

**STUDY OF THE GENETIC DIVERSITY AND
PRODUCTIVE PERFORMANCE FOR SOME
DUCK LOCAL STRAINS USING
MOLECULAR GENETICS**

By

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B. Sc. Agric. Sci.(Poult. Prod.), Fac. of Agric., Ain Shams University, 2008

M. Sc. Agric. Sci. (Poult. Breeding), Fac. of Agric., Ain Shams Univ., 2012

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ABSTRACT

Hesham Ahmed Hussein Hussein Madian: Study of the Genetic Diversity and Production Performance for Some Duck Local Strains Using Molecular Genetics. Unpublished Ph.D. Thesis, Department of Poultry Production, Faculty of Agriculture, Ain Shams University, 2019.

This study aimed to evaluate the Genetic Diversity and productive performance for two native Duck strains (Sudani, SUD and Domyati, DOM) using Microsatellite genotyping analysis. This investigation was done throughout three main parts. The 1st part, deals with the base breeding flock which consist of 600 ducks from both strains and aged 10 months. Some productive traits were determined: Body weight, Body measurements: Shank length, Keel length and body circumference, fertility and hatchability and external and internal egg quality measurements. In the 2nd part, the present study performed using 50 day old duck chicks from each strain. The comparison was held between these strains for different productive traits: Body weight, Body measurements, Mortality rate, feed consumption, feed conversion, carcass measurements and weight of some lymphoid organs and some blood constituents were determined. The 3rd part Molecular genetics technique was carried out to study the Molecular genetic diversity for both strains by isolating the DNA from random twelve venous blood samples (6 samples of each strain) and protein analysis.

The obtained results could be summarized as follow:

- Body weight of SUD strain was heavier than those of DOM ones at all studied ages. Also body weight of Males exceeded that of females within each strain.
- Body measurements did not differ significantly between the two strains.

- Egg External qualities (namely Egg weight, Shell weight, egg Shell, shape index and Shell thickness) the higher significant recorded values for SUD strain than DOM ones. As for the Internal egg quality measurements (namely Yolk weight, Albumen weight, Yolk %, Albumen %, Yolk index, Yolk color and Haugh units) were Significantly higher for DOM strain compared to SUD ones
- Fertility and hatchability percentages were higher in DOM strain ducks than SUD ones.
- Mortality rate didn't affect by strains
- Feed Consumption and Food Conversion: The SUD strain consumed more feed than DOM strain while the feed conversion influence by strain.
- Carcass traits (namely Carcass %, heart %, abdominal fat %, spleen % and Thymes %) were significant higher in SUD strain than that of DOM ones. As for Gizzard % and pancreas% they were significantly higher in DOM strain than SUD ones. There were no significant differences between the two strains in liver %.
- In blood constituents there were no significant differences between the two strains in determining: calcium - albumin - cholesterol and HDL unit. It's noticed that The DOM strain recorded significantly higher values in phosphorus - globulin - total fat and total protein than the SUD strain. Also (LDL) was significantly higher in SUD ducks than DOM ones.
- Genetic studies: The results appeared that the PIC (polymorphic information content) of most microsatellite sites was lower than 0.5. This means that the selected microsatellite loci had a low diversity and can reflect the genetic relationship among SUD and DOM populations. This assured that both SUD and DOM populations could be considered as near populations on a molecular level. When compare protein fraction between DOM and SUD strains shown that common fraction with 75 KDa. The

last results reflected the differ protein fraction between DOM and SUD strains.

Key words: Ducks Performance, Carcass Characteristics, Egg traits, Blood Constituents, Genetic Diversity, Protein and Microsatellite Analysis.

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CONTENTS

	Page
LIST OF TABLE	
LIST OF FIGURES	
LIST OF ABBEVRATION	
ACKNOWLEDGMENT	
ABSTRACT	
INTRODUCTION	
REVIEW OF LITERATURE	3
Body weight and weight gain	3
Body measurements	5
External and Internal Egg Quality measurements	6
3.1. External egg quality measurements	8
3.1.1. Egg weight	8
3.1.2. Shape Index	8
3.1.3. Egg shell traits	9
3.2. Internal Egg quality measurements	11
3.2.1. Yolk traits	11
3.2.2. Albumen traits	12
3.2.3. Haugh Unite	12
4. Fertility and Hatchability	13
5. Mortality Rate	15
6. Feed Consumption and Feed Conversion	15
6.1. Feed Consumption	15
6.2. Feed Conversion	18
7. Carcass traits	20
7.1. Carcass, Giblets and Abdominal fat	20
7.2. Lymphoid Organs	24
8. Blood constituents	25
8.1. Serum protein Fractions	25
8.3. Cholesterol	26

II

	Page
8.4. Calcium and Phosphorus	27
9. Genetic studies:	28
9.1. SDS-PAGE analysis	28
9.2 Microsatellite analysis	30
Material and methods	39
The first part	39
The second part	39
The third part	39
Protein analysis	42
Microsatellite	45
Statistical analysis	48
RESULTSANDDISCUSSION	
1. Body Weight	50
1.1. Adult live body weight (10 months age)	50
1.2. Body weight in the early stages of growth (from hatching up to 12 weeks)	51
1.3. Body weight gain in the early stages of growth (from hatching up to 12 weeks)	53
2.Body Measurements	53
2.1.body measurements of ducks at later age(at10 months)	53
2.1.1 shank length	53
2.1.2 keel length	53
2.1.3 Breast circumferences	54
2.2. Body measurements of duck during early periods of growth(aged 4, 8 and 12 weeks)	55
2.2.1 shank length	55
2.2.2 keel length	55
2.2.3.Breast circumferences	55
3. External and internal quality qualities of eggs	57
3.1. External qualities	57
3.1.1. Egg weight (g)	57

III

	Page
3.1.2. Shell weight (g)	57
3.1.3. Percentage of shell (%)	57
3.1.4. Egg shape index	57
3.1.5. Shell thickness	58
3.2. Internal egg qualities	58
3.2.1. Yolk Weight (g)	58
3.2.2. Albumen Weight (g)	59
3.2.3. Percentage of yolk and albumen (%)	59
3.2.4. Yolk index	59
3.2.5 Yolk color	59
3.2.6. Haugh unit	59
4. Fertility and hatchability percentage	60
5. Mortality rate	61
6. Food Consumption and Food Conversion	62
6. 1. Feed consumption	62
6. 2. Feed conversion	62
7. Carcass trait	63
7.1. Carcass, GIBLETS and Abdominal fat	63
7.1. 1.Carcass Percentage	63
7.1.2. GIBLETS Percentage	64
7.1.2.1. Heart Percentage	64
7.1. 2.2. Liver Percentage	64
7.1. 2.3. Gizzard Percentage	64
7.1. 3. Abdominal fat Percentage	65
7.2. Lymphoid Organs	66
7.2.1. Pancreas Percentage	66
7.2.2. Spleen Percentage	66
7.2.3. Thymes Percentage	66
8. Blood constituents	67
9. Genetic studies	68
9.1. Protein analysis	68

	Page
9.2. Microsatellite	69
SUMMARY AND CONCLUSION	
REFERENCES	
ARABIC SUMMARY	

LIST OF TABLES

Table No:		Page
1	Previous results obtained about body weight trait and Body weight gain	4
2	previous results obtained about body measurements of duck during early periods of growth	5
3	previous results of body measurements of ducks obtained of later ages	6
4	Average of egg weight trait as mentioned formally by many investigators	8
5	Previous results obtained about shape index of ducks egg	9
6	the previous obtained results about egg – shell traits	10
7	Listed some previous results obtained about yolk traits by numerous investigators	11
8	Previous results obtained by many investigators about Albumen traits	12
9	Ducks H.U. at different ages	13
10	Fertility and Hatchability percentage use previously mentioned by many authors	14
11	previous results obtained about mortality rate	15
12	previous results obtained about feed consumption traits	16
13	the previous obtained results about feed conversion trait	18
14	previous results obtained formally about different carcass traits: carcass wt. and %, Giblets wt. and % and abdominal	22
15	Previous results obtained formally about different Lymphoid Organ: Pancreas, Spleen and Thymes	24
16	Serum protein fraction results	25
17	Some obtained results about total lipids	26

Table No:		Page
18	Former results about cholesterol level	27
19	Former results about serum Calcium and Phosphorus	28
20	Composition of the rations	40
21	The methods which used in evaluating different blood constituents were as follows	42
22	Illustrate Inter-Simple Sequence Repeat (ISSR)primers features	47
23	Means \pm SE of body weight at 10 mo. of age for SUD and DOM duck strains	50
24	Means \pm SE of body weight at different age. for SUD and DOM duck strains	51
25	Means \pm SE of body weight gain at different age. for SUD and DOM duck strains.	52
26	Means \pm SE of body measurements at 10 months age for SUD and DOM duck strains	54
27	Means \pm SE of body measurements at different age during early periods of growth (4, 8 and 12 weeks) for SUD and DOM duck strains	56
28	Means \pm SE of External egg quality measurements at 10 Months age for SUD and DOM duck strains	58
29	Means \pm SE of Internal egg quality measurements at 10 months age for SUD and DOM duck strains	60
30	Means \pm SE of Fertility and hatchability percentage at 10 Months age for SUD and DOM duck strains	61
31	Means \pm SE of Mortality rate at different age for SUD and DOM duck strains	61
32	Means \pm SE of Feed consumption at different age for SUD and DOM duck strains	62
33	Means \pm SE of Feed conversion at different age for SUD and DOM duck strains	63

VII

Table No:		Page
34	Means \pm SE of Carcass, Giblets and Abdominal fat at marketing age (12 wk.) of SUD and DOM duck strains	65
35	Means \pm SE of Lymphoid Organs at marketing age (12 wk.) of SUD and DOM duck strains	67
36	Means \pm SE of Blood constituents for SUD and DOM duck strains	68
37	Showed (PIC), (He), (HO) and (Na) of SUD and DOM strains duck.	70