

Reducing the risk of mycotoxins with good feed management practices

by Soren Thielson, OE-Vet AIS, Koeberupvej 33, 4700 Naestved, Denmark.

Mycotoxins in feed are a well established global issue contributing to a wide range of health and performance issues in pigs. Their associated risks threaten the health of the herd and of the producer's bottom line. For nearly 10 years, OE-Vet has worked with mycotoxin related issues in pig herds throughout Europe.

In general, mycotoxins can be divided into two groups; field toxins and toxins caused by stock damaged grain. From our experience, both groups can lead to significant and wide ranging issues in pigs.

Symptoms vary greatly depending on specific mycotoxins present but also age, production stage and health status of the animal.

They may include anaemia, suppressed appetite coupled with reduced growth/weight gain, and are caused by the impact of the overall mycotoxin load on organs such as the liver, kidneys, bone marrow, intestines etc. In general, mycotoxins are oxidising substances that damage cells within the body after the physical problems appear.

It can be difficult to measure the extent to which mycotoxins impact animal health status and performance. A holistic approach to mycotoxin management is therefore needed; one which considers the challenge as a whole, from detection to feed management and diagnosis to addressing the challenge.

For this reason, Alltech developed the MIKO Program which OE-Vet has taken a stage further and has developed a methodology where slaughter house examinations and histological examinations, typically of livers and kidneys, are utilised.

Mycotoxins often cause characteristic injuries and these injuries can be either confirmed or invalidated via histology, offering greater insight into the problems of a herd and increasing the accuracy of mycotoxicosis diagnosis.

Table 1 shows the damaging effects of mycotoxins in both liver and kidney tissues on animal perfor-

mance. It is worth noting the lipid accumulation in the kidneys, likely caused by the presence of mycotoxins. Very few other substances cause this type of damage.

	Before	After
Mortality (%)	18	10
Poor pigs at weaning (%)	15	5
Litter weight (kg)	84	98

Table 1. Effects of mycotoxins on performance

Another breakthrough in understanding the challenge has been the commercial availability of LCMS/MS based, broad spectrum analytical techniques such as Alltech's 37+ Program. The 37+ Program allows producers to get a more accurate picture of their mycotoxin challenge in their feed and bedding, by providing tailored, species specific risk assessment reports for the toxins identified as being most detrimental to animal health and performance.

Case study

In a Danish farrowing unit of 1200 sows, a large number of both young and older farrowing sows were found to be suffering from udder

oedema and stone udders caused by toxin injuries. In particular, many of the gilts had stone udders. Stone udder and udder oedema are circulation diseases which cause the milk to set after farrowing and so the piglets do not get adequate colostrum or milk, leading to reduced immunity and increased disease incidence.

It can be resolved through improved stomach/intestinal function and intestinal flow.

A rougher grinded feed (with more structure) containing a proven, broad spectrum mycotoxin binder should be fed to improve flow in the sows and increase their water intake.

Feed samples were taken to clarify the reason for the toxin injuries. Due to the sows' reduced milking abilities and the limited availability of colostrum antibodies, many of the piglets suffered from injured snouts/atrophy in the lungs caused by Bordetella bronchiseptica. Influenza type H1N2 was also found in piglet lungs. Vaccinations against influenza were given but despite this, it was still found in piglet lungs that should be fully protected.

Antibodies against Bordetella should be present in the sows as this disease (when the sows are confronted with it in the farrowing unit) gives a basic antibody production, leading to more antibodies in the



A diseased and a healthy pig kidney.

colostrum. The reason for piglets not being protected is therefore in my opinion – only caused by significantly reduced availability of colostrum caused by the presence of mycotoxins in feed. The extent of the injuries is shown in Table 2.

The solution

Good feed management practices are an important part of reducing future mycotoxin risk. HACCP based programmes such as Alltech's MIKO Program are particularly effective tools in monitoring and managing mycotoxin challenges. However, mycotoxins are ubiquitous and the use of a proven, broad spectrum mycotoxin binder such as Mycosorb A+ is the most effective means of addressing the issue. Feed samples are naturally largely contaminated with multiple mycotoxins. Mycosorb A+ reflects that and targets a broad range of toxins simultaneously.

Producers should consider though that all binders should be seen as just one part of any mycotoxin management programme. Slaughter house and histology examinations, accurate detection techniques and feed management practices used in conjunction with a binder provides the greatest protection against the dangers of mycotoxins. ■

Mycosorb A+ is not available for sale in the US or Canada

Table 2. Histopathological examination.

Sample number	Sample information
1-5	
History	Health monitoring on formalin-fixed liver and kidney
Histopathological examination	
1-5	
Fixed tissue	Focal, single cell necrosis in one liver. Mild, chronic congestion in another and three livers with mild eosinophilia infiltration
1-5	
Fixed tissue	Three kidneys with moderate to mild intracellular lipid accumulation affecting the distal tubuli. Two kidneys with decreased epithelial height of the distal tubuli