Dog food evaluated

phenylalanine – to compete with tryptophan for transport across the blood-brain barrier. This prevents the mycotoxin-induced changes of tryptophan and consequent loss of appetite (Cavan et al., 1988). Silicate minerals, cholestyramine and cholestyramine are mycotoxin absorption in animals (Diaz and Smith, 2005). Most of these agents, however, either only absorb specific mycotoxins, require a high dietary inclusion rate or are too expensive to use.

Recently developed technologies such as glucomannan polymers extracted from the cell wall of yeast, in contrast, have a high adsorptive capacity for binding a combination of different mycotoxins. Mycotoxins can, therefore, be prevented at a low inclusion rate. Such polymers show great promise of broad application in animal feed industries.

Raju and Dzevegowa (2000), for example, showed that the inclusion of yeast glucomannan polymer (1 g/kg feed) significantly improved feed intake, bodyweight gain and biochemical and hematological parameters of broiler chickens exposed to aflatoxin B1 (0.3 mg/kg feed), ochratoxin A (2 mg/kg feed) and T-2 toxin (3 mg/kg feed) for 35 days.

In another study with quail and T-2 toxin (8.1 mg/kg feed), yeast glucomannan polymer (1 mg/kg feed) significantly inhibited intestinal T-2 toxin absorption as well as liver antioxidant depletion (Dvorska and Surai, 2001).

In comparison, zeolite, a silicate-sequestering agent, was included at a higher level (30 g/kg feed) but was found to be ineffective in preventing the development of oxidative stress caused by T-2 toxin in the liver.

Swamy and Dzevegowa (2002) also demonstrated that 0.2 g yeast glucomannan polymer per kilogram of feed could protect the changes in neurotransmitter and serum antibody concentrations caused by a dietary combination of DON, 15-acetyl DON, fusaric acid and zearalenone (5.5, 0.5, 26.8 and 0.4 mg/kg feed, respectively) in intact, growing pigs.

Supplementation of glucomannan polymer has been shown to prevent hepatic damage and loss of appetite in horses fed the diet containing Fusarium mycotoxins (Raymond et al., 2003).

Conclusions

While aflatoxins, ochratoxins and various Fusarium mycotoxins pose important health threats to dogs fed cereal-based pet foods in the market, the application of new screening protocols, cereal processing techniques, dietary supplementation with mycotoxin-sequestering agents offers solutions for the pet food industry.

References


