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COMPARATIVE STUDY AMONG FOUR EGYPTIAN LOCAL STRAINS OF CHICKENS

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ABSTRACT: This study was carried out to evaluate fertility, hatchability, growth performance, carcass traits and blood characteristics for four Egyptian local strains of chickens (Dokki-4, Gimmizah and Mamourah and Sinai). Eight hundred and four hatching eggs were used. Two hundred forty one-day-old chicks were used in growing exterminates. The obtained results show that Mamourah strain surpassed in egg weight, however, Mamourah and Gimmizah strains achieved highly hatched chick weights. There are no significant differences among the experimental strains in fertility or hatchability percentage. Mamourah and Gimmizah strains have significantly high body weight and weight gain without differences between them followed by Dokki-4 strain and Sinai breed without differences at seven weeks of age. The Sinai breed had significantly lower feed intake compared with the other strains during the total period of study. Mamourah strain has the best feed conversion ratio compared with the other birds. There are no differences among the tested strains in different carcass traits or serum blood characteristic. There are no differences in immunity parameters except for antibody titer against Avian Influenza Virus HI AI which Mamourah strain achieved high significant value comparing with Sinai breed. The results concluded that were no significant differences among Dokki-4, Gimmizah, Mamourah strains and the Sinai breed in fertility, hatchability, hatched chick weight, carcass traits and serum blood characteristics. Mamourah and Gimmizah strains achieved high body weight and weight gain followed by Dokki-4 strain and Sinai breed. Also, Sinai breed has lower feed intake, but Mamourah strain has the best feed conversion ratio throughout the first 7-weeks-old.

Key words: local strain, chicks, carcass, blood parameters.

INTRODUCTION

Increasing demand for poultry products led to poultry breeders to do their best to increase poultry production. Performance of chicken is important for the formulation of breeding plans for further improvement in production traits. Growth and production traits of birds indicate their genetic constitution and adaptation with respect to the specific environment (Ahmed and Singh, 2007). Egyptian chicken breeds had a low growth and meat production. These breeds need to rewrite intensive selection programs (Iraqi *et al.*, 2000). Dokki-4 a local strain established in 1966 at the Dokki-4 Poultry Station from a cross between Fayoumi males and Plymouth Rock females (El-Itriby and El- Sayed, 1966) and they are considered as dual purpose for egg and meat production. Local chicken had a good adaptation to the environmental conditions in Egypt (El-Tahawy and Habashy 2021), in addition to the distinctive flavor, whether for meat or eggs, and we should work to improve the productivity of the Egyptian breeds and strains by applying effective improvement programs. Mamourah strain is one of the local chickens that were developed as a result of crossing male of Alexandria and female of Dokki-4 in 1974. Mamourah strain is tends to produce meat. Sinai chicken is one of the local breeds that is very distinguished in the characteristics of egg quality and heat stress tolerance, but egg production still needs to be improved. The Sinai is a mongrel fowl that is raised in the Sinai Peninsula desert and is adapted to the hot climate (Soltan *et al.*, 2018). Also, Mahgoub (2002) reported that Sinai breed is well adapted to high environmental temperature. Sinai breed could be included in crossbreeding programmers to improve the performance of the local chicken population (El-Tahawy, 2020).

Gimmizah strain is one of the local chickens from crossing between Dokki-4 and Plymouth Rock chickens. Gimmizah chicks are auto-sexing and are similar to Plymouth Rock chickens in feather type. Gimmizah chicks tend to produce meat. The aforementioned strains are widely used to obtained local eggs and meat from Egyptian strains. Therefore, this study was carried out to evaluate fertility, hatchability, growth performance, carcass traits and blood characteristic for four Egyptian local strains of chickens (Dokki-4, Gimmizah, and Mamourah and Sinai) and they are considered as dual purpose for egg and meat production.

MATERIALS AND MEHTODES

This experiment was done at Fac. of Agric., Mans. Univ., throughout September and October 2021. This study was carried out to evaluate fertility, hatchability, growth performance, carcass and blood characteristics for four Egyptian local strains of chickens (Dokki-4, Gimmizah, Mamourah and Sinai). Eight hundred and four eggs (from El-Serw Experimental Research Station, Domietta Governorate) were used to study fertility and hatchability (201eggs from each strain in three replicates). Two hundred forty one-day-old chicks were used in this study (60 chicks each strain, distributed into 4 replicates groups). Chick's growth performance was recorded. Also, carcass traits and serum blood parameters were studied. All chicks were fed commercial starter diet throughout three weeks (Metabolizable energy 3100 Kcal/kg and crude protein 23

%) and then fed grower-finisher diet up to 7 weeks of age (Metabolizable energy 3100 Kcal/kg and crude protein 20 %). The experimental diets and water were offered to chicks *ad libitum* during the experimental period (seven weeks of age). Chicks were housed in breeding pens with fresh wood shavings; gas heater was used to provide the chicks with heat needed for brooding. Ambient temperature was maintained at 30-32 ^{o}C during the 1st week and weekly decreased by 3 ^{o}C for the next three weeks. During the 4th and 5th weeks, temperature was maintained at 22-24 ^{o}C. Birds were kept in a well-ventilated open system under the same managerial, hygienic and environmental conditions. Birds of all experimental groups were vaccinated against Newcastle using Hitchner B1 strain via drinking water at seven days of age while Lasota and Colon30 vaccines were used at 18 and 28 days of age, respectively. Likewise, to protect the chicks against Gumboro they were vaccinated at 12 days of age via drinking water. A light schedule condition was used; from one-day old until 7th day it was 23 h light, followed by 20 h of light from 8th day to the end of experiment. The following measurements were determined in this study:

Fertility and hatchability percentages:

Fertility and hatchability were calculated as follow for each strain:

Fertility (%) = (fertile eggs/total eggs) ×100

Hatchability of the fertile eggs (%) = (hatched chick/fertile eggs) ×100

Growth performance of hatched chicks:

After hatching 60 chicks from each strain were used in the growing experiment in four replicates group in rearing battery. Growth performance includes weekly chicks live body weight (LBW) and feed intake (FI) were recorded at a replicate basis. Body weight gain (BWG) and feed conversion ratio (FCR) were calculated. Fed conversion ratio was calculated as feed intake in the period/ body weight gain in the same period. The performance measurements (LBW, FI, BWG and FCR) were calculated for the whole experimental period (from hatch up to 49 days of age).

Carcass traits of broiler chicks:

At the end of the feeding trial (49 days of age), five chicks from each strain were randomly chosen from each treatment to undergo slaughter test. Chicks were fasted for 8 hours before slaughter. Individual LBW of birds was recorded immediately before slaughtering. Carcass traits were recorded. Procedures for cleaning out were performed on the hot carcasses. Weights of carcass yield (CY) and edible organs were determined and expressed as a percentage of live body weight at slaughter.

Serum blood parameters:

Five chicks from each strain at 49 days of age were chosen to collect 5 serum blood samples. Blood serum was separated by centrifugation process at 3000 rpm for 15 minutes. Serum concentrations of Total protein, Albumin, Globulin, Total lipids, Triglycerides, cholesterol, high-density lipoprotein (HDL), low-density lipoprotein (LDL), very low-density lipoprotein (vLDL), The activity of alanine aminotransferase (ALT), aspartate aminotransferase (AST), Alk phosphatase, Total antioxidant capacity (TAC), malondialdehyde (MDA) and superoxide dismutase (SOD) and corticosterone were measured by commercial kits (commercial kits: Spectrum Diagnostic kits S.A.E.,

Egyptian company of biotechnology, 2016).

Estimation of Immune Response

(IgG) Immunoglobulin G, (IgM) Immunoglobulin M, (IgA) Immunoglobulin A, antibody titer against Newcastle Disease Virus (HI ND) and antibody titer against Avian Influenza Virus **(**HI AI) were measured by commercial kits in blood serum of chicks (commercial kits: Spectrum Diagnostic kits S.A.E., Egyptian company of biotechnology, 2016).

Statistical analysis:

Statistical processing of results of performance was performed by using one-way analysis of variance of the GLM procedure of the Statistical Analysis System (SAS, 2004). However the data of carcass and blood parameters two way analysis of variance was used to study effect of sex. The significant differences between which treatment means were separated by Tukey's Multiple Range-test ($P<0.05$). The following statistical model was used to growth performance: $Yij = \mu + Si + eij$. Where: Yij = observed traits; μ = the overall mean; Si = effect of local strains; i= (1, 2, 3 and 4); eij = experimental random error. However the following model was used for carcass and blood parameters: $Yij = \mu + Si + Mj + SMij + eij$. Where: Yij = observed traits; μ = the overall mean; Si = effect of local strains; i= (1, 2, 3 and 4); Mj = effect of sex; j= (1and 2); SMij= interaction between local strains and sex; eij = experimental random error.

RESULTS AND DISCUSSION

Fertility and hatchability

The effect of different local strains and Sinai breed on fertility and hatchability are shown in table 1. Egg weight of the Mamourah strain was high compared to the other strains followed by that of Sinai breed, Gimmizah and Dokki-4 in descending order. There are no significant differences in fertility or hatchability of eggs among all strains or Sinai breed. Gimmizah and Mamourah strains have the best hatched chick weight followed by Sinai breed and Dokki-4 chicks, respectively. The highest dead embryo percentage was recorded for Sinai breed followed by Mamourah, Gimmizah and Dokki-4, respectively.

In that context, Abuoghaba *et al.* (2019) reported that the hatchability of Mandarah chicks were lowest compared to other strains Inshas, Matrouh and Silver Montazah. Taha *et al.* (2019) found that fertility in Dokki-4 was higher than Salam strain. Adedeji *et al.* (2015) observed improvements in fertility, hatchability and chicks weights due to estimated genes effects in theses strains. Taha *et al.* (2013) found that El-Salam and Mandarah chicks have highly fertility and hatchability percentage compared to other stains (Canadian shaver A, B, C). Hassan *et al.* (2020) found that Silver Montazah strain has improved fertility, hatchability percentages and chick weights at hatch compared to Matrouh strain. Sola-Ojo and Ayorinde (2011) found that fertility, hatchability and body weight of chicks hatch affected by strains. Dessie and Ogle (2001) reported that local strains have high fertility and hatchability percentages.

Growth Performance

Live body weight

Table 2 shows live body weight for three local strains and Sinai breed chickens. The analysis of variance showed that there were significant differences among strains in live body weight up to 7 weeks of age. Mamourah and Gimmizah strains achieved the highest live body weight at hatch and still superior to 7 weeks of age,

followed by Dokki-4 strain and Sinai breed, respectively.

In that context, our results partially agree with results those of, Soltan *et al.* (2021) who found that Gimmizah had the highest weight compared to Sinai and Silver Montazah at 4, 8, 12 and 16 weeks of age. El-Tahawy (2020) reported that Alexandria strain have significantly effect on BW compared with Sinai strain. Abuoghaba *et al.* (2019) reported that Inshas chicks had significantly increased LBW at 4, 8, 12 weeks of age compared to other strains Matrouh, Silver Montazah and Mandarah. Rayan *et al.* (2017) showed that BW in Mamourah strain have significantly increased compared to other local strains Golden Montazah, Matrouh, Mandarah, Silver Montazah, Bahig, Gimmizah and Sina. EL-Tahawy (2015) reported that Sinai strain have lower BW than Lohman Brown strain at 0-12 weeks of age. Ramadan *et al.* (2014) reported that BW was affected by genetic strains at 8 weeks of age. Younis *et al.* (2014) found that BW in Dokki-4 increased compared to over two generation. However, Taha *et al.* (2012) showed that Mandarah strain have highly BW at 2, 4, 6, 8, 10 weeks of age compared to other strains (Inshas, El-Salam and Dokki-4) but found El-Salam chicks have highly BW at 12 weeks of age. Ahmed and Singh (2007) determined that chick's growth performance was due to genetic background of strains and its adaptation to the environment.

On the other hand El-Sheik *et al.* (2016) showed that Golden-Montazah had a higher weight than Gimmizah at 4, 8, 12, 16 weeks of age. Taha *et al.* (2013) reported that Salam and Mandarah strains have the same BW of chicks at 2-8 weeks of ages, also Mandarah strains have the lowest BW compared to the other strain (Shaver A, B, C). El-Kaiaty and Hassan (2004) found that LBW of chicks was not affected at 12 weeks of age by differences in strains of Golden Montazah and Matrouh chickens.

Body weight gain

Table 3 showed Daily body weight gain for three local strains and Sinai breed chickens. Analysis of variance revealed that there were significant differences in body weight gain among the studied local chickens at the 2^{nd} and 7^{th} week of age and the total period of study. Regarding the entire period of study, Mamourah and Gimmizah have the best BWG without differences between them followed by Dokki-4 strain and Sinai breed without differences between them.

In line with our results, Soltan *et al.* (2021) found that Gimmizah had the highest BWG compared to Sinai and Silver Montazah at 16 week of age and Sinai had the lowest BWG compared to other strain. Abuoghaba *et al.* (2019) reported that Inshas chicks had significantly recorded higher BWG during 0-12 weeks of age compared to Mandarah. EL-Tahawy (2015) reported that Sinai strain have lower BWG than Lohman Brown strain at 0-8 weeks of age. Taha *et al.* (2012) showed that Dokki-4 chickens have lowest BWG compared to other strains (Mandarah, Inshas, El-Salam) at 4, 5, 6, 7 weeks of age.

On the other hand Taha *et al.* (2013) reported that BWG chicks were not affected by different strains Salam and Mandarah during 2-12 weeks of age, also Mandarah strain have lowest BWG compared to the other strain (Salam, Shaver A, B, C). El-Sheik *et al.* (2016) showed that Golden-Montazah and Gimmizah have the same BWG at 4, 8, 12, 16 weeks of age.

Feed intake

Table 4 showed daily feed intake for three local strains and Sinai breed chick. Analysis of variance revealed that there were significant differences in feed intake among the studied local chickens at the 2nd week of age and the total period of study. Sinai breed have significantly lower FI compared with other strains at the total period. There are no differences among Mamourah, Gimmizah and Dokki-4 chickens in feed intake during the total period of study. Our results are in agreement with results those of Taha *et al.* (2013) who found that El-Salam chicks have less FI compared to other stains (Mandarah, Shaver A, B, C) during 4-8 weeks of age. However, Abuoghaba *et al.* (2019) reported that FI of Inshas, Matrouh, Silver Montazah and Mandarah chicks was not affected during experimental periods by different strains. Taha *et al.* (2019) found that FI of clicks Salam higher than Dokki-4 strain. El-Sheik *et al.* (2016) showed that Golden-Montazah have higher FI than Gimmizah at 4-8, 8-12, 12-16 experimental periods.

Feed conversion ratio

Table 5 showed feed conversion ratio for three local strains and Sinai breed chick. Analysis of variance revealed that there were significant differences in feed conversion ratio among the studied local chickens at the total period of study. Mamourah has the best FCR compared to other strains followed by Sinai, Gimmizah and Dokki-4, respectively.

Our results agree with results those of El-Sheik *et al.* (2016) who showed that Golden-Montazah and Gimmizah have the same FCR at 4-8, 8-12 and 12-16 weeks of age periods. Also, Taha *et al.* (2013) found that El-Salam chicks have best FCR compared to other stains (Mandarah, Shaver A, B, C) during 4-8 weeks of age. However, Abuoghaba *et al.* (2019) reported that FCR of Inshas, Matrouh, Silver Montazah and Mandarah chicks were not affected by strain differences during experimental periods. El-Anwer *et al.* (2010) found that FCR in Silver Montazah and Matruoh chicks were not significant affected at 8 -12 weeks of age by line strains.

Carcass traits

Table 6 showed carcass traits for three local strains and Sinai breed chicks at 7 weeks of age. Carcass traits of chicks were not significantly different for local strains or Sinai breed except for heart percentage. Mamourah strain record high value of heart percentage compared to Gimmizah strain. Dokki-4 had low pre slaughter body weight compared with Mamourah and Gimmizah. Pre slaughter body weight of male chicks was higher than female chicks.

Confirming our results, El-Attrouny *et al.* (2021) reported that Mandarah, Inshas and Silver Montazah had the same carcass and carcass traits percentage but lower than Matrouh strain. Also, Hassan *et al.* (2020) found that carcass traits of chicks did not affected by strains Silver Montazah strain and Matrouh at 40 weeks of age. Additionally, El-Sheik *et al.* (2016) showed that Golden-Montazah and Gimmizah strains had no significant effect of carcass traits.

On the other hand Taha *et al.* (2019) found that carcass of clicks Salam was higher than Doki-4 strain but giblets percentages in Dokki-4 higher than Salam strain. Rayan *et al.* (2017) reported that Mamourah, Golden Montazah and Mandarah strains have significantly increased carcass percentage and carcass traits percentage compared to other strains Matrouh, Silver Montazah, Bahig, Gimmizah and Sinai. Taha *et al.* (2013)

reported that Mandarah surpassed Salam strain in carcass and heart percentages.

Serum blood of chicks

Tables (7 and 8) shows serum blood parameters for three local strains and Sinai breed chick at 7 weeks of age. Analysis of variance revealed that there were no significant differences in serum blood traits of chicks at the end of the experiment. Serum blood traits of chicks were not significantly affected by sex except for alkaline phosphatase which was higher in females than males.

Our results are in agree with the finding of Moustafa *et al.* (2019) for Cholesterol, MDA, AST, ALT and Alk phosphatase in the blood of Gimmizah chicks. Also, Taha *et al.* (2019) found that Total serum Lipids, Cholesterol, triglycerides, HDL, LDL, Total protein, Albumen and Globulin were not significantly affected by Dokki-4 and Salam stains. El-Sheik *et al.* (2016) showed that Golden-Montazah and Gimmizah stains did not significant affect of blood traits total protein, albumin, globulin, AST, ALT, Cholesterol and Triglycerides. Hassan *et al.* (2006) reported that Silver-Montazah, Mandarah and El-Salam did not affect of serum total protein, albumin, globulin and A/G ratio under heat stress. However, El-Slamony (2005) reported that Golden-Montazah strain had significantly lower serum cholesterol than Matrouh strain at 44 weeks of age. Also, El-Kaiaty and Hassan (2004) showed that Fayoumi and Golden Montazah have significantly lower serum cholesterol than Matrouh strain at 12 weeks of age.

Immunity parameter in serum blood of different local strains and Sinai breed chicks

Table 9 shown immune parameters of serum blood for three local strains and Sinai breed chick at 7 weeks of age. Immune serum blood traits of chicks were not significantly different of local strains except for antibody titer against of Avian Influenza Disease Virus (HI AI) which Sinai chicks' records low value compared with Mamourah chicks. Immune serum blood traits of chicks were not significantly affected by sex local strains except for HI ND and HI AI. Male chicks achieved high values of HI ND, however, female chicks' records high values of HI AI.

Our results in line with results of Abuoghaba *et al.* (2019) who found that Inshas chickens showed significantly lower HI ND compared with Mandarah strain. Also, Taha *et al.* (2012) showed that Dokki-4 chicks have the best immune response against ND and Avian Influenza Virus (AI) compared to other strains at 3, 6, 7, 8 weeks of age. In addition, Chang *et al.* (2011) found that local strains have different immune response to H6N1vaccine. Also, Hassan *et al.* (2004) reported that Mandarah strain had highly responses against ND compared to other strains (Gimmizah, Sinai, Dandrawi).

CONCLUSION

It could be concluded that there are no significant differences among Dokki-4, Gimmizah, Mamourah strains and Sinai breed in fertility, hatchability, hatched chick weight, carcass traits and serum blood characteristics. Mamourah and Gimmizah strains achieved high body weight and weight gain followed by Dokki-4 strain and Sinai breed, respectively. Also, Sinai breed had a lower feed intake, but Mamourah strain has the best feed conversion ratio throughout 7-weeks-old.

Table (1): Means for fertility and hatchability related traits as affected by different studied strains

Strain	egg weight	fertility %	hatchability %	Hatched chick weight g	Unfertile eggs %	early dead embryos %	late dead embryos %
Dokki-4	48.7^{d}	90.5	64.2	32.5^{b}	6.00	1.5^{a}	9.0^{b}
Gimmizah	51.5^{c}	88.8	83.2	34.8^{a}	11.2	0.0^{b}	11.9^{ab}
Mamourah	56.5^{a}	89.6	82.2	35.7^{a}	10.5	0.0^{b}	14.9^{ab}
Sinai	54.3^{b}	89.0	77.7	34.3^{ab}	10.5	0.5^{ab}	17.9^{a}
SEM	0.255	1.210	15.251	0.407	1.912	0.266	1.573
Probability	0.0001	0.779	0.818	0.006	0.303	0.019	0.048

a-b: Means within column with different superscripts are significantly different.
SEM=standard error of mean

Table (2): Means for live body weights as affected by different studied strains

Strain	Initial body weight	Live body weight (g) at weeks of age						
		1st week	2nd week	3rd week	4th week	5th week	6th week	7th week
Dokki-4	32.5^{b}	75.5^{b}	135^{b}	211^{b}	287^{b}	396	511^{ab}	665^{b}
Gimmizah	35.0^{a}	78.9^{ab}	147^{a}	226^{ab}	308^{b}	407	508^{ab}	696^{a}
Mamourah	35.7^{a}	82.1^{a}	148^{a}	234^{a}	332^{a}	426	532^{a}	715^{a}
Sinai	34.4^{ab}	76.0^{b}	138^{b}	219^{ab}	294^{b}	392	483^{b}	648^{b}
SEM	0.547	1.194	1.897	4.321	5.380	9.521	8.484	5.436
Probability	0.008	0.007	0.0005	0.016	0.0003	0.099	0.011	0.0001

a-b: Means within column with different superscripts are significantly different.
SEM=standard error of mean

Table (3): Means for daily body weight gain as affected by different studied strains

Strain	Daily body weight gain (g) at weekly periods							TDWG
	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	
Dokki-4	6.14	8.46^{b}	10.9	10.9	15.5	16.4	22.0^{b}	12.9^{b}
Gimmizah	6.27	9.75^{a}	11.2	11.7	14.2	14.4	26.8^{a}	13.5^{a}
Mamourah	6.63	9.44^{ab}	12.2	14.1	13.4	15.2	26.1^{ab}	13.9^{a}
Sinai	5.95	8.83^{ab}	11.6	10.8	14.0	13.0	23.6^{ab}	12.5^{b}
SEM	0.199	0.296	0.719	0.986	0.901	1.183	1.098	0.113
Probability	0.158	0.037	0.604	0.113	0.416	0.262	0.031	0.0001

a-b: Means within column with different superscripts are significantly different.
SEM=standard error of mean

Table (4): Means for daily feed intake as affected by different studied strains

Strain	Daily feed intake (g) at weekly periods							Total DFI
	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	
Dokki-4	10.6	16.7^{ab}	23.2	22.3	34.4	36.7	58.7	28.9^{a}
Gimmizah	10.1	17.8^{a}	22.6	23.9	33.3	33.3	61.2	28.9^{a}
Mamourah	9.68	16.1^{ab}	24.9	27.1	30.6	35.8	59.6	29.1^{a}
Sinai	9.73	15.1^{b}	23.8	22.4	30.6	31.1	54.1	26.7^{b}
SEM	0.549	0.607	0.659	1.332	1.121	2.022	1.827	0.455
Probability	0.665	0.047	0.146	0.084	0.079	0.249	0.091	0.009

a-b: Means within column with different superscripts are significantly different.
SEM=standard error of mean

Table (5): Means for feed conversion ratio as affected by different studied strains

Strain	Daily feed conversion ratio at weekly periods							Total FCR
	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	
Dokki-4	1.74	1.97	2.16	2.07	2.25	2.25	2.67	2.24^{a}
Gimmizah	1.61	1.83	2.05	2.05	2.35	2.32	2.30	2.14^{ab}
Mamourah	1.46	1.71	2.04	1.93	2.28	2.37	2.29	2.10^{b}
Sinai	1.64	1.71	2.06	2.09	2.20	2.42	2.30	2.13^{ab}
SEM	0.108	0.067	0.089	0.076	0.074	0.079	0.106	0.027
Probability	0.359	0.058	0.779	0.466	0.554	0.496	0.066	0.016

a-b: Means within column with different superscripts are significantly different.
SEM=standard error of mean

Table (6): Means for carcass traits as affected by different studied strains

Strain	Life weight (g)	Carcass %	Liver %	Gizzard %	Heart %	Goblet %	Total edible parts %	None edible parts %
Dokki-4 1	551[b]	64.7	3.05	2.05	0.55[ab]	5.65	70.38	29.62
Gimmizah 2	688[a]	64.2	3.14	1.92	0.47[b]	5.53	69.68	30.32
Mamourah 3	733[a]	65.4	2.90	1.85	0.66[a]	5.41	70.79	29.21
Sinai 4	660[ab]	66.2	2.40	1.85	0.53[ab]	4.79	70.95	29.06
SEM	31.02	0.948	0.234	0.105	0.043	0.312	1.034	1.034
Probability	0.005	0.500	0.159	0.507	0.042	0.254	0.827	0.827
Sex								
Male A	720[a]	65.5	2.71	1.81	0.54	5.07	70.6	29.4
Female B	596[b]	64.7	3.03	2.02	0.56	5.62	70.3	29.7
SEM	21.933	0.671	0.166	0.074	0.031	0.221	0.731	0.731
Probability	0.001	0.406	0.188	0.068	0.701	0.101	0.799	0.799
Interaction								
1×A	580	65.1	2.84	2.06	0.52	5.42	70.5	29.5
1×B	522	64.4	3.25	2.04	0.58	5.87	70.3	29.7
2×A	750	65.7	3.28	1.96	0.45	5.69	71.4	28.6
2×B	625	62.6	3.01	1.88	0.48	5.37	68.0	32.0
3×A	817	63.8	2.70	1.64	0.70	5.04	68.9	31.1
3×B	650	66.9	3.10	2.06	0.62	5.78	72.7	27.3
4×A	732	67.4	2.03	1.61	0.50	4.14	71.6	28.4
4×B	588	64.9	2.78	2.10	0.57	5.45	70.3	29.7
SEM	43.87	1.341	0.331	0.148	0.061	0.441	1.462	1.462
Probability	0.647	0.135	0.488	0.161	0.594	0.345	0.138	0.138

a-b: Means within column with different superscripts are significantly different.
SEM=standard error of mean

Table (7): Means for serum blood parameters as affected by different studied strains

Strain	Total protein	Albumin	Globulin	Uric acid	Triglyceride	Cholesterol	HDL	LDL	vLDL
Dokki-4 1	5.42	2.62	2.80	2.95	176	208	43.1	91.7	99.9
Gimmizah 2	5.56	2.79	2.77	2.97	180	208	39.2	88.6	99.0
Mamourah 3	5.63	2.78	2.85	2.89	178	206	41.6	89.3	95.3
Sinai 4	5.78	2.56	3.22	2.73	182	214	39.3	90.1	94.1
SEM	0.125	0.077	0.147	0.136	3.399	3.663	1.825	2.065	1.439
Probability	0.265	0.119	0.152	0.618	0.700	0.497	0.393	0.734	0.052
Sex									
Male A	5.52	2.75	2.77	2.91	182	207	40.4	89.7	97.4
Female B	5.68	2.63	3.05	2.86	176	211	41.2	90.1	96.7
SEM	0.088	0.055	0.104	0.096	2.404	2.590	1.290	1.459	1.018
Probability	0.215	0.141	0.075	0.690	0.124	0.214	0.687	0.829	0.628
Interaction									
1×A	5.51	2.78	2.73	3.09	182	211	41.5	90.2	97.8
1×B	5.33	2.46	2.88	2.81	171	205	44.6	93.2	102.0
2×A	5.39	2.90	2.49	3.05	187	205	38.6	93.6	103.6
2×B	5.73	2.68	3.05	2.88	173	211	39.9	83.5	94.5
3×A	5.51	2.83	2.68	3.00	176	199	42.3	85.3	95.3
3×B	5.75	2.73	3.02	2.79	180	213	40.9	93.2	95.3
4×A	5.67	2.48	3.19	2.52	182	211	39.3	89.6	93.1
4×B	5.90	2.65	3.25	2.95	181	217	39.3	90.6	95.1
SEM	0.109	0.109	0.208	0.193	4.807	5.181	2.581	2.919	2.036
Probability	0.482	0.174	0.638	0.265	0.283	0.283	0.841	0.044	0.025

SEM=standard error of mean

Table (8): Means for serum blood parameters as affected by different studied strains

Strain	Alt	AST	Alkaline phosphatase	TAC	MDA	SOD	Cortico-sterone
Dokki-4 1	67.1	56.4	7.72	426	1.08	313	3.96
Gimmizah 2	66.8	56.0	7.62	427	1.11	313	3.60
Mamourah 3	67.5	59.9	7.71	426	1.09	313	3.56
Sinai 4	63.6	55.6	7.59	423	1.04	313	3.50
SEM	0.981	1.274	0.152	3.159	0.052	0.545	0.222
Probability	0.054	0.105	0.902	0.809	0.858	0.869	0.468
Sex							
Male A	65.8	57.7	7.48[b]	427	1.12	313	3.72
Female B	66.7	56.2	7.84[a]	424	1.04	313	3.59
SEM	0.693	0.9010	0.108	2.234	0.037	0.385	0.157
Probability	0.415	0.2726	0.032	0.478	0.194	0.770	0.586
Interaction							
1×A	67.6	55.1	7.39	430	1.09	312	3.71
1×B	66.7	57.8	8.06	423	1.06	313	4.22
2×A	64.6	58.4	7.39	428	1.22	313	3.96
2×B	68.9	53.5	7.85	426	1.00	313	3.25
3×A	68.6	59.8	7.56	427	1.09	313	3.99
3×B	66.5	60.0	7.87	425	1.09	314	3.12
4×A	62.6	57.5	7.59	422	1.06	314	3.21
4×B	64.6	53.7	7.59	424	1.03	313	3.80
SEM	1.387	1.802	0.215	4.467	0.074	0.771	0.314
Probability	0.131	0.159	0.477	0.773	0.442	0.471	0.059

SEM=standard error of mean

Table (9): Means for immune parameters as affected by different studied strains

Strain	IgG	IgM	IgA	HI ND	HI AI
Dokki-4 1	997	254	82.9	3.67	3.50[ab]
Gimmizah 2	1008	254	83.3	3.00	3.50[ab]
Mamourah 3	998	255	82.0	2.67	4.00[a]
Sinai 4	998	255	82.8	3.00	2.50[b]
SEM	4.2131	4.7165	1.6094	0.2635	0.2500
Probability	0.2531	0.9946	0.9507	0.0936	0.0049
Sex					
Male A	1001	255	83.8	3.50[a]	2.92[b]
Female B	1000	254	81.7	2.67[b]	3.83[a]
SEM	2.9791	3.3350	1.1380	0.1863	0.1768
Probability	0.7557	0.7241	0.2257	0.0060	0.0021
Interaction					
1×A	999	254	80.3	3.33	3.33
1×B	995	254	85.5	4.00	3.67
2×A	1011	261	82.1	4.00	2.67
2×B	1005	247	84.4	2.00	4.33
3×A	1004	248	87.3	3.33	3.67
3×B	993	262	76.7	2.00	4.33
4×A	990	257	85.3	3.33	2.00
4×B	1006	252	80.3	2.67	3.00
SEM	5.9582	6.6701	2.2760	0.3727	0.3536
Probability	0.1553	0.2492	0.0125	0.0158	0.3099

a-b: Means within column with different superscripts are significantly different.
SEM=standard error of mean

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الملخص العربى

دراسة مقارنة بين اربع سلالات من الدجاج المحلى المصري

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اجريت هذه التجربة لدراسة نسبة الخصوبة ونسبة الفقس ومعامل التحويل الغذائي ومواصفات الذبيحة ومقاييس الدم لأربع سلالات محلية مصرية (دقي4 – الجميزة – المعمور- السينا). تم استخدام 804 بيضة تم تفريخها للحصول على كتاكيت التربية. بينما تم استخدام 240 كتكوت عمر يوم بتجربة النمو.
أوضحت النتائج المتحصل عليها ان سلالة المعمورة تفوقت في وزن البيض بينما سلالات المعمورة والجميزة حققت اعلى وزن للكتاكيت الفاقسة. كما وجد انه لا توجد أي فروق معنوية بين السلالات لكلا من نسبة الخصوبة ونسبة الفقس. كما وجد ان سلالات المعمورة والجميزة حققت اعلى وزن للجسم ومعدل النمو دون أي فرق معنوي بينها متبوعة بسلالة دقى4 ثم سلالة السينا دون أي اختلاف بينهما في الاسبوع السابع من العمر. كما حققت سلالة السينا اقل معدل لاستهلاك العلف مقارنة بالسلالات الاخرى في الفترة الكلية للدراسة. وسلالة المعمورة كانت افضل في معامل التحويل الغذائي مقارنة بباقي السلالات. ولا يوجد فروق معنوية بين السلالات في مواصفات الذبيحة ومقاييس سيرم الدم. ولا يوجد فروق معنوية في مقاييس المناعة فيما عدا الاجسام المضادة لفيروس انفلونزا الطيور حيث حققت سلالة المعمورة اعلى قيمة معنوية مقارنة بسلالة السينا.
ومن هذه النتائج يتضح انه لا يوجد فروق معنوية بين سلالة دقى4 والجميزة والمعمورة وسينا في نسبة الخصوبة ونسبة الفقس ووزن الكتكوت الفاقس ومواصفات الذبيحة ومقاييس الدم. كما حققت سلالة المعمورة والجميزة اعلى وزن جسم واعلى زيادة وزنية يليها سلالة دقى4 ثم السينا . وكذلك سلالة السينا حققت اقل معدل استهلاك للعلف لكن سلالة المعمورة افضل في معامل التحويل الغذائي خلال 7 اسابيع الاولى من العمر.