



We have greatly enhanced the capacity and speed of our microbial identification capabilities by acquiring a MALDI-ToF (Matrix-assisted laser desorption/ionization time-of-flight) mass spectrometry system.

A key requirement in food microbiology is the ability to identify specific microorganisms rapidly - such as in confirmation of suspected *Listeria* and *Salmonella* isolates, or in differentiation of very similar organisms in order to trace routes of contamination within factories. The MALDI-ToF system allows us to do this and more, as Julie Archer explains:

"MALDI-ToF will complement the existing biochemical and 16S ribosomal DNA sequencing techniques that we currently use - bringing down the identification or confirmation time for isolates from 24-48 hours to about 15 minutes."

"Its potential applications are widespread; as well as standard confirmation of isolates, we can quickly identify contaminating microorganisms during troubleshooting, helping us to determine the root cause of contamination problems. We are now able to offer very fast turnaround identification to clients and fast confirmatory testing to laboratories that have obtained presumptive positive pathogen results."

Rapid microbial identification

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Innovations in analysis

The analysis of food is a key part of managing food safety, quality and authenticity. We are investing to ensure that you have access to cutting-edge facilities and expertise to support your business in analysis, both now and in the future.

We have, for example, invested in a new MALDI-ToF mass spectrometer. This has reduced our microbiological identification time, which gives you more time to act on the results. We've also upgraded our chemical risk assessment service - using new predictive computer models to help companies better understand the risks associated with unintentionally created food-borne chemicals.

Through our member funded research programme we are assessing the use of next generation analytical techniques to provide more rapid results, greater sensitivity and the ability to detect emerging food safety risks. You can read more about this on page 4-5.

Steven Walker, Director General

FSA Chair to deliver Campden Lecture

FSA Chair, Heather Hancock, will deliver the 39th Annual Campden Lecture on Campden BRI Day on Wednesday 7 June. This is also a great opportunity to network, catch-up with peers and soak up knowledge.

Visit our website for further information and highlights of the 2016 event at www.campdenbri.co.uk/campdenbri-day.php

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Industry's future skills - FoodLab

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Campden BRI Hungary is part of an EU project to promote the skills of food science and technology students. FoodLab involves 15 partners from 6 EU countries. To find out more visit <https://foodlab-eu.com/> or read the latest FoodLab newsletter (<https://foodlab-eu.com/foodlab-newsletter-4-en>)

Investigating cake microstructure

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A new club project is investigating industrial cake microstructure and the factors that affect it, particularly ingredient functionality. The experimental programme will evaluate the function and interaction of key ingredients (e.g. fat, egg, flour, sugar, emulsifiers and enzymes). It will involve some novel experimental techniques that were not available when much of the early cake work was published. It is anticipated that this will lead to modifications of existing theories for bubble stability and improved understanding of how to control cake structure. Each partner in the club can use this data in their own R&D activities. Contact us to join this club.

New video

Anton Alldrick talks about the recently launched chemical risk assessment service based on computer models, which assesses the hazard of chemicals and identifies if a contaminant could potentially pose a risk to human health.
www.campdenbri.co.uk/news/chemical-risk-service.php



Innovation survey

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An industry survey carried out in December 2016 to better understand industry's attitudes to innovation found that:

- Most companies plan to focus innovation on range extension and developing entirely new products over the next two years
- The majority of companies plan their innovation pipeline 9-12 months ahead
- Time and resource are the biggest barriers to innovation

The majority of respondents said they will target innovation on extending their range and developing entirely new products over the next two years. Other common drivers of innovation were targeting new markets, reformulating for health and cost saving.

Time and resource were the most common barriers to innovation, but facilities and generating ideas were also cited.

While all those surveyed said their company planned to innovate in at least one area over the next two years, only 28% said it was a top priority.

Keeping ahead in chemical food safety

Member-funded research is providing us with the opportunity to assess the use of next generation analytical techniques to provide more rapid results, greater sensitivity and the ability to detect emerging food safety risks, as the following examples demonstrate. To find out more contact information@campdenbri.co.uk

Detecting human saliva on foreign bodies

When someone claims that a foreign body has been found in their mouth whilst eating a product, we are often asked to test whether the foreign body has been in contact with human saliva. We have evaluated a lateral flow immunochromatographic test for human saliva detection (RSID™-Saliva).

We screened a wide range of foodstuffs for false positive cross reactivity or interference in the test, including those known to contain amylase enzymes (sprouting seeds, honey and commercial *Bacillus* alpha amylase). None of the foodstuffs gave a false positive result. Results with foodstuffs frequently associated with foreign bodies being found in them indicate that the kit has the potential to test for low levels of human

saliva on different types of foreign bodies recovered from different food types. Certain foreign bodies, for example glass, may not retain saliva as well as others, so this must be taken into account when interpreting the results.

Detecting inorganic arsenic in rice and seafood

Inorganic arsenic is toxic and dietary exposure has been linked to increased risk of some cancers, as well as skin lesions. However, organically bound arsenic is essentially non-toxic. As organic arsenic can occur in relatively high levels in some foods, it is very important that analysis can distinguish between the two forms, in order to ensure the maintenance of food safety whilst not creating unnecessary concern.





Rice is potentially a source of inorganic arsenic in the diet. We have implemented an improved method for inorganic arsenic analysis in rice and other food products. Species-specific hydride generation following low-temperature sample extraction is used for on-line separation of inorganic and organic arsenic species, with subsequent detection by inductively coupled plasma mass spectrometry. We have also demonstrated the application of the method to seafood, which typically can have relatively high levels of organic arsenic.

Identifying mustard

Mustard is widely used in seasonings, sauces and other preparations and can arise as a 'masked' allergen, leading to serious allergic reactions. Analysis by other antibody or DNA methods can be difficult, especially where the sample is cooked. We used mass spectrometry to try to identify suitable marker compounds to routinely screen for the presence of mustard in foods. Allyl isothiocyanate seems to be a potential marker for the presence of black or brown mustard in food preparations. However, it is naturally present in some other foods, such as beans, cabbage, horseradish and cauliflower, which could potentially lead to misleading results in foods also containing these ingredients.



Identifying foreign bodies

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Foreign bodies form the biggest single cause of consumer complaints received by manufacturers, retailers and enforcement authorities. Rapid and accurate identification is essential for determining the source of contamination and implementing measures to prevent recurrences.

For example, fragments of glass are often produced when someone is trying to scrape the last contents of a jar using a spoon or knife; a little excess pressure causes a small hole to be punched in the bottom corner of the jar. Another example of a recurring foreign body is a fragment of dental amalgam from a consumer's filling. These tend to be dark in colour and so are easily spotted. Dental fillings and tooth fragments are often associated with hard foods such as crusty bread or biscuits, or sticky foods such as toffee.

Our forensic specialists use a whole range of analytical techniques to identify foreign bodies. The skill is to use the right technique for the detective work. If you have received a foreign body complaint, we can identify it, so helping you to prevent it recurring.



STEC seminar 24 May

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www.campdenbri.co.uk/stec-food-safety-review.php

May events

- 8-12 HACCP - advanced (level 4)
- 9-10 Threat Assessment Critical Control Point (TACCP) - intermediate level
- 11 Documentation and design of quality systems
- 12 STEC - comprehensive food safety review seminar
- 16-17 Factory inspections - technical issues
- 16-18 Thermal processing validation
- 18 Packaging technology for non packaging technologists
- 19 Thermal processing - quality optimisation
- 23-24 Internal auditing - principles and practices
- 24-25 Understanding microbiology

A full list of scheduled courses is available on our website www.campdenbri.co.uk/training.php or request a booklet from training@campdenbri.co.uk +44(0)1386 842104

Starter training courses

www.campdenbri.co.uk/training/starter-courses

We offer foundation training in different technical areas for those new to the food industry, or changing roles to a less familiar discipline.

Shiga toxin-producing *E. coli* (STEC) have become a key area of concern for the food industry, with incidences associated with the 'Big 6' serotypes now being reported. Interventions to control this situation are important. The Food Standards Agency has produced a new revised guidance document to assist with this. This seminar will feature presentations from FSA, Public Health England and other professional bodies.

Establishing and using microbiological criteria

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www.campdenbri.co.uk/publications/pubDetails.php?pubsID=4661

The value of meaningful microbiological criteria in the safe production of food is of major interest to the food and drink industry. A new edition of *Establishment and use of microbiological criteria* (Guideline 52) discusses how microbiological specifications and guidelines can be developed and suggests best use of resource and resulting data when testing food for the presence of micro-organisms. It also provides an introduction to the material which can be accessed from the Microbiological Criteria Database (MERCADO).

www.campdenbri.co.uk/training.php

Member zone

www.campdenbri.co.uk/memberzone.php

to access privileged member information and services

Welcome to new members

We are delighted to welcome the following new members:

Freak of Nature - manufacturer of chilled "free-from" desserts

Grassroots Wholesale Foods - processing and cutting of red and white meat

Hakkasan Ltd - restaurant group specialising in Asian cuisine

Ocean Foods Packaging Ltd - packer of refined iodised edible salt

MyProtein.co.uk - manufacturer of fitness and wellbeing dry powder blends and supplements

Pulsemaster BV - pulsed electric field processing equipment supplier

Somerset Larder - local catering service cooperative

Tastel Fine Food Private Ltd - manufacturer of sauces, pastes, dips, chutneys, frozen bread and snacks

Tayto Group Ltd - savoury snack manufacturer

Thew Arnott & Co Ltd - manufacturer of emulsifiers and confectionery coatings

Clare Brett +44(0)1386 842125 membership@campdenbri.co.uk

Please notify the Membership Department of any name or address changes to allow us to keep our records up to date.

Using insects as foodstuffs

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There is interest in the use of insects as foodstuffs due to their potential to provide protein from a more environmentally sustainable source. However, as part of a member-funded project into emerging ingredients, we have demonstrated that there are several considerations that need to be taken in account when using these ingredients. Our report *Insects - considerations for use in food and drink products* (RD419) is available on the project website at www.campdenbri.co.uk/research/emerging-ingredients.php

Innovation

for the food and drink supply chain

Scientific and technical needs

Industry needs consultation

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Understanding what you need from science and technology shapes the support we provide - services, research and innovation - and helps us promote your needs to Government and funding bodies. Over the next few months we will be asking you about your scientific and technical needs, compiling the answers and publishing a new version of 'The scientific and technical needs of the food and drink industry'.

This will be the eighth time for this triennial consultation, which will start at the spring MIGs and continue on-line through the summer. To view the current version, see www.campdenbri.co.uk/industry-needs.php

New project websites live

All ongoing and recently completed member-funded projects have their own pages on our website. Web pages for the new 2017 projects have now been loaded - view them all at www.campdenbri.co.uk/research/projects.php



Functional foods for older people

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The older adult consumer population continues to grow; however, many health related changes accompany the ageing process, including physiological and sensory changes, and chronic illnesses such as cardiovascular disease, cancer and osteoporosis, as well as insufficient dietary intake. As part of the member-funded project on Designing food and drinks for personalisation of diets for different life stages, we have looked at *The potential role of functional foods in addressing the nutritional and physiological changes that impact on the health of the older adult population* (RD418).

This report is available on the project website at www.campdenbri.co.uk/research/designing-food-drinks.php

Testing for food fraud

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Food fraud has been defined as “*the deliberate and intentional substitution, addition, tampering, or misrepresentation of food, food ingredients, or food packaging; or false or misleading statements made about a product, for economic gain.*” It is an issue that is addressed through the food-defence systems operating within a food business quality management system.

Testing for food fraud: a risk based approach (RD417) discusses the processes necessary for developing a risk model for a food business to develop its analytical programme regarding food fraud and in particular addresses issues of obtaining information and assessing its significance. It is available on the project website at www.campdenbri.co.uk/research/due-diligence-testing.php

Date for your diary:

Food fraud seminar - 10 October 2017

New blogs on the web

www.campdenbri.co.uk/blogs/campdenbri-blogs.php

Protein profiling - how can it improve food safety and traceability? by Reka Haraszi

Fast track food innovation by Emma Hanby

Developing food for the ageing consumer - six things to consider by Sarah Chapman

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For other sites, see

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