EFFECT OF PROLONGED ADMINISTRATION OF HALOFUGINONE AND MADURAMICIN ON EGG QUALITY AND SERUM ESTRADIOL-17B AND PROGESTERONE LEVELS IN BOVANS LAYING HENS

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Abstract

In the present work, the effects of Halofuginone hydrobromide and Maduramicin ammonium mixed with ration for 120 days were studied in Bovans laying hens. Serum levels of estradiol and progesterone and egg quality, besides histop athological changes of the ovaries were also studied. Results revealed that serum estradiol and progesterone levels were significantly decreased in Maduramicin treated groups. Egg quality and age of start laying were also significantly decreased in the latter groups. No significant changes of the ovaries were observed in both groups. It could be concluded from the present study that Halofuginone hydrobromide (1.5 or 3 p.p.m.) can be given to Bovans laying hens during the rearing period, but not recommended during the period of egg production as it has significant effect on egg quality. Maduramicin ammonium cannot be used safely in Bovans laying hens as it delays sexual maturity and stops the egg production until 21 days post drug withdrawal.

INTRODUCTION

Coccidiosis is undoubtedly the most important parasitic disease of poultry caused by specific protozoa (genus *Eimeria*) which damages the lining of the intestinal tract resulting in enteritis and diarrhoea. Coccidiosis outbreaks vary from mild to severe infection that depends upon the number of the sporulated oocysts causing the infection (Hofstad *et al.*, 1984). Halofuginone hydrobromide and Maduramicin ammonium were widely used as effective coccidiostat for broiler chicken. Apart from rapid development of oocyst resistance with continual use, problems also arose with adverse effects on laying performance.

Thus, the present work was carried out to evaluate the effects of Halofuginone hydrobromide and Maduramicin ammonium on reproductive performance of laying hens. Serum levels of gonadal hormones (estradiol 17 β and progesterone)and egg qualities were also studied.

MATERIALS AND METHODS

A- Materials

A.1. Drugs

A.1.1. Halofuginone hydrobromide (Stenorol)

It was obtained from HOECHST-ROUSSEL-Vet. in a package of 25 kg each. Each kilogram of (Stenorol) contained six grams of Halofuginone hydrobromide. It was dispensed in the form of white premix powder to be mixed with starter ration.

A.1.2. Maduramicin ammonium (Cygro)

It was obtained from HOFFMAN-LA ROCHE, France, in a package of 20 kg. Each kilogram of (Cygro) contained ten grams of Maduramicin ammonium. It is dispensed in the form of tan premix crystalline powder mixed with starter ration.

A.2. Birds

Thirty-five birds, one day old Bovans hens were brought from Tiba company. Feed and water were offered *ad-libitum* with adequate ventilation. Light and vaccination programs were adjusted. The birds were kept under strictly hygienic conditions .

Experimental Design

Thirty-five birds, one day old Bovans hens were divided into five equal groups (7 females each). The first group was fed on unmedicated starter ration for 120 days. The second group was given Halofuginone hydrobromide mixed with starter ration for 120 days (1.5 p.p.m., coccidiostatic dose). The third group was given Halofuginone hydrobromide (3 p.p.m., coccidiocidal dose) mixed with starter ration for 120 days. The fourth group was given Maduramicin ammonium at a dose of 5 p.p.m. (the recommended dose) mixed with starter ration for 120 days. The fifth group was given Maduramicin ammonium (10 p.p.m.) mixed with starter ration for 120 days. Birds in all groups were fed on unmedicated growing ration from 120-148 days-old(production period).

B-Methods

Blood samples were collected from the brachial vein of each bird at age 120, 127, 134, 141 and 148 days old without anticoagulant, left to clot, then, centrifuged at 3000 r.p.m for 15 minutes to separate serum. Serum samples were kept at -20°C for assay of estradiol and progesterone hormones at age 120, 127, 134, 141 and 148 day-old and at time 9.00 h and 12.0 h AM. (Okulicz *et al.*, 1985).

B-1-Measurement of gonadal hormones

They were determined according to Yalow and Berson (1971).

Estradiol-17 β was determined by using DSL-4300 Active™ Estradiol Coated tube Radioimmunoassay Kit obtained from Diagnostic Systems Laboratories. U.S.A.

Progesterone was measured by using DSL-3900 Active™ Progesterone kit obtained from Diagnostic Systems Laboratories .

B-2- Egg studies

Egg samples were collected from corresponding groups from 120 days and weekly till 148 days-old. The collected eggs were labeled and examined to detect egg quality as follow:

B-2.A- External egg quality

1- Egg weight

All fresh eggs were weighed individually to the nearest 0.1 g and the weight was noted on the shell.

2- Shape Index

It was calculated as described by Shultz (1953).

B-2.B. Shell quality

1- Shell weight and its percentage to egg weight

It was determined as described by Brake and Baughman (1989).

2- Shell thickness

It was measured by using Ames shell thickness gauge according to Sushil Kamar *et al.* (1983).

B-2.C. Internal egg quality

1. Albumin quality

1.a. Albumin weight and percentage

They were calculated as described by Abdullah (1998).

1.b. Albumin height and Haugh units

Albumin height was estimated as described by Abdullah (1998). Haugh units according to Stadelman and Cotteril (1977).

2. Yolk quality

2. a. Yolk weight and percentage

It was determined as described by Abdullah (1998).

2. b. Yolk Index

It was estimated according to Amer (1959).

2. c. Yolk colour

Yolk colour was evaluated by means of Roche Yolk Color Fan.

C-Statistical analysis: The results obtained were statistically analyzed using student T test according to Snedecor (1969).

RESULTS AND DISCUSSION

Coccidiosis is considered very dangerous parasitic disease that affects poultry industry and causes economic losses, so, anticoccidial drugs are widely used to prevent the disease and minimize such losses. Today, laying hens are products of interest due to their importance in producing eggs.

Halofuginone hydrobromide and Maduramicin ammonium representing two different groups of anticoccidial drugs (Quinazolinone & Polyether ionophores) that are widely used for prophylactic control of coccidiosis by mixing them with ration. The adverse effects of these drugs may affect productive and reproductive performance. In the present work, the effects of Halofuginone hydrobromide and Maduramicin ammonium mixed with ration for 120 days were studied in Bovans laying hens on serum levels of estradiol-17β and progesterone and egg quality. Besides, histoparhological changes of the ovaries were also studied.

Table 1 showed that Maduramicin ammonium with both doses significantly decreased the level of serum estradiol 17 β ($P < 0.05$, $P<0.01$ and $P< 0.001$) from 120 to 148 days-old. Concerning the effect of the tested anticoccidial drugs on serum progesterone, results revealed that Halofuginone hydrobromide at a dose of 3 p.p.m. significantly ($P<0.001$) increased it, while, Maduramicin ammonium at a dose of 5 p.p.m. significantly decreased it (Table 2).Where ($P<0.05$) at 127 day-ald and ($P<0.01$ at 134 and 141 days-old (Table 2).

The obtained results revealed that, both low and high doses of Maduramicin ammonium caused a significant decrease in serum estradiol-17 β level. This inhibitory effect of the carboxylic ionophores was previously reported by Levorse *et al.* (1991) who recorded that extended periods of increased cytoplasmic calcium induced by carboxylic ionophores may serve as a negative feedback mechanism to reduce steroid production. This results in a dose dependent inhibition of and rostenedione production by LH stimulated theca cells.

Our obtained results are consistent with results of Soliman (1996) who found that lasalocid sodium at a dose of 2.5 & 5.0 mg/kg b.wt decreased plasma estradiol-17 β level in hens.

On the contrary, administration of Maduramicin ammonium (5 & 10 p.p.m.) caused a significant decrease in serum progesterone level. This observation is consitent with that reported by Jobell *et al.* (1987) who found that lasalocid suppressed LH which promotes progesterone production from avian granulose cells. They attributed this suppressing effect of lasalocid to decrease cellular ATP levels, thus, effecting metabolic events that depend on phosphorylation needed for protein production. Similar results were recorded by Soliman (1996).

The effects of the tested drugs on eggs quality (Table 3), revealed that laying of eggs in Bovans hens began at 102 days in unmedicated control group. Other medicated groups, laying of eggs began at 105 and 112 days in Halofuginone hydrobromide (1.5 and 3.0 p.p.m.) and at 127 and 141 days in Maduramicin ammonium (5 and 10 p.p.m.), respectively. The number of eggs per week was increased with increasing age in all groups, but, it was noticed that the tested drugs decreased number of eggs as compared with non- medicated group. At the last two weeks from the experimental period (two weeks following drug stoppage) showed an increase in egg production in group given 3 p.p.m. Halofuginone hydrobromide.

Concerning the effect of the tested drugs on egg weight, shape index and shell thickness, the obtained results revealed that Halofuginone hydrobromide at a dose of 1.5 p.p.m significantly decreased egg weight at 127, 134 and 148 days and shape index decreased at 127 and 141 days (Table 3). Shell thickness was reduced at 127 days-old and shell weight at 148 days and shell percentage to egg weight was increased at 127 and 134 days (Table 4). Albumin weight decreased at 127 and 134 days albumin height increased at 127 and 134 days-old and albumin percentage at

134 days (Table 5). Yolk weight and index increased at 120 and 148 days and yolk colour at 120 days (Table 6).

Halofuginone hydrobromide at a dose of 3 p.p.m. decreased egg weight and shape index from 120 - 148 days (Table 3), shell weight at 148 days and shell thickness at 127 days, while, it increased shell percentage to egg weight from 120-134 days (Table 4). Albumin weight was decreased at 127 and 148 days but, albumin height increased at 127 days and albumin percentage at 134 days (Table 5). Yolk weight and percentage decreased at 148 days (Table 6). Yolk colour increased at 120 days and yolk percentage at 127 and 134 days (Table 6).

Maduramicin ammonium administered at a dose of 5 p.p.m. increased shape index at 134 days (Table 3), shell percentage to egg weight and shell thickness at 134 days (Table 4). Albumin weight and height decreased at 141 days-old and albumin height at 127 days-old. Haugh unit was increased from 141-148 days (Table 5). Yolk index increased at 134 days (Table 6), while, at a dose of 10 p.p.m. showed a significant decrease in the weight of eggs, shells, albumin and yolk.

The changes in egg quality agreed with those results reported by Jones *et al.* (1990). They found that 125 p.p.m of nicarbazin suppress egg production, and egg weight is reduced 5 % besides egg yolk spotting and mottling. As well, it reduced fertility and hatchability. Moreover, EL-aroussi *et al.* (1993) added that treatment of hens with coccidiostat (nicarbazin) led to cessation of egg production with maintenance of the reproductive tract.

Concerning the effect of ionophores on egg quality, Ruff and Jensen (1977), found that feeding laying hens up to 200 p.p.m. of monensin had no deleterious effect on egg shell thickness, egg appearance and Haugh unit.

It could be concluded from the present study that Halofuginone hydrobromide (1.5 or 3 p.p.m.) can be given to Bovans hens during the rearing period, but not recommended during the period of egg production, as it has significant effect on egg quality. Maduramicin ammonium, cannot be used safely in Bovans laying hens as it delays sexual maturity and stops the egg production until 21 days post-drug withdrawal.

Table 1. Effect of Halofuginone hydrobromide (1.5 & 3.0 p.p.m) and Maduramicin ammonium (5.0 & 10.0 p.p.m) administered for 120 successive days on the level of serum estradiol-17 β (pg/ml) of Bovans laying hens (Mean ± S.E.) n = 7.

Time of Sampling (day-old)	Unmedicated Control	Groups			
		Halofuginone hydrobromide		Maduramicin ammonium	
		1.5	3.0	5.0	10
120	162.57 ±1.41	164.86 ± 1.94	165.0 ± 1.11	** 156.14 ± 1.38	** 154.29 ± 1.36
127	163.86 ±1.33	165.29 ± 1.63	165.86 ± 1.4	** 158.42 ± 1.02	** 156.57 ± 1.82
134	168.57 ±0.87	169.43 ± 0.65	170.14 ± 0.51	* 164.71 ± 1.27	*** 153.86 ± 0.88
141	171.0 ± 0.53	170.19 ± 0.52	171.43 ± 0.43	** 165.43 ± 1.17	*** 156.57 ± 1.21
148	171.86 ± 0.7	171.29 ± 0.75	171.86 ± 0.8	** 165.57 ± 1.49	*** 159.29 ± 0.92

* P < 0.05 ** P < 0.01 *** P < 0.001

Table 2. Effect of Halofuginone hydrobromide (1.5 & 3.0 p.p.m.) and Maduramicin ammonium (5.0 & 10.0 p.p.m.) administered for 120 successive days on the level of serum progesterone (ng/ml) of Bovans laying hens (Mean ± S.E.) n = 7 .

Time of Sampling (day-old)	Unmedicated Control	Groups			
		Halofuginone hydrobromide		Maduramicin ammonium	
		1.5	3.0	5.0	10
120	0.16 ± 0.02	0.18 ± 0.02	*** 0.48 ± 0.02	0.14 ± 0.02	0.13 ± 0.01
127	0.33 ± 0.04	0.34 ± 0.01	0.37 ± 0.01	* 0.23 ± 0.01	*** 0.12 ± 0.02
134	0.40 ± 0.03	0.42 ± 0.03	0.47 ± 0.03	** 0.26 ± 0.02	** 0.25 ± 0.03
141	0.31 ± 0.03	0.37 ± 0.01	0.35 ± 0.02	** 0.17 ± 0.02	*** 0.11 ± 0.01
148	0.41 ± 0.02	0.41 ± 0.01	0.43 ± 0.03	0.38 ± 0.01	*** 0.28 ± 0.0

* P <·0.05 ** P < 0.01 *** P < 0.001

Table 3. Effect of Halofuginone hydrobromide (1.5 & 3.0 p.p.m) and Maduramicin ammonium (5.0 & 10 p.p.m) administered for 120 successive days on external egg quality of Bovans laying hens (mean ± S.E.) n = 7.

Time of Sampling (day-old)	External egg quality	Groups				
		Unmedicated	Halofuginone hydrobromide		Maduramicin ammonium	
		Control	1.5	3.0	5.0	10
	Z.T. (days)	102	105	112	127	141
	Number of eggs per week	35	28	21	0	0
120				*		
	Egg weight (g)	42.17 ± 1.62	43.14 ± 1.07	38.34 ± 0.56	0	0
	Shape index (W/L x 100)	75.0 ± 0.01	75.0 ± 0.01	75.0 ± 0.01	0	0
	Number of eggs per week	37	35	28	0	0
			*	**		
127	Egg weight (g)	55.41 ± 2.33	45.98 ± 3.14	43.43 ± 1.89	0	0
			***	***		
	Shape index (W/L x 100)	77.3 ± 0.15	72.4 ± 0.13	73.9 ± 0.11	0	0
	Number of eggs per week	39	35	39	21	0
			***	***		
134	Egg weight (g)	54.83 ± 1.95	42.56 ± 0.69	42.87 ± 0.63	49.74 ± 2.44	0
				***	***	
	Shape index (W/L x 100)	75.1 ± 0.12	76.3 ± 0.13	73.3 ± 0.13	79.1 ± 0.11	0
	Number of eggs per week	41	36	49	21	0
141	Egg weight (g)	45.43 ± 1.43	43.76 ± 0.88	43.36 ± 0.67	41.51 ± 2.03	0
			***	***		
	Shape index (W/L x 100)	81.2 ± 0.21	78.1 ± 0.18	78.3 ± 0.22	81.1 ± 0.19	0
	Number of eggs per week	42	42	49	35	20
			**	**		*
148	Egg weight (g)	47.94 ± 1.09	43.43 ± 0.83	43.93 ± 0.61	44.31 ± 1.77	43.48 ± 1.7
				***		
	Shape index (W/L x 100)	79.2 ± 0.9	78.0 ± 0.8	75.3 ± 0.1	79.3 ± 0.1	79 ± 0.7

• (Zero time) start of laying eggs.
W (width) L (length)

* $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$

Table 4. Effect of Halofuginone hydrobromide (1.5 & 3.0 p.p.m.) and Maduramicin ammonium (5.0 & 10 p.p.m.) administered for 120 successive days on shell quality of Bovans laying hens (mean ± S.E.) n = 7.

Time of sampling (day-old)	Shell quality	Groups				
		Jnmedicatec	Halofuginone hydrobromide		Maduramicin ammonium	
		Control	1.5	3.0	5.0	10
120	Shell weight (g)	4.93 ± 0.18	4.97 ± 0.08	4.99 ± 0.09	0	0
	Shell percentage to egg weight (%)	11.74 ± 0.41	11.64 ± 0.45	13.02 ± 0.20 *	0	0
	Shell thickness (mm)	0.39 ± 0.01	0.38 ± 0.01	0.37 ± 0.01	0	0
127	Shell weight (g)	5.55 ± 0.15	5.38 ± 0.34	5.06 ± 0.21	0	0
	Shell percentage to egg weight (%)	9.87 ± 0.4	11.83 ± 0.51 *	11.71 ± 0.28 **	0	0
	Shell thickness (mm)	0.42 ± 0.02	0.34 ± 0.01 **	0.33 ± 0.01 ***	0	0
134	Shell weight (g)	6.25 ± 0.15	6.74 ± 0.14	6.47 ± 0.09	6.59 ± 0.04	0
	Shell percentage to egg weight (%)	11.46 ± 0.3	14.9 ± 0.94 *	15.09 ± 0.22 ***	13.44 ± 0.65 *	0
	Shell thickness (mm)	0.39 ± 0.01	0.41 ± 0.01	0.41 ± 0.01	0.43 ± 0.01 **	0
141	Shell weight (g)	5.78 ± 0.19	5.41 ± 0.04	5.34 ± 0.19	5.68 ± 0.13	0
	Shell percentage to egg weight (%)	12.82 ± 0.54	12.39 ± 0.27	12.32 ± 0.37	13.8 ± 0.47	0
	Shell thickness (mm)	0.37 ± 0.01	0.39 ± 0.01	0.37 ± 0.01	0.39 ± 0.01	0
148	Shell weight (g)	5.17 ± 0.29	4.5 ± 0.11 *	4.22 ± 0.07 **	4.61 ± 0.21	4.5 ± 0.08 *
	Shell percentage to egg weight (%)	10.77 ± 0.46	10.59 ± 0.32	9.6 ± 0.18	10.49 ± 0.56	10.45 ± 0.47
	Shell thickness (mm)	0.37 ± 0.01	0.35 ± 0.01	0.37 ± 0.02	0.39 ± 0.01	0.39 ± 0.01

* $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$

Table 5. Effect of Halofuginone hydrobromide (1.5 & 3.0 p.p.m) and Maduramicin ammonium (5.0 & 10 p.p.m) administered for 120 successive days on albumin quality of Bovans laying hens (mean ± S.E.) n = 7.

Time of Sampling Day-old	Albumin Quality	Groups				
		Unmedicated	Halofuginone hydrobromide		Maduramicin ammonium	
		Control	1.5	3.0	5.0	10
120	Albumin weight (g)	28.07 ± 1.38	25.49 ± 0.24	25.3 ± 0.29	0	0
	Albumin percentage (%)	66.58 ± 1.95	59.82 ± 2.59	66.03 ± 0.64	0	0
	Albumin height	0.74 ± 0.03	0.69 ± 0.03	0.73 ± 0.02	0	0
	Haugh units	19.0 ± 2.21	16.71 ± 2.09	24.29 ± 0.61	0	0
127	Albumin weight (g)	30.02 ± 0.57	24.68 ± 0.84***	26.29 ± 0.55***	0	0
	Albumin percentage (%)	55.01 ± 3.36	54.91 ± 2.87	61.32 ± 3.1	0	0
	Albumin height	0.35 ± 0.04	0.67 ± 0.08**	0.74 ± 0.05***	0	0
	Haugh units	22.83 ± 8.46	9.29 ± 5.2	17.22 ± 2.54	0	0
134	Albumin weight (g)	29.24 ± 0.84	28.16 ± 0.61	28.23 ± 0.38	29.54 ± 0.75	0
	Albumin percentage (%)	53.56 ± 1.7	66.15 ± 0.51***	65.86 ± 0.28***	60.1 ± 2.79*	0
	Albumin height	0.59 ± 0.05	0.57 ± 0.04	0.5 ± 0.02	0.63 ± 0.07	0
	Haugh units	16.73 ± 2.52	12.34 ± 1.39	11.1 ± 0.67	11.69 ± 0.68	0
141	Albumin weight (g)	26.49 ± 0.3	26.65 ± 0.31	26.27 ± 0.24	24.8 ± 0.6*	0
	Albumin percentage (%)	58.81 ± 2.03	61.09 ± 1.63	61.08 ± 0.99	60.35 ± 1.89	0
	Albumin height	0.44 ± 0.02	0.41 ± 0.01	0.44 ± 0.02	0.36 ± 0.02*	0
	Haugh units	5.23 ± 1.32	7.75 ± 1.58	7.16 ± 1.66	12.7 ± 1.84	0
148	Albumin weight (g)	33.38 ± 0.99	28.34 ± 1.08**	29.92 ± 0.94*	28.72 ± 1.65*	28.48 ± 0.64**
	Albumin percentage (%)	69.88 ± 2.8	65.24 ± 2.2	68.33 ± 2.95	64.52 ± 1.79	66.08 ± 2.79
	Albumin height	0.5 ± 0.02	0.44 ± 0.02	0.47 ± 0.02	0.41 ± 0.03*	0.44 ± 0.03
	Haugh units	8.32 ± 0.91	7.37 ± 1.53	7.27 ± 1.5	10.97 ± 0.41*	11.83 ± 0.72

* P < 0.05 ** P < 0.01 *** P < 0.001

Table 6. Effect of Halofuginone hydrobromide (1.5 & 3.0 p.p.m.) and Maduramicin ammonium (5.0 & 10 p.p.m.) administered for 120 successive days on yolk quality of Bovans laying hens (mean ± S.E.) n = 7.

Time of Sampling (Day-old)	Yolk quality	Groups				
		Unmedicated	Halofuginone hydrobromide		Maduramicin ammonium	
		Control	1.5	3.0	5.0	10
120	Yolk weight (g)	6.8 ± 0.19	7.67 ± 0.15 **	6.69 + 0.16 ***	0	0
	Yolk percentage (%)	17.81 ± 0.28	19.86 ± 0.1	17.46 ± 0.25	0	0
	Yolk index	55.22 ± 2.77	43.95 ± 1.31 ***	57.29± 2.05 **	0	0
	Yolk color	5.71 ± 0.18	7.29 ± 0.18	7.14 ± 0.34	0	0
127	Yolk weight (g)	7.98 ± 0.09	7.42 ± 0.24	8.19 + 0.27 **	0	0
	Yolk percentage (%)	14.58 ± 0.69	16.68 ± 1.29	19.04 ± 0.89	0	0
	Yolk index	50.0 ± 1.51	51.23 ± 1.92	47.6 ± 0.93	0	0
	Yolk color	7.14 ± 0.34	7.0 ± 0.31	7.28 ± 0.18	0	0
134	Yolk weight (g)	9.74 ± 0.37	9.44 ± 0.22 *	9.86 + 0.62 *	9.96 ± 0.18	0
	Yolk percentage (%)	18.04 ± 1.32	22.19 ± 0.69	22.94 ± 1.29	20.36 ± 1.16 *	0
	Yolk index	49.22 ± 1.45	49.29 ± 1.54	47.51 ± 0.59	53.7 ± 1.46	0
	Yolk color	7.29 ± 0.29	7.14 ± 0.26	7.57 ± 0.2	7.57 ± 0.2	0
141	Yolk weight (g)	10.29 ± 0.15	10.47 ± 0.13	10.28 + 0.21	9.15 ± 0.37	0
	Yolk percentage (%)	23.07 ± 0.86	24.0 ± 0.65	23.72 ± 0.33	22.12 ± 0.52	0
	Yolk index	49.1 ± 0.67	49.27 ± 1.6	50.1 ± 2.2	46.37 ± 1.77	0
	Yolk color	6.71 ± 0.29	7.0 ± 0.31	6.57 ± 0.2	7.0 ± 0.22	0
148	Yolk weight (g)	10.87 ± 0.32	8.51 ± 0.46 ** *	9.03 + 0.09 *** *	9.51 ± 0.59	9.02 ± 0.5 **
	Yolk percentage (%)	22.71 ± 0.71	19.53 ± 0.76	20.58 ± 0.45	21.69 ± 1.63	20.93 ± 1.28
	Yolk index	47.23 ± 1.99	49.85 ± 0.82	49.64 ± 0.84	47.53 ± 0.75	51.88 ± 2.13
	Yolk color	7.0 ± 0.31	7.57 ± 0.29	7.14 ± 0.26	7.29 ± 1.8	7.85 ± 0.34

* $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$

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تأثير إعطاء هالوفوجينون والماديوراميسين لفترة طويلة على جودة البيض وهرمون الاستراديول ١٧ بيتا والبروجيسترون فى المصل فى دجاجات بوفانز

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فى هذه الدراسة تم دراسة تأثير اثنين من مضادات الكوكسيديا (هالوفوجينون هيدروبروميد ، ماديوراميسين أمونيوم) فى الدجاج بخلطها فى العليقة من عمر يوم حتى ١٢٠ يوماً على معدل هرمون الاستراديول والبروجيسترون وجودة البيض.

أجريت هذه الدراسة على خمسة وثلاثين كتكوتاً من سلالة بوفانز عمر يوم، وقسمت إلى خمس مجموعات متساوية تحتوى كل مجموعة على سبع إناث. المجموعة الأولى تم تغذيتها بعليقة خالية من مضادات الكوكسيديا (المجموعة الضابطة). المجموعة الثانية والثالثة أعطيتا هالوفوجينون هيدروبروميد مضافا إلى العليقة بنسبة ١,٥ و ٣ جزء فى المليون على التوالى. المجموعة الرابعة والخامسة أعطيتا ماديوراميسين أمونيوم مضافا إلى العليقة بنسبة ٥ و ١٠ جزء فى المليون على التوالى.

تم أخذ عينة دم من وريد الجناح لكل طائر لفصل المصل أسبوعيا عند عمر ١٢٠- ١٤٨يوما . كما تم أخذ عينات من البيض أيضا أسبوعيا عند عمر ١٢٠- ١٤٨ يوما.

وقد لوحظ أن هالوفوجينون هيدروبروميد (١,٥ و ٣ جزء فى المليون) عندما أعطى للدجاج البياض أحدث بعض التغيرات فى خصائص البيض.

ماديوراميسين أمونيوم (٥ و ١٠ جزء فى المليون) عندما إعطى فى الدجاج البياض أحدث نقصا فى مستوى هرمون الاستراديول١٧ بيتا والبروجيسترون.

ومن النتائج السابقة يمكن إعطاء هالوفوجينون هيدروبروميد (١,٥ و ٣ جزء فى المليون) للدجاج لحمايتها من الكوكسيديا أثناء فترة التربية ولا تعطى أثناء فترة الإنتاج لأنها تؤثر على جودة البيض أما ماديوراميسين أمونيوم لا تعطى للدجاج لأنها تؤخر البلوغ الجنسى وتثبط إنتاج البيض لمدة وصلت إلى ٢١ يوما بعد إيقاف الدواء.