

E05- Immuno-mycotoxigenology IMT

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Context

- ✓ 25 % of the world crop production are contaminated by mycotoxins. In northern Europe, the climate is favorable to the development of *Fusarium* on cereals.
- ✓ Deoxynivalenol (DON) is the main mycotoxin found in France and in northern Europe. Besides DON, *Fusarium* also produce “emerging” mycotoxins, that are much less characterized and the chemical structure of which are very diverse. Thus, humans and animals are generally not exposed to just one mycotoxin but to several toxins at the same time.
- ✓ Because of the high percentage of cereals in its diets, pig is one of the most exposed species to mycotoxins. Moreover, pig can be regarded as a relevant animal model for extrapolating to humans.
- ✓ The gastrointestinal tract represents the first barrier against food or feed contaminants. Following the ingestion of contaminated food or feed, the intestine could be exposed to a high concentration of mycotoxins. As a consequence, the barrier function or the immunological homeostasis could be altered.

THE DIFFERENTS APPROACHS

Mycologic Studies



Mycotoxins
Chemical
characterization of
fungal compounds



Fungi
Genetic
elucidation of
mycotoxinogenesis

Toxicological Studies



In vivo model
Pig experimental
Intoxications



Ex vivo model
Porcine intestinal
explants



Cellular model
Epithelial and
dendritic cells

AIM : Analyze the co-contaminations

- ✓ Characterize the metabolome of *Fusarium*
- ✓ Analyze the effects of DON on the intestine (epithelial & dendritic cells) and intestinal flora
- ✓ Analyze the effects of emerging mycotoxins from *Fusarium* on the intestine
- ✓ Determine the type of interaction between the different mycotoxins from *Fusarium* (antagonist, additive or synergistic)

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