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EFFECT OF ADDITION DRY BREAD YEAST (*SACCHAROMYCES CEREVISIAE*) AND PROBIOTIC ON GROWTH, CARCASS CHARACTERISTICS AND SOME RUMEN AND BLOOD PARAMETERS IN AWASSI LAMBS

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ABSTRACT

This study was conducted In Animal Production Department fields, at college of agriculture and forestry, University of Mosul, by using 24 awassi male lambs average body weight 26.43± 2.46 kg and their ages ranged 5-6 months, lambs were divided into four treatments and fed ration consisting of barley, wheat bran, wheat straw and urea. The lambs were fed the first treatment (control) without additives, while 10 g/lamb/day dry bread yeast (*saccharomyces cerevisiae*) was added to the second treatment, 10g/lamb/day of probiotic was added to the third treatment, and the fourth treatment was added in a mixture of 5 g dry bread yeast and 5 g probiotic/lamb/day. The results were showed that daily feed intake of feed was 999, 1171, 1004, 1104 g/lamb/day, daily body weight gain increased significantly($P<0.05$) 129, 201, 152, 205 g/lamb/day. Hot carcass weight increased ($P<0.05$) in the second and third treatment as compared first (control) 19.706, 23.750, 21.380, 24.516 kg. Also results indicated that there were a significant differences ($P <0.05$) for the third and fourth treatments in rumen pH after 2 hours of feeding and were 5.43, 5.78, 6.11 , 5.97 respectively. No significant differences were noted in serum parameters. Through the results, it is noted that most of the productive representative of the additive treatments of dry bread yeast (*saccharomyces cerevisiae)* are added.

Keywords: carcass characteristics, *saccharomyces cerevisiae*,probiotic, sheep.

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INTRODUCTION

The high success of animal husbandry projects in general and productivity in them depends on the difference between expenses and financial inputs as profits. Nutrition costs constitute the largest share (about 65-70%) (Lazem *et al.*,2012). of those expenses due to increased demand, scarcity of feed and high costs due to drought and competition between humans and animals. This is why it is geared towards increasing animal productivity. Studies have directed towards exploitation and attempting to improve feed materials to obtain optimal production by increasing the efficiency of feed utilization.(Mohanna *et al.*, 2009) Studies have tended to probiotic,which may lead to the creation of a microbial balance in the rumen, and then an increase in the digestion of feed stuffs, Increase the feed intake and reduce

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find ways and means to improve the nutritional value of feed to increase its digestibility factor and improve efficiency in utilizing it. One of these means are the use of food additives such as dry bread yeast (*saccharomyces cerevisiae*) andthe concentration of ammonia in the rumen , *saccharomyces cervisiae* causes a change in some blood parameters such as total protein, glucose, and cholesterol.
in the blood serum (Muhammad 2016). in addition lambs supplemented with S.C. before weaning had good development in the rumen and ability for feeding which may reduce the production cost (Rajab *et al.*, 2013). Some researchers have also used the biological booster(probiotic), It is a mixture of bacteria, yeasts, protozoa and Other organisms that have been assembled and used to improve the state of the rumen and small intestine and has a beneficial effect on digestion and metabolism.

MATERIALS AND METHODS

This study was conducted in animal production department fields, at college of agriculture and forestry , Mosul University, by using 24 Awassi lambs, ages ranged 5-6 months, average body weight 26.43 ± 2.46 kg, the lambs were randomly divided into four treatments. Each treatment contained 6 lamb fed ad libitum with standard ration consisted mainly of barley, wheat bran, wheat straw and urea (Table 1). The first treatment was fed on the diet without additive (control), while 10g/lamb /day of dry bread yeast (*saccharomyces cerevisiae)* was added to the second treatment, third treatment was added 10 g / head / day of the Probiotic, while the fourth treatment was fed in addition to a mixture of 5 g dry bread yeast and 5g of probiotic daily. Dry bread yeast was purchased from the local market of Turkish origin (Altunsa) and probiotic from Vietnamese-made component of *lactobacills acidophillus , bacills subtilys , saccharomyces cerevisiae, aspergillus oryza*, vitamin

Table (1): Components and chemical composition of standard diet.

The ingredients	Percentage of feed ingredients
Barley	64
Wheat bran	29
wheat Straw	5
Urea	1
Salt + lime stone	1
%Chemical composition of diet	
Dry matter	93.74
Organic matter	95.03
Crude fiber *	9.82
Ether extract	2.74
Crude protein	16.22
Metabolizable energy Kcal/Kg	2664

* Calculated on the basis of dry matter, as stated in Al-Khawaja et al. (1978).

A, D3, B1, Folic Acid, Niacin . After 90 day of study lambs were fasted for 12 hours, weighed then slaughtered and hot carcass were recorded after that carcasses were split longitudinally at midline into two half's , longissimus muscle was from the left side between ribs 12 and 13 according to (Everitts and Jurry 1966 and Sents *et al.,* 1982). chemical analysis of diet was done as stated in (A.O.A.C 2002).

Blood samples were taken from the jugular vein according to Jain et al (1987) serum were separated directly using centrifuge (4000 rpm) for 10 minutes and kept under freezing until analysis . The total protein concentration, glucose, cholesterol, triglycerides and urea in the blood serum were estimated using the French manufactured (Biolabo) kits by spectrophotometer (Auto-analyzer, RA-1000, UK). rumen liquor about 200 ml were collected using suction pump (Baily and Scott, 1998) and pH measure directly then filtered through four layer of gauze , to each 20 ml of rumrn liquor 2 ml of 6 normality was added for ammonia determination and 9 ml of 10% volume /volume formalin were added to 1 ml of rumen liquor for bacterial and protozoa . as mentioned by Shamoon (1983). Rumen liquid ammonia was estimated by Legleiter et al., (2005) according to Broderick and Kang (1980). The numbers of bacteria and protozoa were estimated according to the study of Atlas et al., (1995). Statistical analysis of experiment data was performed using a complete randomized design (CRD) to analyse the variance of data rates between coefficients for a one-way experiment as stated in Dawood et al., (1990) according to the following mathematical model:

$Yij = \mu + Ti + E ij$

The results were statistically analysed by applying the statistical analysis system (SAS 2001) using complete random design (CRD).The Duncan test was conducted to measure the significance of the differences between the averages (Duncan 1955).

RESULTS AND DISCUSSION

Table (2) indicate that daily feed intake was 999, 1171, 1004, 1104 g / head / day, respectively. feed conversion ratio 7.70, 5.80, 6.57 ,5.37 respectively, as well as significantly ($p < 0.05$) in daily and total gain, the second treatment, as compared first and third treatments this improvement may have been due to an increase in the number of microorganisms to increasing its digestive enzymes and converting them into microbial protein and thus increasing its absorption upon reaching the small intestine. These results are consistent(T2) with the results obtained by Haddad and Goussons (2005),Estrada *et al.,* (2013). and he did not agree with The researchers Hillal *et al.,* (2011) and These results are consistent(T3) with the results obtained by Al-Issawi (2012)., Hillal et al., (2011). and he did not agree with The researchersand Hassan et al., (2009),and Table No. (2) indicates To a significant increase ($p < 0.05$) in the hot carcass weight in the the second and fourth treatment compared to the control treatment. These results in favor of the *Saccharomyces cerevisiae* treatment were not consistent with the results of the researchers Tayeb and Yassin (2018), Estrada *et al*.,(2013). Al- Rubaie and Al-Qabbani (2011). Ding (2008). and Gomes *et al.,* (2009). Dressing percentage results (53.000,53.858,53.571,55.208%) and Eye

longissimus dorsi muscle area

Table (2): Effect of the addition of *Saccharomyces cerevisiae* and probiotic on growth and the characteristics of the carcass.

Treatment	T1	T2	T3	T4
Initial weight kg	26.416 a ±1.331	26.416 a ±0.700	26.500 a ±0.577	26.416 a ±0.637
Final weight kg	38.166 b ±1.222	44.583 a ±1.028	40.250 b ±1.116	44.916 a ±1.098
Total gain weight kg	11.750 b ±1.763	18.166 a ±1.314	13.750 b ±1.116	18.500 a ±1.154
Daily gain weight kg	129 b ± 0.019	201 a ± 0.014	152 b ± 0.030	205 a ± 0.012
Daily feed intake g/day	999	1171	1004	1104
Feed conversion kg feed / kg weight	7.70	5.80	6.57	5.37
Hot Carcass weight	19.706±0.57b	23.750±1.31a	21.380±1.23ba	24.516±1.09a
Dressing percentage %	53.000±1.711 a	53.858±0.562a	53.571±1.482a	55.208±0.873a
Eye muscle area cm^2	15.500± 1.75 a	15.750±2.25a	16.833±1.54a	18.083±1.29 a

*Means in the same row with different superscripts are significantly different($p < 0.05$).

(15.500,15.750,16.833,18.083cm^2) were no significant differences between treatments. These results are consistent with Tayeb and Yassin (2018)., Shams El-Din *et al.,* (2014)., Lazim *et al.,* (2012)., Nasser et al., (2012)., al-Rubaie and al-Qabbani (2011). and Gomes *et al.,* (2009). As for the results of the eye muscle area, the differences did not reach the level of significance between the treatments. Table No. (3) indicates there were no significant differences between the treatments in Rumen liquor pH before feeding, but after two hours of feeding the third and fourth treatment recorded a significant increase ($p < 0.05$) in pH as compared control 5.43, 5.78 , 6.11 , 5.97, respectively Probiotics may have an important role in raising pH rumen fluid .These results are consistent with the results of Tayeb and Yassin (2018), Mousa (2012). and. Hillal et al., (2011), but effect of the probiotic was different with Soliman (2016)., Abdul Qudir (2014). and Hillal et al., (2011).Table No. (3) indicates that there were no significant differences between the treatments in the ammonia concentration of the rumen liquid before feeding reached 0.440,0.998,0.560,1.321 Mmol/dl, respectively. It was significant differences between the treatments ($p < 0.05$) in ammonia concentration after two hours for feeding has reached 0.551,1.675,0.930,1.726 Mmol/dl, respectively, the results did not agree with Muhammad and Saeed (2019)., Tayeb and Yassin

Table (3): Effect of adding *Saccharomyces cerevisiae* and Probiotic on the qualities of rumen liquid.

Treatment	T1	T2	T3	T4
Rumen Liquor pH before feeding	6.11±0.12 a	6.02± 0.28a	6.45± 0.12a	6.65± 0.16a
Rumen Liquor pH after feeding	5.43± 0.03b	5.78±0.24ab	6.11±0.06a	5.97±0.07a
Ammonia concentration before feeding Mmol/dl	0.440±0.21a	0.998±0.12a	0.560±0a	1.321±0.45a
Ammonia concentration after feeding Mmol/dl	0.551±0.17b	1.675±0.25a	0.930±0.07b	1.726±0.22a
numbers of bacteria before feeding / ml rumen Liquor x^{10}	5.80±0.65a	7.95±1.60a	6.05±2.99a	4.15±1.68a
numbers of bacteria after feeding / ml rumen Liquor x^{10}	5.50±1.09ab	7.15±0.18a	3.90±1.43ab	2.75±1.41b
numbers of protozoa before feeding / ml rumen Liquor x^{9}	0.386±0.07a	0.769±0.10a	0.672±0.16a	0.595±0.21a
numbers of protozoa after feeding / ml rumen Liquo x^{9}	1.390±0.22a	1.490±0.07a	0.850±0.10b	1.264±0.07ab

*Means in the same row with different superscripts are significantly different($p < 0.05$).

(2018)., Soliman (2016)., Abdul Qadir (2014)., Mousa (2012)., Hillal *et al.*, (2011).and Ding (2008). However. Table No. (3) indicates there were no significant differences between the treatments in Bacterial and protozoan numbers before feeding0.386, 0.769, 0.672, 0.595 $\times 10^{10}$ in a row. After 2hr of feeding significant differences were noted the number of bacteria and protozoa between treatments and highest number was noted when lambs fed with yeast supplement 1.390, 1.490, 0.850 ,1.264$\times$ 10^{10}, respectively. , (T2) are consistent with Zeliko (2010). He disagreed with Tayeb and Yassin (2018). And Gallip (2006). Table No. (4) Showed no significant effect of additive in serum concentrations of triglycerides, glucose and urea. Yeast additive caused decrease in serum cholesterol significantly as compared control and probiotic 44.13, 28.70, 9.71 and 14.8 mg / 100ml respectively. on other hand the additive led to a significant increase in serum total protein 6.732 , 6.490 and 6.692g/100ml as compared control 6.016g/l The results of the second treatment of *Saccharomyces cerevisiae* were consistent with Tayeb and Yassin (2018)., Al jassim et al., (2018). and Al-Issawi (2012)., but did not agree with Hussein (2014).

Table (4): Effect of using *Saccharomyces cerevisiae* and Probiotic on some blood traits in Awassi lambs.

Treatment	T1	T2	T3	T4
Triglycerides mg/100ml	14.5±3.4a	8.63± 1.7a	9.71± 2.8a	14.8±3.3a
Cholesterol mg/ 100ml	44.13±5.3a	28.70±4.5b	43.39±2.4a	31.26±5.4ab
glucose mg/ 100ml	62.82±4.1a	61.79±2.3a	62.44±3.9a	61.25±2.9a
Urea mg/ 100ml	43.73±3.1a	48.09±2.7a	45.80±5.0a	45.39±1.9a
total protein g/100ml	6.016±0.14b	6.732±0.11a	6.4.90±0.19a	6.692±0.09a

*Means in the same row with different superscripts are significantly different($p < 0.05$).

تأثير إضافة خميرة الخبز الجافة*(saccharomyces cerevisiae)* والمعزز الحيوي على النمو وصفات الذبيحة وبعض صفات الكرش والدم في الحملان العواسية

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الخلاصة

أجريت هذه الدراسة باستخدام الحملان العواسية، متوسط أعمارها 5 - 6 أشهر ومتوسط أوزانها 26.437± 2.46 كغم. غذيت الحملان في كل المعاملات على عليقة تكونت من الشعير ونخالة الحنطة وتبن الحنطة واليوريا. غذيت حملان المعاملة الاولى (سيطرة) بدون اضافات، بينما تم اضافة 10 غم / حمل / يوم خميرة الخبز الجافة لحملان المعاملة الثانية، واضافة 10 غم / حمل/ يوم معزز حيوي للمعاملة الثالثة والمعاملة الرابعة تم فيها اضافة خليط مكون 5 غم خميرة الخبز الجافة و5 غم معزز حيوي / حمل / يوم. بلغ المتناول اليومي للعلف 999 و1171 و1004 و1104 غم / راس / يوم، والزيادة الوزنية بالوزن 129 و201 و152 و205 غم / راس / يوم. ولم تشر معدلات نسبة التصافي ومساحة العضلة العينية اي فروق معنوية. اشارت النتائج الى وجود تحسن معنوي ($P< 0.05$) للمعاملتين الثانية والرابعة لوزن الذبيحة الحار23.750 ,21.380 , 24.516 ,19.706 كغم على التوالي. اشارت النتائج الى وجود فروق معنوية ($P<0.05$) لمعاملتي الثالثة والرابعة في الأس الهيدروجيني لسائل الكرش بعد التغذية وقد بلغت المعاملات 5.43 و5.78 و6.11 و5.97 على التوالي، اشارت النتائج الى عدم وجود فروق معنوية في بعض صفات الدم. من خلال النتائج يلاحظ تفوق في معظم الصفات الانتاجية لمعاملات الاضافة لخميرة الخبز الجافة.

الكلمات المفتاحية، صفات الذبيحة، خميرة الخبز الجافة، المعزز الحيوي، الأغنام.

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