

Newsletter

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Setting product shelf life

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New member subscription-funded research will look at how manufacturers can check whether accelerated shelf life type tests are valid for their products, and how they might need to be modified in order to give meaningful results.

Pressure to maintain market share

All sectors of the food and drink industry are under increasing pressure to rapidly develop and launch new and innovative products to maintain market share. Part of the product development cycle is to set a suitable shelf life. For ambient stable products with a long shelf life (6 months plus), commercial pressure means it is rarely feasible for full shelf life evaluations to have been completed prior to product launch. For the chilled foods sector, although the shelf lives are much shorter, they might extend to 12 weeks or more for some products and there is still a desire to have the shelf life results in less than half this time. Chemical, biochemical and microbiological changes may be induced when the product is held under accelerated conditions that would not otherwise occur, thus limiting the usefulness of results from such tests.

This project will validate the 'comparison approach' - comparing the performance of the new product to an existing similar product of known shelf life under forcing conditions - as a method for accelerated shelf life testing. The method requires the boundaries for selecting similar products to be defined and to be validated.

Your partner for validation

March 2014

Your partner in innovation

The food and drink industry continues to be dynamic and challenging. In the last year, issues such as reformulation, diet and health, sustainability, authenticity and supply chain management have continued to demand and drive change across the sector. These challenges, coupled with factors such as the need for safety and quality assurance, lean manufacturing, late customisation and cost control, present complex and sometimes conflicting pressures. But in our experience innovation often provides the solution.

Innovation is one of our core areas of activity at Campden BRI. Our experts work closely with our members, funding bodies, government and academia to harness the latest science and technology for commercially and industrially relevant solutions.

The 11 new member subscription funded research (MSFR) projects we started this year specifically address key industry issues. Each new project has its own mini-website, which can be found in the research area of our website.

We've also invested over £1.3 million in new equipment over the last two years to ensure that we have the cutting-edge facilities and expertise to tackle your problems and support your business - both now and in the future. We have installed new equipment to expand our capabilities, particularly in the analysis of flavour and taints, packaging defects and foreign bodies. On the process plant side, we have recently boosted our facilities for soft drinks NPD, added a sparkling wine plant to support secondary fermentation, riddling and bottling, and have a new facility to carry out microbiological processing trials.

If you think we can help, please do get in touch.

Steven Walker

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Validation

www.campdenbri.co.uk/sectors/validation.php



Benchmarking accredited

Blog by Maria Bryan

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

HACCP - validation and verification

Training course on 19-20 May and 8-9 October 2014

www.campdenbri.co.uk/training/haccp-validation.php

Disinfectant video

www.campdenbri.co.uk/videos/disinfectant-testing.php

Choosing a method validation procedure

Free white paper by Farinaz Monadjemi - to receive a copy, send an e-mail to auto@campdenbri.co.uk with the subject line: **send validation**

Food information to consumers

White paper with information on the practicality of translating the requirements of FIC into an actual label. For a free copy send an e-mail to auto@campdenbri.co.uk with the subject line: **send FIC**



Cereus-ly good work!

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We have developed a sensitive and quantitative analytical procedure for the accurate determination of a *Bacillus cereus* toxin. Foods known to be commonly affected are pasta, rice and dairy products, particularly when the food has been stored and re-heated.

The dose of the toxin, cereulide, that causes illness is not known. However, through a study sponsored by the European Committee for Standardisation and involving nine international laboratories, we have developed a procedure using LC/MS/MS to determine cereulide in a wide range of food stuffs. A first working draft of the method is currently being prepared for submission for CEN Standardisation, and this will be an invaluable step toward detecting the presence of *Bacillus cereus* toxin in foods.

Ed Wray at Parliament

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Ed Wray with Brandon Lewis MP, Pubs Minister

The BBPA approached us to brew a bespoke bottled beer that could be given as a gift to the MPs at the event. Ed created a British IPA using two British hops - Jester and Endeavour - in our pilot brewery at our Nutfield site. The end product had a soft, sweet, biscuit malt base, complemented by hints of caramel and fresh citrus, grapefruit and tropical fruits. More citrus, orange aromas and a spicy, marmalade character were then balanced with a clean, bitter, dry finish. The IPA was a resounding success with the MPs and Ed has certainly done the company proud with his unique brew.

Proficient analysis?

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In the food industry, major decisions are made on the basis of analytical results. To be confident that the methods you are using are appropriate, and carried out effectively and in the correct way, and that equipment is operating adequately, you need to test your results regularly against some kind of known standard. Participating in a proficiency scheme is the most effective way of doing this and is often a prerequisite for accreditation to laboratory schemes.

All proficiency schemes, be they for chemical, physical or microbiological analyses, typically work by providing participating laboratories with standard

samples for the laboratory to analyse 'blind'. We administer several proficiency schemes. In the Campden Microbiological Proficiency Scheme (CMPS), for example, we know the level of the microorganisms (and the nature of the cocktail of mixtures) provided, but the test laboratories do not. Each laboratory analyses the sample(s) using its usual methods (which might differ from one laboratory to another) and submits its results to us. We compile and statistically analyse these results and include them in a report that also contains the 'true' result and, for each laboratory, a score (called a z-score) reflecting how close it was to the 'true' value. Each laboratory can see how it performed but cannot identify the other labs.

The Brewing Analytes Proficiency Scheme (BAPS), which we administer with LGC, works in a similar way - and includes chemical, microbiological and sensory analyses. It has the advantage that it uses commercial beers with no additions.

We also run a Foreign Bodies Identification Scheme, in which laboratories use their own methods to identify contaminating items that have been found in food products. Recent examples include fragments of stone reported from a baked product (which was reported to have damaged a tooth, resulting in a dental claim) and a fragment of glass from a fluorescent tube reported from a sandwich.





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Unlocking truffle flavour for Black Moth vodka

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We have developed a method for Black Moth to boost the flavour extracted from European Périgord truffles - the key ingredient in the brand's truffle vodka.

Due to both their elusive nature and delicious flavour, truffles are among the world's most prized culinary delicacies. Black Moth wanted to increase the intensity of the flavour of their truffle vodka, so turned to us for help.

Geoff Taylor, our wines and spirits expert, drew on his 30 years' experience of supporting the alcoholic drinks sector to develop an innovative and highly effective method. The all-natural characteristic is a key part of Black Moth's brand identity, and so using an artificial truffle flavour was not an option.

Ingenious and cost effective solution

We assessed various methods to maximise the amount of flavour extracted from the truffles. Whilst the method finally decided upon is confidential, our laboratory and sensory analyses confirmed that it quadruples the truffle flavour. This is an ingenious and cost effective solution for Black Moth to make the most of an extremely precious raw material, maximising the effect of the natural flavours in the truffle.

Paul Amin, owner of Black Moth commented, "*The method not only enhanced the flavour of our flagship product, it has also massively increased the use and efficiency of our most expensive raw material. This wouldn't have happened without the expertise and technical support of Geoff and his team at Campden BRI.*"

Differentiating between fresh and frozen-thawed meat

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As the EU Food Information to Consumers Regulation comes ever-closer to being implemented in December 2014, labelling will change for fresh and frozen-thawed meat. The term 'defrosted' will be required to accompany the name of defrosted foods where freezing has an effect on safety or quality. This will be useful as frozen-thawed meat has a tendency to have a shorter shelf life than fresh meat, and any meat that is not labelled correctly has the potential to be passed off by rogue traders as 'fresh' when it has in fact been frozen.

We have put in place a method to distinguish between meat that is fresh and meat that has been frozen-thawed by using a mitochondrial enzyme, beta-hydroxyacyl-CoA dehydrogenase (HADH), which is released when meat is frozen. For example, two meat samples were tested - one which was frozen-thawed, and another which was analysed without freezing. HADH activity was measured in meat press juice extracted from the samples. It was found that HADH activity was much higher in the meat that was frozen-thawed, and so using this as a measure provides a means of determining the authenticity of "fresh" meat with respect to freezing.



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We will be on Stand H230
at Foodex, NEC Birmingham
24-26 March 2014



featured kit

Microbiology process hall

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Our newly commissioned microbiology process hall will help us develop our well established microbiology evaluation and process validation services. In particular, it provides us with a larger area dedicated to the microbiological inoculation of foods and evaluation of the effect of food and drink processes at reducing and eliminating such contamination. As it mimics a real processing environment, it also allows us to do combination studies using pathogens and give recommendations for surrogate organisms suitable for further trials.

Assessments can evaluate novel technologies, traditional treatments, product development, pilot equipment, troubleshooting and new packaging formats. We can back this up with in-house expertise on the heat resistance and subsequent survival of microorganisms in a very wide range of food and drink matrices.

Clients have the option to have work done that is primarily laboratory-based or combine this with validation studies using equipment housed in this area, and possibly followed by validations with manufacturing equipment in place on site at clients' facilities. Contact us for a complete microbiological process validation service.

On the podium

Campden BRI staff regularly give presentations at conferences, symposia and exhibitions. Amongst those in action in the next few weeks are:

Gordon Jackson presenting on NPD using novel raw materials, at the Asia Pacific Conference of the Institute of Brewing and Distilling in Thailand on 25 March.

Emma Hanby, Rachel Gwinn, Jos den Boer and **Colette Jermann** talking about process optimisation at Nutraformulate at the National Motorcycle Museum Exhibition Centre near Birmingham on 19 March. **Greg Hooper** will also be there to answer questions on product reheating and cooking.

Steve Spice talking about the Food Information to Consumers Regulation at Food and Drink Expo at the NEC, Birmingham, which runs from 24-26 March. **Steve Garrett** will give a presentation on Food Fraud, **Roy Betts** will discuss the next big microbiological issues for the food industry, and **Sarah Kuczora** will present 'Trends in Product Innovation'. **Caroline Walker** (Director of Brewing) and **Emma Hanby** (Product Innovation Manager) will also be available at the Campden BRI stand H230.

Caroline Walker will present 'The role of targeted R&D in meeting the challenges for tomorrow's breweries' at the 11th International Trends in Brewing Conference, Ghent, 13-17 April.



Countdown to FIC

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Having spent a lot of time over the past few years working on the practical implementation of FIC and hearing the thoughts of our members

at our labelling seminar last month, here are a few of our top tips for success.

- Book time with your printer, it's going to be a busy year for them;
- Check your labelling policies and get them signed off;
- If you use an electronic specification system to generate pack copy, then make sure it has been adapted to accommodate the requirements of FIC and give the information on it a good spring clean;
- Early on, get some labels independently checked before you get too many done; doing them twice could prove expensive!

For more information on the practicality of translating the requirements of FIC into an actual label, do have a look at our white paper, by sending an e-mail to auto@campdenbri.co.uk with the subject line: **send FIC**

or pop along and meet Steve at the Campden BRI stand at Food & Drink Expo in March 24-26th



April training events

A full list of 2014 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

- 2-3 Food and drink labelling
- 3 Threat Assessment and Critical Control Points (TACCP)
- 9 Facing the auditors/compliance (microbrewers)
- 10 Calculating meat content
- 29 Building safety in - foundation (microbiology)
- 29 Documentation and design of quality systems
- 29-30 An introduction to food law
- 30-2 May Food processing hygiene management (module 2)
- 30-1 May HACCP - intermediate (workshop)

Novel cereals for new alcoholic drinks!

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Advances in technology and the opening up of new markets have created new opportunities for alcoholic beverage production. *Novel cereals and enzymes for alcoholic beverage production*, a seminar to be held on 7 May at Nutfield, will focus on the specific areas where these new opportunities have arisen:

- The novel use of enzymes - to improve brewhouse performance, produce gluten-free alcoholic beverages and cut costs
- Brewing with novel cereals - to create new products and utilise local resources

It will provide delegates information on New Product Development, and an increased awareness of the latest advances in enzyme and cereal use, prompting ideas for improving brewhouse efficiency and cutting costs.

www.campdenbri.co.uk/training.php

Validation of cleaning to remove allergens

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Preventing allergen cross-contamination in food is essential. In factories where an allergen is present in some formulations but not others, this means ensuring that processing lines are properly and effectively cleaned between runs. Originally published in 2009, *Validation of cleaning to remove food allergens* (Guideline 59) looks at the steps that have to be taken to demonstrate that the cleaning mechanisms used are effective, and at what tests need to be done after the cleaning



to show that the allergen has been removed. It also discusses the limitations of what can be done. There is also further information relating to allergens in *Food allergens: practical risk analysis, testing and action levels* (Guideline 71), published in 2013.

Dream on!

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In conjunction with our colleagues in Hungary, we have been significantly involved in the recently completed EU DREAM project - *Design and development of realistic food models with well characterised micro- and macro-structure and composition*. This was a collaborative project between 18 partners in 9 European countries, with the objective of developing models to support understanding of the impact of changing composition and processing conditions on food quality. A range of well-characterised model products were developed within four food categories. Predictive models were developed to assess the effects of processing and formulation on structure and nutritional properties.

Modelling is a useful tool to assess effects on food product quality and to aid process optimisation in support of practical trials. For studies of food nutrition, safety and quality, standardised model food products such as those developed in the project provide a common basis for validation and application of findings between researchers and manufacturers.

The full set of project results is available via the project website at <http://dream.aaeuropae.org>.



The latest news and information for our members



Visit Member Zone to access privileged member information and services

www.campdenbri.co.uk/memberzone.php



Campden BRI Day 2014 themes

Campden BRI Day 2014 on Wednesday 11 June will feature a wide range of interactive exhibits grouped under the headings of:

- Research and innovation
- Analysis and testing
- Operational support
- Knowledge management

providing insight into the latest technical developments to help your business. All this will be supplemented by the Annual Campden Lecture, this year to be delivered by Dr. Mehmood Khan, Executive Vice President and Chief Scientific Officer of PepsiCo Global Research and Development.

To register for Campden BRI Day, please contact Annalie Brown +44(0)1386 842270 annalie.brown@campdenbri.co.uk

Use our newsfeed alerts to keep up with the latest developments

www.campdenbri.co.uk/optin.php

practical application

Decontamination of low Aw foods and environments

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A member subscription-funded project is evaluating and validating potential decontamination technologies for low water activity (Aw) foods. Traditionally, these foods, which include chocolate, nuts, seeds, cereals, and flour, have been regarded as microbiologically safe as a result of their inherent product characteristics. However, concern has been recently raised about the potential presence and survival of Enterobacteriaceae such as *Salmonella*, *Escherichia coli* and *Cronobacter* in low Aw foods.

Research is focusing on three decontamination strategies for cocoa beans, powders, herbs and dried pet foods: whole room ozonation; a combination of wetting and heat; and steam. As part of these methods, the D- and z-values of two strains of *Salmonella* attached to stainless steel surfaces were analysed to determine the time taken for significant log reductions of this bacterium.

In low Aw foods, D-values calculated for *Salmonella* strains were much higher than would be expected in a moist situation, where a process of 70°C for 2 minutes would be expected to achieve >6 log reductions in this organism. In low Aw foods, the D-value was 30 minutes at 115°C, showing the disparity between moist and dry conditions. These findings will help in developing guidelines for processors of low-moisture foods, including assessment and validation instructions for the thermal performance of selected industrial processes to establish their importance in microbial risk reduction.



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Welcome to new members

Campden BRI is delighted to welcome the following new members who joined recently:

Agrana Fruit SAS - manufacturer of fruit purees and chunks for the dairy industry

Crediton Dairy Ltd - dairy processing and packing of milk products

DAL Food - involved in milling, blending, food manufacture, dairy farming and processing

Emirates Industry for Camel Milk & Products - producer of camel milk and camel milk products

Festo Ltd - designer and developer of automation product innovations

KTC Edibles Ltd - supplier of cooking oils and fats

Living Witness Limited - manufacturer of pre-packed sausage rolls and breadsticks

Lucozade Ribena Suntory Ltd - developer and manufacturer of soft drinks

Mitsubishi Electric - designer and supplier of automation systems

Posidonia SA - developer and distributor of lower sodium salt to the bread industry

Premier Foods Thermal Processing Department - manufacturer of heat preserved foods

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.

Social media



Facebook - find out more about our history and our lighter side www.facebook.com/campdenbripage

Twitter - regular tweets to keep up to date with our latest news and activities <https://twitter.com/campdenbri>

YouTube - a range of videos providing an insight into the science and technology underpinning food and drink production www.youtube.com/campdenbri

LinkedIn - company updates providing our latest news www.linkedin.com/company/campden-bri

iTunes - subscribe to our podcasts

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