Journal of Sohag Agriscience (JSAS) 2023, 8(1):40-52

ISSN 2357-0725
https://jsasj.journals.ekb.eg
JSAS 2023; 8(1): 40-52

Received: 23-01-2023
Accepted: 10-02-2023

Talat M. El-Sheikh
Lamia M. Radwan
Ahmed A. Abuoghaba
Walaa M. Ahmed

Animal Production and Poultry Sciences Department Offered Subjects: productive performance
Faculty of Agriculture
Sohag University
Sohag
82524
Egypt

Corresponding author:
Walaa M. Ahmed
walaamagdy@agr.sohag.edu.eg

Effect of strain and generation on productive performance for Baladi and Fayoumi chickens

Talat M. El-Sheikh, Lamia M. Radwan, Ahmed A. Abuoghaba and Walaa M. Ahmed

Abstract

This study was conducted to evaluate the effect of strain and generation on the productive performance of two Egyptian local chicken strains Baladi and Fayoumi. The performance of Baladi and Fayoumi chicken strains; Body weight, Mortality rate, Age at sexual maturity, Hen day production, Hen housed production, Egg weight, and Egg mass were evaluated at the base generation (G0) and first generation (G1). The results could be summarized as follow: Baladi chicken showed significant (P≤0.0001) higher body weight compared with Fayoumi chicken during the period from 60-72 weeks of age. In addition, Baladi chicken showed significant (P≤0.001) higher egg weight compared with Fayoumi chicken during the periods of 32-36, 36-40, 44-48, 48-52, 52-56 and 56-60 weeks of age by about 2.14, 1.86, 1.5, 1.41, 1.21 and 1.38%, respectively. While Fayoumi chicken showed significant (P≤0.001) higher hen day production compared with Baladi chicken during the periods of 36-40, 40-44, 44-48, 48-52, 52-56 and 56-60 weeks of age by about 3.8, 5.31, 8.66, 6.42, 2.95 and 0.7%, respectively. Also, Fayoumi chicken showed significant (P≤0.0001) higher hen housed production compared with Baladi chicken during the periods of 32-36, 36-40, 40-44, 44-48, 48-52, 52-56, 56-60, 60-64, 64-68 and 68-72 weeks of age by about 2.61, 4.57, 5.55, 6.92, 6, 4.33, 2.92, 2.34, 3.25 and 3.37%, respectively. In addition, Fayoumi chicken showed significant (P≤0.001) higher egg mass compared with Baladi chicken during the periods of 40-44, 44-48, 48-52 and 52-56 weeks of age by about 8.2, 17.8, 19.5 and 11.7%, respectively.

Keywords: Baladi, Fayoumi, Egg production, Generation, Egg mass.

INTRODUCTION

Local Egyptian chickens are divided into three types based on the external morphology of the birds (Hosny, 2006). Fayoumi and Dandarawi are examples of pure native breeds in the first category. Mongrel poultry, such as the Baladi and Sinai strains, are included in the second category. They were originated from hybridization among exotic and Egyptian autochthonous chickens continued along with different times of old trade dispersal and colonization to Egypt. The third group includes improved local strains which originated from crossing between local and standardized exotic chicken strains accompanied by selection for fast growth, such as El-Salam strain (Abd El-Gawad *et al.*, 1983) and for high egg production, such as Golden Montazah strain (Mahmoud *et al.*, 1974). Because of their ability for environmental adaptation, resistance to certain diseases, and high level of immune competence, local chicken breeds or strains are considered to be a valuable genetic treasure. For instance, numerous studies have shown the Fayoumi breed to have enhanced resistance to coccidiosis (Pinard *et al.*, 1998) and Marek's disease, making it an unique breed in terms of disease resistance (Tixier-Boichard *et al.*, 2009). Although local strains typically have low productivity, there are various genetic improvement programs that can improve their production. The objective of this study was to evaluate the growth performance (body weight and mortality rate), egg production traits (Age at sexual maturity, average egg weight, Hen day production, Hen housed production and Egg mass) for Baladi and Fayoumi chicken strains and their generation.

MATERIALS AND METHODS

This work was carried out during the period from January 2018 to July 2020 on Baladi and Fayoumi chickens at the Poultry Production Department, the Faculty Agriculture, Sohag University in cooperation with poultry breeding station of the Development Projects in Sohag Governorate.

Experimental design

In this study, Baladi and Fayoumi males and females, from the base generation (G0), were mated to produce the first generation (G1). All chickens were reared under the same environmental managerial and hygienic conditions, vaccinated against common diseases according to the used program in the poultry breeding station. Flock sizes for each generation were about 6000 females and 600 males. All males of both strains (Baladi and Fayoumi) were randomly mated with females to produce the first generation,10 birds/m2, in an open house, 5 cm deep litter system, until 18 weeks of age. Pullets were then moved to production house at 18 weeks of age until 72 weeks of age. They were fed a laying diet containing 18.98% CP and 2767.24 kcal ME/kg from 50% egg production to 42 weeks of age and diet containing 15.86% CP and 2615.96 kcal ME/kg from 42 up to 72 weeks of age. The ingredient composition and calculated nutrient contents of the experimental diets are presented in Table 1. Feed and drinking water were offered to birds ad libitum, whereas conventional breeding and management procedures were applied throughout the experimental period which lasted up to 72 weeks of age. The lighting schedule was maintained at 16 hours of light and 8 hours of darkness throughout the experiment.

Studied traits

Body weight

Body weight individually recorded monthly for each strain and their generations every individual bird to the nearest 0.1g from 44 up to 72 weeks of age.

Mortality rate

Mortality rate were daily recorded for each strain and their generations during the allover experimental period and then monthly calculated as follow:

$$\text{Mortality rate (\%)} = \frac{N1-N2}{TN2} \text{ X } 100$$

Where N1 is the number of birds at certain age (44 week) and N2 is the number of chicks after 28 days and calculated as a percent (48 week) between the live chicks at the period end)/ live chicks at the starting × 100

Egg production traits

Age at sexual maturity was recorded in days for each generation, the period from hatching to the day of laying the first egg. Hen day production (HDP), Hen housed production (HHP), Egg weight, Egg mass was recorded from 32-72 weeks of age according the following equations:

$$\text{HDP (\%)} = \frac{\text{Total number of eggs produced a day x 100}}{\text{Total number of hens present on that day}}$$

$$\text{HHEP (\%)} = \frac{\text{Total number of eggs laid during the laying period x 100}}{\text{Total number of hens housed at the beginning of laying period}}$$

$$\text{Egg mass} = \frac{\text{Mean egg weight} \times \text{Egg production}}{100}$$

Statistical analysis

The statistical analyses of the data were performed by two-way analysis of variance, including the strain, generation and their interaction using the GLM procedure of SAS (SAS Institute Inc., 2002). The significance tests for the differences between different means for studied traits were done according to Duncan (1955). Significance level was set at 5%. The data were statistically analyzed using the following model:

$$\mathbf{Y_{ijk} = \mu + S_i + G_j + e_{ijk}}$$

Where:
Y_{ijk}: the observation of the individual $_{ijk}$,
μ: the overall means, S_i: the fixed effect of the i^{th} strain (i=l and 2),
G_j: the fixed effect of the j^{th} generation (j= 0 and l),
e_{ijk}: the Experimental error.

RESULTS AND DISCUSSION

Body weight

Effect of strain

As presented in Figure 1, the results showed that the body weight for Baladi chicken strain was significantly (P≤0.0001) increased compared with Fayoumi chicken strain during the period from 60-72 weeks of age. While, body weight during the period from 44-56 weeks of age was not significant. The increased body weight for Baladi chickens may be due to increase the abdominal fat or oviduct weight for hens specially during the final production stages. These results agreed with the results of Radwan and Mahrous (2018a) who indicated that the lowest body weight was recorded in Fayoumi pure line chickens compared with Sinai chicken strain. Also, the results of Nowier *et al.,* (2018) who showed that the body weight for Rod Island Red chickens was significantly heavier than those of Fayoumi and White Leghorn chickens strains. Similarly, The results of Balcha *et al.,(*2021) who showed that the body weight for Fayoumi chicken strain significantly (P≤0.05) differed compared with White leghorn chicken. In contrast, Habashy *et al.,* (2021) who found that the body weight for Fayoumi chicken strain was significantly higher compared with those of White Leghorn chicken. In the same trend, Abuoghaba *et al.,* (2021) who noted that the body weight for Matrouh, Silver Montazah, Mandarah, and Inshas chicken strains were insignificantly influenced.

Effect of generation

The obtained results in Figure 2 showed that the body weight for chickens in base generation was significantly (P≤0.0001) increased compared with those in the first generation at 65 and 68 weeks of age, respectively. The trend was reverse, the body weight for chickens in first generation was significantly (P≤0.01) increased compared with those in the base generation at 44 weeks of age. While, the body weight at 48, 52, 60 and 64 weeks of age was not significant. The remarkable improve in the body weight for base generation may be due to improve feed utilization for base generation compared with first generation. The apparent superiority of body weight for base generation than the first generation may be due to decrease in performance of the first generation in this trait. These results are in agreement with those of Soltan *et al.,* (2021), who found that the body weight for base generation significantly improved compared with first generation of Gimmizah, Silver Montazah and Sinai chicken strains. In contrast, Younis *et al.,* (2014) who found no significant differences in body weight of Dokki-4 chicken strain between bases, first and second generations at 65 weeks of age. Also, Radwan and Mahrous (2018c) who found that the body weight in the first generation for both Rhode Island and Sinai chicken strains were significantly higher than those of the base generation.

Mortality rate

Effect of strain and generation on the mortality rate is presented in Figures 3 and 4. The results showed that the mortality rate for Baladi chicken strain was higher than Fayoumi strain without any significant effect. This may be due to

that more Fayoumi strain is tolerant than Baladi chicken strain by about 2.13%. These results are in agreement with the findings of Olawumi and Dudusola (2010) and Taha *et al.,* (2012), who they found that the mortality rate was not affected in different strain. On the other hand, Khawaja *et al.,* (2012) who reported that Fayoumi had significantly higher mortality rate than Desi chicken. Also, Haq (2011) who found that mortality rate in Fayoumi higher than that of Dokki strain. Regarding generation effect, the results revealed that the mortality rate in base generation was insignificantly higher than that of first generation by about 3.32%. Generally, from these results could be noted that no significant effect due to strain and generation on mortality rate at different ages.

Egg production traits

Age at sexual maturity

Effect of strain and generation on age at sexual maturity are presented in Figures 5 and 6. The results concluded that Baladi chicken strain was early age at sexual maturity by about 4 days compared to Fayoumi chicken strains without any significant effect. These results are agree with those results of Balcha *et al.,(*2021) who found no significant differences between pure lines of White Leghorn chicken and Fayoumi strain in age at sexual maturity. On the other hand, these findings disagree with results of Shafik *et al., (*2013) who reported that Fayoumi chicken strain was earliest age at sexual maturity than Rhode Island Red chicken. Regardless the effect of strain, the base generation was the earliest age at sexual maturity by about 10.5 days compared to first generation about 7.6%. In contrast, Ashour *et al.,* (2015) who found that there were significant differences in age at sexual maturity between base, first, and second generations of El-Salam strain. Similarly, Hosny (2016) who found that age at sexual maturity for Gimmizah chicken strain was significantly ($P \leq 0.01$) higher than Golden Montazah chicken strain.

Hen day egg production

Effect of strain

As shown in Figure 7, it could be observed that a significant ($P \leq 0.001$) increase in hen day egg production for Fayoumi chicken strain during the periods of 36-40, 40-44, 44-48, 48-52, 52-56 and 56-60 weeks of age, compared with Baladi chicken strain it were by about 3.8, 5.31, 8.66, 6.42, 2.95 and 0.7%, respectively. The significant improve in hen day egg production for Baladi chicken strain may be due to the presence of genetic variability between both strains. While, the trend was reverse the hen day egg production for Fayoumi chicken strain during the period of 60-64 weeks of age significantly ($P \leq 0.01$) increase than those of Fayoumi chicken strain by about 1.15%. Also, the hen day egg production was not significant during the periods of 32-36, 64-68 and 68-72 weeks of age. These results are in agreement with those of Radwan *et al.,* (2018b) who found that hen day egg production for Fayoumi chickens was significantly higher than those of Sinai and Dandarawi chicken strains by about 2.49 and 7.8%, respectively. Similarly, Abuoghaba *et al.,* (2021) who found significant differences in hen day egg production among Inshas, Silver Montazah, Matrouh and Mandarah chicken strains. On the other hand, Khawaja *et al.,* (2012) who reported that the hen day egg production for Fayoumi and Desi chicken strains was significantly lower than those of Rod Island Red chickens. Similarly, Shafik *et al.,* (2013) who showed no significant differences between Fayoumi and Rhode Island Red chicken strains on hen day egg production. On the other hand, Hosny (2016) who showed that no significant difference on hen day egg production between Gimmizah and Golden Montazah chicken strains during period 20-36 weeks of age.

Effect of generation

The obtained results in Figure 8 showed that the hen day egg production for chickens in the first generation was significantly ($P \leq 0.05$) increased in most hen day egg production periods 40-44, 44-48, 48-52, 52-56, 56-60, 64-68, and 68-72 weeks of age compared with those in the base generation by about 1.3, 5.23, 1.16, 1.33, 0.5, 1.31 and 1.48%, respectively.The significant increase in hen day egg production in the first generation may be due to earliest age at sexual maturity compared with the base generation. Thus from these results could be recommended to selection for this trait to improve hen day egg production in both strains. While, the trend was reverse the hen day egg production for chickens in the base generation was

significantly (P≤0.0001) increased during period of 32-36, 36-40 and 60-64 weeks of age compared with those in the first generation by about 3.19, 1.97 and 1.13%, respectively. Generally, the low HDP% in both generations was expected because these local strains which remain unselected and unimproved. These results are in agreement with Kosba *et al.,* (2002) who reported that the hen day egg production for first generation significantly improved compared with base generation of chicken strains. In contrast, the results of Ashour *et al.,* (2015) who concluded that the hen day egg production for first and second generations of El-Salam chickens strain was significantly decreased compared with base generation. Similarly, Radwan *et al.,* (2020) who found that the hen day egg production during the first 90 days of laying for first generation of Fayoumi chickens strain was significantly (P≤0.01) lower compared with base generation.

Hen housed egg production (HHP %)

Effect of strain

The obtained results in Figure 9 showed that the hen housed egg production for Fayoumi chicken strain during the periods of 32-36, 36-40, 40-44, 44-48, 48-52, 52-56, 56-60, 60-64, 64-68 and 68-72 weeks of age were significantly (P≤0.0001) increased compared with those of Baladi chicken strain by about 2.61, 4.57, 5.55, 6.92, 6, 4.33, 2.92, 2.34, 3.25 and 3.37%, respectively. The significant improve of the hen housed egg production in Fayoumi chicken strain may be due to decrease mortality rate compared with Baladi chicken strain. These results are in agreement with the findings of Rayan *et al.,* (2020) who found a significant (P≤0.0001) higher effect on hen housed egg production for Hy-Line White-36 compared with those in Hy-Line Brown chickens. On the other hand, In contrast, Hosny (2016) who showed that no significant difference on hen housed egg production between Gimmizah and Golden Montazah chicken strains during period 20-36 weeks of age.

Effect of generation

The obtained results in Figure 10 showed that the hen housed egg production for hens in the base generation was significantly (P≤0.0001) increased compared with those in the first generation at the same periods (32-36, 36-40, 40-44, 44-48, 48-52, 52-56, 56-60, 60-64, 64-68 and 68-72) weeks of age about of 21.37, 20.32, 17.76, 4.86, 17.02, 16.05, 13.9, 9.06, 4.5 and 4.13%, respectively. While, the hen housed egg production during the periods of 32-36 and 60-64 weeks of age was not significant. The apparent superiority in hen housed egg production for base generation could be attributed to genetic variation and environmental factors. These results are in agreement with the results of, Adomako *et al.,* (2010) who found that hen housed production for the second generation of Naked neck chicken strain was significantly (P≤0.05) higher than those of the first generation. Also, Ashour *et al.,* (2015) who found that means of egg number and feed conversion were significantly reduced by generations.

Egg weight (g)

Effect of strain

The results in Figure 11, showed that the egg weight for Baladi chickens was significantly (P≤0.001) increased compared with Fayoumi chickens during the periods of 32-36, 36-40, 44-48, 48-52, 52-56 and 56-60 weeks of age by about 2.14, 1.86, 1.5, 1.41, 1.21 and 1.38%, respectively. The significant improve of egg weight in Baladi chickens may be attributed to the lower age at sexual maturity, which amounted 4.5 days i.e. 3.3% compared with Fayoumi chicken strain. While, the trend was reverse the egg weight for Fayoumi chickens was significantly (P≤0.001) increased compared with Baladi chickens during the period 64-68 and 68-72 weeks of age by about 1.05 and 0.89%, respectively. While, the egg weight was not significant during the periods of 40-44 and 60-64 weeks of age.These results are in agreement with those results of Nowier *et al.,* (2018), who noted that Fayoumi and White Leghorn chicken strains produced a significantly (P≤0.05) lower egg weight as compared with Rod Island Red chickens. Similarly, Balcha *et al.,(*2021) who found that the egg weight for Fayoumi chicken strain significantly (P≤0.05) lower than those of White leghorn chickens.On the other hand, Abuoghaba *et al.,* (2021) who found no significant differences among Matrouh, Silver Montazah, Mandarah, and Inshas chicken strains on egg weight.

Effect of generation

The obtained results in Figure 12, showed that the egg weight for base generation chickens was significantly (P≤0.001) increased compared with those in the first-generation during periods of 32-36, 36-40, 44-48, 48-52, 52-56 and 64-68 weeks of age by about 4.32, 3.94, 1.07, 1.07, 0.93 and 1.64%, respectively. The significant increase in egg weight for base generation chickens may be due to positive correlation between body weight and egg weight for base generation. While the trend was reverse the egg weight for the first generation chickens was significantly (P≤0.001) increased compared with those in the base generation during period of 60-64 and 68-72 weeks of age by about 1.42 and 1.63%, respectively. Also, the egg weight was not significant during the periods of 40-44 and 56-60 weeks of age.These findings are in agreement with Soliman *et al*., (2016) who reported that the egg weight for base generation of Alexandria chicken strain significantly (P≤0.05) higher than those of Fayoumi chicken strains. In contrast, Ashour *et al.,* (2015) who found that the egg weight for El-Salam chicken strain in the first generation had significantly higher than those of the base generations by about 10.26%. Similarly, the result of Radwan *et al.,* (2020) who showed that the egg weight during the first 90 days of laying period in the first generation of Fayoumi chicken strain was significantly (P≤0.05) higher than those in the base generation.

Egg mass (g/h/d)

Effect of strain

As presented in Figure 13, results showed that the egg mass for Fayoumi chicken strain was significantly (P≤0.001) higher compared with Baladi chicken strain during the periods of 40-44, 44-48, 48-52 and 52-56 weeks of age by about 8.2, 17.8, 19.5 and 11.7%, respectively. While, the egg mass was not significant during the periods of 32-36, 36-40, 56-60, 60-64, 64-68 and 68-72 weeks of age.The significant increase in egg mass for Fayoumi chicken strain may be due to the higher hen day as well as hen housed egg production as compared with Baladi chicken strain. In contrast, Hosny (2016) who showed that no significant difference in egg mass between Gimmizah and Golden Montazah chicken strains. Nowier *et al.,* (2018) who concluded that the Fayoumi chicken strain significantly (P≤0.05) lower egg mass as compared with Rhode Island Red and White Leghorn chicken. Similarly, Ghoname *et al.,* (2022) who found that the egg mass for Fayoumi chicken strain significantly (P≤0.05) lower than those of Golden Sabahia, Lohman and White Leghorn chicken.

Effect of generation

Results in Figure 14 showed that the egg mass for first generation chickens was significantly (P≤0.001) increased compared with those in the base generation during period of 44-48, 56-60 and 64-68 weeks of age by about 10.8, 8.9 and 9.8%, respectively. This may be attributed to higher hen day egg production in the first generation chickens than those in the base generation. While, the trend was reverse the egg mass for the base generation chickens was significantly (P≤0.0001) increased compared with those in the first generation during period of 32-36, 36-40 weeks of age by about 14.4 and 17%, respectively. While, the egg mass during the periods of 40-44, 48-52, 52-56, 60-64, and 68-72 weeks of age was not significant. These findings are in agreement with results of Ashour *et al.,* (2015) who noticed that the egg mass for the first generation of El-Salam strain was significantly (P≤0.001) higher than those in the base generation. Also, the results of Abou El-Ghar and Abd El-Karim (2016) who showed that the egg mass for the first generation of Inshas chicken strain was significantly higher than those of the base generation at first 120 days of laying period. In contrast, El-Attrouny *et al.,* (2019) who found that the egg mass at the first 120-days of laying for base generation of Benha chicken strain was significantly (P≤0.05) higher than first and generation by about 4.5%.

Table (1): Ingredients and chemical composition of the experimental diets

Ingredient	Layer 50%EP to 42 wks	From 42 wks up to 72 wks
Ingredients Feed composition		
Corn	61.62	60.36
Soybean meal (44%)	30.06	20.12
Gluten	0.00	0.00
Limestone	4.51	7.04
Di-calcium phosphate	1.00	1.01
Wheat bran	1.40	10.06
DL- methionine	0.20	0.20
L-lysine	0.15	0.15
$NaHCO_3$	0.30	0.30
NaCl salt	0.25	0.25
Choline chloride	0.20	0.20
Vitamin/mineral premix	0.30	0.30
Total	100	100
Calculated composition		
Dry matter	89.07	89.09
Metabolizeable energy	2767.24	2615.96
Crude protein	18.98	15.86
Ether extract	2.62	2.76
Crude Fiber	3.61	3.84
Calcium	2.15	3.10
Total phosphorus	0.56	0.50
Lysine	1.13	0.91
Methionine	0.50	0.46

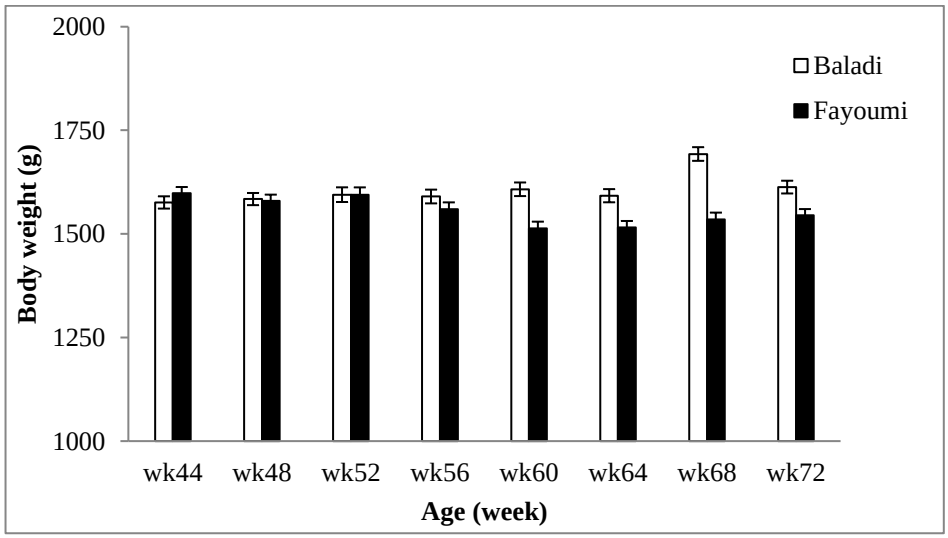

Figure (1): Effect of strain on body weight at different ages

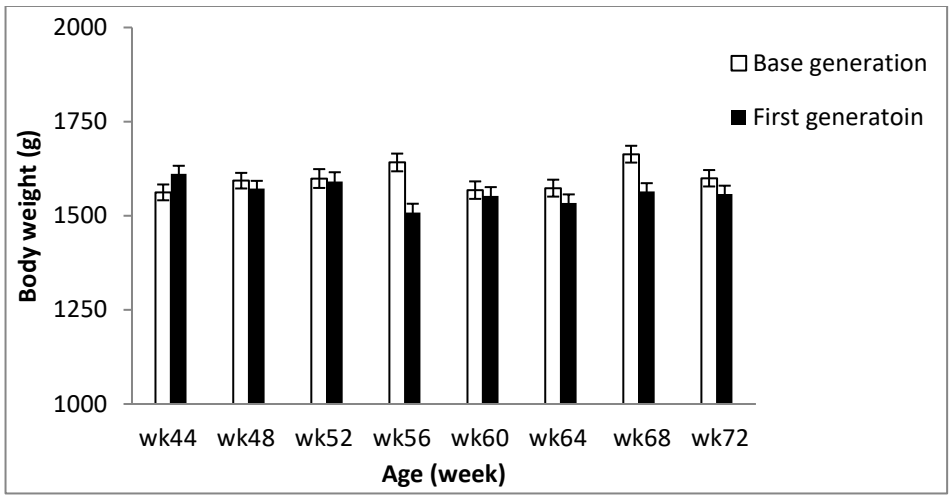

Figure (2): Effect of generation on body weight at different ages

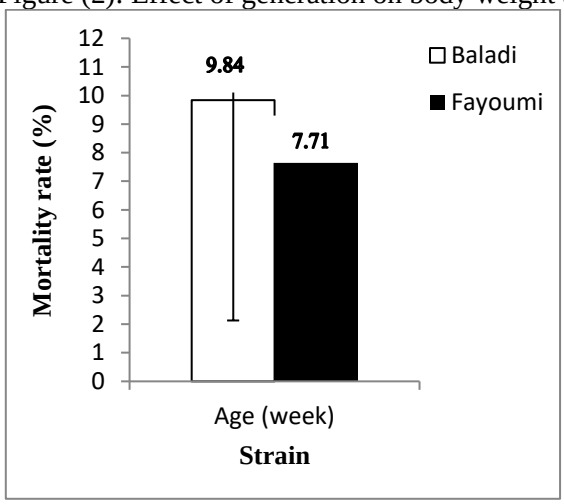

Figure (3): Effect of strain on mortality rate allover experimental period

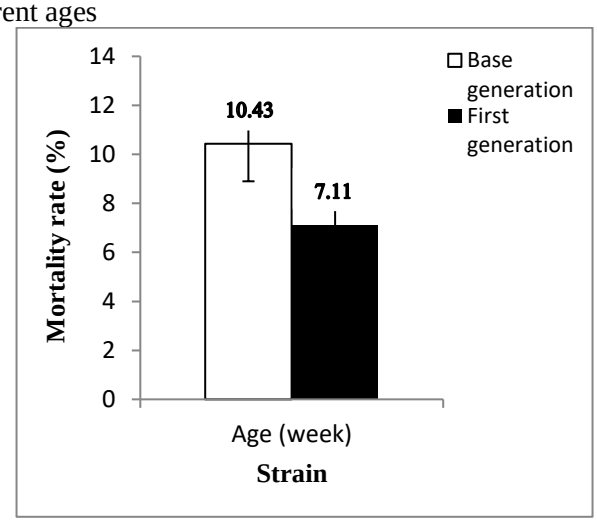

Figure (4): Effect of generation on mortality rate allover experimental period

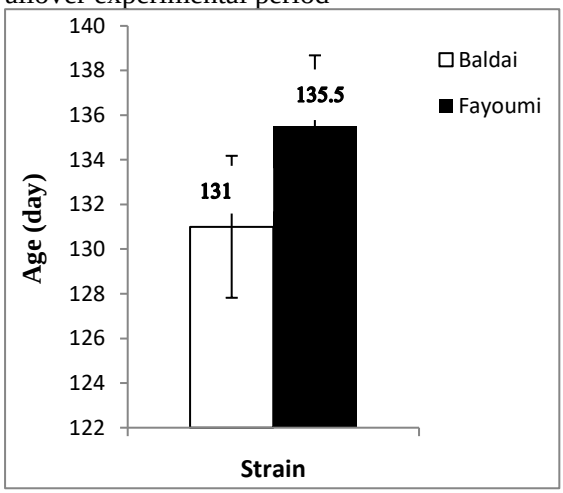

Figure (5): Effect of strain on age at sexual maturity

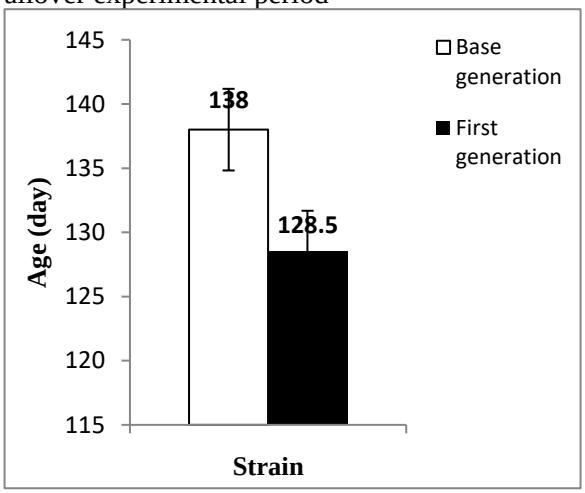

Figure (6): Effect of generation on age at sexual maturity

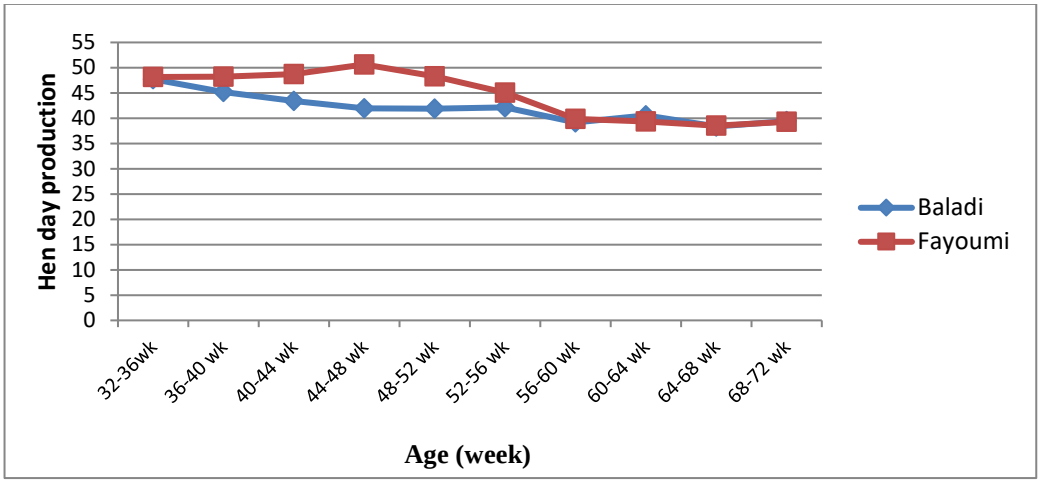

Figure (7): Effect of strain on hen day egg production at different ages

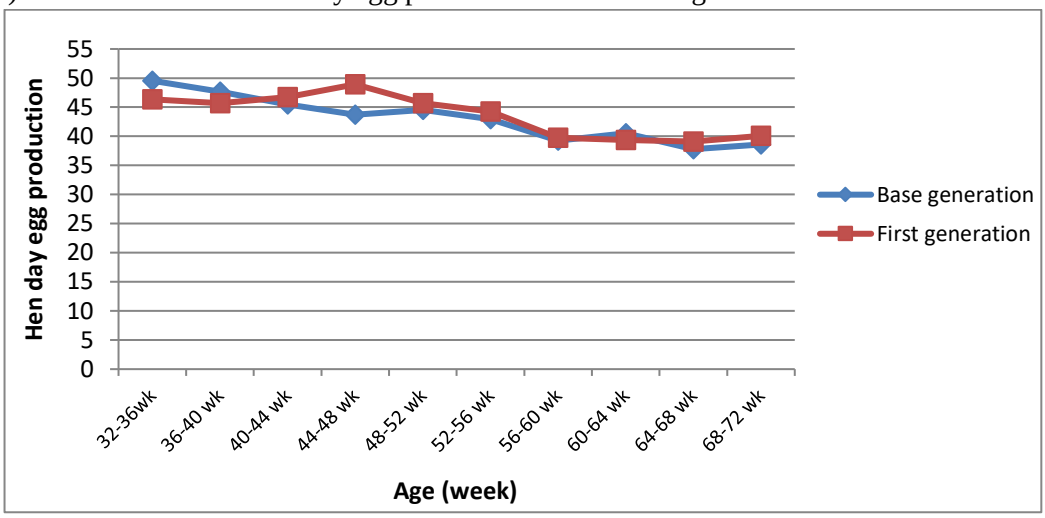

Figure (8): Effect of generation on hen day egg production at different ages

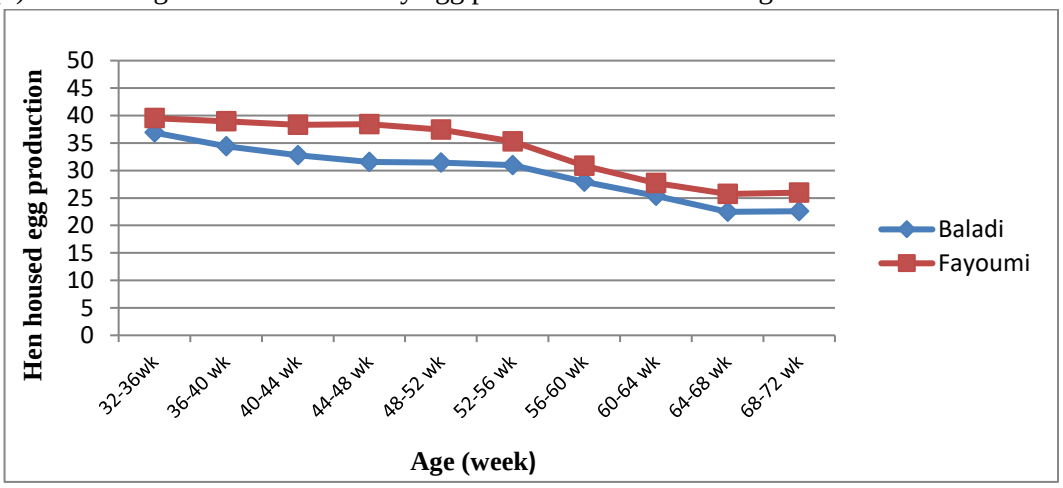

Figure (9): Effect of strain on hen housed egg production at different ages

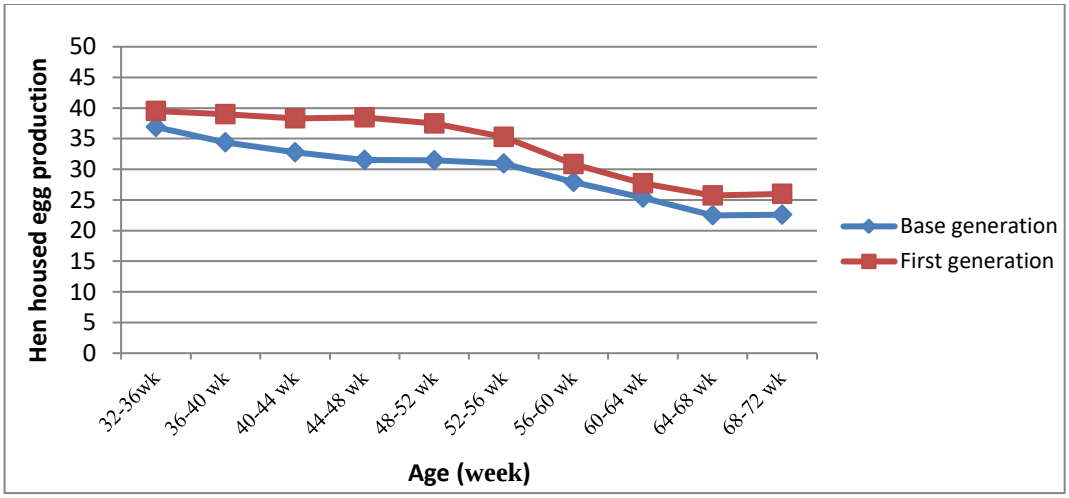

Figure (10): Effect of generation on hen housed egg production at different ages

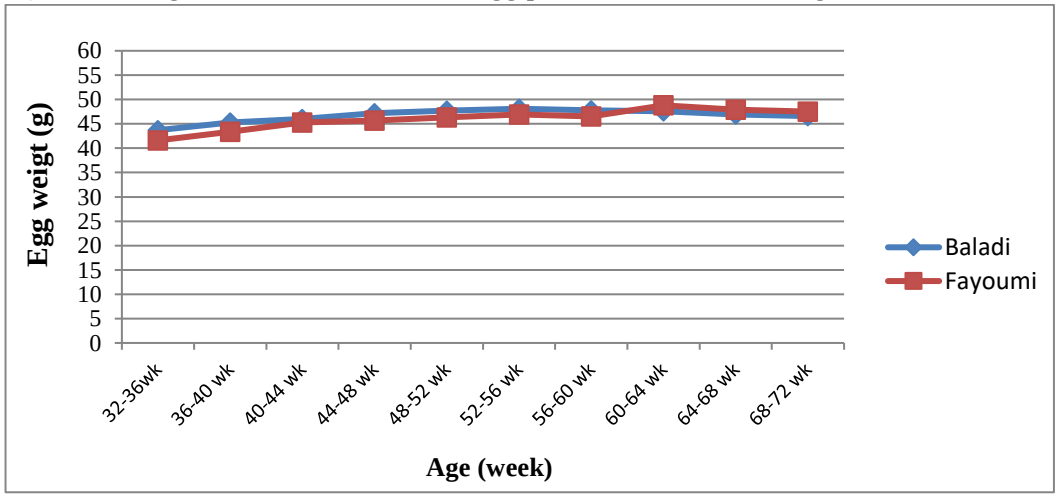

Figure (11): Effect of strain on egg weight at different ages

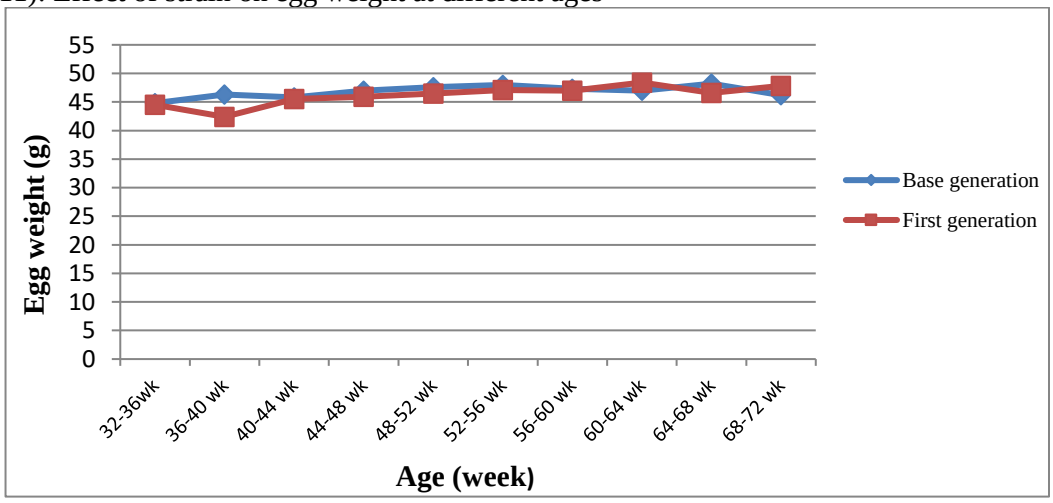

Figure (12): Effect of generation on egg weight at different ages

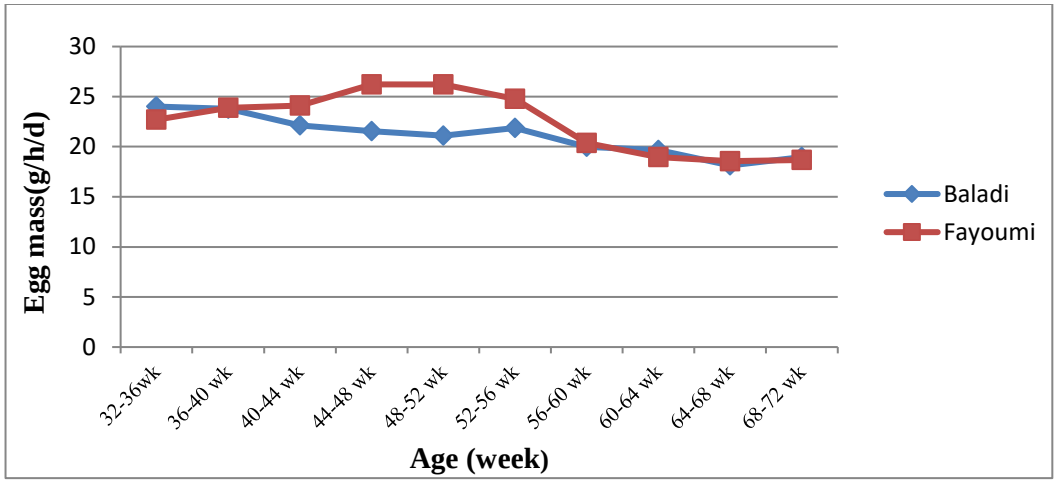

Figure (13): Effect of strain on egg mass (g/h/d) at different ages

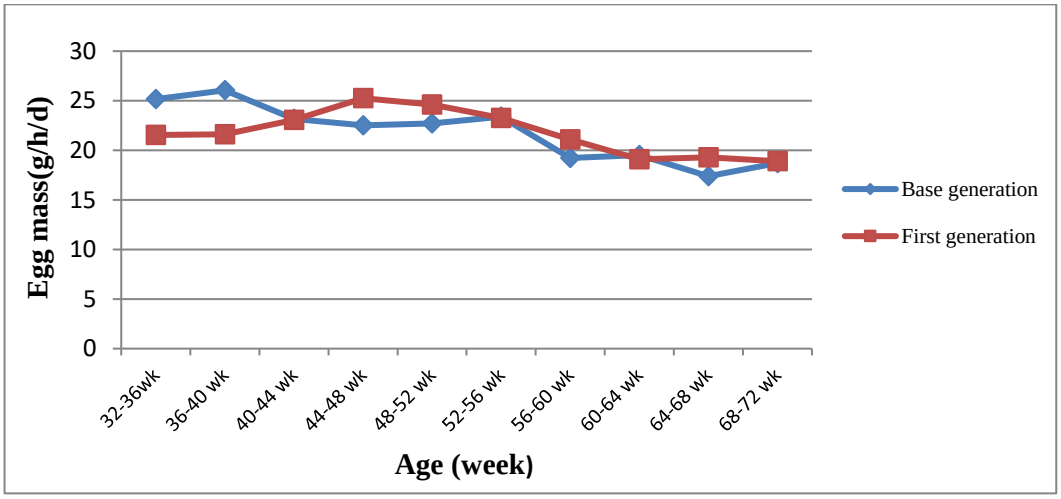

Figure (14): Effect of generation on egg mass (g/h/d) at different ages

CONCLUSION

According to the findings of this study, it can be concluded that the Baladi chicken strain has significantly higher body weight and egg weight than the Fayoumi chicken strain, while the Fayoumi chicken strain has significantly higher hen day production, hen housed production and egg mass than Baladi chicken strain. The base generation has significantly higher hen housed production and egg weight than the first generation, while the first generation has significantly higher hen day production than the base generation. Whereas the effect of generation fluctuated between the base and first generation on body weight and egg mass traits. The information obtained from this study may be useful in programs of genetic improvement and conservation of these Egyptian local strains of agriculturally and commercially valuable.

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تأثير السلالة والجيل على الاداء الإنتاجي للدجاج البلدي والفيومي

طلعت مصطفى الشيخ، لمياء مصطفى عبد المنعم رضوان، أحمد عبد الكريم أبو غابة، ولاء مجدى أحمد على

قسم إنتاج الدواجن، كلية الزراعة، جامعة سوهاج، سوهاج، 82524، مصر

الملخص العربي

أجريت هذه الدراسة لتقييم تأثير السلالة والجيل على الأداء الإنتاجي لسلالتين محليتين من الدجاج المصري البلدي والفيومي. أداء سلالات الدجاج البلدي والفيومي تم تقييم وزن الجسم ، معدل النفوق ، العمر عند النضج الجنسي ، إنتاج البيض اليومي ، إنتاج البيض الموسمي ، متوسط وزن البيضة ، وكتلة البيض في الجيل القاعدي (G0) والجيل الأول .(G1) يمكن تلخيص النتائج على النحو التالي: أظهرت سلالة الدجاج البلدي زيادة معنوية (P≤0.0001) في وزن الجسم مقارنة بسلالة الدجاج الفيومي خلال الفترة من 60-72 أسبوعًا. بالإضافة إلى ذلك ، أظهرت سلالة الدجاج البلدي ارتفاعًا معنويًا (P≤0.001) في متوسط وزن البيضة مقارنة بسلالة الدجاج الفيومي خلال الفترات 32-36 و 36-40 و 44-48 و 48-52 ، 52-56 و 56-60 أسبوعًا. العمر بنحو 2.14 و 1.86 و 1.5 و 1.41 و 1.21 و 1.38٪ على التوالي. بينما أظهرت سلالة دجاج الفيومي زيادة معنوية (P≤0.001 في إنتاج البيض اليومي مقارنة بسلالة الدجاج البلدي خلال الفترات 36-40 و 40-44 و 44-48 و 48-52 و 52-56 و 56-60 أسبوع من العمر. بنحو 3.8 و 5.31 و 8.66 و 6.42 و 2.95 و 0.7٪ على التوالي. كما أظهرت سلالة دجاج الفيومي زيادة معنوية (P≤0.0001 في إنتاج البيض الموسمي مقارنة بسلالة الدجاج البلدي خلال الفترات 32-36 و 36-40 و 40-44 و44-48 و48-52 و 52-56 ، 56 - 60و 60-64 و 64-68 و 68-72 أسبوعًا بعمر حوالي 2.61 و 4.57 و 5.55 و 6.92 و 6 و 4.33 و 2.92 و 2.34 و 3.25 و 3.37٪ على التوالي. بالإضافة إلى ذلك، أظهرت سلالة دجاج الفيومي كتلة بيض أعلى معنوية (P≤0.001) مقارنة بسلالة الدجاج البلدي خلال فترات 40-44 و 44-48 و 48-52 و 52-56 أسبوعًا بنحو 8.2 ، 17.8 و 19.5 و 11.7٪ على التوالي.

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