



**POULTRY PRODUCTION DEPARTMENT
FACULTY OF AGRICULTURE**



**MANSOURA UNIVERSITY
MANSOURA – EGYPT**

**A Possibility of Improving the Productive Performance of Local
Chickens by Some Dietary Factors**

By

Ahmed Ahmed Ahmed El-GAMAL

B.Sc. Poultry Production, EL-Azhar University, 2007

M.Sc. Agric. Sci. Poultry Production, Mansoura University, 2017

THESIS

**Submitted in Partial Fulfillment of the
Requirements for the Degree of Philosophy Doctor (Ph.D.)**

In

**Agricultural Sciences
(Poultry Production)**

SUPERVISORS

Prof. Dr.

KHALIL EL. SHERIF

**Prof. of Poultry Nutrition,
Department of Poultry Production,
Faculty of Agriculture,
Mansoura University.**

Prof. Dr.

MAHMUD H. RABIE

**Prof. of Poultry Nutrition,
Head of Poultry Production Dept.,
Faculty of Agriculture,
Mansoura University.**

Prof. Dr. MALAK MANSOUR BESHARA

**Prof. of Poultry Nutrition,
Department of Poultry Production
Anim. Prod. Res. Inst., Agric. Res. Center, Ministry of Agric.**

Mansoura University, Arab Republic of Egypt

2021

Name of candidate: AHMED AHMED EL-GAMAL

Degree: Ph.D.

Title Thesis: A Possibility of Improving the Productive Performance of Local Chickens by Some Dietary Factors

Supervisors: PROF. DR. KHALIL EL SHAHAT SHERIF
PROF. DR. MAHMOUD RABIE
PROF. DR. MALAK MANSOUR BESHARA

Department: Poultry Production

Branch: Poultry Production

Approval: / /

ABSTRACT

A total number of 210 Sinai laying hens and 21 males, 30 wks- old were used. The birds were weighed, and randomly divided into seven experimental groups with three replicates for each to investigate the possibility of using low crude protein in hen's diet with adding the first and second limiting amino acids (lysine and methionine) as control diet, 0.2% citric acid or their mixture between them on the productive, reproductive, nitrogen excretion and economic performance of Sinai laying hens during the period from 30 to 46 weeks of age. Hens were provided with recommended Sinai layer's diet containing crude protein. The control diet was formulated according to the requirement recommended of Sinai laying hens (15% crude protein). The diets contained gradually levels of crude protein as follow: basal diet that was to meet the requirements of crude protein (15%), diets 2 and 3 containing low crude protein by 1 and 2 percentages with supplementation lysine and methionine as the same level of control diet, diets 4 and 5 containing the same low crude protein levels with 0.2% citric acid and diets 6 and 7 containing the same low crude protein levels with mixture between lysine and methionine and citric acid together. The results clarified that hens fed control diet (15% crude protein) recorded significantly the highest body weight compared to those received diet contained 13 % crude protein with adding 0.2% citric acid and 14% crude protein supplemented with mixture between lysine and methionine and citric acid. Hens fed diet 14% crude protein with lysine and methionine+ citric acid achieved satisfactory egg number/hen and returned to occupy the first position with respect to egg number as compared to the control diet by about 1.84 %, it must be mentioned that all dietary treatments did not significantly differ from the control group except for the diet

contained 13% crude protein with lysine and methionine. Analysis of variance showed that no significant differences among dietary treatments in yolk index, yolk % and albumen%. All dietary treatments resulted in a insignificant increase in both hatchability of set and fertile especially the eggs produced from hens fed 13% and 14% crude protein with adding 0.2% citric acid /kg diet. Reduction crude protein in diet up to 13% with lysine and methionine led to significantly lower nitrogen excreted than the control diet by about 28.78%. Moreover, results of nitrogen retention proved that feeding on 14% crude protein supplemented with 0.2% citric acid was significantly better than the control diet. All dietary treatments did not significantly differ from the control diet in respect of economic efficiency of egg production except for the diet contained 14% crude protein with 0.2% citric acid compared to the control diet. In addition, all dietary treatments led to insignificant improve in economic efficiency of hatchability of set eggs.

The results indicated reduction crude protein level up to 14% crude protein with lysine and methionine supplementation alone, 14% crude protein with adding 0.2% citric acid alone and 13, 14% CP with lysine and methionine as control diet + 0.2% citric acid together able to restore productive performance as nearly the control diet where, generally these dietary treatments can be used without any adverse effect on productive, reproductive and economic performance of Sinai laying hens.

Key words: Crude protein, Amino acids, Egg production, Egg quality, Fertility, Hatchability

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