

# MYCOAD

**Anti-Mycotoxin Additive of Proven Efficacy  
to Prevent Aflatoxin M1 in Milk**

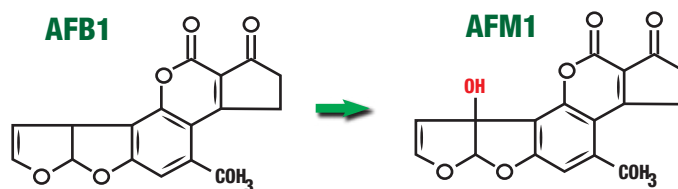


## INTRODUCTION

There is a general understanding that ruminants are less susceptible to mycotoxins' detrimental effects due to the metabolizing action of the rumen microflora. However, metabolites produced in the rumen can be equally or even more toxic than the original toxin. Ruminants are not efficiently protected against aflatoxin toxicity due to the limited ruminal degradation of aflatoxin B1 (AFB1); and because its main metabolite: aflatoxicol, has a similar toxicity to the original molecule. In addition, ruminant rations include forages, increasing the risk of mycotoxicosis due to their high levels of contamination, especially in silages.

Aflatoxin contaminated feed not only reduces performance and health status of the animals, it also generates a serious risk of milk contamination. AFB1 is rapidly absorbed and transformed into aflatoxin M1 (AFM1) in the liver. AFM1 is also rapidly eliminated through milk and urine. It has been established that AFM1 appears in milk 12 hours after the ingestion of AFB1 by the cow. Maximum concentration in milk occurs at 24 hours, and it is cleared 4 days after the animal stops consuming the mycotoxin.

The average transfer of aflatoxin from the feed to the milk is about 1.7%, fluctuating between 1 to 3%.



This transfer of aflatoxin from the diet to milk may vary widely between animals, from day to day, and between milking times, due to ingestion and digestion rate, health status, milk production, and cow sensitivity to mycotoxins. A transfer of up to 6.2% has been measured in top performing dairy cows at peak production.

At least 100 countries had some kind of legislation addressing the control of mycotoxins in feed and food; 66 had specific legislation concerning AFM1 in milk. There are two standards to regulate the maximum level of AFM1 in milk: 500 parts per trillion (ppt) or 0.50 parts per billion (ppb) in the USA and many countries in Latin America; and 50 ppt or 0.05 ppb in the European Union (EU).

To comply with legislations, it is necessary to maintain an extremely low level of aflatoxin B1 in dairy feed; and/or use an anti-mycotoxin additive of proven efficacy to prevent animal toxicity and the presence of aflatoxin M1 in the milk.

## EFFECT OF MYCOAD IN REDUCING AFLATOXIN M1 IN MILK

### Field Test 1.

#### Purina trial in a commercial dairy farm in Parma – Italy

This trial was conducted with 800 lactating dairy cows, producing milk with levels of AFM1 above 50 ppt, the maximum accepted by the EU legislation. **MYCOAD** was added to the ration at a rate of 50 g/cow/day during 10 consecutive days.

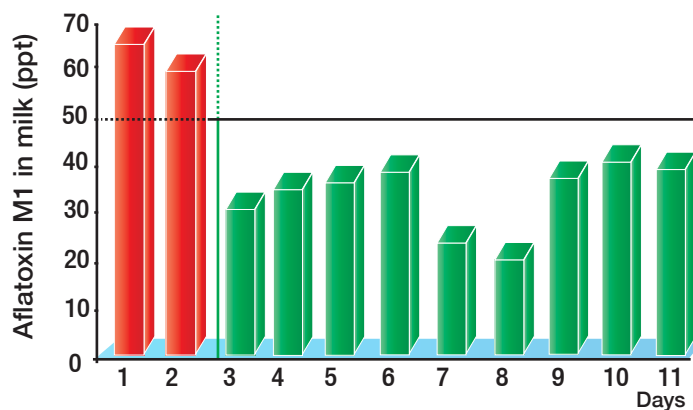
The addition of **MYCOAD** at a dose of 50 g/cow/day resulted in a marked reduction of AFM1 in milk in just 24 hours; to levels below the maximum established by the EU legislation.

### Field Test 2.

#### Test in a commercial herd in Porto Lucena, RS. Brazil.

This trial was conducted with Holstein dairy cows in lactation, divided in 3 groups and fed with 5 kg of concentrate per day plus forages. During 5 consecutive days, cows received the concentrate experimentally contaminated with 500 or 1000 ppb of aflatoxin and one additional group was fed the concentrate with 1000 ppb of aflatoxin + 0.5% **MYCOAD** (25 g/cow/day). Milk production was recorded and aflatoxin in the concentrate and milk was analyzed.

Presence of AFM1 in milk after the addition of **MYCOAD**



— Maximum level of AFM1 in milk EU    — The day **MYCOAD** was added in the diet



## Effect of MYCOAD in reducing AFM1 in milk when cows consumed high dietary AFB1

Treatment	AFB1 ppb	AFB2 ppb	AFG1 ppb	AFG2 ppb	Total Afla ppb	Average Milk l/cow/day *	AFM1 Morning ppb	AFM1 Afternoon ppb	AFM1 Average ppb
500 ppb Aflatoxin	516	2.4	92	1.8	612	16.0	1.72	2.12	1.92
1000 ppb Aflatoxin	822	6.6	206	3.2	1038	14.0	1.96	3.22	2.59
1000 ppb Afla + MYCOAD	856	3.6	214	2.8	1076	19.5	1.16	1.64	1.40

\* Average milk production in the last two days of exposure to contaminated diets.

The levels of aflatoxins detected in feed were similar to those used in the contaminated groups. The high aflatoxin contamination decreased milk production. The milk from the afternoon milking consistently showed higher presence of AFM1. **MYCOAD** at a dose of 25 g/cow/day improved milk production by 28% and reduced the presence of AFM1 in milk by 46% when the concentrate contained 1000 ppb of AFB1.

## Scientific Test 1.

Experiment at the Faculty of Agronomy University of Piacenza, Italy.

This trial was conducted with 24 lactating dairy cows, using a latin square experimental design with 4 treatments (control and 3 anti-mycotoxin additives) of 6 cows each. Each week a group of 6 cows received a different treatment. Products A and B were used at the dose recommended by their manufacturers. AFB1 concentration in the feed was 10 ppb and the inclusion of **MYCOAD** was 60 g/cow/day.

### Effect of different anti-mycotoxin additives in reducing Aflatoxin M1 in milk

Treatment	Week 1 ppt	Week 2 ppt	Week 3 ppt	Week 4 ppt	Average ppt	Reduction %
Control	31	23	18	25	24.3	-
Product A	23	19	16	24	20.5	15.5
Product B	13	15	5*	14	11.8	51.5
MYCOAD	7	8	6	9	7.5	69.1

\* This group received **MYCOAD** the previous week

The natural contamination of 10 ppb of AFB1 in the feed did not generate high levels of AFM1 in milk; however, it is evident from the results of this test that **MYCOAD** was the most effective anti-mycotoxin additive in reducing AFM1 in milk (69%).

## Scientific Test 2.

Experiment at the Federal University of Santa Maria LAMIC RS, Brazil.

This trial was conducted with 24 Holstein dairy cows in production divided in 4 treatments with 6 replicates each. Treatments consisted of: a control group; **MYCOAD** 50 g/cow/day; 500 ppb aflatoxin and 500 ppb aflatoxin + **MYCOAD** 50 g/cow/day. Experimental contamination consisted of a mixture of aflatoxins, containing 93.8% AFB1. Diets were consumed for 5 consecutive days and the presence of AFM1 in milk was analyzed at day 0, 1, 3 and 5 during the experiment.

### Efficacy of MYCOAD in reducing Aflatoxin M1 in milk during 5 days of contaminated feed intake

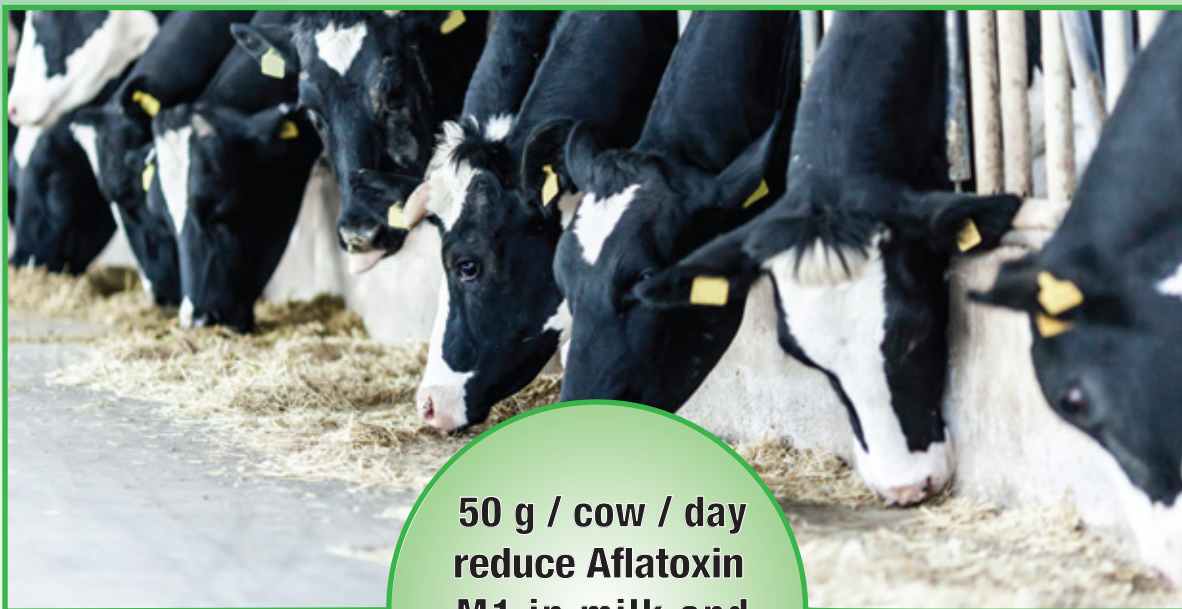
Treatment	Day 0 ppt	Day 1 ppt	Day 3 ppt	Day 5 ppt
Control	8	30 b	40 c	40 c
MYCOAD	4	20 b	20 c	10 c
500 ppb Aflatoxin	9	1280 a	2030 a	3180 a
500 ppb Afla + MYCOAD	8	490 ab	1020 b	910 b

a, b, c. Values in the same column with different letters are significantly different P <0.05

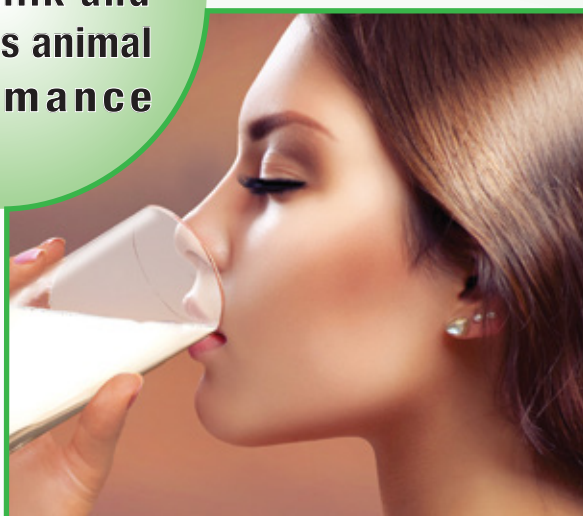
**MYCOAD** at a dose of 50 g/cow/day significantly reduced the presence of aflatoxin M1 in milk when cows were exposed to high level of aflatoxin B1 contamination. After 5 days of exposure, the use of **MYCOAD** in the feed was able to reduce the presence of aflatoxin M1 in milk by 71%.

# MYCOAD

**Reduce Aflatoxin M1 in 24 Hours**



**50 g / cow / day  
reduce Aflatoxin  
M1 in milk and  
improves animal  
performance**



*Just Science*<sup>®</sup>



**SPECIAL NUTRIENTS**  
THE MYCOTOXINS SPECIALIST  
[www.mycotoxin.com](http://www.mycotoxin.com)