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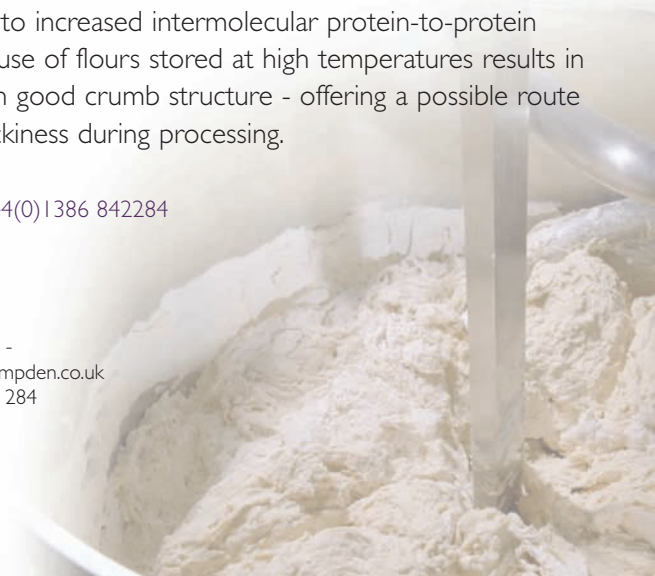
Bread making operations are known to be affected by the temperature in the bakery during dough mixing and development. For example, bakers report that high ambient temperatures can result in uncontrolled fermentation, yielding sticky un-processable dough and dough collapse during proving or baking. Our research project is assessing the precise impact of high ambient temperatures at various stages of bread production on the practicalities of the process and the quality of dough and bread produced.

Whilst high dough temperature during mixing or high ambient bakery temperatures can be shown to result in sticky dough, causing handling problems during moulding, the high bakery temperatures do not affect bread volume or crumb quality as such. However, if not addressed, the problem of dough stickiness will significantly compromise production output.

Changes in flour properties were also observed. Peak viscosity in flour-water pastes increased, while dough rheology became 'tighter'. The latter is probably due to increased intermolecular protein-to-protein bonding. Interestingly, use of flours stored at high temperatures results in less sticky doughs with good crumb structure - offering a possible route to reduced dough stickiness during processing.

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with the subject line: send RD 284



Sulphite replacement

A new EU-funded project is underway to identify ways of replacing sulphur dioxide in products. Sulphur dioxide (sulphites) plays several important roles. Through its anti-oxidant activity it prevents enzymatic and non-enzymatic browning, whilst its anti-microbial properties help reduce spoilage. However, its use has some disadvantages. It can elicit adverse reactions in sensitive consumers, and so is listed as one of the 14 specified 'allergens' in EU legislation that have to be declared on products. It can also strongly reduce thiamine uptake, and so is generally avoided in food products that are an important source of this vitamin.

The project - SO₂SAY (*Replacement of sulphur dioxide in food keeping the same quality and shelf-life of the products*) - will investigate alternative approaches to preventing enzymatic browning, explore the use of replacement plant extracts with anti-oxidative and/or antimicrobial activities, and assess the use of processing and packaging under reduced oxygen atmospheres. The work will include studies with fresh and dried fruits and vegetables, wine and beverages, and snacks and convenience products. It is anticipated that the new approaches could be used singly or in combination, depending on the application.

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Yeast identification

New approaches to identification of brewer's yeasts and spoilage yeasts are being assessed. Biolog's Microbial Identification has been used to identify yeasts on the basis of their carbon metabolism, and could successfully distinguish between a range of ale yeasts and spoilage yeasts. An expanded and customised database of yeast profiles would be required for distinguishing lager yeasts. Profiling a wider range of yeast characteristics (with 'Phenotype MicroArrays') also offered promise, demonstrating that changes in yeast metabolism occurred as a result of the process conditions. It is important to understand what is happening to the yeast to ensure that each brew is consistent.

These approaches complement established molecular methods, used for characterising brewing yeasts and yeasts that cause spoilage across a range of food and drink products. For example, DNA sequencing can be extremely useful in identifying contaminant yeasts responsible for product spoilage.

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Service FEATURE

Trouble with taints

Problems with taints and off-flavours can cost food and drink companies considerable money and time - in wasted product and resolving the problem. Understanding the cause is crucial in preventing recurrences - but demands significant skill and experience as taint problems are often sporadic. Rob Levermore of Campden BRI's Chemistry Department explains:

"Typical taint descriptions include, for example, 'antiseptic', 'musty', 'rancid' and 'petrol'. The client may have noticed the taint themselves or have received consumer complaints, but not know the cause. We have solved taint problems over many years, so with knowledge of the product and its history can quickly form a view of likely causes. We use state-of-the-art equipment, like mass spectrometry, to confirm our suspicions or to identify new problem chemicals - which helps establish how the problem arose."

Phil Voysey of our Microbiology Department comments: *"'Nail varnish' taint can arise from yeast contamination. For example, if the yeast is present in a glaze applied to the product post-baking, a distinctive taint can develop with time. Understanding that this has a microbiological rather than chemical cause is essential in preventing recurrences."*





> Sensory aspects

Sometimes a company suspects that it has a taint problem, but isn't sure. Our sensory descriptive panel can help establish whether there is a problem, as Susan Rogers explains: "Our panels of trained assessors can assess products using descriptive analysis and provide meaningful guidance to our chemists in their investigations. This multidisciplinary approach works extremely well."

Wine is a product in which taints can have many causes and be particularly contentious, as Geoff Taylor of Campden BRI's Corkwise explains: "Wine taints can arise from inadequately cleaned vats, tainted wood, cleaning fluids, closures, dirty bottles or proximity to odours. As well as tackling these, we have recently developed a new technique for quantification of 'aerial taint' - arising from the atmosphere in wineries, warehouses and cellars."

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Korea collaboration

Campden BRI is delighted to have signed a collaborative agreement with KFRI (Korea Food Research Institute), based in Kyonggi-do just outside Seoul in South Korea. Martin Hall, Director of Food Science at Campden BRI, commented:

"Our organisations have worked together for many years looking, for example, at formulation of Korean products to western tastes. This agreement enables us to capitalise on our relationship and explore joint ventures in research, technical services and information provision - for example, exchanging best practice in areas such as food safety assurance, and low energy and low carbon technologies. We are also keen to harness their expertise in areas of diet and health - particularly strong aspects of Korean culture."

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Martin Hall and Dr. Dong Bin Shin, with Steven Walker and Dr. Ho-Moon Seog signing the collaborative agreement between Campden BRI and KFRI



Prof. Sam Millar

We are pleased to announce that Sam Millar, recently appointed Director of the Cereals and Cereal Processing Division at Campden BRI,

has been awarded a Special Professorship of Cereal Processing in the School of Biosciences at The University of Nottingham. This reflects Sam's considerable standing in the cereal science and technology community and his direct contribution to the university through cereal science lectures on university courses.

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Visit us at:

Drinktec
Munich
14-19 September
Hall B1 - Stand 309

Members' Day 2009
Nutfield site
8 September 2009

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ABPCO role

Campden BRI's Daphne Llewellyn Davies has been elected Vice-chair of ABPCO (the Association of British Professional Conference Organisers), reflecting our growing role in event management. Together with our training team, Daphne manages around 30 major conferences, seminars and exhibitions annually for Campden BRI and client organisations, at our purpose-built event facilities and elsewhere. Current events include the European Fish and Seafood conference (Stavanger, Norway, 9-10 March) on behalf of Nofima Norconserv and work with Elsevier to produce the bi-annual Pangborn Sensory Symposium and the European Sensory Science Conference (5-8 September 2010).

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Electronic records club

Our newly formed Electronic Records Club is developing guidelines for the use of electronic storage for records of food production and compliance with control points. Electronic data storage can reduce manpower and paper use and enables the capture of more accurate and detailed records of critical parameters. New club members are welcome at the next meeting on Monday 21 September at our Chipping Campden site.

The club was instigated at the request of the heat preserved foods sector, but could benefit all areas of the food and drinks industry. One of the barriers to widespread adoption of electronic storage has been the lack of guidelines for their use, which this club aims to address. Electronic records are widely used in the pharmaceutical and aerospace sectors, for example, and the aim is to learn and adopt best practice from these sectors. To find out more, without obligation, please get in touch.

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Seminars

Campden site unless stated otherwise

Hand hygiene 20 October

Water footprinting 11 November

**Baking for a healthier diet:
reformulation**
12 November

Meat and poultry - slaughter
19 November

Food labelling 3 December

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Laboratory accreditation forum

A new dedicated forum will encourage discussion between food testing laboratories on all issues relating to laboratory accreditation. By providing laboratory managers and technical staff with direct access to relevant expertise, and allowing them to discuss non-competitive issues in a neutral environment, the forum will help foster their continuing professional development and reinforce adoption of best practice. It will take the format of seminars with presentations and discussion sessions with invited experts, addressing all aspects of laboratory accreditation and related subjects. Appropriate trade displays will be used to demonstrate new equipment and systems.

The forum is open to microbiology and chemistry laboratories, both small and large, within food companies, the contract analysis sector, and enforcement. It will cover topics such as national and international standards, method validation, novel technologies, calibration, quality control and assurance, laboratory management and auditing. Please contact us for further information or to register interest.

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WELCOME TO NEW MEMBERS

Campden BRI is delighted to welcome the following new members who joined in June 2009:

Aberdeen City Council - a Scottish local enforcement authority

Bioguard Hygiene Solutions Ltd - a manufacturer and distributor of a range of non-hazardous hygiene, cleaning and infection control products.

Cambrian Pet Foods Ltd - a Welsh pet food manufacturer

Dawn Fresh Foods Ltd - an Irish manufacturer of soups, sauces and ready prepared meals

Design Go Ltd - a supplier of products spanning a wide variety of consumer needs within the travel and gift market

Disposable Cubicle Curtains Ltd - a specialist supplier of curtains to the healthcare sector

Faegre & Benson LLP - a corporate law firm

Food Development Association - a trade body

Gallaher Ltd (UK) - a Northern Irish tobacco company

Hayden's Bakeries Ltd - a manufacturer of a range of bakery and flour confectionery products

Hygiene International Ltd - a microbiology and life science company developing rapid solutions for the food & beverage, healthcare and life science industries.

Northern Group Systems (Environmental Health) - a Northern Irish local enforcement authority

Ramdiya & Sons - an Indian importer and exporter of food products (mainly bakery products) and an importer of food processing equipment

VenVide Ltd - a company specialising in the design, development and manufacture of highly specialised colour and visual assessment equipment

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