Mycotoxins in Poultry Feed

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Mycotoxins, which can be present in animal feed, can have serious negative effects on animal health. Mycotoxins are produced by molds, which are filamentous fungi that frequently contaminate grains and improperly stored feeds. Mold growth typically is associated with extremes in weather conditions, and mold spores are found almost everywhere, including in soil and plant debris. Crops can be contaminated with mold in the field, during harvest, or during storage, processing, or feeding. The effects of mycotoxins in poultry feed depend on the specific mycotoxin or mycotoxins present, the level of contamination, the length of time the animal has been consuming the mycotoxin(s), and the animal's age, sex, and level of stress.

Hundreds of different mycotoxins exist, and they vary in their chemistry and mode of action on animals. The molds that are most common in animal feed are *Aspergillus*, *Fusarium*, and *Penicillium*. Consequently, the mycotoxins of greatest concern are produced by these molds and include aflatoxin (produced by *Aspergillus*); deoxynivalenol, zearalenone, T-2 toxin, and fumonisin (produced by *Fusarium*); and ochratoxin and PR toxin (produced by *Penicillium*). Ergot is another mycotoxin commonly present in animal feed.

Even with excellent management, low levels of mycotoxins may exist in poultry feed. Several mycotoxin binders have been developed that prevent the toxic effects of mycotoxins on animals consuming contaminated feed. These materials bind with the mycotoxin(s) and prevent the negative effects on the animals consuming them. Potential mycotoxin binders include activated carbon; aluminosilicates (e.g., clay, bentonite, montmorillonite, zeolite, phyllosilicates); and complex indigestible carbohydrates (e.g., cellulose, polysaccharides in the cell walls of yeast and bacteria) as well as some synthetic polymers. The diversity in chemistry of mycotoxins influences the effectiveness of mycotoxin binders. Mycotoxin control measures may require multiple approaches to solve the problems associated with mycotoxin consumption. More recent approaches include the use of a combination of binders, microbial enzymes, yeast cell walls, and natural antioxidants.