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Assessment of mycotoxin occurrence in feed samples from the veal calf industry

Antonissen G.[1,2] *, Valgaeren B. [3] *, Detavernier C. [4], De Saeger S. [4], Van Pamel E. [5], Daeseleire E. [5], Pardon B.[3], Ducatelle R. [1], Deprez P. [3], Croubels S. [2]

1) Department of Pathology, Bacteriology and Avian Diseases, Faculty of Veterinary Medicine, Ghent University, Salisburylaan 133, 9820 Merelbeke, Belgium
2) Department of Pharmacology, Toxicology and Biochemistry, Faculty of Veterinary Medicine, Ghent University, Salisburylaan 133, 9820 Merelbeke, Belgium
3) Department of Large Animal Internal Medicine, Faculty of Veterinary Medicine, Ghent University, Salisburylaan 133, 9820 Merelbeke, Belgium
4) Department of Bio-analysis, Faculty of Pharmaceutical Sciences, Ghent University, Harelbekestraat 72, 9000 Ghent, Belgium
5) Institute for Agricultural and Fisheries Research, Technology and Food Science Unit, Brusselsesteenweg 370, 9090 Melle, Belgium

*contributed equally to this work

E-mail: Gunther.Antonissen@UGent.be / Bonnie.Valgaeren@UGent.be

The veal industry specializes in rearing dairy and beef calves on a controlled low-iron diet to obtain white veal meat. The calves are fed a milk replacer, mainly based either on skimmed milk powder or on vegetable protein. In recent years, roughage and low-iron concentrates have been added to the diet to ensure better rumen development and ensure a better welfare for the animals. The aim of this study was to evaluate the mycotoxin contamination of feed samples from the veal industry. In this pilot study, 45 feed samples were collected from 15 different veal farms in Belgium. On each farm 3 to 6 samples per feed component, respectively milk replacer, roughage (straw or corn silage) and concentrate feed, were collected and subsequently pooled per feed component. Samples were analysed by validated multi-mycotoxin (UHP)LC-MS/MS methods (Monbaliu et al., 2010; Van Pamel et al., 2014). About 13% of the milk replacer samples were contaminated with fumonisin B_1 and fumonisin B_2, with an average contamination level of respectively 32 ± 7 and 13 ± 1 µg/kg. None of the other mycotoxins included in the detection method were found in these samples. However, all roughage and concentrate feed samples were contaminated with at least one mycotoxin. Deoxynivalenol (DON) was most prevalent, contaminating 80% of the roughage samples (average concentration in positives: 637 ± 621 µg/kg, max. 1818 µg/kg), and all concentrate samples (411 ± 156 µg/kg, max. 693 µg/kg). Also the DON conjugates 3- and 15-acetyl-DON were present in 40% of the feed samples. It remains to be determined whether these conjugates contribute to the total DON contamination, e.g. by in vivo hydrolysis. Besides DON, also enniatin B was highly prevalent (73% of the samples). Other mycotoxins detected were alternariol, diacetoxyscirpenol, HT-2 toxin, T-2 toxin, neosolaniol, nivalenol and zearalenone.

This survey demonstrates a multi-mycotoxin contamination in veal feed samples, especially in roughage and concentrate feed. The contamination levels are comparable with previous published mycotoxin surveys in feed for other animal species (Monbaliu et al., 2010; Streit et al., 2013). Mycotoxin occurrence in veal feed will not affect food safety. However, further research is necessary to evaluate the effect of mycotoxins on animal performance.

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