

# A recent survey of twelve common mycotoxins contamination in wheat in western Canada

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Mycotoxins are naturally occurring toxic secondary metabolites produced by fungi. Ingestion of contaminated foodstuffs by animals can cause carry-over of mycotoxins, for example into milk, animal tissues or eggs. The aim of this study was to evaluate the occurrence of mycotoxins contamination in wheat samples. Sixty wheat samples were randomly selected during May and June 2016 in western Canada. Twelve common mycotoxins, including nivalenol (NIV), deoxynivalenol (DON), 3-acetyldeoxynivalenol (3-ADON), 15-acetyldeoxynivalenol (15-ADON), ochratoxin A (OTA), zearalenone (ZEN),  $\alpha$ -zearalanone ( $\alpha$ -ZAL),  $\beta$ -zearalanone ( $\beta$ -ZAL), diacetoxyscirpenol (DAS), T-2 toxin (T2), HT-2 toxin (HT2), and aflatoxin B1 (ATB1), were determined by liquid chromatography/tandem mass spectrometry method at Prairie Diagnostic Services Inc. Results showed that 15 (25.0%) wheat samples were contaminated with mycotoxins (mean concentration:  $390.0 \pm 1896.3$  ppb). For DON, 3-ADON, 15-ADON, OTA, ZEN, and HT2, the contamination rates were 16.7%, 6.7%, 1.7%, 6.7%, 3.3%, and 5.0%, and their mean concentrations were  $374.1 \pm 1861.8$ ,  $6.6 \pm 27.3$ ,  $1.8 \pm 14.1$ ,  $2.17 \pm 8.5$ ,  $2.5 \pm 16.5$ , and  $2.8 \pm 14.8$  ppb, respectively. None of the samples was contaminated with NIV,  $\alpha$ -ZAL,  $\beta$ -ZAL, DAS, T2, or ATB1. The concentration of DON and OTA in 4 samples (6.7%), HT2 in 3 samples (5.0%), and ZEN in 1 sample (1.7%) exceeded the regulatory limits for mycotoxins in dairy cattle diets. In conclusion, the concentration of DON, OTA, and HT2 in wheat deserves greater attention and regular monitoring. Rapid, non-destructive, and cost effective screening methods based on molecular spectroscopy techniques are highly expected.