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THE EFFECT OF FEEDING THE LAYER (ISA BROWN) WITH HERBAL METHIONINE INSTEAD OF SYNTHETIC METHIONINE (DL-METHIONIE) IN THE LOW PROTEIN DIETS ON THE PRODUCTIVE TRAITS IN CHICKENS ECONOMICALLY

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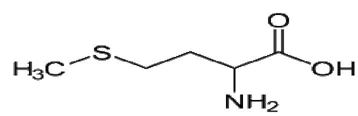
Abstract

The aim of this study was to determine using Herbal – methionine (H. Met) instead of industrial Methionine (DL-Met) in the Low protein diet for Layer upon the performance and egg quality traits. 160 ISA Brown layer at old 28 Week Were randomly distributed in to ten nutritional treatments , T1: Was basic diet(0.17% DL-Met).complete the needs, T2 :basic diet (16% C.P+0.17% H.Met) to complete the needs, T3 : basic diet (15% C.P+0.17% DL-Met) to complete the needs, T4: basic diet (15%C.P + 0.17% H.Met) to complete the needs, T5: basic diet (14%C.P +0.20% DL-Met) to complete the needs, T6: basic diet (14%C.P +0.20% H.Met) to complete the needs, T7: basic diet (15% C. P + 0.25% DL- Met) above the needs 10%, 78 :(15% C.P +0.25 % H.Met) above the needs 10%, T9: basic die (14% C.P + 0.28% DL-Met) above the needs 10 % and T10: basic die (14 % C.P + 0.28 % H.Met) above the needs 10%. The period of the experiment Was 60 days. The average of the egg production (H.D), egg mass, Met conversion ratio significantly ($p<0.05$) better for the birds of the T3: and T4:than all other, The feed cost for producing lone Kg of egg was the best and lowest for the T10: birds than the control (T1) birds and the value of this score were (0.668, 0.524, 0.536, 0.495, 0.658, 0.533, 0.610, 0.484, 0.576, and 0.468) dollars feed cost per kg. of egg produced respectively.

***Keywords* :** DL- Met , H. Met , layer, egg production and Haugh unit.

Introduction

Methionine is an essential nutrient for poultry and methionine acid provides methyl groups which act as vital roles for synthesis of carnitine and creatine (Schutte *et al.*, 1997; Ahmed and Abbas, 2011). Proteins are made up of amino acids and methionine and cysteine are collectively referred to as sulfur amino acids (SAA). Most of total sulfur amino acid requirement is met by the feed stuffs (about 75%), but the another port is provided by synthetic methionine (about 25%). Methionine plays an important role in energy production, protein synthesis and enhancing the layer performance and its quality (Ahmed and Abbas, 2015), DL- methionine is produced chemically from acrolein, methyl mercaptan and hydrogen cyanide (Figge *et al.*, 2010) and the risk of chemical residues and the increasing price of petro derived (Hadinia *et al.*, 2014), Methiorep and Meth-O-Tas are herbal methionine premixes that are available in animal feed as instead for industry methionine (DL-methionine).The aim of this study was to determine the effect of using herbal methionine as alternative for DL-methionine on the layer production traits and egg quality parameters.



Synthetic Methionine

Materials and Methods

The basal diet used in this experiment was formulated to meet nutrient requirements for ISA Brown based on the commercial Management Guide (2019). A total 160 ISA Brown layers of 28 weeks age were distributed in a completely randomized design into ten treatments, each of 16 layers. Each treatment was further subdivided in to 8 replicates (8 cages at battery system) each 2 birds each. The layers were placed on one of the ten dietary treatments (Table 1).

Table 1 : Ingredients and nutrients composition in basal diet

Ingredient	Treatment nutritional									
	1	2	3	4	5	6	7	8	9	10
Corn yellow	25.89	25.89	29.49	29.49	29.00	29.28	29.27	29.27	29.20	29.20
Wheat	38.00	38.00	38.50	38.50	42.18	42.50	38.50	38.50	42.50	42.50
Barley	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Soybean (47%CP)	18.28	18.28	15.28	15.28	11.78	11.78	15.28	15.28	11.78	11.78
Oil vegetarian	3.60	3.60	2.50	2.50	2.60	2.00	2.50	2.50	2.00	2.00
Stone clear	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13	9.13
Dicalcum phosphate	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22
Salt feed	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Choline chloride	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Vitamin premix	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
L-Lysine	0.04	0.04	0.04	0.18	0.22	0.22	0.18	0.18	0.22	0.22
DL-Methionine	0.17	----	0.17	----	0.20	----	0.25	----	0.28	----
Herbal methionine	---	0.17	----	0.17	----	0.20	----	0.25	----	0.28
Total	100	100	100	100	100	100	100	100	100	100

Chemical composition calculated										
Metabolizable energy(kcal/kg)	2880	2880	2847	2847	2896	2896	2847	2847	2842	2842
Crude protein %	16	16	15	15	14	14	15	15	14	14
DL-methionine%	0.41	----	0.40	----	0.41	----	0.48	----	0.49	-----
Herbal methionine	----	0.41	----	0.40	----	0.41	----	0.48	----	0.49
Calcium %	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
phosphorus	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39

T1, basic diet (16% C.P) supplemented with 0.17 % DL-methionine to complete the needs, T2 basic diet (16% C.P) supplemented with 0.17% Herbal methionine to complete the needs, T3, basic diet (15% C.P) supplemented with 0.17% DL-methionine to complete the needs, T4, basic diet (15% C.P) supplemented with 0.17% Herbal methioinine to complete the needs, T5, basic diet (14%C.P) supplemented with 0.20% DL-methionine to complete the needs , T6 , basic diet (14% C.P) supplemented with 0.20% Herbal methionine to complete the needs, T7, basic diet (15% C.P) supplemented with 0.25% DL-methionine to complete the needs, 78, basic diet (15% C.P) supplemented with 0.25% Herbal methionine to complete the needs, T9, basic diet (14% C.P) supplemented with 0.28% DL-methionine to complete the needs, T10, basic diet (14% C.P) supplemented with 0.28%Herbal methionine to complete the needs, The period of data recording was 60 days. The performance data were recorded at weekly intervals while the external and internal quality traits were recorded at 20 days intervals. The cost per kg. egg was calculated as following equation:

Feed cost (dollars)/kg eggs=Feed ratio conversion x price (dollars) kg of Feed (AL-Nuaimy and AL- Hadeedy)

Results and Discussion

Performance characteristics: The effect of herbal methionine supplementation instead of DL-methionine to complete the methionine needs or above the needs in the layer diets contains three levels of protein 16%, 15% and 14% (Table 2) revealed that egg production (H.D%) and egg mass (gms) were significant (p<0.05)among the birds of treatments. The egg production (H.D%) and mass (gms) were significantly higher for the fourth treatment birds than control treatment birds.

Table 2 : Effect of the using herbal methionine as an alternative about DL-methionine in a feed chicken eggs on the adjectives productivity

Nutritional Treatments	Egg production (%H.D)	Weight Egg (gm)	Egg mass (gm)
T1	3.50±78.9 c	0.73±63.32	2.92±49.94 Ac
T2	1.36±82.08 ac	0.39±64.59	1.41±50.90 Abc
T3	2.46±89.06 ab	0.25±64.34	1.17± 56.20 A
T4	1.26±92.70 a	0.36±64.49	0.50±56.42 A
T5	3.30±83.33 bc	0.43±64.93	1.80±52.45 Abc
T6	.20± 81.04 1 bc	0.41±64.21	1.08±48.75 C
T7	3.65±81.45 bc	0.62±63.44	2.55±54.77 Ab
T8	0.81±82.81 bc	0.70±64.38	1.39±52.69 Abc
T9	3.38±84.06 bc	0.51±63.67	2.30±54.69 Ab
T10	2.02±80.20 c	0.48±64.39	1.41±50.90 Abc

(T) by 17.49% and 12.98% for egg production (%H.D) and egg mass (gms) respectively. There were no significant variation among treatments for the egg weight (gms) and the live birds weight at the initial and final of the experiment .The results in the (Table 2) indicated the low the feed and protein intake and protein conversion ratio significantly were the birds of the T10 birds by comparing that with T1birds. While the best value of feed conversion ratio were for the birds of T8 (1.59) while this value were (2.11) for the control treatment birds. On other hand significantly (P<0.05) best value for methionine conversion ratio were for the birds of the T4 (6.58) by comparing with the T1 birds (8.76). External and Internal Egg.

Table 3 : Effect of the using herbal methionine as an alternative about DL-methionine in a fee d chicken eggs on the adjectives consumption feed and protein and methionine

Nutritional Treatment	Feed intake (gm)	Intake (gm)	Protein Conversion ratio	Methionine Intake(gm)	Feed Conversion ratio	Methionine conversion ratio
T1	4.26±102.52 ab	0.69±16.68 a	0.01±0.34 A	17.66±424 bc	0.10±2.11 ab	0.44±8.76 ab
T2	3.50±84.79 cd	0.53±13.79 cd	0.01±0.27 Bcd	14.49±350.94 d	0.07±1.67 ab	0.29±6.93 Cd
T3	3.18±97.13 bc	0.48±14.78 abc	0.01±0.26 cde	12.82±391.27 cd	0.06±1.75 ab	0.27±7.07 Cd
T4	5.89±92.42 bcd	0.89±14.06 bcd	0.01±0.24 de	23.72±372.27 ab	0.09±1.63 b	0.39±6.58 D
T5	6.54±113.65 a	0.91±15.97 ab	0.01±0.30 ab	27.44±476.76 cd	0.10±2.19 a	00.42±9.22 A
T6	2.44±86.55 cd	0.34±12.16 de	0.01±0.25 de	10.26±363.09 dc	0.07±1.79 ab	0.31±7.52 Cd
T7	4.15±106.84 ab	0.63±16.24 a	0.01±0.30 bc	19.98±513.29 cd	0.11±1.98 ab	0.54±9.55 A
T8	5.47±83.84 cd	0.83±12.75 cde	0.01±0.24 de	26.33±403±14 cd	0.08±1.59 b	0.41±7.68 Bcd
T9	4.26±104.53 ab	0.59±14.69 abc	0.00±0.27 bcd	21.21±520.06 a	0.06±1.94 ab	0.31±9.67 A
T10	4.70±81.60 d	0.66±11.47 e	0.01±0.22 e	23.41±405.96 cd	0.07±1.60 b	0.36±8.00 bc

The economic efficiency for the nutritional treatments were shown in the (Table). The best nutritional treatment economically (feed cost per one Kilogram produced) and lowest const for feed 1 Kilogram egg was for of this core were (0.668, 0.524, 0.536, 0.495, 0.658, 0.533, 0.610, 0.484, 0.576, and 0.468) for the experimental treatments respectively.

References

Ahmed, M.E. and Abbas, T.E. (2015). The effect of feeding herbal methionine versus dl-methionine supplemented diets on broiler performance and carcass characteristics. International Conference on Agricultural Ecological and Medical Sciences, 10-11.

Ahmed, M.E. and Talha, E.A. (2011). Effects of Dietary Levels of Methionine on Broiler performance and Carcass Characteristics , International Journal of poultry Science, 10(2): 147-151.

Al-Nuaimy Mohammad, I.A. and Al-Hadeedy, Ismail Y.H. (2018). Effect of different levels of energy, protein, methionine and lysine without variation the value of calorie protein ratio upon the layer performance and quality traits of egg. Journal of Kirkuk University for Agricultural sciences. Vol(9) No.(2).

Figge, R.; Soucaile, P. and Bestel- Corre, G. (2010). Producing methionine without N-acetyl-methionine. patent application publication. USA: 2010.No :US 2010/0047879 Al.

Hadinia, S.; Shivazad, M.; Moravej, H.; Al-ahyari-Shahrasb, M. and Nabi, M.M. (2014). Bio-efficacy comparison of herbal methionine and DL-methionine based on performance and blood parameters of broiler chickens . Ves.Forum., 5(2): 81-87

N.R.C. National Research council (1994). Nutrient Requirement of Poultry. (9th rev. ed.). National Research Council. National Academy Press, Washington, D.S; USA

Schutte, J.B.; De Jong, J.; Smink, W. and Pack, M. (1997). Replacement value of betaine for DL methionine in male broiler chicks; Poult. Sci., 76: 321-325.