Title	Determination of type B trichothecenes and macrocyclic lactone mycotoxins in field contaminated maize
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Abstract

A sensitive, reliable liquid chromatography-tandem mass spectrometry (HPLC-MS/MS) method for determining some commonly found mycotoxins produced by *Fusarium* strains in maize was evaluated and applied to field samples. The selected substances were: trichothecenes B (nivalenol, deoxynivalenol, fusarenon X, 3- and 15-acetyldeoxynivalenol) and some macrocyclic lactones (zearalenone, α- and β-zearalenol, zearalanone, α- and β-zearalanol). Analytes were extracted from a 1 g sample by homogenization with acetonitrile/water (75:25, v/v, 25 mL final volume). 5 mL of crude extracts was cleaned-up on Carbograph-4 cartridges. Two fractions were obtained and were analyzed by HPLC-electrospray ionization (ESI) in negative mode. Recoveries for spiked maize samples were in the range 79–106% and method detection limits (MDLs) were ≤ 6 ng/g for all compounds, except fusarenon X (12 ng/g). 25 random maize samples were analyzed both by the ELISA-based methods specific for deoxynivalenol and zearalenone and by this method for trichothecenes B and macrocyclic lactones. Results were comparable for zearalenone ($R^2 = 0.982$), but disagreed for deoxynivalenol. Finally, a total of 78 freshly harvested maize samples, collected from central and northern Italy during 2002, and divided in two different experiments, were analyzed by the developed method. Data show that there exists a phenomenon of random contamination from the target fusariotoxins just before harvest and an increase of trichothecene B and zearalenone abundance on field crop possibly related to damp climate, temperature range and delayed harvest period. Deoxynivalenol was the most abundant (up to 3430 ng/g) and frequent mycotoxin (40%) detected, followed by acetyldeoxynivalenol. Derivatives of zearalenone were present in traces and β-zearalanol was never found.