Poster Abstract

Contamination of rice by various mycotoxins after inoculation: development of a UPLC-MSMS method

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Introduction

The main aim of this work consists in developing a multi-mycotoxins method applicable to various matrices. Among the mycotoxins to be detected the trichotecenes are often found (DON, 3 and 15 acetyl-DON, Nivalenol, zearalenone, zearalanone, α and β zearalenol, α and β zearalanol). The samples consist of rice grains inoculated with *Fusarium graminearum*.

Material and methods

28 rice samples were inoculated by means of stocks of *Fusarium graminearum*, isolated at the time of the season 2007, particularly favourable for development of these fungi. The extraction of the mycotoxins was done by means of a methanolic solution with 70%. An analytical screening was carried out on the extracts to highlight the presence of 14 mycotoxins. This screening was followed by the quantification of the detected mycotoxins.

Results

The development of the chromatographic method is difficult because of the similarity of the molecules from the ZEA group and the use of the mass spectrometry is essential to the detection and the quantification of the six compounds. The calculations carried out by linear modelisation led to concentrations identical to those obtained with a quadratic model. The linear model was thus be preferred as the calculations are much more simple.

During the quantifications carried out for the DON and its derived compounds, the presence of DON-glucoside was detected in all the samples. Moreover, the content of Acetyl-DON could be correlated with the content of DON : it accounts for approximately 7% of the DON.

Preliminary analytical screening made it possible to detect the presence of zearalenone, zearalanone, α and β zearalenol besides the DON, the acetyl-DON and DON-glucoside.

Conclusions

An analytical method of screening was developed in UPLC-MSMS to allow the detection of mycotoxins in rice grains. This method, applied to rice samples inoculated by *F. graminearum*, showed the presence of various toxins: DON, Acetyl-DON, DON-glucoside, zearalenone, zearalanone, α and β zearalenol. The results obtained raise the question of the expression of the result: is it necessary to give an individual quantification of the compounds or to gather it in a form "DON equivalent" or " ZEA equivalent " ? This form of expression could include the concept of toxicity, as it is the case for PCBs.