

# EFFECTS OF AFLATOXINS ON THE PERFORMANCE OF PEKIN DUCKLINGS

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## ABSTRACT

In this study 105 1-d-old male were used to evaluate the effects of aflatoxins on the Pekin ducklings' performance. They were divided into five treatments with three replicates of 7 birds per treatment, as follow: A) 0 µg aflatoxins/kg diet (control); B) 20 µg of aflatoxins/kg feed; C) 50 µg of aflatoxins /kg feed; D) 100 µg of aflatoxins/kg feed; and E) 300 µg of aflatoxins/kg feed. due to the high mortality recorded in this treatment, dose of treatment E was suspended, at 28 days. For analysis of their performance, all animals were weighed at the beginning of the experiment and, subsequently, at 7, 14, 21, 28, 35 and 42 days old. Applying analysis of variance (ANOVA), by using the Bonferroni test ( $P \leq 0.05$ ), statistical difference was found only in the treatment E which contained 300 mg of aflatoxins/kg feed. The average weight of this treatment was 2705.23 g, what is considered statistically lower than the average weight of control (3114.57 g). The mortality rate recorded in the treatment E was 38.09%. In addition, no animals died and the control group. However, statistical difference was not observed in treatments B, C and D. In the treatments B and C there was no mortality. In the treatment D, mortality was recorded as 14.28%, and necropsy founded in the liver was yellowish and very brittle, which are characteristic signs of poisoning by aflatoxins. It was observed that 300 mg/kg is a toxic dose for Pekin ducklings what make this species extremely sensitive to aflatoxins.

**KEY WORDS: aflatoxicosis, ducks, lethal dose.**

## INTRODUCTION

Due the production systems technification Pekin Ducklings, it is necessary to ensure the feed quality supply. Because of the presence of various anti-nutritional factors in the diet, growth performance is affected, causing economic losses. Among these factors there are aflatoxins, secondary metabolites produced by fungi of the genus *Aspergillus*, being the principal representatives the *A. flavus* e o *A. parasiticus* (Moss, 1991).

The presence of aflatoxins in the diet at sublethal doses over several days results in a toxic syndrome, affecting mainly the liver, compromising the health and productivity of affected animals (Mallmann, 2007).

Several toxic effects may be caused by aflatoxins in different species of poultry. Among them performance decrease, liver disease, immunosuppression and

changes in organ weights (Wyatt, 1991). Therefore, it is important to know the magnitude of the aflatoxin effects on the Pekin Ducks' performance.

## **MATERIALS AND METHODS**

In this study, 105 1-d-old male were used to evaluate the effects of aflatoxin on the Pekin ducks' performance. These were divided into five treatments with three replicates of 7 birds per treatment, being A) 0 µg aflatoxins/kg diet (control); B) 20 µg of aflatoxins/kg feed; C) 50 µg of aflatoxins/kg feed; D) 100 µg of aflatoxins/kg feed; and E) 300 µg of aflatoxins/kg feed. due to the high mortality recorded in this treatment, the dose of treatment E was suspended, at 28 days.

The experiment was carried out in 2012 at the experimental poultry unit of Institute Samitec - Santa Maria/RS, Brazil. The animals were housed following ethical standards of animal experimentation, in controlled-temperature room.

The animals were feed, during the whole experimental period, with isonutritives *ad libitum* diets; except on the weighing days, when animal were submitted to solid fasting. The animals were observed twice daily and the consumption and mortality data were recorded.

For analysis of their performance, all animals were weighed at the beginning of the experiment and, subsequently, at 7, 14, 21, 28, 35 and 42 days old. These data were submitted to analysis of variance (ANOVA), by employing the Bonferroni test ( $P \leq 0.05$ ).

## **RESULTS AND DISCUSSION**

At the second week of experiment, deleterious aflatoxins effect on the animal weight in treatment E (300 µg of aflatoxin/kg feed) was observed. After 42 days of treatment, the animal average weight was 2705.23 g, what is statistically less than the control (A) average weight (3114.57 g).

The recorded mortality in the treatment E was 38.09%, while in the control group was 0. On the other hand, statistical difference was not observed in the treatments B, C and D, and the mean weight recorded were B = 3200.76; = 3266.71; D= 3250.22, respectively. These averages were higher than that observed for the control treatment (A). In the treatments B and C, no death occurred. In the treatment D, mortality was

14.28%, and necropsy found in the liver was yellowish and friable, which are characteristic signs of chronic intoxication by aflatoxin.

Poultry of the treatment E were the only ones that it was possible to notice minor weight gaining. In this treatment, apathy and uniformity among animals were also observed.

Food consumption was statistically higher in treatments A and C, while treatment E had the lowest consumption among all treatments (51.6% lower than the consumption recorded in control treatment).

## **CONCLUSION**

Based on these findings, it was possible to observe that 300 µg/kg dose is highly toxic to Pekin ducklings. Therefore, this species seems to be extremely sensitive to aflatoxins. Doses below 100 µg/kg did not cause weight loss and changes in food consumption.

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