EFFECT OF OYSTER MUSHROOM *(PLEUROTUS SAJOR CAJU)* ON GROWTH PERFORMANCE OF AFLATOXIN FED BROILERS

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ABSTRACT

Aflatoxicosis in commercial chicken enterprise is a serious problem due to its impact on production performance. The study was envisaged to test the prophylactic efficacy of oyster mushroom, *Pleurotus sajor caju*, in aflatoxin fed broilers. Mushroom treatment resulted in dose dependant decrease in body weight, decrease in feed consumption and reduction in the feed conversion efficiency. Hence there is a reduction in the growth performance with reference to the level of mushroom in the feed.

KEY WORDS : Aflatoxin, *Pleurotus sajor caju*, Broiler, Growth parameter

INTRODUCTION

Aflatoxin contamination in poultry feed causes huge economic loss to the farmers through growth retardation and immune suppression in broilers. Supplementation with polysaccharide extracts of mushroom has shown better growth performance in broilers (Gou et.al., 2004). Hence this study was planned to determine the effect of oyster mushroom (*Pleurotus sajor caju*) on the growth performance of aflatoxin fed broilers.

MATERIALS AND METHODS

The experiment was conducted as per the guidelines of the Institutional Animal ethics committee.

Aflatoxin B1 was produced on sterile rice using Aspergillus parasiticus NRRL 2999 strain (Shotwell et al., 1966) and estimated by Romer method (1975) using Thin Layer Chromatography. Oyster mushroom was purchased from a commercial production unit at Coimbatore, shade dried and powdered. The toxin and mushroom powder were mixed with feed in appropriate quantities according to experimental design.

Sixty commercial day old straight run broiler chicks (Vencob strain) were weighed, wing banded and reared under standard management conditions. The chicks were fed standard broiler feed free of aflatoxin and water *ad libitum* during the first week. On day eight, the chicks were randomly divided into six treatment groups of ten each and the following treatments were given from the eighth day to forty second day.

Group I was fed with normal feed (zero control). Aflatoxin (1ppm) mixed feed was given to group II (Toxin control). Group III was fed with mushroom (5%) mixed feed (mushroom control). Aflatoxin 1ppm along with 1%, 2.5% and 5% mushroom was mixed with feed and fed to groups IV, V and VI respectively.

The body weight of the individual birds and feed consumption for each group of birds were recorded at weekly intervals. The data were statistically analysed by CRD (Body weight) and Student's unpaired't'-test (feed consumption), as per Snedecor and Cochran (1986). Feed conversion efficiency was calculated at the end of sixth week.

RESULTS AND DISCUSSION

Body weight

The mean values of body weight for the control and treatment groups (I-VI) recorded weekly are presented in table 1. There was a marginal increase in the body weight of aflatoxin alone fed group compared to control, all along the study except during third week. Increase in body weight in aflatoxin fed broilers has been reported by Maurice et al. (1983). Growth stimulating effect by low level of aflatoxin has been reported by Lanza et al. (1980). In this study, the increase in body weight may be due to the increase in organ weight and presence of ascites in aflatoxin alone fed group (Plate 1, Plate 2, and Plate 3).

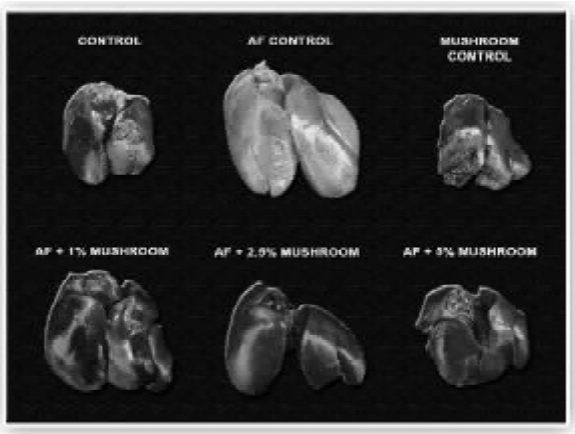


Plate 1. Gross appearance of livers


Plate 2. Ascites in aflatoxin fed birds

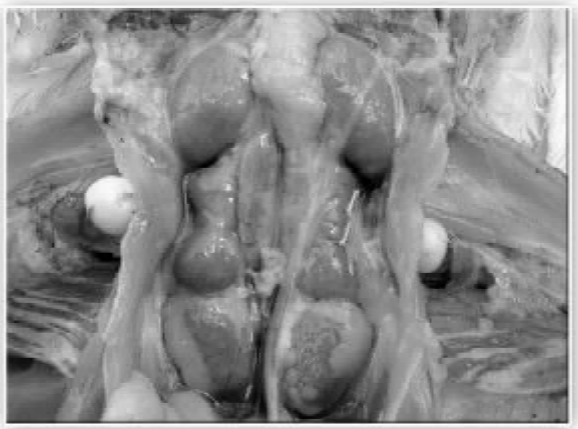


Plate 3. Enlargement of kidney in aflatoxin fed birds

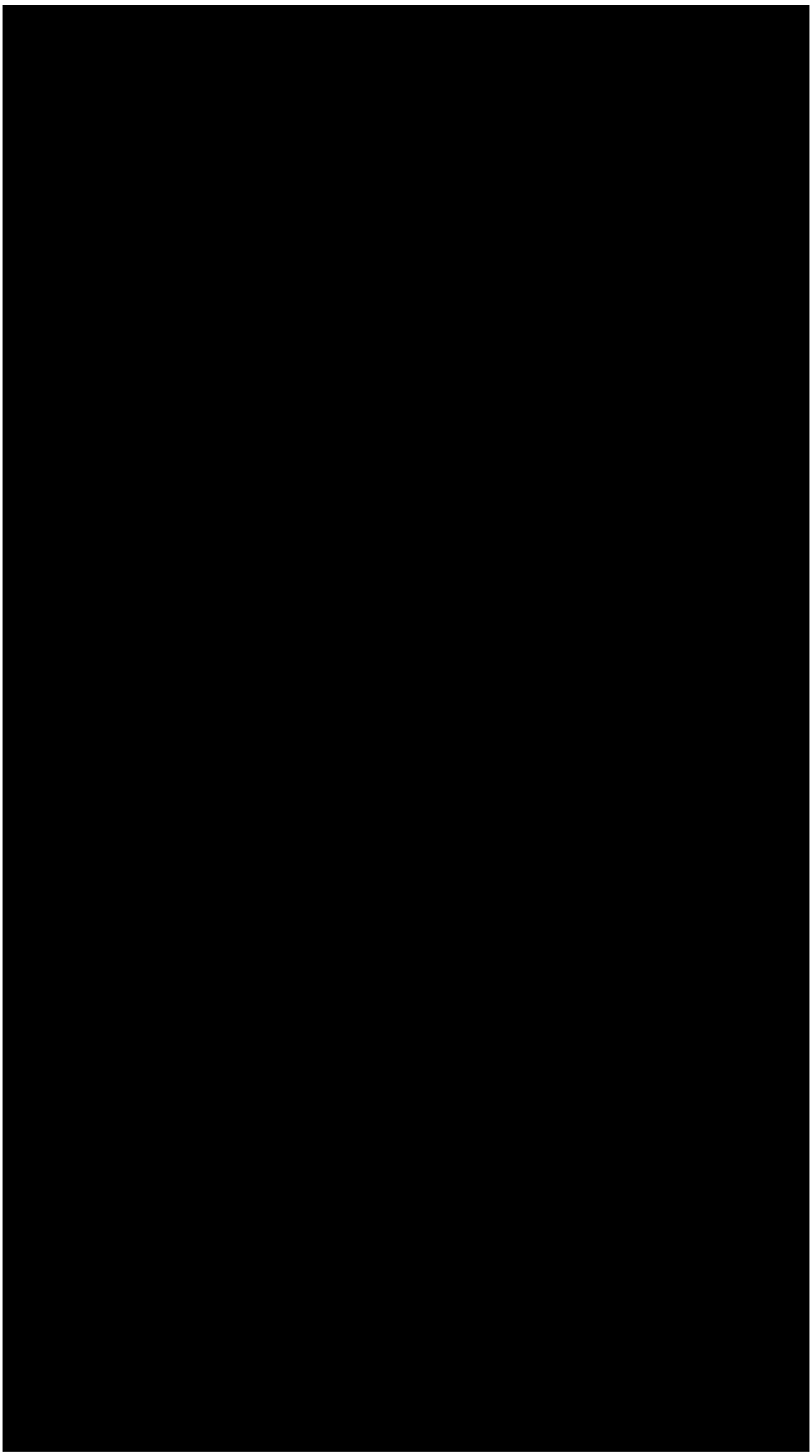
The body weight of mushroom control group was significantly less than that of the zero control group during second week. From third week till the end of the experiment there was apparent reduction in the body weight of mushroom alone fed group compared to control. Tannin content of mushroom might be responsible for this reduction (Iwalokun et al., 2007).

Among the treatment groups, the body weight of group IV was comparable to that of control. There was a marginal reduction in the body weight of group V up to fifth week, while at the end of the study, there was a significant ($P< 0.05$) reduction in body weight compared to control. Group VI recorded a significant ($P< 0.05$) decrease in body weight, throughout the experiment, except at the end of fifth week, compared to control. The decrease in body weight may be a cumulative effect of aflatoxin and tannins present in the mushroom (Iwalokun et al., 2007). Hence there is a dose dependant reduction in body weight with reference to the level of mushroom in the feed.

Feed consumption

The weekly feed consumption of all groups were recorded and presented in table 2. An insignificant reduction of feed consumption was observed in aflatoxin control group except during second week. Similar results have been reported by Bryden et al. (1980). Absence of feed refusal in aflatoxin fed broilers has also been reported by Khan et al.(1990).

A marginal reduction in feed consumption was observed in group III. This effect may be due to the high fiber content of mushroom (Cohen et al., 2002). The treatment groups also did not differ



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n = 10

Overall mean between groups did not differ significantly

significantly from control group, with reference to feed consumption; however there was gross reduction in feed intake. When the level of mushroom in the feed increased, the feed consumption decreased apparently. This effect may be due to the cumulative effect of high fiber content of mushroom and aflatoxin.

Feed Conversion Efficiency

The FCR at the end of the trial were recorded and presented in table 2. The feed efficiency of aflatoxin control birds was comparable to that of control birds. It was due to increase in body weight in aflatoxin alone fed birds. Similar results were reported by Maurice et al. (1983). Among the other treatment groups including mushroom control, the feed conversion ratio increased as the mushroom level in the feed increased. This effect may be due to decrease in body weight due to presence of tannins (Iwalokun et al., 2007). Hence, the growth performance in the aflatoxin alone fed birds and in mushroom control birds was not much affected. In the mushroom treatment group there was a dose dependant decrease in body weight, feed consumption and poor feed conversion efficiency.

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