

# The potential for dietary sequestering agents to reduce the transmission of dietary aflatoxin to milk of dairy cows

*D.E. Diaz, W.M. Hagler, Jr., B.A. Hopkins, J.A. Eve and L.W. Whitlow, North Carolina State University, Raleigh, NC*

## Objectives

To evaluate the effects of dietary addition of sequestering agents on the transmission of aflatoxin from feed to milk.

## Materials and methods

### Experimental diet

Clean corn grain, contaminated corn grain and alfalfa silage were analyzed by HPLC for aflatoxin concentration and used to formulate diets containing 100 ppb aflatoxin (Table 1). Four commercially available sequestering agents, calcium (Ca) and sodium (Na) bentonite, activated charcoal and an esterified glucomannan product (Mycosorb) were added to diets at recommended use rates (Table 2).

**Table 1. Diet composition<sup>1</sup>.**

Ingredient	% of dry matter
Alfalfa silage	66
Ground corn	32
Vitamin/mineral premix	2

<sup>1</sup>Diets were formulated to contain  $\cong$  100 ppb total aflatoxin.

**Table 2. Dietary treatments.**

Treatment	% of diet dry matter
Activated charcoal	0.25
Mycosorb	0.05
Calcium bentonite	1.25
Sodium bentonite	1.25

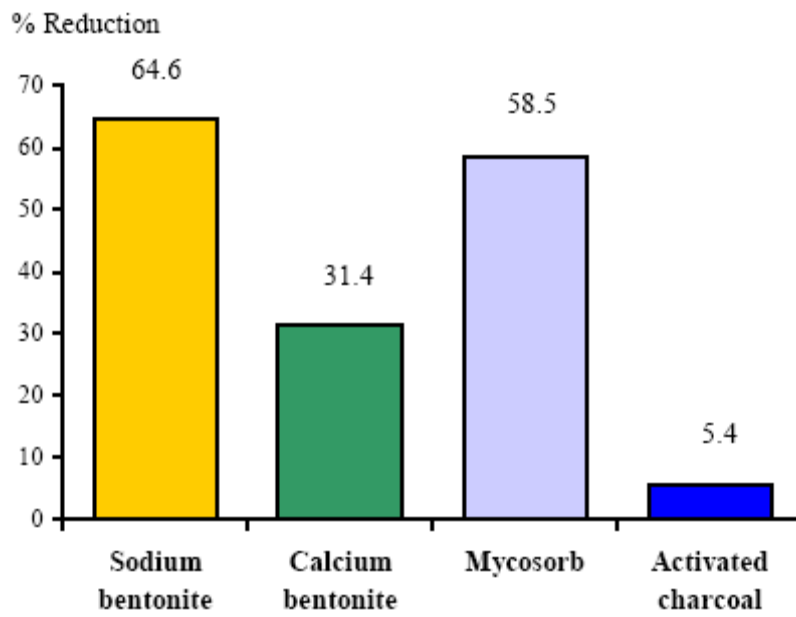
## Animals and measurements

Twenty eight late lactation Holsteins were randomly assigned to the four treatments. Aflatoxin contaminated diets were fed for 10 days. Cows received no sequestering agent for the first five days and then received one of the four sequestering agents for the remaining five days. Milk samples were collected from the last four milkings representing 2 days at the end of each 5 day period.

Milk samples were analyzed for aflatoxin M<sub>1</sub> by enzyme immunoassay (ELISA kit for quantitative analysis of aflatoxin M<sub>1</sub> in milk (BIO-TEK® Instruments, Inc. Winooski, VT)). Treatment differences determined using SAS GLM with significance declared at  $P < .05$ .

## Results

Mycosorb, Na and Ca bentonite reduced aflatoxin M<sub>1</sub> in milk ( $P < 0.0001$ ) (Figure 1). Mycosorb at 0.05% of the diet was not significantly different than Na bentonite at 1.25% of the diet. Activated charcoal at the level used in this experiment had no significant effect on milk aflatoxin content.



**Figure 1. Effects of sequestering agents on milk aflatoxin residues.**

*J. Dairy Sci.* 82(Suppl. 1):838, 1999