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JUNE/JULY 2013



Changing **Nature** New options for food

Also Inside

**QUESTIONING THE SAFETY OF ENERGY DRINKS
UNLOCKING THE SECRETS TO FOOD PREFERENCES
LOW CARB DIETS LINKED TO MORTALITY**

Ballantyne

Quality, expertise & innovation.

ON THE COVER

*Real cheese, real dairy...
as authentic as the original*



Ballantyne, Australia's first manufacturer of cheese powders, has an extensive range of cheese and dairy ingredients that will boost the appeal of foods with an authentic and intense cheese profile.

A family owned, third generation business, Ballantyne has been serving the global market for fine foods for over 84 years and is one of the most recognised and trusted brands of dairy products throughout the world today.

The Ballantyne range of cheese and dairy powders are true dairy ingredients, not flavours. Ballantyne's dairy ingredients are the perfect partners in your premises, convenience foods, bakery and snack foods.

Ballantyne's cheese, cream, yogurt and butter powders not only provide you with a real dairy flavour profile but enhances mouth-feel and richness in food products. It can also enhance sweet and savoury flavours in your applications. Try the Ballantyne range to understand the benefits of real cheese and dairy ingredients in your product applications.

Why Ballantyne Cheese Powders?


The solution to meeting your customer's expectations on clean labelling is using our wide range of cheese and dairy powders.

The range of Ballantyne cheese powders offers a wide variety of cheese profiles for various applications. The Cheddar cheese range imparts flavour profiles that are mild and buttery to strong, sharp and mature. The specialty cheese range offers Parmesan, Romano, ricotta, blue vein, mascarpone and cream cheese.

The concentrated range of cheese powders and pastes are made from real cheese and dairy ingredients. With enzyme technology, flavours are intensified so you can use less, providing a more economic option. The concentrated cheese and dairy range is also able to withstand high heat in bakery applications, such as crackers, dough and bakery fillings, and high-pressure retort environments, such as soup and sauce applications.

Benefits of using powdered cheese and dairy products

The benefits of powdered cheese and dairy products include convenience, storage, longer shelf life and ease of use in the manufacturing environment. Ballantyne's real cheese and dairy products are perfect for use in dry applications. Ballantyne's cheese and dairy powders also help to support a "real cheese" claim, improve savoury flavour profiles in ready-to-eat and convenience foods, and can replace fresh cheese in applications.

Ballantyne continues to provide food technologists and manufacturers with authentic cheese and dairy flavor profiles demanded by today's consumer. Our vision is to attract food manufacturers through these value-added taste offerings. We also aim to inspire our customers to create appealing, delicious and popular products with our signature cheese and dairy powder range. 

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Quality, expertise & innovation.

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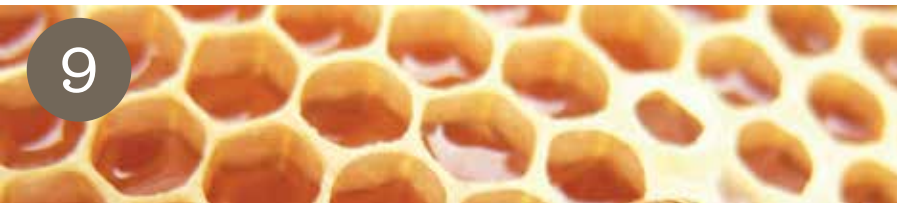
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FROM THE EDITOR

The ongoing European horsemeat scandal ("The Horsemeat Scandal Gallops On", page 28) is providing an unfortunate illustration of the many issues the food industry faces, including the problems of complex supply chains and how to address consumer concerns.

During a recent conference on the integrity of the food chain in York (UK), the head of quality, safety and supplier performance for Sainsbury said that the crisis was "horrendous" for the entire industry.

"We have very robust processes where a lot of money and years of expertise have been put in, but this was down to a lack of insight," Alec Kyriakides said. According to Kyriakides, at the present time no amount of testing or inspection can stop this type of food fraud from occurring again – and he is convinced it will.

Meanwhile, breakthroughs in research and technology are providing new opportunities for health and wellbeing and new options for the ever-changing needs of the world, from a new form of rice that could help billions of people ("Fortifying for the Future", page 18) to developing olive oil with higher levels of polyphenols (page 48) and using ozone to kill germs (page 34).

And anyone simply looking for a longer life might want to purchase a Greek briki (page 7) and learn to love boiled coffee.

Opa indeed.

Lynn Elsey

Editor

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Average Net Distribution
1 October 2011 -
30 September 2012
2764



BY THE NUMBERS

STATE OF THE INDUSTRY

The Department of Agriculture, Fisheries and Forestry's annual overview of Australia's food sector, "Australian Food Statistics 2011-12", takes a fairly optimistic tone about the food industry, although it does report a two per cent drop in employment.

Overall, the industry accounted for nearly a quarter of all Australian manufacturing jobs. And although consumers have claimed that rising prices are a problem, Australia's food inflation was significantly lower than average across OECD countries over the past year.

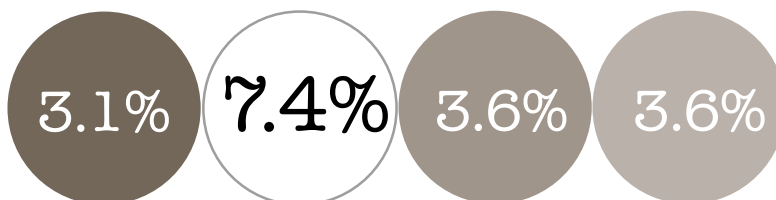
Food exports continue to rise, helping increase Australia's food trade surplus by 14.6 per cent over the previous year. And it comes as no surprise to find that the export market is changing, with the US dropping to third place, following Japan and Korea in the total value of Australian food exports. China now ranks fifth, just behind Indonesia.

When it comes to retail margins, our supermarket chains continue to punch above their weight on the global stage – the rare instance of an Australian success that doesn't cause a bout of flag waving among all constituents.

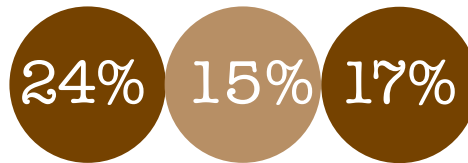
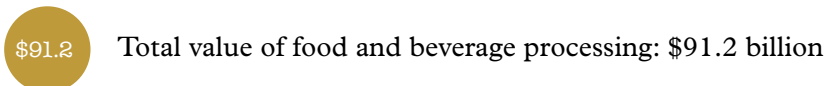
The following come from the new report.

Supermarket retail margins:

- Global average: 3.1%
- Woolworths': 7.4%
- Coles 3.6%
- Metcash 3.6%



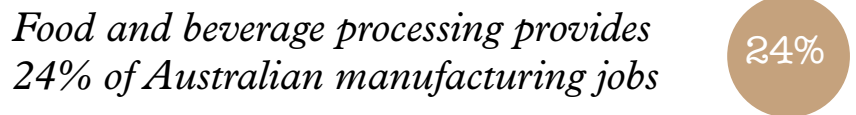
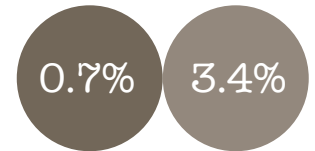
Total Food Exports: \$30.5 billion, 12.3% increase



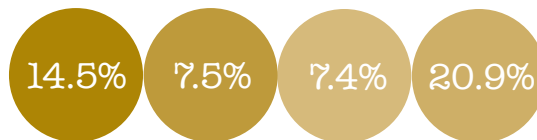
Key food industry segments by value: Meat 24%; Dairy 15%; Beverages 17%



Australian food price inflation: 0.7 %; OECD average: 3.4%



Where does our food go? Japan, 14.5%, US 7.5%, Indonesia 7.4%, ASEAN countries 20.9%





THE SECRET TO A LONGER LIFE

Drinking boiled Greek coffee may be the key to longevity and a healthier heart, according to a new study.

A group of cardiovascular health researchers from the University of Athens Medical School wanted to see if there was any connection between drinking Greek boiled coffee and the remarkable longevity rates for residents on the Greek island of Ikaria. The Ikarians have been noted for their exceptionally long life spans – one per cent of the population lives more than 90 years – 10 times higher than the European average.

The scientists analysed the coffee drinking habits of 142 elderly Ikarians (out of sample of 673 permanent residents over the age of 65) to evaluate the relationship between consumption of boiled Greek coffee and endothelial function. The researchers said that endothelium, which is affected by ageing and lifestyle habits, plays a key role in vascular function. Recent studies have indicated that moderate coffee consumption can boost endothelial health and lead to a reduction in cardiovascular disease.

The study, which was published in the March 2013 issue of *Vascular Medicine* (doi: 10.1177/1358863X13480258), found that subjects with elevated cardiovascular risk factors who drank boiled Greek coffee every day had better endothelial

functions than those who drank other types of coffee. The researchers noted that boiled Greek coffee, which is rich in polyphenols and antioxidants and contains only a moderate amount of caffeine, seemed to provide more benefits than other types of coffee.

“This evidence provides a further explanation about how chronic coffee consumption can favourably affect cardiovascular risk, providing a new connection between nutritional habits and cardiovascular health,” the authors concluded. They also said that given the widespread consumption of coffee and its possible effect on public health, further studies were needed to determine how coffee benefits vascular integrity. ¹⁰



FUNCTIONAL CONFECTIONERY

An Israeli company has developed confectionery that not only tastes good but also provides nutrients.

Carmit Candy's R&D team has created a line of fortified confectionery products including sugar-free toffee chews with Echinacea, vitamin C and zinc and chocolate coins with vitamin D and K.

The ingredients are selected for their science-backed health claims, regulatory approval and technical parameters. They are then incorporated into one of the company's products where they undergo organoleptic and analytical testing to insure stability and taste.

Carmit products are market locally and internationally. The company also provides private label products for the North American, European and Asian markets. According to a spokesman they are currently undergoing discussions with an Australian health food provider regarding providing products for the Australian market. ¹¹

BARLEY WITH EXTRA BENEFITS

Researchers at CSIRO have developed a new type of barley grain that is high in fructans which have been shown to improve gut health.

The new barley, which took five years to develop, can be used as flakes or wholegrain flour in a wide variety of products including bread, cakes, crackers and breakfast cereals.

According to Tony Bird from CSIRO's Food Futures Flagship, the "fructan content isolated and extracted from barley was found to improve a range of indicators of gut health, including promoting the growth of 'good' bacteria in the gut of experimental rats".

The team also found that the grain helps promote the retention of essential minerals, especially calcium and magnesium, and may be beneficial for promoting bone health.

The new barley has up to 11g of fructans per 100g compared to standard barley which has less than 1g per 100g.

CSIRO plans on commercialising the new grain. ❸

NEW FOOD ALLERGY CENTRE

In response to the spiralling rate of food allergies, a new collaborative research centre has opened in Australia.

The Centre for Research Excellence in Paediatric Food Allergy and Food-related Immune Disorders aims to tackle the growing allergy epidemic.

According to the centre, one in five Australians is affected by allergies, with experts warning that the percentage could rise to 70 per cent by 2050 unless efforts are made to counter the rapid expansion.

The new institute is designed to create an alliance of researchers, clinicians and allied health professionals across Australia to focus on developing childhood allergy prevention strategies, including preventing the development of allergies, preventing adverse allergy events in children and preventing allergies from progressing to asthma.

The new centre is being funded by the NHMRC and aims to provide evidence-based guidelines to inform public health policy and the clinical care of patients. ❹

GOSCAN OFF TO A SLOW START

After three years in development, an iPhone app designed to link food products to particular dietary needs was launched on 21 March 2013.

GoScan, Australia's first industry-wide endorsed application, was developed in association with the major retailers, food companies, the AFGC, Australian universities, the Allergy and Anaphylaxis Australia and the Coeliac Society.

As of mid-April around 4,500 products were available on the app, with around 10,000 downloads from consumers.

The app works by scanning food product barcodes, which are linked to manufacturer-provided information. Although quite a bit of the dietary information can already be found on most of products, the app allows the user to personalise their searches.

For example, a user can indicate that they have a peanut allergy, which prompts the app to provide an alert when a product

contains peanuts. It also could be a blessing to those of a certain age who often find that the fine print on labels is difficult (if not impossible) to read without putting on reading glasses.

The company behind the app, GS1, says that it gives food manufacturers more confidence that the information is accurate, rather than other apps which have information provided from outside sources.

Along with dietary information the app also includes options for country of origin information, links to the manufacturer's website and social media and sustainability details. According to GS1 banner ads are scheduled to go live on 1 July 2013, which will allow companies to provide promotions and competitions.

A spokesman for GoScan said that the product uptake has been slow (the average number of packaged food products in an Australian supermarket is

around 20,000) due to food manufacturers having difficulties consolidating and loading the relevant information onto the database. ❺





FOOD COMPANIES FALLING SHORT ON NUTRITION

A new report, which ranks the profile of the world's 25 largest food and beverage companies in regards to policies, practices and performance related to obesity and undernutrition, says that the businesses need to do more to increase access to nutritious products and influence consumer behaviour.

The Access to Nutrition Index (ATNI) rated Danone, Unilever and Nestlé as the best of the large multinationals in regards to commitments for improving global nutrition but still finds them coming up short.

Out of a possible score of 10, Danone topped the list with a 6.3 ranking, followed by Unilever at 6.1 and Nestlé at 6.0. Heinz placed 8th (2.7), Kellogg 10th (2.5) and Mars ranked 16th (1.6).

The rankings were based on seven categories: corporate strategy and governance related to nutrition; formulation of appropriate products; delivery of affordable, available products; responsible marketing policies; support for healthy diets and lifestyles; informative and appropriate use of health and nutrition claims and engagement with policymakers and other stakeholders.

"The aim is to promote a more objective public debate and encourage companies to do more to address nutritional needs of customers," said Keith Bezanson, chair of the ATNI Independent Advisory Panel.

Inge Kauer, the executive director of ATNI, said that improvements were not only good for public health but also helpful to the companies long term sustainability.

The report found that although many companies had corporate strategies that included explicit commitments to improving nutrition, these often did not align with their actual performance on product formulation, accessibility and marketing.

The report criticised a general lack of transparency and disclosure regarding the nutritional practices, making proper evaluation difficult.

The initiative was funded by the Global Alliance for Improved Nutrition, the Bill and Melinda Gates Foundation and the Wellcome Trust.

The ATNI plans to publish its index every two years. It also plans to address some of the current limitations including the lack of an international standard for determining what is considered to be a "healthy" product. ¹⁰

SUPPLEMENTING DOESN'T HELP COGNITIVE DECLINE

Consuming vitamins, fatty acids, drugs or herbal products have no effect on preventing cognitive decline in healthy older adults according to a new study.

Scientists at St Michael's Hospital in Toronto, Canada undertook a research review of 32 randomised clinical trials of around 25,000 adults. The researchers

did not find strong evidence that a variety of treatments – including the use of cholinesterase inhibitors, herbal supplements such as ginkgo, or vitamins and fatty acids such as vitamin B6 or omega-3 fatty acids – had a positive impact on improving cognitive function in healthy elderly people.

They did find, however, that some mental exercises could be helpful.

The results of the study have been published in the *Canadian Medical Association Journal* (doi: 10.1503/cmaj.121448). ¹¹

PHYTOTRON CELEBRATES 50 YEARS



Australia's chief scientist Ian Chubb has officially opened the recently refurbished Phytotron facility at Black Mountain. The facility has been the site of world-leading research by plant scientists for half a century.

Work carried out at the facility during the 70s helped explain how plants react to environmental factors such as temperature, light intensity and day length, which led to significant improvements in crop productivity. Today it is an important site for genomics and phenomics research.

"The refurbishment of this building enables the Phytotron to continue to produce great science and act as a melting pot for the world's leading plant scientists to tackle pressing global issues," said John Manners, chief of CSIRO Plant Industry. ¹²

A HONEY OF A REMEDY

Australian researchers have determined that manuka honey can be highly effective in the treatment of chronic wound infections.

The research, which was undertaken by scientists at the University of Technology Sydney (UTS), may provide an important new way of combating the increasingly difficult challenge of treating chronic conditions, due to antibiotic resistance.

“Honey is an excellent example of where years of evolution can provide an effective, long-term medical solution and our research supports the claim that bacteria will not become resistant to honey,” said Liz Harry, lead researcher on the project.

The study involved testing a number of honeys, including medical-grade manuka (medihoney), kanuka and clover for effectiveness at inhibiting the growth of four types of bacteria commonly found in chronic wounds.

Results showed that the medical grade manuka honey was the most effective at inhibiting the growth of four types of bacteria. The study also involved combining the medihoney with a commonly used antibiotic, rifampicin. The researchers found that combining honey with the antibiotic was more effective at killing the bacteria than using either treatment alone. The researchers believe that the honey prevents the emergence of rifampicin-resistant bacteria.

“Interestingly, the key to the effectiveness of honey is its chemical complexity – it contains several chemicals that inhibit bacterial growth”, Harry said.

Harry also said that that it was important that clinicians and patients were aware that synthetically altered honey was not equal to natural honey and that consumers and clinicians should use natural honey products that have been minimally processed for optimal use against chronic wounds.

The results of the study have been published in *PLoS One* (doi:10.1371/journal.pone.0057679). ©



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GLOBAL FOOD ALLERGY STUDY UNDERWAY

A new global food allergy study, which is being billed as the world's largest, is aiming to provide better tools to understand and manage food allergies.

The EU sponsored €9 million project involves partnerships between an array of international experts and industry leaders in a quest to produce a standardised management process for food manufacturing, develop tools to enforce new regulations and produce evidence-based information for improved health advice regarding food allergies.

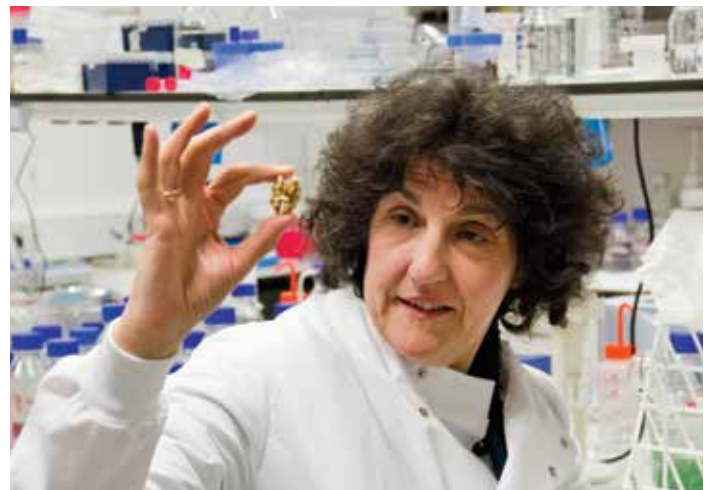
The Integrated Approaches to Food Allergen and Allergy Risk Management (iFAAM) project is being led by Clare Mills, from Manchester Institute of Biotechnology, UK, and will include researchers from the UK, Europe, the US and Australia. The project will also involve 38 partnerships with industrial stakeholders, including Unilever and Eurofins, patient groups and a risk manager and assessor group and the UK Food Standards Agency.

"This is a massive research project which will have far reaching consequences for consumers and food producers. The evidence base and tools that result from this will support more transparent precautionary "may contain" labelling of allergens in foods which will make life easier for allergy sufferers as they try to avoid problem foods," Mills said.

The head of the UK's Food Standards Agency allergy branch, Sue Hattersley, said that information gained from the study could help provide consumers with a more consistent source of information about food allergies, allowing them to make safer choices about the foods they eat.

"Furthermore it has the potential to provide a much greater insight into the development of food allergies – and, from an industry and regulatory perspective, more guidance and a big impact on the management of allergens in food manufacturing and production," Hattersley said.

The research project is expected to take three years to complete. ①



Clare Mills

DEMITARIANS UNITE!

People in wealthy countries should halve their consumption of meat in order to protect those in poorer countries and avoid severe global environmental damage, according to a new report commissioned by the UN Environmental Program.

Those living in "rich" western countries, especially Europe and the US, should become what Mark Sutton calls "demitarians" – eating half as much meat as they currently do.

"Eat meat, but less often – make it special," said Sutton, of the UK Centre for Ecology and Hydrology (CEH) and lead author on the report. "Portion size is key. Think about a change of culture that says, 'I like the taste, but I don't need so much of it.'"

By eating more vegetables and less meat, people will also have better diets he noted. Decreasing meat consumption in the western world would enable those in poorer countries to increase their consumption of animal protein.

Sutton feels that getting Europeans to cut back on meat will be easier than convincing Americans to change their habits.

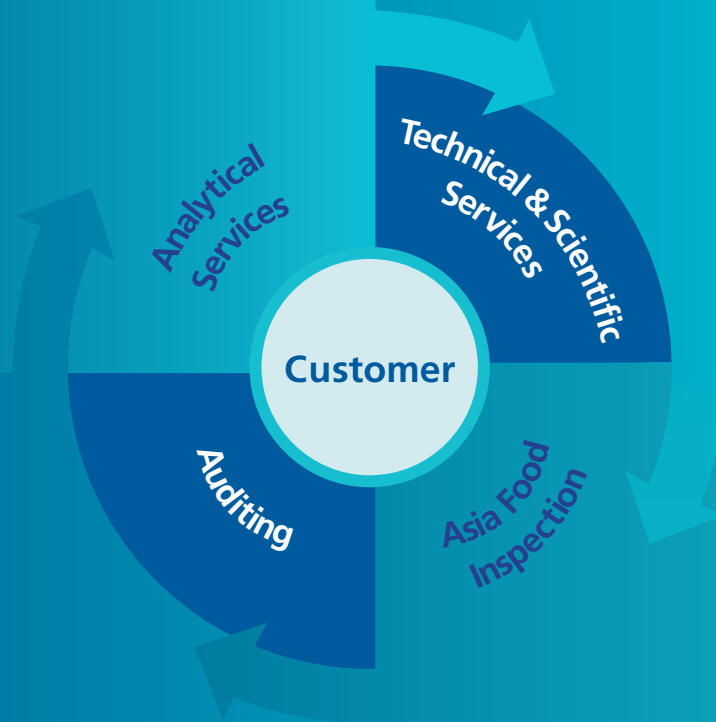
The report, "Our Nutrient World: The challenge to produce more food and energy with less pollution", also found that chicken and pork offered better environmental options.

The authors concluded: "Unless action is taken, increases in pollution and per capita consumption of energy and animal products will exacerbate nutrient losses, pollution levels and land degradation, further threatening the quality of our water, air and soils, affecting climate and biodiversity."

The study was conducted by CEH and, along with recommending changes in eating behaviours, suggested a number of agricultural and environmental measures to address the issues. ②

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PEOPLE

Laurie steps down

Jock Laurie has stepped down as president of the National Farmers' Federation to run for pre-selection for a NSW seat for the National Party. Laurie has served as the head of the farm body since November 2010.

Duncan Frasier, who was vice president of the association, has taken over the role until an election is held in November. Frasier owns and runs a wool, sheep, rice and wheat property near Hay.

Warrnambool Cheese

Barry Irvin has resigned as a director of the Warrnambool Cheese and Butter Factory. Bruce Morley, a former director and current associate director, has been appointed to fill the position.

Management Changes Fonterra

Fonterra has announced a number of senior management changes, including a new leadership team for its Asia Pacific Middle East Africa unit (APMEA).

Judith Swales has been appointed as managing director of Fonterra Australia, a newly created role. Swales previously served as managing director of Heinz Foods Australia and the CEO and managing director of Goodyear Dunlop.

"I am confident Judith can provide the leadership to accelerate the turnaround and growth of our Australian business," Fonterra chief Theo Spierings said in a release.

Other members of the new APMEA team include Peter McClure, who remains as managing director for New Zealand. Juan Carlos-Pestana is the new managing director ASEAN and Malcolm Smith is the new commercial director. Chris Augustijns is now director of marketing; Joe Coote is the new director of operations and supply chain; Alan Fitzsimmons is the managing director of the Indian

sub-continent, Middle East-Africa and Garry Mudford is the new director for people, culture and services.

Mark Wilson, the managing director of APMEA, is leaving Fonterra; a search is underway for his replacement.

Patties Foods

Mark Smith is the new chairman and non-executive director of frozen food company Patties Foods. Smith has extensive experience in the FMCG sector including 16 years with Cadbury Schweppes Australia and New Zealand where his roles included serving as managing director. Smith has taken over from Chris Riordan who has retired.

Basford joins IRRI Board

Kaye Basford, from the University of Queensland, has been appointed to the International Rice Research Institute board of trustees. Basford, who joins 14 other members from 11 countries, is the sole Australian on the board.

"With new sustainable rice farming techniques, we can work with the public and private sectors to help improve the yield and quality of their rice in an environmentally sustainable way, and help governments formulate policy to improve the equitable supply of rice," Basford said.

New Asia Pac Director for Loftware

Andy Chew has been named as director of the Asia Pacific division of Loftware, a global enterprise labelling company. From his base in Singapore Chew will be responsible for overseeing all sales and business development throughout the Asia Pacific region.

Fonterra Board

Mark Dingley has been appointed as general manager of operations for Matthews Australasia. Dingley has held various roles with the company since 1994. 



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Gluten free, flavour enhancement the natural way.



Introducing two new Kikkoman soy sauce products for use in the industrial food manufacturing market:

Kikkoman Naturally Brewed Gluten Free Soy Sauce 200Ltr and *Kikkoman Dehydrated Naturally Brewed Gluten Free Tamari Soy Sauce 25kg*.

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For more information about Kikkoman and our food manufacturing products, visit www.kikkoman.com.au


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AIFST

NEWS & EVENTS

The latest news and details of what's happening with AIFST.

Convention Countdown

The latest advances in probiotics and using technology to design safer and healthier foods are just a few of the highly topical subjects on offer during AIFST's annual convention in Brisbane, 14–16 July 2013.

The convention will continue to build on AIFST's reputation for providing our members and the wider community with up-to-date research and news about the food industry across Australia and around the world, to provide participants with plenty of opportunity to discuss and debate key issues and opportunities to network with colleagues.

Along with covering key challenges and issues in the food industry, the conference will also include practical elements such as a focus on managing food innovation in challenging times.

Full details of the conference and workshops can be found on the website.



AIFST CONVENTION - SCHEDULED HIGHLIGHTS



Ross Crittenden

Vice president of research and development at Valio, Finland's largest dairy company, and also chair of the Global Alliance for Probiotics. Crittenden will be providing insight about the latest advances in probiotics for gut health.



Cristina Nicoli

Head of food science and technology at the Agriculture Faculty of the University of Udine, Italy. A past recipient of the Italian National Innovation Prize, Nicoli will be covering technological strategies for designing foods with better safety and health profiles and an overview of shelf life.



Dior Sawaya

Market development manager for Roquette, France, where she focuses on technical applications in food and nutrition. Sawaya will be addressing issues with enabling food trends in new product development.



Workshop

Salt/sodium reduction mini workshop, which includes a panel of experts from across the industry, including Gerhard Gerstner, business development manager for Jungbunzlauer Landenburg, Germany, facilitated by Sandra Capra, the president of the International Confederation of Dietetic Associations.

AIFST Welcomes New Fellows

In recognition of their excellent contributions to the food science profession, the AIFST Council has elected the following individuals as Fellows of the Institute.



Lance Schlipalius

An active member of the AIFST since 1968, Schlipalius was the inaugural chair of the southern branch microbiology group and recipient of the 1988 AIFST Innovation Award for commercialisation of natural beta carotene from algae. He received a BSc in microbiology – nutrition

from Melbourne University and associateship diploma of food technology, Royal Melbourne Institute of Technology. His professional roles include serving as product development manager for dairy products at Kraft Foods, director of Technovate Management and Consultants since 1985 and as technical manager and director of Betatene and Cognis and Top End Nutritional Holdings.



Justin Whitely

After receiving a B.S. (Honours) and PhD in biochemistry from the University of Western Australia, Whitely started his career as a researcher/technical officer for the Western Australian Department of Agriculture. He joined the Compass Group in 2000 where he is currently general manager

HSEQ and Risk. Whitely has been a member of AIFST since 1993 and committee member of the WA branch since 1999. Other AIFST involvement include chairing the National Constitution/Manual Procedure Working Group, acting as vice chair and chair of the WA branch and serving as a member of the AIFST Council.



Elizabeth Szabo

As chief scientist for the NSW Food Authority, Szabo provides scientific input into regulatory decision-making, consumer and industry advice. She has taken an active role as a member of AIFST including being a member of the 2011 convention committee and

chair of the technical program committee. Szabo has a BSc (Hons) and PhD in microbiology from the University of Queensland. She has worked as research microbiologist for CSIRO, represented Food Science Australia on the CRC for International Food Manufacture and Packaging Science and served as deputy director, Australian Food Safety Centre of Excellence. ⁴

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QUESTIONS & ANSWERS



Mia Sadler

Mia Sadler is managing director of the Food Group International, a nutrition-related agency she founded with partner Emma Stirling in 1999. Her previous roles included working as nutrition co-ordinator for the Australian Meat and Livestock Corporation, manager of science communications for Gatorade Australia and as a dietitian in the critical cardiac unit of a NSW country hospital.

An Accredited Practising Dietitian (APD), Sadler holds a bachelor of applied science (nutrition) from Curtin University in Perth, WA; a graduate diploma of dietetics and a certificate in marketing (UTS).

Q What does the Food Group do?

A We deliver nutrition solutions for global food businesses. Our clients engage us to be their external eyes and ears in the nutrition world and their internal arms and legs when they are short on resources.

Our team includes a number of internal and external APDs, food scientists, food lawyers and other food experts who work together on nutrition projects.

Q Who are your clients?

A Our clients are mostly global food brands. From our Sydney office we service businesses in 38 countries across Australia, the Pacific, the Middle East and Africa. Our clients include McDonald's, Mars, Lion, Goodman Fielder and others.

Q What kinds of projects do you undertake?

A Anything nutrition-related. This can be as simple as third-party approval on nutrition labels to creating a company nutrition strategy – and everything in between. If you think of a new product in its life cycle, nutrition touches it from concept through to sale. In many cases, with our clients we get involved in most steps along the way.

Many of the projects we work on support our clients corporate social responsibility commitments, such as reducing the saturated fat in Mars Bar. Our work also involves close liaison with non-government organisations, such as working to reformulate products to help them meet the Heart Foundation's strict nutrition requirements. An example of this was changing McDonald's frying oil to a canola oil blend.

Q How did you get started?

A In 1999, before FSANZ made nutrition panels mandatory, we realised that the requirement for nutrition information would prompt a whole new level of nutrition literacy and sophistication for companies. We saw an opportunity for a team that could offer nutrition, creativity and innovation under one umbrella.

Q Best thing about the business?

A The opportunity to work with leading brands means you can really spearhead change; not just in Australia but globally. For example, making a small change in the type of oil that McDonald's used in their products has led to big changes. When a leader like McDonald's changes, it opens up a new supply option for the entire industry. From March 2007 to December 2010, 1,952 tonnes of trans fat were removed from the Australian food supply due to the new oil. That's a major public health change and we feel privileged to be part of that.

Q What trends do you see in the market?

A A demand for technical knowledge combined with commercial acumen. These days nutrition is getting more sophisticated and more integrated into company strategy. On top of this, the digital world we live in has created a demand for larger brands to be aligned globally. So nutrition messages need to be consistent, yet adapted to suit the local market.

Q What is the secret to your success?

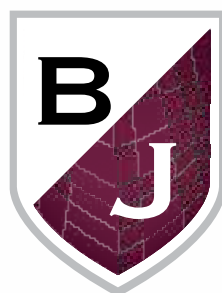
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FORTIFYING FOR THE FUTURE

An Australian biofortification project may lead to a sustainable way of treating iron deficiency for billions of people.

Words by Lynn Elsey

“So, what do you know about iron?” A simple question during a plant genetics conference in 2007 planted the seed for a decade-long research project aimed at increasing the amount of iron in rice.

To date, the project has involved learning a lot about iron and rice, use of the Australian Synchrotron particle accelerator, collaboration with researchers across Australia, the Philippines and Colombia, maneuvering through quarantine issues associated with transferring rice between the countries and a lot of coffee.

More than two billion people – 30 per cent of the world’s population – suffer from iron deficiency. Although the issue is magnified in many parts of the developing world, where iron deficiency affects large numbers of women and children, lack of iron is a problem without borders. For example, it is estimated that seven to eight per cent of Australian women do not get enough iron in their diet.

Iron supplementation is one option for addressing the shortfall. Fortification of foods with iron compounds is another. In developed countries many cereal products are fortified with digestible forms of iron such as ferrous sulfate. However, supplementation and fortification are expensive processes that require food processing industries and health infrastructure, things which are often lacking in developing countries. Furthermore, the costs associated with both options are recurring, requiring

constant inputs of money – and neither approach has had much success reaching rural populations.

Biofortification of crops, on the other hand, cuts to the heart of malnutrition by altering food crops to take up more iron and other essential micronutrients. The creation of biofortified crops, such as rice, would greatly reduce the need for supplementation and food fortification and offer a sustainable method of increasing iron and other micronutrient intakes in developing countries.

Rice and iron

Rice is an ideal vehicle for increasing dietary iron. Widely available and inexpensive, rice provides up to 80 per cent of daily calories for people in many parts of the world such as South and South East Asia. Predictions of continued and rapid population growth (9.3 billion people by 2050, with large increases in rice consuming countries such as India, China and Indonesia)

practice with rice because the germ and bran are rich in oils, thereby leaving whole grain, or “brown” rice, vulnerable to oxidative rancidity at room temperatures and reducing shelf life to approximately six months.

Unfortunately, most of the iron in rice is also found in these oil-rich bran and germ layers, and milling leads to drastic reductions in the amount of iron. While brown rice may have 20 parts per million (ppm) of iron or more, polished or white rice typically has 2–4 ppm iron. Nutritionists estimate that approximately 14 ppm iron is needed in white rice to provide adequate levels of iron in a rice-based diet. The 14 ppm target concentration is based on numerous factors such as per capita consumption, estimated average iron requirements and retention through processing as well as bioavailability.

Because it is not possible to breed this level of iron by traditional means – the highest polished grain iron concentration in any natural rice



Biofortification of crops, on the other hand, cuts to the heart of malnutrition



mean that demand for this important food staple will continue to grow.

Most of the rice that people consume is polished or “white” rice, meaning that it has undergone a milling process to remove the outer germ and bran layers of the grain. Milling is common

variety is approximately 5–6 ppm iron – cutting-edge biotechnology became the option of choice to increase iron specifically in tissues that make up the polished grain.

The Research

So, back to the question of iron.

Following a presentation on salt tolerance in rice, Joe Tohme, the nutritional genomics manager for the HarvestPlus Challenge Program (an international, non-profit research consortium aimed at developing biofortified crops to combat micronutrient malnutrition in developing countries), approached Alex Johnson, a lecturer in the School of Botany at the University of Melbourne and also a nutrition project leader for the Australian Centre for Plant Functional Genomics (ACPGF), to discuss rice biofortification and, more specifically, the possible factors that might be preventing traditional rice breeders from producing an iron biofortified rice.

The discussion led to a small one-year study to explore plant biotechnology options to increase iron concentrations in rice. The results were so positive that the study quickly expanded to a multi-year project, based in Australia and the Philippines, to see if it was possible to create a new type of rice that could put 14 ppm iron into central grain tissues – called the endosperm – which make up polished rice.

Nearly five years later, Johnson's team includes eight postgrads, one post-doc and two technicians who are

based at the University of Melbourne and Adelaide and Melbourne nodes of the ACPFG. The team closely collaborates with scientists at the University of South Australia, in the Philippines at the International Rice Research Institute (IRRI), and in Colombia (International Center for Tropical Agriculture); team members frequently travel between all of the research centres.

In order to grow rice with more iron embedded deep within the grain, Johnson's team focused on a naturally occurring plant compound called nicotianamine (NA), which all plants synthesise in order to keep iron and other metals soluble in their tissues and to facilitate their transport throughout the plant. Nicotianamine synthase (NAS) genes encode enzymes that make NA, and in plants such as rice they are only turned on at high levels when the plant senses that it is iron deficient and needs to absorb more iron from the soil.

"We altered the NAS genes in rice to be on all the time, not just during iron deficiency," Johnson said. "In effect, we tricked the plant into constantly thinking it doesn't have enough iron. By making the plant behave as if it doesn't have enough iron, it absorbs more iron from soil and puts more iron into the grain."

“

We tricked the plant into constantly thinking it doesn't have enough iron

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Laura Moreno checking on the biofortified rice in Colombia.



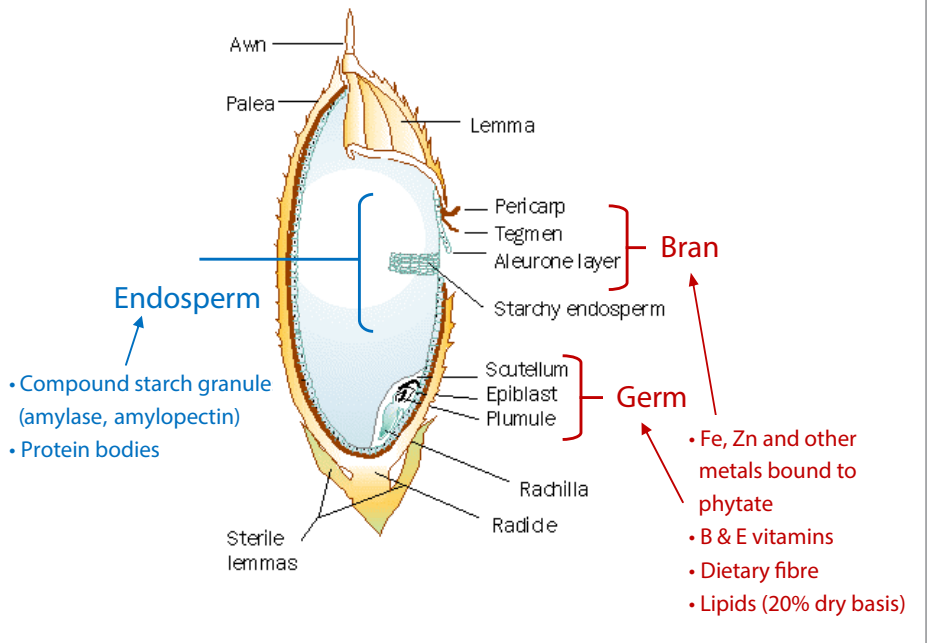
Alex Johnson

Using genetic modification technology, the team developed three new types of rice, corresponding to the three different NAS genes that rice has – all were found to have significantly more iron in the central endosperm tissues that make up polished rice. Of great interest to Johnson's team, however, was the unexpected finding that one of the rice NAS genes, called OsNAS2, was much more effective at increasing iron delivery into the rice grain compared to the other two. Rice plants that were modified to have this gene continuously "on" produced grain, for the first time, with anywhere from 14 to 19 ppm iron in the endosperm. Another unexpected, yet welcome, surprise was that the grain had significantly more zinc. Zinc, like iron, is an essential micronutrient that frequently lacks in rice-based diets

"The new rice has up to four times more iron and twice as much zinc and standard rice," Johnson said.

In an article published in *PLOS ONE* (doi:10.1371/journal.pone.0024476), Johnson and the team concluded that biotechnology could lead to increased iron concentrations in far

RICE NUTRITION BASICS - NUTRIENTS TOWARDS THE OUTSIDE, CARBOHYDRATES ON THE INSIDE



greater amounts than is possible with conventional plant breeding. The team presented "elemental maps" that were generated after many long days at the Australian Synchrotron. These elemental maps allowed the researchers to determine exactly where the extra iron, and zinc, was located in the biofortified rice grain.

The genetically modified rice shows enormous potential for iron and zinc biofortification of rice endosperm and could provide a sustainable and genetically simple solution to iron and zinc deficiency disorders affecting billions of people throughout the world.

From the lab to the field

The work doesn't end with the positive lab results – it is just the start.

"You can have the rice produced but then you have to take it to a developing country where it needs to be bred into varieties adapted to that country," Johnson explained.

The breeding part of the work is currently underway. The biofortified rice produced by Johnson's team is now being backcrossed to natural rice varieties in Colombia and the

Philippines in order to transfer the high iron trait to these varieties, as well as evaluate the biofortified rice in the field.

Thus far, the field trials have shown no difference in yield between the biofortified and normal rice varieties. This is an important result, as farmers will only take up biofortified crops with yields that are at least equal to traditional varieties. Iron and zinc concentrations also remain higher in the biofortified grain, but more seasons of field trials are required before it can be ascertained if the biofortified rice varieties meet the iron biofortification target in a field setting. Johnson's team is also gearing up for trials to test if the biofortified rice improves iron levels in deficient animals. Assuming all goes well, the final step will be a human feeding trial.

A team effort

Working on such an extensive and broadly funded project has provided Johnson with an array of challenges and opportunities.

For starters, managing a project involving multiple time zones, countries and languages adds a layer

“ People seem to come together for nutritional projects ”

of complexity to the project. “It is difficult to get everyone together,” Johnson admitted, “but Skype helps.”

“One of my students, Laura Moreno, just returned from spending a year in Colombia. A Colombian by birth, her fluency in Spanish has been quite useful.”

One of the biggest challenges of the project is dealing with quarantine issues that inevitably surface when transferring biological materials between labs and field sites in different countries. The team has learned to keep these transfers to a minimum and, when they are necessary, to count on it taking longer than expected.

Because the project has been funded by a number of different organisations – the University of Melbourne, HarvestPlus, ACPFG, the Australian Research Council – trying to juggle myriad of funding and reporting requirements can be quite tricky. But Johnson said that this hasn’t created any problems.

“Although each institute has its agreements and way of doing things, people seem to come together for nutrition projects.”

On the plus side, Johnson said that working on an international project has provided great exposure and provided the opportunity to meet some world renowned researchers. “It forces you to get out of your lab.”

But, more importantly, the potential outcome of the project – raising the health standard of countless people – is obviously a big positive. And helps explain why Johnson is quite sanguine about the concept of running a decade-long project.

“I want to follow it through and have an impact on people’s lives,” Johnson said. “We’re in it for the long run.”

Lynn Elsey is the editor of food Australia.



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ENERGY DRINKS UNDER FIRE

As the popularity of caffeinated energy drink continues to grow, questions about safety are also on the rise.

Words by Lynn Elsey

Although the possible health benefits of caffeine have been highlighted in a number of recent studies (see News, page 6 for one example), the presence of caffeine in energy drinks is causing concern with researchers and health organisations around the world.

Reports showing dramatic increases in health and life-threatening incidents related to energy drinks and the rapid growth of the caffeine-fuelled beverages have helped escalate concerns about the safety, status and regulation of caffeine-infused energy drinks.

Hambleton said that the AMA believes urgent action is required to control the sale of energy drinks. Along with the absence of warning labels regarding possible side effects of the caffeine on the drinks, the absence of any standard guidelines for an acceptable daily intake of caffeine is also an issue. Hambleton said if energy drinks are being sold in the same locations as soft drinks, they should also be subject to the same regulations.

After noting that the Australian and New Zealand ministers responsible for regulating food and beverages

Although many energy drink manufacturers claim that their products are not targeted at children or young adults, a number of studies have shown that this cohort is drinking quite a lot of the beverages.

On 6 March 2013, the European Food Safety Authority (EFSA) released a report regarding energy drinks in the EU. It found that adolescents aged 10–18 are the highest consumers of energy drinks, downing an average of 2.1 litres of energy drinks a month. And 12 per cent of these adolescents consumed an energy drink at least 4 to 5 times a week, with an average of 7 litres consumed per month.



Adolescents aged 10–18 are the highest consumers of energy drinks



Sales of energy drinks in Australia are reported to be increasing by more than 8 per cent a year, and now comprise more than 35 per cent of all beverages sold in Australian convenience stores, surpassing soft drinks with 31.5 per cent of the market.

The surge in popularity is amplifying concerns with the medical profession. Following repeated calls for the government to regulate the energy drink industry due to “hard evidence” that the drinks were harmful, Australian Medical Association president Steve Hambleton has stepped up his efforts to press for government intervention into the industry.

(the Legislative and Governance Forum on Food Regulation) are current reviewing policy guidelines on caffeine, Hambleton said: “We hope these review processes reach an agreement on appropriate regulation to warn people of the health dangers of energy drinks and restrict their sale in the interest of public health”.

European Reaction

Concerns about the deleterious effect of energy drinks on children and young adults have helped fuel campaigns to determine caffeine safety levels and also to regulate energy drinks across Europe.



“

A robust correlation between the caffeine levels in energy drinks and adverse health and safety consequences

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The report also found that 12 per cent consumed at least one litre of drink at a time. And 18 per cent of children aged 3–10 have consumed an energy drink at least once over the past year, with a weekly drink consumption of around 0.95 litres.

In response to complaints and concerns about energy drinks, the EC has now requested that the EFSA provide an opinion on the safety of caffeine, including the maximum level of caffeine from all sources, the risk of caffeine interaction with alcohol and other ingredients commonly found in energy drinks and to delay authorisation of some health claims.

Up north, Jack James, a professor in health psychology and behavioural medicine at Reykjavik University, Iceland, and the National University of Ireland, has called for further research and action regarding energy drinks.

James, who previously served as the head of Behavioural Sciences at LaTrobe University, noted that some countries, including Denmark, France, Norway and Canada, have taken initial steps toward regulation, but finds little evidence of effectiveness due to their limited nature.

In an editorial in the February 19 issue of the *Journal of Caffeine Research* (DOI: 10.1089/jcr.2013.1226), along with stating a need for further research, he called for a “discernible policy framework” to address caffeine-related harm.

He said that regulatory authorities, research institutes and clinical organisations need to address the form and content of caffeine product labelling, possible restrictions on advertising, the possibility of introducing taxation and other financial measures as methods of curtailing consumption and more general restrictions on sales, especially related to age.

North America responds

Canada has responded to the energy drink issue with new regulations that limit the amount of caffeine in a single serving of energy drink to 180mg. Larger size bottles, such as a 32 ounce product, will be limited to 400mg per litre. The regulation also reclassified the drinks from “natural health products” to “food”.

In the US, a group of prominent scientists and health specialists have taken their case against energy drinks directly to the head of the FDA.



On 19 March 2013, 18 senior researchers, scientists, clinicians and public health professionals expressed their concerns about the use of caffeine in energy drinks by sending a letter, backed with references to numerous studies, to FDA commissioner Margaret Hamburg.

The FDA has previously said that products containing caffeine have a history of safe use and that the amounts of caffeine in energy drinks is comparable to other current regular sources of caffeine.

In response, the letter provided detailed references to an array of evidence regarding health complications, injuries and deaths related to the consumption of energy drinks.

The authors say the FDA has been provided with reports implicating consumption of one brand of energy drinks in the deaths of five individuals, and with 13 other deaths linked to another drink. A 14-year-old girl reportedly died from cardiac arrhythmia induced by caffeine after consuming two 24-ounce drinks over two days and 21 cases of adverse reactions, some requiring hospitalisation, associated with drinking another popular energy drink have also been reported to the FDA. The authors said that some of the energy drinks contained caffeine levels of between 160 and 240mg.



The absence of any standard guidelines for an acceptable daily intake of caffeine is also an issue



The paper details numerous other health-related incidents linked to energy drinks including a ten-fold increase in emergency department visits, cardiovascular complications and seizures among children and young adults.

The authors said that the information provided showed that there was no evidence that the high levels of caffeine added to energy drinks was safe as required by FDA Generally Recognized as Safe (GRAS).

“To the contrary, the best available scientific evidence demonstrates a robust correlation between the caffeine levels in energy drinks and adverse health and safety consequences, particularly among children, adolescents, and young adults.”

The paper noted that energy drinks differ dramatically from coffee in three important ways:

- while caffeine in coffee is natural, the caffeine in energy drinks is added by manufacturers and therefore subject to FDA regulation as a food additive,
- the caffeine concentration in many energy drinks and related products

greatly exceed that found in even the most highly caffeinated coffee, and

- coffee is typically consumed slowly by sipping; energy drinks are consumed more rapidly, indeed they are often marketed in way that encourages consumer to ingest large quantities rapidly.

In conclusion, the authors recommend that the FDA take action by applying existing GRAS standards (200 parts per million of caffeine, approximately 71mg per 12 fluid ounces) for sodas to energy drinks and other beverages with added caffeine. The authors also requested that the FDA require manufacturers to include caffeine content on product labels.

The latter recommendation, however, might have unintended consequences. It has been noted that including caffeine levels on labels could actually lead to even higher consumption by some young people, who might be actively seeking the highest “energy buzz” for their money. ¹⁰

Lynn Elsey is the editor of food Australia.

FDA agrees to address caffeine safety

The US Food and Drug Administration has decided to investigate the safety of caffeine in food products, especially in regards to children and adolescents. The organisation said it was responding to the growing market for caffeine being added to a number of food and beverages.

Michael Taylor, the FDA deputy commissioner for foods and veterinary medicine, said that the agency was very disturbed about caffeine being included in a number of food products such as gum, jellybeans and sunflower seeds without considering the cumulative impact.

“Meanwhile, ‘energy drinks’ with caffeine are being aggressively marketed, including to young people. An instant oatmeal on the market boasts that one serving has as much caffeine as a cup of coffee, and then there are

similar products, such as a so-called ‘wired’ waffle and ‘wired’ syrup with added caffeine,” Taylor said.

Taylor said that the FDA needs to address the potential effect of the caffeine product proliferation to children and adults, to better understand caffeine consumption patterns and to determine a safe level of total caffeine consumption. Additionally, it wants to consider the type of products that are appropriate for having caffeine included.

He noted that until now the FDA had only approved adding caffeine to one category of food – cola – back in the 1950s and that “existing rules never anticipated the proliferation of caffeinated products”.

“The more fundamental questions are whether it is appropriate to use foods that may be inherently attractive and accessible to children as the vehicles to deliver the stimulant caffeine, and whether we should place limits on the amount of caffeine in certain products.” ¹¹

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THE HORSEMEAT SCANDAL GALLOPS ON

Repercussions from the European horsemeat crisis continue to reverberate across the industry, while horse-tainted meat continues to surface.

Words by Lynn Elsey

Significant drops in the sales of ready to eat meals in the UK have been blamed on the recent horsemeat scandal.

Market research group Symphony IRI has reported a "slowdown in the spectacular growth trend of ready meals" which it said was prompted by rising prices and the horsemeat scandal. The group found that in early April the total RTE market had dropped 5 per cent over the past year, with frozen food sales down 13 per cent and chilled dropped 3 per cent. In the three weeks prior to 2 March, year-on-year sales had dropped 18 per cent in frozen ready meals and 6 per cent in chilled meals.

Analysts from Symphony said they were not sure if the decrease was temporary or whether it reflected a longer term drop in consumer confidence following the horsemeat issue and adverse publicity about processed foods.

Irish food company Greencore reported a drop between 30-40 per cent of its ready meals sales in February. The company's CEO Patrick Coveney said the extraordinary decrease was due to



the European horsemeat scandal. One of the company's RTE products, a beef Bolognese sauce, was caught up in the scandal in February when grocer Asda found horse DNA in the product.

UK consumers are Europe's biggest RTE buyers. According to Mintel, in 2012 UK consumers spent £1.9 billion on RTE

meals, double the numbers of the French and six times more than the Spanish. Thirty per cent of adults eat a RTE meal more than once a week.

A new study by consumer group Which says that 6 out of 10 UK consumers have changed their shopping habits as a result of the horsemeat



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scandal. The study found that consumer trust had fallen by 24 per cent, with 24 per cent of respondents saying they were now buying fewer ready meals with meat or choosing vegetarian options. And 68 per cent said they did not think the government had done enough to enforce label laws while 83 per cent want country of origin labelling to be required on meat products.

On the other hand, Quorn, the UK's largest vegetarian RTE brand, has reported more than double sales growth in the second half of February.

Consumer concerns will no doubt be further inflamed following revelations in mid-April that 50,000 tonnes of meat supplied by two Dutch meat companies may contain horsemeat.

Government response

The UK government has announced a wide ranging review of the horsemeat scandal in order to restore and maintain consumer confidence in the food chain. According to food and farm minister David Heath, it will also cover the responsibilities of food businesses and practices throughout the food chain and help alert the government to other vulnerable areas that could also be exploited for fraudulent activity.

Additionally, the British Food Standards Agency has launched an investigation into how it handled the adulteration of processed beef products with horsemeat and pig meat scandal. The review will include considering whether the organisation should have been more alert to the potential contamination risks following the initial exposure of the problem by the Food Safety Authority of Ireland in January. ❷

Lynn Elsey is the editor of food Australia.



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What do consumers think?

Consumers consider food to be safer than electronics and children's toys, according to a new global study. The research also found that a significant percentage of those asked were willing to pay a premium for "safe food".



The TÜV SÜD Safety Gauge was conducted in the US, the UK, China, India and Japan by the Munich-based technical service organisation. It included more than 5,000 consumers and management-level employees in manufacturing, distribution and retail companies.

Around 67 per cent of consumers said that food safety was very important to them, up from 48 per cent in 2007. Their biggest safety concerns involved raw meat, fish, milk, dairy and eggs. A little over half, 55 per cent, said that they were more concerned about food safety when purchasing food products online than in a store.

A fifth of the respondents said they had experienced "unsafe" food over the past five years and named allergic reactions and food poisoning as the biggest culprits.

Three quarters of those surveyed said they were willing to pay an average premium of 15.5 per cent for food products that had verifiable (by a credible and independent source) safety standards.

From a business perspective, 68 per cent of managers working in food companies said that their companies met or exceeded minimum safety requirements. Food manufacturers said they spend an average of 13.6 per cent of total production costs on product safety measures. In-house product testing (69 per cent) and staff training (65 per cent) were the most frequently named safety measures.

Just over half of the food industry managers, 52 per cent, said they could ensure that their entire supply chain fulfilled product safety requirements, with around 46 per cent being able to trace all raw materials throughout the supply chain. Production costs would need to be increased by 21 per cent to achieve the highest levels of safety standards according to those surveyed. ❸





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*As the potential for outbreaks grows, a Dutch company has turned to phages to fight *listeria*.*

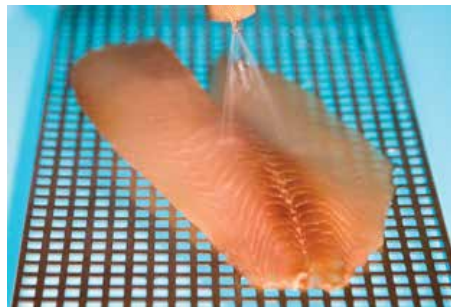
Words by Dirk de Meester

Although many of us think that our food is safe, frequent food recalls around the world show that we cannot afford to distract attention from this crucial matter.

New threats, such as emerging food pathogens, need to be dealt with. In addition, current trends in food formulation and processing – such as the reduction of salt levels in meat and cheese products or the application of mild or minimal processing techniques in order to preserve fresh characteristics of the products – should reinforce food safety considerations within the food industry, as well as with government regulators.

Additionally, the growing consumer desire for “natural” foods, without synthetic additives or ingredients, has prompted food companies toward clean labelling manufacturing procedures.

And the rise of antibiotic resistance and the resulting restrictions to use of antibiotics in food producing animals also underlines the need to keep food safety issues on the industry’s radar.



Data collected by Food Standards Australia New Zealand (FSANZ) show that over the past 10 years, *Listeria monocytogenes* is the microorganism most commonly associated with food recalls in Australia. Out of 223 recalls

notified to FSANZ between 1990 and 2005, 41 per cent were due to *listeria*. Listeriosis, a serious infection caused by this bacterium, mainly spread through contaminated food, is an important public health problem. Worldwide, outbreaks are reported on a regular basis, causing serious illnesses and deaths from, for example, meningitis and septicemia. Infections during pregnancy may result in miscarriages or stillbirths. Pregnant women, newborns, as well as the elderly and immune compromised persons are especially at risk – which is why the FSANZ enforces a zero tolerance for ready-to-eat (RTE) products.

The Food Standard Code singles out RTE foods, including meat and dairy, as posing the highest risk for *listeria* infection, due to their ability to support the growth of these bacteria during

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storage. Compared to other bacteria, *listeria* survives adverse environmental conditions quite well – it even grows at refrigerated temperatures and in low oxygen environments, such as in vacuum-packaged products.

Unfortunately, current trends in food reformulation, food processing and consumer preferences contribute to potential exposure to *listeria*. For example, changing salt concentrations will change the water activity of products, which might affect growth, survival or death of microorganisms. Several studies have suggested that *listeria* survival and growth would be enhanced in reduced salt conditions. New processing methods do not always result in complete inactivation of the microbes present. Mild thermal treatment of cut cabbage, for instance, has been shown to promote the growth of *listeria*.

Fighting pathogens with phages

Following the country's strong track record in innovative R&D in the food safety domain, Dutch company Microcos anticipated a need for a new way of combatting issues such as *listeria*. The company developed a phage technology centre to address many of the developments and trends in current animal farming and food manufacturing.

One of the products from the centre, Listex, was recently approved by FSANZ for use in Australia and New Zealand to help control *listeria*. The product, a phage-based product, works against thousands of strains *listeria monocytogenes*.

Bacteriophages – Greek for 'bacteria-eaters' – were discovered nearly a century ago. They are ubiquitous in our environment and are found in the human body and many foodstuffs.

Their unique property of being able to attack specific bacteria and kill them makes them especially suitable for use against unwanted bacteria in the production or handling of food.

In October 2012, FSANZ approved Listex for use in Australia and New Zealand in meat, seafood, cheese and RTE foods, the first accepted phage product for food safety. As a processing aid, is exempt from labelling requirements. The product has already received approval in the US (Generally Recognized as Safe by FDA and USDA/FSIS) and Canada. It is also organic certified in the EU, US and Canada.

This isn't the last we have heard from bacteriophage technology. In April, the company started the approval process for its newest product targeting Salmonella. 

Dirk de Meester is a director of Microcos, based in Wageningen, The Netherlands. He previously worked at Nestlé and at Twynstra Gudde Management Consultants in the Netherlands.

References

- www.foodstandards.gov.au/comsumerinformation/foodrecalls/foodrecallsstatistics/
- Wijnker et al, *Food Microbiology* 23 (2006) 657–662.
- Ells et al, *J Food Prot.* 2010 Mar;73(3):425-33.
- S.C. Stringer and C. Pin (2005): Microbial risks associated with salt reduction in certain foods and alternative options for preservation. Institute of Food Research, United Kingdom.

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QUESTIONS OF HEALTH

The health credentials of a popular herbal supplement and organic fruit are under question.

Ginkgo biloba linked to cancer

Following the release of a new report from the National Institutes of Health (US), the Center for Science in the Public Interest (CSPI) has recommended that consumers should avoid consuming Ginkgo biloba.

The non-profit nutrition and food safety organisation issued its warning against purchasing or consuming the popular herbal remedy and dietary supplement after a National Toxicology Program study on Ginkgo biloba extract found that the ingredient caused cancer in mice and rats. The supplement is frequently marketed to enhance memory and brain function.

The two-year study involved feeding rats and mice with Ginkgo biloba extracts. Following examination of

tissues at the end of the study the researchers concluded that the extract caused cancer of the thyroid gland in male and female rats and male mice, and cancer of the liver in male and female mice.

Organic Kiwifruit contaminated with chemicals

In New Zealand, organic kiwifruit has caused alarm after traces of chemical DDAC (didecyl dimethyl ammonium chloride) were discovered during routine testing.

The chemical, which is not allowed in organic products and is also completely banned for export to Japan, has been traced back to sanitisers produced by New Zealand-based Citrox. The organic labelled fruit was found to

contain 3mg/kg (3 parts per million) of DDAC. According to Citrox, Europe limits DDAC for fruit and vegetables at 0.5mg/kg.

Dave Tanner, the general manager of science and innovation for kiwifruit marketer Zespri, said that no kiwifruit containing the residue has or will be sent to Japan but admitted there would be "logistical" issues related to distributing fruit that had traces of the chemical to the market. He said that the levels detected in the fruit had no adverse affect on human health.

New Zealand's Ministry for Primary Industries said it was working with the kiwifruit industry and Citrox to understand how the contamination occurred and where the products have been sold. ☺



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TECHNOLOGY TO THE RESCUE

Researchers are applying cutting-edge technology to help combat germs and bacteria.

Words by Lynn Elsey

Killing germs with ozone

The often-denigrated ozone is taking on a more positive role as a possible aid for making food safer. A team of researchers from the University of Glasgow's School of Physics and Astronomy recently announced they have developed a plasma-based method of killing germs in packaged food, with the use of ozone.

The process involves turning some of the oxygen found inside sealed food packages into ozone, which they say is an effective germicide.

The system works through the use of plasma, which is generated through a retractable device that is briefly held against the surface of glass or plastic packaging. It splits the bonds between the oxygen molecules inside the package and changes them into ozone. After a few hours the ozone returns to its original state, which the researchers say is ample time to for any mould, fungi or bacteria to be destroyed without affecting the food's taste.

The process also extends the shelf life of the food for at least one extra day. The prototype of the device has been tested at UK labs, including BRI, and been shown to extend the shelf life of a range of products including bread and muffins and significantly reduce *campylobacter* and *E.coli* in poultry.

The product, which was developed by Declan Diver and Hugh Potts, is being commercialised through a university spinoff company called Anacail.

"It's safe and easy to use, doesn't require any change in current packaging of food products to be effective, and it doesn't require any chemical additives – the sterilisation effect comes directly from oxygen

already in the package which is treated by our plasma head," said Ian Muirhead, the CEO of Anacail.

Muirhead said that ozone is perfectly safe to use for food decontamination due to its limited lifespan before reverting to oxygen and because it doesn't leave behind any dangerous residues – making it an effective method for inhibiting or destroying the growth of bacteria and viruses.

The new product will undergo trials on several UK food processing lines during the year. Although Anacail is initially focusing on developing products for the food industry, the process has potential in other areas, such as sterilisation of medical and dental equipment according to the company.

"In this study, we have identified a new strategy for selectively killing specific types of bacteria. Stable enzyme-based coatings or sprays could be used in food supply infrastructure – from picking equipment to packaging to preparation – to kill *listeria* before anyone has a chance to get sick from it," said Ravi Kane, one of the researchers. "What's most exciting is that we can adapt this technology for all different kinds of harmful or deadly bacteria."

The researchers attached the *listeria*-killing enzymes, called Ply500, to USDA approved silica nanoparticles, creating an ultra-thin film. They also used maltose binding protein to attach the enzymes to edible starch nanoparticles commonly used in food packaging. Both were effective



We can adapt this technology for all different kinds of harmful or deadly bacteria



Using nanobiotechnology to fight listeria

Researchers in the US claim to have developed a new way of selectively killing pathogenic bacteria, including *listeria*, as an alternative to using antibiotics or chemical decontamination in food handling and packaging.

The team from Rensselaer Polytechnic Institute (NY), attached cell lytic enzymes to food-safe silica nanoparticles, creating an ultra-thin coating that selectively killed *listeria* on contact, even at high concentrations, within a few minutes. The coating did not affect other bacteria.

at killing all *listeria* concentrations, as high as 100,000 bacteria per millilitre, within 24 hours.

The research "Enzyme-based Listericidal Nanocomposites," has been published in *Scientific Reports* (doi: 10.1038/srep01584).

Lynn Elsey is the editor of food Australia.

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NUTRITION WATCH

What's new in nutrition? The following research was recently published.

Words by Ramon Hall

Intermittent energy restriction diets lead to greater insulin sensitivity and fat loss

A recent study conducted at University Hospital of South Manchester (UK) involving overweight women revealed that intermittent energy and carbohydrate restriction (IECR) diets are superior to daily energy restriction (DER) diets with respect to improved insulin sensitivity and body fat reduction. The four-month trial involved 115 women aged between 20 and 69 years who were allocated to three different dietary restriction regimes (25 per cent energy reduction), involving a three-month weight loss and one month of weight maintenance. The IECR treatment involved calorie restrictions (2500–2717 kJ day), and reduced carbohydrates (40g carbohydrate a day for two days a week). The DER group involved 25 per cent energy restriction (approximately 6000 kJ day for seven days per week). The third IECR treatment involved unrestricted protein and fat intake.

Both IECR groups showed significant reductions in insulin resistance compared to the DER treatment. Both IECR groups had greater reductions in body fat (mean reductions of 3–7kg) compared to the DER group. The authors suggests that participants' greater compliance with the 2-day intermittent restriction regime explains part of the successful outcomes, the restriction on carbohydrates leads to a greater production of ketone that is indicative of a switch from glycogenolysis to fat oxidation. Further

longer term studies are required to understand if the IECR regime is suitable for general clinical practice and this may have implications for manufacturers of weight loss products and programs.

Harvie *et al.* "The effect of intermittent energy and carbohydrate restriction v. daily energy restriction on weight loss and metabolic disease risk markers in overweight women", published online, 16 April 2013, in *British Journal of Nutrition* (doi:10.1017/S0007114513000792).

Fruit and vegetable bioactive shows potential to reduce adipose tissue growth

In a recently published article in the *Journal of Nutritional Biochemistry*, researchers from Korea found that the food-derived flavonol fisetin has bioactivity to inhibit fat cell production. Fisetin is a naturally occurring flavonoid found in fruits and vegetables, especially onions, strawberries, blueberries, mangoes and the skin of cucumbers. In a series of animal and cellular based experiments, the researchers provided some preliminary evidence to suggest that fisetin acts on a growth regulatory signalling pathway (mammalian target of rapamycin complex 1 (mTORC1)) of pre-adipocytes to prevent them progressing to adipocytes (fat cells).

During a 10-week study rats were fed a high fat diet (HFD) to replicate the progression to the obese state. Animals fed a HFD with a 0.5 per cent fisetin supplement had significantly lower body weight, fat pad weight and adipose size than animals on the HFD alone or a HFD with a 0.2 per

cent fisetin supplementation, without affecting food intake.

Further studies in humans are required to substantiate the purported benefit of the study, which may have implications for the supplement industry, which already markets fisetin capsules, and potential for functional foods for humans.

Jung *et al.* "Fisetin regulates obesity by targeting mTORC1 signalling" *Journal of Nutritional Biochemistry*, published online 18 March 2013 (doi: 10.1016/j.jnutbio.2013.01.003).

Benefits from high protein breakfasts

Researchers from the University of Missouri showed that eating breakfast – particularly one rich in protein – improves satiety, food motivation and reward and improves diet quality in overweight or obese teenage girls by altering appetite hormonal and neural signals that control food intake regulation.

The randomised crossover design trial involved 20 overweight or obese girls (normally breakfast skippers) who were assigned to three different treatments. They consumed either a 1465 kJ normal protein (13g) cereal-based breakfast, a 1465 kJ high protein egg- and beef-rich (35g protein) breakfast or continued skipping breakfast for six days. On day seven, they underwent testing for appetite and satiety (through questionnaires), blood sampling, pre-dinner food cue-stimulated functional magnetic resonance imaging (MRI) brain scans, unrestricted dinner and evening snacking.

The results showed that eating breakfast reduced hunger and the high protein breakfast caused greater increases in fullness ratings compared with the normal protein breakfast. It also reduced daily ghrelin (appetite hormone) and increased daily peptide YY (appetite hormone) concentrations compared with those who skipped breakfast. The MRI scans revealed that both meals caused reduced pre-dinner brain activity in the amygdala, hippocampal and mid-frontal corticolimbic compared with those who skipped breakfast, while the high protein breakfast led to additional reductions in hippocampal and parahippocampal activation compared to the normal protein breakfast. It also led to a reduction in evening snacking of high fat foods compared to those who skipped breakfast.

This study highlights the importance of eating breakfast and some of the benefits of consuming a breakfast rich in protein in regards to controlling appetite, snacking and related hormonal and physiological changes.

Leidy *et al.* "Beneficial effects of a higher-protein breakfast on the appetitive, hormonal, and neural signals controlling energy intake regulation in overweight/obese, "breakfast-skipping," late-adolescent girls. *American Journal of Clinical Nutrition* (doi: 10.3945/ajcn.112.053116).

Capsaicin and protein help promote weight less

Researchers from the Maastricht University, The Netherlands, have shown that the combination of capsaicin and protein counteract the energy intake restriction effects on appetite ratings and energy expenditure and help promote a negative fat balance. They also found that protein treatments prevent a negative protein balance and therefore may be helpful for preventing muscle loss. Twenty four young healthy weight participants took part in this randomised controlled crossover study involving eight 36-hour sessions in a respiration chamber.

The participants followed two control diets, either 100 per cent or 80 per cent of their daily energy requirements and varying levels of protein, capsaicin, or combinations of protein and capsaicin. As expected, the 80 per cent control diet (20 per cent



calorie restricted treatment) reduced diet induced thermogenesis, and fullness compared with the 100 per cent diet. The 80 per cent capsaicin diet stopped the effects of calorie restriction in regards to total energy expenditure, diet induced thermogenesis, and fullness, and the 80 per cent energy protein and 80 per cent combined protein and capsaicin diets exceeded these effects. Fat oxidation was greater (indicating greater potential for fat loss) in the 80 per cent capsaicin, protein, or combined protein capsaicin groups than in the 80 per cent control group.

These results may provide important leads for future weight loss formulations; however further weight loss studies are required to verify that these short-term results lead to significant and meaningful weight loss.

Smeets *et al.* "Addition of Capsaicin and Exchange of Carbohydrate with Protein Counteract Energy Intake Restriction Effects on Fullness and Energy Expenditure", *Journal of Nutrition* (doi:10.3945/jn.112.170613).

Berries may help reduce insulin spike

A recent study conducted at the University of Eastern Finland showed

that serving berries with either white or rye bread resulted in significant reductions in glycemic responses and, more importantly, a reduction in insulin response (Törrönen *et al.*, 2013).

The researchers wanted to see if earlier *in-vitro* results suggesting that polyphenol-rich berries may slow digestion and absorption of starch and thereby suppress postprandial glycemia could be corroborated. Participants consumed white or rye bread, both containing 50g available carbohydrates, with 150g whole-berry puree and the same amount of bread without berries. Over a series of three randomised controlled crossover studies the researchers revealed that the polyphenol-rich berries significantly improved the glycemic profile of the breads. And although the rye bread has a better insulin response profile than the white bread, both bread profiles were improved with the addition of the berry mixture. Strawberries, bilberries, lingonberries, raspberries, cloudberries, chokeberries, cranberries and blackcurrants were used in the study.

Although the amount of berries included with the bread was relatively



high, it does reiterate the importance of consuming mixed meal containing components that help control starch digestion and metabolism. This work could have implications for development of new products with berries or polyphenol extracts to help minimise glycaemic and insulinemic responses.

Törrönen *et al.* "Berries Reduce Postprandial Insulin Responses to Wheat and Rye Breads in Healthy Women". *Journal of Nutrition* (doi:10.3945/jn.112.169771).

Beta glucans can help maintain blood glucose

A recent review in the *European Journal of Clinical Nutrition* by Susan Tosh from Guelph Food Research Centre in Canada focused on examining the levels β -glucan from oat and barley based foods required to help reduce post-meal blood glucose control when consumed in the context of a meal rich in available carbohydrates. Similar reviews have been undertaken previously in relation to β -glucans cholesterol modulating properties that

underpinned health claims in this area. The researcher identified 76 studies and subsequently included 34 studies that met inclusion criteria for study quality and scope. Both dose response and ratio of β -glucan to available carbohydrate as predictors of glycaemic response were examined.

Overall, the meals provided 0.3–12.1 g oat or barley β -glucan, and reduced glycaemic response by an average of 48 ± 33 mmol_{min}/l compared to a suitable control. Statistical modelling revealed that changes in glycaemic response were greater for intact grains than for processed foods. For processed foods containing 4 g of β -glucan, a statistical model predicted a decrease in glycaemic response of 27 ± 3 mmol_{min}/l, and 76% of treatments significantly reduced glycaemic response. The author concluded that "intact grains as well as a variety of processed oat and barley foods containing at least 4 g of β -glucan and 30–80 g available carbohydrate can significantly reduce post-prandial

blood glucose". This review provides good justification for the inclusion of β -glucan into food products rich in available carbohydrate to help reduce the glycaemic response of these products.

Tosh SM, (2013) "Review of human studies investigating the post-prandial blood-glucose lowering ability of oat and barley food products. *European Journal of Clinical Nutrition* 67, 310-317. doi:10.3945/jn.112.169771.

Ginkgo bioactive maybe helpful in diabetes

Researchers from North-western Polytechnical University in China have found that kaempferol, a flavonol compound found in ginkgo biloba, grapefruit and some berries, has bioactivity that enhances β -cell longevity and improves functioning in a human pancreatic β -cell line model pre-treated with lipid.

The lipid pre-treatment disrupts the normal functioning of the cells and leads to their premature death. Pancreatic β -cells are responsible for insulin production to help maintain

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healthy blood glucose levels after meals. Other common food derived flavonol compounds were also tested through the same regime, but none of these showed the degree of β -cells protection provided by kaempferol. The researchers also undertook further biochemical studies to reveal that the cytoprotective effects of kaempferol was associated with improved insulin secretion, synthesis, and pancreatic and duodenal homeobox-1 (PDX-1) expression (critical factor of β -cell differentiation).

Although these preliminary cellular based studies show promise, further animal and human clinical trials are required to verify that this potential bioactivity is demonstrated for use in human supplements and functional foods.

Zhang et al. "Small molecule kaempferol modulates PDX-1 protein expression and subsequently promotes pancreatic β -cell survival and function via CREB". *Journal of Nutritional Biochemistry*, (doi.org/10.1016/j.jnutbio.2012.03.008).

Dairy lipid biomarker associated with reduced Diabetes incidence

A research team from Harvard School of Public Health led by Dariush Mozaffarian has provided new evidence to support the relationship between whole fat dairy food consumption and a reduced risk of diabetes. Earlier cohort studies have indicated a link between dairy consumption and lower risk of type 2 diabetes, but little is understood about the mechanism underpinning this relationship. Using the US Multi-Ethnic Cohort Study of Atherosclerosis (MESA) involving 2,617 adults (aged 45–84) at baseline (2,281 non-diabetic at baseline), the researchers followed the cohort for seven years and prospectively assessed the risk of new onset of diabetes (205 new cases).

The researchers utilised the blood phospholipid biomarker trans-palmitoleate (trans-16:1n-7), a fatty acid found in dairy foods and some partially hydrogenated oils that may be associated with a healthier metabolic profile and less incidence of diabetes. They revealed that trans-Palmitoleate was positively correlated with consumption of whole-fat dairy and butter. The group with the highest concentration of trans-Palmitoleate had a two-fold lower risk of incident diabetes. Higher concentrations were associated with higher LDL cholesterol, but also with lower triglycerides and fasting insulin. These relationships were similar for males and females and across different race-ethnic groups.

These results are consistent with an earlier study by the same researchers involving the US Nurse Health Study (NHS), whereby the highest group had a 2-fold lower risk of diabetes. It is thought that trans-Palmitoleate may be a useful biomarker for whole dairy food consumption and as a potential biomarker of diabetes. The researcher concluded that further experimental and clinical studies are required to understand if the observed relation is causal.

Mozaffarian D et al. trans-Palmitoleic acid, other dairy fat biomarkers, and incident diabetes: the Multi-Ethnic Study of Atherosclerosis (MESA). *American Journal of Clinical Nutrition* (doi: 10.3945/ajcn.112.045468). ¹³

Ramon Hall is manager of the Dairy Health and Nutrition Consortium at Dairy Innovation Australia and is an Honorary Research Fellow at the School of Exercise & Nutrition Sciences, Deakin University.

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STARTING YOUNG

The development of sensory perception and food choices pre-dates birth, according to specialist Julie Mennella.

Words by Lynn Elsey

The expression “punches above her weight” could have been created for Julie Mennella.

The diminutive researcher has a rather large reputation for her studies involving the transference of flavours from the mother’s diet to infants, enhancing the acceptance of fruits and vegetables during infancy and the role of genetics and culture on taste sensitivity and preference.

Mennella provided some highlights of her research during a recent seminar on food tastes and choices, from infancy to early childhood, in Melbourne. Mennella was one of the speakers at a Deakin’s Centre for Physical Activity and Nutrition Research (C-PAN) and AIFST sponsored seminar on 22 February 2013.

Along with providing thought-provoking information about food taste and choices, Mennella and her fellow speakers Russell Keast and Karen Campbell (both from C-PAN) helped illustrate the importance of interdisciplinary research in food. Removing some of the traditional boundaries between areas such as chemical and sensory science and food may help improve the overall body of knowledge and provide better solutions for some of the growing food-related challenges, such as obesity.

In an interview before the seminar, Mennella said that input from a variety of disciplines had not only helped her research but also opened up new avenues to pursue throughout her career.

“It has taken many different turns, leading to findings that you don’t necessarily expect.”

Mennella’s passion for research is compounded with the collegial aspect of her work and an overarching interest in learning.

“The thrill of doing science is that sometimes you learn more when you have to reject your hypothesis,” she said

A member of Monell Chemical Sense Center in Philadelphia, PA (US), Mennella has degrees in biology (BS and MS) as well as in biopsychology, MS and PhD. During her studies she became interested in development from a biological point of view which led to looking at the transfer of mother’s milk to babies.

According to Mennella, food choice is linked to biology. She said that her research has shown that evolution has shaped the type of food we like and dislike, with basic biological principles behind our food choices.

She has discovered that many food behaviours are best learned early in life – even before birth. For example, patterns for food preferences, including taste and smell, are well developed by the second trimester of pregnancy.

This means that what a pregnant woman eats affects the tastes that her child will develop. And thus, Mennella surmises, wouldn’t it be easier to set up a pattern of healthy eating at this stage of development, rather than trying to fight against bad habits that have set in a few years after the child is born?

Research has shown that taste preferences emerge quite quickly after a child is born. For example, at age four months an infant has already developed a distinct taste for salt, along with a heightened rejection of bitter tastes. Infants also have a stronger preference for salt and sweet tastes than adults.

Mennella explained that infants learn about and prefer food that their mothers eat during pregnancy and while breastfeeding. Her studies have also found that elasticity for variety and preferences are open for up to a year.

“Mother’s milk is a flavour bridge,” she said. “Breastfeeding confers an advantage for initial acceptance of fruits and vegetables.”

Mennella said that early exposure to starchy table foods is associated with an increased preference for salt later on – which she said was probably not a product of marketing and modern technology, but based on early exposure to the type of foods that the mother consumes while pregnant or breastfeeding an infant.

However, although Mennella can track food preferences back as far as the womb, when it comes to unhealthy food habits and poor nutritional messages, food manufacturers aren’t off the hook.

“Today food manufacturers are adding ‘sweet’ to everything,” she said. “Those making food are teaching children that all foods are supposed to taste sweet.” ⁵

Lynn Elsey is the editor of food Australia.

NEW RESEARCH IN SENSORY SCIENCE

Taste cells have been identified and colour may play an important role in taste.

Words by Lynn Elsey

Identifying taste cells

A multidisciplinary team of researchers has identified a missing link in taste perception. The team, headed by scientists at Monell Chemical Science Center (US), have pinpointed the identity of CALHM1, a channel in the walls of taste receptor cells, which they say is necessary to detect sweet, bitter and umami taste.

The results of their study have been reported in *Nature*.

The research was designed to determine how taste cells informed the brain that they have detected something, according to Monell taste biologist Michael Tordoff. "This question has been a longstanding missing link in our understanding of taste perception," he said.

The team found that the step involves the opening of a pore formed by CALHM1 in the taste cell membrane, which allows molecules of neurotransmitter ATP to leave the taste cell and relay a signal to nearby nerve cells, which are connected to the brain. They found that the CALHM1 pore is specifically found in cells that detect sweet, bitter and umami taste.

"Now we can connect the molecular dots of sweet and other tastes to

the brain," said Kevin Foskett, from the Perelman School of Medicine, University of Pennsylvania, another member of the team.

The study found that channel proteins pannexins and connexions, which were previously assumed to be connected with the release of ATP from taste cells, were not required.

Ishiro Matsumoto, a Monell molecular neurobiologist and another member of the research team said, "this paper provides compelling data to overturn the previous hypothesis. It's part of what makes science so exciting."

Cup colour influences taste

A team of researchers have evidence that the colour of a cup influences perception about its taste. The scientists, from the Polytechnic University of Valencia (Spain) and the University of Oxford (UK), have published the results of their study in the *Journal of Sensory Studies* (doi: 10.1111/j.1745-459X.2012.00397.x) showing that creme and orange colours lead to better perceived taste.


The research involved having 57 participants evaluate hot chocolate, served in four different cups, which were coloured white, cream, red or

orange on the outside and all white inside. They found that those drinking from the creme or orange cups reported that the hot chocolate had a better flavour. However, the level of sweetness and aroma were not significantly influenced by the cup colour.

Author Betina Piqueras-Fiszman commented, "As this effect occurs, more attention should be paid to the colour of the container as it has more potential that one could imagine".

The same team of researchers previously conducted and published another food perception study, to ascertain the role that cutlery played in perceived taste of yogurt.

The authors said that despite the important role that accessories such as dishes and cutlery play in the eating process, little research has been done to investigate how they might affect food perception. Their study, which involved testing the impact of eating with a plastic versus stainless steel spoons on taste, found that eating with stainless steel resulted in perceptions of better taste, quality and flavour intensity.

The study was also published in the *Journal of Sensory Studies*. 

Lynn Elsey is the editor of food Australia.



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FUNCTIONAL FOODS ROUNDUP

Breakfast on the go and salt reduction are two key areas for new product development.

Words by *Ranjan Sharma*

Competition in marketing liquid breakfast

Australia's liquid breakfast market is heating up with the recent launches of several new products. The sector is responding to trends showing that as consumers continue to lead busy lives they are looking for convenient, portable and healthy options for breakfast.

The portable breakfast concept was first introduced in the US in 2005 by Kellogg's, with the launch of Drink'n Crunch. The product had an innovative double-cup system, which kept the cereal and milk separated until they reached the consumer's mouth – allowing maximum crunch. However, the initial concept was too pricey when compared with boxed cereals and fell out of favour with consumers. Undaunted, companies such as Kellogg's and General Mills have continued to launch new products into the US market.

In Australia, the market for liquid breakfasts has been dominated (more than 90 per cent market share) by Sanitarium's Up & Go. The success of Up & Go has led to the increase of breakfast drinks from four per cent in 2008 to nearly eight per cent in 2013 according to Roy Morgan Research. According to these findings, Australians under the age of 25 were the main drivers of the growth, while 35-49 year-old Australians also were developing a taste for drinking their breakfast. The success of the Sanitarium product has attracted competition from several FMCG

companies such as Lion Dairy, Murray Goulburn and Kellogg's in Australia. These products are offered in 250 mL Tetra Brik with some containing small amount of grain flours in addition to the vegetable fibre inulin. Although Lion has offered products both in soy (Vita Go) and dairy (Oats Express), Murray Goulburn has made a point of difference by stating that their products are made with "real milk not soy".



Recent studies have shown that regular eating of cereal for breakfast is linked to healthy weight for children; this could be another market for liquid breakfast as long as the products meet their "taste test". As big players such as Quaker Oats (PepsiCo) are committing to "drinkify" snack and meals, it is likely that drinkable new products will continue in the market, offering convenience, health and nutrition on-the-go.

The big challenge is surviving in the long term as 80 per cent of new products fail within five years of their launch. It is likely that breakfast cereal makers such as Kellogg's may have an edge as they already have established breakfast brands embedded in consumers' minds. However, unique marketing efforts such as launching products through school programmes and increased advertising efforts could help secure a reasonable market share for new players in the market. Product differentiation could also be introduced through nutrition and health claims.

Sodium reduction on the radar

Following a lower salt diet helps reduce the risk of heart disease and stroke. However, the average modern diet provides excessive amounts of salt, from early childhood through adulthood. Consumer advocate, Choice Australia recently slammed the food industry for high salt levels in snacks and breakfast cereal that target youth and has called for tougher action towards change. Choice cited a review of 240 children-targeted products using data from The George Institute for Global Health which found that 20 per cent of products were high in salt while almost 60 per cent contained medium levels of salt. Although no salt regulations seem to be in the pipeline for Australia, a voluntary code of conduct for salt levels cannot be ruled out in the near future.

Reducing the salt content in food products is not a straightforward



process as salt plays an important role in the taste and the shelf life of many products. However, a number of strategies are being employed across the industry including the launch of new products with reduced salt levels. A low-salt Cheddar cheese was recently launched by UK supermarket Tesco. According to the manufacturer of the cheese, Joseph Heler, the product contains 30 per cent less salt than standard Cheddar. Thus far consumers have given a “thumbs up” for the product’s taste and texture.

According to recent studies, reducing dietary intake of sodium and boosting levels of potassium could prevent millions of deaths from heart disease and stroke worldwide each year. AkzoNobel, one of the largest suppliers of salt-based ingredients has recently teamed up with Givaudan, a leading global flavour and fragrance company, to address the challenges of sodium reduction for processed meat. The new ingredient, Suprasel OneGrain TS-M100, looks, tastes, flows, blends and dissolves in the same way as regular salt but contains less sodium than normal salt.

Based on AkzoNobel’s OneGrain technology, the new product combines salt, potassium chloride and flavour in each single grain, ensuring the same processing and storage properties as regular salt. According to the company, the new ingredient can help meat manufacturers reduce sodium by up to 40 per cent.

UK research organisation Campden BRI has suggested reducing the amount of salt by stealth, the gradual reduction of salt in processed foods over an extended period of time to avoid detection by the consumer, as an option for sodium reduction. This approach however, has not been hugely successful, which means that manufacturers need to come up with other innovative techniques and formulations that can lead to salt reduction in food. 🍌

*Ranjan Sharma is the editor of Functional Food Weekly
www.functionalfoods.biz.*

References:

Roy Morgan Single Source (Australia), Oct 2007 – Sept 2012; February 02, 2013.

“Reducing salt and increasing potassium will have major global health benefits”, press release, BMJ 4 April 2013.



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USING FAT WISELY

A fat blocking ingredient that also helps lower LDL cholesterol and new research about oils are making news.

Words by Lynn Elsey

Cutting calories without side effects

An Indonesian/Australian company has released a new fat-binding supplement it claims will block up to 500 fat calories without any side effects.

The new supplement, Calorease, is based on non-digestible fibre molecule alpha-cyclodextrin, which is derived from corn. The active ingredient, FBCx, is said to bind up to nine times of its weight in fat from food and safely remove the fat before the body absorbs it.

The company marketing the new ingredient, Soho Flordis (SFI), says that typical dietary fibres bind to dietary fat at approximately a 1:1 ratio but the new product binds to fat molecules at a ratio of 9:1.

The supplement has been approved for daily consumption by the WHO and is GRAS approved by the FDA as an ingredient in foods, beverages and supplements up to 25g/day.

The ingredient not only blocks fat absorption but also can help lower triglyceride levels and LDL (bad) cholesterol levels, as the binding characteristic of FBCx has a preference for saturated fats versus unsaturated fats, according to SFI and the original team who discovered it.

The ingredient FBCx was discovered and developed by scientists at Wayne State University, Michigan (US). Following a study conducted by the National Institutes of Health, Wayne State University and ArtJen, an article was published in *Metabolism Clinical and Experimental* that concluded that FBCx

not only improved blood lipid levels but also improved the fatty acid profile of blood as shown by a preferential reduction in saturated and transfatty acid levels.

The Wayne State researchers formed a company in 2007 to patent and sell the technology process. But, according to SFIs North American managing director Jeff McHarg, efforts to market the product were not a success.

Scientists at the Technical University of Munich (TUM) and the University of Vienna looked at four different edible fats and oils: lard, butterfat, rapeseed oil and olive oil, to see how each affected the feeling of fullness.

The study involved a three-month period where participants consumed 500g of low-fat yogurt enriched with one of the four fats daily.

They found that olive oil had the

“

The new product binds to fat molecules at a ratio of 9:1

”

“They are scientists, not marketers,” McHarg said. Once SFI took a close look at the patents and the research, management saw an opportunity and decided to acquire the assets of the original company.

According to McHarg, the ingredient’s biggest potential is as a functional food ingredient, rather than as a supplement. He said that the chemical attributes of FBCx – low viscosity, colourless, tasteless and highly soluble – along with its stability at high temperatures are some of the key benefits of the new product.

Olive oil increases satiety

Researchers in Germany and Austria have found that some edible oils, especially olive, and their aromas can help regulate the sensation of feeling full after eating.

biggest effect on satiety; the group that consumed the olive oil yogurt had a higher concentration of the satiety hormone serotonin in their blood. No member of the olive oil group had an increase in weight or body fat.

The scientists then decided to test the effect of aroma compounds in olive oil. In this part of the study, one group was given yogurt with olive oil aroma extracts while a control group was given plain yogurt.

The olive oil group, who showed an increased level of satiety hormone, adapted their eating habits and their calorie intake didn’t change. However, those in the control group consumed an additional 176 kilocalories per day. The researchers also found that the control group had less of the satiety hormone serotonin in their blood.



Olive oil and nuts might be the key to the Mediterranean diet

Researchers have found that following a Mediterranean diet, supplemented with extra virgin olive oil and nuts, substantially reduces the incidence of major cardiovascular disease for high-risk individuals.

The results of the study, which ran from 2003 to 2011, were so dramatic that the Spanish research team stopped the trial early for ethical reasons. The results, “Primary Prevention of Cardiovascular Disease with a Mediterranean Diet” (doi: 10.1056/NEJMoa1200303), have been published in *The New England Journal of Medicine*.

The research involved nearly 8,000 participants, aged 55-80, at a high risk of cardiovascular disease. The volunteers were divided into three groups. The control group followed a low fat diet (following American Heart Association guidelines). A second group was put on a Mediterranean diet (rich in fresh fruits, vegetables, whole grains, monounsaturated fats and very low amounts of meat and dairy) supplemented with 30g nuts (15g walnuts, 7.5g hazelnuts and 7.5g almonds) a day. The third group also followed a Mediterranean diet but consumed 50ml of virgin olive oil a day rather than nuts. None of the groups were given calorie restrictions.

The results of the study were quite dramatic. The rate of cardiovascular incidents was reduced by 30 per cent and the risk of stroke by 49 per cent for the two groups following the Mediterranean diet.

The researchers found that “extra-virgin olive oil and nuts were probably responsible for most of the observed benefits of the Mediterranean diets”. 🍷

Lynn Elsey is the editor of food Australia.



MORE NEWS FROM THE WORLD OF FATS AND OILS

Faking Fat

A Geneva-based company says it has developed a fat replacer that works by stimulating fat taste receptors. Natural Taste Consulting based its new product on a gene called CD36, which it says is connected to the taste buds and promotes the experience of tasting fat.

The ingredient is derived from vegetable oil fractions, which target the specific taste receptors in the tongue, providing a similar feel to regular fat. According to the company the new ingredient can be used to replace up to 25 per cent of fat in a number of applications including gravy, seasonings, snacks and meat products.

The fat enhancer is allergen-free and can be labelled as a 'natural flavour' in European and US food products. It can be used in concentrations from 0.1 per cent to 0.2 per cent in ready-to-eat products.

Olive Oil with a difference

According to a group of Spanish olive oil executives and researchers, most of the olive oil currently on the market actually has rather low levels of the polyphenols which are said to provide many of the health benefits of the oils.

The group, Olive Innovations, claims that most olive oils, including extra virgin, use overripe olives and haven't been correctly processed, stored and packaged, which all deteriorate the levels of the polyphenols. The group says that according to the European Food Safety Authority, the olive oil must have at least 5mg of hydroxytyrosol and its derivatives per 20g of oil but due to the shortfalls mentioned above, most of the oil that consumers are purchasing falls below this level.

In response, they developed an extra virgin olive oil, OliveHeart, with high levels of polyphenols but without any extra bitterness. According to the group's founder Jeronimo Diaz, the new oil has a different production,

storage and packaging process that allow it to retain a high level of polyphenols.

Initially the oil is being marketed through pharmacies, in 10ml and 250ml glass bottles, to emphasise the healthy cardiovascular benefits of polyphenols, "because it must be perceived as healthy and consumers must know why," Diaz explained. He said that Olive Innovations believes that it is up to manufacturers to get across the health message, rather than the government.

Olive juice polyphenols

While olive oils are claiming most of the glory for healthy benefits, a California company has gone back to the source – the olive – in the development of a new polyphenol-backed product.

HidroX is made from the olive juice that was previously discarded as a by-product of olive oil production. Roberto Crea, the founder of a research company CreAgri, decided to take advantage of the throwaway material and has turned it into a product that is being promoted as a natural antimicrobial and antioxidant.

The ingredient, *olea europaea* extract with hydroxytyrosol, is sourced from the pulp of olives. According to the company it has the same benefits as olive oil, without the calories.

The product is being marketed with links to recent studies showing that olive polyphenols have positive benefits for a range of health issues such as chronic inflammation, skin conditions and even cancer.

According to Crea, HidroX has the capacity to fight free radicals, stop LDL cholesterol from oxidizing and manage chronic inflammation.

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Low-fat cheese

A new cheese, with 80 per cent less fat than other leading Australian light cheese, has been developed by Victorian Warrnambool Cheese and Butter Factory (WCB) for Kraft Foods.

The new offering, called "Livefree", has 5.5 per cent fat and half the calories but higher levels of protein than other low fat options. According to Kraft, a serving of the new cheese contains 20 per cent of the recommended daily intake of protein, 25 per cent of the RDI for calcium but only 2 per cent of the RDI for fat.



Aussie Olive Oils Awarded

Australian olive oils made a big splash at a recent international olive oil competition when extra virgin oils from Rylstone and Cobram came away with a number of medals, including Best of Class and gold.

In April the 2013 New York International Olive Oil Competition was held to honour the world's best extra virgin olive oils. A panel of experts tasted and ranked 702 entries from 22 countries. Italy topped the list with 83 total awards followed by Spain with 51.

Australia came away with three Best of Class awards – equalling Spain – and five Gold awards.

Cobram received two Best in Class trophies, for Cobram Estate Picual and Hojblanca, and four gold medals. Rylstone Australian collected a Best of Class award with its Rylstone Olive Press Cudgegong 3 and also two gold medals.

The judges included Giuseppe Di Lecce from the University of Bologna's department of Food Science and Maria Santarelli, the Official Taster, for Italy's Ministry of Agriculture and Forestry. 🇮🇹



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CARBOHYDRATE INTAKES – HIGH, LOW, OR IRRELEVANT?

Links between low carb diets and mortality and new models for assessing nutritional quality were some of the topics presented during a recent seminar on the highly topical subject of carbohydrates.

Words by Chris Cashman



On 19 March 2013 ILSI SEAR Australasia and the Grains & Legumes Nutrition Council brought a panel of experts together to discuss the health impacts of carbohydrate intake and the science behind current controversies surrounding this topic.

Peter Williams (University of Canberra) discussed trends in carbohydrate intake and provided an overview of the health effects of various levels of carbohydrates intake. Australia's National Health and Medical Research Council (NHMRC) suggests that Australians should eat between 45–65 per cent energy from carbohydrates. The most recent data suggests Australians are consuming 46 per cent energy from carbohydrates, compared to countries around the world where intakes range between 38–79 per cent. Williams cautioned that the energy intake is only part of the story and that the total amount of carbohydrate and total energy consumed from carbohydrates are important considerations for health. He said that higher intakes of dietary fibre and wholegrains appear to be beneficial for health, while low carbohydrate diets are often promoted to the general public for short term weight loss. Notably, a recent meta-analysis found that long-term exposure to low carbohydrate diets was associated with a higher risk of all-cause mortality, indicating that low carbohydrate diets in the long term may pose health risks. He concluded that not all carbohydrates are the same and that food based evidence is best to guide dietary recommendations.

Manny Noakes (CSIRO) elaborated on the potential risks and benefits of low carbohydrate diets. Based on the current evidence, she suggested that while low carbohydrate intake (less than 100g/day) appears to be effective for weight management, these diets are often associated with high saturated fat proportion, which may have a negative impact on cardiovascular health through increased LDL cholesterol and deterioration in vascular function. Noakes suggested that some components of wholegrains may promote fat loss, as there is a body of epidemiology evidence which suggests that higher grains intakes (particularly wholegrains) is associated with reduced body weight. She concluded that the inclusion of moderate amounts of carbohydrate in the form of high fibre wholegrains, low glycemic index (GI) grain foods, dairy and fruit is optimal for weight loss and nutrient intakes.

Alan Barclay (GI Foundation and Australian Diabetes Council) addressed the risks and benefits of high carbohydrate intakes and summarised a recent review which found that a high dietary fibre intake is associated with lower risk for obesity, type 2 diabetes, cardiovascular disease and colorectal cancer. Reflecting the current debate around sugar intake, he discussed the latest research on dietary sugars and body weight conducted for the World Health Organisation, which found that while sugar-sweetened beverages were a determinant of body weight, weight change was related to energy intake and exchanging sugars for other carbohydrates (i.e. starches) was not. Barclay presented evidence that GI and glycemic load (GL) are stronger predictors of obesity, diabetes and coronary heart disease. In conclusion he said that rather than focusing on sugar or starch content of foods, the evidence suggests that Australians need to lower the GI of their diet.

Jane Muir (Monash University) explored the short term benefits and the long term risks of restricting fermentable carbohydrates. Recent attention has focused on short chain carbohydrates, collectively known as FODMAPs, for their role in health and

in the management of Irritable Bowel Syndrome (IBS). FODMAPs found across a number of plant foods have been associated with a range of health benefits as they act as “prebiotics”, meaning they promote the growth of beneficial bacteria in our digestive systems. Muir mentioned the significant proportion of Australian adults (approximately 15 per cent) who are intolerant to these carbohydrates and experience symptoms associated with IBS when they consume various levels of FODMAP containing foods. As such, restricting FODMAP foods has become the cornerstone for management of IBS, however she emphasised this diet is not recommended as a long term dietary

cardiovascular disease, infections and inflammation and can promote bowel health. These non digestible carbohydrates include FODMAPs, particularly those found in wholegrains and legumes, as well as certain types of resistant starch. Bird concluded that while the evidence to date is promising; more studies are needed to determine whether the beneficial changes in the gut directly result in improvements in human health and wellbeing.

Alan Barclay and **Bill Shrapnel** (Shrapnel Nutrition Consulting) evaluated the measures of carbohydrate quality. Barclay outlined the different terms which are used to describe

“ *GI and energy density were unrelated to the sugar content of breakfast cereals* ”

approach due to the potential for negative effects on the gut microbiota.

Anthony Bird (CSIRO) elaborated on the science of prebiotics and their potential to promote health and wellbeing. He noted that recent animal and human nutritional studies have identified a number of non digestible carbohydrates that could serve as prebiotics and have the potential to protect against lifestyle diseases, including type 2 diabetes, obesity,

carbohydrates including starch, sugar, fibre, wholegrain, GI and GL. He argued that current food labelling contains incomplete information on carbohydrates and this may be contributing to the confusion around the role of carbohydrates and sugar in nutrition. Shrapnel suggested the preferred model for healthy eating was a moderate fat, Mediterranean style diet and what was needed was a universal and systematic guide to carbohydrate quality. He presented a





new model for assessing the nutritional quality of carbohydrate rich foods based on nutrient density and GI. This model and other evidence presented

have been a central message in sports nutrition guidelines. Guidelines have evolved over the last 30 years from a “one size fits all” recommendation



Low carbohydrate diets in the long term may pose health risks



showed that GI and energy density were unrelated to the sugar content of breakfast cereals. Shrapnel concluded that his evidence questioned the use of sugar as a measure for assessing the nutritional quality of carbohydrate foods.

Louise Burke (Australian Institute of Sport) spoke about the evolution of carbohydrate guidelines for sports performance. As carbohydrates play a key role in fuelling athletic performance, recommendations in the daily diet and during the periods immediately before, during and between exercise

of a high carbohydrate diet to a more individualised, timed approach to the fuel costs of the athlete’s training and competition load. Burke concluded that today’s guidelines for carbohydrate intake during exercise are specifically tailored to each event. During sustained high intensity sports lasting approximately one hour, small amounts of carbohydrate, even mouth rinsing, enhance performance via central nervous system effects. While 30–60 g/h is an appropriate target for sports of longer duration, events greater than 2.5 hours may benefit from higher intakes of up to 90 g/h.

Nilani Sritharan (Cereal Partners Worldwide) presented an interactive session to explore the challenges that the food industry faces translating nutrition science into real foods. She used breakfast cereal as a practical example and invited delegates to taste products which had differing levels of sugar, sodium, fibre, wholegrain and protein. The respective nutrient information was then revealed to delegates and interpreted. This activity demonstrated that improving the nutrient composition of food products does not always deliver the same tasting product or the nutrient benefits expected. Sritharan explained that improving the nutrient density of a product recipe requires a careful balance between the overall nutrition, taste, production cost and perceived value of a food or drink. However, the real test is whether the consumer will buy it, as a product will only impact nutrient intakes if the consumer eats it.

Sarah Hyland (Colmar Brunton) shared her experience working in food and



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beverage market research and explored consumer attitudes to carbohydrate intake. Suspicion, distrust, tension and fear are some of the most common perceptions consumers link with carbohydrates. Consumers often perceive carbohydrate foods to be fattening and there is a fear of added sugars in foods. On the other hand, the value of carbohydrates and particularly wholegrains resonates most strongly with consumers at breakfast. Hyland presented results from a 2012 survey, which showed that 16 per cent of Australians are limiting wheat foods, with over a third of these individuals self-diagnosing an intolerance to wheat.

Amanda Lee (Queensland University of Technology) spoke about consumer guidance on carbohydrate intake and said the new Dietary Guidelines aimed to answer the question: "What should Australians eat?" She said that people don't choose to eat nutrients such as carbohydrates but rather choose to eat foods that give us a range of nutrients, and so guidance provided in the guidelines reflected this. The food modelling used to translate Nutrient Reference Values (NRVs) into dietary patterns indicated that Australians need to eat more vegetables, legumes, fruits and wholegrain foods while aiming to eat less starchy vegetables, refined foods, high fat dairy and discretionary foods (extras). Lee concluded that the revised dietary guidelines provided clear recommendations and supporting materials on what type of foods people need to consume to get the best source of carbohydrates for health and wellbeing. 

Chris Cashman is a nutrition project officer at the Grains & Legumes Nutrition Council.



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SELLING FEAR: FOOD INSURANCE

“Food security” is taking on a whole new meaning in the US.

A growing number of Americans are worried about threats from economic, political, natural and man-made disasters. As the concern escalates, so does a desire to stockpile more than just guns and ammunition.

The more astute survivalists have also decided that when the time comes to hunker down in their bunkers, they want something interesting to eat. Boring, military-type rations are not going to be enough to sustain their interest during the hours, days, months and even years they might have to hide from marauding hordes (or Democrats).

The market has responded with the birth of a new industry, called food insurance.

With phrases such as “peace of mind” and “prepare for life’s many and unexpected emergencies” populating their websites (the majority of the businesses are online), companies that cater to the nervous survivalist

are sprouting like weeds, touting an array of food and beverage products designed to last 25 years or more.

The products are mainly freeze-dried or vacuum-packed food and ready to eat meals which usually are supplied in #10 cans, which hold around 6lb 6oz of food. Offerings range from traditional meat and veg dinners to vegetarian and gluten-free products.

If space is tight, compact packaging allows the concerned citizen to maximise storage. Food Insurance, a Utah-based online store, says that their unique packing design means a customer can store a three-month supply of food for a family of five, such as its 948 Entrée Meal Plan (\$US2,919.99), under a twin-sized bed.

Customers who are worried that their nosy neighbours might be put off by knowing that the family next door is stockpiling food can opt for the Ready Store’s shipping camouflage option for “discrete, unmarked boxes”.

Those having difficulty working out which provider to use can visit the Food Storage Reviewer site, where they will find ratings on product taste, preparation times, storage and value for 26 food insurance providers.

Always helpful, the site reminds the concerned that, “When it comes to food, there are instances throughout history when governments have confiscated farm equipment and passed laws making it illegal to have food in your house.”

The fear business is booming. The chief executive of Food Insurance, Mark Hyland, recently reported an 80 per cent sales increase over the previous year. He also noted that “our customer base has moved away from the gun fanatics and political extremists to something more mainstream” – a reassuring thought for all. 📌



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June 19. Opening Pandora's Box of Food Microbiology. CSIRO, North Ryde, NSW. Visit www.aifst.asn.au for more information.

June 24-25. Lunch! Sydney. Royal Hall of Industries, Moore Park. Industry event for the food-to-go market. Visit www.lunchshow.com.au for more details.

July 2-4. NZIFST Annual Convention. "Time for Action". Hawke's Bay, NZ. Visit www.nzifst.org.nz for more details.

July 14-16. The 46th Annual AIFST Convention. Brisbane Convention and Exhibition Centre. Visit www.aifst.asn.au/convention for more information.

August 12-13. Lunch! Melbourne. Melbourne Convention and Exhibition Centre. Industry event for the food-to-go market. Visit www.lunchshow.com.au for more information.

August 12-14. Food and Feed Extrusion Course. Bribie Island, Qld. Visit www.foodstream.com.au for more details.

August 27-29. Australian HACCP Conference. Central Pier Docklands, Melbourne. Visit www.haccptown.com.au for more details.

September 7-8. Real Food Festival. Maleny Showgrounds, Sunshine Coast, visit www.realfoodfestival.com.au for more details.

September 9-12. Fine Food Australia. Sydney Convention and Exhibition Centre, Sydney, NSW. Visit www.finefoodaustralia.com.au for details.

September 12. Food Microbiology for the Non Food Microbiologist. CSIRO, North Ryde, NSW. Visit www.aifst.asn.au for details.

October 22-24. Food Structures, Digestion and Health International Conference. Bayview Eden Hotel, Melbourne, Vic. Visit www.foodstructureandhealth2013.com for more details.

INTERNATIONAL 2013

June 19-20. 7th Global Dairy Congress. Lucerne, Switzerland. Visit www.zenithinternational.com/events for details.

June 26-28. 13th International Conference on Antioxidants. Marrakech, Morocco. Visit www.isanh-me.com for more details.

July 2-4. The New Zealand Institute of Food Science and Technology Conference: Time for Action. Hawkes Bay Opera House, Hastings, NZ. Visit www.nzifst.org.nz for information.

July 8-9. International Conference on Food Processing and Technology. London, UK. Visit www.waset.org for more information.

July 13-16. The US Institute of Food Technologists Annual Meeting. Chicago, US. Visit www.ift.org for more details.

July 28-31. International Association for Food Protection Meeting. Charlotte, North Carolina, US. Visit www.foodprotection.org for information.

August 11-15. Pangborn Sensory Science Symposium. Rio de Janeiro, Brazil. Visit www.pangborn2013.com for details.

August 18-23. 15th Annual Practical Short Course on Food Extrusion: Cereals, Protein and Other Ingredients. Texas A&M University, College Station, Texas, US. Visit foodprotein.tamu.edu for more details.

September 9-11. 13th ASEAN Food Conference. Singapore. Visit www.sifst.orgsg for more details.

September 11-13. Food Ingredients Asia. Bangkok, Thailand. Visit www.ingredientsnetwork.com for more details.


September 16-20. drinktec 2013. New Munich Trade Fair Centre. Munich, Germany. Web: www.drinktec.com.

September 29-October 2. AACCI 2013 Annual Meeting. Albuquerque, New Mexico, US. Visit www.aaccnet.org/meet for more information.

September 30-October 2. 1st International Conference on Global Food Security. Noordwijkerhout, The Netherlands. Visit www.globalfoodsecurityconference.com for details.

October 3-5. Fi and Hi India. Bombay Exhibition Centre, India. Visit www.foodingredientsglobal.com/india/home for more information.

October 5-9. Anuga. Cologne, Germany. "Taste the Future". Visit www.anuga.com for more information.

November 28-30. The First International Conference of the Asia-Pacific Society for Agricultural and Food Ethics. Theme: Food Safety and Security for the 21st Century. Chulalongkorn University, Bangkok, Thailand. Visit www.apsafe2013.wordpress.com for details. 

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