

How mycotoxins affect horses

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Mycotoxins are toxic chemicals produced by particular mold growth under certain conditions and can occur in growing, harvested or stored cereal and forage crops. However, one of the key difficulties in identifying this risk is that mycotoxins can be present without there being any mold. Equally, not all mold growth indicates the presence of mycotoxins.

Horses are exposed to mycotoxins via feed materials and grazing, as well as bedding. The latter is often over-looked but is also an important consideration. Acute mycotoxicosis (mycotoxin poisoning) is rare in the UK, and the more likely scenario is chronic exposure to low levels of multiple mycotoxins, presenting an ongoing challenge. Mycotoxicosis has the potential to suppress the immune system and has been associated with a wide range of conditions, from general lack of form, hypersensitivity and loss of well-being through to colic and liver damage. Horses ingesting mycotoxins run the risk of suffering from poor condition, lethargy, depression, lameness and sometimes death.

There are three major groups of molds that produce mycotoxins affecting horses and other animals: *Fusarium*, *Aspergillus* and *Penicillium*. The first is a field-borne mold, meaning the mycotoxins are usually present when the crop or forage is harvested. The latter two typically form during storage. For example, *Penicillium* mycotoxins can be seen in poor-quality haylage, especially if air has penetrated the wrap. Effects in the horse vary across the mycotoxin groups, but most are immunosuppressive. *Fusarium*-derived trichothecenes, such as deoxynivalenol, tend to disrupt normal cell function and affect cells located in the small intestine, liver and immune system. Clinical effects can be reduced feed intake, growth and body weight. Another group of *Fusarium* mycotoxins is the fumonisins, to which horses appear the most sensitive species. Exposure to fumonisins can result in equine leukoencephalomalacia (ELEM), characterized by depression, ataxia, abnormal behavior, head pressing and often death. The liver can also be involved, and horses generally die within hours of clinical signs.

Grazing can also pose a risk. Both tall fescue toxicosis and perennial ryegrass staggers are linked to mycotoxins produced by endophytic molds on the respective grass species. Lolitrem B is a neurotoxin that causes trembling, muscle spasms and hypersensitivity. All clinical signs can be reversed on removal of the horse from the

infected pasture. Red clover can be infected with a particular mold that produces a mycotoxin called slaframine. Slaframine induces diarrhea, feed refusal, respiratory failure, excessive production of tears, abortion and, sometimes, death. It also causes excessive salivation and, hence, the disease is given the name 'slobbers.'

The concern for horses in relation to mycotoxins is predominantly the effect that consistent, low-level exposure may have on athletic performance and breeding capability without the appearance of any specific symptoms. Unlike commercially bred livestock, horses can have a long lifespan and may, therefore, be expected to reproduce successfully in their later years. For this reason, the relative 'safe' level of mycotoxins allowed within the diet is unknown.

More equine-specific research is required, but leading figures in the industry agree that it is an area requiring attention. Suffice to say, all horses come into contact with mycotoxins on a daily basis. Good management practices, such as using quality feedstuffs, careful production and storage of feedstuffs and ensuring a fully balanced diet, will all help minimize the challenge from these compounds. Additionally, dietary inclusion of an appropriate mycotoxin adsorbent will help mitigate risk of negative effects on the horse.

Horses cannot avoid exposure to mycotoxins, but with good management practices, it is possible to significantly reduce potentially harmful effects.

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