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www.euchinasafe.eu

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Welcome to the 3rd edition of the EU-China-Safe e-Newsletter.

EU-China-Safe is four and half years EU funded project that aims to mobilise resources in Europe and China to develop a cohesive partnership that will deliver a shared vision for food safety and authenticity and work towards "mutual recognition".

Comprising 15 participants from the EU and 18 from China, EU-China-Safe contains key research organisations, government and industry needed to develop and jointly implement major advances in improving food safety and combating food fraud in the two trading blocks.

The aim of this newsletter is to provide you with a brief summary of the project and update you on some of the progress and project activities. We hope you find the newsletter useful.

Chris Elliott and Yongning Wu,
EU-China-Safe coordinators

EU-China-Safe IN A NUTSHELL:

Key facts:

Horizon 2020 Project
Type of action: RIA

Acronym:

EU-China-Safe

Website:

www.euchinasafe.eu

Duration:

54 months
September 2017 - February 2022

Co-ordinators:

prof. Christopher Elliott, QUB, Belfast, UK &
prof. Yongning Wu, CFSA, Beijing, China

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Strategic objective of EU-China-Safe is:

To develop and implement a shared vision of best practice within the EU and China that will enhance food safety, deter food fraud, restore consumer trust, deliver mutual recognition of data and standards and support the flow of agri-food trade between the two trading blocks to promote economic growth.

EU-China-Safe will build the core components needed for a joint EU-China food safety control system comprising: control management, food legislation, food inspection, food control laboratories, and food safety and quality information, education and communication.

The project will develop an EU-China Joint Laboratory Network that will achieve and demonstrate equivalency of results, and will develop a state of the art virtual laboratory, with interchangeable staff from two continents, that will be used as a "showcase" to communicate and demonstrate best practice. Innovative traceability tools will strengthen the most vulnerable supply chains. New or improved detection capabilities for chemical/microbiological hazards and food fraud will be implemented in a harmonised way across the EU-China network. Trade barriers caused by food safety and fraud issues will be analysed and recommendations of how to predict and prevent future events disseminated.

The project will focus on the most commonly reported foods linked to chemical and microbiological contamination and fraud (infant formula, processed meat, fruits, vegetables, wine, honey, spices).

Substantial knowledge transfer and training actions will build high-level and long-term collaboration, synergies and trust between a wide range of EU and China actors.

These advances, in addition to a wider range of confidence building measures towards food safety, authenticity and transparency, will address consumer expectations and facilitate an expansion of EU- China trade.

EU-China-Safe PROGRESS:

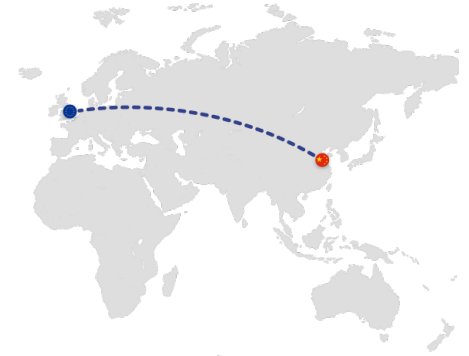### Implementation of innovations in food traceability

EU-China-Safe aims at exploring various traceability techniques and technologies of several products moving between Europe and China. The main challenge related to food product traceability is that there is not necessarily a connection between the actual properties of a food product and the claims made in the traceability system. The final outcomes will be a digitised, DNA-based traceability system using blockchain to provide trustable data. A suite of traceability management and collaboration tools designed to support open and transparent sharing of information between supply chain members in both the EU and China, aiming to prevent a major food safety crisis, and alerting tools to identify inconsistencies in data recorded in traceability systems will be developed.

Demonstration of a traceability example of pork moving from Cranswick farms to China was completed with DNA analysis.

The work in Development of risk-based traceability management tools, as well as the expansion of the arc-net platform in Pro-active Traceability Alerting tools, bringing alerting and warning systems to the existing traceability solution, was finalised. This brings opportunities to predict supply chain issues before they occur and identify them in real time as they do. By adopting these complete solutions into the food production industry, we can offer secure, trustable, and transparent traceability leading to increased safety and confidence in the EU-China supply chain.

Mapping the local-global wine supply chain from the Bordeaux region in France to China enabled identification and highlighted points of weakness. The mapping and analysis of the supply chain, and the indication of where fraud might happen was partly based on existing scientific literature, reports, and news stories, and partly on a number of interviews conducted with supply chain actors in France and in China.

Read the report on: [Mapping the local-global wine chain from Europe to China: Towards shared standards and benchmarks in wine traceability and authenticity](#)

Implementation of innovations in food authenticity

EU-China-Safe aims at developing, transferring knowledge and implementing innovative research methods and processes for combating food fraud. Methodologies for detection of food fraud developed both in the EU and China will be transferred both ways, from the EU to China, and from China to the EU. The methodology will focus on five product groups which are all very susceptible to fraud, i.e. wine, dairy products (infant formula), processed meat, organic fruit and vegetables, and spices. Methodologies are based on the latest technology and include state-of-the-art laboratory-based confirmatory methods. Handheld, portable machine vision based methods for on-site screening will be trialled. In most cases the Standard Operating Procedures (SOPs) of the existing methodology will be exchanged and the methods implemented in the laboratories of the other partners.

The methodologies, developed both in the EU and China from previous research and established practices, for the detection of food fraud, are being transferred and implemented both ways, from the EU to China, and from China to the EU. Authentication methods involve wine, infant formula, processed meats, organic produce, and spices. The method exchange and validation with industry partners have also been performed for some of the product groups.

The analytical outcomes of the spot check performed on the integrity of European wines on the Chinese market showed agreement of results between partners and high levels of proficiency for the chosen methods.

Furthermore, the wine results also point to a variety of applied fraudulent practices among the tested samples, highlighting wine as a product at a high risk of fraud. Seven methods were established for the detection of adulterants in infant formula, together with the completion of the first draft of the Chinese GB standard for the *Determination of Lactoalbumin in Infant Formula Foods and Milk Powder.* Methods for the detection of water retaining substances, carrageenan and glucomannan in meat, and for the screening of adulteration, show good potential for the fight against meat fraud. Portable light spectroscopy applications (SCiO and Specim IQ instruments) can be used as screening tools for pepper provided that the spectral database is expanded to develop more robust models which incorporate more (internal and external) product variation.

Look at the Methods for food authenticity testing (EU-China-Safe VIRTUAL REFERENCE LAB)

Read our latest papers:

Teresa M. Müller, Qiding Zhong, Shuangxi Fan, Daobing Wang, Carsten Fauhl-Hassek**: What's in a wine? – A spot check of the integrity of European wine sold in China based on anthocyanin composition, stable isotope and glycerol impurity analysis.** Food Additives & Contaminants: Part A (2021) Vol 38 (8).

Sara W. Erasmus, Lisanne van Hasselt, Linda M.Ebbinge, Saskia M. van Ruth: **Real or fake yellow in the vibrant colour craze: Rapid detection of lead chromate in turmeric.** Food Control (2021) Vol 121, 107714.

Schusterova D., Hajslova J., Kocourek V., Pulkrabova J.: **Pesticide residues and their metabolites in grapes and wines from conventional and organic farming system.** Foods (2021) 10(2) 307.

Implementation of innovations in food safety

EU-China-Safe aims at (i) addressing current challenges and gaps in microbiological and chemical food safety testing through the implementation of new or improved analytical methods; (ii) transferring analytical methodology and harmonise testing between China and the EU; (iii) improving the safety and quality of food consumed in Chinese and European markets; and (iv) improving the food safety infrastructure in both China and the EU.

Multi-analyte UHPLC-HRMS method was developed and validated for screening of 425 analytes covering the classes of pesticides, mycotoxins and plant toxins 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. Method has been transferred at Chinese laboratories and its applicability was verified through the interlaboratory study.

Another approach focused on development of a multianalyte enzyme inhibition screening method for pesticides residues showing high affinity towards 13 active substances.

The rapid LC-MS/MS methodology for the analysis of eight bound nitrofurans residues using a microwave-assisted derivatisation step and a modified QuEChERS-based sample extraction has been validated at EU partner laboratories, following the synthesis of new commercially available isotopically labelled standards. **Watch the video about this method**

A new high throughput method was established for the determination chlorate and perchlorate residues in milk and milk powders using LC-MS/MS and transferred from the EU to laboratories in China. The results of validation showed that the method is simple, rapid and highly sensitive, and suitable for the determination of these residues in dairy samples.

Sample preparation and LC-MS/MS detection methods were also established for 13 antiviral drugs in meat. Work has commenced on the addition of antiviral drugs that could be potentially used against COVID-19 and African Swine flu.

Standardized operating protocols were developed for the whole genome sequencing (WGS) of three selected food-borne pathogens and transferred to Chinese collaborators.

Training content covering agreed topics on Food Contact Materials, shared with the Chinese partners, has been also prepared.

Chinese partner (CAU) has developed a new ELISA method for the analysis of ribavirin in chicken muscle tissue.
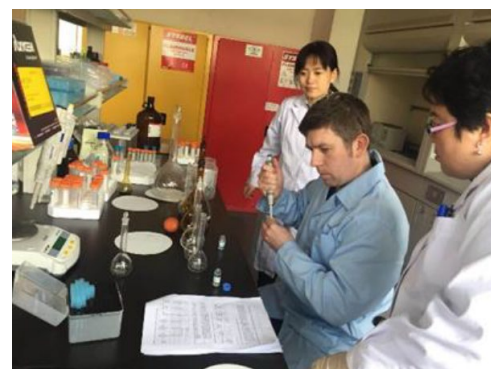
A method for the analysis of nitrite and nitrate in milk powder was transferred from China (CFSA) and is being set-up in the EU (Teagasc) laboratories.

Look at the Methods for food safety testing (EU-China-Safe VIRTUAL REFERENCE LAB)

Look at the methods on COVID-19 sampling and testing in food (EU-China-Safe VIRTUAL REFERENCE LAB)

Confidence building and trade facilitation

EU-China-Safe aims at building confidence in EU-China trade by improved understanding of consumer practices and regulatory frameworks, the latter by developing and demonstrating mutual recognition of laboratory standards and results. A virtual laboratory (RL2020) will be established to showcase new best practice, ensure harmonisation of laboratory procedures and to build confidence and mutual recognition of results. There will be a strong focus on exchanging best practices between the EU and China and will ensure that there is a full understanding of food safety and authenticity requirements to support compliance of exporting companies with both the EU and Chinese requirements, in support of enhancing bilateral trade of food/agri-food commodities. Emphasis will be placed on reaching consistent laboratory testing regimes as well as food safety standards underpinned by robust risk assessment, with the aim of bolstering consumer confidence in both jurisdictions.

The **Virtual laboratory RL2020** will assist within the field of harmonising food control in terms of analytical response and knowledge, and sharing the information and methods.

Watch the video about EU-China-Safe activities of virtual 'Reference laboratory 2020' (RL2020)

The dioxins method validation webinar is available in the RL2020 database as a training resource.

The analysis of consumer attitudes and barriers to trade arising from food safety incidents will enable action to be taken to reassure the consumer and to identify actions that may remove barriers to trade.

Read the report: **Report on (a) the results of qualitative stakeholder interviews (b) the food trade impediments between the EU and the PRC that can be attributed to differences in food safety measures, (c) the results of EU quantitative consumer survey**

CFSA in China has completed two consumer surveys, to examine Chinese consumer perceptions, trust and purchase intentions towards food products made in China and EU. The first (N>7000) found the majority of respondents (>90%) believe that natural raw food is safer than food produced and processed by the modern food industry, and 70% considered home made food safest. The second (N>3000) explored the finding from a previous survey that consumers were more concerned about chemicals in food than microbial contamination. It identified that the public and professionals view risk differently, trust in stakeholders is an important factor in determining how the public perceive risks and how receptive they are to messages.

Communication needs, expectations, perceived barriers and facilitators to building trust and confidence, and on consumer views have been analysed both within Europe and in China. An analysis of food trade impediments between the EU and China identified two commodities of interest (peanuts and infant formula milk). Data on causes of rejections and recall incidents associated with commodities traded between EU and China were analysed. Chinese peanuts were identified as the main crop rejected at the EU border due to aflatoxin B_1, while it was found Chinese rejection of EU foods were mainly caused by incompliant quality of dairy products. There has been engagement with key industry and government stakeholders to identify trade impediments associated with divergent safety standards. This indicated improved traceability for EU baby milk might become more important for future sales of this product in China.

Dissemination, exploitation and training

EU-China-Safe aims at transferring knowledge, together with training, that is the key instrument for reinforcing cooperation and increasing the level of collaboration as well as enhancing synergy between the EU and China in the food safety area. It will support the working synergies to be found between on-going EC projects and will maximise impact delivery in terms of improving safety of food supply and increasing consumer confidence in imported/exported agri-food products.

Training program for consortium members, external scientists and stakeholders has been developed in collaboration with EU and China partners, including e-learning tools to support worldwide knowledge dissemination to the community not involved directly in the training program.

Due to on-going pandemic COVID-19 most of EU-China-Safe training activities are organised virtually.

Various short-term and long-term training and education activities at different levels are running within the EU-China-Safe project training program. The training program will facilitate exchange of expertise and knowledge transfer among the participants within and outside the project consortium, and support both staff and young scientists in development of their careers.

9 short-term training courses and 3 options for scientists mobility program have been proposed by trainers centres, based on commodity (A) and analytical methodology (B) and other (C) approaches, considering following threats: (i) microbiological, (ii) chemical and (iii) food fraud, and one of the food products (i) processed meat, (ii) wine, (iii) fruits/vegetables, (iv) spices, (v) dairy infant formula. Well established experts´ institutes representing both academia, research and governmental organizations, and also having different expertise, acting as key trainers´ centres and also contributing to the preparation of other training materials, include: QUB, Belfast, UK; UCT Prague, Czech Republic; BfR, Berlin, Germany; TEAGASC, Dublin, Ireland; UCD, Dublin, Ireland; Wageningen UR, Wageningen, The Netherlands; JRC, Geel, Belgium; FERA, York, UK.

e-learning tools/webinar(s) to support worldwide knowledge dissemination to the community not involved directly in the training program have been developed.

Massive Online Open Courses:

Prepared in Collaboration with European Institute of Innovation & Technology (EIT) Food ([EIT Food](#))

Ö [Introduction to Food Science](#)
Ö [Revolutionising the Food Chain with Technology](#)
Ö [Farm to Fork: Sustainable food production in a changing environment](#)
Ö [Understanding Food Supply Chains in a Time of Crisis](#)

Workshops focused on various aspects of food safety and authenticity, aimed at knowledge transfer to the community of professionals, associations, industry and other potential end-users are organised with the inputs from all trainers' centres, and are also aimed at presenting the achievements of the EU-China-Safe partnership.

So far, 4 workshops have been organised by QUB, BfR and Nofima, on "Innovation in wine authentication analysis" (BfR), "Fake news Under the Microscope" (QUB), "THREATS TO OUR FOOD SYSTEM: The impact of climate change and legislative changes on the control of mycotoxins and antimicrobial agents" (QUB), and "Why laboratory methods are not enough: detecting and combating food fraud by analysing records and traceability" (Nofima).

In addition to the planned training program, **series of twinning activities** in response to the tasks of individual EU-China-Safe workpackages have been organised to support knowledge transfer on developed methodologies between EU and China project partners.

China International Food Safety & Quality Conference
October 27 - 28, 2021
JW Marriott Hotel Beijing Central

EU-China-Safe acts as the **partner of the** [China International Food Safety & Quality Conference (CIFSQ 2021)](#)**,** organised in October 27 - 28, 2021, Beijing, China.

Two sessions on "**China Intergovernmental Cooperation on S&T Innovation / EU Horizon 2020 Food, Agriculture and Biotechnology Flagship Project"** are supported by EU-China-Safe experts.

EU-China-Safe was represented at these scientific events, for example:

○ [FOOD INTEGRITY & AUTHENTICITY: Global Cooperation and Response to Food Integrity and China's Leadership](#), China International Food Safety & Quality Conference, November 4-5, 2020, Shanghai

○ [5th Asia- Pacific Food Safety International Conference (APFSIC 2021)](#) on 27-28 January, Hong Kong, China.

[Watch the video on EU-China-Safe HERE!](#)

EU-China-Safe scientists will be represented at **Virtual event highlighting current Trends & Views on RECENT ADVANCES IN FOOD (RAFA 2021)**, 3-4 November 2021, www.rafa2021.eu.

YOU ARE WELCOME TO JOIN US!

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Series of new scientific papers published by EU-China-Safe consortium:

[Look at the list of ALL SCIENTIFIC PAPERS HERE](#)

Do you want to receive information about EU-China-Safe (activities, newsletters, organised events...)?

Please **Sign up for stakeholder's database** [here](#).

We hope you have found this e-Newsletter interesting and informative. We would welcome your views on any of the issues covered. Please email at euchinasafe@euchinasafe.eu. Please feel free to distribute this EU-China-Safe e-Newsletter to other interested parties.

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