Indian Farmer
Volume 13, Issue 01, 2026, Pp. 22-24
Available online at: www.indianfarmer.net
ISSN: 2394-1227 (Online)

Popular Article

OPEN ACCESS

Occurance & Prevention Of Mycotoxin

Harsh V. Patel and Harsh A. Patel

M.V.Sc., Department of Animal Nutrition, and M.V.Sc., Department of Veterinary Microbiology, College of Veterinary Science and A.H.,Kamdhenu University, Sardarkrushinagar,Gujarat,India

**Corresponding author: harsh12381@gmail.com*

Received: 21/01/2026 *Published:27/01/2026*

INTRODUCTION

Inadequate drying, high humidity, and moisture cause fungal development in the feed ingredients that are stored. The interaction of moisture content, moulds and insects can rapidly lead to spoilage of stored feed raw materials. Approximately 200 identified filamentous fungi that grow in a wide range of environmental settings on various agricultural materials naturally create mycotoxins as secondary metabolites. A number of fungal genera, mainly Aspergillus, Penicillium, Alternaria, Fusarium, and Claviceps produce mycotoxins. Mycotoxin contamination in animal feed and the potential transfer into animal products to be consumed by humans still remains a major problem alerting the entire world. After consuming tainted food and feed, both humans and animals have experienced a number of outbreaks. As a result of mycotoxin- contaminated animal feed consumption, decreased feed intake, feed refusal in some cases, poor feed utilization, reduced body weight gain, increased disease susceptibility, and reduced reproductive abilities are commonly observed; moreover deaths can occur which leads to serious economic losses. Mycotoxin exposure results in disorders known as mycotoxicoses. In both humans and animals, mycotoxins have various toxicological effects. Foods of animal origin, such as contaminated milk, meat, and eggs, or contaminated foods of plant origin, primarily cereal grains, could expose humans to the substance. Some mycotoxins with harmful effects on animals and human health are aflatoxins (AFs), ochratoxin A (OTA), trichothecenes (deoxynivalenol (DON) and T-2 toxin), zearalenone (ZEN) and fumonisins (FBs).

Aflatoxins

Aflatoxins are mainly produced by two Aspergillus species, A. flavus and A. parasiticus. Animal feed ingredients frequently contain the four primary naturally occurring aflatoxins B1, B2, G1 and G2. Aflatoxines are the most well studied class of all known mycotoxins due to their severe acute toxicological and chronic hepatocarcinogenic effects in a variety of susceptible species. Immunosuppressive, hepatotoxic, carcinogenic, mutagenic, and teratogenic effects can be observed according to animal species, sex, age and aflatoxintype, exposure dose and period .

Fumonisins

Fumonisins are a group of non-fluorescent mycotoxins, mainly produced by Fusarium moniliforme, F. proliferatum. F. napiforme, F. dlamini and F. nygamai. The most susceptible domestic species of mammals are horses and swine, followed by ruminants. Mammals are less resilient than poultry. Equine leukoencephalomalacia (ELEM), a deadly neurological disorder, is a notable toxic consequence in horses. The most noticeable post-mortem lesion is a massive softening and liquefaction of the brain's white matter. Nervous symptoms such as ataxia, aimless gait, facial paralysis, blindness, coma, and death are indicative of ELEM. Fumonisins have also been shown to be carcinogenic to rats and have been reported to be associated with pulmonary edema in swine and esophageal cancer in humans.

Zearalenone

Zearalenone is a mycotoxin with hyperestrogenic effects in animals produced by Fusaria, mainly by F. graminearum, F. culmorum and F. sporotrichioides. Zearalenone is metabolized into two diastereoisomeric zearalanols, α and β-zearalanol. Although all ZENs have estrogenic capabilities, their potential varies, perhaps as a result of differences in binding affinities to oestrogen receptors. Swine are the most susceptible farm animals to reproductive effects of ZEN. Mammary gland hypertrophy and hyperestrogenism are visible in prepubertal gilts, while nymphomania and pseudopregnancy are visible in adult sows.

Trichothecenes

The main sources of trichothecenes in the food/feed supply are contaminated cereal grains. The toxic effects in animals include gastrointestinal disturbances such as vomiting, diarrhea and inflammation. In addition, trichothecenes are potent immunosuppressive agents that affect immune cells and modify immune responses as a consequence of other tissue damage.

Ochratoxin

It can damage the kidneys and limit growth rates. It cause renal tubular failure in swine, rats and mice and pale swollen kidneys are observed.

OCCURRENCE OF MYCOTOXINS IN PLANT AND ANIMAL PRODUCTS

Climate variables like temperature and relative humidity, as well as agricultural activities like the use of fungicides and farming methods, have an impact on the generation and incidence of mycotoxins in crops and, as a result, the degree of contamination in feed and food. The circumstances of drying, processing, handling, packaging, storage, and transportation may also be considered. Insects play an important role through physical damage of the grains and mechanical transmission of the microorganisms. Distribution of mycotoxins varies according to fungus nature. Depending on the geographical and climate conditions, different fungal species can invade foods and feedstuffs. For example, aflatoxins are mostly expected in tropical areas where climate conditions and storage practices are favorable to fungal growth and toxin production, while ochratoxin A is frequently detected in moderate and subtropical regions; fumonisins in subtropical and tropical locations; zearalenone and trichothecenes are worldwide mycotoxins. In general, tropical and subtropical regions with high humidity and temperature are more likely to have crops that are

contaminated with the most hazardous mycotoxins. Dairy products can be directly contaminated by mycotoxigenic fungus, particularly in cheese. Both unclean manufacturing media and fungal starting cultures used for the production of particular dairy products can cause mould contamination. Mycotoxins and their metabolites can also be excreted through milk. AFM1 in milk from dairy cows reaches its peak concentration two days after consumption of AFB1-containing feed and can disappear four days after the contaminated feeds are removed.

PREVENTION & MANAGING THE MYCOTOXIN

Pre-harvest preparations include effective agricultural practises such as harvesting mature plants when moisture content is lowest, irrigating to reduce moisture stress, and using fungicides and insecticides wisely to prevent fungal and insect invasion. Improvement of plant genes to resist fungal attack is based on genetic engineering, effective breeding programs, and using of biocompetitive fungi. There are two important parameters in controlling the fungal activity in stored agricultural stuffs, temperature and moisture which are affected by geographical location and other circumstances such as drying, aerating, turning of the grains and transport. The toxin contaminated feed should rapidly withdrawn and a low fat, high quality protein ration should be offered. Increase the vitamins, minerals and amino acids particularly methionine by 30-40%. In order to reduce the bioavailability of the toxin during digestion, chemicals are added to the meal. Bentonites, zeolites, diatomaceous earth, clays, modified clays, and activated charcoal are a few examples of inorganic adsorbents. Different materials, including fibres from plant sources like alfalfa, oat fibres, the extracted cell wall fraction of Saccharomyces cerevisiae, and most recently, the beta-D-glucan fraction of yeast cell wall, have been investigated as organic adsorbents. Numerous chemicals (acids, bases, oxidising agents, and various gases) have been investigated for their potential to detoxify mycotoxins, however the majority of them reduce the feed's nutritional value and palatability. Propionic acid and acetic acid are added at 0.1 to 1% concentration to high moisture feeds to reduce moulds effectively. Ultraviolet and ionizing radiation may be effective in destroying some mycotoxins such as aflatoxins, but also are likely to destroy nutrients in the feedstuffs.

CONCLUSION

It is still conceivable for mycotoxicosis outbreaks or other undesirable results related to mycotoxin exposure, despite all the precautions taken to avoid mycotoxin contamination and associated consequences. Authorities should take both human and animal exposure into consideration. The wellbeing of both people and animals can be maintained by being aware of mycotoxin qualities, reducing their prevalence in the environment, and avoiding exposure above dangerous limits. To protect the public health from harmful effects, nations should have their own national regulations and restrictions.