ABSTRACT

Ayman Rezk Hassan Habeb: Physiological and Immunological Effects of Some Physiological Additives on Productive and Reproductive Performance in Inshas Chicken Strain. Unpublished Ph.D. Dissertation, Department of Poultry Production, Faculty of Agriculture, Ain Shams University, 2014.

A total number of 840 chicks at their 10th week of age (WOA) of Inshas strain were assigned randomly to 6 equal experimental groups, each of four replicate, with 35 chicks. The experimental treatments were as follows: the 1st group (T1) was fed the basal diet (control); the 2nd (T2); 3rd (T3) and the 4th (T4) groups were fed the basal diet supplied with separate supplementation of 3 ppm vitamin B_6, 50 ppm L-carnitine, 100 ppm L-carnitine, respectively. While, The 5th (T5) and 6th (T6) groups were given the basal diet with a combination of 3 ppm vitamin B_6 plus 50 ppm L carnitine and 3 ppm vitamin B_6 plus 100 ppm L-carnitine, respectively.

Live body weight, weight gain, feed consumption and feed conversion ratio were recorded for each treatment at 10, 12, 14 and 16 WOA. Age and body weight at sexual maturity as well as laying performance were recorded for hens of each group. Fresh eggs were randomly taken from each treatment at 32 and 42 WOA for the external and internal egg quality measurements. Fertility, hatchability and chick weight were estimated for each treatment at 47, 48 and 49 WOA. At 16, 23 and 42 WOA, plasma samples were harvested from males and females for the determination of some blood biochemical parameters as well as primary antibody titration against NDV challenge (at 42 WOA). For Semen quality assays samples were collected from trained cocks of each treatment at 23 and 42 WOA. The results illustrated that: Inshas chicks of (T6) had the heaviest average body weights and body weight gain as well as the best FCR at 16WOA, followed by T4 group. Hens received 3ppm vitamin B_6 (T2) singly was the earliest to reach sexual maturity. Thus, increased ($P \leq 0.01$) the number of eggs, egg mass and rate of laying

throughout the egg production cycle, followed by the hens group if combination (T5 &T6). However, the egg weight results showed contradict trend. None of all external egg and internal egg quality traits was significantly change due to supplemental L-carnitine and / or vitamin B_6, except the albumen which statistical increased in eggs supplemental 100ppm L-carnitine singly (T4), and those given the combinations (T5 and T6). Percentages of fertility and hatchability and the weight of hatched chicks were markedly improved with supplemental L-carnitine and / or vitamin B_6. Likewise, semen quality traits were improved, particularly in groups of T4, T5 and T6, while the worst semen traits were found for the control group (T1) followed by those of B_6 lonely (T2).

Plasma total protein (PTP) and albumin levels were significantly increased in females compared with males. However, no effect of different dietary treatments on PTP, highly significant effect was shown on albumin and globulin concentration. Significant reduction in plasma cholesterol and triglycerides associated with supplements application and with males over females at 16, 23 and 42 WOA. on the other hand, insignificant effects of treatments, sex and their interaction on plasma GOT and GPT activities at 23 and 42 WOA. Moreover, the effect of sex by treatment interaction was not significant at all ages and for all treatments.

Total primary antibody titers determined against NDV vaccines were increased hens given diets contained both L-carnitine and vitamin B_6 together (T5 & T6) followed by those on diets contained each of both supplements separately (T2 & T4).

It could be concluded that addition of a combination of vitamin B_6 with L-carnitine at the level of 3 ppm and 50 up to100 ppm / Kg diet is practically effective in promoting the productive and reproductive performance of Inshas laying chickens, without any deleterious effects on their physiological parameters.

Key words: L-carnitine, vitamin B_6, egg, physiological, antibody, Inshas chickens.

CONTENTS

LIST OF ABBREVIATION

Alb	Albumin
Apdx	Appendix
BW	Body weight
˚ C	Degree Celsius
cm	Centimeter
CoA	Coenzyme A
d	Day
dl	Deciliter
DOA	Day of age
FC	Feed consumption
FCR	Feed conversion ratio
g	Gram
GLM	General linear models
Glob	Globulin
GOT	Glutamate oxaloacetate
GPT	Glutamate pyruvate transaminase
h	Hour
IGF	Insulin like growth factor
I.U	International unit
Kcal	Kilocalorie
Kg	Kilogram
L	Liter
LBW	Live body weight
M.E.	Metabolizable energy
mg	Millegram
NDV	Newcastle disease virus
NRC	National research council
P	Probability
pH	Hydrogen ion concentration
ppm	Part per million
PTP	Plasma total protein
r.p.m	Revolution per minute
vit.	Vitamin
WG	Weight gain
wk	Week

WOA	Week of age
T1	Control
T2	3 ppm vitamin B_6 / kg diet
T3	50 ppm L-carnitine / kg diet
T4	100 ppm L-carnitine / kg diet
T5	3 ppm vitamin B_6 + 50 ppm L-carnitine / kg diet
T6	3 ppm vitamin B_6 + 100 ppm L-carnitine / kg diet
β	Beta
γ	Gama
%	Percent