

# Biomin® *Trials*



## Mycofix® Plus

### Effects of Mycofix® Plus in Diets contaminated with Aflatoxin, T-2 toxin and Ochratoxin on Broiler

2004 Avimetria, Argentina

Surveillance: Dr. Luis Micheluzzi

### Aim of the Trial

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This trial was conducted at the experimental farm of Avimetria, Don Mariano, located in Mercedes, province of Buenos Aires, Argentina, to evaluate the effect of aflatoxin, T-2 toxin and ochratoxin A on broiler. Furthermore the capacity of Mycofix® Plus to counteract the toxic effects of these mycotoxins was assessed.

### Trial Design

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A total number of 1632 broiler of the same origin was randomly divided into 32 similar units with 51 birds per unit (26 females, 25 males) with a density of 10 birds per m<sup>2</sup>.

4 different diets were formulated with 8 replicates per treatment.

Duration of the trial was from day 0 to day 42 of age. Feed and water were provided ad-libitum. In *table 1* the feeding programme is shown.

**Table 1: Feeding programme**

Feeding programme	Age [d]
Prestarter Phase 1	0-14
Starter Phase 2	15-28
Finisher Phase 3	29-42

A total of 10 birds per replicate were weighed at day 7, 14, 21, 28 and 35. At the age of 42 days all birds were weighed and the consumption was evaluated. Mortality was controlled daily and accumulated per week. At day 35 blood was taken and serum was used for plasma protein analysis. One bird per batch was necropsied (female) for histopathology of organs.

The trial was designed to compare measured parameters of a negative control group, a positive control group fed mycotoxin-contaminated feed, one group without contamination but with 1 kg of Mycofix® Plus included, and one group with mycotoxin contamination and 1 kg of Mycofix® Plus. Thus, four treatments of broiler were formed following *table 2*.

**Table 2: Trial design**

		Negative Control	Positive Control	Trial Group 1	Trial Group 2
Aflatoxin (Afla)	[µg/kg]	0	50	0	50
T-2 toxin	[µg/kg]	0	300	0	300
Ochratoxin A (OTA)	[µg/kg]	0	500	0	500
Mycofix® Plus	[kg/t]	-	-	1.0	1.0

Data were analysed using ANOVA, Tuckey test was used to for statistical evaluation of body weight, feed conversion, weight gain and sera protein and histopathological lesions. Statements of significance are based on  $p < 0.05$ .

## Results and Discussion

*Table 3* and *Figure 1* summarise the effects of the dietary supplementation of Mycofix® Plus on body weight gain, feed intake and feed conversion. The group receiving aflatoxin, T-2 toxin and ochratoxin A alone (positive control) had a significantly lower weight on day 42 (123g less compared to Trial Group 2), a significantly impaired feed conversion (+ 8%) and a lower daily weight gain than the other three groups. Mortality was also highest in the positive control group (+ 53% compared to Trial Group 2).

**Table 3: Overall results**

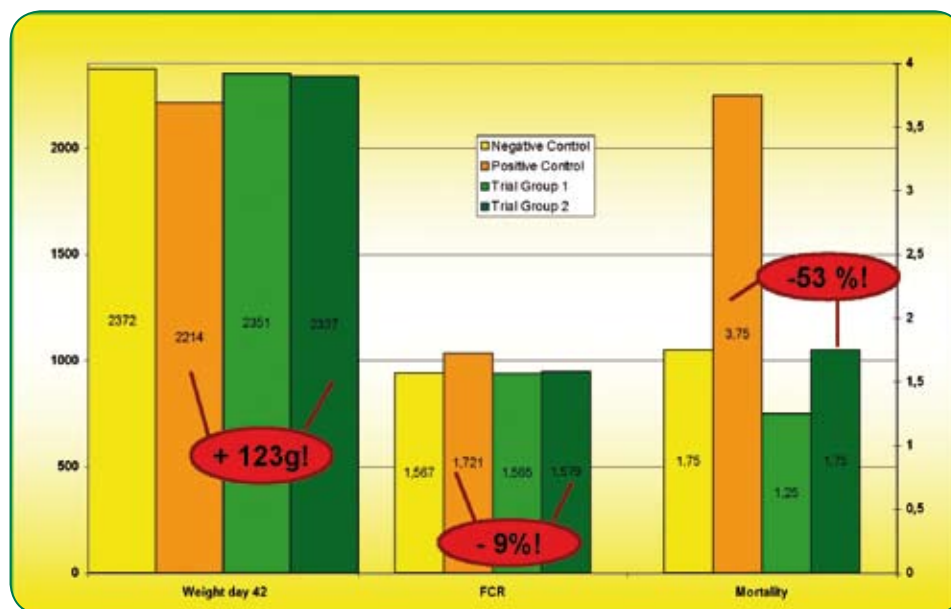
	Body Weight at 42d [g]	Feed Intake [g]	Daily Weight Gain [g]	FCR	Mortality
<b>Neg. Control</b>	2372 <sup>a</sup>	3714 <sup>a</sup>	56,5 <sup>a</sup>	1.567 <sup>a</sup>	1.75 <sup>a</sup>
<b>Pos. Control</b>	2214 <sup>b</sup>	3783 <sup>b</sup>	52,7 <sup>b</sup>	1.721 <sup>b</sup>	3.75 <sup>b</sup>
<b>Trial Group 1</b>	2351 <sup>a</sup>	3678 <sup>a</sup>	56,0 <sup>a</sup>	1.565 <sup>a</sup>	1.25 <sup>a</sup>
<b>Trial Group 2</b>	2337 <sup>a</sup>	3687 <sup>a</sup>	55,6 <sup>a</sup>	1.579 <sup>a</sup>	1.75 <sup>a</sup>

*a, b ... Different superscripts on the same column mean statistical differences ( $p < 0.05$ )*

Furthermore also the level of plasma protein (*table 5*) was significantly lower in the positive control group. The low level of plasma protein showed the immunosuppressive effect of the mycotoxins. The level of histopathological lesions was highest in the positive control group. With respect to all analysed parameters, there was no significant difference between groups 1, 2 and 4. Performance parameters as well as level of plasma protein and level of lesions were similar in the negative control group, in Trial group 1 (Mycofix® Plus, no mycotoxins) and in Trial Group 2 (mycotoxins, Mycofix® Plus), thus meaning that toxic effects of a high contamination of aflatoxin, T-2 toxin and ochratoxin A were completely overcome by the use of 1 kg of Mycofix® Plus in the diet.

**Table 4: Bodyweight over the trial period.**

Day	7	14	21	28	35	42
<b>Negative Control</b>	174.3	394.1	738.4	1049.3	1739.3	2372.2
<b>Positive Control</b>	166.1	362.8	672.5	990.8	1667.0	2213.8
<b>Trial Group 1</b>	170.8	397.3	730.4	1154.3	1692.6	2351.1
<b>Trial Group 2</b>	167.8	384.5	728.6	1112.8	1710.6	2337.2



**Figure 1: Performance parameters (day 42).**

**Table 5: Level of plasma protein and level of histopathological lesions.**

	Plasma Protein	Histopathological lesions
<b>Neg. Control Group</b>	3.063	1.875
<b>Pos. Control Group</b>	2.738	2.750
<b>Trial Group 1</b>	3.088	1.375
<b>Trial Group 2</b>	3.088	1.5

## Conclusions:

Mycotoxins are well known for their adverse effects on animal performance. The results of the present trial confirm these effects since 50ppb aflatoxin, 300ppb T-2 toxin and 500ppb ochratoxin A significantly decreased daily weight gain, body weight, and mortality. Additionally, the feed conversion rate was significantly increased in the mycotoxin group. The presence of mycotoxins furthermore led to a decreased level of proteins in plasma and to an increase in lesions on organs. The negative effects on performance as well as the negative effects on the level of plasma protein and the lesions were completely overcome by the dietary supplementation of 1 kg of Mycofix® Plus. 1kg of Mycofix® Plus protected the broiler flock against the detrimental effects of a multiple attack of mycotoxins!

The natural way.



## Are your animals protected from mycotoxins?

Mycotoxins have a negative impact on the health status and performance of your animals.

**Mycofix® Plus** is the right feed additive to solve the problem. The unique mode of action of **Mycofix® Plus** controls all relevant mycotoxins.

**... and your animals are safe!**

*(Mycofix® is not available in the US & Canada)*



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### > IMPRESSUM

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