Background Information

<table>
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<th>Starting Date: 1st May, 2012</th>
<th>End Date: 30th April, 2014</th>
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<tbody>
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<td>Total Cost: 10,000,000</td>
<td>Total Cost: Belgium side nd equivalent EUR</td>
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<tr>
<td>Chinese Side Coordinator: Prof. Dabing Zhang</td>
<td>Belgian Side Coordinator: Prof. Sarah De Saeger</td>
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Participants:
Chinese Side: Shanghai Jiao Tong University, Shanghai Food and Drug Administration, China Agricultural University, Huazhong Agricultural University and Shanghai Academy of Agricultural Sciences
Belgian Side: Ghent University, Université catholique de Louvain, CODA-CERVA, University College Ghent

Objectives & Achievements

The objectives and contents of the research project are:

1). Survey of Chinese food samples to assess mycotoxin dietary exposure. Important food products, such as peanuts, cereals and banana will be analysed for their mycotoxin content. Samples will be analysed at SJTU by liquid chromatography-mass spectrometry (LC-MS/MS). Expertise present at UGent and CODA-CERVA will be transferred to SJTU and Shanghai FDA in the following ways. Chinese scientists will be trained at UGent and CODA-CERVA; Belgian researchers will further assist in setting up the LC-MS/MS methods in China.

2). Development of rapid mycotoxin tests. Fast screening tests can substantially reduce costs and time of analysis. Therefore enzyme-linked immunosorbent assays (ELISA) and lateral flow dipsticks (for on-site use) will be developed at CAU and SJTU. For the antibody development UGent will prepare appropriate immunogens in cooperation with CAU and SJTU. Evaluation of commercial rapid mycotoxin ELISA test kits CODA-CERVA, the Belgian national reference laboratory (NRL-LRN) for mycotoxins, evaluates the fast immunoassay-based mycotoxin test kits that are currently available on the market. Kits for deoxynivalenol, ochratoxin A and aflatoxins in cereals were assessed. The assessment is subdivided in three parts: an inventory of all kits available for the mycotoxin of interest, a desktop evaluation of the validation dossiers delivered by the manufacturers (mainly focusing on accuracy, precision and legal compliances) and an experimental evaluation performed in the laboratory. The main points verified in the experimental part are accuracy (bias towards a reference
value), matrix effects, LOD and cross-reactivity (analogues or other mycotoxins) in three matrices: wheat, winter barley and oats. CODA-CERVA will assist the Chinese partners in the comparison of rapid tests kits available on the Chinese market.

3). **Production of reference materials.** A suitable Fusarium (or other fungus) species/strain is selected and used for inoculation of a small quantity of cereal grains. The amount needed can be calculated from the total quantity which has to be produced. A specific homogenization scheme is then used to distribute the highly contaminated inoculum in the final food/feed product. This process can be used also to produce a multi-mycotoxin contaminated food/feed. Currently a material containing DON, T2, ZEA, enniatins and beauvericin has been produced by CODA/CERVA and MUCL. The whole process is followed by LC-MS/MS analysis in order to check the homogeneity and the stability of the reference material.

4). **Organization of workshops in Belgium and China.** Two workshops will be organized during the project, one in China, one in Belgium. Chinese and Belgian experts will disseminate their knowledge and expertise on Fusarium and mycotoxins by oral presentations.

**Achievements include:**

1) Establishment of LC-MS/MS based quantitative methods for simultaneous detection of multiple mycotoxins from different food matrixes with the sensitivity reaching ng level, providing a solid platform for latter high throughput toxigenic phenotypic analysis on a large scale screening;

2) Establishment of the methods for novel metabolite identification based on high resolution mass spectrometry;

3) Build-up of the system for the production of matrix standard materials for Fusarium toxins;

4) Construction of in vitro toxicology system, and characterizations of the metabolic kinetics of cT-2, AFB1, OTA, and DON

5) Publication of 16 SCI articles;

6) Production of serial single clonal antibodies and mycotoxin detection kits and products;

7) Establishment of the “Shanghai Jiao Tong University-Ghent University Joint Laboratory of Mycotoxin Research”;

8) Organization of two workshops in Belgium and China

**Profile of the Testimonial Speaker**
Dr. Jianxin Shi received his B Sc. from Shanxi Agricultural University in 1988, MSc. from Southwest University in 1991, and PhD from the Hebrew University of Jerusalem, Israel in 2007. From 1991 to 2001, he worked in Shanxi Academy of Agricultural Sciences as an assistant to associate professor. Between 2007 and 2010, he was a post-doctorate researcher in Weizmann Institute of Science, Israel. Dr. Shi joined Shanghai Jiao Tong University in the end of 2010 as an associate researcher. His research interests focus on food safety, GMO safety, metabolomics, and plant cuticle biology. He also participated in another FP7 project (613908) on GMO. He published more than 30 SCI papers, granted 3 patents, and won 3 provincial prizes on Sci. and Technol.