

Effect of Mycosorb on performance and Gumbore vaccination response in broilers fed corn naturally contaminated with deoxynivalenol (DON)

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Three groups of 362 broilers were fed a corn/soy based feed, of which in two groups 30 % corn was replaced with 30 % contaminated corn (final level of DON= 2.03 ppm). One of these two groups received Mycosorb (Alltech Inc., USA) at 2 kg/T. Body weight and feed consumption was measured at 42 days of age by sampling at random 50-75 animals per group. At 14 days of age, animals were vaccinated against IBD and blood titers were taken from 20 animals per treatment at 14, 21, 28, 35 and 42 d of age and analysed for titers. Statistical analysis on the blood titers was performed by Anova, followed by Duncan post hoc test.

The results demonstrate that feeding DON contaminated corn reduced the end weight at 42 d from 2166 g for the control to 2090 g for the DON fed group, but adding Mycosorb restored the end weight to 2198 g. The IBD antibody titer was significantly reduced ($P < 0.05$) at 21 d in serum of animals fed DON contaminated feed. Adding Mycosorb resulted in titers which were comparable with the titers of the control group. The coefficient of variation (CV, =STD/Average*100) of the titers of the DON fed group at 21 and 28 days was about twice the CV of the titers of the control or the Mycosorb fed group. It can be concluded that feeding 2.03 ppm DON reduce immunity response to vaccination and end weight and this effect could be counteracted by feeding Mycosorb.

Keyword: Mycotoxin; DON; Mycosorb; broiler; immunity; Gumboro

Introduction

The negative effect of mycotoxicosis, clinical and subclinical, on performance and immunity has been a research object during the last 10 years. Although much is already known about the way mycotoxins acts on the immunity of poultry, in particular broilers, the most manifest for poultry producers is to see the interference of mycotoxins with vaccination schemes applied in broiler production. The objective of this trial was to evaluate the effect of feeding broilers with a feed containing corn naturally contaminated by DON on performance and IBD vaccination response, and the effect of Mycosorb on prevention of these negative effects.

Material and methods

Three groups of 362 Ross 308 broilers kept separately in one broiler house. All animals were fed a mycotoxine free feed for the first 7 days. After 7 days animals were fed: (1) corn/soy based feed, (2) corn/soy diet but with 30 % of the corn replaced by 30 % of corn contaminated naturally with DON (final level in feed: 2.03 mg/kg) and (3) as groups 2 but with Mycosorb at 2 kg/T. At 14 days of age, animals were vaccinated against IBD (VMG91 strain via the drinking water. Body weight and FCR at 42 days of age was measured while also blood titers against IBD of 20 animals per treatment 14, 21, 28, 35 and 42 days of age. Statistical analysis on the blood titers was performed by Anova, followed

by Duncan post hoc test. Results were considered significant when $P < 0.05$.

Results and discussion

Feeding of DON contaminated corn reduced the end weight at 42 days with 76 gram from 2166 g for group 1 to 2090 g for group 2 (Table 1).

Table 1 Technical performance data at 42 days of age

Group	Treatment	Body weight (kg)	FCR
1	Control	2.166	2.02
2	DON*	2.090	2.02
3	DON* + Mycosorb (2 kg/T)	2.198	2.05

* Final DON level: 2.03 ppm

Adding Mycosorb at a dose of 2 kg/T on top of the mycotoxine contaminated feed improved the end weight to 2198 g. The IBD antibody titer was significantly reduced at 21 days (7 days post vaccination) when animals were fed mycotoxine contaminated feed to which no Mycosorb was added (group 2). Adding Mycosorb resulted in titers which were comparable with the titers of the control group (Figure 1). The coefficient of variation ($=\text{STD}/\text{Average} \times 100$) of the titers of the mycotoxine fed group at 28 days, as on 21 days, was about twice the coefficient of variation of the titers of the control or the Mycosorb fed group (Figure 2).

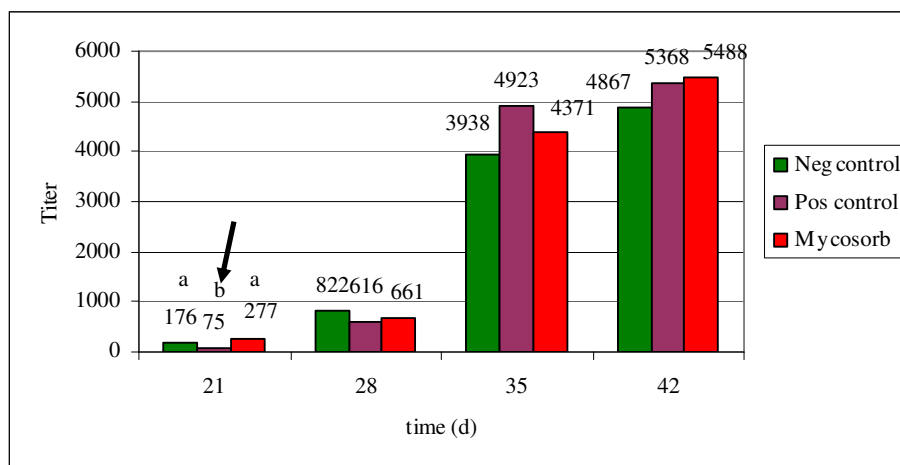


Figure 1 Effect of the different treatments on titers against IBD; Bars with a different letter at a given time are statistically different ($P < 0.05$)

It can be concluded from this trial that feeding 2.03 ppm DON to broilers had a significant negative effect on performance and the vaccination success of IBD vaccination shortly after the vaccination (at least first 7 days). Adding Mycosorb at 2kg/T eliminated the negative effect of this level of DON completely.

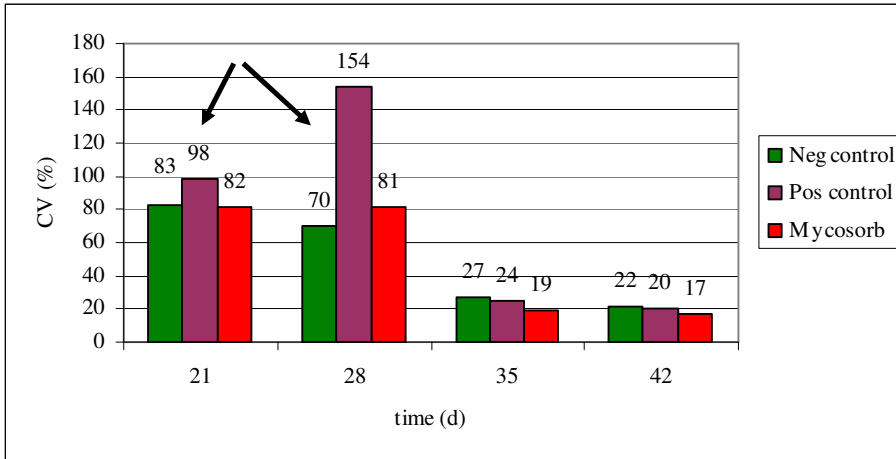


Figure 2 Effect of the different treatments on titer variability