J. Agric. & Env. Sci. (Damanhour University) 2023, 22 (2): 122-142
Print: ISSN 1687-1464 Online: 2735-5098

EFFECT OF SELECTION FOR SKELETAL TRAITS ON BODY WEIGHT IN ALEXANDRIA LOCAL CHICKENS

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ABSTRACT:

The present study aimed to improve the body weight in the Alexandria chickens by selection for the skeletal traits of the high breast width, breast length and leg length at eight weeks of age. 2500 birds at a day of hatch were obtained from 5 consecutive hatching weekly hatches were taken for one generation. The results of this study showed that the overall means for body weight at four weeks (BW_4), body weight at eight weeks (BW_8) and body weight at twelve weeks (BW_{12}) were (204.699 and 190.02 g), (718.559 and 610.20 g) and (1289.99 and 1049.002 g) for males and females, respectively. These results showed that the differences among line were highly significant ($P \leq 0.01$) in selected line than control line in BW_8 and BW_{12}. Also, the overall means of shank length in eight weeks of age (SL_8), breast length in eight weeks of age (BRL_8) and breast width in eight weeks of age (BRW_8) were (6.81 and 6.38 cm), (11.85 and 11.23 cm) and (11.24 and 10.78 cm) for males and females, respectively. The selection for the skeletal traits in Alexandria chickens in eight weeks of age showed that the differences among line were highly significant ($P\leq 0.01$) for albumin and Albumin/Globulin ratio in selected line. The analysis results showed that highly significant (<0.0001) positive correlation for BW_4 with SL_8 (0.47), BRL_8 (0.41)

J. Agric. & Env. Sci. (Damanhour University) 2023, 22 (2): 122-142
Print: ISSN 1687-1464 Online: 2735-5098

and BRW_8 (0.39), and highly significant (<0.0001) positive correlation for BW_8 with SL_8 (0.46), BRL_8 (0.61), BRW_8 (0.498) and highly significant (<0.0001) positive correlation for BW_{12} with SL_8 (0.39), BRL_8 (0.46) and BRW_8 (0.42), respectively. In conclusion selection for skeletal traits increased body weight in selected line than control line and in male than female at different ages.

Keywords: Local chickens, Selection, Skeletal traits, Body weight, Correlation.

INTRODUCTION

The poultry industry regales growth and reproduction as the two most economically valued characteristics for providing adequate animal proteins. Poultry production is one of the rapidly growing subsectors of agriculture producing a range of commodities for the global population. Poultry production plays an important role as a source of cheap and high quality of animal protein for human nutrition in Egypt **(Hosny, 2006)**. The global population is estimated to reach 9.15 billion in year 2050, with developing countries experiencing the fastest growth **(FAO, 2017).**

Local chickens are important in producing a large and cheap source of animal protein in Egypt, beside pure Egyptian breeds there were some local developed strains that established for both meat and egg production **(Abou El-Ghar *et al*., 2016).** Egyptian chicken breeds had a low growth rate, poor feed efficiency and less meat yield. These breeds were not subjected to any intensive selection programs and consequently, high additive and non-additive genetic variations are expected in them **(Iraqi *et al*., 2000).**

Direct response to selection for high body weight at marketing age (12 weeks) resulted in large body weight at different ages and positive changes in body measurements and growth rate for males and females in local strain of chickens **(Salem, 1993, El-Wardany *et a*l.,**

1999, Abd El-Ghany, 2006 and Saleh *et al*., 2008). Indigenous chickens have desirable traits such as disease resistance, pleasantly flavored meat and eggs, and the ability to withstand adverse environmental conditions (**Ramadan *et al.*, 2011**). Alexandria strain is a local strain chickens which established in Faculty of Agriculture (El-Shatby), Alexandria University ,by crossing between Fayoumi as Egyptian breed and Barred Plymouth Rock, Rhode Island Red and White Leghorn as standard breeds (**Kosba, 1966**).

Selection of meat-type chickens has previously focused not only on increased growth performance but also on improved carcass quality. In particular, the emphasis has been on better body composition, with higher breast meat yield and lower abdominal fat. This focus responds to the consumer desire for healthier meat, and to the evolution of the market through a rising demand for portioned and processed products (**Barton, 1994**). The principal objective of selective breeding is genetic improvement of economically important traits in successive generations and improving these economical traits improves production efficiency **(Amira *et al*., 2018).** Due to selection for increased body weight modern broilers are 3-4 times heavier as compared with chickens of the laying type **(Sobolewska *et al*., 2011).**

Skeletal muscle is the largest organ of the body and, in addition to its role in motion, muscle also functions as the endocrine and metabolic organ to regulate energy balance, glucose uptake, and metabolic activities **(Tomas *et al*., 2004).** Normal skeletal development of chicken is important in terms of obtaining high level of fertility. Males with a good balance of shank length, keel length and breast width had a high fertility rate **(Dudgeon, 2010).** Also, Keel length is the most commonly estimates of frame size in breeder management and there are small differences among strains at the time of hatching **(Gao *et al*., 2010).** In modern poultry industry, the live body weight (LBW) and carcass traits are under intensive selection for more than half a century which are very important economic traits in broiler breeding programs **(Baéza *et al*., 2012).**

The main objective of the present study was aimed to improve the productive traits of the in the Alexandria chickens by selection for

the structural traits of the high breast width, breast length and shank length, at eight weeks of ages and the phenotypic correlation between body weight and skeletal traits

MATERIALS AND METHODS

The present study was conducted at the Poultry Research Center, Poultry Production Department, Faculty of Agriculture (El-Shatby), Alexandria University, and the animal and poultry production Department, Faculty of Agriculture, Damanhour University during the period from September 2019 until December 2021.

Husbandry flocks

All experimental parents and hatching eggs received the same managerial treatments for all lines. In years (2019-2020) the identified eggs were collected from dams through trap nesting. In each year the collected eggs were set biweekly in forced draft type incubator. Eggs were collected for hatch when females were 22 weeks of age, marked, incubated for 18 days then were transferred to the hatchery part for 3 days. At the end of incubation period (21 days), all healthy chicks were removed. At hatching the chicks were pedigreed wing banded, weighed and brooded in floor brooders. At day of hatch, all chicks were permanently identified by wing-banded and placed in floor brooders at a starting temperature of 35 °C during the first week after hatching, and then decreased 2-3 °C each week. At eight weeks of age, the chicks were sexed, weighted and moved to the rearing houses. Also at twelve weeks of age the chicks were weighted, the birds randomly assigned to two groups. The first group was practiced to study the effect of selection (Line S) and the second group was maintained as contemporary control (Line C). They were individually selected according to egg number.

Feed and water were *ad libitum* for all experimental chickens, with diet contained 23 % crude protein and 3000 Kcal Metabolizable energy (ME) / Kg feed until 8 weeks of age, then they received a diet contained 21 % crude protein and 3100 Kcal. ME / Kg feed during 8-18 weeks of age, then they received a diet contained 18 % crude

protein, 2800 Kcal ME / Kg, 3.4% calcium and 0.45% phosphorus available feed during the production period.

Selection plan

The base population was established from the birds maintained by random mating without intended selection for one generation. The mating system in the base population was in by 10 females per each male.

Control population for the selected meat line was obtained by random mating of the same base population of meat line without selection for any trait.

In respect to selection technique, all birds with higher breast width, breast length and shank length width were selected according to their positive deviation from the population mean is selected line (Line S) , at eight weights of age.

After recording the eggs laid in the first 20 weeks of egg production period, the birds distributed randomly using 1 male: 10 female as sex ratio. The fertile eggs laid used for incubation to obtain the chicks of the next generation. Exactly 14 families were formed for the selected line with 154 birds, and 4 families for the control line with 44 birds. After 5 consecutive hatching the number of chicks was obtained 2500 at a day of hatch. The number of birds at the age of four weeks was 2325 (1088 males and 1237 female), 2260 birds at the age of eight weeks (1060 males and 1200 female) and 2184 birds (1038 males and 1146 female) at the age of twelve weeks.

Studied traits

- **Body weight**: Body weight was recorded for every individual bird for each sex and line to the nearest 0.1 g for Body weight in four weeks **(BW_4)**, Body weight in eight weeks **(BW_8)** and Body weight in twelve weeks **(BW_{12})** of age.
- **Skeletal traits**: A cloth tape measure was used for measured breast width, breast length and shank length nearest 0.1 cm at eight weeks

of age. Breast width (BRW) (cm) was measured at the anterior end of the keel while the chicken was held on its back. The tape was passed under the wings as the distance between the wings. When the chicken is standing, the breast length (BRL) (cm) was measured with the tape at the anterior end of the keel bone. Shank length (SL) (cm) was measured with the tape from the shin bone to the foot, at eight weeks of ages.

- **Blood parameters**: Fresh blood samples, each of 2 ml, were collected randomly from 8 birds at 8 weeks of age. Individual blood samples were collected in dry clean centrifuge tubes containing EDTA from the slaughtered birds and plasma was separated by centrifugation at 3000 rpm for 15 min. and assigned for subsequent determination. Blood samples were stored at -20°C in a deep freezer until the time of chemical determination. Biochemical analysis of blood serum was conducted in physiology laboratory. Quantitative determination of blood was included the following: serum total protein (g/dl) measured using special kits delivered from sentinel CH Milano, Italy by means of a spectrophotometer (Beckman DU-530, Germany) according to guidelines of **Armstrong and Carr (1965)**. Serum albumin (g/dl) was determined using special kits delivered from sentinel CH Milano, Italy according to the method of **Doumas *et al*. (1971)**. Serum globulin level (g/dl) was calculated by the difference between total protein and albumin since the fibrinogen usually comprises a negligible fraction **(Sturkie,1986).** Albumin to globulin ratio was also calculated. In addition, biochemical determinations included different types of globulin (α-globulin, ß-globulin, and γ-globulin) according to **(Bossuyt *et al*., 2003).** Serum glucose concentration was measured by the method of **Trinder (1969).** Serum total lipids and triglyceride concentrations (mg/dl) were determined in blood serum using special kits delivered from CAL-TECH Diagnostics, Inc. Chino, CA, and the USA by means of a spectrophotometer according to the

recommendation of **Frings *et al*. (1972)**. Serum total cholesterol (mg/dl) was determined on individual bases using the specific kits according to the recommendation of **Bogin and Keller (1987).** Serum concentration of total tri-iodothyronine (T3) and thyroxin (T4) was assayed by radioimmunoassay technique using the kit from Diagnostic Products Corporation, Los Angeles, USA. According to **Fossati and Prencipe (1982),** T3 and T4 ratio was also calculated.

Phenotypic correlation (r_P):

Phenotypic correlation coefficient (r_p) between traits, were obtained by using the following formula **(Becker, 1985):**

$$r_P = \frac{Cov_s + Cov_w}{\sqrt{\{(var\,S_x + var\,w_x)(var\,S_y + var\,w_y)\}}}$$

Where:

Cov_s: the covariance between sires,

Cov_w: the remainder of the genetic plus the environmental covariance,

$var\,(S_x)$: the sire variance component of trait x,

$var\,(w_x)$: the environmental variance component of trait x,

$var\,(S_y)$: the sire variance component of trait y, and

$var\,(w_y)$: the environmental variance component of trait y

Statistical analysis

Data were analyzed using SAS **(SAS, 2004)** for statistical analysis program. All percentages data were transformed to their corresponding arcsine angles values according to **Sndecor and Cochran (1981)** before analysis. The significant tests for the differences between each two means for any studied trait were done according to Duncan's multiple rang test **(Duncan, 1955),** were analyzed using the following model:

$$Y_{ij} = \mu + P_i + S_j + (PS)_{ij} + e_{ij}$$

Where:

Y_{ij} : is the observation on the j^{th} individual,

μ : is the overall mean,

P_j : is the population effect,

S_k : is the sex effect,

PS_{ij} : is the interaction between population and sex effect,

e_{ij} : is the random error.

The data for blood parameters were analyzed using the following model:

$$\mathbf{Y_{ij} = \mu + P_i + e_{ij}}$$

Where:

Y_{ij} : is the observation on the j^{th} individual,

μ : is the overall mean,

P_j : is the population effect,

e_{ij} : is the random error.

RESULTS AND DISCUSSIONS

Least-square means for body weight at four, eight, and twelve-weeks of age of Alexandria chickens during selection for the skeletal traits, were presented in Table 1. The analysis results showed that the differences among line were highly significant in control line than selected line at 4, 8, 12 weeks of age and the effects between sex were highly significant, for males were higher than females at 4 and 12 weeks of age. The means of BW_4 for the both sexes ranged from 188.005 to 207.61 g, with an overall mean was 196.39 g. Also, the overall means of BW_4 were 194.97 and 200.74 g for selected and control, respectively. Generally, the BW_4 means of selected line for males were 203.81 and in females were 188.005, the BW_4 means of control line for males were 207.61 and in females were 195.90 g and (BW_8) of the males in the selected line increased by 6.59 g over than control line and the weight of the females in the selected line increased by 6.13 g over than control line. Generally, the BW_8 means of selected line was higher than control line.

Also, the means of BW_{12} for the both sexes ranged from 998.69 to 1301.88 g, with an overall mean was 1157.68 g. And, the overall means of BW_{12} were 1289.99 and 1049.002 g. for males and females, respectively. Generally, the BW_{12} means of selected line for males increased by 50.61 g over than control line and the weight of the females in the selected line increased by 68.34 g over than control line. The results show that there has been a grouping of some genes responsible for the characteristics of body weight.

These values were nearly with finding by **El-Tahawy (2000)** and **El-Dlebshany (2008)**, lower than **Kosba *et al.* (2010)**, **El-Tahawy (2020)** and **Soliman *et al.* (2020)** , however, it was higher than the results found by **Kosba *et al.* (2008)** for body weight at four weeks of age . These values were higher than the results found by **El-Tahawy (2000), El-Dlebshany (2008), Kosba *et al.* (2006, 2008, 2009, 2010), El-Tahawy (2020) Soliman *et al.* (2020)** for body weight at eight weeks of age. These values were higher than the results found by **El-Tahawy (2020)** for body weight at twelve weeks of age.

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Print: ISSN 1687-1464 Online: 2735-5098

Table (1): Least square means ($\overline{X}$ ± SE) for body weight at four, eight and twelve weeks of age (BW_4, BW_8 and BW_{12}) in grams during selection for the skeletal traits in Alexandria chickens.

Trait	Bw_4			Bw_8			Bw_{12}		
Line / Sex	Selected	control	Overall mean	Selected	control	Overall mean	Selected	control	Overall mean
Male	203.81± 2.07	207.61± 4.14	204.699^{a} ±1.85	720.13± 5.15	713.54± 9.01	718.559^{a} ±4.47	1301.88± 7.30	1251.27± 11.92	1289.99^{a} ±6.298
Female	188.005± 1.67	195.90± 3.03	190.02^{b} ±1.47	611.78± 4.16	605.65± 6.896	610.20^{b} ±3.56	1067.03± 5.44	998.69± 7.94	1049.002^{b} ±4.64
Combined sex	194.97^{B}± 1.32	200.74^{A}± 2.48	196.39 ± 1.66	659.29 ±3.59	650.199 ±6.099	657.02± 4.01	1175.17^{A} ±5.65	1105.42^{B} ±9.34	1157.68± 5.47
S.O.V.	P value								
Line	0.032			0.16			<.0001		
Sex	<.0001			<.0001			<.0001		
Line*Sex	0.27			1.0000			1.0000		

Means having different letters in each effect are significantly (P≤ 0.05).

$^{A \text{ and } B}$ among lines.

$^{a \text{ and } b}$ between sexes.

** Significantly at P ≤ 0.01

Bw_4 = body weight at four weeks of age,

BW_8 = body weight at eight weeks of age,

Bw_{12} = body weight at twelve weeks of age.

Shank length at eight weeks of age (SL): Least-square means for SL of Alexandria chickens during selection for the skeletal traits, are shown in Table 2. The means of SL for both sexes ranged from 6.35 to 6.82 cm., with an overall mean was 6.57 cm. The analysis results showed that the differences among line were not significant ($P \leq 0.24$) in selected line than control line and the effects between sex were highly significant ($P \leq 0.0001$), for males were higher than females. Also, the overall means of SL were 6.81 and 6.38 cm, for males and females, respectively. Generally, the SL means of selected line for males were 6.82 and in females were 6.39 cm., the SL means of control line for males were 6.79 and in females were 6.35 cm. These values were lower than the results found by **Udeh and Ogbu, (2011)** in three strains of broilers chicken (Arbor Acre, Marshal and Ross), **Ojedapo *et al*. (2012)** and **Akramullah, *et al*. (2021).** These values were higher than the results found by **Abou El-Ghar *et al*. (2016)** and **Habashy, *et al*. (2021).**

Breast length at eight weeks of age (BRL): Least-square means for BRL of Alexandria chickens during selection for the skeletal traits, are shown in Table 2. The means of BRL for both sexes ranged from 11.14 to 11.87 cm., with an overall mean was 11.499 cm. The analysis results showed that the differences among line were significantly ($P \leq 0.02$) in selected line than control line and the effects between sex were highly significantly ($P \leq 0.0001$), for males were higher than females. Also, BRL of the males in the selected line increased by 0.11 cm. over than control line and the BRL of the females in the selected line increased by 0.12 cm. over than control line.

Breast width at eight weeks of age (BRW): Least-square means for BRW of Alexandria chickens during selection for the skeletal traits, are shown in Table 2. The means of BRW for both sexes ranged from 10.52 to 11.29 cm., with an overall mean was 10.98 cm. The analysis results showed that the differences among line were highly significant in selected line than control line and the effects between sex were highly significant, for males were higher than females.

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Print: ISSN 1687-1464 Online: 2735-5098

Table (2): Least square means ($\overline{X}$ ± SE) for shank length, breast length and breast width (SL, BRL and BRW) at eight weeks of age in (cm) during selection for the skeletal traits in Alexandria chickens.

Traits / Line	SL			BRL			BRW		
Sex	Selected	control	Overall mean	Selected	control	Overall mean	Selected	control	Overall mean
Male	6.82± 0.03	6.798± 0.07	6.81^{a} ±0.03	11.87± 0.04	11.76± 0.09	11.85^{a} ±0.04	11.29± 0.04	11.06± 0.07	11.24^{a}± 0.04
Female	6.397± 0.03	6.35± 0.06	6.38^{b}± 0.03	11.26± 0.04	11.14± 0.09	11.23^{b} ±0.04	10.88± 0.03	10.52± 0.08	10.78^{b} ±0.03
Combined sex	6.59± 0.02	6.53 ±0.05	6.57± 0.79	11.53^{A} ±0.03	11.39^{B} ±0.07	11.499±1 .05	11.06^{A} ±0.03	10.74^{B} ±0.06	10.98± 0.99
S.O.V.	P value								
Line	0.24			0.02			<.0001		
Sex	<.0001			<.0001			<.0001		
Line*Sex	1.0000			1.0000			1.0000		

Means having different letters in each effect are significantly (P≤ 0.05).
$^{A \text{ and } B}$ among lines.
$^{a \text{ and } b}$ between sexes.
**** Significantly at P ≤ 0.01**

SL= shank length at eight weeks of age,
BRL= breast length at eight weeks of age,
BRW= breast width at eight weeks of age.

Also, the overall means of BRW were 11.24 and 10.78 cm. for males and females, respectively. Also, BRW of the males in the selected line increased by 0.23 cm. over than control line and the BRW of the females in the selected line increased by 0.36 cm. over than control line. These values were nearly with the results found by **Udeh and Ogbu, (2011)** in three strains of broilers chicken (Arbor Acre, Marshal and Ross). The reasons for their ranges may be due to differences in genetic makeup of the chicks

Blood serum constituents at eight weeks of age: Least-square means for blood serum constituents of Alexandria chickens' selection for the skeletal traits, are presented in Table 3. Considered blood plasma measurements were (total protein (g/dl), albumin (g/dl), globulin (g/dl), Alb/Glob ratio, total lipied (mg/dl), cholesterol (mg/dl), triglycerides (mg/dl), tri-iodothyronine (T3) (g/dl), thyroxin (T4), T3/T4 ratio and Glucose (g/dl). The selection for the skeletal traits in Alexandria chickens at eight weeks of age showed that the differences among line were significantly ($P \leq 0.02$) for albumin and Alb/Glob ratio in selected line, also there was significant ($P \leq 0.04$) for globulin in control line. The ranges of serum total protein, albumin and globulin concentrations were (7.44 – 7.71 g/dl), (3.37 – 3.18 g/dl) and (4.07 – 4.53 g/dl), respectively, these results is higher than **El-Dlebshany *et al.* (2009)** and **(Mohanty and GayatriAcharya, 2020).** The overall means of total lipped, triglycerides, T3 and T4 were (255.63, 296.58, 1.04 and 6.43 g/dl).

The overall means of cholesterol was (182.21g/dl) this result is higher than **El-Dlebshany *et al.* (2009)** and **(Mohanty and GayatriAcharya, 2020),** and glucose was (249.21 g/dl) this result is nearly with **El-Dlebshany *et al.* (2009).** These results may be indicating that high body weight consumes more glucose than light body weight, so glucose concentration decrease in plasma with increasing in body weight.

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Table (3): Least square means ($\overline{X}$ ± SE) and standard errors (SE) for Total protein, Albumin, Globulin, Alb/Glob ratio, Total Lipied, Cholesterol, Triglycerides, T3, T4, T3/T4 and Glucose at eight weeks of age during selection for the skeletal traits in Alexandria chickens.

Traits / Line	Total protein	Albumin	Globulin	Alb/Glob ratio	Total Lipied	Cholesterol	Triglyce-rides	T3	T4	T3/T4	Glucose
Selected	7.44 ±0.11	3.37 [a] ±0.07	4.07 [b] ±0.14	0.84 [a] ±0.04	253.25 ±	189.33 ± 8.918	314.33 ± 12.79	0.99 ±0.05	6.40 ±0.16	0.16 ± 0.008	253.92 ± 21.06
control	7.71 ±0.14	3.18 [b] ±0.03	4.53 [a] ±0.16	0.71 [b] ±0.03	258.00 ± 6.39	175.08 ± 9.27	278.83 ± 17.24	1.095 ± 0.06	6.46 ±0.32	0.17 ± 0.001	244.50 ± 14.51
Overall mean	7.58± 0.43	3.28± 0.19	4.299± 0.51	0.78± 0.13	255.63 ± 26.10	182.21± 31.51	296.58± 52.598	1.04± 0.19	6.43± 0.87	0.16± 0.019	249.21± 62.65
S.O.V.	P value										
Line (L)	0.13	0.02	0.04	0.03	0.66	0.28	0.11	0.18	0.87	0.16	0.72

Means having different letters in each effect are significantly (P≤ 0.05).
**** Significantly at P ≤ 0.01**

Total protein (g/dl), albumin (g/dl), globulin (g/dl), Alb/Glob ratio, total lipied(mg/dl), cholesterol (g/dl), triglycerides (mg/dl), tri-iodothyronine (T3), thyroxin (T4), T3/T4 ratio and Glucose (g/dl).

Phenotypic correlation coefficients between skeletal traits and some traits for Alexandria chickens during selection for the skeletal traits, are presented in **Table (4)**. The phenotypic correlation between body weight at four, eight and twelve weeks of age and body dimension were strong and positive, ranging from 0.39 to 0.62. The analysis results showed that the highly significant (<0.0001) positive correlation for **BW_4** with **SL_8** (0.47) this finding is in agreement with the findings reported **Habashy *et al.* (2021)**, and highly significant (<0.0001) positive correlation for **BW_4** with **BRL_8** (0.41) and **BRW_8** (0.39). These current results are in agree with the phenotypic correlation reported by **Mahmoud *et al.* (2014)**, **Akramullah *et al.* (2021), Bekele *et al.* (2021)** and **Habashy *et al.* (2021)**. Highly significant (<0.0001) positive correlation for **BW_8** with **SL_8** (0.46) this finding is in agreement with the findings reported and highly significant (<0.0001) positive correlation for **BW_8** with **BRL_8** (0.61), **BRW** (0.498)**.** Also, highly significant (<0.0001) positive correlation for **BW_{12}** with **SL** (0.39), **BRL** (0.46) and **BRW_8** (0.42), respectively. Udeh and Ogbu2011 reported that bodw weight was positively correlated between shank lenghth and breast width .This suggested that body diminution should include in the breeding program that would have a significant effect on body weight.

Table (4): Phenotypic correlation coefficients between traits.

Trait	SL_8	BRL_8	BRW_8
BW_4	**0.47****	**0.41****	**0.39****
BW_8	**0.46****	**0.61****	**0.498****
BW_{12}	**0.39****	**0.46****	**0.42****
SL_8	**-**	**0.498****	**0.45****
BRL_8	**0.498****	**-**	**0.62****
BRW_8	**0.45****	**0.62****	**-**

**** Significantly at P < .0001**

BW_4 = body weight at four weeks of age,
BW_8 = body weight at eight weeks of age,
Bw_{12} = body weight at twelve weeks of age,
SH_8: shank length at 8 weeks of age,
BRL_8: breast length at 8 weeks of age,
BRW_8: breast width at 8 weeks of age.

CONCLUSIONS

In the current study selection in the Alexandria chickens for some structural traits of the breast width, breast length and shank length increased body weight in selected line compared with control line and in male compared female. The breast width, breast length and shank length were positively correlated to live body weight at different ages in Alexandria.

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J. Agric. & Env. Sci. (Damanhour University) 2023, 22 (2): 122-142
Print: ISSN 1687-1464 Online: 2735-5098

الملخص العربى

تأثير الإنتخاب للصفات الهيكلية على وزن الجسم فى الدجاج المحلى الإسكندراني

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هدفت الدراسة الحالية إلى تحسين الصفات الإنتاجية في دجاج الإسكندراني عن طريق الانتخاب للصفات الهيكلية عرض الصدر وطول الصدر وطول الساق عند عمر ثمانية أسابيع. أظهرت نتائج هذه الدراسة أن المتوسطات الإجمالية لوزن الجسم عند أربعة أسابيع (BW_4) ووزن الجسم عند ثمانية أسابيع(BW_8) ووزن الجسم عند اثني عشر أسبوعًا (BW_{12}) كانت (204.699 ، 190.02 جرام) و (718.559 ، 610.20 جرام) و (1289.99 ، 1049.002 جرام) للذكور والإناث على التوالي كما أظهرت هذه النتائج أن الفروق بين السلالة كانت ذات دلالة عالية ($P \leq 0.01$) في الخط المنتخب عن خط المقارن في BW_8 و BW_{12} ، وكذلك متوسط طول الساق (SL_8) وطول الصدر (BRL_8)وعرض الصدر(BRW_8) عند ثمانية أسابيع من العمر (6.81 ، 6.38 سم) و (11.85، 11.23 سم) و (11.24 ، 10.78 سم) للذكور والإناث على التوالي..
أظهر الانتخاب للصفات الهيكلية لدجاج الإسكندراني في ثمانية أسابيع من العمر أن الفروق بين السلالات كانت عالية المعنوية ($P \leq 0.01$) للألبومين ونسبة / Albu Globفي الخط المنتخب . وأظهرت نتائج التحليل وجود ارتباط موجب عالي المعنوية (<0.0001) لـ BW_4 مع (SL_8 (0.47) ، (BRL_8 (0.41) و (BRW_8 (0.39) ، وارتباط إيجابي عالي المعنوية (<0.0001) لـ BW_8 مع (SL_8 (0.46) ، (BRL_8 (0.61) و (BRW_8 (0.498) وارتباط إيجابي عالي المعنوية (<0.0001) لـ BW_{12} مع SL_8 (0.39)و (BRL_8 (0.46) و (BRW_8 (0.42) على التوالي. يمكن القول أن ، أدى الانتخاب لصفات الهيكل العظمي إلى زيادة وزن الجسم في الخط المنتخب عن خط المقارن وفي الذكور أكثر من الإناث في الأعمار المختلفة.