



e-Newsletter: Ensuring the Integrity of the European food chain

Issue No. 6 – November 2017



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Welcome to the Sixth FoodIntegrity Newsletter.

Very soon we will, unbelievably, be entering the last year of FoodIntegrity. The date and location for the 5th Annual FoodIntegrity Conference, which will coincide with the project's completion, has just been set. Put the date in your diaries.

5th FoodIntegrity Conference: 14th –15th November, 2018 in Nantes, France

It seems like an opportune time to report the opinions of some important stakeholders on FoodIntegrity's progress. The team at the Scotch Whisky Research Institute have used my guest editorial capacity to identify benefits seen by our own industry in its participation within FoodIntegrity. We also gain valuable insights from Eric Marin of the EU's Directorate General of Health and Food Safety and Simon Kelly of the United Nation's FAO/IAEA Joint Division.

The objectives of FoodIntegrity are inherent in many related EU projects, some of which will continue its legacy past its official completion date. This newsletter focuses on three such projects: Authent-Net, OLEUM and EU-China-Safe.

And finally, the FoodIntegrity project continues to produce results of benefit to industry, official food control, and consumers world-wide. One of the first project deliverables was the prioritisation of gaps in the application of scientific methods to food authentication. FoodIntegrity has been unique in commissioning additional packages of work to address these priorities. This newsletter briefly reports on initial results from work on rapid, on-site, cost-effective methods for fraud detection within the Iberian Pig industry. Future newsletters will focus on the outcomes from some of the other commissioned work.

Guest Editor, Ian Goodall – Scotch Whisky Research Institute

And don't forget, there are many ways by which you can still get involved with the project and keep up to date with news, events and activities. Don't hesitate to visit our web site at www.FoodIntegrity.eu or sign up as an expert or stakeholder in the [FoodIntegrity Network](http://FoodIntegrity_Network). Please contact us (foodintegrity@fera.co.uk) with any suggestions for improvement.

Perspective of Industry on FoodIntegrity:



The Scotch Whisky Research Institute Food Integrity Team

Meeting the needs of industrial partners

Ian Goodall, The Scotch Whisky Research Institute & Work Package 5 Leader

The Scotch Whisky Research Institute (SWRI) is the Research and Technical Organisation for the UK distilling sector. One of its key roles is the application of its scientific understanding of Scotch Whisky production for the benefit of its industrial membership, from raw materials to final product. However, the Institute also serves to represent the spirit drink sector's industrial needs within the wider research community.



This dual role has been to the fore in the SWRI's participation within the FoodIntegrity project. We have researched and developed techniques and resources to improve the authentication of EU spirit drink products. However, we have also acted as a voice to promote the needs of our sector in identifying and preventing fraud. We have been able to use key opportunities that the FoodIntegrity project has provided to explain these requirements to a number of solution providers. Successful collaborations have resulted, making use of experts from within the FoodIntegrity consortium as well as those that have engaged with the project through its wide range of workshops, conferences and other dissemination activities.

In our experience, the needs of industry can often be overlooked when it comes to designing and enacting research projects in the areas of food authentication. Technology providers and researchers with a novel application will develop and publish scientific studies that address the wrong problems, or fail to understand the complexities of a seemingly simple production process. Promised advances in spirit drink authentication often fail to live up to expectations as result.



The FoodIntegrity project, whilst making good use of the scientific expertise embedded in academic and research institutions, has incorporated a strong foundation of contributions from within the food industry. This has helped ensure that solutions and resources developed are both innovative *and* relevant. The initial Work Packages were designed with the needs of industry in mind. The following initiatives have been of particular note:

- the incorporation of Work Packages to specifically address authentication challenges associated with three key commodities: olive oil, spirit drinks and fish;
- the inclusion of a Work Package led by a major European food manufacturer, Barilla, to help ensure that the project's outcomes have sustainable impact for the food industry; and
- a study of Chinese consumer attitudes to the authenticity of European food products and the ways in which producers can provide quality assurances (with the added bonus of a focus on Scotch Whisky).

This said, I still think the industrial voice could be stronger within such large-scale collaborative projects as FoodIntegrity. There are always complications to achieving this objective, not least the highly competitive nature of the food industry and its resulting reluctance to share commercial information and publicise an area that can generate negative press. However, being able to demonstrate effectiveness in identifying and removing fraud throughout a food product's supply chain is often vital to a sector's sustainability and justifies industrial participation. The advances made in Scotch Whisky authentication from the collaborations established within FoodIntegrity will be a valuable legacy of the project.

Perspective of DG Health and Food Safety on FoodIntegrity:



Progress of the FoodIntegrity project and links with other current and possible future EU food research perspectives

Eric Marin, DG Health and Safety & Member of the FoodIntegrity Advisory Board

Recent food crises in the European Union have very clearly shown the need for such a project, the beginning of which predates the horsemeat crisis and therefore proved visionary and immediately demonstrated the increasing interest of European research in this field.

The participation of DG Health and Food Safety as a Board member in this vast project co-funded by DG Research (12 million Euros) has allowed the work to be steered towards the interests of the relevant authorities in this area and constitutes a concrete example of the use of the EU research budget for the Commission's strategic priorities.

The areas of the project that have been of particular interest to DG Health and Food Safety include:

- the development of a stakeholder platform, which fits within the strategy of strengthening cooperation to prevent and combat fraud and allowed the creation of a link with the EU FOOD FRAUD NETWORK (EU Member States' competent authorities);
- the knowledge database, a web tool that compiles available information on suitable analytical tools and associated reference data for the detection of food fraud;
- the identification of research gaps, i.e. in the field of analytical methodology;
- the early warning system, which will be of huge interest to the competent authorities and businesses.

As regards the identification of gaps, I would like to point out that research organisations tend to focus on advanced technologies. The regular updating and maintenance of these databases is costly. For the time being, it has proved difficult to use these results as irrefutable evidence in judicial proceedings. I believe that we also lack harmonised methods in certain sensitive sectors that are prone to fraud. We need to develop these further. An issue as simple as adding water or applying glazing to foods merits greater attention from the reference laboratories, to agree on harmonised methods for one of the most, if not *the* most common, types of food fraud.

One of the future challenges of the European Commission is the establishment of European Reference Centres for Food Authenticity as provided for in the new Official Controls Regulation which entered into force on 27 April 2017. No provision has been made in the 2018 budget to undertake the work needed for their establishment. However, in the meantime, the Commission's Joint Research Centre has proposed to set up a European Commission Knowledge Centre for Food Fraud. This will collect, check, structure and make easily accessible and comparable all the relevant data, knowledge and intelligence related to food fraud, making it readily available to Commission services regulating the food supply chain. I am confident that this platform will work as a good transitional tool for the projects of interest to the stakeholders by guaranteeing the durability of the concrete results obtained by the FoodIntegrity project.

Perspective of the FAO on FoodIntegrity:



Fresh eyes on the FoodIntegrity project

Simon Kelly, Joint FAO/IAEA Division of Nuclear Applications in Food and Agriculture & WP1 Leader

I was involved in the conceptualisation of the FoodIntegrity project whilst working at Fera and was fortunate to have a really strong team of core institutes collaborating on the submission, which led to the project being successfully funded in 2013. I left Fera in October 2013 but returned to the FI project in 2016 as a participant through the United Nation's FAO/IAEA Joint Division in Work Packages 1, 2, 10 and 11 and more recently as the WP1 leader.

What's really pleasing and satisfying is to see that all of the key planned activities have come to fruition. For example, the WP on gap analysis; recognising the wealth of existing information, has fed into the commissioning of €3M of highly relevant food integrity projects. These new projects have both enhanced and expanded the existing consortium. In addition, the FoodIntegrity knowledge base is in place and will be transferred to the European DG JRC Fraud Prevention and Detection Unit. This will ensure its long-term sustainability, an outcome that is often criticised as being overlooked in EU projects.

The success of the FI project can also be measured through the growing attendance at its annual conference and its activities to raise awareness of food adulteration, fraud and related safety issues outside the European Union. However, I believe FI has some way to go on raising awareness at an international level and consequently has yet to reach its full potential. Raising awareness of food fraud and adulteration fits well with the FAO, which is currently commissioning a study on food fraud in developing countries. This study is part of a series that seeks to explore the issue of food fraud and economically motivated adulteration in a number of FAO Member States. These investigations will characterise the scope and nature of the problem, the approaches to prevention and mitigation that countries have taken, major challenges and lessons learned. Ultimately the studies are intended to inform the global discussion on food fraud and to guide the FAO and member countries to recognize and address the challenges faced in tackling fraud.

With the outputs from the existing and new Workpackages, I see the FI project going from strength to strength. As the new WP1 leader, I plan to maintain this momentum with a series of promotional videos corresponding to the publishing of seven scientific opinions and various other activities, such as developing a range of food matrix reference materials dedicated to stable isotope analysis. We are also planning two one-day awareness raising workshops that will coincide with an IAEA Technical Cooperation conference in Africa and a food safety symposium in South America organised by the University of Cordoba. If you have any ideas for outreach activities, or would like to support these workshops, please get in touch.

FoodIntegrity ... Related Projects

Authent-Net – Strategic co-operation between Member State funding bodies to prevent food fraud



The profile of food fraud has never been higher than at the present time in Europe. With diminishing government budgets, there is a clear need for better cohesion and cooperation between funding bodies in Member States in order to work more strategically together and reduce duplication. Authent-Net is a 2-year H2020 Concerted Action that aims to fulfil that need.

From its start in April 2016, Authent-Net has been engaging with and "recruiting" funding bodies across Europe. Stock taking of research and surveillance activities, the funding landscape, mechanisms and priorities across 13 Member States has taken place. This information is currently being uploaded into a dynamic and sustainable European information platform, named the Food Authenticity Research Network Hub (FARNHub). This web-based portal, which will soon be accessible to all, provides users with a single interface related to most aspects of food authenticity, including papers and documents (scientific or other), ongoing projects, online databases, an overview of funding bodies with contact points, news stories, analytical methods and regulations.



A CEN Workshop Agreement (CWA) is also being developed that will propose terms and definitions for use in the area of food authenticity. The kick-off workshop for this work titled, "[Authenticity in the Feed and Food Chain](#)", was held in May 2017 in Parma, Italy.

All of the work within this Concerted Action is continuously reviewed by the funding organisations within the project as well as the funder network members that have participated in several international workshops in Dublin, Geel and Parma. The final output of Authent-Net will be a written Strategic Research Agenda agreed by the funders, outlining high level priorities and ways of working together in the future. A white paper will be written providing the rationale for an ERA-NET in the area of food authenticity.

For further information on Authent-Net and how to join, please visit the Authent-Net website at: www.authent-net.eu.

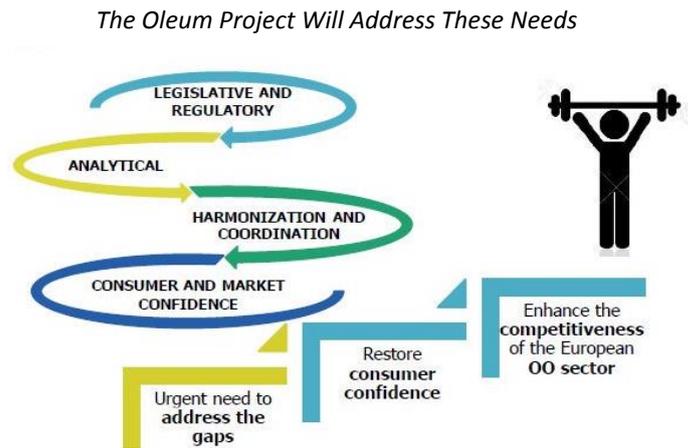
FoodIntegrity ... Related Projects



OLEUM - Better solutions to protect olive oil quality and authenticity

Europe is currently the largest producer of olive oil, accounting for more than 70% of the world's production. Non-EU countries are now starting to expand their domestic production, thereby increasing the competitiveness of the global olive oil market. This increased competitiveness, combined with expanding markets and a lack of efficient and harmonised analytical methods for detecting olive oil fraud, has led to significant weaknesses that can be exploited by counterfeiters.

OLEUM is a 4-year H2020 project coordinated by Prof. Tullia Gallina Toschi of the Department of Agricultural and Food Sciences of the University of Bologna, Italy. Twenty partners, covering fifteen countries, bring together competences from food analysis, food legislation, industrial equipment engineering, bioinformatics, communication and knowledge exchange. The overall objective of OLEUM is to better guarantee olive oil quality and authenticity by empowering detection and fostering prevention of olive oil fraud. Improvements in the quality, safety and authenticity of olive oils will boost consumer confidence and ultimately enhance the competitiveness of the EU olive oil market.



Designing the OLEUM Network

One of the strategic objectives of OLEUM is to develop and support a worldwide community of proficient analytical laboratories involved in the analysis of olive oil, therefore establishing a wide OLEUM Network.

Please contact us at OLEUM@fera.co.uk, if you are interested in joining.

Your opportunity to contribute to the OLEUM research activities

The OLEUM project has developed a questionnaire to identify information about current weaknesses in the olive oil regulations and analytical methods and to gather information about emerging frauds. To reach these goals, we need to collect information and opinions from many stakeholders involved in the olive oil sector. If you are interested and involved in the olive oil sector, please find the questionnaire [here](#). The questionnaire will take *only* about 5 minutes, is available in several languages.



FoodIntegrity ... Related Projects

EU-China-Safe - Queen's University Belfast to lead EU-China collaboration to tackle food fraud



The Institute for Global Food Security at Queen's University Belfast will lead one of the world's largest food safety projects across Europe and China. The European Horizon 2020 programme and Chinese Ministry of Science and Technology (MOST) programme have awarded €10 million towards an EU-China partnership to improve food safety and tackle food fraud.



The EU-China-Safe project will involve key players in the food industry, research organisations and Governments across two of the world's largest trading areas.

Over recent years, China has become the EU's biggest source of imports and second most important export market. In Europe and China, consumer trust in the food industry and regulatory authorities has been damaged by a large number of accidental and deliberate food contamination/adulteration incidents. The ability of European Union (EU) companies to export to, and import from China, has been hampered by these safety, traceability, regulatory and fraud issues. Chinese companies trying to export to Europe face similar obstacles.

Twenty-first century food supply chains are increasingly complex and highly vulnerable to safety and fraud threats. Increasing demand and growing markets enhance the likelihood of food safety incidents and deliberate contamination, which in turn ruin consumer trust and undermine legitimate trade at domestic and international levels. Several instances of food fraud and contamination have focused attention on product integrity, such as the 2008 Chinese melamine incident, the 2013 European horsemeat scandal and the 2014 'gutter oil' scandal in China which saw slaughterhouse waste and sewage used in cooking oil.

Furthermore, laboratories in Europe and China are often working to different quality standards and using different analytical methods for producing data for certification/confirmation purposes, which can result in protracted trade disputes/embargoes.

There is a clear need for greater co-operation among those key actors within the EU and China, who are responsible for ensuring food safety, and preventing fraud, to accelerate the achievement of “mutual recognition” in food standards, testing and certification, similar to that already achieved in other areas between these trading blocks.

EU-China-Safe will reduce food fraud and improve food safety through focusing on improving food legislation, food inspection and increasing access to information across both continents. State-of-the-art technologies including a virtual laboratory will create a unique space to share and demonstrate best practice. The use of innovative technologies will result in improved detection of adulteration of food products as well as increased traceability and transparency of global supply chains.



Professor Chris Elliott
Project Co-ordinator

Professor Elliott, Pro-Vice Chancellor, Faculty of Medicine, Health & Life Sciences at Queen’s and project co-ordinator, said:

“We are delighted that The Institute for Global Food Security at Queen’s University will lead this important project, bringing together key stakeholders in the global food system across two of the world’s largest trading markets.”

Professor Yongning Wu, Chief Scientist from the China National Center for Food Safety Risk Assessment, co-ordinator of the Chinese efforts in the project, stated:

“The EU-China Safe partnership between our two trading regions is of immense importance to help deliver safe and genuine food to all citizens. Working together across China and the EU will enable us to identify where food fraud is happening, address the root causes and thereby enable us to improve food safety standards for all our citizens.”

Reported instances of food fraud are on the increase and occur on a global scale, worth an estimated \$52 billion globally each year. Food fraud is a global issue demanding a global response. The increasingly complex global food supply network increases the risks of serious food borne illness.

Professor Elliott added: *“This project will tackle these highly connected issues in a way that will serve to better protect several billion people. There is a pressing need to act internationally in response to emerging threats to food safety and fraud. Working together as a coalition of 33 partners to share knowledge and maximise our technologies will empower the food industry to provide safer, authentic food and will boost consumers’ confidence and ultimately facilitate the expansion of EU-China trade.”*

FoodIntegrity Priorities – Rapid Detection Methods

Work Package 19 - Rapid fraud detection within the Iberian pig sector



Professors Ana Garrido-Varo and Dolores Pérez Marín, leaders of WP 19 and 21 respectively.

Work Package 19 was developed to meet the identified FoodIntegrity priority of “Rapid, on-site, cost-effective methods for feed/food fraud detection.” Its objective is to design a system of “voluntary labelling” based on Near Infrared Spectroscopy (NIRS) in combination with information and communication technologies (ICTs) to be used in the Iberian Pig industry sector. Work Package 21 will engage in demonstration activities for the outcomes of Work Package 19, as well as Work Package 15 (dedicated to the identification of fish species from its digitised picture).

As a first step, a number of tests have been carried out at both laboratory and slaughterhouse to optimize different parameters, including spectral range and resolution. The sampling technique has also been refined to produce a list of recommendations that can be observed when taking measurements at the slaughterhouse. It was found that reducing noise and increasing signal-to-noise are essential steps needed to detect the smallest concentration levels of an analyte of interest.

Secondly, the most common inter-instrument standardisation methods were tested using spectra belonging to different instruments: an NIRS scanning monochromator instrument (FNS6500) and a MicroNIR (MN1700) miniature spectrometer. 267 samples of adipose tissue belonging to carcasses



MN1700 miniature spectrometer analysing adipose tissue in pig carcasses in situ

from the category “Premium” and 392 samples belonging to the category “Non-Premium” were transferred from the FNS6500 to the MN1700. 56 samples analysed with the MN1700 were used as validation set. Results obtained showed that accuracy and precision of the prediction models for palmitic, stearic and oleic acids maintain acceptable values.

Once the feasibility of transferring a large dataset of intact pig adipose tissue had been demonstrated, 500 samples were analysed at different slaughterhouses in the Pedroche Valley and Guijuelo Province, both covered by the Jamon Pata Negra Designation of Origin. New prediction models are being developed to determine the fatty acid profile and therefore the commercial category of each animal, focussing on detecting the Premium category that is related to animals fed with acorns.

Dissemination activities:

Budapest Workshop:

A workshop on assuring the integrity of the food supply in the Central European countries was organised on the 25th October 2017 in Budapest, Hungary. The aim of this workshop was to foster collaboration between EU countries and Hungarian food safety authorities and research organisations. Recent knowledge on practices to counter food fraud was communicated and networking opportunities for future collaboration were discussed.

RAFA 2017:

The 2nd FoodIntegrity Open day is a satellite event of the [8th International Symposium on Recent Advances in Food Analysis \(RAFA 2017\)](#), on 7-10 November 2017, Prague, Czech Republic. The Open day offers RAFA delegates the chance to join the FoodIntegrity experts to discuss the latest developments and strategies in the field of food integrity.



For further information on dissemination activities please click [HERE](#).

Training Activities:

TRAINING PROGRAMME OPEN CALL

[FoodIntegrity](#) has now opened the call for participation in one of the numerous training programmes offered by expert institutes around Europe.



A training network has been established, consisting of a comprehensive training program, a young scientist mobility program, establishing a training school, and the organisation of a series of workshops. Number of trainings will be provided by well-established EU organisations for:

ANALYTICAL METHODOLOGIES CONCEPTS: (i) Stable isotopes and metabolomics for verifying authenticity of food; (ii) IRMS – Theory and lab fruit juice and wine; (iii) Stable isotope analysis of wine; (iv) Vibrational spectroscopy and chemometrics; (v) FT-IR spectroscopy for authentication of food; (vi) Application of advanced validated analytical strategies for food / feed authentication; (vii) Analytical tools for authenticity of raw materials in pasta, sauces & bakery production

COMMODITIES CONCEPTS: (i) Workshop on Infrared spectroscopy, Raman spectroscopy and chemometrics for monitoring of food and feed products; (ii) Training on Profiling with applications to honey

OTHER CONCEPTS: (i) Regulatory & Risk Assessment (Frauds & adulterations management in strategic raw materials for pasta, sauces & bakery products); (ii) Sensory & Management (Consumers science & Industrial management skills useful to assure food integrity); (iii) Data collection and analysis methods in consumer research; (iv) Traceability in relation to food integrity

Please follow this link for further information: [List of Training Opportunities and Institutes](#)

Please follow this link to access the application: [Training Application Form](#)

Application Deadline: 30 November 2017

All applications and CVs to be sent to: Monika.Tomaniova@vscht.cz

How to Get Involved?



[Register for project communications.](#)



[Please click here to register to be a part of the FoodIntegrity Network.](#)



Follow FoodIntegrity on [Twitter](#) or join the Network Group on [LinkedIn](#).

Dates for Diary:



FoodIntegrity Associated events:

[Belfast Summit on Global Food Integrity \(ASSET 2018\)](#)

29-31 May 2018, Belfast, Northern Ireland, UK

External events:

[3rd International Conference on Global Food Security](#)

3-6 December 2017, Cape Town, South Africa

[5th International Conference on Foodomics](#)

10-12 January 2018, Cesena, Italy

[15th International Symposium on Hyphenated Techniques in Chromatography and Separation Technology](#)

24-26 January 2018, Cardiff, UK

[Nutraceuticals Europe](#)

14-15 February 2018, Barcelona, Spain

[Prevent Food Fraud & Ensure Product Integrity & Compliance](#)

22 February 2018, London, UK

[FoodFraud](#)

1 March 2018, London, UK

[10th World Mycotoxin Forum](#)

12-14 March 2018, Amsterdam, The Netherlands

[14th Annual North American Summit on Food Safety](#)

30 April – 1 May 2018, Toronto, Canada

[3rd Food Structure and Functionality Forum Symposium and 3rd IDF Symposium on Microstructure of Dairy Products](#)

3-6 June 2018, Montreal, Canada

[Metabolomics 2018](#)

25-28 June 2018, Seattle, USA

[Innovations in Food Analysis](#)

19-21 September 2018, Munich, Germany

[32nd International Symposium on Chromatography \(ISC 2018\)](#)

23-27 September 2018, Cannes - Mandelieu, France

We hope you have found this e-Newsletter interesting and informative. We would welcome your views on any of the issues covered. Please email foodintegrity@fera.co.uk. Please feel free to distribute this FoodIntegrity e-Newsletter to other interested parties.

Disclaimer: The information expressed in this e-Newsletter reflects the authors' views; the European Commission is not liable for the information contained therein. The FoodIntegrity consortium cannot accept any liability for the e-Newsletter accuracy or content.

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