

تأثير السموم الفطرية على صحة الدواجن

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اشتملت هذه الدراسة فحص ١٠٠ بيضة دجاج ، و ٥٠ بيضة بط جمعت من الأسواق المتفرقة في محافظة أسيوط للكشف عن وجود السموم الفطرية في البيض والصغار. وأسفرت النتائج عن عدم وجود أى سموم فطرية فيها .

كما اشتمل البحث على دراسة مدى تأثير السموم الفطرية في العليقة على صحة الدواجن (الذكور البالغة والدجاج البيض) وأظهرت النتائج توقف إنتاج البيض منذ بداية التجربة وأظهر الفحص الهستوماثولوجى عن أضرار مختلفة في مايض الدجاج ، بينما لم يكن للسموم الفطرية تأثير باثولوجي على مخاصى الديوك .

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EFFECTS OF AFLATOXIN ON OVARIES AND TESTICLES IN
MATURE DOMESTIC FOWLS
(With One Figure)

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SUMMARY

The present study aimed at:

- 1- Examination of commercial chicken and duck eggs for the possible presence of aflatoxins.
- 2- Study of the sex susceptibility of mature chickens when fed on ration containing aflatoxins.
- 3- Study of clinicopathological effects on their ovaries and testicles.

In this investigation, 100 chicken and 50 duck eggs collected from markets in the vicinity of Assiut Governorate, were examined individually for the presence of aflatoxins in the whites and yolks. The study revealed that the examined eggs contained no aflatoxins.

Experimentally, aflatoxin B (8.1 ppm) and G (1.6 ppm) were incorporated into the feed of five laying hens and five mature cocks for three weeks duration. The layers showed cessation of egg production during the whole feeding period. Histopathological examinations revealed that, the ovaries showed follicular atresia while testicles were normal.

It was shown that, aflatoxicosis cause pathological changes in the chicken ovaries, which has a detrimental effects on egg production.

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INTRODUCTION

The potential significance of food-borne mycotoxins, in animal and human health, reflects the interest of research in the field of mycotoxicosis.

The primary manifestation of aflatoxicosis in the adult female chicken is the decrease in egg production (KRATZER et al., 1969 and BRIGGS et al., 1974). KRATZER et al. (1969) reported an apparent decrease in the percentage of hatchable eggs as a result of feeding hens a ration containing 2.7 ppm of aflatoxin, but no aflatoxin was detected in the eggs or meat. SIMS et al. (1970) also observed no measurable in eggs from groups of hens which received 2,4 or 8 ppm of aflatoxin in the ration. JACOBSON and WISEMAN (1974) on the contrary reported that, aflatoxin fed to hens was transmitted to eggs in measurable amounts to all levels fed, and was found in both whites and yolks. On the other hand, the effect of aflatoxins on mature broiler males of chickens was also investigated. BUTLER and BARNES (1964) noted that, there was a substantial sex difference in response, that the female being less susceptible than the male. BRIGGS et al. (1974) stated that, aflatoxin does not affect the semen characteristics of mature broiler males of chickens.

MATERIAL AND METHODS

Experiment 1:

In this trial 100 chicken and 50 duck eggs were collected from different districts in the vicinity of Assiut Governorate. Eggs were examined individually for the possible presence of aflatoxins both in the whites and yolks. The method used for

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determination and confirmation of aflatoxins was as that described by WISEMAN et al. (1967).

Experiment II:

The toxic fungi used in this experiment (A.flavus) was previously isolated from peanut hulls in Botany Dept., Fac. of Science (ABDEL-FATTAH et al., 1979). The toxic fungi were grown on rice according to SHOTWELL et al. (1966). The mouldy rice was steamed to kill the fungus, dried, ground to fine powder. Aflatoxins B and G were separated and determined spectrophotometrically according to the method described by NABNEY and NESBITT (1965).

Two groups of birds, each comprised five laying hens and three mature cocks were housed into two pens under hygienic conditions. All birds were of Dandarawi breed and nearly have the same age (1 year).

At the start of the three weeks experimental period, one of the two groups of birds received a ration containing 8.1 ppm aflatoxin B and 1.6 ppm aflatoxin G. The other group received a ration without added aflatoxins and kept as a control. At the end of the experiment, each bird was slaughtered and the ovaries as well as the testicles were removed, fixed and processed for histopathological examinations.

RESULTS AND DISCUSSION

In this study, the survey for the detection of aflatoxins in whites and yolks revealed that they contain no aflatoxins. It may be concluded that, either the laying hens were not exposed to mouldy ration producing aflatoxins or the aflatoxins

were not transmitted into eggs as showed KRATZER et al. (1969) and SIMS et al. (1970).

The laying hens fed aflatoxins showed cessation of egg production from the first day until the end of the feeding period. Besides, hens and cocks showed signs of unthriftiness. This indicates that, aflatoxins B and G might be responsible for these symptoms since the control birds showed no abnormal signs. Apart from these symptoms, no mortalities were recorded during the experimental period.

Histopathological examinations, revealed a pathological atresia in all ovaries while the testicles were completely normal. The most common and early changes in the follicles were shrinkage of the nuclei and their separation from the vitelline membrane together with disintegration and lysis of the zone radiation. Lysis of oocyte nucleus was a constant finding in all growing up follicles. The previtelline layer showed large vacuoles similar to that of large fat droplets. The granulosa cell nuclei showed piknosis and rehxis. The medulla of two cases showed severe vacuative lysis of the cytoplasm of the acidophilic interstitial medullary cells. In one case, abundant aggregation of haemosidrin laden phagocytes was observed among the medullary stroma. Fig. 1, showed follicular atresia in the ovary.

It was shown that the ovaries were affected, when aflatoxin-containing ration was fed to birds and therefore this was reflected on the egg production.

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Fig. 1: Showing follicular atresia in the ovary