EFFECT OF FUNGI TOXIN (AFLATOXIN B1) AND DETOXIFICATION AGENT (MYCODOTE) ON THE PERFORMANCE OF SOME LOCAL STRAINS OF CHICKENS

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Abstract

Two local strains of chickens- Gimmizah (G) and Dokki-4 (D4) at age of 48 weeks were used to investigate the effect of aflatoxin (B_1) at levels of 0.0, 2.0 and 5.0 ppm in the layer diet. Within each of these levels, Mycodote[R] the commericial detoxifier(HSCAS) was added at levels of 0.0 or 0.1%. The treatment period lasted for three weeks followed by recovery period for four weeks where birds received diet free of supplemental aflatoxin and Mycodote.

Results showed that administration of aflatoxin B_1 at 2ppm in the diet significantly decreased most productive traits like egg production traits (egg number, egg weight and total egg mass), egg quality traits (albumen height, yolk weight, egg shell weight, yolk index and Haugh units), feed intake, reproductive traits (fertility, hatchability and chick weight at hatch) and semen performance (semen volume, sperm concentration and mass activity). On the other hand, hens mortality rate, embryo abnormalities, dead embryos and sperm abnormalities and dead sperm percentage were significantly ($P<0.05$) increased . The effects were more pronounced by the elevation of aflatoxins B1 from 2.0 to 5.0 ppm in the diet. Adding Mycodote to the experimental diets improved all production traits.

Chickens which consumed lower levels of aflatoxin (2 mg/kg diet) with Mycodote recovered more rapidly than those which consumed higher levels of aflatoxin (5 mg/kg diet) with or without Mycodote during treatment period. So, it can be recommended that adding Mycodote especially, at 0.1% of the hens diet contaminated with aflatoxin B_1 can efficiency improve feed intake, feed conversion, egg production, egg quality, semen quality, fertility and hatchability.

Mycodote®: adsorbent agent (HSCAS).

INTRODUCTION

Aflatoxins (AF) are the secondary metabolites which are produced mostly by certain species of *Aspergillus flavus* and *Aspergillus parasiticus* (Peers and Linsell, 1977). These toxins contaminate variety of food and feed products, and they threat animals and human health. Profitability of poultry production can be greatly affected due to the frequency of food contamination and the detrimental effects of these toxins on performance (Huff *et al.,* 1988).When contaminated feeds are consumed by live stock with relatively high levels greater than 500 ppb (5 mg/kg diet) adverse effects such as, decreased feed intake and impaired chicks feed conversion are observed (Abd El-Hamid *et al.*, 1995). Also, these levels caused many acute disease syndromes, while at lowest levels they can reduce the productive performance. The prevention of mycotoxins is the best method of controlling contamination. Yet, if the contamination should occur, therefore, the removal or avoidance of their hazards must be carried out. This could be done, experimentally, via decontamination procedures including:

a- Physical, chemical, and biological removal,
b- Physical or chemical inactivation (Park, 1970).

The present work was designed to study the effects of aflatoxin B_1 on the performance of local Gimmizah and Dokki-4 Chicken strains. It also includes an attempt to inactivate AB_1 in layers contaminated diets by adding a commericial detoxifier (mylodote) . .

MATERIALS AND METHODS

This study was carried out at "Sids" Poultry Research Station, Animal Production Research Institute, Agricultural Research Center. A total of 192 birds of Gimmizah (G) and Dokki-4 (D4) strains (90 hens +6 cocks) for each strain at 48 weeks of age were wing-banded, weighed and randomly distributed into three experimental groups with 2 replicates (15 hen +1 cock). The birds were housed in floor pen. All groups were fed on commercial diet for 4 weeks before the experimental period.

The experimental diet was formulated with three levels of Aflatoxin B_1 (0.0, 0.2 or 5.0 mg/kg diet) in 3 x 2 experimental levels and two levels of the detoxifier

mycdote (HSCAS). The birds were fed on the experimental diets for 3 weeks as treatment period, then, they were fed on a diet toxin-free for 4 weeks as a recovery period, to study the withdrawal time required for bringing back the flock to the normal production. Aflatoxin was produced via fermentation of rice by *Aspergillus flavus* NRRL 2999 as described by Shotwell *et al.* (1966). Fermented rice was autoclaved, dried and ground to a fine powder which was analyzed spectrophotometry for its aflatoxin content by the method of Nabney and Nesbitt (1965). Aflatoxin in the rice powder was extracted by chloroform, then incorporated into the basal diet and confirmed by TLC to provide the desired level of 2 and 5 mg aflatoxin B_1/kg diet. Production and reproduction studied traits were as follow:

Egg production traits: Egg production-egg number and egg weight- and feed intake were recorded weekly. Total egg mass, and feed conversion ratio were calculated.

Egg quality traits: Eggs were weighed individually, yolk weight, albumen height, yolk index, Haugh unit, egg shell weight and shell thickness was determined.

Reproductive traits: Fertility and hatchability: A total of 720 eggs (360 eggs for each strain) was collected at the end of 3rd week (treating period), and 7th week (recovery period) of the experiment to determine fertility (%), hatchability (%) and embryo abnormalities (%).

Semen evaluation: Thirty cocks (48 weeks old) from Gimmizah and Dokki-4s were housed in cages and fed on aflatoxic diets without or with Mycodote (0.1%) during the experimental period and all cocks were trained for semen ejaculation to determine semen volume (ml), sperm concentration (billion/ml^3), mass activity (%) sperm abnormality ratio (%) and dead sperm (%).

Statistical analysis: the data for all traits were statistically analyzed according to one way analysis of variance design using general linear model (GLM) procedure by computer program of SAS (1985) on the model.

$$X_{ij} = \mu + A_i + e_{ij}$$

Where:

X_{ij} = Represents observation

μ = Overall mean.

A_i = Effect of treatment (diets).

e_{ij} = Experimental error.

RESULTS AND DISCUSSION

Egg production traits: Averages of total egg number/hen, egg weight (g), total egg mass (gm/hen), total feed intake (gm/hen) and feed conversion ratio (gm/feed required for gm/egg) during treatment period (3 weeks after start) for Gimmizah and Dokki-4 hens are presented in Tables 1 and 2 , respectively. Results revealed that number of eggs and egg weight laid per hen was reduced significantly ($P<0.05$) with each increase in aflatoxin level from 2 to 5 ppm/ kg diet. Also, results in Tables 1 and 2 revealed that the total egg mass laid per hen during the treatment period for Gimmizah and Dokki-4 was decreased significantly ($P<0.05$) with each increase in aflatoxin level in the diet. However, supplementation with Mycodote caused a slight improvement in total egg number, average egg weight and total egg mass laid by hen during the treatment period. Results in the same tables, revealed that Gimmizah and Dokki-4 hens fed the aflatoxin free diet with and without Mycodote and those fed diet contaminated with 2 ppm/kg aflatoxin with or without Mycodote and those received diet contaminated with 5ppm with Mycodote laid 337.6, 407.9, 142.6, 177.9 and 124.16% more egg mass than the group received diet with 5ppm aflatoxin without Mycodote for Gimmizah and 587.3, 637.3, 203.7, 259.9 and 137.9% for Dokki-4 , respectively.

Averages feed consumed during the treatment period for Gimmizah and Dokki-4 hens received diets contaminated with aflatoxin consumed ($P<0.05$) lower feeds during the treatment period, and feed consumption was reduced more pronounced than the control groups. Average feed conversion ratio was increased significantly ($P< 0.05$) with each increase in the level of aflatoxin in the diet and dietary supplementation of mycodote caused a slight improvement in this trait. Mortality rate increased in the contaminated diet with aflatoxin and the increase was more pronounced in hen groups received higher levels of aflatoxin. The results of the same tables show that Mycodote (the antitoxin agent) decreased the mortality rate.

In general, these results indicate that aflatoxin decreased the total egg number/hen, egg weight, total egg mass, total feed intake and increased mortality rates and feed

conversion in Gimmizah and Dokki-4 hens. Incorporation of mycodote reduced the negative effects of the aflatoxin. These results are in agreement with findings of those obtained by Sudhakar (1990) and Hassan (1998). They found that egg production and egg weight were significantly decreased by aflatoxin contaminated diets in different chicken strains. However, Hassan (1998) found that aflatoxin contaminated diets decreased significantly hens body weight. Iqbal *et al.* (1983) found that aflatoxin contaminated diets impaired feed conversion in hens and laying Japanese quail.

During the recovery period, a total egg mass laid per hen was improved. Average feed conversion ratio ranged between 3.7 and 3.93 (g) feed required for egg production. Mortality rate was zero % for the control and the 2 ppm aflatoxin plus Mycodote groups, while, it ranged between 3 and 4% in the other groups. These results are in agreement with those reported by Abo Norag *et al.* (1995) who found that adding antitoxin to aflatoxin contaminated diet alleviated the adverse effects of aflatoxicosis on chicken body weight, feed intake, feed conversion, and reduced mortality rates during all studied period.

Generally, the effect of aflatoxin on egg production traits on Dokki-4 hens was more pronounced than that on Gimmizah hens, except for feed conversion and mortality rate %.

Egg quality traits: Data presented in Tables 5 and 6 showed that there was a significant ($P<0.05$) decrease in egg weight, albumen weight, shell weight, yolk index, and Haugh unit by feeding aflatoxificated diet at either 2 or 5 ppm only or in combination with 0.1% Mycodote for Gimmizah and Dokki-4 hen. However, the effect was higher by aflatoxin only. These results indicated that the decrease in egg quality traits may be due to affecting the hens by aflatoxin treated which led to decrease in egg weight and egg mass. These results were similar to those obtained by Hamilton and Garlich (1972). Decreasing egg albumen may be due to lowering blood albumin which may be attributed to lowering the synthetic power of albumin in liver by aflatoxicosis.

Reproductive traits: Data in Tables 5 and 6 showed significant ($P<0.05$)decreases in fertility, hatchability and chick weight at hatch and increasing abnormalities when aflatoxin increased from 2 to 5ppm for G and D4 hens. Adding Mycodote (0.1%) to

aflatoxificated diet during treating period, repressed the negative effects of aflatoxin on reproductive traits. It is clear from these results that, the reduction in reproductive traits especially fertility rate may be due to impaired semen characteristics. Increasing total death of embryos during hatch period may explain the reduction in hatchability of fertile eggs. These results are in agreement with those obtained by Johri *et al.* (1990) who found that the reproductive traits were poorer by aflatoxificated diets for different chicken strains.

Semen quality traits: Data presented in Tables 7 and 8 revealed that there were decrease in semen volume, sperm concentration and activity, and increased sperm abnormality and dead values, when aflatoxin increased from 2 to 5 ppm, for G and D4 cooks, respectively. Those fed aflatoxin diet with 0.1% Mycodote showed an improvement in the semen traits of cocks suffering from aflatoxin at 2 ppm in their diet than those fed contaminated diet at 5 ppm aflatoxin B_1. These results are in a harmony with those obtained by Sharlin *et al.* (1980) who concluded that, with White Leghorn males, the significant decline in semen volume and its concentration by aflatoxificated diet was due to impaired spermatogenesis resulting from decreased feed consumption which caused reduction in LH and therefore reduced testosterone levels.

It could be recommended that Mycodote at 1% of the diet, can efficiently improve feed intake, feed conversion, egg production, egg quality, semen quality, fertility and hatchability, and overcome the adverse effect of aflatoxin in poultry diets at level up to 3 pmm aflatoxin B_1.

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Table 1 . Effect of antitoxin (Mycodote) as detoxifier for aflatoxin B_1 on egg production, feed intake (g) and feed conversion (gm feed/gm eggs) of Gimmizah hens during treatment (0-3 weeks) and recovery (4-7 weeks) periods.

Items	Treatment period (Start to 3 weeks)						Recovery period (4-7 weeks)					
	AF level (ppm)						AF level (ppm)					
	0		2		5		0		2		5	
	Mycodote %						Mycodote %					
	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
Total egg number (hen/period)	15^{a}	16^{a}	7^{d}	8^{c}	5^{f}	6^{e}	15^{a}	15^{a}	12^{b}	13^{b}	11^{b}	12^{b}
Average egg weight (g)	47.2^{a}	47.8^{a}	38.2^{d}	41.7^{cd}	37.5^{f}	38.8^{e}	46.7^{a}	47.2^{a}	45.3^{b}	45.5^{b}	44.7^{b}	44.9^{b}
Total egg mass (hen/period)	708.0^{a}	764.8^{a}	267.4^{d}	333.6^{cd}	187.5^{f}	232.8^{e}	700.5^{a}	708.0^{a}	543.6^{b}	592.8^{b}	491.7^{b}	538.8^{b}
Total egg mass (% of lowest value)	377.6	407.9	142.6	177.9	100	124.16	142.5	144.0	110.5	120.6	100	109.6
Total feed intake (hen/period)	2233.1^{b}	2379.2^{a}	2005.8^{bc}	2040.5^{b}	1938.1^{f}	1984.4^{d}	2344.6^{a}	2367.3^{a}	2125.8^{b}	2144.9^{b}	2079.2^{d}	2120.1^{c}
Feed conversion (gm feed/ gm egg)	3.55^{d}	3.44^{de}	5.41^{e}	4.95^{de}	6.24^{a}	5.89^{b}	3.76^{NS}	3.70^{NS}	3.81^{NS}	3.87^{NS}	3.93^{NS}	3.90^{NS}
Mortality rate %	0.0	0.0	9.0	2.0	14.0	7.0	0.0	0.0	3.0	0.0	4.0	3.0

a, b, ... = Mean on the same row are differently superscripted are significantly different ($P< 0.05$).
NS = non-significant.
AF=aflatoxin B_1.

Table 2. Effect of antitoxin (Mycodote) as detoxifier for aflatoxin B_1 on egg production, feed intake (g) and feed conversion (gm feed/gm eggs) of Dokki4 hens during treatment (0-3 weeks) and recovery (4-7 weeks) periods.

Items	Treatment period (Start to 3 weeks)						Recovery period (4-7 weeks)					
	AF level (ppm)						AF level (ppm)					
	0		2		5		0		2		5	
	Mycodote %						Mycodote %					
	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
Total egg number (hen/period)	14^{a}	15^{a}	6^{d}	7^{c}	3^{f}	4^{e}	14^{a}	14^{a}	12^{b}	13^{b}	10^{b}	12^{b}
Average egg weight (g)	47.1^{b}	48.0^{a}	38.2^{d}	41.5^{cd}	37.5^{f}	39.0^{e}	46.2^{a}	46.3^{a}	44.8^{b}	45.2^{b}	44.2^{b}	44.4^{b}
Total egg mass (hen/period)	660.8^{ab}	717.0^{a}	229.2^{d}	291.9^{cd}	112.5^{f}	155.2^{e}	646.8^{a}	649.6^{a}	537.6^{b}	587.6^{b}	442.0^{b}	532.8^{b}
Total egg mass (% of lowest value)	587.3	637.3	203.7	259.9	100	137.9	146.3	146.8	121.6	132.9	100	120.5
Total feed intake (hen/period)	2210.0^{b}	2413.2^{a}	1913.4^{c}	2035.6^{cd}	1820.3^{f}	1898.4^{d}	2312.1^{a}	2162.1^{cd}	2212.1^{b}	2043.2^{d}	2043.2^{d}	2128.3^{e}
Feed conversion (gm feed/ gm egg)	3.46^{e}	3.39^{e}	5.13^{c}	4.77^{cd}	6.10^{a}	5.72^{b}	3.58^{NS}	3.45^{NS}	3.70^{NS}	3.74^{NS}	3.82^{NS}	3.81^{NS}
Mortality rate %	0.0	0.0	5.0	2.0	9.0	5.0	0.0	0.0	2.0	0.0	3.0	2.0

a, b, ... = Mean on the same row are differently superscripted are significantly different ($P< 0.05$).

NS=non-significant.

AF=aflatoxin B_1.

Table 3. Effect of antitoxin (Mycodote) as detoxifier for aflatoxin B_1 on relative egg component of Gimmizah hens during treatment period (0-3 weeks) and recovery (4-7 weeks) periods.

Items	Treatment period (Start to 3 weeks)						Recovery period (4-7 weeks)					
	AF level (ppm)						AF level (ppm)					
	0		2		5		0		2		5	
	Mycodote %						Mycodote %					
	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
Egg Wt.	43.0^{a}	44.9^{a}	42.0^{b}	42.5^{b}	40.0^{d}	41.1^{c}	47.8^{a}	48.9^{a}	45.9^{a}	46.6^{a}	43.8^{a}	45.2^{a}
Yolk Wt.	11.0^{a}	11.2^{a}	10.4^{a}	10.8^{a}	9.3^{a}	9.6^{a}	13.6^{a}	15.5^{a}	12.2^{a}	12.7^{a}	11.6^{a}	12.0^{a}
Albumin Wt.	22.1^{a}	24.2^{b}	20.8^{b}	21.5^{b}	18.4^{bc}	19.2^{d}	24.6^{a}	24.7^{a}	22.2^{a}	24.5^{a}	21.7^{a}	21.8^{a}
Shell Wt.	4.9^{a}	5.4^{b}	4.8^{a}	5.2^{b}	4.3^{a}	4.8^{a}	5.7^{a}	6.0^{a}	5.7^{a}	5.6^{a}	4.9^{a}	5.4^{a}
Yolk index %	42.7^{a}	46.8^{b}	40.9^{d}	41.8^{b}	39.8^{c}	39.7^{e}	43.6^{a}	44.7^{a}	44.6^{a}	43.7^{a}	42.0^{a}	42.1^{a}
Haugh unit	76.5^{a}	77.0^{a}	75.3^{ab}	75.5^{ab}	73.1^{b}	73.2^{ab}	76.9^{a}	77.6^{a}	76.8^{a}	76.4^{a}	73.8^{a}	76.1^{a}
Shell thickness (mm)	0.393^{a}	0.420^{a}	0.380^{a}	0.395^{a}	0.366^{a}	0.376^{a}	0.396^{a}	0.403^{a}	0.386^{a}	0.383^{a}	0.380^{a}	0.380^{a}

a, b, ... = Mean on the same row are differently superscripted are significantly different ($P< 0.05$).

AF=aflatoxin B_1.

Table 4 . Effect of antitoxin (Mycodote) as detoxifier for aflatoxin B_1 on relativeegg component of Dokki-4 hens during treatment period (0-3 weeks) and recovery (4-7 weeks) periods.

Items	Treatment period (Start to 3 weeks)						Recovery period (4-7 weeks)					
	AF level (ppm)						AF level (ppm)					
	0		2		5		0		2		5	
	Mycodote %						Mycodote %					
	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
Egg Wt.	45.7^{ab}	47.5^{ab}	43.6^{ab}	45.3^{ab}	39.4^{c}	42.4^{bc}	49.0^{ab}	50.4^{a}	46.1^{bc}	47.9^{ba}	43.9^{c}	45.8^{bc}
Yolk Wt.	11.3^{a}	12.0^{a}	10.6^{a}	10.7^{a}	10.2^{a}	10.5^{a}	14.4^{ab}	15.7^{a}	12.3^{b}	14.2^{ab}	11.9^{c}	12.1^{b}
Albumin Wt.	24.7^{a}	25.1^{a}	23.4^{a}	23.6^{a}	20.1^{a}	22.8^{a}	27.4^{a}	27.6^{a}	26.6^{a}	27.2^{a}	22.8^{a}	23.7^{a}
Shell Wt.	5.4^{a}	5.6^{b}	5.2^{ab}	5.3^{ab}	4.6^{b}	5.01^{ab}	6.2^{a}	6.3^{a}	5.9^{a}	6.0^{a}	5.3^{a}	5.7^{a}
Yolk index %	42.8^{a}	47.3^{b}	41.7^{d}	42.2^{bc}	38.7^{bc}	39.5^{e}	43.9^{a}	45.2^{a}	45.0^{a}	43.8^{a}	43.1^{a}	43.4^{a}
Haugh unit	75.5^{a}	77.0^{a}	75.3^{a}	75.5^{a}	73.1^{a}	73.2^{a}	77.0^{a}	77.8^{a}	76.5^{a}	76.7^{a}	75.4^{a}	76.1^{a}
Shell thickness (mm)	0.380^{a}	0.410^{a}	0.374^{a}	0.376^{a}	0.346^{a}	0.363^{a}	0.381^{a}	0.397^{a}	0.370^{a}	0.380^{a}	0.363^{a}	0.364^{a}

a, b, ... = Mean on the same row are differently superscripted are significantly different ($P< 0.05$).

AF=aflatoxin B_1.

Table 5. Effect of antitoxin (Mycodote) as detoxifier for aflatoxin B_1 on productive traits of Gimmizah hens during treatment (0-3 weeks) and recovery (4-7 weeks) periods.

Items	Treatment period (Start to 3 weeks)						Recovery period (4-7 weeks)					
	AF level (ppm)						AF level (ppm)					
	0		2		5		0		2		5	
	Mycodote %						Mycodote %					
	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
Fertility (%)	93.0^{a}	94.0^{a}	69.6^{c}	75.0^{b}	56.3^{e}	65.0^{d}	91.7^{ab}	93.6^{a}	80.2^{bc}	84.7^{b}	77.4^{d}	79.7^{cd}
Hatchability (%)	81.0^{a}	86.0^{a}	66.1^{b}	68.3^{b}	43.3^{d}	54.0^{c}	81.4^{a}	83.2^{a}	76.4^{bc}	79.3^{e}	70.1^{d}	72.8^{c}
Abnormality (%)	1.21^{c}	1.13^{c}	2.18^{abc}	1.66^{bc}	3.21^{a}	2.33^{ab}	1.34^{bc}	1.28^{bc}	1.82^{c}	1.53^{cd}	1.91^{a}	1.88^{b}

a, b, ... = Mean on the same row are differently superscripted are significantly different ($P< 0.05$).

AF=aflatoxin B_1.

Table 6 . Effect of antitoxin (Mycodote) as detoxifier for aflatoxin B_1 on productive traits of Dokki 4 during treatment (0-3 weeks) and recovery (4-7 weeks) periods.

Items	Treatment period (Start to 3 weeks)						Recovery period (4-7 weeks)					
	AF level (ppm)						AF level (ppm)					
	0		2		5		0		2		5	
	Mycodote %						Mycodote %					
	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
Fertility (%)	91.0^{a}	93.6^{a}	68.7^{bc}	74.3^{b}	55.9^{d}	64.2^{c}	90.8^{b}	91.7^{b}	81.6^{c}	83.8^{bc}	75.9^{e}	78.2^{d}
Hatchability (%)	83.3^{a}	87.0^{a}	65.8^{b}	67.6^{b}	43.7^{d}	56.0^{c}	80.0^{ab}	82.9^{a}	75.8^{cd}	78.5^{bc}	72.3^{e}	73.8^{d}
Abnormality (%)	1.33^{b}	1.20^{b}	1.81^{b}	1.71^{b}	3.00^{a}	2.04^{ab}	1.29^{c}	1.27^{bc}	1.79^{abc}	1.48^{d}	1.86^{a}	1.81^{b}

a, b, ... = Mean on the same row are differently superscripted are significantly different ($P< 0.05$).

AF=aflatoxin B_1.

Table 7. Effect of antitoxin (Mycodot) as detoxifier for aflatoxin B_1 on semen evaluation of Gimmizah hens during treatment (0-3 weeks) and recovery (4-7 weeks) periods.

Items	Treatment period (Start to 3 weeks)						Recovery period (4-7 weeks)					
	AF level (ppm)						AF level (ppm)					
	0		2		5		0		2		5	
	Mycodote %						Mycodote %					
	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
Volume (ml)	0.509^{a}	0.529^{a}	0.201^{b}	0.234^{bc}	0.152^{d}	0.189^{e}	0.484^{b}	0.529^{a}	0.367^{d}	0.391^{d}	0.307^{e}	0.355^{d}
Concentration (billion/ml)	3.823^{a}	3.980^{a}	2.413^{c}	2.923^{b}	1.924^{d}	2.291^{g}	3.961^{a}	4.137^{a}	3.198^{c}	3.464^{b}	2.960^{cd}	3.075^{d}
Mass activity (%)	83.5^{b}	88.7^{a}	51.8^{d}	61.6^{c}	33.4^{f}	41.2^{e}	86.5^{a}	89.5^{a}	71.8^{bc}	75.2^{b}	67.0^{c}	67.6^{c}
Abnormality (%)	6.3^{f}	7.2^{e}	12.9^{c}	9.3^{bc}	24.8^{a}	13.4^{d}	5.29^{c}	5.31^{d}	8.62^{b}	7.46^{b}	11.78^{a}	10.12^{ab}
Died (%)	2.36d	2.33d	$8.2b^{c}$	7.3^{c}	13.3^{a}	9.4^{b}	2.21^{d}	2.10^{d}	8.67^{ab}	7.90^{bc}	6.34^{a}	5.67^{b}

a, b, ... = Mean on the same row are differently superscripted are significantly different ($P< 0.05$).
AF=aflatoxin B_1.

Table 8. Effect of antitoxin (Mycodote) as detoxifier for aflatoxin B_1 on semen evaluation of Dokki-4 during treatment (0-3 weeks) and recovery (4-7 weeks) periods.

Items	Treatment period (Start to 3 weeks)						Recovery period (4-7 weeks)					
	AF level (ppm)						AF level (ppm)					
	0		2		5		0		2		5	
	Mycodote %						Mycodote %					
	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
Volume (ml)	0.513^{a}	0.563^{ab}	0.227^{bc}	0.253^{cd}	0.156^{d}	0.210^{cd}	0.486^{b}	0.532^{a}	0.362^{c}	0.385^{c}	0.317^{c}	0.358^{d}
Concentration (billion/ml)	3.823^{a}	3.912^{a}	2.410^{c}	2.910^{b}	1.804^{d}	2.285^{c}	4.041^{a}	40176^{a}	3.124^{bc}	3.142^{b}	2.915^{c}	2.976^{c}
Mass activity (%)	83.3^{b}	88.2^{a}	48.3^{d}	63.2^{c}	31.6^{f}	43.3^{e}	87.6^{a}	90.0^{a}	72.3^{b}	74.3^{b}	68.0^{b}	69.6^{b}
Abnormality (%)	6.64^{b}	6.42^{b}	1.07^{cd}	9.8^{bc}	29.8^{ab}	12.9^{b}	6.43^{b}	6.12^{b}	8.67^{ab}	7.90^{bc}	12.13^{a}	11.22^{a}
Died (%)	2.32^{c}	2.29^{c}	7.93^{b}	7.42^{b}	14.78^{a}	8.62^{b}	2.25^{c}	2.03^{c}	4.60^{ab}	4.42^{b}	5.95^{a}	5.12^{ab}

a, b, ... = Mean on the same row are differently superscripted are significantly different ($P< 0.05$).
AF=aflatoxin B_1.

تأثير السموم الفطرية (أفلاتوكسين ب ١) و أحد مضادات السموم الفطريه (مايكودوت) على أداء بعض السلالات المحلية من الدواجن

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أجـرى هذا البحث بمحطة تربية الدواجن بسدس واستكملت التحليلات الكيميائية بمعامل معهد بحوث الإنتاج الحيوانى بقسم بحوث تربية الدواجن.

– فـي هذه الدراسة استخدم عدد ١٩٢ طائراً من سلالتى الجميزة ودقى ٤ عمر ٤٨ أسبوعاً ٩٦ طائراً من كل سلالة (٩٠ دجاجة + ٦ ديوك) وتم تقسيم الطيور إلي ثلاثة مجاميع كل مجموعة تحتوى علي مكررين كل مكرر يحتوى على (١٥ دجاجة + ديك) وتم ترقيم الطيور ووزنها قبل تسكينها الأعشاش.

– استغرقت فترة التجربة ٧ أسابيع تم تقسيمها إلي مرحلتين :

المرحلة الأولى (فترة المعاملة):

أسـتمرت لمـدة ثلاثة أسابيع وتم تغذية الطيور على عليقة تحتوى على افلاتوكسين ب١ بمستويات إضافة صـفر، ٢ ، ٥ جـزء فـى المليون، وتم تقسيم كل مجموعة الى قسمين أضيف لأحدهما ١، ٠% مضاد للسموم الفطرية والأخرى خالية من المضاد .

المرحلة الثانية (فترة الأستشفاء):

اسـتمرت لمـدة أربعـة أسـابيع تم تغذية الطيور على عليقة خالية من أى اضافات لدراسة مدى سرعة الأستشفاء من أثار السموم الفطرية

وقد أظهرت الدراسة النتائج الآتية:

(أ) بالنسبة لانتاج البيض والغذاء المأكول وكفاءة التحويل الغذائى ومعدل الوفيات:

– كـان أعلى معدل فى إنتاج البيض ومتوسط وزن البيض وكتلة البيض فى المجاميع المغذاة على علائق المقارنـة (الكنـترول) سواء المضاف إليها مضاد سموم أو الغير مضاف ، وكان للتأثير أكثر فى العلائق المحـتوية علـى ٥جـزء فىالمليون، وكان هذا التأثير أقل عند إضافة مضاد سموم الى العلائق الملوثة. واخـتفى هذا التأثير خلال فترة الاستشفاء وكان معدل إنتاج البيض وكتلته أفضل لسلاله الجميزة بالمقارنة بسلاله دقى ٤ .

(ب) صفات جودة البيض:

– أدت التغذية على علائق ملوثة بالأفلاتوكسينات الى انخفاض واضح فى صفات جودة البيض منها وزن البيضة ككل ومعامل الصفار وأوزان البياض والقشرة ووحدات هوف بينما لم يكن هناك تأثير واضح علىوزن الصفار وسمك القشرة– أدى إضافة مضاد للسموم الى العلائق الملوثة الى خفض شدة هذه التأثيرات على صفات الجودة.

– فى نهاية فترة الاستشفاء حدث تحسن ملحوظ لصفات الجودة جميعها.

(ج) صفات التكاثر:

– أدت التغذية على علائق ملوثة بالأفلاتوكسينات الى انخفاض واضح فى نسبة البيض المخصب ونسبة الفقس من البيض المخصب وكذلك أوزان الكتاكيت عند الفقس بينما ارتفعت نسبة الكتاكيت المشوهة وكان التأثير أكثر شده فى المجاميع المغذاة على علائق ملوثة بمستويات مرتفعة من الأفلاتوكسينات بالمقارنة بالمستويات المنخفضة.

(د) خصائص السائل المنوى:

– أظهرت نتائج الفحص للسائل المنوى للديوك المرباة تربية منفصلة فى أقفاص والمغذاة على علائق ملوثة بالأفلاتوكسينات بدون أضافه مضاد سموم انخفاضاً كبيراً فى حجم القذفة وتركيز الاسبرمات والحركة الجماعية وارتفاع ملحوظ فى نسبة الاسبرمات المشوهة والميتة بالمقارنة بالمجاميع المغذاة على علائق المقارنة (كنترول).

ونستخلص من هذه الدراسة أن استخدام الميكودوت كمضاد للسموم الفطرية بنسبة ٠,١% له تأثيره الفعال فى تقليل الآثار السلبية لمستوى ٢ و ٥ جزء فى المليون أفلاتوكسين ب١ عند تواجده فى علائق الدجاج البياض من السلالات المحلية (الجميزة و دقى ٤).

كما ان فترة سحب السم الفطرى من علائق الدجاج البياض والتي بلغت ٤ أسابيع (الاستشفاء) كانت كافية لعودة الطيور بدرجة كبيرة لأدائها الإنتاجي الطبيعى. وقد ساعد الميكودوت على سرعة الشفاء .