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 Unpublished Ph.D. Thesis, Department of Poultry Production, Faculty of Agriculture, Ain Shams University, 2019.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 circumstance, 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 determing: 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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