Introduction

Mycotoxins are heat-resistant fungal secondary metabolites that can be found in crops, grains, and foods of animal origin. They are a significant problem in the food industry as they can cause economic losses and pose health risks to humans and animals. Due to the importance of detecting and quantifying mycotoxins, a rapid and sensitive automated online sample preparation LC-MS/MS method was developed to detect and quantify multiple mycotoxins in corn meal extract and also to shorten assay time and increase throughput.

Methods

Five grams of raw corn meal purchased from a local grocery store was extracted using 25 mL of 70% methanol in water followed by 60 minutes of ultrasonication. The extract sat overnight at room temperature. A 10% volume/volume solution of the extract was prepared for analysis.

LC/MS Methods using positive ESI mode (Method A):

Solvent A: water
Solvent B: 0.1% formic acid in ACN

Analytical Column: Hypersil GOLD™ column 2.1 x 50 mm, 1.9 μm

Mass Spectrometer Parameters

Sheath Gas (N2): 50 arbitrary units
Vaporizer Temp: 209 °C
Capillary Temp: 270 °C
Collision Gas: 1.5mTorr

Results and Discussion

Figure 4 shows the comparison of chromatograms of 8 positive analytes at 1:100 dilutions in methanol and corn meal extract. AICD and DON show matrix effects due to matrix-induced ionization variability, which was previously reported by others. In future work, the incorporation of a linear dynamic range might be used to compensate for the matrix effect.

Conclusion

The simple and easy-to-use LC-MS/MS method reported here is a rapid and sensitive automated online sample preparation method that can be used to detect and quantify multiple mycotoxins in corn meal extract. The results may be used by eliminating sample preparation, the necessity of the sample to be analyzed will be reduced, and the quality of the work will be improved further. Finally, the method is more rapid and cheaper than traditional methods.

References

7. Rahmani, A., Jinap, S., Soleimany, F. 2008. Results and Discussion

The LC method with eight positive analytes at 1:100 dilutions in methanol and corn meal extract. Including excellent chromatographic separation in both solvent and matrix. Matrix effect calibration standards were prepared in three different concentrations of corn meal extract. The response factors were used to calculate the concentration of the analytes in the matrix. The results showed that the matrix effect was not significant. The analytes were detected in corn meal extract at concentrations below the limit of quantification. The results showed that the matrix effect was not significant. The analytes were detected in corn meal extract at concentrations below the limit of quantification.