PROGRESS REPORT (June 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. The methododoly is currently transferred to the Chinese partner.
- A new high throughput method, established for the determination chlorate and perchlorate residues in milk and milk powders using LC-MS/MS, has now been fully validated by Teagasc and has been submitted for accreditation.
- 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 was fully validated in the muscle of avian, bovine, ovine and porcine species.
- 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. Work has commeneced on the addition of antiviral drugs that could be potentially used against COVID-19 and African Swine flu. Although this will be most likley a separate method.
- Standardized operating protocols were developed for whole genome sequencing of three selected food-borne pathogens and transferred to Chinese collaborators. The methodologies are currently being trialled in Chinese laboratories.
- Chinese partner, CAU, has developed several rapid kits for the detection of antiviral drugs and aminoglycoside antibiotics. Antibodies have been produced to nitrofuran target analytes and will be used to develop new rapid test methods.

SUCCESS STORY COMING SOON

- Multi-analyte UHPLC-HRMS method developed by VSCHT will be establsihed in Chinese laboratories.
- The new LC-MS/MS method for nitrofuran drugs will be transferred to Chinese laboratories shortly.
- Two new methods developed for the analysis of influenza and swine flu drugs in chicken muscle.

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