

PREVALENCE OF FUNGI AND MYCOTOXINS IN SILAGE AND MILK IN LITHUANIA

Violeta Baliukonienė, Bronius Bakutis, Toma Vaivadaitė, Elena Bartkienė, Jurgita Jovaišienė

¹*Department of Food Safety and Quality*

Veterinary Academy of Lithuanian University of Health Sciences

Tilžės 18, LT-47181 Kaunas, Lithuania; Tel. +370 37 36 32 08; E-mail: violeta.baliukoniene@lva.lt

Abstract. The aim of this study was to estimate silage contamination with fungi and mycotoxins and milk contamination with aflatoxin M₁ in Lithuania. During 2008 and 2009, silage samples of different botanical composition and samples of raw milk were collected from different agricultural enterprises in Lithuania. The determined fungi spores count in grass mixture silage from bales was by 23.8% ($p>0.05$) higher than in clover silage and by 86.7% ($p<0.05$) higher than in ryegrass silage from bales. In grass mixture silage taken from trenches, the fungi spores count ranged from 0.0 to 19.0 log₁₀ CFU/g and in maize silage from trenches it ranged from 0.0 to 175.0 log₁₀ CFU/g. In the different botanical composition silage samples, the most frequently occurring genera were *Aspergillus* sp. (0.9–15.7%), *Penicillium* sp. (1.2–12.6%), *Rhizomucor* sp. (3.1–15.6%), *Rhizopus* sp. (0.6–14.3%). The highest mean levels of mycotoxins AFL (total), DON, and ZEN were detected in ryegrass silage from bales: AFL (total) – 21.2±3.9 µg/kg, DON – 471.0±65.6 µg/kg; ZEN – 397.5±83.5 µg/kg. By comparison of silage produced using different technologies, contamination with AFL (total) and DON concentrations was detected 14.0% ($p>0.05$) and it was by 24.0% ($p>0.05$) higher in silage from bales. ZEN concentration in silage from bales was by 3.0% ($p>0.05$) lower than in silage from trenches. When the total AFL in ensiled forages of dairy cows ranged from 0.0 to 27.0 µg/kg, the average concentration of AFL M₁ in cows' milk was 0.019±0.01 µg/l. The main finding of this paper is that silage preparation technology had no significant impact on the studied mycotoxicological indicators. Raw materials were more important in this respect.

Keywords: cows, fungi, milk, mycotoxins, silage.