



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



HANAA ALY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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التوثيق الإلكتروني والميكروفيلم

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HANAA ALY

**BIOCHMICAL AND PHYSIOLOGICAL RESPONSES
OF BROILER CHICKS SUPPLEMENTED WITH
SOME AMINO ACIDS AND CREATINE**

By

EBTSAM SHAABAN AHMED BAKRY

B.Sc. Agri. Sc. (Agric. Biochemistry), Fac. of Agric., Ain Shams Univ., 2015

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Approval Sheet

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ABSTRACT

Ebtsam Shaaban Ahmed Bakry: Biochemical and Physiological Responses of Broiler Chicks Supplemented with some Amino Acids and Creatine, Department of Biochemistry, Faculty of Agriculture, Ain Shams University, 2020.

The main objective of this study was to evaluate the ability of amino acids (AA) and Creatine supplementation (either singly or in combination) to drinking water to overcome the negative responses of feeding broiler chicks on low protein diet (1990). The blood parameters, histological and immunological traits along with growth performance from hatching to marketing age. A total of 120 one day old were determined old, unsexed broiler chicks were obtained from a local hatchery. The chicks were divided into six treatment groups and subjected to different treatment for four weeks from the second week until the fifth week as follows: 1st group was kept as a control group, while the 2nd and 3rd groups were supplemented respectively (via drinking water) with 0.5 g and 1.0 g amino acid /L of drinking water. The 4th and 5th groups were supplemented with 0.5 g and 1.0 g Creatine /L of drinking water, respectively. The 6th group was supplemented with 0.5 g of AA and 0.5 g of Creatine/L. Broilers of control group were fed on another commercial diet containing 23% of protein and 3100 Kcal/ kg as recommended by NRC (1994), while other groups of chicks were fed on a diet obtaining 19% protein and 2900 kcal/Kg. The duration of the experiment was five weeks. The productive and biochemical responses were evaluate through measurement of were: live body weight, weight gain, blood plasma protein fractions, plasma lipids (cholesterol, triglycerides, high density lipoprotein (HDL) and low density lipoprotein (LDL). Transaminases (ALT and AST) activity indicative of liver function was measured. Kidney function test in terms of plasma creatinine, urea nitrogen and uric acid were also determined. Results showed that live body weight and weight gain of broiler chickens were significantly increased by AA

administration either at three or five weeks of age. At marketing age (5 weeks), birds from the 3rd and 2nd groups achieved heavier body weight by 32.3 and 26.8% respectively more than the control chickens. Blood plasma total protein, albumin and globulin levels were significantly increased in the AA treatment groups for T3 and T2, respectively as compared to the control chicks. Addition of AA resulted in an obvious increase in the activity of ALT and AST indicative of negative influence of excess AA on liver function-related enzymes, especially with the higher dose of AA (T3). This was also observed for plasma uric acids and creatinine concentrations as end products of protein metabolism. The histological sections from lymphoid organs revealed better histological appearance indicative of better immunity and bird's health. It is concluded that excessive AA administration for broilers fed on low protein diet, could be used to increase live body weight, enhance protein metabolism without negative impacts on blood biochemistry, and improve their immune response. However, further study is needed to assess the cost and the net revenue from AA and Creatine supplementation.

Key words: Amino acids. Creatine, blood biochemical parameters, growth performance, broiler chickens

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LIST OF ABBREVIATIONS

AA	: Amino Acids
ALT	: Alanine aminotransferase
AST	: Aspartate aminotransferase,
BNU	: Urea
BWG	: Body weight gain
CHOL	: Cholesterol
CMH	: Creatine monohydrate
CRE	: Creatinine
EDTA	: Ethylenediaminetetraacetic acid
Fig.	: Figure
Hb	: Hemoglobin
HDL	: High density lipoprotein,
Ht	: Hematocrit
IgA	: Immunoglobulin A
IGF-1	: Insulin growth factor -1
IgG	: Immunoglobulin G
IgM	: Immunoglobulin M
LBW	: live body weight
LDL	: Low density lipoprotein
MCH	: Mean corpuscular hemoglobin
MCHC	: Mean corpuscular hemoglobin concentration
MCV	: Mean corpuscular volume
MDA	: Malondialdehyde
Min.	: Minute
NS	: Non-significant
RBCs	: Red blood cells count
SAS	: Statistical analysis system
SE	: Standard error
SOD	: Superoxide dismutase
ST	: Standard