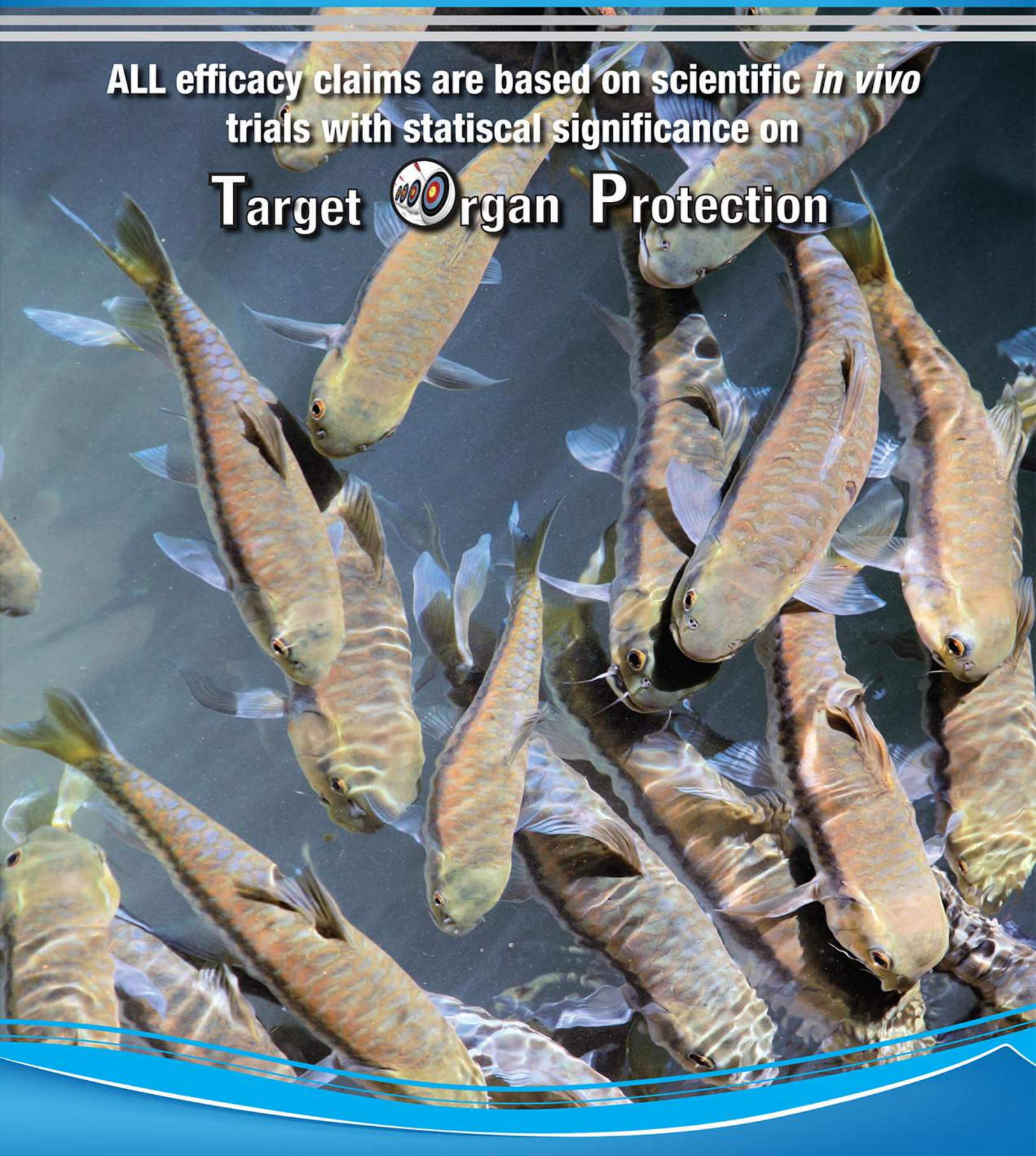
MYCOAD


ALL efficacy claims are based on scientific *in vivo* trials with statiscal significance on
Target Organ Protection

EFFICACY OF MYCOAD IN THE REDUCTION OF THE TOXIC EFFECTS OF AFLATOXIN IN TILAPIAS

MATERIALS AND METHODS

This study was conducted in the aquaculture experimental unit of SAMITEC, located in Santa María, RS, Brazil. A total of 288 tilapia of the Nile (*Oreochromis niloticus*) were randomly distributed in 5 treatments with 4 replicates each; using 48 fish in the control and 60 fish in the rest of the treatments. Fish were placed in 24 polypropylene cages with an individual capacity of 60 L, for a total of 2500 L of recirculating water system. Water was maintained at 25°C with a daily renovation rate of approximately 5%. Physical and chemical analyses of water were performed, measuring ammonia, nitrogen, dissolved oxygen, pH, and water transparency, hardness and temperature.

A feed containing 35% protein and 3440 kcal/kg was administered twice a day in an amount equivalent to 5% of the biomass. On weighing days fish were fasted 6 hours before measurement. Aflatoxin contaminated diets were added with 5000 ppb of a mixture of 93.8% aflatoxin B1, 2.1% B2, 3.4% G1, and 0.7% G2 produced at Lamic from a culture of a toxigenic strain of *Aspergillus parasiticus*.

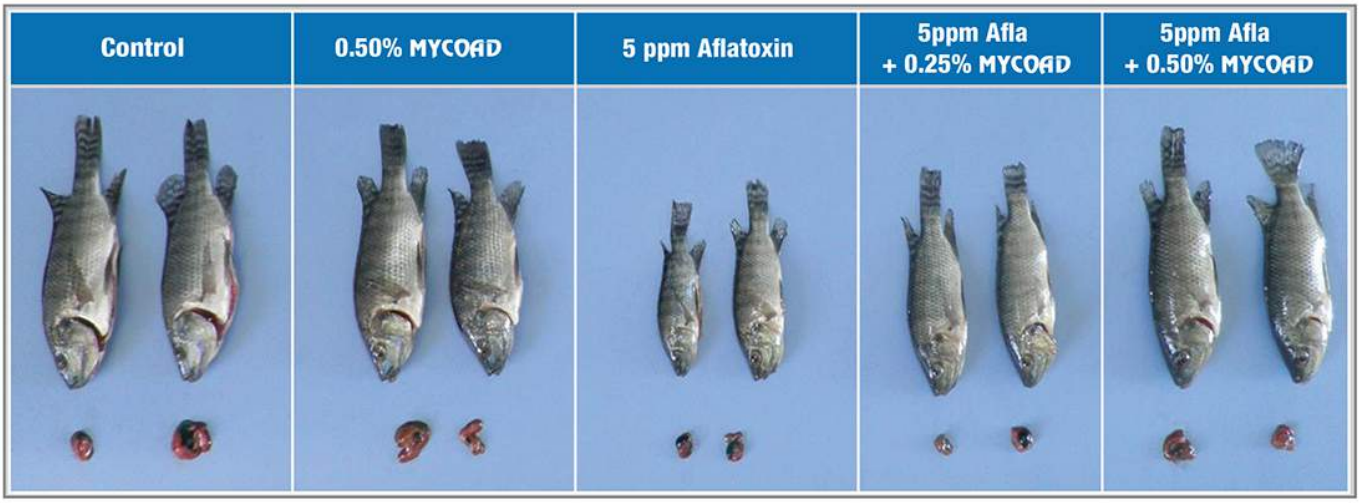
Live weight of individual fish and fish size, measured according to NAFO (Northwest Atlantic Fisheries Organization) were evaluated at 0, 7, 14, and 21 days of age.

RESULTS

Average body weight and total size of fish after 21 days of treatments.

Treatment	Day 0		Day 7		Day 14		Day 21	
	ABW g	SIZE cm	ABW g	SIZE cm	ABW g	SIZE cm	ABW g	SIZE cm
Control	2.74 a	3.89 a	5.02 a	6.19 a	7.61 a	7.27 a	11.17 a	8.19 a
0.50% MYCOAD	2.73 a	3.89 a	4.85 a	6.19 a	7.55 a	7.30 a	10.66 ab	8.19 a
5 ppm Aflatoxin	2.65 a	3.86 a	4.45 a	6.04 a	6.02 b	6.77 b	8.24 d	7.27 b
5 ppm Afla + 0.25% MYCOAD	2.48 a	3.82 a	4.45 a	5.95 a	6.18 b	6.86 b	8.40 cd	7.49 b
5 ppm Afla + 0.50% MYCOAD	2.58 a	3.81 a	4.59 a	6.11 a	6.76 ab	7.05 ab	9.52 bc	7.87 a

a - d Means in the same column with different superscripts differ significantly (P< 0.05)
ABW = Average Body Weight (g)



Histopathological lesions caused by Aflatoxin in the livers of 6 twenty one day-old fish per treatment.

Treatment	Necrosis of hepatocytes	Megalocytosis
Control	none	none
0.50% MYCOAD	none	none
5 ppm Aflatoxin	3 out of 6, + 2 out of 6, ++	3 out of 6, ++
5ppm Afla + 0.25% MYCOAD	4 out of 6, + 1 out of 6, ++	5 out of 6, + 1 out of 6, ++
5ppm Afla + 0.50% MYCOAD	4 out of 6, + 1 out of 6, ++	3 out of 6, +

Score: Mild (+), moderate (++), accentuated (+++), severe (++++)

Necrosis of the hepatocytes and megalocytosis are caused by Aflatoxicosis

DISCUSSION AND CONCLUSIONS

The ABW of fish at the beginning of the experiment across treatments was similar ($P < 0.05$), an important parameter in evaluating the effect of mycotoxins in fish under experimental conditions. The deleterious effects on performance and the microscopic damage to the livers caused by the presence of 5000 ppb Aflatoxins in the diet was clearly demonstrated. Mycoad (5 kg/mt) showed a statistically significant improvement in performance (body weight and fish size) and the best protection of the liver.

EFFICACY OF MYCOAD IN REDUCING THE TOXIC EFFECTS OF A NATURAL CONTAMINATION OF AFLATOXIN + OCHRATOXIN IN CARPS

Adapted from: H.M. Agouz and W. Anwer. J. Fish. Aquat. Sci. 6(3): 334-345. 2011
Central Laboratory of Agriculture Research, Abbassa, Sharkia, and Faculty of Veterinary Medicine, Cairo University, Egypt.

MATERIALS AND METHODS

A total of 150 healthy fingerlings (15 g initial body weight) common carp (cyprinus carpio) were used in 5 different treatments with 3 replication each. The control group received a commercial natural contaminated diet containing 22 ppb of aflatoxin and 15 ppb of ochratoxin. This same diet, in one of the treatments, was supplemented with 0.25% MycoAd. Fish were in water maintained at 25±2°C and fed for 90 days with an amount equivalent to 3% of biomass.

RESULTS AND CONCLUSIONS

Based on the results of this experiment, it can be concluded that synergitic low levels of natural aflatoxin + ochratoxin contamination of fish diets can cause many drastic effects on performance parameters and body composition of common carp. The addition of 2.5 kg of Mycoad per metric ton of feed significantly improved all performance parameters and body composition of carps; with and increase of 6% in the survival of fish.

Effect of MYCOAD on performance and body composition of carps fed a low natural contaminated diet for 90 days

Parameter	Contaminated Diet *	Contaminated Diet * +2.5 kg MYCOAD
Weight gain g/fish	32.95 a	38.26 b
Growth rate %/day	1.36 a	1.42 b
Feed intake g/fish	83.36 a	71.92 b
Feed conversion	2.53 a	1.88 b
Survival rate %	88.00	93.77
Body protein %	51.02 a	53.00 b
Body fat %	32.15 a	29.00 b

a - b Means in the same row with different superscript differ significantly ($P< 0.05$)
*** Diet naturally contaminated with 22 ppb Aflatoxin and 15 ppb Ochratoxin**