

ACOUSTIC SCREENING METHOD FOR THE DETERMINATION OF DEOXYNIVALENOL (DON) IN WHEAT

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Summary. Mycotoxins in food and feed are considered important safety issues of growing concern. Most scientific developments have occurred in the last decades in the area of mycotoxins. Limits and regulations for mycotoxins in food and feed have been established in many countries. Quantitative methods of analysis for regulatory purposes for mycotoxins often make use of laborious and complicated procedures such as of immuno affinity cleanup with Liquid Chromatography (LC) or Gas Chromatography (GC) separation techniques in combination with various types of detectors, including Mass Spectrometry (MS). Therefore, there exist the drive for newer developments in mycotoxin methodology and analysis for screening purposes. These methods include (bio-) sensor-based techniques and non-invasive methods based on infrared and other techniques. Very important mycotoxin from an economic point of view and less from a health point of view is deoxynivalenol (DON) or vomitoxin. DON is a toxin formed by fungi of the genus *Fusarium* and occurs mainly on grains and corn. The aim of the present study was to use such a screening technique as an existing acoustic method to determine the specifically structural changes of grains by *Fusarium graminearum* resulting in shriveled grains and determine via correlations DON in the contaminated grain. The structural properties of wheat were evaluated according to the value of the amplitude of the acoustic signal penetrated through the tested sample of wheat and the amplitude of the short impulse reflected from the tested sample. High correlations confirmed by ELISA (RIDASCREEN) in a calibration experiment between the with DON contaminated wheat sample and the different amounts of shriveled kernels in mixtures determined by the acoustic method were found. The investigations show that the acoustic method was sufficient precise, non-invasive and could be successfully used for an effective control- and screening- of cereals contaminated with *Fusarium* species.

Key words: deoxynivalenol, contaminated grains, acoustic method.