Mesopotamia J. of Agric. ISSN: 2224 - 9796 (Online) مـجلــة زراعــة الـرافـديـن
Vol. (47) No. (3) 2019 ISSN: 1815 - 316 X (Print) المجلد (47) العدد (3) 2019

THE EFFECT OF IMMERSION AND SPRAY OF HATCHING EGGS WITH VITAMIN C IN HATCHABILITY AND PRODUCTIVE PERFORMANCE OF QUAIL PROGENY

Anwar M. Y. AL-Hamed Ahmed M.N.AL-Eshaki
Animal production Dept. College of Agri. & Forestry University of Mosul / Iraq.
E-mail: althuraya.gmail.com

ABSTRACT

Research was conducted in the fields of animal production department / College of Agriculture and Forestry/ University of Mosul form 3/4/2019 to 22/5/2019 for 49 days, to investigate the effect of treating hatching eggs with vitamin C by immersion (Im) and spraying (SP), in the shell thickness and weight, hatchability, productive performance ,carcass and some blood parameters. The study include: the initial egg weights at days (5, 10, 15) , the shell thickness and weight before and after incubation, The treatments groups were as follows : 1st control, 2nd: the (Im) of eggs with distilled water, 3rd: (Sp) with water, 4th: (Im)by 5g vit.C\l, 5th: (Im) with 10g/l, 6th: (Sp)with 5g /l and 7th: (Sp) with 10g /l, duration of (Im) and (Sp) was 2 Min. After hatching, birds reared for 49 days. The results revealed an increase in the loss% of egg weight , hatching% and in the weight of hatching chicks and a decrease in the egg weight% of the initial weight, and increase in embryonic mortality% for (Im) by 10g/l. Decrease in body weight and feed consumption in Vit.C treatments with improvement in feed conversion and production index for (Im) (5, 10) g/l and high mortality% at (Im) 10g /L. Significant superiority in the dressing in 10 g/l and the chest% for Vit.C treatments ,significant decrease in abdominal fat in (Im)at a 10 g /l at 49 days. A decrease in serum glucose, globin and triglycerides to spray 5g vitC /l

keywords: Quail eggs, vitamin C, immersion, spraying, productive performance.

Received: 17/10 /2019 , Accepted: 23 / 11 / 2019.

INTRODUCTION

It was found that feed additives such as vitamins and others to the basal diets are transmitted only (25-30)% to eggs (Sklan & Tucker,2004).The possibility of intervenetion in the hatching period is not possible, hence the importance of using the technique of early feeding of embryos by treating the incubated eggs by providing nutrients to help the fetus in the formation of body tissues and overcome the stress during the hatching process (Ohta & Ishabish, 2001). Raising hatchability, digestive system development and subsequent body weight (Uni & Ferket, 2006), One of the vitamins is (Ascorbic acid) , which contributes to the increase of stress resulting from metabolic heat during the late period of hatching and therefore may be useful for the vitality of the embryos during the incubation period (Zakaria & Al-Latif, 1998).

Research is part of MS.c thesis of the 2nd author .

Stimulates growth and reduces embryonic mortality and production of hatching chicks (Badran et al., 2017) and (Sgavioli et al., 2013). Ascorbic acid concentration in hatching eggs decreases at the 16th day of incubation (Zakaria & Al-Anezi, 1999). Quail is a dual-purpose bird for the production of meat and eggs and has produce almost 250-300 eggs /hen/year , Being small in size, it needs small breeding areas. It is also considered as an ideal experimental animal for biological and genetic studies (Kayang et al., 2004) and disease resistant (Oguz & Minvielle, 2001).The process of injecting eggs is easy and clear when used in chicken eggs and the presence of scanning unlike quail eggs, where the eggs are spotted and small size, where the success rate of injection of eggs is much lower and reflected on the numbers of chicks resulting as well as a loss of time and effort.

MATERIALS AND METHODS

This study aimed to know the extent of the access of ascorbic acid to the fetus through the shell by submerging fertilized quail eggs or sprayed before incubation and it's impact on fetal growth, which is reflected in the weight of chicks and increase hatching rate and reduce embryonic mortality as well as the possibility of improving the productive performance of chicks, by providing energy requirements and growth as a result increased metabolic processes. A total of 630 fertilized eggs were distributed to seven treatments and weighed randomly to record the initial weight of each treatment before it was subjected to the experimental treatments and before placing in the incubator used in the study. The Ration provided in a homogeneous mixture of grain mills was formed according to the dietary decisions of the National Research Council (NRC, 1999).The study was carried out in two stages, the first was the study of some shell and hatching indicators where the initial weights of eggs and weight were taken at days (5, 10, 15) and the thickness and weight scales were measured before incubation and then eggs were treated with vitamin C.

Treatments were as follows: The 1^{st}: control (without treatment), the 2^{nd}: immersing eggs with distilled water. The 3^{rd}: spraying eggs with distilled water, the 4^{th}: immersing eggs with a solution of at a concentration of 5 g vit.C/ l distilled water, 5^{th}: immersing eggs in10 g vit.C/l distilled water, 6^{th}: spraying the eggs with 5g vit.C /l, 7^{th} : Spraying eggs with10g vit.C /l water. The duration of spraying and immersion was 2 minutes at four replications per treatment and the following measurements were taken: difference in shell weight ,The difference in thickness of the shell ,Lost egg weight at ages (5, 10, 15) days ,Hatching %, Embryo Mortality % , weight of chicks (g) , Study of productivity indicators, carcass characteristics and some blood parameters for the second stage of production, starting from one day to the age of sexual maturity at 49 days on the first day. Amount of feed consumed , Feed conversion ,Mortality% and Production index .

Blood sample were examined in order to evaluate the biochemical characteristics of blood :as glucose, cholesterol , triglycerides concentration , and high density lipoprotein – cholesterol (HDL-C) concentration, according to(Friedewald et al.,1972).

Estimation of serum low density lipoprotein concentrations and estimation of serum total protein, albumin and globulin concentration and estimation of serum AST and ALT concentration according to Tietz (1972).

Statistical analysis: was done using Completely Randomized Design (CRD) SAS (2003),differences between treatments was done by Duncan's multiple rang test (1955) at ($p \leq 0.05$) and according to the equation model : -

$Yij = \mu + ti + Eij$ Since: - Yij = Value of Views, μ = Average of Views ti = Transaction Effect, Eij = Impact of Experimental Error.

RESULTS AND DISCUSSION

(Table 1) showed that lowest significant egg weight per day (5,10,15) of the incubation was at spraying concentration of 5g/l and the same treatment was significantly superior in the loss of the initial egg weight for days (5,10,15) Spraying by 5g/l gave the higher loss% as a result of the same treatment having the lowest relative weight of the eggs. This increase in loss was probably due to the change in the characteristics of the shell, which affected the layer of Qutecl and due to the interaction between the egg shell and Vitamin C, increased the porous conductivity of the cortex, which was necessary in passing Gases and water vapor during the period of incubation while we note that the lowest rate is the immersion and spraying of 10g/l. may be the reason that this concentration caused damage in the shell so that it affected the composition of stomata and pores, this agreed with (Shafey, 2002), (Mohammed , et al., 2011).

(Table 2) showed significant differences in the shell thickness before and after the incubation and that immersion in 10 g/l was significantly superior to the difference in the thickness of the shell compared to control and with immersion with Vit. C is a weak acid has contributed to thinning the shell and change in its properties .(Shafey, 2002). It was observed that control was higher in shell weight, whereas both immersion and spraying significantly exceeded the difference in pre-and post-incubation shell weight on the control and spraying and water immersion treatments. These results were agreed with (Davis and Ackerman, 1987). (Mohammed et al., 2011). Table (3) also showed that spraying by 5g vit.C/l significantly exceeded the other treatments in hatching% and that the lowest hatching% was in egg immersion 10g vit.C /l and that this percentage may have affected embryos where the proportion of fetal mortality was high for the same treatment. The appropriate concentration has led to increased metabolic activity. Vitamin C is involved in several important enzymatic reactions as a reducing agent (Pardue and Thaxton,1986)) and has antioxidant activity and tissue protection from damage (Murray et al., 2000), (Lohakare et al., 2005). (Kutlu, .,2001) and (Ghonim et al. 2008), the improvement in hatching% was due to increased vitality of the embryos. This improvement may be caused by conduction in the shell when treating eggs with vit.C. It contributes to raising the stress during the incubation process and accompanying the process of hatching chicks, thus reducing the embryonic mortality during hatching and after hours up to 30 hours (Zakaria & Al-latif,

1998;Mohammed et al., 2011; Kul and Kandemir, 2013; Findan et al.; 2015, and Aboughaba et al., 2016). There were significant differences in hatchery weight at hatching where egg spraying 5 g / l was significantly superior compared to other treatments. Minerals and vitamin D also reduces the weight of subsequent chicks between 21-28 days in addition to stimulating the growth of chicks (Zakaria and AL-latif, 1998). These findings were agreed with (Askar, 2012).

Table (4) Indicated a significant increase in average body weight at 7th week for control ,immersion in water and spraying in water compared with another treatments This may be due to the persistence of the high concentration (10g /l) of the vitamin, which continued during the period of the growth of chicks and at agreed with (yassein et al, 2014), (Aboughaba, et al,2016). It was noted that the lowest significant value was belong to the group used spray eggs with 10g vit.C /l . These results were agreed with (Aboughaba et al., 2016) , (yassein et al., 2014). In feed consumption it was found that the control, immersion and water spraying and 5g vit.C /l spray treatment significantly exceeded the 5,10g vit.C /l immersion treatments and egg spraying. by 10g vit.C /l with another transactions. These results were agreed with Aboughaba et al., 2016) and (yassein et al., 2014). The total feed conversion decreased significantly in (5, 10) g vit.C /l compared to the control and with the immersion and spraying with water and with the spraying of eggs (5and10) g vit.C /l. From table (4), there were significant differences in the production index between the treatments. The immersion and spray by 5g vit.C /l were superior to other treatments. These results were agreed with (yassein et al., 2014)and (Ghonim et al.2008) .This was due to the role of ascorbic acid in regulating corticosterone and stimulating the immune system. Anti-stress factors (Kutlu, 2001) and (Abouoghaba et al., 2016).

Table (5) showed significant increase in carcass weight in immersion 10g vit.C/l compared with the immersion 5g/l . The carcass cuts were significantly higher in the immersion treatments in 10g vit.C /l and at two egg spray treatments (5, 10) g vit.C /l compared to the control and the immersion and water spraying procedures. Significant superiority was observed for immersion of eggs in 10g vit.C /l compared to spraying (5,10)g vit.C / l and in Back%, the spray with 10g vit.C /l was significantly superior to spraying eggs by 5g vit.C /l and control and treatment of immersion and spraying with water.

In Table (6) it was noticed that egg spraying by 5 g vit.C / L was significantly higher compared to other liver treatments. It was also observed that spraying eggs with 10 g vit.C/l improved the level of abdominal fat deposited and gave the least significant value compared to the control. Its value is zero% in age 49 days.

Mesopotamia J. of Agric. ISSN: 2224 - 9796 (Online) مـجلــة زراعــة الـرافديـن
Vol. (47) No. (3) 2019 ISSN: 1815 - 316 X (Print) المجلد (47) العدد (3) 2019

Table (1): Effect of immersion and spraying quail eggs in vitamin C on egg weight and on the rate of loss of the egg weight at different stages of the incubation.

characters / treatments	initial weight gm	weight egg gm			loss in egg weight gm			egg weight from initial egg weight %			loss from initial weight %		
		days			days								
		5	10	15	5	10	15	5	10	15	5	10	15
control	10.56	10.33 b ± 0.18	10.20 b ± 1.18	10.18 a ± 1.18	0.23 b ± 0.07	0.36 d ± 0.07	0.38 e ± 0.07	97.84 a ±1.66	96.61 a ± 1.67	96.42 a ± 2.67	2.16 c ± 0.66	3.39 c ± 0.67	3.58 e ± 0.67
IM in water	10.50	10.29 b ± 0.18	10.20 b ± 1.15	10.18 a ± 0.16	0.23 b ± 0.04	0.30 d ± 0.04	0.29 e ± 0.03	96.95 a ± 2.4	97.15 a ± 1.37	96.95 a ± 3.38	2.00 c ± 0.40	2.85 c ± 0.37	3.0 e ± 0.37
SP in water	10.59	10.33 b ± 0.08	10.20 b ± 0.17	10.18 a ± 0.12	0.26 b ± 0.16	0.39 c ± 0.06	0.41 d ± 0.18	97.00 a ± 2.65	96.00 a 3.66 ±	96.00 a ± 1.58	3.00 c ± 1.54	4.00 b ± 1.46	4.00 c ± 1.46
IM in vit.C 5g/l	11.11	10.49 a ± 0.12	10.68 a ± 0.14	9.64 bc ± 0.15	0.26 b ± 0.01	0.25 d ± 0.14	1.47 b ± 0.14	94.00 b ± 3.13	97.00 a ± 3.11	86.76 d ± 1.18	5.00 b ± 0.12	2.30 c ± 0.12	13.00 b ± 0.18
IM in vit.C 10g /l	11.07	10.90 a ± 0.17	10.75 ab ± 0.18	10.21 a ± 0.15	0.17 c ± 0.02	0.32 d ± 0.05	0.86 c ± 0.02	98.50 a ± 1.22	97.14 a ± 3.23	92.00 b ± 2.27	1.53 d ± 0.22	2.86 c ± 0.23	7.75 d ± 0.27
SP in vit.C 5g /l	11.11	10.22 b ± 0.55	9.48 c ± 0.19	8.96 c ± 0.17	0.89 a ± 0.05	1.63 a ± 0.02	2.15 a ± 0.04	91.0 b ± 3.2	85.31 c ± 1.02	80.63 e ± 1.78	8.02 a ± 0.13	14.69 a ± 0.24	19.37 a ± 0.32
SP in vit.C 10g /l	11.05	10.88 a ± 0.56	10.46 ab ± 1.13	9.94 ab ± 1.19	0.17 c ± 0.01	0.59 b ± 0.01	1.11 c ± 0.13	98.46 a ± 2.33	94.66 b ± 3.09	89.94 c ± 1.98	1.54 d ± 0.02	5.00 b ± 0.09	10.06 c ± 0.17

values with different letters vertically indicate significant differences at ($p \leq 0.05$)

IM: immersion , SP: spraying

Table(2): Effect of immersion and spraying quail eggs in vitamin C on shell thickness and weight before and after incubation

characters / treatments	shell thickness mm		shell weight gm		difference in shell thickness	difference in weight shell
	before incubation	after incubation	before incubation	after incubation		
control	0.280 a ± 0.001	0.248 a ± 0.002	1.250 ab ± 0.1	1.095 a ± 0.09	0.033 b ± 0.001	0.155 b ± 0.01
IM in water	0.267 a ± 0.02	0.247 a ± 0.02	1.040 b ± 0.08	0.870 abcd ± 0.07	0.020 b ± 0.001	0.170 b ± 0.03
SP in water	0.263 a ± 0.01	0.220 a ± 0.07	1.063 b ± 0.5	0.900 abc ± 0.05	0.043 ab ± 0.006	0.163 b ± 0.04
IM in vit.C 5g/l	0.285 a ± 0.01	0.235 a ± 0.04	1.230 ab ± 0.01	0.820 bcd ± 0.03	0.050 ab ± 0.003	0.410 a ± 0.04
IM in vit.C 10g /l	0.270 a ± 0.03	0.210 a ± 0.03	1.360 a ± 0.01	0.953 ab ± 0.04	0.060 a ± 0.003	0.407 a ± 0.02
SP in vit.C 5g /l	0.303 a ± 0.01	0.256 a ± 0.04	1.177 ab ± 0.05	0.787 cd ± 0.02	0.047 ab ± 0.005	0.390 a ± 0.02
SP in vit.C 10g /l	0.293 a ± 0.03	0.243 a ± 0.04	1.047 b ± 0.04	0.737 d ± 0.02	0.050 ab ± 0.003	0.310 a ± 0.02

Values with different letters vertically indicate significant differences at ($p \leq 0.05$)
IM: immersion , SP: spraying

Table (3): Effect of immersion and spraying quail eggs in vitamin C in the indicators of hatching and embryos mortality% during the stage of eggs incubation

characters / treatments	hatching %	embryo mortality %				hatching chick weight (gm)	incubation period (hours)	chick weight /egg weight %
		early	intermediate	late	total mort-ality			
control	79.66 bc ± 2.88	6.32 d ± 0.51	5.16 cd ± 1.16	8.86 a ± 0.55	20.34 c ± 2.00	6.81 c ± 0.15	387.30	64.00 c ± 2.13
IM in water	80.00 bc ± 3.11	7.00 d ± 0.74	5.55 c ± 0.78	6.66 ab ± 0.98	20.00 c ± 2.01	6.82 c ±0.04	387.30	64.95 c ± 1.55
SP in water	81.35 b ± 1.42	10.66 b ± 0.94	2.66 de ± 0.32	5.33 bc ± 0.82	18.65 c ± 1.06	7.13 c ± 0.04	386.00	63.12 c ± 1.17
IM in vit.C 5g/l	73.11 d ± 1.53	13.26 b ± 1.23	5.35 cd ± 0.68	8.28 a ± 1.64	26.89 b ± 1.49	7.75 b ± 0.08	384.00	70.00 b ± 2.33
IM in vit.C 10g /l	66.67 e ± 0.98	14.75 a ± 1.54	8.46 a ±1.25	10.12 a ± 0.18	33.33 a 1.46 ±	7.77 b ± 0.04	382.30	7.00 b ± 1.97
SP in vit.C 5g /l	88.45 a ± 2.00	6.62 cd ± 0.58	1.60 e ± 0.18	3.33 bc ± 0.40	11.55 d ± 0.46	8.29 a ± 0.09	383.30	75.00 a ± 2.09
SP in vit.C 10g /l	74.43 cd 1.42±	10.4 bc ± 0.44	8.04 a ± 0.60	6.89 ab ± 0.63	25.57 b ± 0.49	7.95 b ± 0.03	387.30	72.00 b ± 2.11

Values with different letters vertically indicate significant differences at ($p \leq 0.05$).
IM: immersion , SP: spraying

Table (4): Effect of immersion and spraying quail eggs in vitamin C in productive performance of progeny (7 week age)

characters / treatments	average body weight gm	total weight gain gm	total feed consumption	average feed conversion	production index	mortality %
control	225.67 a ± 3.07	182.58 ab ± 3.66	421.38 a ± 2.33	2.30 a ± 0.18	11.20 b ± 1.75	2.77 d ± 0.35
IM in water	225.58 a ± 4.52	191.54 a ± 2.58	428.46 a ± 3.25	2.24 a ± 0.15	11.29 b ± 2.00	5.55 c ± 0.81
SP in water	225.37 a ± 4.43	191.29 a ± 3.01	430.16 a ± 4.00	2.25 a ± 0.13	12.04 b ± 2.12	0.00 d ± 0.00
IM in vit.C 5g/l	221.05 b ± 4.46	187.30 a ± 2.16	397.11 b ± 3.15	2.12 b ± 0.21	14.15 a ± 2.11	13.88 b ± 1.15
IM in vit.C 10g /l	218.79 c ± 4.70	181.23 ab ± 3.25	390.58 b ± 4.82	2.16 b ± 0.13	9.92 c ± 1.35	27.77 a ± 1.61
SP in vit.C 5g /l	217.22 c ± 3.76	187.36 a ± 2.65	416.36 a ± 3.81	2.22 a ± 0.22	14.83 a ± 3.45	5.55 c ± 0.26
SP in vit.C 10g /l	209.63 d ± 4.75	177.89 b ± 4.22	394.84 b ± 2.91	2.22 a ± 0.14	11.57 b ± 2.22	13.88 b ± 2.20

Values with different letters vertically indicate significant differences at ($p \leq 0.05$).
IM: immersion , SP: spraying

Table (5): Effect of immersion and spraying quail eggs in vitamin C in carcass characters of progeny (7 weeks age)

characters / treatment	carcass weight	dressing %	chest %	thigh %	back %	wing %	neck %
control	123.49 ab ± 1.89	68.02 c ± 0.95	13.36 c ± 0.63	15.90 ab ± 0.58	12.98 b ± 0.28	5.64 a ± 0.34	3.29 a 0.30 ±
IM in water	122.83 ab ± 1.59	66.32 c ± 0.12	16.76 c ± 0.46	15.50 ab ± 0.42	13.11 b ± 0.07	5.25 a ± 0.25	3.25 a ± 0.30
SP in water	122.8ab ± 1.58	67.00 c ± 0.38	13.14 c ± 1.62	16.02 ab ± 0.63	13.13 b ± 0.33	5.46 a ± 0.26	2.79 a ± 0.43
IM in vit.C 5 g/l	120.67 b ± 1.20	68.5cb ± 0.71	18.66 bc ± 1.31	15.75 ab 0.93 ±	13.73 ab ± 0.33	5.54 b ± 0.26	2.63 a ± 0.43
IM in vit.C 10g /l	131.67 a ± 1.67	73.52 a ± 1.08	20.34 ab ± 1.17	17.08 a ± 0.34	13.97 ab ± 0.80	4.42 ab ± 0.50	2.95 a ± 0.63
SP in vit.C 5g /l	127.52 ab ± 2.82	70.81b ± 0.40	22.43 a ± 0.84	14.39 b ± 0.36	13.19 b ± 0.21	4.03 b ± 0.29	2.96 a ± 0.34
SP in vit.C 10g /l	125.33 ab ± 6.06	67.82 c ± 1.38	21.52 a ± 0.56	14.68 b ± 0.41	14.16 a ± 0.16	3.81 b ± 0.27	2.32 a ± 0.24

Values with different letters vertically indicate significant differences at ($p \leq 0.05$).
IM: immersion , SP: spraying

Table (6): Effect of immersion and spraying quail eggs in vitamin C in edible parts% and abdominals fat% of progeny (7 weeks age)

characters / treatments	heart %	liver %	gizzard %	total edible eaten%	abdominals fat %
control	0.94 a ± 0.09	2.69 b ± 0.10	2.00 a ± 0.23	5.18 a ± 0.12	0.79 ab ± 0.21
IM in water	1.11 a ± 0.09	1.98 b ± 0.33	2.31 a ± 0.12	5.40 a ± 0.37	0.91 a ± 0.07
SP in water	0.94 a ± 0.03	2.19 b ± 0.09	2.33 a ± 0.25	5.46 a ± 0.19	0.78 ab ± 0.21
IM in vit.C 5 g/l	1.01 a ± 0.05	2.64 b ± 0.42	2.04 a ± 0.08	5.69 a ± 0.29	0.40 abc 0.02
IM in vit.C 10g /l	0.88 a ± 0.05	2.95 b ± 0.36	1.97 a ± 0.24	5.80 a ± 0.54	0.18 bc ± 0.01
SP in vit.C 5g /l	0.80 a ± 0.06	3.91 a ± 0.44	1.70 a ± 0.90	6.41 a ± 0.24	1.00 a ± 0.03
SP in vit.C 10g /l	0.83 a ± 0.11	2.81 b 0.09	2.08 a ± 0.15	5.72 a ±0.18	0.00 c ± 0.00

Values with different letters vertically indicate significant differences at ($p \leq 0.05$).
IM: immersion , SP: spraying

Table (7) showed significant differences where the concentration of glucose was significantly decreased in spray treatment by 5 g / l compared with other treatments and the blood glucose concentration was significantly decreased in the treatment of egg immersion at 5g/l and egg spray at 10g/l compared with control. It was noted that the total protein in the treatment of spraying at a concentration of 5 g / l was significantly reduced compared to the immersion treatment and in albumin there was no significant differences between treatments. In globulin, it was observed that the immersion treatments at 10g/l and spraying at 5g/l decreased significantly compared with control and with water immersion.

Table (8) showed that the treatment of spraying eggs at a concentration of 5 g / l decreased significantly compared to the control and immersion and spraying with water and spraying at a concentration of 10 g / l in tri chlorides. It was observed that the concentration of cholesterol, low-density fatty acids (LDL), hormone AST and ALT were not significantly affected by the treatment of eggs. With the immersion and spraying of eggs with water and spray at a concentration of 10 g / l. In very low fatty acids VLDL it was observed that the control and immersion in water decreased significantly in this characteristic compared to other treatments.

Table (7) Effect of immersion and spraying quail eggs in vitamin C in glucose and blood proteins of progeny (7^{th} week age)

characters / treatments	glucose mg/dl	total protein g/dl	albumen g/dl	globulin g/dl
control	199.80 a ± 2.37	4.02 ab ± 0.23	2.20 a ± 0.22	1.99 ab ± 0.13
IM in water	189.07 ab ± 2.53	4.40 a ± 0.31	2.30 a ± 0.20	2.10 a ± 0.20
SP in water	183.60 ab ± 4.16	4.00 ab ± 0.10	2.40 a ± 0.27	1.60 abc ± 0.23
IM in vit.C 5 g/l	180.40 b ± 4.11 ±	4.10 ab ± 0.20	2.70 a ± 0.38	1.40 bc ± 0.17
IM in vit.C 10g /l	190.80 ab ± 3.33	3.90 ab ± 0.20	2.60 a ± 0.20	1.30 c ± 0.27
SP in vit.C 5g /l	154.20 c ± 12.18	3.80 b ± 0.04	2.60 a ± 0.38	1.20 c ± 0.21
SP in vit.C 10g /l	172.80 b ± 5.42	4.10 ab ± 0.11	2.50 a ± 0.38	1.60 abc ± 0.20

Values with different letters vertically indicate significant differences at ($p \leq 0.05$) .
IM: immersion , SP: spraying

Table (8) Effect of immersion and spraying quail eggs in vitamin C in the biochemical parameters of progeny (7 weeks age)

characters / treatments	tri glyceride mg / dl	cholesterol mg / (dl	HDL mg / dl	LDL mg / dl	VLDL mg / dl	AST	ALT
control	7.40 b ± 0.72	9.20 a ± 0.64	4.52 a ± 0.30	1.70 a ± 0.09	1.17 b ± 0.11	6.20 a ± 0.20	5.40 a ± 0.49
IM in water	7.60 ab ± 0.36	9.20 a ±0.59	4.92 a ± 0.49	1.5 a ± 0.27	1.18 b ± 0.05	6.00 a ± 0.33	5.80 a ± 0.34
SP in water	8.20 a ± 0.57	9.50 a ± 0.55	4.89 a ± 0.49	1.40 a ± 0.18	1.82 a ± 0.39	5.80 a ± 0.53	5.30 a ± 0.40
IM in vit.C 5g/l	5.90 bc ± 0.16	10.00 a ± 1.93	2.40 b ± 0.28	1.18 a ± 0.19	2.00 a ± 0.07	5.30 a ± 0.38	5.60 a ± 0.47
IM in vit.C 10g /l	5.70 bc ± 0.27	9.50 a ± 0.52	2.18 b ± 0.23	1.60 a ± 0.12	1.92 a ± 0.25	5.70 a 0.43±	5.50 a ± 0.48
SP in vit.C 5g /l	4.13 c ± 0.46	9.90 a ± 1.31	2.52 b ± 0.35	1.30 a ± 0.07	1.98 a ± 0.14	6.45 a ± 0.74	4.70 a ± 0.22
SP in vit.C 10g /l	8.50 a ± 1.25	9.90 a ± 1.80	5.02 a ± 0.9	1.50 a ± 0.19	1.98 a ± 0.11	6.10 a ± 0.33	5.10 a ± 0.17

Values with different letters vertically indicate significant differences at ($p \leq 0.05$).
IM: immersion , SP: spraying

Mesopotamia J. of Agric. ISSN: 2224 - 9796 (Online) مـجلــة زراعــة الـرافـديـن
Vol. (47) No. (3) 2019 ISSN: 1815 - 316 X (Print) المجلد (47) العدد (3) 2019

تأثير غمر ورش بيض التفقيس بفيتامين C في الفقس والاداء الانتاجي للنسل الناتج للسمان

انوار محمد يونس الحامد احمد محمود نصيف الاسحاقي
قسم الانتاج الحيواني / كلية الزراعة والغابات /جامعة الموصل – العراق
E-mail: althuraya.gmail.com

الخلاصة

اجري البحث في حقول قسم الانتاج الحيواني لكلية الزراعة والغابات/جامعة الموصل للفترة 2019/4/3 ولغاية 2019/6/28 ولمدة 87 يوماً لمعرفة تأثير معاملة بيض التفقيس بفيتامين C بطريقتي الغمر والرش في سمك ووزن القشرة والفقس وفي الأداء الإنتاجي والذبيحة وبعض معايير الدم الكيموحيوية ، تحت درجة حرارة بيئية مرتفعة 37 ± 2 مْ . الدراسة بمرحلتين :المرحلة الاولى، اخذت الاوزان الاولية للبيض عند الايام (5، 10، 15) وسمك ووزن القشرة قبل وبعد الحضن وتم معاملة البيض بالاتي:- الاولى : السيطرة والثانية : غمر البيض بالماء المقطر، الثالثة : الرش بالماء والرابعة :الغمر بـ 5غم/لتر، الخامسة : الغمر بـ 10غم/لتر ،السادسة : الرش بـ 5غم/لتر والسابعة: الرش بـ 10غم/لتر ، مدة الغمر والرش 2 د، والمرحلة الثانية : من عمر الفقس 1يوم ولغاية عمر 49 يوما ، نتائج المرحلة الاولى: في الفقد% من وزن البيضة وفي الفقس% وفي وزن الافراخ عند الفقس وانخفاض في وزن البيضة% من الوزن الاولي، وتفوق في الفرق بسمك القشرة وارتفاع في الهلاكات الجنينية % للغمر بـ 10 غم/لتر، وتفوق بالفرق في وزن القشرة للغمر والرش بفتامين C ، المرحلة الثانية : انخفاض في وزن الجسم الحي و استهلاك العلف في معاملات الاسكوربك اسد مع تحسن في معامل التحويل الغذائي و دليل الانتاج للغمر (5، 10) غم/لتر وارتفاع الهلاكات% للغمر بـ 10غم/لتر .وتفوق معنوي في التصافي% للغمر بـ 10غم/لتر وفي الصدر% من وزن الجسم الحي لمعاملات بالاسكوربك اسد عند 49 يوم من العمر وانخفاض معنوي في نسبة دهن البطن في الغمر بتركيز 10غم/لتر عند 49 يوم . وانخفاض في كلوكوز وكلوبين والكليسريدات الثلاثية مصل الدم للرش 5غم/لتر بفيتامين C .

الكلمات الدالة : بيض السمان ، فيتامين C ، الغمر ، الرش، الاداء الانتاجي

تاريخ استلام البحث : 2019/10/17 وقبوله 2019/11/23

REFERENCES

Abuoghaba .A.A;(2016).Impact Of Spraying In Cuba Feel Submitted To High Temperature With Ascorbic Acid On Embryonic Development, Hatchability, And Some Physiological Responses Of Hatchel Chicks .*Canadian journal of animal , 2017,97(2);172-182*

Anonymous. (2003). Statistical Analysis System User's Guide. (Version 9.1.3). SAS Institute Inc., Cary North Carolina, U.S.A.

National Research Council (N . R . C,1994) Nutrient Requirements Of Poultry. *National Academy Of Science , Washington, D.C.*

Askar .A.A .(2012). Influence Of The Manipulation Of Incubated Japanese Quail Eggs By Ascorbic Acid On The Embryo Weight , Hatchability And Hematological Parameter Of The Chicks . *Egyptian J . Anima . prod (2012) 49(2) ؛187 – 194* .

Badran , A.M ;. M. H. Hatab and. N. S. Ibrahim.2017. Effect Of Ascorbic Acid Injection In Pre-Incubated Hy-Line Layer Eggs On Hatchability And Some Blood And Hematological Parameters Of Hatched Chicks Egypt. *Poult. Sci. Vol (37)(IV): (1141-1151).*

Davis,T.A. and Ackerman, R.A. (1987). Effects Of Increased Water Loss On Growth And Water Content Of The Chick Embryo .*Journal of Experimental Zoology (Supplement). 1: 357-364.*

Duncan, D.B. (1955). Multiple range and multiple F Test.

Findan. E . D .; A . Nazligul ; M – kaya .(2015) The Effect Of Dipping Hatching Egg In Ascorbic Acid Solution On Embryonic And Hatchability Traits , And Hatching Weight ; Weight In Japanese Quail . *Animal health prod and Hug (2015) 4 (1), 398-401.*

Friedewald , W .; Y . Levy and N . Fredrickson .(1972). Estimation Of The Concentration Of Low Density Lipoprotein Cholesterol In Plasma Without Use Of Preparative Ultracentrifuge . *Clin . Chem , 18 : 499 – 502*

Ghonim,A.I.A, A.L.A. Awad, M.H.A,.fattouh and A.M. EL-Suhhat and kh.A.A. Ali, 2008. Effect Of Muscovy Duck By Ascorbic Acid Solutions During Incubation Period On Hatchability Traits. *Egpt. Poult . 28:282-293*

Kayang , B . B .; A . Vignal ; M . Inoue – Murayama ; M . Miwa ; J . L . Monvoisin ; S . Ito and F . Minvielle .(2004). A First- Generation Micro Satellite Linkage Map Of The Japanese Quail . *Animal Genetics . 35:195 – 200 (abstract).*

KUL .S.S.K.; O.Kandemir.(2013). Effect Of Ascorbic Acid Immersion Of Eggs On Some Hatching Properties In Quail. *The Indian journal of animal Sciences 83(10):1053-1057* .

Kutlu, H.R.,2001. Influences Of Wet Feeding And Supplementation With Ascorbic Acid On Performances And Carcass Composition Of Broiler Chicks Exposed To A High Ambient Temperature. *Arch. Nutri.,54. 127-139.*

Lohakare,J.D;M.H.Ryu; T.W.Hahn; J.K.Lee; B.J.Chae. (2005) .Effect Of Supplemental Ascorbic Ascorbic Acid On The Performance And Immunity Of Commercial Broiler .*J.App Poultry. 14:10-19.*

Murray, R. K. ; Granner, D. K. ; Mayes, P. A. and Rodwell, W. W. (2000) Harper's Biochemistry, 25th Lang Medical Pub., *Canada. Pp: 155-158.*

National Research Council (N . R . C,1994) Nutrient Requirements Of Poultry. *National Academy Of Science , Washington, D.C.*

Oguz , I . and F . Minvielle .(2001). Effects Of Genetics And Breeding On Carcass And Meat Quality Of Japanese Quail: A Review. Proceedings Of The 15th European Symposium On The Quality Of Poultry Meat, WPSA TurkishBranch,*Sept.9-12,Kusadasi,Turkey.*

Ohta, Y; M. T. Kidd and Ishabishi, T. 2001. Embryo growth and amino acid concentration profiles of broiler breeder eggs embryos and chicks of in ovo administration of amino acids. *Poultry Science, 80: 1430-1436.*

Pardue,S.L.. and J.P.,Thaxton (1986) .Ascorbic Acid In Poultry A Review. *World Poultry .Sci.J.42: 107-123.*

Sgavioli, S.I; J.B. Matos Júnior, L.L. Borges, M.F. Praes and V.S. Morita.2015. Effects of Ascorbic Acid Injection in Incubated Eggs Submitted to Heat Stress on Incubation Parameters and Chick Quality. *Brazilian Journal of Poultry Science. v.(17) . n(2) 181-190.*

Shafey.T.M.(2002). Egg Shell Conductance ,Embryonic Growth , Hatchability And Embryonic Mortality Of Broiler Breeder Eggs In To Ascorbic Acid Solution . *poultry science (2002) 43:135-140.*

Sklan.D.and L.Tucker .(2004). The Importance Of Early Gut Development In Broilers *Poultry International .43(10):18-22.*

Titez , N . W .(1972). Clinical guide to laboratory tests . 3rd Edn .

18- Uni, Z. and R. P. Ferket. 2006. Methods Of Early Nutrition And Their Potential. *World's Poultry Science Journal , 60:101-111* .

Yassein,D.M.M.;S.M.M.;Beamish .A.M.A.(2014).Effect Of Spraying Hatching Egg By Ascorbic Acid During Incubation On Hatchability Post Hatch Chick Growth And Physiological Parameters In A Local Strain Of Chickens .*Egypt .poultry. Sci . 34:715-733.*

Zakaria,A.H. and A.A.AL-Laatif.(1998). Effect Of Ascorbic Acid Treatment During Egg Incubation And After Hatch On Embryonic Development ,Hatch Time, And Body Weight Changes On Post Hatch Incubation Time Of Broiler Chickens .*Arch. Gaffing 1998.62 (4) : 176-182.*

Zakaria,A.H. and N.A.AL-Anezi. (1999) Effect Of Ascorbic Acid And Calling During Egg Incubation On Hatching, Mortality And Body Weight Of Broiler Chickens . *poultry Sci., 75: 1204-1209.*