FACULTY OF **BIOSCIENCE ENGINEERING**

Integrated risk assessment of selected mycotoxins in fresh produce and derived food products throughout the food chain, affected by climate changes and globalization

E. Van de Perre[1], L. Jacxsens[1], N. Deschuyffeleer[1], F. Devlieghere[1],B. De Meulenaer[1]
[1]Department of Food Safety and Food Quality, Ghent University, Ghent, Belgium

Veg-i-trade project

Fruits and vegetables are an import part of a healthy diet, and their consumption is expected to increase in the future because of health promotion. However, **climate change** and **globalization** will effect their safety. In order to maintain the desired level of food safety in Europe, it is necessary to explore new food contamination pathways and approaches to deal with these projected changes.
An imported food safety problem is the **presence of emerging toxigenic fungi and their mycotoxins on fresh fruits, vegetables and derived products.**
This research is performed in the frame of veg-i- trade project (www.veg-i-trade.org).

Objective

Screening of mouldy products (tomatoes, bell peppers, onions and soft red fruits) to inventarise the relevant **moulds** and **mycotoxins** present on fresh produce and derived food products

Research

Screening with **HPLC** method for patulin on tomatoes, bell peppers, soft red fruits and onions and derived products.

To screen for **patulin** we performed an non quantitative method with an HPLC with an extraction method described by Sanzani et al. (Sanzani et al. 2009). Preliminary results showed a presence of 14% of patulin in mouldy tomatoes (15 out of 107).
In the future we will screen for patulin in mouldy onions, soft red fruits, sweet bell peppers and their derived products. Fig. 1 gives the result of the screening on mouldy tomatoes.

Fig. 1: Result of screening with HPLC for patulin in mouldy tomatoes: 15 out of 107 mouldy tomatoes tested positive for patulin

Screening with a **LC-TOF-MS** method on tomatoes, bell peppers, soft red fruits and onions and derived products for ochratoxin A, *Alternaria* species (alternariol, alternariol monomethyl ether), fumonisin B1, B2 and B3.

The MS parameters were tuned for each mycotoxin and both positive and negative electrospray conditions were checked. It was decided to screen for the mycotoxins in two separated runs (positive and negative electrospray run). The six mycotoxins (**ochratoxin A, alternariol, alternariol monomethyl ether, fumonisin B1, B2 and B3**) can be screened in one sample in a relative short time of one hour.

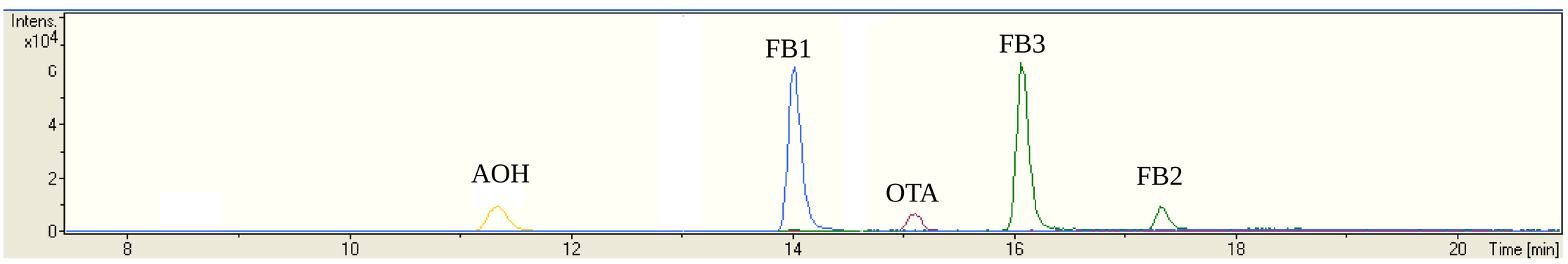

Fig. 2: LC-MS spectra (ESI positive) of alternariol (AOH), ochratoxin A (OTA) and fumonisin B1, B2 and B3 (FB1, FB2, FB3)

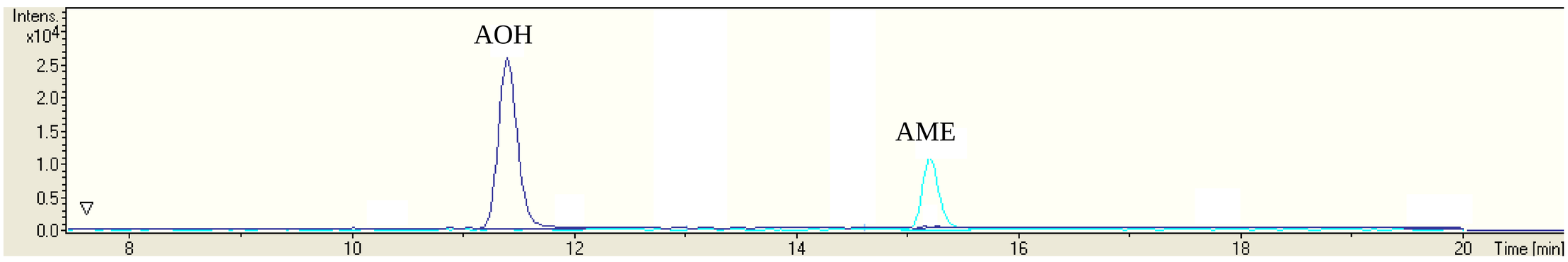

Fig. 3: LC-MS spectra (ESI negative) of alternariol (AOH) and alternariol monomethyl ether (AME)

Future work

The objective of the research is to **develop a farm-to-fork risk assessment model** to predict the mycotoxin concentration in fresh and derived products in order to predict future risks due to climate change and growing import of foods from third countries.

For more information: Tel. ++32 9 264.61.61 Fax ++32 9 264.62.15 E-mail: Evelien.Vandeperre@UGent.be, Bruno.DeMeulenaer@UGent.be
http://www.nutriFOODchem.UGent.be
http://www.veg-i-trade.org/