Egypt. Poult. Sci. Vol (30) (IV): (1059-1072)

STRAIN AND SEX EFFECTS ON PRODUCTIVE AND SLAUGHTER PERFORMANCE OF DEVELOPED LOCAL EGYPTIAN AND CANADIAN CHICKEN STRAINS

By

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.Received: **06/11/2010** Accepted:**28/11/2010**

Abstract: *This experiment was conducted to evaluate the effect of strain and sex on productive performance and slaughter traits of chickens. A total of 1951 one day old chicks of three Canadian dual purpose strains (Shaver A, B and C) and two Egyptian strains (Salam and Mandarah) were used. Productive performance measured from one day old to 12 weeks of age and slaughter traits were recorded for cocks at 12 weeks of age. Results revealed that strain effect was clear for Shaver C strain for body weight, weight gain, feed consumption. In addition Shaver C had better feed conversion, dressing, fleshing, liver, glycogen, tenderness percentages but recorded the highest percentages for abdominal and total fat content as well as lowest testicular weight of cocks. Shaver B showed higher percentages for blood loss, feather, bones, gizzard and spleen percentages but Shaver A showed the highest percentages for pH content, ashes, color and water holding capacity. Sex effect showed superiority of males over females for body weight allover study period, weight gain during 4, 6, 8, 10 and 12 weeks and feed consumption during 6, 8, 10 and 12 weeks of age, while sex effect was not clear for feed conversion. Shaver C strain had the best averages for most productive and slaughter traits.*

INTRODUCTION

Production of commercial egg-type or broiler chicken strains involves mainly two parts, development and improvement. There is no clear cut between development and improvement programs. In Egypt, there are pure and hybrid lines of chickens. Among these hybrids Salam and Mandarah strains which they were improved genetically for both eggs and

meat production. Some dual purpose foreign chickens were domesticated in Egypt as Shaver Canadian strains.

There is evidence that there are genetic differences in growth rate between strains **(Deeb and Lamont, 2002).** Strain of chicken affect mean of body weight and gain at different ages **Leeson et al., (1997).** Also significantly altered feed intake, feed conversion and feed conversion ratio **Rondelli et al., (2003).** Moreover, sex has effect on some performance traits of chickens include body weight, growth rate, feed intake and feed conversion ratio **Balogun et al., (1997)** and **(Ajayi and Ejiofor, 2009).**

Effects of strain and sex on carcass parameters were also evaluated by many authors **(Ahn et al., 1995; Cherian et al., 1996; Musa et al., 2006; Jaturasitha et al., 2008; Ojedapo et al., 2008 and Zhao et al., 2009).** There were great variations in their results about body measurements and carcass quality.

The objectives of this study were to analyze the effects of strain and sex between local improved and foreign stains of chickens for growth and carcass traits.

MATERIALS AND METHODS

A total number of 1951 one day old chicks obtained from three Canadian dual purpose strains received from Shaver poultry breeders and two Egyptian strains (Salam and Mandarah) .

Chicks Management

Chicks individually weighted, sexed, wing banded and Mark's vaccinated with spectam at one day old, then randomly distributed and put 25 females /pen and 24 males /pen from each strain.

Chicks were brooded for the first five weeks of age in a clean well ventilated room, previously fumigated with formalin and potassium permanganate with ratio (2:1). The room was provided with heaters to adjust the environmental temperature according to age of the chicks, starting with 35 °C at one day old and decreased 3 °C weekly until the end of brooding period then adjusted at 21 °C in the growing period that started from six week till the end of study.

Feeding of Birds

Females fed with starter ration (19% CP and 3050 K.cal/kg) ad libitum from zero to 5 weeks of age and then grower ration (14% CP. / and 3100 K.cal/kg from 6-12 weeks). Males fed with broiler starter ration (22%

CP and 3150 k. cal/kg) from 0-5weeks of age, then roaster grower (20 % CP and 3200 k.cal /kg) from 6- 10 weeks of age, and roaster with finisher (18 % CP and 3250 K.cal/kg) from 10-12 weeks of age.

Studied Traits

Body weight, weight gain, Feed consumption and feed conversion ratio **(Lambert et al., 1936)** were calculated every two weeks from hatch till 12 weeks of age.

Four males were slaughtered from each strain at 12 weeks of age to estimate their carcass quality parameters including percentages of blood loss, feather, fleshing, bones, liver, gizzard, spleen, heart, color, dressing weight, fat, protein, pH, ashes, glycogen according to **(Dalrymple and Hamm, 1973)**, tenderness, water holding capacity, thyroid and testicular weight.

Statistical analysis

The analysis of variance (GLM) for the obtained data was performed using Statistical Analysis System **(SAS, 2002)** software to assess significant differences according to the following model.

$$X_{ijl} = \mu + G_i + L_j + e_{ijk}$$

Where:

X_{ijk} = the X th observation of the strain.

μ = overall mean.

G_i = effect of strain (i = Shaver A, B, C, Salam and Mandarah).

L_j = effect of sex (j = Male and female).

e_{ijk}= random error.

RESULTS AND DISCUSSION

1- **Strain and sex effect on body weight**

Results in (Table. 1.a.) represented least square means ± standard errors of the effect of different strains on body weight of male from 0 - 12 weeks of age. Hatch weight of males showed significant differences between different strains; Shaver (C) presented the highest significant values, while the lowest weight recorded for Mandarah strain (45.16 vs. 34.97 gm).

Body weight from the second week till the twelfth week showed that Shaver C cocks recorded the highest significant weight throughout the 2nd, 3rd, 4th, 8th, 10th and 12th week of age while the lowest weight throughout the same periods were recorded by Shaver B cocks (164.36, 497.34, 977.74,

1482.41, 2046.15 and 2629.12 gm) versus (110.73, 271.87, 497.56, 746.94, 1029.15 and 1355.36 gm).

Final body weight of males of all strains at week 12 of age was recorded dissentingly as follows: Shaver C, Shaver A, Salam, Mandarah and Shaver B (2629.13, 1686.31, 1598.84, 1594.84 and 1355.36 gm respectively).

Females of different strains followed the same trend for males, Shaver C females showed the highest hatch weight while the lowest hatch weight recorded by Mandarah E strain 44.18 vs. 34.58 gm (Table. 2).

Shaver C females recorded the highest significant weights (Table. 1.b) through the 2^{nd}, 3^{rd}, 4^{th}, 8^{th} , 10^{th} and 12^{th} week of age while the lowest weight through the same periods (164.31, 430.81, 742.01, 1113.60, 1506.20, and 2051.80 gm) versus (111.50, 257.56, 419.40, 572.13, 755.95 and 1158.80 gm) was for Shaver B strain.

Females at the 12^{th} week body weight ranked from the highest to the lowest body weight as follows: 2051.80, 1326.25, 1313.63, 1227.87 and 1158.80 gm for Shaver C, Shaver A, Salam, Mandarah and Shaver B; respectively.

These results showed that there was significant effect of strain on body weight and these agreed with those obtained by ***Leeson et al.,(1997), Farran et al., (2000), Nadia et al., (2001), (Ajayi and Ejiofor, 2009) and Enaiat et al., (2010)*** who reported marked strain and breed differences for body weight.

Results showed also significant differences for sex effect on body weights at different ages where males were higher than females in body weight. These results closely related to those obtained by ***Gueye et al., (1998), Rondelli et al., (2003) and (Ajayi and Ejiofor, 2009).***

2- **Strain and sex effect on weight gain.**

Strain effect were evident on weight gain (Table. 2) where Shaver C strain expressed higher significant weight gain than other strains during week 2, 4, 6, 8, 10 and 12 (8.55, 21.29, 27.98, 31.06, 33.06, 33.86 and 40.25 gm; respectively). On the other hand Shaver B strain recorded the lowest values of weight gain during week 2, 4, 6, 8 and 10 (4.94, 10.95, 13.78, 14.27 and 16.55 gm; respectively). While Mandarah recorded the lowest weight gain at week 12 of age 24.25 gm. These results agreed with those obtained by ***(Deeb and Lamont, 2002), Rondelli et al., (2003), Zhao et al., (2009) and Enaiat et al., (2010).*** They found significant differences between different strain in growth rate and weight gain at different stages of life.

Females recorded higher weight gain during week 2 of age for all strains with overall average (6.66 vs. 6.39) on the other hand males of all strains recorded higher significant weight gain than females during weeks 4, 6, 8, 10 and 12 of age parallel to overall (15.26, 22.46, 24.12, 24.80 and 30.14 gm) versus (13.05, 15.67, 16.36, 18.16 and 28.45 gm). The same trend of results was recorded by ***Balogun et al., (1997), Rondelli et al., (2003) and Enaiat et al., (2010)*** who found that males had higher weight gain than females.

3- **Strain and sex effect on feed consumption.**

Shaver C strain showed the highest significant different among strains (Table, 3) for feed consumption (gm/day/bird) during week 2, 4, 6, 8, 10 and 12 (23.78, 63.22, 79.44, 106.91, 121.03 and 134.03 gm /day/bird; respectively). Differences between strains in feed consumption were confirmed by the results obtained by ***Leeson et al.,(1997) and Rondelli et al., (2003).*** In addition female consumed more feed than males during 2nd and 4thweek of age for Shaver C (24.65, 64.70, Vs. 22.82, 61.61 gm). On the other hand males consumed more feed than females during weeks 6, 8, 10 and 12 (81.53, 109.59, 129.95 and 143.32 gm Vs. 77.55, 104.47, 112.92 and 125.57 gm /day/bird). These results agreed with those obtained by ***Balogun et al., (1997)*** who found that cockerels consumed more feed than pullets of the same strain and age Moreover, it was noticed that males consume more feed than females for all strains throughout week 6, 8, 10 and 12. These results were the same obtained by ***Enaiat et al., (2010)*** who concluded that Matrouh chicks strain consumed significantly lower amounts of feed than that of Sliver Montazah chicks during all studied periods and the males of each strain consumed significantly more feed than their females.

Shaver B strain recorded the lowest feed consumption during week 2 and week 6 (21.04 and 54.60 gm /day/bird, while Salam strain recorded the lowest feed consumption during weeks 4, 8 and 12 of age (42.49, 63.05 and 92.47 gm /day/bird). But Mandarah strain was the lowest one during week 10 of age (80.57 gm /day/bird).

4- **Strain and sex effect on feed conversion**

Table (4) showed that there were significant differences among different strains for feed conversion where the best feed conversion recorded by Shaver C during week 2, 4,6, 10 and 12 (2.87, 3.10, 3.10, 4.03 and 3.54 gm feed/gm gain), while Salam strain showed the best feed conversion during week 8 (3.70 gm feed/gm gain). On the other hand, the lowest feed conversion recorded by Shaver B during week 2, 4, 6, 8, 10 and 12 (4.47, 4.52, 4.54, 6.11, 7.10 and 4.64 gm feed/gm gain).Line and strain effect on

feed conversion was closely related to the results recorded by ***Farran et al., (2000) and Rondelli et al., (2003).***

Sex effect had no specific trend during early weeks and late period of rearing as recorded for weeks 2, 4, 10 and 12. Non significant differences for sex between Silver Montazah and Matrouh strains on feed conversion ratio at early stages of growth were recorded by ***Enaiat et al., (2010).*** But males of different strains showed the best feed conversion than females during week 6 and 8 for all strains. Significant differences in feed conversion between sexes were recorded by ***(Washburn et al., 1975).***

5- Strain effect on carcass parameters

Table (5) represented effect of strain on carcass parameters, Shaver C recorded the highest significant percentages for dressing, fleshing, liver, abdominal fat, total fat and glycogen (72.75, 58.75, 2.10, 3.65, 3.72 and 1.27 %; respectively). Strain effect on abdominal fat percentage were recorded also by ***Ahn et al., (1995), Cherian et al., (1996), Farran et al., (2000) and Zhao et al., (2009),*** and on carcass percentage ***Ojedapo et al., (2008).***

Heart and protein percentages were significantly higher for Mandarah strain (0.57 and 21.25%). On the other hand Shaver A showed the higher pH content, ashes, color, water holding capacity (6.30, 1.11, 0.36 and 3.08%) as well as thyroid weight (9.35 mg/100 gm live weight). These results agreed with ***Ojedapo et al., (2008)*** who found that chickens of Anka and Rugao breeds differed significantly in color density, pH and tenderness ***Musa et al., (2006)***, but disagreed with ***Musa et al., (2006)*** who reported non significant differences between breeds in water holding capacity.

Tenderness percentage was the highest for Shaver A and Mandarah while the lowest for Shaver C (2.82, 2.82 and 2.55 %; respectively). On the other hand, cocks of Salam strain recorded the highest significant testicular percentage 0.44 % while the lowest was for cocks of Shaver C strain 0.16 %. ***Chatterjee et al., (2007)*** recorded significant differences in testicular weight between Brown Nicobari and White Leghorn males and their crosses.

From the above results, It was concluded that strain and sex had prominent effect on most productive and slaughter traits. In addition; Shaver C strain had the best averages for these parameters.

Table (1.a): Least square means ± standard errors of the effect of different strains on body weight of male from 0 - 12 weeks of age

Age in weeks	Strains					Average
	Shaver A	Shaver B	Shaver C	Salam	Mandarah	
Hatch weight	43.31 ± 0.26 ^{b}	42.45 ± 0.30 ^{b}	45.16 ± 0.33 ^{a}	35.19 ± 0.41 ^{c}	34.97 ± 0.31 ^{c}	40.15 ± 0.24
Week 2	121.27 ± 1.50 ^{c}	110.73 ± 1.49 ^{d}	164.36 ± 2.10 ^{a}	125.97 ± 1.70 ^{bc}	127.44 ± 1.67 ^{b}	129.65 ± 1.12
Week 4	319.56 ± 3.48 ^{b}	271.87 ± 4.18 ^{c}	497.34 ± 5.59 ^{a}	321.12 ± 5.04 ^{b}	314.25 ± 4.35 ^{b}	343.41 ± 4.09
Week 6	606.31 ± 6.78 ^{b}	497.56 ± 7.87 ^{c}	977.74 ± 10.82 ^{a}	617.09 ± 8.88 ^{b}	605.45 ± 9.11 ^{b}	657.92 ± 8.42
Week 8	912.42 ± 9.28 ^{b}	746.94 ± 10.34 ^{c}	1482.41 ± 17.78 ^{a}	945.05 ± 13.13 ^{b}	913.50 ± 11.90 ^{b}	995.62 ± 12.72
Week 10	1223.05 ± 13.21 ^{b}	1029.15 ± 14.12 ^{c}	2046.15 ± 22.96 ^{a}	1214.94 ± 20.45 ^{b}	1232.88 ± 14.90 ^{b}	1342.85 ± 17.94
Week 12	1686.31 ± 16.99 ^{b}	1355.36 ± 17.35 ^{d}	2629.12 ± 27.19 ^{a}	1598.84 ± 20.80 ^{c}	1594.84 ± 18.72 ^{c}	1764.90 ± 22.03

a, b, c and d= means on the same raw (between strains) significantly ($p \leq 0.01$).

Table (1.b): Least square means ± standard errors of the effect of different strains on body weight of female from 0-12 weeks of age

Age in weeks	Strains					Average
	Shaver A	Shaver B	Shaver C	Salam	Mandarah	
Hatch weight	43.12 ± 0.27 ^{b}	41.72 ± 0.28 ^{b}	44.18 ± 0.30 ^{a}	34.78 ± 0.32 ^{c}	34.58 ± 0.65 ^{c}	39.67 ± 0.25
Week 2	122.17 ± 1.47 ^{c}	111.59 ± 1.59 ^{d}	164.31 ± 2.11 ^{a}	132.36 ± 1.83 ^{bc}	134.02 ± 1.51 ^{b}	132.97 ± 1.10
Week 4	298.06 ± 3.81 ^{b}	257.56 ± 3.88 ^{c}	430.81 ± 5.29 ^{a}	295.42 ± 4.40 ^{b}	295.97 ± 3.81 ^{b}	315.78 ± 3.30
Week 6	489.89 ± 6.19 ^{c}	419.40 ± 7.57 ^{d}	742.01 ± 8.52 ^{a}	519.09 ± 8.31 ^{b}	503.62 ± 7.02 ^{b}	535.26 ± 5.98
Week 8	696.04 ± 7.87 ^{b}	572.13 ± 8.60 ^{c}	1113.60 ± 13.20 ^{a}	738.08 ± 10.04 ^{b}	698.48 ± 9.36 ^{b}	764.39 ± 9.43
Week 10	939.16 ± 11.08 ^{b}	755.95 ± 10.42 ^{d}	1506.20 ± 16.48 ^{a}	977.07 ± 12.56 ^{b}	910.90 ± 12.86 ^{c}	1018.69 ± 12.91
Week 12	1326.25 ± 14.02 ^{b}	1158.80 ± 12.98 ^{d}	2051.80 ± 23.10 ^{a}	1313.63 ± 13.32 ^{b}	1227.87 ± 14.44 ^{c}	1416.98 ± 16.31

a, b, c and d= means on the same raw (between strains) significantly ($p \leq 0.01$).

Table (2): Least square means ± standard errors of the effect of different strains on live weight gain (g/day) from 2 - 12 weeks of age

Age in weeks	Sex	Strains					Average
		Shaver A	Shaver B	Shaver C	Salam	Mandarah	
Week -2	M	5.57 ± 0.10	4.88 ± 0.10	8.51 ± 0.14	6.49 ± 0.12	6.60 ± 0.11	6.39 ± 0.07
	F	5.65 ± 0.10	4.99 ± 0.11	8.58 ± 0.14	6.97 ± 0.13	7.10 ± 0.11	6.66 ± 0.07
	overall	5.61 ± 0.07 ^{c}	4.94 ± 0.07 ^{d}	8.55 ± 0.10 ^{a}	6.73 ± 0.09 ^{b}	6.85 ± 0.08 ^{b}	6.63 ± 0.05
Week -4	M	14.16 ± 0.18	11.50 ± 0.24	23.78 ± 0.35	13.93 ± 0.32	13.34 ± 0.24	15.26 ± 0.23
	F	12.55 ± 0.20	10.42 ± 0.20	19.03 ± 0.32	11.64 ± 0.25	11.56 ± 0.20	13.05 ± 0.17
	overall	13.35 ± 0.15 ^{b}	10.95 ± 0.16 ^{d}	21.29 ± 0.29 ^{a}	12.76 ± 0.22 ^{c}	12.44 ± 0.17 ^{c}	14.13 ± 0.14
Week- 6	M	20.48 ± 0.37	16.11 ± 0.40	34.31 ± 0.51	21.14 ± 0.50	20.79 ± 0.44	22.46 ± 0.34
	F	13.70 ± 0.34	11.56 ± 0.41	22.22 ± 0.49	15.97 ± 0.41	14.83 ± 0.35	15.67 ± 0.24
	overall	17.07 ± 0.35 ^{c}	13.78 ± 0.33 ^{d}	27.98 ± 0.56 ^{a}	18.50 ± 0.37 ^{b}	17.78 ± 0.35 ^{bc}	18.99 ± 0.23
Week -8	M	21.49 ± 0.49	17.81 ± 0.44	36.04 ± 0.77	23.42 ± 0.62	22.00 ± 0.63	24.12 ± 0.38
	F	14.72 ± 0.36	10.91 ± 0.36	26.53 ± 0.67	15.64 ± 0.44	15.13 ± 0.61	16.36 ± 0.32
	overall	18.27 ± 0.39 ^{bc}	14.27 ± 0.37 ^{e}	31.06 ± 0.61 ^{a}	19.45 ± 0.47 ^{b}	18.93 ± 0.52 ^{d}	20.16 ± 0.27
Week -10	M	22.19 ± 0.61	20.16 ± 0.58	40.27 ± 0.98	19.28 ± 1.10	22.81 ± 0.63	24.80 ± 0.49
	F	17.36 ± 0.54	13.12 ± 0.53	28.08 ± 0.86	17.07 ± 0.58	15.13 ± 0.61	18.16 ± 0.36
	overall	19.26 ± 0.44 ^{b}	16.55 ± 0.45 ^{c}	33.86 ± 0.76 ^{a}	18.15 ± 0.65 ^{b}	18.93 ± 0.52 ^{b}	21.41 ± 0.32
Week -12	M	33.08 ± 0.66	32.29 ± 0.56	41.64 ± 1.58	27.42 ± 1.05	25.85 ± 0.67	30.14 ± 0.51
	F	27.64 ± 0.61	28.77 ± 0.52	38.99 ± 1.30	20.04 ± 0.64	22.67 ± 0.72	28.45 ± 0.44
	overall	30.35 ± 0.50 ^{b}	26.10 ± 0.45 ^{c}	40.25 ± 1.02 ^{a}	25.69 ± 0.62 ^{c}	24.25 ± 0.50 ^{c}	29.28 ± 0.34

a, b, c, d and e = means on the same raw (for the average of strains) significantly ($p \leq 0.01$).

M = Male F= Female

Table (3): Least square means ± standard errors of the effect of different strains on feed consumption (g/day/bird) from 2 - 12 weeks of age

Age in weeks	Sex	Strains					Average
		Shaver A	Shaver B	Shaver C	Salam	Mandarah	
Week -2	M	21.05 ± 0.06	21.97 ± 0.04	22.82 ± 0.04	22.80 ± 0.00	22.49 ± 0.02	22.22 ± 0.03
	F	22.50 ± 0.06	20.15 ± 0.06	24.65 ± 0.03	22.44 ± 0.06	22.07 ± 0.02	22.36 ± 0.06
	overall	**21.78 ± 0.06** ^{d}	**21.04 ± 0.07** ^{e}	**23.78 ± 0.07** ^{a}	**22.61 ± 0.03** ^{b}	**22.28 ± 0.02** ^{c}	**22.29 ± 0.03**
Week -4	M	48.88 ± 0.06	46.67 ± 0.20	61.61 ± 0.41	43.30 ± 0.23	43.78 ± 0.42	47.53 ± 0.34
	F	44.06 ± 0.18	47.85 ± 0.20	64.70 ± 0.08	41.72 ± 0.03	44.23 ± 0.40	48.58 ± 0.38
	overall	**43.52 ± 0.10** ^{c}	**47.27 ± 0.15** ^{b}	**63.22 ± 0.23** ^{a}	**42.49 ± 0.13** ^{d}	**44.01 ± 0.29** ^{c}	**48.06 ± 0.26**
Week- 6	M	55.72 ± 0.04	54.82 ± 0.13	81.53 ± 0.14	60.29 ± 0.15	58.35 ± 0.28	61.96 ± 0.45
	F	57.60 ± 0.06	54.50 ± 0.22	77.55 ± 0.16	60.05 ± 0.02	60.80 ± 0.05	62.14 ± 0.36
	overall	**56.66 ± 0.07** ^{d}	**54.60 ± 0.13** ^{e}	**79.44 ± 0.18** ^{a}	**60.16 ± 0.07** ^{b}	**59.59 ± 0.16** ^{c}	**62.05 ± 0.29**
Week -8	M	79.68 ± 0.04	72.72 ± 0.37	109.59 ± 0.76	66.52 ± 0.67	75.92 ± 0.94	80.62 ± 0.73
	F	69.34 ± 0.10	69.10 ± 0.18	104.47 ± 0.58	59.72 ± 0.06	73.27 ± 0.45	75.26 ± 0.70
	overall	**74.48 ± 0.37** ^{b}	**70.86 ± 024** ^{c}	**106.91 ± 0.50** ^{a}	**63.05 ± 0.41** ^{d}	**74.58 ± 0.52** ^{b}	**77.88 ± 0.51**
Week -10	M	100.37 ± 0.05	100.41 ± 0.14	129.95 ± 0.64	86.11 ± 0.15	82.65 ± 0.23	99.57 ± 0.77
	F	78.77 ± 0.30	84.47 ± 0.15	112.92 ± 0.34	85.81 ± 0.18	78.54 ± 0.39	88.20 ± 0.59
	overall	**89.51 ± 0.79** ^{c}	**92.24 ± 0.58** ^{b}	**121.03 ± 0.71** ^{a}	**85.96 ± 0.12** ^{d}	**80.57 ± 0.27** ^{e}	**93.76 ± 0.51**
Week -12	M	113.92 ± 0.04	115.54 ± 0.26	143.32 ± 0.81	92.08 ± 0.21	100.79 ± 0.04	112.82 ± 0.81
	F	103.70 ± 0.23	101.37 ± 0.19	125.57 ± 0.29	92.83 ± 0.25	91.93 ± 0.14	103.12 ± 0.55
	overall	**108.78 ± 0.38** ^{b}	**108.27 ± 0.53** ^{b}	**134.03 ± 0.76** ^{a}	**92.47 ± 0.16** ^{d}	**96.32 ± 0.39** ^{c}	**107.87 ± 0.51**

a, b, c, d and e = means on the same raw (for the average of strains) significantly ($p \leq 0.01$).
M = Male F= Female

Table (4): Least square means ± standard errors of the effect of different strains on feed conversion (gm feed/gm gain) from 2 - 12 weeks of age

Age in weeks	Sex	Strains					Average
		Shaver A	Shaver B	Shaver C	Salam	Mandarah	
Week -2	M	3.91 ± 0.08	4.71 ± 0.11	2.75 ± 0.05	3.64 ± 0.06	3.52 ± 0.06	3.71 ± 0.04
	F	4.12 ± 0.08	4.24 ± 0.10	2.98 ± 0.07	3.34 ± 0.06	3.21 ± 0.07	3.57 ± 0.04
	overall	**4.02 ± 0.05** ^{b}	**4.47 ± 0.07** ^{a}	**2.87 ± 0.04** ^{d}	**3.48 ± 0.05** ^{c}	**3.36 ± 0.05** ^{c}	**3.64 ± 0.03**
Week -4	M	3.08 ± 0.04	4.27 ± 0.12	2.66 ± 0.05	3.27 ± 0.08	3.37 ± 0.06	3.34 ± 0.04
	F	3.60 ± 0.06	4.47 ± 0.10	3.49 ± 0.06	3.78 ± 0.09	3.93 ± 0.07	3.01 ± 0.04
	overall	**3.34 ± 0.04** ^{b}	**4.52 ± 0.08** ^{a}	**3.10 ± 0.05** ^{c}	**3.35 ± 0.06** ^{b}	**3.65 ± 0.05** ^{b}	**3.63 ± 0.03**
Week- 6	M	2.86 ± 0.09	3.60 ± 0.09	2.34 ± 0.04	3.11 ± 0.14	2.98 ± 0.09	3.00 ± 0.04
	F	4.46 ± 0.12	5.44 ± 030	3.72 ± 0.12	4.03 ± 0.11	4.34 ± 0.10	4.40 ± 0.08
	overall	**3.66 ± 0.09** ^{b}	**4.54 ± 0.17** ^{a}	**3.10 ± 0.08** ^{c}	**3.58 ± 0.09** ^{b}	**3.66 ± 0.08** ^{b}	**3.71 ± 0.05**
Week -8	M	3.83 ± 0.09	4.38 ± 0.14	3.15 ± 0.07	3.05 ± 0.09	3.61 ± 0.08	3.61 ± 0.05
	F	5.12 ± 0.20	7.76 ± 0.59	4.60 ± 0.37	4.32 ± 0.23	6.99 ± 0.75	5.76 ± 0.22
	overall	**4.48 ± 0.12** ^{c}	**6.11 ± 0.33** ^{a}	**3.91 ± 0.20** ^{cd}	**3.70 ± 0.13** ^{d}	**5.32 ± 0.40** ^{b}	**4.71 ± 0.12**
Week - 10	M	5.30 ± 0.47	5.53 ± 0.23	3.43 ± 0.12	6.45 ± 0.92	3.91 ± 0.11	4.93 ± 0.22
	F	5.20 ± 0.19	8.60 ± 0.82	4.57 ± 0.22	5.91 ± 0.32	6.19 ± 0.31	6.07 ± 0.20
	overall	**5.15 ± 0.25** ^{c}	**7.10 ± 0.45** ^{a}	**4.03 ± 0.13** ^{d}	**6.18 ± 0.47** ^{b}	**5.06 ± 0.18** ^{c}	**5.51 ± 0.15**
Week - 12	M	3.59 ± 0.08	5.69 ± 0.36	3.94 ± 0.42	4.40 ± 0.68	4.23 ± 0.14	4.37 ± 0.18
	F	4.08 ± 0.17	3.65 ± 0.07	3.18 ± 0.16	4.25 ± 0.16	4.64 ± 0.21	3.96 ± 0.07
	overall	**3.84 ± 0.09** ^{b}	**4.64 ± 0.19** ^{a}	**3.54 ± 0.22** ^{c}	**4.32 ± 0.34** ^{ab}	**4.44 ± 0.12** ^{ab}	**4.16 ± 0.09**

a, b, c, d and e = means on the same raw (for the average of strains) significantly ($p \leq 0.01$).
M = Male F= Female

Table (5): Least square means ± standard errors of the effect of different strains on parameters of slaughter test relative to live body weight of males at 12 weeks of age.

Parameter*	Strains					Average
	Shaver A	Shaver B	Shaver C	Salam	Mandarah	
Blood loss	3.22 ± 0.17 ^{a}	3.30 ± 0.14 ^{a}	2.50 ± 0.04 ^{b}	3.02 ± 0.06 ^{a}	2.57 ± 0.12 ^{b}	2.92 ± 0.08
Feather	9.67 ± 0.07 ^{bc}	11.40 ± 0.12 ^{a}	9.55 ± 0.19 ^{d}	10.07 ± 0.17 ^{c}	10.22 ± 0.14 ^{bc}	10.18 ± 0.06
Dressing	65.50 ± 0.28 ^{bc}	63.75 ± 0.47 ^{c}	72.75 ± 0.62 ^{a}	64.75 ± 0.62 ^{c}	66.75 ± 0.75 ^{b}	66.70 ± 0.76
Fleshing	49.00 ± 0.70 ^{b}	45.25 ± 1.25 ^{c}	58.75 ± 1.03 ^{a}	48.25 ± 0.75 ^{c}	49.75 ± 0.85 ^{b}	50.20 ± 1.10
Bones	16.50 ± 0.50 ^{a}	18.50 ± 0.04 ^{a}	14.00 ± 0.70 ^{b}	16.50 ± 0.85 ^{a}	17.50 ± 0.28 ^{a}	16.60 ± 0.45
Liver	1.77 ± 0.07 ^{b}	1.85 ± 0.02 ^{b}	2.10 ± 0.09 ^{a}	1.82 ± 0.04 ^{b}	1.85 ± 0.06 ^{b}	1.88 ± 0.36
Gizzard	2.37 ± 0.18 ^{a}	2.40 ± 0.07 ^{a}	2.07 ± 0.04 ^{b}	1.95 ± 0.02 ^{b}	1.97 ± 0.04 ^{b}	2.15 ± 0.05
Spleen	0.27 ± 0.07 ^{ab}	0.42 ± 0.07 ^{a}	0.22 ± 0.02 ^{b}	0.30 ± 0.00 ^{ab}	0.20 ± 0.00 ^{b}	0.28 ± 0.02
Heart	0.50 ± 0.00 ^{b}	0.50 ± 0.00 ^{b}	0.51 ± 0.00 ^{b}	0.52 ± 0.02 ^{b}	0.57 ± 0.02 ^{a}	0.52 ± 0.09
Abdominal fat	1.50 ± 0.17 ^{b}	0.47 ± 0.04 ^{c}	3.65 ± 2.48 ^{a}	1.47 ± 0.11 ^{b}	1.30 ± 0.12 ^{b}	1.68 ± 0.50
Total fat	2.92 ± 0.07 ^{b}	2.25 ± 0.06 ^{d}	3.72 ± 0.06 ^{a}	2.92 ± 0.02 ^{b}	2.55 ± 0.06 ^{c}	2.87 ± 0.11
Protein	20.70 ± 0.07 ^{b}	20.55 ± 0.11 ^{b}	20.38 ± 0.03 ^{b}	20.46 ± 0.16 ^{b}	21.25 ± 0.09 ^{a}	20.67 ± 0.08
PH	6.30 ± 0.03 ^{a}	6.11 ± 0.06 ^{ab}	6.03 ± 0.04 ^{b}	5.95 ± 0.01 ^{c}	6.01 ± 0.02 ^{b}	6.02 ± 0.02
Ashes	1.11 ± 0.01 ^{a}	1.06 ± 0.01 ^{b}	1.08 ± 0.00 ^{b}	1.03 ± 0.00 ^{c}	1.08 ± 0.00 ^{b}	1.07 ± 0.01
Glycogen	0.74 ± 0.01 ^{c}	0.90 ± 0.01 ^{b}	1.27 ± 0.08 ^{a}	0.94 ± 0.03 ^{b}	0.69 ± 0.01 ^{c}	0.91 ± 0.04
Color	0.36 ± 0.01 ^{a}	0.25 ± 0.01 ^{d}	0.28 ± 0.00 ^{bc}	0.29 ± 0.00 ^{b}	0.27 ± 0.00 ^{cd}	0.29 ± 0.01
Tenderness	2.82 ± 0.04 ^{a}	2.75 ± 0.05 ^{a}	2.55 ± 0.02 ^{b}	2.57 ± 0.04 ^{b}	2.82 ± 0.04 ^{a}	2.70 ± 0.03
W-holding capacity	3.08 ± 0.5 ^{a}	2.59 ± 0.05 ^{c}	2.86 ± 0.04 ^{b}	2.95 ± 0.03 ^{ab}	2.67 ± 0.05 ^{c}	2.83 ± 0.04
Thyroid **	9.35 ± 0.17 ^{a}	9.72 ± 0.08 ^{a}	8.02 ± 0.13 ^{b}	7.07 ± 0.08 ^{c}	8.25 ± 0.18 ^{b}	8.48 ± 0.22
Testis	0.42 ± 0.01 ^{a}	0.27 ± 0.00 ^{c}	0.16 ± 0.01 ^{d}	0.44 ± 0.02 ^{a}	0.34 ± 0.01 ^{b}	0.33 ± 0.02

a, b, c and d = means on the same raw (for the average of strains) significantly ($p \leq 0.01$).

* Percentage from live body weight ** Thyroid weight mg/100 g live weight

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الملخص العربى

تأثير السلالة و الجنس على الأداء الإنتاجي وصفات الذبيحه فى سلالات الدجاج المحلية المصرية والكندية

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أجريت الدراسة بهدف تقييم تأثير السلالة والجنس على الأداء الإنتاجي وصفات الذبح للدجاج حيث إستخدم ١٩٥١ كتكوت عمر يوم واحد من ثلاث سلالات كندية ثنائية الغرض (شيفر أ- ب- ج) واثنين من السلالات المصرية (سلام والمندرة). درست الصفات الإنتاجية من عمره يوم واحد إلى ١٢ أسبوعا وكذلك صفات الذبيحه سجلت للديوك عند عمر ١٢ أسبوع. وكشفت النتائج أن تأثير السلالة كان واضحا لسلالة (شيفر ج) لوزن الجسم ، وزيادة الوزن ، استهلاك العلف. وبالإضافة إلى ذلك كانت أفضل سلالاله فى تحويل الغذاء ، ونسبة التصافى للذبيحة ، والكبد والجليكوجين . إلا أنها سجلت أعلى النسب المئوية لمحتوى الدهون في منطقة البطن والجسم عامه فضلا عن أدنى وزن للخصية فى الديوك. وقد أظهرت سلالة (شيفر ب) أعلى النسب المئويه للدم المفقود بعد الذبح ، التريبش ، والعظام ، والنسب المئوية للطحالز بينما أظهرت النتائج أن سلالة (شيفر أ) قد سجلت أعلى النسب المئوية للمحتوى الرقم الهيدروجيني ، والرماد ، واللون ، والقدرة على الاحتفاظ بالماء. وبالنسبة إللى تأثير الجنس أظهرت النتائج تفوق الذكور على الإناث فى وزن الجسم أثناء فترة الدراسة ، وزيادة الوزن في الأسابيع ٤ و ٦ و ٨ و ١٠ و ١٢ واستهلاك الغذاء في الاسابيع ٦ و ٨ و ١٠ و ١٢ من العمر ، بينما لم يكن تأثير الجنس واضحا بالنسبة لمعدل تحويل الغذاء.

ونخلص من هذه الدراسة إلى ان سلالة (شيفر ج) سجلت أفضل المتوسطات لمعظم الصفات الإنتاجية وصفات الذبيحة.