ewes during late pregnancy (2 months) and post-lambing (two months, from lambing until weaned their born lambs) were not significantly affected by the treatment, but with numerically positive effect for G2 (9.27 kg) and G3 (9.46 kg) from control group (G1) (10.0 kg), respectively. The same trend was observed by Shehata *et al*. (2007), who recorded a decline in body weight of high milk yielding goat during the first month post-parturition. Similar results were obtained by Ahmed *et al*. (2008) who found increases in live body weight of Zaraibi goats during late pregnancy and decreases in post-parturition (90 days) in dairy Zaraibi goats as a result of supplementing 1.0 g or 2.0 g Lacture/h/d. In addition, similar trends were observed by Abou'l Ella (2007) for lactating ewes.

Table (3): Live body weight (LBW) of Rahmani ewes during late pregnancy and suckling period as affected by the treatments.

Items	Groups		
	G1	G2	G3
No. of ewes	11	11	11
Initial weight (at 105 days of pregnancy).	56.82 ± 1.59	56.45 ± 1.62	56.91 ± 1.40
At 120 days of pregnancy	57.27 ± 1.67	57.27 ± 1.75	58.27 ± 1.58
At 135 days of pregnancy	58.45 ±1.65	58.36 ± 1.75	59.27 ± 1.66
At 150 days of pregnancy	59.63 ±1.66	60.09 ± 1.73	61.55 ± 1.66
Weight at lambing	52.18 ± 1.35	52.45 ± 1.45	51.91 ± 1.46
Weight at 15 days post-lambing	50.45 ± 1.25	50.55 ± 1.45	50.0 ± 1.36
Weight at 30 days post-lambing	48.45 ± 1.15	49.0 ± 1.35	48.91 ± 1.31
Weight at 45 days post-lambing	47.73 ± 1.14	48.09 ± 1.38	48.0 ± 1.38
Weight at 60 days post-lambing(weaning)	46.82 ± 1.16	47.27 ±1.27	47.46 ±1.37
Change in live body weight	10.0 ± 1.39	9.27 ±0.76	9.46 ±0.76

Data in Table (4) indicated that yeast supplemented groups had significantly higher serum glucose, total lipids, total protein, globulin and urea-N than the control. The same trend was also observed on serum cholesterol, albumin and both GOT and GPT. Similar results were observed by Yousef *et al.*, (1996); Kholif and Khorshed (2006) on lactating animals. Moreover, Ahmed *et al*., (2008) reported that yeast supplemented groups of lactating

Zaraibi goats had significantly higher serum glucose, albumin, protein, globulin, urea-N and cholesterol than the control group. El-Ashry *et al*., (2001) reported that serum total protein, albumin, urea-N, glucose and cholesterol content were significantly higher as a result of using some yeast types in dairy animals rations. From the present results, beneficial effects of Lacture supplements on metabolism in Rahmani ewes could be noticed and the data were within the normal ranges for healthy sheep. In this respect, Alonso *et al.,* (1997) reported that blood laboratory parameters and productive traits are essentially affected by the genetic potential of individual animals and parameters of homeostasis in the body.

Table (4). Effect of Lacture yeast supplement diet on some blood parameters of Rahmani ewes.

Items	Groups			Normal range (Reference)*
	G1	G2	G3	
Glucose, mg/dl	$63.60^{c} \pm 0.36$	$70.67^{b} \pm 0.36$	$72.37^{a} \pm 0.36$	50-100 mg/dl
Cholesterol, mg/dl	$103.8^{bb} \pm 0.35$	$105.0^{ba} \pm 0.35$	$106.2^{aa} \pm 0.35$	95-103 mg/dl
Total lipids, mg/dl	$308.1^{c} \pm 0.28$	$311.0^{b} \pm 0.28$	$313.3^{a} \pm 0.28$	
Total protein, g/dl	$6.67^{c} \pm 0.06$	$7.33^{b} \pm 0.06$	$7.83^{a} \pm 0.06$	6-7.9 g/dl
Albumin, g/dl	$2.98^{b} \pm 0.03$	$3.04^{bb} \pm 0.03$	$3.19^{a} \pm 0.03$	2.4-3.3 g/dl
Globulin, g/dl	$3.69^{c} \pm 0.04$	$4.29^{b} \pm 0.04$	$4.64^{a} \pm 0.04$	
Urea-N, mg/dl	$15.68^{c} \pm 0.18$	$16.71^{b} \pm 0.18$	$17.49^{a} \pm 0.18$	8-20 mg/dl
GOT, U/L	$47.69^{aa} \pm 0.19$	$46.85^{bb} \pm 0.19$	$47.26^{ba} \pm 0.19$	25-59 U/L
GPT, U/L	$17.05^{aa} \pm 0.16$	$16.46^{bb} \pm 0.16$	$16.53^{ba} \pm 0.16$	

Means in the same row with different superscripts differ significantly at P<0.05.
*** Many of these reference numbers of serum chemistry of sheep were taken from Kaneko (1989).**

Productive and reproductive performances of ewes fed the experimental diets are summarized in Table (5). The obtained results indicated that treatment by the two levels of Lacture yeast (G2 and G3) had no adverse effect on Rahmani ewes performance during late pregnancy. No abortion and stillbirth cases happened in all groups. Results indicated that average litter size was higher (1.09 and 1.27 with G2 and G3, respectively), which received 1 g/h/d and 2 g/h/d supplemented lecture in diets ***vs.*** 1.0 litter size with the control group (G1, which received 0 g/h/d lacture yeast). In the same trend, lambing rates were 109 and 127 for G2 and G3 ***vs.*** 100 with G1, respectively. However, litter size was found to range from 1.0 to 1.3 in Rahmani ewes (Abdel-Gawad, 1996).

The obtained results in Table (5) indicated that the average birth weight was significantly higher 2.92 kg and 3.11 kg ***vs.*** 2.68 kg with increasing levels of lecture yeast (G2 and G3 ***vs.*** G1, respectively. Also, the levels of lecture, 1 g/h/d and 2 g/h/d (G2 and G3) had significant positive effect on weaning weight (12.88 kg and 13.82 kg, respectively) vs. 11.45 kg in control (G1). This was reflected on daily body gain (DBG), being 165.9 g and 178.6 g for G2 and G3 compared with 146.2 g for G1. The improvements in DBG by treatments G2 and G3 were 13.47% and 22.16%, respectively compared with G1 where differences were significant. Similar results were observed by Abou'l Ella (2007) in their study on lactating ewes. They found that average daily body gain of lambs were significantly higher (182 g/h/d) with using dry yeast in ewes rations compared with the control (162 g/h/d). In

another study on Zaraibi does, similar results were observed by Ahmed *et al.* (2008) since, he reported that supplemented lacture had a positive effect on birth weight, weaning weight and daily body weight gain.

Table (5). Effect of the experimental treatments on the productive and reproductive performance of Rahmani ewes.

Items	Groups		
	G1	G2	G3
No. of ewes	11	11	11
Born lambs	11	12	14
Stillbirth lambs, No.	-	-	-
Alive lamb at 0 day	11	12	14
Alive lambs at 60 days (weaning)	11	12	14
Litter size	1.0	1.09	1.27
Lambing rate, %	100	109	127
Average birth weight, kg	$2.68^{bb} \pm 0.16$	$2.92b^{a} \pm 0.11$	$3.11^{aa} \pm 0.10$
Weight at 15 days of age, kg	$4.95^{c} \pm 0.29$	$5.58^{b} \pm 0.19$	$6.16^{a} \pm 0.26$
Weight at 30 days of age, kg	$7.0^{c} \pm 0.32$	$7.81^{b} \pm 0.24$	$8.80^{a} \pm 0.29$
Weight at 45 days of age, kg	$9.18^{c} \pm 0.54$	$10.25^{b} \pm 0.24$	$11.46^{a} \pm 0.35$
Weight at 60 days of age, kg (Weaning).	$11.45^{c} \pm 0.35$	$12.88^{b} \pm 0.31$	$13.82^{a} \pm 0.32$
Daily body gain, g	$146.2^{c} \pm 3.83$	$165.9^{b} \pm 4.19$	$178.6^{a} \pm 4.49$
Kilogram lambs born/ewe	$2.68^{b} \pm 0.27$	$3.18^{bb} \pm 0.27$	$3.95^{a} \pm 0.27$
Kilogram weaned/ewe	$11.45^{b} \pm 1.15$	$14.05^{bb} \pm 1.15$	$17.80^{a} \pm 1.15$
Mortality of lambs, No.	-	-	-
Economic efficiency*	1.28	1.55	1.96

Means in the same row with different superscripts differ significantly at P<0.05.

***Economic efficiency (estimated for 4 months) = $\frac{\text{Kg lambs* 25}}{\text{Feed cost/120 days.}}$**

Accordingly, output measured as kilograms lambs produced per ewe improved significantly by the Lacture treatments (G2 and G3) compared with control (G1), since the number of kilograms at birth and at weaning, were 3.18 kg born/ewe and 3.95 kg born/ewe with G2 and G3, respectively ***vs.*** 2.68 kg born/ewe with G1 and 14.05 kg weaned/ewe and 17.8 kg weaned/ewe with G2 and G3, respectively ***vs.*** 11.45 kg weaned/ewe with G1. This increase in daily gain of offspring may be due to the increase of milk yield. Generally increasing milk yield for lactating ewes by the treatment represents an important factor for the production of robust lambs at weaning. In addition, it also have been effective in reducing incidence of scouring and mortality and stimulated live weight gain for offspring (Umberger *et al*., 1989; Abou'l Ella, 2007 and Ahmed *et al*., 2008).

The productive performance of Rahmani lambs fed experimental diets is summarized in Table (6) and Fig.(1). The obtained results indicated that treatment by the two levels of Lacture yeast (T2 and T3) had a positive effect on lambs performance during the whole experimental period. The mean initial live body weight of lambs (LBWL) were equal 13.25 kg in all treatments. The LBWL at the end of the experiment (at 180 days of age) were significantly higher 27.0 kg and 28.08 kg with T2 and T3, respectively than that the weight (23.92 kg) with the control treatment (T1). Generally, the results obtained by many authors (El-Ashry *et al*., 2002; Abou'l Ella, 2007; Hanafy, 2008 and Ahmed *et al*., 2008) indicated significant improvements in daily body gain in supplemented rations with yeast compared with control.

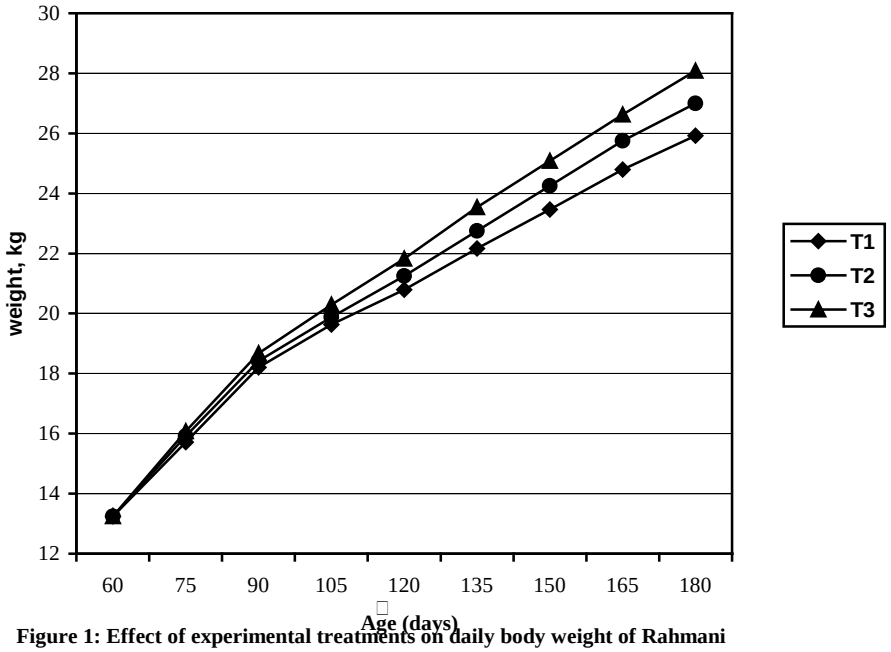

Figure 1: Effect of experimental treatments on daily body weight of Rahmani lambs.

Table (6). Effect of the experimental treatments on the productive performance of Rahmani lambs.

Items	Treatments		
	T1	T2	T3
No. of lambs	6	6	6
Initial weight, kg (at 60 days of age).	$13.25^{a} \pm 0.64$	$13.25^{a} \pm 0.57$	$13.25^{a} \pm 0.62$
Weight at 75 days of age, kg	$15.71^{a} \pm 0.61$	$15.92^{a} \pm 0.50$	$16.08^{a} \pm 0.61$
Weight at 90 days of age, kg	$18.21^{a} \pm 0.68$	$18.42^{a} \pm 0.58$	$18.67^{a} \pm 0.60$
Weight at 105 days of age, kg	$19.63^{a} \pm 0.63$	$19.88^{a} \pm 0.63$	$20.29^{a} \pm 0.61$
Weight at 120 days of age, kg	$20.79^{a} \pm 0.74$	$21.25^{a} \pm 0.52$	$21.83^{a} \pm 0.59$
Weight at 135 days of age, kg	$22.17^{a} \pm 0.75$	$22.75^{a} \pm 0.54$	$23.54^{a} \pm 0.58$
Weight at 150 days of age, kg	$23.46^{a} \pm 0.75$	$24.25^{a} \pm 0.48$	$25.08^{a} \pm 0.63$
Weight at 165 days of age, kg	$24.79^{a} \pm 0.76$	$25.75^{a} \pm 0.48$	$26.63^{a} \pm 0.57$
Weight at 180 days of age, kg	$25.92^{bb} \pm 0.75$	$27.0^{ba} \pm 0.48$	$28.08^{aa} \pm 0.54$
Daily body weight gain, g	$105.6^{c} \pm 1.49$	$114.6^{b} \pm 1.42$	$123.6^{a} \pm 0.88$

Means in the same row with different superscripts differ significantly at P<0.05.

Results in Table (7) indicated that significantly higher weight of males than females at birth (3.17 kg ***vs.*** 2.65 kg) and weight at weaning (13.25 kg vs. 12.35 kg), respectively, whereas, type of birth was higher with single born than twins being, 2.95 kg ***vs.*** 2.81 kg at birth and 12.83 kg ***vs.*** 12.75 at weaning, respectively, but differences were not significant. Similar results

were observed by Abou'l Ella (2007) in their study on lactating ewes and Ahmed *et al*. (2008) in their study with Zaraibi lactating goats.

Table (7). Effect of the sex and type of birth on the productive performance of lambs such as birth, weaning and daily weight gain.

Items		No.	Birth weight, kg	No.	Weaning weight, kg
Sex	Male	19	$3.17^{a} \pm 0.08$	19	$13.25^{a} \pm 0.31$
	Female	18	$2.65^{b} \pm 0.09$	18	$12.35^{b} \pm 0.36$
Type of birth	Single	29	$2.95^{aa} \pm 0.09$	29	$12.83^{aa} \pm 0.29$
	Twins	8	$2.81^{aa} \pm 0.10$	8	$12.75^{aa} \pm 0.35$

Means in the same column with different superscripts differ significantly at P<0.05.
G1: 0 g Lacture/head/day; G2: 2 g Lacture/head/day; G3: 2 g Lacture/head/day.

Conclusion

From this work, it is clear that supplement of Lacture yeast to Rahmani ewes rations during late pregnancy and suckling period had a positive role in improving dry matter intake, live body weight and blood profile of ewes. This improvement was reflected on liter size, lambing rate, birth and weaning weight and daily gain, without any adverse effect on mortality rate and still birth or general health. Also, output measured as kilograms lambs produced per ewe was significantly improved due to treatment. This had a good economic return on the herd of Rahmani sheep.

Acknowledgement

I would like to express my deepest grateful to Prof. Dr. Essam El-Din I. Shehata, Prof. Dr. Faten F. Abou Ammou, Prof. Dr. Mohamed I. Ahmed and Prof. Dr. Fathia A. Ibrahim, Chief Researcher of Animal Production Research Institute, Ministry of Agriculture, for their advice and instructions which were of real help in completing this work. Special sincere thanks and greatest gratitude are due to Prof. Dr. Ahmed Zaki Mehrez Prof. of Anim. Nutr. Mansoura Univ., for his encouragement, valuable advices,and his careful remarks which allowed wider scope of interpreting the results.

REFERENCES

A.O.A.C. (1988). Official Methods of Analysis of the Association of Official Analytical Chemists. 12th Ed. Washington. D.C.

Abdel-Gawad, A.M. (1996). Some sheep production systems under Egyptian condition. M.Sc. Thesis, Fac. Agric. Mansoura Univ.

Abou'l Ella, A.A. (2007). Effect of dry yeast and/or bentonits as feed additives on the productive performance of lactating ewes and its offspring's. Egypt. J. Nutr. And Feeds, 10: 81.

Ahmed, M.E., E.I. Shehata, F.F. Abou Ammou, A.M. Abdel-Gawad and K.M. Aiad (2008). Milk production, feed conversation rate and reproduction of Zaraibi goat in response to bacterial feed additive during late pregnancy and lactation. Egyptian J. Anim. Prod., 45 Suppl. Issue: 189-203.

Alonso, A.J., R. de Teresa, M. Garcia, J.R. Gonzales and M. Vallego (1997). The effects of age and reproductive status on serum and blood

parameters in Merino breed sheep. Zentralbl Veterinarmed. A. 44, 223-231. Cited from Citation J.K (2010). Normal hematology and selected serum biochemical values in different genetic lines of Awassi ewes in Jordan. The Internet Journal of Veterinary Medicine. 2010 Volume 7 Number 2.

Armstrong, W.D. and C.W. Carr (1964). Physiological chemistry: Laboratory Direction: 3rd Ed. PP. 75, Bburges Publishing Co. Minneapolis, Minnesota. USA.

Besong, S., J.A. Jackson, C.L. Hicks and R.W. Hemken (1996). Effect of a supplemental liquid yeast product on feed intake, ruminal profiles, and yield composition, and organoleptict characteristics of milk from lactating Holstein cows. J. Dairy Sci., 79: 1654.

Chiquette, J., C.L. Girard and J.J. Matte (1993). Effect of the diet fed to growing steers and folic acid addition on digestibility and ruminal fermentation. J. Anim. Sci., 71: 2793.

Dawson, K.A. (1992). Current and future role of yeast cultures in Animal production: A review of research over the last six years. In: Supplement to proceedings of Altech 8th Annual Symposium 1: 23.

Dawson, K. A., K.E. Newman and J.A. Boling (1990). Effects of microbial supplements containing yeast and lactobacilli on roughage-fed ruminal microbial activities. Anim. Sci., 63: 3392.

Doumas, B., W. Wabson and H. Biggs (1971). Albumin standards and measurement of serum with bromocresol green. Clin. Chem. Acta, 31: 87.

Duncan, D.B. (1955). Multiple Range and Multiple F-test Biometrics, 11: 1-42.

El-Ashry, M.A., Zeba A. Motagally and Y.A. Maareck (2001). Effect of live dried baker's yeast and yeast culture on performance of growing buffalo calves. Egypt. J. Nutrition and Feeds, 4 (special Issue): 607.

El-Ashry, M.A., Zeba A. Motagally and Y.A. Maareck (2002). Effect of live dried baker's yeast with or without acidification of milk and yeast culture on performance of suckling buffalo calves. Egypt. J. Nutrition and Feeds, 5: 31.

El-Badawi, A.Y., H.M. Gado and M.A. Tawilla (1998). Influence of dietary yeast culture on the lactation performance of goats. Arab Univ. J. Agric., Ain Shams Univ., Cairo, 6:111.

Erasmus L.J., P.M. Botha and A. Kistener (1992). Effect of yeast culture supplement on production, rumen fermentation and duodenal nitrogen flow in dairy cows. J. Dairy Sci., 75: 3056.

Hanafy, Y.H (2008). Nutritional studies on sheep. Ph.D. Thesis, Fac. Agric. Zagazig Univ.

Harrison, G.A., R.W. Hemken, K.A. Dawson, R.J. Harmon and K.B. Barker (1988). Influence of addition of yeast culture supplement to diets of lactating cows on ruminal fermentation and microbial population. J. Dairy Sci., 71: 2967.

Higgibotham, G. E., C.A. Collar, M.S. Aseline and D.L. bath (1994). Effect of yeast culture and Aspergillus oryzae extract on milk yield in a commercial dairy heard. J. Dairy Sci., 77: 343.

Kaneko, J.J (1989). Clinical biochemistry of domestic animals, ed. 4, New York, 1989, Academic Press.

Kholif, S. M and M.M. Khorshed (2006). Effect of yeast or selenized yeast supplementation to rations on the productive performance of lactating buffaloes. Egypt. J. Nutrition and Feeds, 9: 193.

Kostner, G.M., P. Avogaro, G. Bittolo Bon, G. Cazzolato and G.B. Quinci (1979). Determination of high – density lipoproteins: Screening methods compared. Clin. Chemm. 25/6: 939.

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

NRC (1975). Nutrient Requirements of Domestic Animals" No. 5 Nutrient Requirements of Sheep. National Research Council, Washington, D.C. (PP. 42-44).

Olson, K.C., J.S. Caton, D.R. Kirby and P.L. Norton (1994). Influence of yeast culture supplementation and advancing season on steers grazing mixed-grass prairie in the northern great Plai: I. Dietary composition, intake and in situ nutrient disappearance. J. Anim. Sci., 72: 2149.

Patton, C.J. and S.R. Crouch (1977). Spectrophotometric and kinetics investigation of the ammonia. Anal. Chem., 49; 464.

Postma, T. and J.A. Stroes (1968). Lipids Screening in clinical chemistry. Clinica Chimica Acta. 22: 569.

Putnam, D.E., C.G. Schwab, M.T. Socha, N.L. Whiteouse, N.A. Kierstead and B.D. Garthwaite (1997). Effect of yeast culture in the diets of early lactating cows on ruminal fermentation and passage of nitrogen fractions and amino acids to the small intestine. J. Dairy Sci., 80: 374.

Reitman, S. and S. Frankel (1957). Colorimetric methods for the determination of serum glutamic oxaloacetic – and glutamic – pyruvate transaminase. Anal. J. Clinc. Path, 28: 56.

Salama, O.A. (1983). Lamb production in relation to dam's nutrition during pregnancy and suckling. M.Sc. Thesis, Fac. Agric., Cairo, Univ., Cairo, Egypt.

SAS Institute (1994). SAS/STAT user's Guide: Statistics. Ver. 6.04, Fourth Edition SAS Institute Inc, Cary, NC.

Siest, G., J. Henny and F. Schiele (1981). Interpretation des examens de laboratoire karger ed. 206.

Shehata, E.I., F.H. Abd El-Rasoul, F.F. Abou Ammou and A.M. Abdel-Gawad (2007). Effect of feeding the medicinal herbs, Chamomile flower, on some productive performance of Egyptian Zaraibi does and their new born kids. Egypt. J. of Sheep and Goat Sci., 2: 111.

Umbecger, S.H., D.R. Notter, K.E. Webb and W.H. McClutre (1989). Evaluation of a lactobacillus inoculants on feedlot lamb performance. Anim. Sci. Res., Rep., Virginia Agric. Exp. Stat., Virginia Poly., 8: 40.

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

Yousef, H.M., K.A. El-Masry and A.I. Aboulnaga (1996). Effect of dried live yeast supplemented on haemobiochemical levels and milk production

responses of lactating buffaloes under hot summer conditions in Egypt. J. Anim. Prod., 33: 11.

تأثير إضافة خميرة اللاكتشر على الأداء الإنتاجي لأغنام الرحمانى المصرية وحملانها.

عبدالجواد مجاهد عبدالجواد

قسم بحوث الأغنام والماعز- معهد بحوث الإنتاج الحيواني – مركز البحوث الزراعية – وزارة الزراعة- مصر.

أجريت هذه الدراسة في محطة بحوث الإنتاج الحيواني بالسرو- محافظة دمياط- التابعة لمعهد بحوث الإنتاج الحيواني وزارة الزراعة. وكان الهدف من اجراء هذه الدراسة هو دراسة تأثير استخدام أحد الإضافات البكترية (خميرة اللاكتشر) بمستويين على الأداء الإنتاجي لأغنام الرحمانى المصرية وحملانها فتم قياس المأكول اليومى من المادة الجافة وبعض قياسات الدم والحالة الإنتاجية و التناسلية (مثل الولادة النافقة ، حجم البطن ، معدل الولادات ، معدل الزيادة اليومية فى الوزن ، عد الكيلو جرامات المولودة والمفطومة لكل أم ، باللأضافة الى تـاثير المعاملات على الحملان النامية.

تم استخدام عدد 33 نعجة رحمانى عشار (فى بداية الشهر الرابع من الحمل واستمرت حتى فطام نتاجها عند عمر شهرين) قسمت الى ثلاثة مجموعات هى مج1 ، مج2 ، مج3 وغذيت تبعا لمقررات ال_ NRC مع اضافة ثلاثة مستويات من الخميرة هى صفر ، 1 ، 2 جم لكل رأس يوميا للمجموعات الثلاثة على التوالى. تكرر هذا العمل مع الحملان الذكور عند فطامها (عمر شهرين) حتى عمر 180 يوم فكان المتاح 18 حولى (من جملة 19 ذكر مولود) قسمت الى ثلاثة معاملات هى T1, T2, T3 وغذيت تبعا لمقررات ال_ NRC مع اضافة ثلاثة مستويات من الخميرة هى صفر ، 1 ، 2 جم لكل رأس يوميا للمعاملات الثلاثة على التوالى وغذيت كما سبق مع النعاج.

وأظهرت النتائج :- المأكول من المادة الجافة كان أفضل في المجموعة مج 2، مج 3 بالمقارنة بالكنترول (مج1). وجد عدم وجود تأثير معنوي للمعاملات على التغير فى وزن الجسم للأمهات خلال فترة الحمل والرضاعة ولكن كان هناك تغير طفيف فى تغير الوزن للأمهات من البداية حتى نهاية فترة التجربة (9.27كحم ، 9.46 كجم للمجموعة 2 ، 3 مقابل 10.0 كجم لمجموعة المقارنة) 0 أظهرت قياسات الدم أن إضافة اللاكتشر أدت إلى زيادة معنوية في جلوكوز السيرم والليبيدات والبروتين (الجلوبيولين والالبيومين) ونتروجين اليوريا والكولسترول وبالتالي هناك تأثير ايجابي على مكونات الدم. لم يكن هنالك اى حالات نفوق أو إجهاض أو ولادة نافقة للثلاث مجموعات.

حجم البطن أزداد بزيادة مستويات الخميرة فكان (1.0 ، 1.09 ، 1.27) للمجموعات الثلاثة مج 1 ، مج2، و مج 3 على الترتيب. أظهرت النتائج تفوق معنوي فى أوزان الميلاد والفطام للنتاج فى مجموعات المعاملة مج 1 ، مج 2 بالمقارنة بمجموعة الكنترول (مج 1) فكانت 2.92 كجم ، 3.11 كجم مع مج 2 ، مج3 مقابل 2.68 كجم مع مج 1 عند الميلاد على الترتيب بينما كانت 12.88 كجم ، 13.82 كجم مع مج2 ، مج3 مقابل 11.45 كجم مع مج1 عند الفطام على الترتيب ، وبالتالي كان هناك تفوق معنوي فى معدل النمو اليومى من 146.2 جم مع مج1 الى 165.9 جم ، 178.6 جم مع مج2 ، ومج3 على التوالى محققة معد تحسين قدرة 13.5% ، 22.2% مع مج 2، مج3 مقارنة بمجموعة الكنترول (مج1).

عدد الكيلوجرامات المولودة لكل أم كانت أفضل وبدرجة معنوية فكانت 3.18كجم/أم ، 3.95 كجم/أم مع مجموعات المعاملة مج 2 ن مج 3 على الترتيب مقارنة 2.68كجم/أم مع الكنترول (مج 1). كذلك عدد الكيلوجرامات المفطومة لكل أم كانت أفضل وبدرجة معنوية فى مج 2 (14.05 كجم/أم) ، ومج 3 (17.8 كجم/أم) مقارنة بالكنترول (11.45 كجم/أم) مما انعكس على تحسين الكفاءة الاقتصادية لمجموعات المعاملة مج 3، ومج 2 بالمقارنة بمجموعة الكنترول مج1. أظهرت النتائج تفوق معنوي فى معدل النمو اليومى لحملان الرحمانى من عمر الفطام (60 يوم) حتى عمر 180 يوم فكانت 114.6 جم/يوم ، 123.6 جم/يوم مع المعاملات T2 ، T3 مقارنة بمجموعة المقارنة T1 فكانت 105.6 جم/يوم وبالتالي كان لها مردود اقتصادي.

توضح هذه الدراسة أن استخدام خميرة اللاكتشر فى علائق النعاج الرحمانى أثناء الفترة الأخيرة من الحمل وفترة رضاعة نتاجها وكذا فترة نمو حملان الرحمانى بعد الفطام له تأثير ايجابي على التمثيل الغذائي فى الحيوان وانعكس ذلك على أوزان الميلاد والفطام ومعدل النمو اليومى مما أدى الى تحسين واضح فى إنتاجية واقتصادية الأمهات متمثلا فى عدد الكيلوجرامات المفطومة لكل أم وأيضا زيادة معدل النمو اليومى للحملان مما يحقق منفعة اقتصادية فى قطعان الأغنام الرحمانى.

قام بتحكيم البحث

أ.د / أحمد زكى محرز	**كلية الزراعة – جامعة المنصورة**
أ.د / فاتن فهمى أبو عمو	**معهد بحوث الأنتاج الحيوانى**