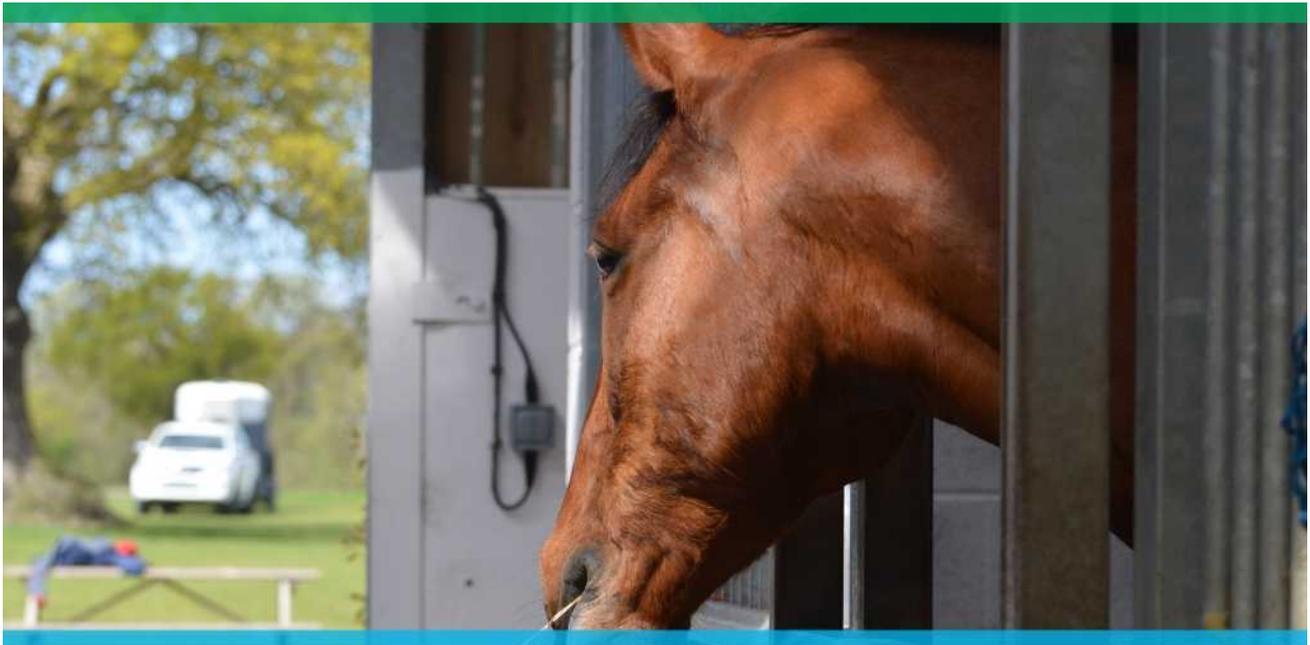


Find out information about mycotoxins and the horse. Learn about what mycotoxins are, how you can reduce exposure to them. Understand whether testing will give you answers to mycotoxin exposure and help your horse.



All horse owners work very hard to provide their horses with the best possible feed but mycotoxins almost always present and a threat to your horse's health. It is impossible to avoid all mycotoxin exposure and a healthy horse with a healthy immune system will have a level of built in protection against these toxins when exposed to low levels. Young and stressed horses will always be more susceptible as will elderly horses with impaired immune systems.

What are mycotoxins and where can they be found?

Mycotoxins are a group of naturally occurring chemicals which are toxins/poisons produced by certain moulds. They can grow on many different crops and food stuffs, usually under warm and humid conditions. Of particular concern for horse owners is their presence on contaminated cereals, seeds, hay, grass and straw. Although mycotoxins may be present on hays, grass pasture and especially clover, ryegrass or fescue, this is not the major source for horses and avoiding those hay types solves that problem. Damaged

cereals, processed cereals, and seed meals are the most likely to be contaminated with mycotoxins.

There are numerous mycotoxins and they cannot be seen by the eye so the food your horse is eating may look fine. They can cause adverse effects in horses in tiny amounts but because horse health is not an economic farming industry issue and horses are not in the human food chain in the UK, research into the effects of mycotoxins is very incomplete compared to other animal species such as dairy animals, poultry and pigs.

Aflatoxins such as B1 are the most toxic and have been shown to be genotoxic i.e. cause cancer in animal species. Other mycotoxins have a range of other health effects including kidney damage, gastro intestinal disturbances, reproductive disorders or suppression of the immune system.

Find out information about mycotoxins and the horse. Learn about what mycotoxins are, how you can reduce exposure to them. [Click To Tweet](#)

How will horses be affected by mycotoxins?

Regarding mycotoxins and their affect upon horses Dr Eleanor Kellon writes

The mycotoxicosis (mycotoxin induced disease) most familiar to horse owners is leukoencephalomalacia, “moldy corn poisoning”. In this disease, the horse’s brain literally liquefies and by the time the horse is obviously ill it will be fatal and irreversible. Moldy corn poisoning is caused by the mycotoxin fumonisin. Dangerous in amounts only 1/40th of fumonisin, aflatoxin is the fungal toxin behind the huge recall of Purina feeds on the East Coast of the USA a few years ago. Symptoms of high level exposure include liquefaction of the brain, fat degeneration, liver damage, damage to the intestinal tract with hemorrhage, depletion of lymphocytes (a type of white blood cell) and heart damage.

Potentially equally dangerous is T-2 toxin which causes intestinal damage, skin changes and altered immune system. Complicating the task of assigning safe

upper limits for intakes of these toxins is that there are often more than one toxin in a contaminated feed. This makes it impossible to determine whether one is the culprit or if it is a combined effect of the mixture.

The mycotoxins DON and zearalone are not well studied in horses. In addition to the effects already described, negative effects on reproductive function may occur. Low level intake of mycotoxins, adding up to a longer term, chronic exposure can also be harmful but the effects only begin to be obvious over several weeks' time.

These include:

Weight loss

Dull coat

Skin problems

Performance issues

Possible changes in urination/appearance of urine

Behavior changes

Possible colic

One tip off on premises that have many horses is that more than one horse will be showing symptoms, although not necessarily to the same degree. This indicates a herd problem. If a mycotoxin problem is suspected, blood should be sent for a chemistry screen. One or more liver enzymes will likely be elevated.

Testing Forage and Horse Feed for Mycotoxins

Although testing can be carried out to screen for panels of mycotoxins by ELISA it is important to understand that the screenings are expensive and also only test for a narrow range of the most common mycotoxins. With this in mind then Forageplus believes that it is better to either feed only the best and most clean horse feed and forage. It is like finding a very expensive needle in a haystack determining if you have a problem with mycotoxins as all horse feed is likely to have to be tested and a panel of 6 screens covering Aflatoxin, Ochratoxin, Zearalenone, T-2, DON plus Fumonisin could cost in the

region of £200. This panel however does not breakdown Aflatoxin into its major components and in some instances and with some types of feed there may be the possibility that an ELISA test may indicate a false positive result for any of these toxins. In this case a high result would then indicate that confirmation by a technique such as HPLC be performed. In this case each test would cost in the region of £100 for each individual mycotoxin but would report at lower limits. As you can see mycotoxin testing could be like finding a very expensive needle in a haystack!

Suggested Upper Safe Mycotoxin Intakes for Horses are as follows:

Aflatoxin 20 to 50 ppb T - 2 Toxin < 1 ppm for acute problems

DON 2 ppm Zearalone < 1 ppm for acute problems

Fumonisin 5,000 ppb (5 ppm) in the concentrate; no more than 20% of the diet being infested grain

Note: ppb = parts per billion, e.g. one kilogram in a billion kilograms of feed - which is a tiny, tiny amount!

Digestive upsets can be a sign of mycotoxin intakes - find out more with this Forageplus article.[Click To Tweet](#)

How to reduce the affect of mycotoxins

A much better approach than testing, along with feeding only good clean quality horse feed, if you think you may have a mycotoxin problem is to feed supplement products aimed at decreasing the threat of these toxins. These can be split into two types - adsorbents and biological modifiers.

Adsorbents, such as, charcoal, clays and zeolites, bind the mycotoxins to their surface so that they cannot damage the intestine or be absorbed. Their activity depends upon the pH of the digestive tract and type of mycotoxin with aflatoxin being one mycotoxin which can be effectively adsorbed by many different adsorbants. However there is little data in horses as to the feed rate of these substances but from data in other species, to be effective, they must be consumed at a rate of approximately 1 to 2% of the diet. Care should be taken not to feed charcoal or clay long term though due to the fact that both these substances can inhibit the uptake of nutrients. So as an example a horse consuming

10 kg of food per day would need to eat 100 grams per day as a minimum to be effective. Isolated cell walls from *Saccharomyces* yeast also adsorb mycotoxins and has a wide activity. Alltech manufactures a yeast cell wall binder called Yeasacc which is included in many feeds or can be bought separately.

Feeding clean cereals from reputable feed merchants is a must as is avoiding any mouldy or musty hay and haylage. It is important to pay attention to the sell by dates on bags of feed. Keeping the bottoms of feed bins regularly cleaned and washing and scrubbing feed buckets and feed spoons and stirrers is good management too. Hay mangers and hay bars can also build up old hay which then becomes fusty and mouldy. These kind of build-ups can represent a mycotoxin risk.

Digestive upsets can be a sign of mycotoxin intakes, and can also put the horse at higher risk of effects from mycotoxins. Supplementation with *Saccharomyces cerevisiae* yeast (Yea-Sacc) may help, since this strain's cell wall can adsorb mycotoxins. However, it is not known if it also can biologically inactivate them. The feed rate for an anti-mycotoxin effect is also unknown but the digestive enhancing dose is 46 billion organisms/day.

Mycosorb A+ for horses is also an option to support and maintain health in the presence of mycotoxins. It is the most broad-spectrum toxin-binder (including aflatoxins) and is derived from the inner portion of the yeast cell wall which contains both gluco-mannan and beta D-mannan combined with a small portion of alumina-silica. There is a synergistic effect of combining these two elements and this is patented. Research has shown it is effective in amounts as low as 0.05% of the diet. Mycosorb has also been tested specifically against aflatoxin, ochratoxin and T-2, as well as in field trials of animal performance. Mycosorb has a helical or spiral structure which has an incredibly vast surface area. One gram of Mycosorb has 2 hectares of surface area, working at a very low feed rate at a wide range of pH throughout the intestines, and has excellent capacity to mop up high concentrations of mycotoxins. Mycosorb will pass through the digestive system, doing its job and then exit with the manure.

People report feeding the toxin-binder dose twice a day during times of high mycotoxin exposure like autumn works better than once per day. This ensures more even presence throughout the 24 hour period.

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