A practical guide to differential diagnosis in swine

1 – Immunodepression

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We start this series with the most classical but also most dangerous and creeping effect from mycotoxins – immunodepression.

The occurrence of mycotoxins is a worldwide phenomenon that affects all kinds of commodities. The real problem of mycotoxicoses (poisoning resulting from toxins' exposure) is that they are mostly unobservable and their outcomes are usually in the form of the weakening of some tissues and apparatus.

immunodepression, brought about by most mycotoxins, can give similar signs as other biological agents that are usually counteracted through veterinary or pharmaceutical interventions.

A number of biological agents are able to compromise immune integrity of animals, from mycotoxins to infections to drugs.

A single instance or concomitant administration and poisoning caused by these elements can undermine trough suppression or disrupt regular development of body defences, resulting in lower performances, easier outbreaks and vaccine failures.

Most often the syndromes stem from so-called 'conditioned diseases', E. coli, streptococcus, salmonella, pasteurella, influenza, etc.

It is well known nowadays that diseases come from multifactorial causes; immunodepression can let loose many latent infections, presenting a challenge for practitioners regarding etiology and therapy.

The checklist presents in evidence the undermining of immune reaction caused by mycotoxins that can depress the immune process at its four main steps:

- Cytokines involved in recruiting antigens presenting cells, along with macrophages and dendritic cells.
- Cytokines involved in activating specific immunity reaction, Th1, Tr.
- Proliferation of lymphocytes after antigenic stimulus.
- Specific antibody production.

Mycotoxin contamination is always concomitant to some infections in the herd. They can also be synergetic in depressing immune reaction as some viruses, like circovirus, herpes virus, asfivirus, orthomyxovirus (flu), and arterivirus (PRRS), can interfere with certain steps in the immune process. The same can be said for some bacterial infections such as mycoplasma, pasteurella, Actinobacillus pleuropneumoniae or salmonella.

Aflatoxins were shown to lower cytokines expression and specific antibody titers after vaccination with Mycoplasma agalactiae.

Naturally occurring Salmonella enterica was seen to manifest more at growing levels of ochratoxin poisoning.

Pasteurella multocida, P. bronchiseptica proved to be more pathogenic, occurring together with fumonisins and increasing the susceptibility of pigs to Porcine Reproductive and Respiratory Syndrome (PRRS).

Following clinical investigation and a review of aspects involving management, nutrition, epidemiology and sometimes laboratory analysis, a therapy is decided.

When antibacterial agents make up part of the therapy, one has to take into account that some antibiotics can depress the immune reaction; tetracyclines, penicillines, sulphametazine, streptomycin and chloramphenicol (forbidden in the EU).

These are widely adopted in swine therapies but have to be used wisely and producers must also be aware of secondary negative effects on the body's natural healing processes. ■

Check list	Corrective action
Potential cause: AFB1, DON, DAS, T-2, OTA, FUM	
• Positive raw materials ELISA, feed HPLC • Origin of raw materials historically contaminated • Symptoms pertaining to mix of infections, vaccine failure • Decline of herd/phase performances	• Check raw materials and feed • Hygiene of feed and water lines • Use Mycofix at suitable inclusion rate
Potential cause: PATHOGENS: PCV2, Herpes (Aujeszky's), Flu, ASF, PRRS, Mycoplasma, Pasteurella, Actinobacillus pleuropneumoniae, Salmonella	
• Epidemiology, symptomatology • Necropsy • Immune-histochemistry, PCR, ELISA	• Biosecurity • Vaccination • Antibiotics
Potential cause: tetracyclines, penicillines, sulphametazine, streptomycin, chloramphenicol (not in the EU)	
• Overdosing • Prolonged treatment • Unwise adoption	• Proper management and nutrition (acidifiers, phytogenics) • Alternative antibiotics

References are available from the author on request