EFFECT OF DIETARY IODINE ON SOME PRODUCTIVE AND METABOLIC RESPONSES OF LOCAL LAYING HENS

By

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Abstract: *One hundred and twenty and twenty four males Golden Montazah of 10 weeks old were divided randomly into four equal groups with 3 replicats of 10 females and 2 males each . layer diet were supplemented with dietary potassium iodide (KI) at levels of 0.0,100,200 and 300 PPM . Productive traits , egg quality , hatching traits and immune response to New Castle disease virus (NDV) were determined.*

Results indicated that , supplementations diets with (KI) at level of 200 PPM improved significantly ($P \leq 0.05$) egg number , egg mass, egg production rate , feed conversion and immunity compared to the other groups .

Applying level of 300 PPM improved egg number , egg mass , egg production rate and feed conversion compared to control (0.0) and level of 100 PPM (KI) increased significantly egg weight, hatchability percentage , only as compared to all other treatments . Addition of (KI) at any level had no effect on feed consumption , shell weigh %, egg quality and shell qualit .

There was a positive correlation between iodide levels and the concentration of some minerals such as potassium in performance and immune response.

INTRODUCTION

Many attempts have been undertaken in order to improve the utilization of diet nutrients by adding dietary supplementation of several growth feed additives from different sources (El- Gendi etal ., 1994 , Ibrahim etal ., 1998 and Abdel – Azeem , 2002) .

Iodine is considered as a trace mineral, which is essentially required for birds in small amounts for normal production and metabolic function. Iodine has important effect on thyroid gland. Thyroid gland consumes about 70 to 100 UG of iodine per day for hormone synthesis. Any deficit from the iodine in dietary intake can be convered by re-utilizing the iodine released up on degradation of the hormones. (***Sturkie, 1986***).

Jiang et al, (1996) observed significantly lower egg production towards the end of experimental period (16 weeks) in hens which were fed with high iodine supplements, while, Licho vnikova *et al,* (2003) found that the greater iodine content (3.5 mg / Kg diet) in the diet of ISA Brown laying hens at diet 52-weeks experiment impaired the egg production, egg weight and the feed intake to egg mass ratio, while, had significant (P<0.05) negative effects on Haugh units, Yolk index and egg shell weight.

Hamdy and Abd EL-Latif (1999) found that supplementing drinking water with KI at levels of 300 and 600 PPM for Japanese quail hens improved (P<0.05) age of sexual maturity egg number, egg weight and feed conversion. While, the applying level of 900 PPM showed an adverse effect on most parameters, especially on egg number, egg weight and feed conversion , while layer's drinking water supplemental by KI increased (P<0.05) serum total protein, total lipids, and thyroid hormones (T3 and T4). Christensen *et al,* (1999) showed that dietary iodine supplemented to diet of Turkey hens depressed the hatchability of Turkey.

The results of Abd El-LAtif *et al,* (2001) showed that, increasing KI levels supplemented in drinking water up to 900 PPM enhanced (P<0.05) body weight, body gain and feed intake of Muskovy ducklings. However, feed conversion (feed/gain) was improved (P<0.05) when birds received drinking water without KI supplementation compared to other treatments during the entire period , also they found that plasma total lipids, total protein, albumin, globulin, glutamic oxaloactic (GOT) and glutamic pyruvic (GPT) transaminases were increased (P<0.05) with increasing KI levels in drinking water at 11 weeks of age , while , birds received 600 or 900 PPM KI recorded the greatest (P<0.05) values of thyroid hormones (thyroxin, T4 and triiodothyronine, T3). However, the best (P<0.05) ratio of T4/T3 was for birds received 300 PPM KI.

Nofal and Hassan (2001) revealed that supplementing water with KI at level of 200 PPM for Japanese Quail improved feed intake, feed conversion and efficiency index while applying level of 400 PPM decreased significantly ((P<0.01) each of egg number, hen day percentage, egg mass/day, feed conversion, fertility and hatchability percentages, egg specific gravity, shell weight, albumin weight, and feed intake were increased (P<0.01) by increasing KI level.

Efficiency index decreased and mortality percent were increased for birds treated with higher KI level, pullets increased significantly (P<0.01) each of egg number, egg yolk weight, egg shell surface area, hen day percentage, egg mass , and egg albumen weight was increased ($P<0.01$) egg albumen weight was increased ($P<0.01$). Interaction between levels of KI and period of egg production affected significantly feed intake ($P<0.01$) and haugh unit score ($P<0.05$).

Harmon, (1998) and Klasing, (1998) documented that the goal of the immuue system is to render harmless a foreign agent, which may be a bacterium, protozoon and virus of noninfectious entity such as a chemical or toxin substances. Very little has been published concerning local strains tolerance to (KI) levels for optimum productive and reproductive performance .

The objective of the current trials was to study the effect of different levels of (KI) supplementation in diets on some productive performance and immune response under climatic conditions of Upper Egypt

MATERIALS AND METHODS

The experimental work was carried out at the Experimental Station of Animal production Department AL-Azhar University, Assiut Branch, Egypt and the laboratory work of determine the immune response for New-castle disease was carried at the poultry services centre in Agriculture Faculty – Cairo University.

Using 144 Golden Montazha chicks (120 females and 24 males) at 40 weeks-old at the middle laying season were reared on floor in open side house under the same managerial conditions. The birds were randomly allotted to 4 groups (30 females + 6 males) and receive basal diets diets supplemented with potassium iodide (KI) at levels of 0.0,100,200,300 PPM. Food and water were provided ad- libitum. The composition of the basal diet was formulated to meet the nutrient requirements of laying hens according to NRC (1994) as shown in Table (1) were isonitrogenous (17.36%CP) and isocaloric (2832 Kcal ME/Kg).

The birds were maintained under the natural environment of upper Egypt. Artificial light was used beside the normal day light to provide 16 hours day photo period. Experimental period was extended to 3 months was initiated at November and terminated in February. The maximum and minimum temperatures and relative humidity were recovered in the morning and afternoon daily during the experimental period in chicks house and summarized monthly Table (2).

Egg number and egg weight (to the nearest gm) of each hen were recorded daily and both egg mass and egg production rate were calculated .

Mortality number for each group were recorded daily to count the mortality percent every month.Feed consumption and feed conversion ratio (g feed / g egg mass) per hen were recorded and calculated every month through the experimental period.At the end of first,second,third months of laying period. Eggs from each treatment were collected throughout successive days and incubated in an automatic incubator. Eggs were examined at 7 days of incubation period to determine fertile and in fertile egg, fertility was calculate as follows:

Fertility%= (Number of fertile eggs / Number of total set eggs) x 100

Hatched chicks and unhatched eggs were counted to calculate hatchability percentage A total hatching eggs for Matrough = 30 eggs x 4 treatments x 3 months = 360 eggs .

Hatchability % = (Number of hatched chicks / Number of fertile eggs) x100

Birds were vaccined against New castle disease virus (NDV) with vaccine la sota at the end of the experimental period. Blood samples were collected after 10 days from vaccinatin and the serum antibody titer were determined by Hemagglution Inhibition (HI) test (Hitchner et al., 1980). Egg dimensions (length and width), diametr and height of albumen & yolk were measured in mM using a digital caliper to calculate the egg shape index according to Romanoff and Romanof (1449) as an egg diameter divided by egg length and yolk and albumen index according to FunK et al, (1958) as yolk and albumen height divided by yolk and albumen diameter.Six eggs were collected from each treatment every month and individually weighed, then broken out individually one flat glass plate to calculated egg contents, egg and shell quality measurement. Haugh unit was calculated according to Eisen , et al, (1962) using the calculation chart for rapid conversion of egg weight and albumen height.

Egg quality measurements involved albumen, yolk and shell weights were calculated as a percent of egg weight. Egg specific gravity (Sp.gr) was calculated by Harms et al., (1990) using the following equation:

Sp.gr = EW/ 0.968 (EWSh.W) + (0.4921X Sh.W), where EW= egg weight, Sh.w= shell weight.

Egg shell quality was studied and included the following:

A- Egg shell weight to the nearest 0.1 gm.

B- Egg surface area (ESA) according to Paganel, et al, (1974) = 4.835W 0.662 cm^2 where w = egg weight in grams.

C- Shell weight per unit surface area (SWUSA) = shell weight, mg/ESA cm^2.

D- Egg shell volume according to Rahn (1981) = ESA cm^2 X shell thickness cm.

E- Shell density according to Nordstrom and Qusterhant (1982) :

shell weight, mg/SSA where = SSA = $3.978 \times W^{0.7056}$ W = egg weight gram.

The total feed cost (L.E) at the end of the experiment for each treatment, was calculated depending upon the local market prices of the ingredients used in formulating the experimental diets. Also, the total income (L.E) was calculated depending upon the local market prices of 1 kg egg weight. Economic efficiency was determined by comparing the net revenue (L.E.) and the total feed cost, for each experimental treatments. It was calculated as follows.

Economic efficiency = Net revenue (L.E.) / total feed cost (L.E.),

Data were statistically analyzed according to **SAS (1996).** Significant differences among individual means were analyzed by Ducans multiple range tests **(Duncan 1955).** Pooled standard error for each trait was calculated.

Table (1): Ingredient composition and calculated analysis of the basal diet.

Ingredient	%
Yellow corn	68.0
Soybean meal	14.5
Layer concentrate[(a)]	10.0
Limestone	7.25
Layer premix[(b)]	0.25
Total	100
Calculated analysis: %	
Crude protein	17.36
Metabolizable energy (Kcal/Kg diet)	2831
Calcium	3.46
Available P	0.85
Lysine	0.86
Methionine	0.37
Methionine + cystine	0.64

(a) Layer concentrate (50%) contain: crude protein 50%, fiber 2%, fat 4.28%, Ca 6%, P 2.85% and methionine 1.8% Methionine + cystine 2.03%, Lysine 2.75% , NaCl 2.67% and ME 2300 Kcal / Kg.

(b) Each 2.5 Kg of layer premix contain: Vit A, 10.000.I. U, Vit D, 2,250,000 C.I.U, Vit E, 10 mg, Vit K, 1 mg Vit B_1, 1 gm, B_2 4 mg, B_6, 1.5 mg, B_{12}, 10 mg, Pantothenic acid 10 mg, Niacin 20 mg, Folic acid 1 mg, Biotin 500 mg, Choline Chloride 500 mg, Iron 30 mg, Manganese 40 mg, Zinc 45 mg, Cupper 3 mgCobalt 100 mg, Iodine 300 mg, Selenium 100 mg and Ca CO_3, to 2500 gm.
Accroding to NRC, 1994

Table (2): Measure of temperature and humidity during the experimental period.

3.30 PM		8.3 AM		Period/ Month
Humidity %	**Temperature C°**	**Humidity %**	**Temperature C°**	
48.97	24.56	84.5	12.94	0-1
47.06	19.85	89.23	9.61	1-2
48.73	19.33	88.87	9.15	2-3

RESULTS AND DISCUSSION

Egg production traids:

The performance of hens are shown in Table, (3). The birds which received diets supplemented with potassium iodide (KI) at level of 200 PPM (T3) had significantly (P<0.05) higher egg number, egg production and immune response against New castle disease virus (NDV), moreover reduced (P>0.05) feed consumption and significantly improved feed conversion as compared to all other experimental treatments.

The same trend addition 200 PPM (KI) to layer diet (T3) significantly surpassed (P<0.05) egg weight and Hatchability percentage as compare to the control group (T1) and T4 (300PPM), while addition 100 PPM (KI) to layer diet (T2) had significantly increased (P<0.05) egg weight and Hatchablity percentage as compared to all treatments, but, significantly improved mortality rate and immune response against (NDV) as compared to (T1) and (T3). On the other hand T2 was the worst treatment with egg number, egg mass and egg production rate as compared to all treatments.

In the mean time, layer hens feed diet supplemented with 300 PPM (KI) were more obvious with showed significantly (P<0.05) greater values of egg number, egg mass and egg production higher that T1 and T2 but significantly decreased mortality rate.

In general, from the above results (T3) was the best treatment in egg number, egg mass, egg production rate, feed consumption, feed conversion and immune response against (NDV), while (T2) was the best treatment in egg weight and hatchability percent.

These results are in harmony with those reported by Nofal and Hassan (2001) who found that addition 200 PPM (KI) to drinking water for Japanese Quail improved feed intake, feed conversion and efficiency index, while, Jiang et el, (1996) noticed that significantly lower egg production towards fed with high iodine supplements. and lichovnikova et al., (2003) found that the greater iodine content in diet of ISA Brown laying hens impaired the egg production, egg weight and the food to egg, but, Christensen et al, (1999) showed that dietary iodine supplemented to hens depressed the hatchability of Turkey. Furthermone Harmon (1998) and klasing, (1998) noticed that iodide improved the immunity response of chickens

Egg contents:

Inspection of data presented in Table (4) shows that layer hens fed diet supplemented with 300 PPM (KI) (T4) improved (P>0.05) shell weight percentage as compared to all other treatments but .these results are in accordance with lichovnikova etal, (2003) and Nofal and Hassan (2001) who reported that the greater iodine content reduced egg shell weight. On the other hand addition of 200 PPM (KI) (T2) and (T3) to layer diet significantly increased . However , albumen weight percent of eggs produced by layers feed diet supplemented with 100(T2) and or 200 (T3) PPM (KI) differed significantly than those of the control group and (T4) These finding are in a greement with these reported by Abd El-Latif et al, (2001) who found that increasing KI levels in drinking water of Muskovy ducklings increased albumen weight percent but disagrees with that reported by Nofal and Hassan (2001) who found that 400 PPM supplemented to (KI) in drinking water's Japanese Quail decreased significantly albumen weight.. On the other hand yolk weight percent was significantly lower in all diets supplemented with different levels of (KI) compared to those fed on control diet but addition 100 and 300 PPM (KI) to layer hens diet reduced insignificantly yolk weight percent as compared to addition 200 PPM (KI) to layer hens diet, these finding agreas with that reported by Nofal and Hassan (2001) who revealed that , yolk weight percent increased significantly with increasing KI level

It can be observed that T4 was the best treatment (P>0.05) with shell weight % and T3 was the best treatment with albumen weight % while yolk weight % had the lowest values with T2, T3 and T4 as compared to T1

Egg quality measurements.

From the results obtained (table, 5) it could be observed that supplemented layer diets with 300 PPM (KI) improved (P>0.05) specific gravity as compared to all treatments and increased (P>0.05) yolk index rather than that T2, while, egg shape index, albumen index and Haugh unit did not responsed (P>0.05) to 300 PPM (KI). However addition 100 PPM (KI) improved (P>0.05) albumen index, while surpassed insignificantly (T2) and (T3), on the other hand supplemented layer diets with 200 PPM (KI) significantly slightly (P>0.05) yolk index and Haugh unite as compared to (T2) and (T4), while, decreased (P>0.05) as compare to the unsupplemental group (T1). The pervious observations are in congruent with results obtained by Nofal and Hassan (2001) who observed that egg specific gravity, haugh unit score and egg yolk index were decreased significantly (P< 0.01) with a advance of high levels of KI in drinking water of Japanese Quail. Also lichovnikova et al, (2003) found that the greater iodine contentin the diet of ISA Brown laying hens had significantly (P< 0.05) negative effects on Haugh unit, yolk index and egg shell weights.

It can be noticed from the above results that (T4) was the best treatment with specific gravity as compared to all the other treatments, while (T2) was the best treatment with albumen index as compared to all the other treatment but, (T3) was the worst treatment with egg quality measurements as compared to the control group.

Egg shall quality:

It is evident from Table (6) that supplementation of 200 PPM (KI) to hens diet slightly improved (P>0.05) egg surface area and egg shell volume as compared to all the other treatments, furthermore insignificantly surpassed the shell density and shell weight per unit surface area (SWUSA) rather than that T2. The same trend supplementation of 300 PPM (KI) for hens diet insignificantly improved shell density and SWUSA as compare to the all other treatments, while the second treatment insignificantly surpassed with egg surface area and egg shell volume rather than that (T4).

These results are in harmony with those reported by Nofal and Hassan (2001) who revealed that increasing (KI) level increased significantly (P< 0.01) egg shell surface area then it decreased by advance of egg production rate , also egg shell thickness and shape index decreased. Moreover Hamdy and Abd El-Latif (1999) showed that supplementing drinking water with (KI) at levels of 300 and 600 PPM for Japanese quail hens improved significantly (P<0.05) egg weight then reduced with applying level of 900 PPM (KI).

It can be concluded from the above results that (T3) was the best treatment with egg surface area and egg shell volume as compared to all other treatments, also (T4) was the best treatment with shell density and SWUSA, while, (T2) was the worst treatment among all treatments.

Economical efficiency:

Data in Table (7) indicated that, addition of 100,200,300 PPM (KI) to Montazha hens diets recorded higher economic efficiency values to be 0.437, 0.691 and 0.567 as compared with that of the control group 0.411. Assuming that the relative E.Ef of the control group equal 100, the other groups recorded relatively E.Ef. values of 106.326, 168.121 and 137.956

for T2, T3 and T4, respectively, while T3 had the highest values of E. Ef. then T4 then T2.

From the previous observation can be concluded that adding 200 PPM (KI) to Golden Montazha laying hens diet increased egg number, egg mass, egg production rate, egg surface area, egg shell volume, albumen weight% and improved feed conversion, feed consumption, vaccined response against (NDV) and economically efficiency.

Table (3): Effect of feeding Montazha laying Hens on different levels of Potassium iodide on layer performance.

Measurements / Treatments	Egg number hen/30 day	Egg mass hen/gm/month	Egg production rate	Egg weight / gm	Feed consumption gm/hen/month	Feed conversion Kg feed/kg egg mass	Hatchability %	Immunity	Mortality%
T1 (Control) O	11.63 ± 1.50^{c}	581.4 ± 4790.23^{d}	38.86 ± 5.1^{c}	49.87 ± 2.73^{d}	2748 ± 28.92	4.99 ± 0.72^{d}	71.67 ± 2.19^{d}	5.867 ± 0.30^{d}	3.33 ± 1.93^{c}
T2 (100 PPM KI)	11.12 ± 1.44^{d}	593.60 ± 88.85^{c}	33.71 ± 5.16^{d}	53.05 ± 1.22^{a}	2745.33 ± 34.08	4.84 ± 75^{c}	78.67 ± 3.67^{a}	6.97 ± 0.33^{b}	2.22 ± 1.11^{b}
T3 (200 PPM KI)	13.47 ± 2.01^{a}	698.57 ± 113.70^{a}	44.79 ± 6.76^{a}	51.65 ± 0.76^{b}	2736.33 ± 24.39	4.15 ± 0.71^{a}	74.67 ± 5.49^{b}	7.00 ± 0.173^{a}	3.33 ± 1.93^{c}
T4 (300 PP KI)	12.71 ± 0.77^{b}	652.49 ± 57.79^{b}	42.24 ± 2.55^{b}	51.14 ± 1.5^{c}	2748.33 ± 17.32	4.29 ± 0.42^{b}	74.33 ± 2.33^{c}	6.200 ± 0.001^{c}	1.11 ± 1.11^{a}

a, d ……. Means with different superscript (S) in the same row are significantly different ($P< 0.05$).

Table (4): Effect of feeding Montazha laying Hens on different levels of Potassium iodide on some egg contents.

Measurements / Treatments	Shell weight %	Albumen weight %	Yolk weight %
T1 (Control) O	0.113 ± 0.0027	0.549 ± 0.0080^{c}	0.337 ± 0.0078^{a}
T2 (100 PPM KI)	0.109 ± 0.0035	0.566 ± 0.0063^{ab}	0.325 ± 0.0060^{b}
T3 (200 PPM KI)	0.109 ± 0.0025	0.569 ± 0.0030^{a}	0.321 ± 0.0037^{b}
T4 (300 PP KI)	0.115 ± 0.0021	0.560 ± 0.0043^{b}	0.325 ± 0.0048^{b}

a,b,c ……. Means with different superscript (S) in the same row are significantly different ($P< 0.05$).

Table (5): Effect of feeding Montazha laying Hens on different levels of Potassium iodide on some egg quality measurements.

Measurements / Treatments	Egg shape index (ES)	Yolk index (YI)	Albumen index(A	Haugh unit (HU)	Specific gravity(SG)
T1 (Control) O	0.734± 0.0095	0.479± 0.0077	0.087± 0.0034	124.39± 1.9925	1.094± 0.0016
T2 (100 PPM KI)	0.732± 0.0073	0.4353±0.0099	0.087±0.0049	119.86±2.5050	1.092± 0.0020
T3 (200 PPM KI)	0.731± 0.0087	0.473±0.0067	0.084±0.0039	123.01±2.018	1.092± 0.0014
T4 (300 PP KI)	0.729± 0.0075	0.462±0.0079	0.082±0.0035	118.01±2.966	1.095± 0.0011

Table (6): Effect of feeding Montazha laying Hens on different levels of Potassium iodide on some egg shell quality.

Measurements / Treatments	Shell density (SD)	Egg surface area (ESA)	SWUSA	Egg shell volume (ESV)
T1 (Control) O	0.093± 0.00211	68.480± 0.6049	0.091±0.0021	27.962±0.8289
T2 (100 PPM KI)	0.089±0.0030	67.189±0.7494	0.087±0.0029	27.652±0.6652
T3 (200 PPM KI)	0.090± 0.0018	68.071±0.5699	0.088±0.0017	28.000±3748
T4 (300 PP KI)	0.093± 0.0018	66.689±0.8514	0.091±0.0018	26.586±0.8259

Table (7): In put analysis and economical efficiency (E.ef)of different treatment of Mountazha hens . (L.E. in 2007)

Items	Potassium iodide levels			
	Control %	100 Pm = 0.1 gm/ Kg feed	200 Pm = 0.2 gm/ Kg feed	300 Pm = 0.3 gm/ Kg feed
Feed consumption/chick (Kg)	2.748	2.745	2.736	2.748
Price/Kg diet (L.E)	1.200	1.204	1.208	1.212
Feed cost/ chick (L.E)	3.298	3.305	3.305	3.331
Egg mass/hen/gm	581.47	593.60	698.57	652.49
Total revenue/ (L.E)	4.652	4.749	5.589	5.220
Net revenue/ (L.E)	1.354	1.444	2.284	1.889
Economical efficiency	0.411	0.437	0.691	0.567
Relative E.ef.	100	106.326	168.127	137.456

L.E = Egyptian pound

Price of gm potassium iodide = 0.04 L.E.

Price of Kg egg mass = 8 L.E.

Economical efficiency = Net revenue/ feed cost.

Relative E.Ef = E.ef of treatment X100 / E.ef of control.

REFERENCES

Abd El-Latif, S.A; Faten A. Ibrahem,.EL-Kiaty A.M and Abd EL-Moty A.K.I. (2001). *Effect of iodine on some productive and metabolic function of growing Muskovy Duckling. Egyptian. J Nutrition and feeds (2001) 4 (special Issue); 1015 – 1023.*

Abdel-Azeem (2002).*Digeston , Neomycin and, teast supplementation in broiler diets under Egyptian summer condition . Egypt poulti. Sci. 22 (1) :235*

Christensen, V.L; Donaldson, W.E; Nestor,K.E; and Mc-Murtry, J.P. (1999). *Effect of genetics and maternal diatry iodide supplementation on Turkey embryonic growth. Poultry, Sci. 78:883-889.*

Duncan, D.B. (1955): *Multiple range and Multiple. F. Test Biometrics, 11:1-42*

Eisen, E.J.;. Bohren B.B and.Mchean H.E (1962). *The Haugh unit as a measure of egg albumen quality Poult. Sci. 41: 1461-1468.*

EL-Gendi, G.M, Ismail . F.A , and EL- Aggoury . F.A (1994) *:Effect of cocci- nel and lomoton dietary supplementation as herbal growth promoters on productive performance in broilers .Annls of Agric.Sci. Moshtohor , 32(3):1551 .*

Funk E.M.; Froning G.; Grottes; G. Forward R. and Kinder J. (1958): *Quality of eggs laid by caged layers. World poultry Sci. J; 15: 207.*

Hamdy, A.M.M.; and Abd EL-Latif, S.A. (1999). *Effect of iodinated water on some productive and metabolic parameters of Japanese quail hens. Egyptian J. Nutrition and feeds 2(special Issue): 703-709.*

Harmon, B.G.(1998). *Avian hetero phils in inflammation and disease resistance. Poultry Sci. 77:972-977.*

Harms, R.H.; Rossi, A. F.Sloan; Miles, D.R; and Christmas R.M (1990). *A method for estimating shell weight and correcting specific gravity for egg weight in egg shell quality studied. Poult Sci. 69:4852.*

Hitchner, S.B.; Domormuth C.H:, Purchase, H. G; and Williams, J.E. (1980). *Isolation and identification of avian pathologists. Creative printing Company INC. Endwell, Ny.*

Ibrahim , M.R.M., Abd El- latif . S.A. and El-yamany A.T. (1998) . *Effect of adding of some natural growth promoters to broiler chicks diets on growth performance , digestibility and some metabolic functions .J Agric . Sci . Mansoura Univ. 23(3) 1024.*

Jiang, Q.Y., Fu, w.L.& (HEN, L.J. (1996). *Effects of high dietary iodine on the reproductive performance of hens. Journal of South China Agricicultural University, 17:33-38.*

Klasing, K.C. (1998). *Nutritional modulation of resistance to infactious disease. Poult Sci. 77;1119-1125.*

Lichovnikova,M,L. ZEMAN AND M. CERMAKNOVA. (2003). *The long-term effects of using a higher amount of iodine supplement on the efficiency of laying hens. British poultry science volume 44, Number 5) (December 2003), PP. 732-734.*

National Research Council, (1994): *Nutrient requirements of poultry. Ninth revised edition, National Academy press, Washington, D.C.*

Nofal, M.E. And. Hassan A.H.A (2001). *Effect of potassium iodide levels for drinking water on the performance of lying Japanese Quail. Egypt. Poult. Sci. vol. 21(11): 423-440.*

Nordstrom, J.O. and. Qusterhant L.E (1982): *Estimation of shell weight, shell thickness, specific gravity and shell density. Poult Sci 61: 1991-1995.*

Paganel, C.V.: Oiszoka A. and A. Ar (1974): *The avian egg: surface area volume and density. The condor. 76: 319-325.*

Rahn, H. (1981). *Gas exschange of avian eggs with special reference to turkey eggs. Poult. Sci:, 60: 1971-1980.*

Romanoff,A.L.and. Romanoff A.J (1949).*The Avian egg. John Wiley & Sons, Inc.Newyork.*

Sas Institute,(1996):*SAS/ STAT. User's guide statistics ver 604 four Edition SAS Institute carry.NC*

Sturkie, p.d. (1986). *Avian physiology, 4th ed. (omstock Associate, Ny, USA.*

الملحص العربي

تاثير تغذية الايودين على بعض الاستجابات الانتاجية والتمثيل الغذائى لدجاج البياض المحلى

أحمد حسين مدين

قسم الانتاج الحيواني – كلية الزراعة – جامعة الأزهر – أسيوط – مصر

استخدم في هذه الدراسة 120 دجاجة و 24 ذكر في منتصف الحياة الانتاجية لدجاج المنتزة الذهبي في 4 مجموعات متساوية ولكل مجموعة 3 مكررات عوملت بمستويات صفر ، 100 ، 200 ، 300 جزء في المليون من يوديد البوتاسيوم في العليقة واستمرت التجربة لمدة ثلاثة اشهر لدراسة تأثير اضافة يوديد البوتاسيوم على صفات جودة البيضة الداخلية والخارجية ونوعية القشرة واداء الدجاج والمناعة ضدالنيوكاسل والكفاءة الاقتصادية وكانت أهم النتائج كالاتى:

1- مستوى 200 جزء في المليون زاد معنويا (5%) عدد البيض وكتلة البيض ومعدل انتاج البيض ومساحة مسطح البيضة وحجم قشرة البيضة والنسبة المنوية لوزن البياض وكذلك حسن معامل التحويل الغذائى وقلل من استهلاك العليقة وحسن المناعة ضد مرض النيوكاسل والكفاءة الاقتصادية.

2- أدى مستوى 300 جزء في المليون الى انخفاضاً معنويا لنسبة الفقس والمناعة ضد مرض النيوكاسل ونسبة الفقس ووزن البيض ومساحة مسطح البيض وحجم قشرة البيض و% لوزن البياض ومعامل شكل البيضة ووحدة هيو بينما حسن لكثافة النوعية و% لوزن الصفار وعدد البيض وكتلة البيض ومعدل انتاج البيض ومعامل التحويل الغذائي مقارنة بالمستوى 100 جزء في المليون ومجموعة الكنترول.

3- ازدادت معنويا (5%) نسبة الفقس ووزن البيضة ومعامل الالبيومين فقط لاغير فى المعاملة الثانية بالمقارنة بباقي المعاملات.

مما سبق يتضح من هذه الدراسة تغذية دجاج المتزة الذهبي على مستوى 200 جزء في المليون يوديد بوتاسيوم أدى الى تحسين بعض الصفات الانتاجية وصفات جودة القشرة والبيض والمناعة والكفاءة الاقتصادية تحت الظروف المناخية للصعيد مصر.