PROGRESS REPORT (January 2020)

WP4: Implementation of innovations in food safety

BACKGROUND

Differences in licensing, regulations and food testing methods have huge potential to disrupt international trade. A EU-China research programme focussing on meat, dairy products and, fruits and vegetables will be undertaken to address these issues. The strengths of each method will be assessed and modified if necessary for future technology readiness and application.

OBJECTIVES

- To address current challenges and gaps in food safety testing through the implementation of new or improved analytical methods.
- To transfer analytical methodology and harmonise testing between China and the EU.
- To improve the safety and quality of food consumed in Chinese and European markets.
- To improve the food safety infrastructure in both China and the EU.

PROGRESS ACHIEVED SO FAR

- Multi-analyte UHPLC-HRMS method was developed by VSCHT and validated for screening of 425 analytes covering the classes of pesticides (n = 357), mycotoxins (n = 57) and plant toxins (11) in fruit, spices and teas. The method uses a rapid QuEChERS-like sample preparation, which allows the processing of large numbers of samples in a single day.
- A new high throughput method was established for the determination chlorate and perchlorate residues in milk and milk powders using LC-MS/MS. The chlorates method has been further improved since the last report through the use of a more sensitive LC-MS/MS instrument that speeds up sample preparation.
- AZTI has developed a multianalyte enzyme inhibition screening method for pesticides residues showing high affinity towards 13 active substances. Work on the sample preparation protocol is ongoing.
- The methodology for the analysis of eight nitrofurans has been validated following the synthesis of new commecrially available isotopically labelled standards at Teagasc.
- FERA staff have written training content covering agreed topics on Food Contact Materials, which will be shared with CFSA staff.
- Sample preparation and LC-MS/MS detection methods was established at Teagasc for 13 antiviral drugs in meat. The test has recently transferred to a more sensitive LC-MS/MS to improve selectivity and sensitivity. A robust sample preparation procedure has been developed an amide column,which provides the most robust retention and separation of antiviral drugs.
- Standardized operating protocols were developed for whole genome sequencing of three selected food-borne pathogens and transferred to Chinese collaborators.

SUCCESS STORY COMING SOON

- Methodology for the analysis of chlorate and perchlorate residues was transferred to CDC and CFSA laboratories in April 2018. Beijing CDC are currently drafting a Chinese National standard using this method.
- An accurate and sensitive method has been developed and validated for the determination of bound residues of eight nitrofuran drugs including, new novel nitrofurans, namely, nifuroxazide, nifuraldezone, and nitrovin.
- The method for the analysis of chlorate and perchlorate residues has now been validated on Agilent and Waters LC-MS/MS instruments.
- A number of papers are in preparation on chlorate and nitrofuran residue analysis.