

# A C B A Feed—What Can Go Wrong

by Mary Lou Eisel



Last summer a number of breeders in Ontario ran into what they felt were feed related deaths in their herds. As a rule, feeds made in this country are safe for the species they were designed for but as we all know from some recent issues things can go wrong with feed/food most notably the death of 20 people in Canada from *Listeria* contaminated meat products. There is very little information available on feed issues with caviae so a lot of the information in this article relates to other species.

Doing research on this topic, I also discovered that there are several possible problems that one can run into with feed. Hence I am covering **Mycotoxins** only in this article and hope to eventually have a series of articles.

**Mycotoxin** is the general term that covers the toxins created from fungal organisms. This includes aflatoxins, vomitoxin, and fumonisin among others. Mycotoxins can affect grains commonly used in animal feed eg. corn, wheat.

**Mycotoxins** can have a very pervasive, yet subclinical, effect on both performance and health in animals that can easily go unnoticed. If you wait until clinical symptoms of mycotoxin problems are obvious, you no doubt have waited too long. The grains used in animal foods may contain mycotoxins- fungi that can cause chronic conditions and even death in both humans and animals. As the grains used in pet food are low grade, they are dealt with last in the handling process and because of this are often left in storage where insects, mites and mycotoxic molds can grow. Where large doses of mycotoxins can cause cancer and even rapid death, small continuous amounts may suppress the immune system and damage organs over time, leading to long-term chronic health conditions.

**Aflatoxin** poisoning, a common mycotoxin that grows on corn as well as other foods, has been reported for over 50 years. Acute intoxication of farm animals is less likely to occur than chronic aflatoxicosis. The principal target organ in all species is the liver. Numerous liver functions are affected, and the cumulative impact can be fatal to animals. As the liver loses function, other effects appear, such as impaired blood clotting, jaundice, and reduction in serum protein. Rabbits and ducks are highly sensitive to aflatoxin, whereas sheep are less sensitive.

Chronic intoxications (chronic poisoning or aflatoxicosis) can result when low levels of toxin are ingested over a prolonged period of time. In general, affected livestock exhibit decreased growth rate, lowered productivity (milk or eggs), and immunosuppression. Reduced growth rate is considered the most common effect associated with chronic aflatoxicosis in farm animals. In young animals fed low levels of toxin, this may be the only detectable abnormality. The lack of other clinical signs frequently cause aflatoxicosis to remain undiagnosed, resulting in serious economic loss. Liver damage is also prevalent in chronic aflatoxicosis in all species.

Aflatoxin is carcinogenic (cancer causing) in several species, including rats, ducks, mice, trout, and subhuman primates.

**Ergot** – Ergot is a fungus found on some grasses and grains. The general effects of ergot on livestock can be categorized as follows:

1. Behavioral effects - convulsions, incoordination, lameness, difficulty in breathing, excessive salivation, and diarrhea;
2. Dry gangrene of the extremities;
3. Reproductive effects - abortion, high neonatal mortality, and reduced lactation; and
4. Reduced feed intake and weight gain.

These effects are not seen in all types of livestock; they are fairly species specific and are modified by the ergot source, amount consumed, period of exposure, and age and stage of production of the animal. Two general effects of ergotism are convulsions and gangrene.

**Ochratoxin** - The ochratoxins have been found in wheat, oats, barley, corn, beans, peanuts, hay, green coffee beans, and mixed feeds. Kidney problems are a common symptom of ochratoxicosis. Although the liver is not a major target organ, some toxic effects occur there.

Effects in different species: Among farm animals, monogastric species (horses, swine, and poultry) are much more sensitive to ochratoxins than ruminants (cattle, sheep, goats). As with other mycotoxins, impaired growth in young animals, including calves, is the first observable sign of intoxication. Young animals are clearly more sensitive than adults. Ochratoxicosis is generally not diagnosable until postmortem examination of kidneys is conducted.

**Citrinin** – Citrinin can be found in various grains. Citrinin-induced kidney damage is similar to that caused by other mycotoxins. It frequently coexists with other toxins in moldy feed. The present consensus of opinion is that citrinin is a contributor rather than a primary cause of kidney problems in swine and poultry.

## FUSARIUM TOXINS

**Zearalenone** – Zearalenone is most commonly found in corn. It can cause estrogenic effects and infertility in animals. Swine are very sensitive to zearalenone, but the presence of refusal toxins (trichothecenes) may limit intake. The syndrome is characterized by swelling of the vulva and mammary glands, anal prolapse, and vaginal prolapse. Poultry are extremely resistant to zearalenone toxicosis. Cattle and sheep are less sensitive than pigs to the estrogenic effects.

**Trichothecenes** – Vomiting and feed refusal are associated with trichothecenes, particularly deoxynivalenol (DON; vomitoxin). Vomitoxin is very dangerous when fed at high levels. It is not advisable to reverse the refusal by masking moldy feed (e.g., with molasses) because of the possible development of toxin reactions from other trichothecenes that are probably present in the feed.