

OCCUPATIONAL EXPOSURE TO MYCOTOXINS IN SWINERIES

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Occupational exposure to aflatoxin B₁ (AFB₁) in swine farms was already reported (Viegas et al., 2013) and showed positive findings for AFB₁ by ELISA in blood samples from workers that work in those farms. However, data regarding fungal contamination showed that exposure to other mycotoxins could be expected.

STUDY DESIGN

A study was developed to analyze if exposure to further mycotoxins was occurring. Occupational exposure assessment to mycotoxins was done with a LC-MS/MS urinary multi-analyte approach (Gerding et al., 2014). Besides urine samples (25 workers and 19 controls), litter (n = 5), feed (10) and air samples (23) from swine farms were also analyzed by LC-MS/MS.



RESULTS

- ✓ Deoxynivalenol, zearalenone, 15-Acetyldeoxynivalenol, 3-Acetyldeoxynivalenol, fumonisins (FB1, FB2 and FB3), mycophenolic acid and sterigmatocystin (STE) were the most prevalent mycotoxins on litter and feed samples.
- ✓ All **litter samples** presented contamination by STE.
- ✓ All **feed samples** showed contamination by several mycotoxins (between 9 to 17 mycotoxins in the same sample).
- ✓ Regarding **air samples**, only two samples have quantifiable values of STE.
- ✓ **Workers urine samples** showed quantifiable results for deoxynivalenol-glucoside (DON-GlcA) (52%), ochratoxin A (4%), Aflatoxin M1 (16%) and citrinin (CT) (4%). For the **control group**, only CIT presented one quantifiable result.

CONCLUSIONS

- ✓ Litter and feed samples presented multiple contamination and are probably responsible for workers exposure.
- ✓ Workers are exposed to several mycotoxins simultaneously.
- ✓ Further studies should be developed to identify possible contamination trends in this workplace environment and to determine the variables that can influence contamination and workers exposure.
- ✓ Mycotoxins should be considered an occupational risk factor in this setting and risk management measures should be defined.
- ✓ Occupational Health surveillance programs should be implemented.



Gerding J, Cramer B, Humpf H-U (2014) Determination of mycotoxin exposure in Germany using an LC-MS/MS multibiomarker approach. Mol Nutr Food Res 58(12):2358–2368. <https://doi.org/10.1002/mnfr.201400406>.

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