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LIST OF ABBREVIATIONS

Abbreviations	Descriptions
%	Percent
ALT	Alanine aminotransferase
AOAC	Association of Official Analytical Chemists
AST	Aspartate aminotransferase
BW	Body weight
BWG	Body weight gain
CF	Crude fiber
CP	Crude protein
DM	Dry matter
EE	Ether extract
EP	Egg production
EW	Egg weight
EM	Egg mass
EST	Egg shell thickness
ESW	Egg shell weight
FCR	Feed conversion ratio
FI	Feed intake
g	Gram
HDL	High density lipoprotein
HU	Haugh units
Kg	Kilogram
LDL	Low density lipoprotein
ME	Metabolizable energy
mg	Milligram
MDA	Malonaldehyde
NFE	Nitrogen free extract
P value	Probability level
SEM	Standard error of the mean
TAC	Total antioxidant capacity
Tu	Taurine
wk	Week
YI	Yolk index
Zn	Zinc

5. SUMMARY AND CONCLUSION

The present study was carried out at EL-Sabahia Poultry Research Station in Alexandria, Animal Production Research Institute. Agricultural Research Center, Ministry of Agriculture.

Two factorial design experiments were conducted to investigate the effect of dietary taurine, energy and zinc on productive performance of Bandara developed chickens. The first experiment was conducted from April to Jule 2011 and the second experiment was conducted from January to May 2012.

First Experiment:

This experiment was designed to determine the influence of adding taurine at different levels (50,100 and 200 mg/kg diet) to Bandara cockers diets containing two levels of dietary energy (2800 and 3000 ME/Kg) and evaluated their effects on productive performance, digestibility coefficients values of nutrients, carcass traits, and blood constituents.

Two hundred 4 weeks old Bandara cockers, obtained from the basal flock of EL-Sabahia Poultry Station were used in this study. Chicks were wing-banded, weighed and divided randomly into 8 experimental groups of 25 chicks each. The average initial body weights of the experimental groups was nearly similar and was statistically not significant. Each group was allotted into five replicates (5 each). All chicks were raised in battery brooder (100x50x50cm) placed in a temperature-controlled room from 4 wks to the end of the experiment (16 wks of age) meanwhile cockers were subjected to 23 hours lighting at on intensity of 3 watt/m^3 along the experimental periods which extended to the age of 16 weeks. All experimental groups were reared under similar managerial and hygienic conditions. Vaccination and medical program were done according to the different stages of age under supervision of veterinarian from day one to the end of the experiment. Fresh water was automatically available at all time by stainless steel nipples for each cage. Experimental starter and grower diets were formulated and provided *ad-libitum* throughout the experimental periods (5-8 and 9-16 wks of age, respectively).

The results of the first experiment could be summarized as follow:

1. Cockers fed diets containing the highest energy level (3000 kcal ME/kg diet) had significantly higher BW and BWG by 7.91and 9.72%, respectively than those fed diet containing low energy level (2800 kcal ME/kg diet).

2. Cockers fed diet supplied with 50 mg Tu / kg diet was significantly increased in their BW and BWG by 3.37% and 4.20%, respectively, compared with control group.

3. The interaction results indicated that, the highest BW and BWG was recorded for cockers fed diets containing 3000 kcal ME and 200 mg Tu/kg diet (1685.84 and 1405.28 g, respectively).

4. Cockers received the highest energy level (3000 kcal ME/ kg diet) consumed lower feed intake and improved their feed conversion ratio than cockers received the low energy level (2800 kcal ME/ kg diet).

5. Increasing the addition of taurine to 200 mg/kg significantly decreased FI compared with the other experimental groups, while the best significant FCR was recorded for cockers received 50 mg Tu /kg diet, compared with the other experimental groups.

6. Cockers fed diet containing 200 mg Tu /kg diet plus the highest energy level (3000 kcal ME/ kg diet) had the lowest amount of FI (48.63 g) and the best overall mean values of FCR.

7. Decreasing of energy level significantly increased apparent DM, CP, EE and NFE, while digestion coefficient values of CF showed no significant differences for cockers fed the two energy levels.

8. Digestion coefficient values of DM, CP and CF showed no significant differences due to supplementation different taurine levels. On the other hand, supplementation cockers diet with 50 mg Tu /kg diet significantly increased the digestion coefficient values of EE and NFE than for the other experimental groups.

9. Interactions results revealved that the digestion coefficients values of different nutrients were significantly improved due to supplementation of Tu with the lowest energy diet.

10. Increasing energy level significantly increased plasma total lipids, total cholesterol, HDL and total antioxidant capacity. While plasma triglycerides, LDL and creatinine were not affected.

11. The lowest plasma total lipids, total cholesterol and LDL were recorded for cockers fed diet had 50 mg Tu/kg diet, while creatinine and total antioxidant capacity were not significantly affected by taurine level. On the other hand, increasing taurine level significantly decreased plasma triglycerides.

12. Plasma total lipids, total cholesterol, triglycerides, HDL, LDL and total antioxidant capacity were significantly affected by interaction between energy and taurine levels among the experimental treatments, while creatinine was not affected.

13. Increasing energy and taurine levels significantly increased plasma glucose, while supplementation of different levels of taurine with high energy level recorded the highest levels of glucose compared with supplementation of different level of taurine with low energy level.

14. Different energy or taurine levels or the interaction between energy and taurine levels, had no significant effect on plasma totals protein, albumin and globulin concentration and ALT and AST activity.

15. Different energy or taurine levels or the interaction between energy level and taurine levels showed insignificant effects on relative weights of gizzard, liver, heart, pancreas, spleen and intestinal weight and length. However, cockers fed diet containing the highest level of energy plus 0.00 or 200 mg Tu / kg had the highest relative weight of carcass compared with the other experimental groups. On the other hand,cockers fed diet containing the highest level of energy (3000 kcal ME/ kg diet) plus 50 mg Tu / kg had the lowest relative weight of abdominal fat compared with the other experimental groups.

Second Experiment:

This experiment was conducted from January to May 2012.The aim of this work was to investigate the effect of supplied with different dietary levels of taurine (50,100 and 200 mg/kg diet) and zinc (40 and 80 mg/kg diet) on Bandara laying hens performance in factorial design experiment.

A total of 216 hens and 36 cocks, 38 wk of age of Bandara local strain were used in this trial. Birds were wing -banded, weighed and divided randomly into 12 treatment groups with 18 hens and 3 cocks in each group was allotted in to 3 replicates (6 hen + one cock).

Feed and water were provided *ad-libitum* thought the experimental period (38-54 wks of age) meanwhile birds were allotted with (15-9h) light-dark cycle during the experimental period. Vaccination and medical program were done according to the different stages of age under supervision of a veterinarian. Layer diet was covered the nutrient requirements according to feed composition table for animal and poultry feed stuffs in Egypt

The results of the second experiment could be summarized as follow:

1. Supplied layer diet with different Zn or Tu levels or their interaction had no significant effect on BW in Bandara laying hens.
2. Laying hens fed diets containing the highest Zn level had significantly highest EP. Also, the highest EP was detected for hens fed diet containing 50 mg Tu /kg diet. The interaction results indicated that, the highest EP was recorded for layer fed diet containing 80 mg Zn plus 50 mg Tu/kg diet.
3. Increasing Zn level significantly increased EW during all experimental periods. Also, the highest EW was detected for hens fed 50 mg Tu /kg diet. However, increasing dietary Tu supplementation from 50 to 200 mg Tu / kg diet significantly decreased EW during all experimental periods. The interaction results indicated that, the significant highest EW was produced by hens fed 80 mg Zn plus 50 mg Tu /kg diet compared with different dietary supplementations during different experimental periods. However, supplied layer diet with 80 mg Zn and 50 mg Tu /kg diet increased EW by 10.33, 6.63, 11.61, 11.59 and 11.04 during 38-41, 42-45, 46-49, 50-53 and 38-53 wks of age, respectively compared with the control group.

4. Increasing dietary Zn supplementation to layer diet increased the EM during the all experimental periods.
5. Addition of taurine at 50 mg/kg significantly increased EM compared with other experimental groups.
6. The significant highest EM was produced by hens fed 80 mg Zn plus 50 mg Tu /kg diet compared with different dietary supplementations during different experimental periods. However, supplied layer diet with 80 mg Zn plus 50 mg Tu /kg diet increased EM by 24.50, 39.36, 33.68, 28.86 and 31.74% during 38-41, 42-45, 46-49, 50-53 and 38-53 wks of age, respectively compared with the control group.
7. Laying hens received the highest Zn level (80 mg/kg diet) had a low FI and improved feed conversion, compared with other experimental groups.
8. No significant variation were found in FI due to different levels of Tu or the interaction between Zn and Tu levels, while the best significant FCR was recorded for laying hens received 50 mg Tu /kg diet, compared with other experimental groups.
9. The best FCR (2.91, 2.60, 2.67, 2.81 and 2.75) were recorded for birds fed 80 mg Zn plus 50 mg Tu/kg diet during different experimental periods (38-41, 42-45, 46-49, 50-53 and 38-53 wks of age, respectively).
10. Different Zn or Tu levels or the interaction between Zn and taurine levels had no significant effect in yolk weight percentage, albumen weight percentage, shell weight percentage, egg shape index, yolk index and Haugh units. However, egg shell thickness was significantly improved by zinc supplementation. Also, results clearly indicated that the highest egg shell thickness was observed for layer fed died supplemented with the highest levels of Zn (80 mg /kg diet) plus the all levels of Tu supplementations.
11. Analysis of variance for treatments fed the different Zn or Tu levels or the interaction between Zn level and Tu levels showed insignificant effects on fertility and pip percentages.
12. Hatchability percentage was insignificant affected by Zn supplementation, while it was significantly improved by supplied layer diet with 50 mg Tu / kg diet. The interaction result indicated that, the highest significant hatchability percentages (77.78 and 76.08 %) were recoded for layer fed diet supplied with 80 mg Zn plus 50 or 100mg Tu /kg diet, respectively, compared with other experimental groups.
13. Increasing Zn level significantly increased chick weight and the highest chick weight (37.46 g) was recorded for the layer fed 80 g Zn/kg, while the lowest value was observed for layers fed 0 mg Zn/kg diet (control), regardless of Tu levels.
14. The highest chick weight (36.41g) was recorded for the layer fed diets supplemented by 50 mg Tu/Kg, while the lowest chick weight was recorded for the layers fed diets supplemented with 100 mg Tu/Kg, regardless of Zn levels.

15. The interaction result indicated that, the highest chick weight (40.11 g) was recorded for the layers fed diet had 80 mg Zn/kg plus 50 mg Tu/Kg, while the lowest chick weight was observed for layers fed 0 mg Zn/kg in their diet plus 100 mg Tu/Kg.
16. Different Zn levels or the interaction between Zn and Tu levels, had no significant effect in plasma albumin, AST and ALT, while total protein, globulin, MDA and total antioxidant capacity were significantly affected.
17. No significant variation was found in plasma total protein, albumin and globulin concentration and ALT and AST activity due to different levels of Tu, while serum MDA concentration was significantly decreased by dietary Tu supplementation.
18. The interaction results revealed that the highest TAC concentration (0.90 mM/L) which was recorded for the layers fed diet supplemented with the highest Zn level (80 mg Zn/kg) plus 100 or 200 mg Tu/kg diet.
19. Increasing Zn level significantly decreased plasma total lipids, HDL, LDL, while increasing supplementation of Zn from 0.00 to 40 and 80 mg/kg diet significantly increased plasma Zn concentration. On the other hand, results indicated that the significant lowest total cholesterol, triglycerides and glucose recorded for hens fed diet containing 40 mg Zn /kg.
20. Plasma total lipids, total cholesterol, LDL and plasma Zn concentration were significantly decreased by Tu supplementation, regardless of Zn levels, while triglycerides and HDL were not significantly affected.
21. The highest plasma total lipids concentrations (452.38, 455.23 and 437.14 mg/dl) were recorded for the layers fed diet unsupplemented with Tu plus different levels of Zn (0.0, 40 and 80 mg Zn / kg diet).
22. The lowest values of Zn concentration (92.46 and 90.62 mg/dl) were recorded for groups fed 40 mg Zn plus 100 mg Tu / kg diet and those fed 80 mg Zn/kg plus 200 mg Tu/kg diet.
23. Supplied layer diets with 40 or 80 mg Zn /kg diet plus different levels of Tu decreased HDL.
24. The lowest significant plasma LDL concentration (65.72 mg/dl) was recorded for the layers fed diet supplied with 80 mg Zn plus 200 mg Tu/kg.
25. The highest plasma glucose concentration (289.33 mg/dl) was recorded for the layers fed diet supplied with 0.00 Zn plus 200 mg Tu/kg, while the lowest concentration (216.33 mg / dl) was recorded for those supplied with0.00 Zn plus 100 mg Tu/ kg diet.

CONCLUSION:

It could be concluded that Bandara cockers fed diets high energy (3000 kcal ME) supplemented with 200 mg Tu/kg diet during starting and growing periods recorded the highest BW and BWG, reduced the amount of FI and improved FCR, the digestive coefficient values and blood lipid profile. Additionally, Bandara layer fed diets supplied with 80 mg Zn plus 50 mg Tu/kg diet during laying period significantly improved layer performance, lipid profiles and oxidative situations.