investigate in primary cultures of bovine mammary gland: i) the expression of genes encoding for biotransformation enzymes and efflux pumps involved in AFB1 metabolism and excretion; ii) the cytotoxicity of AFB1, as well as its modulation by selected natural antioxidants (i.e. Curcumin and Quercetin).

Materials and Methods: Tissues were collected at the slaughterhouse from 3 dairy cows (age: 8–16 years). Epithelial cells were separated and cultured as described (1). Gene expression of CYP1A1, CYP1B1, CYP3A28, GSTA1, GSTA2, UGT1A1, UGT1A6, ABCC2, and ABCG2 was measured by qPCR. Cells were incubated with increasing concentrations of AFB1 (30 nM-10 µM) alone or in the presence of each antioxidant (5 µM) for 24 and 48 h. Cell viability was evaluated by the WST-1 or Neutral Red Uptake assays. Statistical significance ($p \leq 0.05$) was tested by the Mann Whitney test.

Results and Conclusions: All investigated genes, but ABCC2 and both UGT1A isoforms, are readily detectable in the cultured cells from all animals. As reported in BME-UV1 cells, CYP1B1 is the most expressed gene, while CYP1A1 is the least one, in line with its low constitutive expression and high inducibility in the mammary gland of most species. The mRNA levels of CYP3A28, ABCG2 and both GST isoforms are almost comparable. As expected, AFB1 elicits a time and concentration-dependent decrease in cell viability starting from 1 µM at 24 h. While Curcumin is not able to protect cells from AFB1 cytotoxicity, Quercetin significantly ($p \leq 0.05$) enhances cell survival after AFB1 treatment at all tested concentrations. *In vivo* studies are warranted to confirm the positive interactions of natural antioxidants in dairy cows exposed to AFB1.

Reference: 1. Martignani *et al.* (2010) *Plos One*; 5: e-13372.

O15.3 | The effect of chlorophyllin on deoxynivalenol absorption in porcine jejunum explants

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Introduction/Objective: Deoxynivalenol (DON) is a mycotoxin of major concern in pigs in Europe. To prevent swine mycotoxicoses, the use of mycotoxin adsorbents as feed additives is proposed as one of the most promising approaches. Unfortunately, the standard adsorbents turned out to be unsatisfactory for the detoxification of DON. A candidate for an effective adsorbent could be chlorophyllin (CHL) which was shown to reduce remarkable DON absorption in Caco-2 cell line model. Consequently, the major objective of the study was to verify the ability of CHL to reduce DON absorption in porcine isolated mucosa layer model.

Materials and Methods: The study was performed on mucosa explants obtained from the jejunum of healthy adult pigs that 60 min. The incubated medium was supplemented with DON (10 or 30 µg ml^{-1}) or DON and CHL (100 µg ml^{-1}). The integrity and permeability of the mucosa strips were verified by transepithelial electrical resistance (TEER) measurements, as well as lucifer yellow (LY) permeations and lactate dehydrogenase (LDH) leakage. The concentration of DON was assessed by ELISA assay.

Results and Conclusions: The obtained results confirmed the toxic effects of DON towards jejunal mucosa. After 60 min incubation, DON at the concentration of 30 µg ml^{-1} increased the paracellular penetration of LY which reached 174% of the amount which penetrated through the mucosa in the absence of the mycotoxin. Value of TEER dropped to 34% of the initial measurement. Whereas the release of LDH was not affected by the presence of DON. The addition of CHL to the incubation medium containing DON (30 µg ml^{-1}) had no effect on LY penetration, TEER values or LDH leakage. Unexpectedly, the use of CHL did not reduce the absorption rate of DON in the jejunum explants. On the contrary, CHL added to the incubation medium significantly increased the penetration of DON ($p < 0.05$). The concentration of the mycotoxin detected on the serosal site of the explants reached 25 and 55 ng ml^{-1} for the strips exposed to DON and DON+CHL, respectively. These results suggest that CHL intensifies the absorption of DON in jejunal mucosa explants. In the view of the obtained results CHL should not be further considered as promising inhibitor of DON absorption in porcine jejunum.

O15.4 | Role of delta-tocotrienol on ochratoxin-A induced nephrotoxicity and oxidative stress in rat

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Introduction: Ochratoxin A (OTA) is a natural mycotoxin with important implications for animal and human health. In particular, it may induce nephrotoxicity, carcinogenesis and hepatotoxicity in mammals. Several mechanisms of OTA toxicity have been proposed, including the contribution of OTA to the imbalance between oxidant and antioxidant parameters. Tocotrienols are forms of vitamin E that are present in several important food crops (1). A number of *in vitro* studies indicate that tocotrienols have high antioxidant activity (2) as well as anticancer activity (3). For instance, delta-tocotrienol (Delta), a natural form of vitamin E, was shown to have anticancer activity against pancreatic cancer. However, there are no data about Delta antioxidant effect against the OTA-induced nephrotoxicity.

Materials and Methods: In this study we have evaluated the *in vivo* effects of Delta on glomerular filtration rate (GFR), as measured by inulin clearance, as well as the blood pressure (BP) in the