

تأثير الإستجابة للمناعة للمستضد SRBC والجنس على تركيز الجلوبيولينات المناعية  
ووزن الغدد الليمفاوية في الدجاج

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**EFFECT OF IMMUNE RESPONSE TO SRBC ANTIGEN AND  
SEX ON IMMUNOGLOBULINS CONCENTRATIN AND LYMPHOID  
ORGANS WEIGHT IN CHICKENS**

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**ABSTRACT:** *A total number of 320 birds of Norfa strain from both males and females were used in the present experiment. At 20-wk of age, the primary antibody (Ab) titers for sheep red blood cells (SRBC) were determined for each individual at 7-d post-immunization. Birds were divided into three, high, low and control, antibody titers groups with 20 males and 20 females of each group, in order to study the effect of Ab-titers and sex on immunoglobulins (IgG, IgM and IgA) concentration and lymphoid organs weight in Norfa chickens. The main results obtained can be summarized as follows:*

- 1- The high immune response chickens had significantly the highest level (27.16) and the low immune response chickens had the lowest level (2.46) of primary Ab-titers, while the control chickens occupied intermediate level (7.44).*
- 2- The immune response to SRBC had positive association with WBC counts, leukocyte (%), monocytes (%) and immunoglobulins (IgG, IgM and IgA) concentrations.*
- 3- Males had significantly higher WBC counts and immunoglobulins (IgG, IgM and IgA) concentrations than females.*
- 4- The IgM had the lowest concentration, where IgG concentration was predominated in absolute amount over other serum immunoglobulins in chickens.*
- 5- High immune response chickens had heavier primary lymphoid organs weight than low immune response chickens. The weight values were 1.14 vs 0.28 g for bursa of Fabricius and 4.44 vs 3.36 g for thymus, respectively.*
- 6- Control chickens had heavier spleen weight (1.64 g), than high (1.54 g) and low (1.06) immune response chickens, which explained unassociation of spleen weight with the immune response.*
- 7- The present results concluded that high immune response chickens produced higher immunoglobulins (IgG, IgM, IgA) concentration. Also, heavy primary lymphoid organs weight produced higher level of antibody titers.*

**Key words:** *Chickens: immune response, immunoglobulins, primary lymphoid organs.*

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الإحلال الجزئى والكلى لبروتين مسحوق جلوتين الذرة ببروتين الطحالب فى إعداد  
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**PARTIAL AND COMPLETE REPLACEMENT OF CORN GLUTEN  
MEAL PROTEIN BY ALGAE PROTEIN IN DIETS FOR NILE  
TILAPIA, *Oreochromis niloticus* (L.)**

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**ABSTRACT:** Diets incorporating different levels of corn gluten meal replacement by using biofuel algae or Spirulina protein at 0, 25, 50, 75, and 100% were evaluated for larval/juvenile stage of Nile tilapia (*Oreochromis niloticus*). Fish averaging 0.02 g were divided into 18 groups of 50 fish. There were 3 replicates per every dietary treatment that were fed one of six diets for 11 weeks. Corn gluten protein was replaced with algae on the protein basis. All diets were supplemented with 1.5% lysine and 0.5% methionine. The experimental diets were formulated to contain  $34.9 \pm 0.1\%$  protein and  $12.2 \pm 0.1\%$  lipid in the form of fish oil and soybean lecithin (phospholipids source). The results indicated that algae positively affected feed consumption and fish growth up to the 50% replacement and then performance was depressed. Significant differences in concentration of individual minerals (Al, Fe, Zn, and Cu) in the whole fish body were found. Mineral composition of algae might have affected growth when diets which contained more than 75% of plant protein were replaced with microalgae. These findings suggest that up to 50% of dietary corn gluten meal protein can be replaced with microalgae which significantly enhance fish growth.

**Key words:** Corn gluten, Biofuel algae, Spirulina, Nile tilapia, iron, aluminum

***EFFECT OF BREEDING SEASON AND SEX RATIO ON FERTILITY AND HATCHABILITY PERCENTAGES OF OSTRICH EGGS***

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***ABSTRACT:***

A total number of 8 birds of mature black neck bred ostriches (3 males and 5 females) and 130 chicks at hatch were used in the present study, for two consecutive breeding seasons, in order to study some productive and reproductive traits in ostriches. The fertility percentage of 52.4 % and 44.3 % for the first and second season, respectively. The commercial hatchability percentage, which calculate from the total egg set 46.6 % and 38.7 % for the first and second season breeding season, respectively.

***Key words:*** Breeding season , Sex ratio , Hatchability and Ostrich.

***THE INTERACTION EFFECT AMONG AGE OF LAYER, STRAIN OF CHICKEN AND YEAR OF LAYING ON INTERNAL EGG QUALITY TRAITS***

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***ABSTRACT:***

The present study was conducted to compare the internal egg quality traits in two local developed strains (Sinai and Norfa) with two foreign commercial strains (Lohman Selected Leghorn and Lohman Brown) of chicken at sexual maturity, 32, 42, 52 and 62 – wk of age for two consecutive laying years. The results were summarized as follows. 1. Comparison of local versus foreign strains : It was found that foreign strains (L.S.L. and L.B.) had significantly higher values of yolk weight, yolk index, albumen weight, albumen %, albumen height, Haugh units and lower yolk %, yolk color, and yolk : albumen % as compared to local strains (S. and N.). 2. Effect of layer age : It was found that yolk weight, yolk %, albumen weight and yolk : albumen % were increased and lower values of yolk index, yolk color, albumen %, albumen height and Haugh units with advancing age of layer. 3. The interaction effect : The interaction effects between age and strain, age and laying year, strain and laying year or among age, strain and laying year were significant ( $P \leq 0.05$ ) or highly significant ( $P \leq 0.01$ ) for most internal egg quality traits studied. 4. Conclusion : Since, yolk and albumen weights were higher in old layer hens, it may be more beneficial for egg producers and processors to use young hens (32 – 42 wk. old) for table egg production and birds of old age (52 – wk. old or more) for liquid egg production.

***Key words:*** Chicken strain, age, year of laying, Internal egg quality traits