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EFFECT OF YEAST PREPARATION SUPPLEMENTATION TO THE DIETS ON PRODUCTIVE AND REPRODUCTIVE PERFORMANCE OF LOCAL LAYING HENS

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ABSTRACT

The present study was conducted to investigate the productive and reproductive performance of two local laying hen strains (Gimmizah and Mamourah) fed diets supplementation diets with yeast preparation. Three hundred laying hens (150 hens Gimmizah and 150 hens Mamourah strain) 28 week-old were distributed into two groups. Each experiment at group were divided into five sub-group, the 1st group fed on commercial layer diet as a control basal diet, the 2nd group fed on basal diet +1 kg bio-buds (BB) / ton, the 3rd group fed on basal diet +2 kg bio-buds (BB) / ton, the 4th group fed on basal diet +1 kg yeast (Y) / ton and 5th group fed on basal diet +2 kg yeast (Y) / ton.

The results indicated that, supplementation Gimmizah hens diets with yeast preparation (BB or Y) at levels of (1 and 2 mg/kg diet) improved significantly daily feed intake (FI), feed conversion (FC), egg number (EN), egg weight (EW), egg mass (EM), Shell weight, yolk index, yolk color, Hough units and yolk cholesterol (mg/gm yolk). Concerning the dietary yeast levels, shell weight (%) were heaver significantly with layer hen strains feed diet supplemented with Bio-buds (BB) than in the yeast (Y). Feed intake and feed conversion layers fed on the diets content (Y) a significantly higher compared to those fed diets content (BB), the daily feed intake values of layers significantly decreased due to increasing dietary yeast levels. Significant improvement was recorded in EN with the increase in dietary yeast level.

Supplementation Mamourah hens diets contain (BB) laid significantly ($P \leq 0.05$) effect on EN, EW and EM in which the BB more egg than those fed diets contain (Y) While, the worst value recorded by layers fed the 0mg/kg level in BB or Y with Gimmizah strain. Shell thickens (mmx100), yolk color and Hough unit were significantly affected by layer hen strains.

In conclusion, the results of the present study indicated that, adding (Bio Buds) and (yeast) on commercial diets for Gimmizah and Mamourah strain may improve the productive and reproductive performance.

INTRODUCTION

Feed is the major item of cost in the production of poultry meat and eggs. We need to use the natural products in poultry ration to increase production performance. Supplementation of natural components in poultry ration as now widely distributed in the world. Therefore, probiotics have been used as a natural compounds and alternative of antibiotics as promoters. Probiotic have been introduced as a feed additive. Some trials have shown that this component improves bird performance and decrease viability rates.

Aspergillus oryzae (AO) and yeast, particularly *Saccharomyces cerevisiae*, have been used as probiotic by many workers (Kautz and Arens,

1998). Yeast culture (*Saccharomyces cereviside*)contains large amount of yeast metabolites.components inhibiting harmful bacteria, altering microbial metabolism and decrease intestinal pH and use as probiotics (Makled, 1991 and Miles and Bootwella, 1991). Also, it can be defined as organisms and substances, which contribute to intestinal flora and prevents diarrheas (Marionnet and Lebas, 1990) and may replace of antibiotics (Ganguli, 1988).

The practical benefits from use of yeast culture in poultry include: improvements feed efficiency, shell quality, and semen quality in breeder males and decrease in embryo mortality Lyons (1989) and Tawfeek and Marai (1997). Day et al., (1987) noticed no effect on body weight or weight gain in White Leghorn at 29 weeks of age through 308 days, when 0.25 or 0.50% live yeast culture (LYC) were added to the basal diet. Nahashon et al., (1996) found no significant change in body weight gain of Dekalb XL single Com White Leghorn laying hens fed 1.100 or 2.200 ppm *Lactobacillus*.

Yeast culture products had no significant effect on body weight and feed intake (Youssef et al., 2001 and Joo and Yoon 2002). However, Liu et al.,(2002) found that feed intake decresed significantly with supplement yeast culture products to the diet of Hyline pullets.

Tangendjaja and Yoon (2002) reported that, Yeast culture improved ($P<0.05$) feed conversion ratio (feed/egg) significantly up to 8.5% compared to control and showed little effect on feed intake when Lohmann Brown layers (20 weeks of age) were fed on diets containing 0.0, 0.1, 0.2 or 0.3% yeast culture products.

Therefore, the present study was conducted to investigate the effect of yeast preparation supplemental to the diets on productive and reproductive performance of two local strains Gimmizah and Mamourah.

MATERIALS AND METHODS

The experimental work was carried out at Gimmizah Poultry Research Farm, belonging to Agriculture Research Center, Ministry of Agriculture;

The present study was conducted to investigate the productive and reproductive performance of two local laying hen strains (Gimmizah and Mamourah) fed diets supplementation diets with yeast preparation. Three hundred laying hens (150 hens Gimmizah and 150 hens Mamourah strain) 28 week-old were distributed into two groups. Each experiment at group were divided into five sub-group, the 1st group fed on commercial layer diet as a control basal diet, the 2nd group fed on basal diet +1 kg bio-buds (BB) / ton, the 3rd group fed on basal diet +2 kg bio-buds (BB) / ton, the 4th group fed on basal diet +1 kg yeast (Y) / ton and 5th group fed on basal diet +2 kg yeast (Y) / ton.

Bio-buds consisted of dried *Saccharomyces cerevisiae* fermentation product, corn distillers with solubles, roughage products, calcium carbonate, and soybean oil, produced by BROOKSIDE AGRA L.C., U.S.A.

Yeast preparation applied contained ingredient from Natural yeast (*Saccharomyces cerevisiae*) and food grade emulsifier.

Birds were individually caged and fed *ad-libtum* on commercial layer ration. The composition and analyses of the commercial basal diet are shown in (Table 1).

Table (1): Composition and chemical analyses of the basal diets.

Ingredients	(%)
Yellow corn	**67.90**
Soybean meal, 44 %	**23.00**
Limestone	**7.00**
Dicalcium phosphate	**1.50**
Common salt (NaCl)	**0.30**
Vit. & Min. mix.*	**0.25**
Methionine	**0.05**
Total	**100**
Calculated values:**	
Crude protein, %	**16.119**
ME,Kcal/kg	**2787.675**
Crude fiber,%	**3.102**
Ether Extract,%	**2.762**
Calcium, %	**3.300**
Available phosphorus, AP %	**0.405**
Total phosphorus %	**0.671**
Lysine, %	**0.794**
Methionine,%	**0.314**
Methionine + cysteine %	**0.588**
Determined values*:**	
Dry matter, %	**90.112**
Crude protein,%	**15.815**
Crude fiber,%	**3.859**
Ether Extract,%	**2.511**
NFE%	**58.359**
Ash,%	**9.568**

***Vit.& Min. mix:. each 3kg contains: 10,000,000 IU Vit. A; 2,000,000 IU Vit D_3 10,000 mg Vit. E;1,000mg Vit. K; 1,000mg Vit. B1; 5,000mg Vit. B2; 1,500mg Vit B6; 10mg Vit. B12; 30mg; Niacin, 20 gm ; Panatothenic acid, 1gm, Biotin;I,000mg Folic acid;250,000mg choline chloride; 80gm manganese; 40gm iron; 40gm zinc; 2gm copper; 2gm iodine; 1gm Seleinium and 1gm cobalt.**

**** Calculated according to NRC (1994).**

***** Determined according to the methods of A.O.A.C (1980)**

All birds were kept under similar environment conditions and fresh water was available all the time and all hens were fed *ad libitum* for 90 days of production. Also, the birds were exposed to 16 hr of continuous light. Body weight and egg production were individually recorded/hen/day (HD), egg weight and feed intake were recorded weekly and presented based on 4 weeks period. Egg production was recorded. Egg quality measurements were included shape index, Haugh unit (HU), shell weight percentage and shell thickness. The eggs were collected for 7 days, starting after one month of the

experimental period and 3 times during the rest of the experimental period to measure the reproductive efficiency (fertility and hatchability) percentage.

Data were analyzed according to one- way analysis of variances was used to estimate the significant differences between treatments and Duncan's Multiple range test were calculated by using SPSS 10 (1997) computer program.

RESULTS AND DISCUSSION

Body weight (BW) and change in body weight :

Change in body weight results in (Table 2 , 3) indicated that live body weight and weight gain at different age studed were similrly for Gimmizah and Mamourah strains. Also, the data in (Table 2 , 3) showed that the live body weight and weight gain at different age studed was not affected significantly by the yeast preparation source and levels.

This result is inagreement with Youssef et al., (2001), who reported that yeast had insignificant effect on body weight throughout the experimental periods when fed Gimmizah laying hens on dry yeast *Saccharomyces cerevisiae* at levels 0.0, 0.5, 1.0 and 1.5 kg/ton diet, from 32 to 52 wks of age. However, Tangendjaja and Yoon (2002) showed little effect on body weight of Lohmann Brown layers at 20 weeks of age when fed on abased diet supplemented with 0, 0.1, 0.2 and 0.3% of a commercial yeast culture product for 20 weeks. Tollba and El-Nagar (2008) reported that antioxidants or yeast supplemented significant ($P \leq 0.05$) improvement of body weight gain with Dandarawy layers at 20 weeks of age .

Daily feed intake and Feed conversion (g. feed/g. egg mass):

Data in (Table 4 , 5) show that the daily feed intake and feed conversion at different age studied were not affected significant by hen strains (Gimmizah and Mamourah). Results in (Table 4) indicated that yeast preparation (BB and Y), and dietary yeast levels (1 and 2mg/kg diet) had significant effect on daily feed intake and feed conversion during the 12 weeks in production after 28 weeks of age. Feed intake and feed conversion of layers fed on the diets contains (Y) were a significantly ($P \leq 0.05$) higher than those fed diets contains (BB) during the 12 weeks in production after 28 weeks of age. Concerning the effect of dietary yeast levels, the daily feed consumption values of layers significantly decreased due to increasing dietary yeast levels. These results are in agreement with those reported by Tangendjaja and Yoon (2002) whom found a little effect on feed intake and improved ($P<0.05$) feed conversion ratio (feed/egg) significantly by up to 8.5% compared to control when fed Lohmann Brown layers at 20 weeks of age on diet containing 0.0, 0.1, 0.2 and 0.3% yeast culture products. Also Haddadin et al., (1996) whom found that fed White Lohman laying hens for a 48-wk period on diet containing 0.0, 0.67, 2.0 or 0.4 cfu x 10^6g of *Lactobacillus acidophilus*. They elicited that, feed conversion was increased by 14.8% by treatment 3 compared with the control, while, treatment 2 gave the best feed consumption.

T2-3-4

Huthail and Najib (1996) showed that, feed intake and feed conversion were affected by the interaction between breed type and yeast level when fed Baladi (local) and White Leghorn hens at the age of 20 weeks on diet containing 0.0, 0.1, 0.2 or 0.3% yeast culture for 30 weeks. The best feed conversion values were obtained with 0.3% yeast for Baladi and 0.2% yeast for White Leghorn hens. Tollba and El-Nagar (2008) obtained an increasing feed intake and improvement in feed conversion when Dandarawy laying hens were fed diets supplemented with antioxidants or yeast.

(Stockland, 1993) indicated that, many of the beneficial affects attributed to yeast culture are associated with alterations in the digestive processes, which resulted in improvements in the efficiency of feed utilization.

Egg number (EN), Egg weight (EW), and Egg mass (g. egg/hen/day):

The effect source of yeast preparation (BB and Y), and dietary yeast levels (0, 1 and 2mg/kg diet) on hen-day eggs number (EN) in Gimmizah and Mamourah laying hens during the 12 weeks in production after 28 weeks of age had significant ($P \leq 0.05$) effect on egg number, egg weight and egg mass as shown in (Tables 6, 7 and 8). Mamourah hens that fed diets contain (BB) laid significantly ($P \leq 0.05$) effect on EN, EW and EM in which the BB more egg than those fed diets contain (Y). With the observation that EN , EW and EM were significantly higher with 2mg/kg and 1mg/kg dietary yeast levels than with 0mg/kg. On the other hand, EN , EW and EM were significantly higher with 2mg/kg and 1mg/kg dietary yeast levels than that of unsupplemented diet. Significant improvement was recorded in EN with the increase in dietary yeast level. The EN, EW and EM of 2mg/kg and 1mg/kg dietary BB levels and dietary Y levels with either strain being significantly superior than the other groups. While, the worst value recorded by Gimmizah strain layers fed the unsupplemented diet. However, results obtained referred to the dietary yeast level of BB and Y and 2mg/kg and 1mg/kg with either Gimmizah and Mamourah strain were satisfactory for egg number egg weight and egg mass during the 12 weeks in production after 28 weeks of age.

These results are in agreement with those reported by Thayer et al., (1978) whom reported that, diets containing live yeast culture resulted in increased egg production, egg weight when turkeys were fed phosphorus – deficient diets. Also, Youssef et al., (2001), noticed significant effect ($P<0.001$) on egg number when dry yeast was incorporated (at level 0.1%) in layer diets and were more acceptable than the other levels of yeast (0.5 and 1.5%). Huthail and Najib, (1996), Joo and Yoon (2002) and Liu et al., (2002) who found an improvement in egg weight for Hyline hens (20 weeks of age) when fed on diets containing commercial yeast culture product (Diamond VXP yeast culture) at levels 0, 0.1, 0.2 and 0.3%. Moreover, breeder broiler fed supplementation diet with Yea-Sacc (1g/kg feed) showed clear beneficial effects on egg production traits (Lyons, 1990; Gerendia et al., 1992 and Lim, 1992). Thayer et al., (1978) whom reported that, diets containing live yeast culture resulted in increased egg production, egg weight when turkeys were fed phosphorus – deficient diets. These results are in agreement with those reported by Thayer et al., (1978) whom reported that, diets containing live yeast culture resulted in increased egg production, egg weight when turkeys were fed phosphorus – deficient diets.

T5-6-7

t8-9

On the other hand, Brake (1991) found of no beneficial effect on egg production when broiler breeder fed diets containing live yeast culture at level 0, 0.01, 0.03 and 0.05%. Tollba and El-Nagar (2008) reported that antioxidants or yeast supplementation to Dandarawy layer diets significantly increased laying rate or egg mass but had no significant effect on egg weight.

Egg Quality Traits and Reproductive performance:

The effect of layer hen strains (Gimmizah and Mamourah), dietary yeast preparation (BB and Y) and dietary yeast levels (0, 1 and 2mg/kg diet) are presented in (Table 9).

The results showed that the shell thicknes (mmx100), yolk colour and Hough unit were significantly affected by layer hen strains. However, layer hen strains had no significant effect on egg shape index (%), shell weight (%), yolk index, yolk cholesterol (mg/gm yolk), fertility % and hatchability (%).

Results in (Table 9) showed that the shell weight (%) were heavier significantly with layer hen strains feed diet supplemented with Bio-buds (BB) than in the yeast (Y). However, the dietary yeast preparation (BB and Y) had no significant on egg shape index (%), shell thicknes (mmx100), yolk index, yolk index, yolk cholesterol (mg/gm yolk), fertility (%) and hatchability (%).

Shell weight, yolk index, yolk colour, Hough units and yolk cholesterol (mg/gm yolk) were higher significantly for layer hen strain supplemented with yeast preparation at levels 1 and 2mg/kg diet as compared with the control diet. However, Egg shape index (%), shell thicknes (mmx100) and reproductive performance (fertility % and hatchability %) were not affected . significantly by yeast culture preparation levels.

The same results were coincided with the findings of Radwan et al., (1995) found that, no improvement in shape egg index as a result of supplementing with Lacto-Sacc or Egg plus (1kg/ton feed). Tangendjaja and Yoon (2002) obtained a little effect on shell weight when Lohmann Brown layers fed diet containing 0, 0.1, 0.2 and 0.3% commercial yeast culture product. Joo and Yoon (2002) found that, Yeast culture had little effect on egg shell thickness of ISA Brown layers fed diet containing 0, 0.1, 0.2, 0.3% of yeast culture product for 17 week study. McDaniel (1990) who found that, no improvement in yolk index as a result of supplemented with Yea-Sacc (1g/kg feed).

Tangendja and Yoon (2002) who found, little effect on yolk color when Lohmann Brown layers fed diet containing 0, 0.1, 0.2 and 0.3% commercial yeast culture product. However, Woo-Lee (1999) and Youssef et al., (2001) reported that, no significant effect in yolk color score could be detected for Gimmizah layers fed on high level of yeast (1.5 kg/ton diet). Youssef et al., (2001) and Joo and Yoon (2002) whom found that, Yeast culture had little effect on Haugh unit when ISA Brown layers fed diets containing 0.0, 0.1, 0.2, 0.3% of yeast culture product for 17 week study. On the other hand, Woo-Lee (1999) did not find significant effect on Haugh unit when fed Lohmann Brown strain for 4wks period diet containing a commercial layer diet (control diet), diet contained the Natu-Fermen (NF) at levels 0.15% , 0.3% and diet contained AmaFerm at level 0.3%. Haddadin et al., (1996) found that, cholesterol values in yolk were decreased when White Lohman laying hens were fed for a 48-wk period with a basal diets supplemented with

Lactobacillus acidophilus at level 0, 0.67, 2.0 and 4.0 cfu 10^6 g compared with the control. Mc Daniel (1990) found no improvement in fertility (%) as a result of supplementing with Yea Sacc (1g/kg feed). Hosseini et al., 2006 and Tollba and El-Nagar 2008) whom found that addition of yeast in commercial layer hen diet had no positive effect on egg shell thickness, Haugh unit and egg quality.

On the other hand, breeder broiler fed supplementation diet with Yea-Sacc (1g/kg feed) had clear beneficial effects on fertility (%) and hatchability (%) traits (Lyons, 1990; Gerendia et al., 1992 and Lim, 1992).

In conclusion, the results of the present study indicated that, adding (Bio Buds) and (yeast) with levels of 1 or 2kg/ton on commercial diets for Gimmizah and Mamourah strain improved the productive and reproductive performance during the 12 weeks in production after 28 weeks of age.

REFERENCES

Association of Official Analytical Chemists, (A.O.A.C, 1980).Official Methods of Analysis. 13th Washington, D.C.USA.

Brake, J. (1991). Lack of effect of a live yeast culture on broiler breeder and progeny performance. Poultry Sci. 70:1037-1039.

Day, E. J.; B. C. Dilworth and S. Omar (1987). Effect of varying levels of phosphorus and live yeast culture in caged layer diets. Poultry Sci. 66:1402-1420.

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

Ganguli, N. C. (1988). Probiotics: A future feed additives for livestock. Indian Dairyman, India. 40(8): 505 – 510.

Gerendia, D.; Y. Gippert,; H. Istreuue and G. Feraucue (1992). Addition of Yea-Sacc, yeast culture or Lacto-Sacc to diet for New Hampshire Parent Stock. Biotechnology in the feed industry. Proceeding of Alltech's 8th Annual Symposium, 46 – 48.

Haddadin, M. S. Y.; S. M. Abdul-Rahman; E. A. R. Hashiamoun and R. K. Robinson (1996). The effect of *Lactobacillus acidophilus* on the production and chemical composition of hen's egg. Poultry Sci., 75: 491 – 494.

Hosseini, S.A., Lotfollahiaan, H., Kamyab, A. and Mahdavi, A. (2006). Study on the effect of yeast (*Saccharomyces cerevisiae SC47*) utilization on the commercil layer hens performance. Pak. J. Biol. Sci., 9:2346-2349.

Huthail, N. and H. Najib (1996). Effect of incorporating yeast culture Saccharomyces cerevisiae in to the Saudi Baladi and White Leghorn layer's diet. Journal-of-Applied-Animal-Research. 10 (2): 181-186.

Joo, Y. J. and I. Yoon (2002). Response of layers to supplemental yeast culture during post-peak production cycle. Poult. Sci., Vol. 81 (Suppl. 1), pp. 89, (382).

Kautz, W., and M. Arens (1998). What questions should feed manufacturers ask?: Choosing the right microbe. Feed Management, April 1998, Vol. 49, No. 4, 43-46.

Lim, A. M. H. (1992). Effect of diet quality and Yea-Sacc. 1026 on performance of commercial layers. Biotechnology in the feed industry, Proceedings of Allech's 8th Annual Symposium, x41 – x45.

Liu, Z. B.; G. H. Qi and I. Yoon (2002). Effect of yeast culture on production parameters and intestinal microflora in laying hens. Poult. Sci. J., Vol. 81 (Suppl. 1), pp. 89, (381).

Lyons (1989). The scientific basis for the fermentation product yeast culture. Milling Flour and Feed, pp 25 – 28.

Lyons, T. P. (1990). Biotechnology in the feed industry. Proceedings of Allech's 6th Annual Symposium, USA.

Makled, M. N. (1991). The potentials of probiotics in poultry feeds. A review. 3rd Scientific Symp. For animal, poultry and fish nutrition. Sakha, Kafr El-Sheikh, Egypt. 54- 68 pp.

Marionnet, D. and F. Lebas (1990). What is a probiotic. Cuniculture. Limpdes, Paris, No. 96: 225 – 258.

Mc Daniel, C. (1990). Effect of Yea-Sacc 1026 on hatchability of broiler breeders. Proceeding of Alltech's Sixth Annual Symposium, 477 – 480.

Miles, R. D. and S. M. Bootwella (1991). Direct-feed microbial in animal production . National feed ingredients Association. Desmomes, Iowa, USA.

Nahashon, S. N.; H. S. Nakaue and L. W. Mirosh (1996). Performance of single comb White Leghorn fed a diet supplemented with a live microbial during the growth and egg laying phases. Anim. Feed Sci. Tech. 57:25-38.

National Research Council " NRC "(1994). Nutrient requirements of poultry. 9th Ed. National Academy of Science Press, Washington, DC., USA.

Radwan, M. A.; G. A.Abd Allah; H. M. Fayek and M. A. Breiweah (1995). The effect of three types of feed additives on the productive performance of layers. First Egypt. Hung. Poult. Conf., 17 – 19 Sept. Alexandria, Egypt.

SPSS (1997). SPSS user's guide statistics Version 10. Copyright SPSS Inc., USA.

Stockland, W.(1993).Effect of yeast culture on reproductive performance of gilts over two ctycles and performance of their piglets. In Seventh annual European Lecture Tour, Alltech's Inc., 87 – 94.

Tangendjaja, B. and I. Yoon (2002). Effect of yeast culture on egg production and mortality in layer hens. Poult. Sci., Vol. 81 (Suppl. 1), pp. 89, (380).

Tawfeek M. I. and I. F. Marai, (1997). A review. Use of probiotics in small animal production. International Conference on Animal, Poultry and Rabbit production and health. Zagazig University., Egypt. 2 – 4 September, 1997, 71pp.

Thayer, R. H.; F. F. Burkitt; R. D. Morrison and E. E. Murray (1978). Efficiency of utilization of dietary phosphorus by caged turkey breeder hens when fed rations supplemented with live yeast culture. Okla. Agric. Exp. Stn. Res. Rep. MP, 103 : 173 – 181.

Tollba A.A.H. and A.H.I. El-Nagar (2008). Increasing stocking density of Egyptian laying hens by using: 1- Antioxidants & live yeast. Egypt. Poult. Sci., J. Vol. 28(11): 575 – 598.

Woo-Lee, K. (1999). Effect of *Aspergillus Oryzae* on fecal microflora, egg qualities and nutrient metabolizabilities in layers. M. Sc. Thesis, Chungnam National University, USA.

Youssef, S. Mervat; Breakaa, A. Mervat; Abou El-Ella, Y. Nazala and A. Abdalla (2001) performance of Gimmizah laying hens fed various levels of phosphorus and dry yeast (*Saccharomyces cerevisiae)*. Egypt. Poult. Sci., J. Vol. 21(IV): 977 – 996.

تاثير استخدام الخمائر على الآداء الإنتاجي والتناسلى للدجاج المحلى البياض

حمـــدى عبـــد العزيـــز محمـــد ابـــو خشـــبة*, نبيـــة صـــبرى اســـحاق, صبرية بدوى ابو السعود**و عبير عزت النجار***

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أجريت هذه الدراسة بهدف دراسة تأثير إضافة مستحضرات الخمائر للعليقة علي الأداء الإنتاجي والتناسلى علي نوعين من الدجاج المحلي البياض (الجميزة والمعمورة).

استخدم في هذه الدراسة ٣٠٠ دجاجة عمر ٢٨ أسبوع (١٥٠ دجاجة جميزة ، ١٥٠ دجاجة معمورة) وتم تسكين الطيور في أقفاص فردية و قسمت طيور كل سلالة إلي ٥ مجموعات تجريبية المجموعة الاولى تم تغذيتها على عليقة انتاجى بياض تجارية (مجموعة الكنترول), وتم تغذية المجموعة الثانية على عليقة الكنترول +١ كجم/طن عليقة من Bio-Buds, وتم تغذية المجموعة الثالثة على عليقة الكنترول +٢ كجم/طن عليقة من Bio-Buds,بينما تم تغذية المجموعة الرابعة على عليقة الكنترول +١ كجم/طن عليقة من Yeast, وغذية المجموعة الخامسة على عليقة الكنترول +٢ كجم/طن عليقة من Yeast

وكانت أهم النتائج مايلى :

أدى إضافة الخمائر (Bio Buds او Yeast) بمستوى ١او ٢ كجم/طن عليقة إلى تحسن معنوياً على كلا من الغذاء المأكول اليومى ومعدل التحويل الغذائى و عدد البيض الناتج ووزن البيض وكتلة البيض الناتج و وزن القشرة ودليل الصفار ولون الصفار ووحدة هاو و محتوى الصفار من الكوليسترول. نتج عن اضافة BIO-Buds زيادة وزن القشرة مقارنة باضافة Yeast بينما كان الغذاء المأكول اليومى ومعدل التحويل الغذائى احسن معنويا مع Yeast مقارنة BIO-Buds , لوحظ ان الغذاء المأكول اليومى تقل معنويا بزيادة مستوى الخمائر فى العلائق بينما يزيد عدد البيض الناتج معنويا بزيادة مستوى الخمائر.

أدى اضافة كلا من Yeast و BIO-Buds الى علائق دجاج المعمورة تاثيرا معنويا على عدد البيض الناتج ووزن البيض وكتلة البيض الناتج وأن اضافة BIO-Buds أفضل من اضافة Yeast بينما كانت اسوا النتائج مع عليقة الكنترول فى سلالة الجميزة. وجد ان سمك القشرة ولون الصفار ووحدة هاو تتاثر معنويا بالسلالة.

يستخلص من الدراسة ان اضافة الخمائر إلى علائق الدجاج البياض أدي إلى تحسن معدل الأداء الإنتاجي والتناسلي في كلا من سلالتى الجميزة والمعمورة.

Table 2: Effect of yeast preparation on body weight (kg) of Gimmizah and Mamourah strain at different ages

Strain	Gimmizah (G)					Mamourah (M)					SEM
Yeast preparation	control	bio-buds (BB)		Yeast (Y)		control	bio-buds (BB)		Yeast (Y)		
Level BB & Y gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	
28 to 32 (wk)	1.595	1.612	1.598	1.605	1.602	1.584	1.587	1.610	1.616	1.582	0.073
32 to36 (wk)	1.614	1.624	1.625	1.632	1.627	1.603	1.606	1.624	1.642	1.595	0.072
36 to 40 (wk)	1.648	1.650	1.654	1.664	1.653	1.634	1.646	1.645	1.670	1.626	0.106
28to 40 (wk)	1.665	1.674	1.693	1.684	1.671	1.661	1.666	1.673	1.689	1.654	0.134
Overall strain effect	(G) 1.677					(M) 1.674					0.137
Overall yeast effect	(BB) 1.676					(Y) 1.676					0.131
Overall levels effect	(O gm/kg) 1.663			(1gm/kg) 1.678				(2gm/kg) 1.672			0.134

a-b-c Means with different letters within the same row are significantly different at P≤0.05

Table 3: Effect of yeast prepāration change in body weight (g) of Gimmizah and Mamourah strain at different ages

Strain	Gimmizah (G)					Mamourah (M)					SEM
Yeast preparation	control	bio-buds (BB)		Yeast (Y)		control	bio-buds (BB)		Yeast (Y)		
Level BB & Y gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	
28 to 32 (wk)	19.00	12.02	27.15	28.00	25.33	18.67	15.52	20.70	26.81	19.20	0.326
32 to36 (wk)	34.02	26.10	28.67	32.08	26.09	31.03	40.01	21.30	28.67	31.02	0.009
36 to 40 (wk)	17.45	24.05	39.67	20.04	18.18	27.52	20.06	27.90	18.91	28.06	0.002
28to 40 (wk)	70.61	62.17	95.98	96.12	69.33	76.61	78.33	63.45	74.56	72.16	0.008
Overall strain effect	(G) 78.84					(M) 73.02					0.010
Overall yeast effect	(BB) 74.98					(Y) 78.98					0.011
Overall levels effect	(O gm/kg) 73.61			(1gm/kg) 77.79				(2gm/kg) 75.22			0.009

a-b-c Means with different letters within the same row are significantly different at P≤0.05

Table 4: Effect of yeast prepāration on feed intake of Gimmizah and Mamourah strain at different ages

Strain	Gimmizah (G)					Mamourah (M)					SEM
Yeast preparation	control	bio-buds (BB)		Yeast (Y)		control	bio-buds (BB)		Yeast (Y)		
Level BB & Y gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	
28 to 32 (wk)	112.63 a	107.30 de	109.83 cd	111.30 ab	110.17 cd	113.17 a	106.27 e	108.47 cd	111.37 bc	109.83 bc	0.325
32 to36 (wk)	121.33 a	117.20 d	115.00 e	119.13 bc	118.50 cd	122.66 a	117.83 de	114.08 f	118.33 ed	120.00 bc	0.242
36 to 40 (wk)	126.50 a	120.00 d	121.67 cd	123.17 bc	121.00 d	124.42 a	120.08 d	117.92 e	123.17 bc	121.33 d	0.258
28to 40 (wk)	120.15 a	114.83 d	115.50 d	117.86 b	116.55 c	120.08 a	114.72 d	113.49 e	117.62 b	117.05 bc	0.785
Overall strain effect	(G) 116.97					(M) 116.59					0.780
Overall yeast effect	(BB) 114.62 b					(Y) 117.27 a					0.788
Overall levels effect	(O gm/kg) 120.11 a			(1gm/kg) 116.25 b				(2gm/kg) 115.64 b			0.791

a-b-c Means with different letters within the same row are significantly different at P≤0.05

Table 5: Effect of yeast preparation on feed conversion of Gimmizah and Mamourah strain at different ages

Strain	Gimmizah (G)					Mamourah (M)					SEM
Yeast preparation	control	bio-buds (BB)		Yeast (Y)		control	bio-buds (BB)		Yeast (Y)		
Level BB & Y gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	
28 to 32 (wk)	5.14	4.17	3.98	4.70	4.59	4.86	4.30	4.18	5.48	4.48	0.358
32 to36 (wk)	4.43e	3.74bcd	3.26ab	3.72bcd	3.50abcd	3.87d	3.36abc	3.07a	3.47abcd	3.55bcd	0.066
36 to 40 (wk)	4.53c	3.48b	3.27ab	3.69b	3.55b	3.72b	3.26ab	3.01a	3.42ab	3.39ab	0.070
28to 40 (wk)	4.70b	3.79a	3.50a	4.03b	3.88ab	4.15ab	3.64a	3.42a	3.80a	3.80a	0..176
Overall strain effect	(G) 3.98					(M) 3.76					0.355
Overall yeast effect	(BB) 3.58a					(Y) 3.87b					0.357
Overall levels effect	(O gm/kg)4.42b			(1gm/kg) 3.81ab				(2gm/kg) 3.65a			0.370

a-b-c Means with different letters within the same row are significantly different at P≤0.05

Table 6: Effect of yeast preparation on egg number of Gimmizah and Mamourah strain at different ages

Strain	Gimmizah (G)					Mamourah (M)					SEM
yeast preparation	control	bio-buds (BB)		Yeast (Y)		control	bio-buds (BB)		Yeast (Y)		
Level BB & Y gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	
28 to 32 (wk)	13.66	15.40	16.03	14.23	14.40	14.00	14.76	15.36	14.60	14.68	1.73
32 to36 (wk)	15.50c	19.00b	19.30ab	18.00c	19.00b	17.56c	19.13b	20.40a	19.20b	18.83b	1.35
36 to 40 (wk)	15.63c	18.60b	19.93ab	18.57b	18.70ab	18.30b	20.00ab	21.00a	20.00ab	19.80ab	1.06
28to 40 (wk)	44.79b	53.00a	55.26a	50.80ab	52.10a	49.86ab	53.89a	56.76a	53.80a	53.31a	4.27
Overall strain effect	(G) 51.19b					(M) 53.52a					4.73
Overall yeast effect	(BB) 54.73a					(Y) 52.49b					4.81
Overall levels effect	(O gm/kg)47.33b			(1gm/kg) 52.86ab				(2gm/kg) 54.35a			4.83

a-b-c Means with different letters within the same row are significantly different at P≤0.05

Table 7: Effect of yeast preparation on egg weight of Gimmizah and Mamourah strain at different ages

Strain	Gimmizah (G)					Mamourah (M)					SEM
yeast preparation	control	bio-buds (BB)		Yeast (Y)		control	bio-buds (BB)		Yeast (Y)		
Level BB & Y gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	O gm/kg	1gm/kg	2gm/kg	1gm/kg	2gm/kg	
28 to 32 (wk)	47.93b	48.90ab	49.20ab	48.22ab	48.37ab	48.87ab	49.00ab	49.62a	48.84ab	48.90ab	0.11
32 to36 (wk)	49.49c	50.4ab	51.13a	49.86bc	49.83bc	50.44abc	51.23a	50.96a	49.75bc	50.16abc	0.09
36 to 40 (wk)	50.11c	51.93ab	52.43a	50.43cd	51.10bcd	51.06bcd	51.50abc	52.09ab	50.60cd	50.60cd	0.12
28to 40 (wk)	49.17d	50.49ab	50.92a	49.83cd	49.76cd	50.13bc	50.57ab	50.89a	49.86cd	49.88bc	0.17
Overall strain effect	(G) 50.03					(M) 50.26					0.15
Overall yeast effect	(BB) 50.72a					(Y) 49.83b					0.16
Overall levels effect	(O gm/kg)49.65b			(1gm/kg) 50.19a				(2gm/kg) 50.36a			0.16

a-b-c Means with different letters within the same row are significantly different at P≤0.05

Table 8: Effect of yeast prepāration on egg mass of Gimmizah and Mamourah strain at different ages

Strain	**Gimmizah (G)**					**Mamourah (M)**					**SEM**
yeast preparation	**control**	**bio-buds (BB)**		**Yeast (Y)**		**control**	**bio-buds (BB)**		**Yeast (Y)**		
Level BB & Y gm/kg	**O gm/kg**	**1gm/kg**	**2gm/kg**	**1gm/kg**	**2gm/kg**	**O gm/kg**	**1gm/kg**	**2gm/kg**	**1gm/kg**	**2gm/kg**	
28 to 32 (wk)	23.3 8b	26.16ab	28.16a	24.51ab	24.87ab	24.43ab	25.83ab	27.22a	25.47ab	25.64ab	0.11
32 to36 (wk)	27.39b	34.20b	35.24ab	32.05ab	33.81ab	31.63ab	35.00ab	37.13a	34.11ab	33.73ab	0.09
36 to 40 (wk)	27.97c	34.39ab	37.32a	33.44b	34.13b	33.44b	36.78ab	39.07a	36.14ab	35.78ab	0.12
28to 40 (wk)	26.22c	32.50ab	33.50a	30.13b	30.86b	29.75bc	32.44ab	34.39a	31.93b	31.66b	0.17
Overall strain effect	(G) 30.49b					(M) 32.02a					0.15
Overall yeast effect	(BB) 33.05a					(Y) 31.14b					0.16
Overall levels effect	(O gm/kg)27.97b			(1gm/kg) 31.58a			(2gm/kg) 32..58a				0.17

a-b-c Means with different letters within the same row are significantly different at P≤0.05

Table (9): Effect of yeast preparation on egg quality, fertility and hatchability of Gimmizah Mamourah strain laying hens.

Variables			**Egg quality**							**Reproductive performaance**	
Strain	**Yeast preparation**	**Level BB & Y**	**Egg shape index (%)**	**Shell weight (%)**	**Shell thickens mmx100**	**Yolk index**	**Yolk Colour**	**Haugh Units**	*Yolk cholesterol (mg/gm yolk)*	**Fertility (%)**	**Hatchability (%)**
Gimmizah (G)	**control**	**O gm/kg**	0.75	6.03b	32.33a	0.41b	4.83b	81.33 b	30.89a	87.17	88.00
	Bio-buds (BB)	*1gm/kg*	0.74	6.57b	31.63ab	0.41b	5.08ab	86.16 ab	26.33b	87.66	88.63
		2gm/kg	0.73	6.38b	33.25a	0.42ab	4.92b	83.03 ab	26.00b	89.82	89.60
	Yeast (Y)	*1gm/kg*	0.75	6.65b	33.17a	0.44a	5.50ab	84.29 ab	28.00ab	87.82	88.36
		2gm/kg	0.76	6.84ab	32.38a	0.43ab	5.67ab	82.33 b	27.33ab	88.28	90.81
Mamourah (M)	**control**	**O gm/kg**	0.75	6.05b	30.04ab	0.42ab	4.83b	86.87 ab	28.78ab	85.25	90.00
	Bio-buds (BB)	*1gm/kg*	0.76	6.72b	30.96ab	0.44a	5.92ab	88.50 a	25.67b	87.60	91.34
		2gm/kg	0.77	7.71a	33.11a	0.45a	6.42a	84.25 ab	26.33b	89.70	92.20
	Yeast (Y)	*1gm/kg*	0.75	6.30b	31.88a	0.43ab	5.58ab	82.25 b	26.33b	87.22	89.97
		2gm/kg	0.77	6.22b	27.33b	0.42ab	6.00ab	83.67 ab	26.67b	89.30	90.30
Strain											
Gimmizah (G)			0.74	6.49	32.55a	0.42	5.20b	83.42b	27.71	88.15	88.88
Mamourah (M)			0.76	6.60	30.66b	0.43	5.75a	85.10a	26.75	87.85	90.76
Yeast preparation											
Bio-buds (BB)			0.75	6.96a	32.23	0.43	5.58	85.49a	26.08	88.69	90.41
Yeast (Y)			0.75	6.50b	31.30	0.43	5.68	83.13b	27.08	8815	89.86
Level BB&Y											
O gm/kg			**0.75**	**6.40b**	31.19	0.41b	4.83b	84.10ab	29.83a	86.12	89.00
1gm/kg			**0.75**	6.56ab	31.90	0.43a	5.52ab	85.30a	26.58b	88.69	89.55
2gm/kg			**0.75**	6.90a	31.62	0.43a	5.75a	83.33b	26.58b	88.15	90.72
SEM			0.002	0.080	0.400	0.006	0.088	0.288	0.81	0.110	0.102

a-b-e Means with different letters within the same column are significantly different at P≤0.05