



Ongoing member-funded work is helping industry to develop products that assist in weight management. It is exploring the manipulation of food structure and protein content to modify consumer perceptions of, and satiety responses to, energy reduced products.

Obesity, and its associated metabolic complications, is an ongoing public health issue. It is accepted that there is no single solution to lowering obesity rates; however, suggested actions include use of satiety enhancers, development of lower calorie options and reformulation to decrease energy density.

We have assessed the utility of alginate gel micro-beads to increase the porosity of dried wheat pasta - an energy-dense food that is widely consumed. Generating structural porosity is amongst the most promising approaches to increase satiety. The hypothesis is that the alginate beads would dehydrate during air-drying, resulting in evenly-sized, air-filled pores. The beads, produced by air jet spray atomisation, showed promise in increasing the porosity of dried wheat pasta.

More recently, we have looked at incorporating unripe banana flour into products. A number of studies have shown that this flour suppresses hunger, and we successfully incorporated it to produce highly acceptable cookies with caramel and banana flavours.

Food structure and satiety

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Pre-competitive research

Research is crucial to the food and drink industry, but it requires investment. According to a recent report from The Institute of Physics - on The Health of Physics in UK Food Manufacturing - food and drink accounted for less than 2% of the total R&D spend in the UK in 2014. Even for the very largest food companies, conducting research in all areas of potential interest is challenging.

Our member-funded research programme helps address the problem. By joining together all of our members we have been able to invest £12 million over the last five years into pre-competitive R&D for the food and drink industry. We then collectively share the results with members through our Member Interest Groups and project websites. On page 7 you can find out which research projects have been successful in this year's voting and complement around 40 that are ongoing.

Our winter round of Member Interest Group meetings will provide plenty of opportunity to contribute to the planning and direction of the new projects. They will also start discussions on potential new ideas for refinement in the spring round of meetings, as well as help steer the ongoing projects.

Steven Walker, Director General

Virus research needs

EFSA (the European Food Safety Authority) has published a scientific report on the outcomes of a scientific workshop on foodborne viruses organised jointly by EFSA and the UK Food Standards Agency.

The workshop brought together invited specialists and regulators with expertise in research, clinical settings and food producing/processing operations - including Roy Betts and Martin D'Agostino of Campden BRI - to discuss the latest issues with foodborne viruses. You can read the full report at <http://onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2016.EN-1103/pdf>

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International student visit

www.campdenbri.co.uk/pr/transatlantic-exchange-competition.php

In conjunction with the Institute of Food Technologists (IFT) we recently launched "The Thesis Video Competition". This year's winner, Amadeus Driando Ahnan, a PhD Student at University of Massachusetts Amherst, is spending 10 days to experience Campden BRI and aspects of the UK and European food and drink industry.

Packaging colour and product choice

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It is well known that packaging colours have an influence on consumers' expectations of the product experience. Packaging designers may be able to use colour to help portray that a product is healthy. As part of member-funded research into packaging design for 'healthy' products, we asked 376 UK consumers to assess colour associations and perceived 'healthiness' when thinking about product packaging. The findings showed that the colour green, in particular light green, was strongly associated with the perception that a product would be 'quite to very healthy'. This may be associated with green packaging being perceived as fresh and natural, or with the traffic light system on packaging that many consumers are exposed to.

The same colour associations were evident for both 'healthier' and 'less healthy' consumer groups: colours such as green and yellow were perceived as being 'quite to very healthy' and red was thought to be 'quite to very unhealthy' by both segments. As colour associations were consistent across segments, packaging can be designed with the general population in mind, as opposed to targeting sub groups.



Microbiological methods: take part in ring trials

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We are an Expert Laboratory for the validation of new and alternative microbiological methods for a range of food spoilage organisms and pathogens. These validations ensure that commercially available methods used for food and drink analysis are robust and give an equivalent performance to the corresponding BS/ISO method.

An important part of these validation studies is to trial these new methods in competent food testing laboratories, to assess their performance under routine testing conditions. We are looking for laboratories that would like to take part in these trials to help assess new methods.

It involves testing between 8 and 16 samples on an agreed date. The samples would need to be tested using the ISO standard method and the new alternative method. All instructions and media would be provided. Participating laboratories do not need to be accredited for any of the methods but should follow good laboratory practice.

Participants benefit from the opportunity of testing new methods and a proficiency scheme style report is provided showing the performance of the individual laboratory for the ISO test method. This can be used for the laboratory's quality system to show on-going competence. If the laboratory wishes, more than one member of staff can participate to give data on the reproducibility of results between different personnel. *All data remains confidential to the individual laboratory.*



Manufacturing research

www.campdenbri.co.uk/research/projects.php

To the outsider, making food products that are suitable for commercial sale may appear to be relatively straightforward. As you will be well aware, it isn't. As part of our member-funded programme of research, we investigate a variety of formulation and manufacturing issues that can lead to improved product quality and safety. On the front page you can read about how food structure can be manipulated to try and lower obesity rates. Three more of our current projects are briefly outlined below.

Superchilling for enhanced shelf life

The term 'superchill' is used to define the temperature at which a product starts to freeze, generally around -2°C . At this temperature, some of the product is ice and some contains liquid water. This dramatically reduces the rate of appearance of microbiological and chemical spoilage defects, and allows a long shelf life to be achieved compared to the conventionally chilled product. No specialist chilling equipment is needed to achieve good

quality superchilled product. We are currently testing a range of products to monitor their response to superchilling, and answer the question: How long can you keep product at superchill whilst retaining an acceptable chilled shelf life after tempering? Our rule of thumb is: if the product can be stored frozen, then it can be superchilled.

See a video interview with project manager Greg Jones at www.campdenbri.co.uk/research/shelf-life-super-chilling.php



Quality validation for heat processed foods

Better preservation of the nutritional and sensory properties of foods during heat processing is very important for quality and consumer acceptance of the products. It can also have beneficial effects for food



product development. This project is systematically studying process validation and optimisation to reduce cost and energy consumption, improve product quality and ensure safety. It is particularly focusing on how the effects on safety of variations in product size and processing variables have to be taken into account when looking to modify a process to improve quality parameters.

Online technologies for food process control

There is an ever-increasing need to transfer measurement and sensing technology from the laboratory into food manufacturing facilities (at- or on-line). A major driver is the need for rapid, sensitive measurements to enable quick reaction to changes in product quality or process conditions. This project is looking at a range of techniques that might be applicable, including microwave technology and electrical tomography. In the latter, an array of electrodes is used to detect variations in electrical properties within a vessel, to measure the distribution of product.

This is described in detail in R&D report 400 on the project web page - www.campdenbri.co.uk/research/food-process-control-technologies.php. The Food Radar system (a microwave technology for online detection of foreign bodies) will also be reported on this page.

Microbiology process hall

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When developing processes, it is important for food safety and quality to know how relevant microorganisms will react. Our pilot-scale microbiology process hall provides us with an 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.



Support for companies exporting to the USA

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The USA has its own regulations that a company will need to comply with when exporting to this market; we offer three courses to support companies:

USA Food and Drink Labelling

Food labelling regulations in the USA are very different and far more prescriptive than those in the EU. The course provides an in-depth view of those labelling requirements and helps delegates understand how to translate their EU label into a US label.

Better Process Control School (BPCS)

If you are exporting canned or aseptically packaged foods to the USA, the FDA regulations require that each processor of low-acid or acidified canned foods (including aseptic) operate with a certified supervisor on site at all times during production of products for export. The BPCS course provides information and support to help companies meet the requirements in US federal regulations. We have been approved by GMA SEF and the FDA to deliver the BPCS programme both as a scheduled course and in-house to companies.

FSPCA preventive controls for human food

US regulation requires that certain activities must be performed/overseen by a Preventive Controls Qualified Individual (PCQI). Each site must have a PCQI. This course, developed by Food Safety Preventive Controls Alliance (FSPCA) is the "standardized curriculum" recognised by the Food and Drug Administration (FDA); successfully completing this course meets the requirements to become a PCQI. The course will be run both as a scheduled course and in-house for individual companies.

Training courses

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

January

- 16-17 Internal auditing - principles and practices
- 18-19 HACCP - intermediate (level 3)
- 18-19 Threat Assessment Critical Control Point (TACCP) - intermediate level
- 30-3 Feb HACCP - advanced (level 4)

February

- 7-8 Food and drink labelling
- 13-17 FSSC 22000 Auditor/Lead Auditor course

Gluten-free baking

Conference on 16-17 March 2017

www.campdenbri.co.uk/gluten-free-bakery-conference.php

This event will provide a comprehensive review of how the technological challenges associated with gluten-free baking have been addressed to deliver products acceptable to the target market. It will focus on understanding the issues around developing gluten-free baked goods.

www.campdenbri.co.uk/training.php

Member zone

www.campdenbri.co.uk/memberzone.php

to access privileged member information and services

Member funded research 2017

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Each year you, our members, decide how we should invest over £2m of your membership fees in research that helps your company to succeed. This year you have selected the following projects that complement about 40 that are ongoing. More information about these projects will be available as they get underway.

Safety

- Hygienic design: retrospective modification of existing plant
- Food safety and traceability using protein profiling

Quality and value

- Quality and safety of cereal-based products and ingredients for the food and brewing industry
- 'Shelf-Life Plus': enhanced shelf-life evaluation using microbial profiling

Nutrition, health and well-being

- Ingredient selection to meet compositional and nutritional targets

Resilience and efficiency

- A practical approach providing systems to evaluate threats and risks to assure the safe management of the supply chain

Skills and knowledge

- A reference source: the microbiological effects of food processes
- Review of novel natural preservative systems for use in drinks, sauces and other high Aw foods

At our winter Member Interest Group round, members will get the chance to help shape and direct these projects. Please come along and have your say - these projects are 'with members, for members'. Information about current research is available through project websites, Research Summary Sheets and R&D Reports, all on the research section of our website.



Welcome to new members

We are delighted to welcome the following new members:

Adams Bakery Limited t/a Heathrow Bakery - producer of biscuits, cakes and confectionery

AMSCO Asia Modified Starch Co. Ltd - manufacturer of tapioca starch

The British Quinoa Company Ltd - grower and distributor of quinoa products

Chipita SA - manufacturer of dough products, savoury snacks, cakes and confectionery

FEVE - The European Container Glass Federation - trade association

Five Guys JV Ltd - restaurant group specialising in burgers and fries

Fortress Technology (Europe) Ltd - manufacturer of metal detection equipment

Pick Szeged Zrt - meat processing company

PT Bumi Menara Internusa Crab Division - producer of pasteurized Blue Swimming crab meat

Surefoot Solutions Ltd - provider of safety and environmental support

Whittard of Chelsea - retailer specialising in tea and herbal infusions

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



Ecotrophelia Europe - UK teams wins bronze

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A team from Nottingham Trent University has been awarded the bronze prize at the European final of Ecotrophelia for its sustainable and indulgent non-dairy alternative to traditional ice cream, which is made using algal protein. The team, who won the UK final of this student Food Innovation Competition at Campden BRI Day in June with its product - Från Början - was presented with the award at SIAL in Paris.

They were competing against 15 national teams from across Europe, who pitched their ideas to a panel of 20 judges, which was chaired by Ariane Andres, Head of Academic Alliances, Nestlé Research Center.

Bertrand Emond said: "We and the IFST brought the Ecotrophelia competition to the UK just three years ago and are delighted that a UK team has already had success at the European finals. A record nineteen teams from across the UK entered the competition this year and the standard was exceptionally high, which is reflected in the bronze win at the European finals. A huge thanks to all the sponsors of the UK competition for their continued support."



Manufacturing and processing highlights from 2016

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

- Aseptic processing by Philip Richardson
- Pasteurising alcoholic beverages by Chris Rice
- Checking that processes work
- Mathematical modelling of processes by Mark Naylor

Podcasts www.campdenbri.co.uk/podcasts.php

- Ultraviolet light for decontamination - Danny Bayliss
- High-protein drinks: formulation and processing - Fraser Courts

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For other sites, see
www.campdenbri.co.uk/campdenbri/contact.php

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