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intray

Fallout following contaminated sprouts in SA and NT

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SA has given mung bean sprouts the all clear now it has identified the source of the contamination that sickened 254 and saw 48 people hospitalised since last December.

Investigations by SA Health in conjunction with local councils traced the source of the contamination to an unnamed factory. This facility has cooperated completely with SA Health directives to clean the plant and SA Health has advised that there is no longer any risk to consumers. SA Health does not indicate if any prosecutions were made in regard to this contamination incident.

I have to say this is all positive — problem identified, source of contamination identified, thorough clean-up... problem solved. But while the factory that was the source of the contamination has not been named, some of the places that served the contaminated sprouts have been.

How fair is this?

What compensation is there for those that used the sprouts in good faith or those who became ill?

It doesn't matter how fastidious you may have been with your hygiene and sanitation procedures, if you bring contaminated produce into your kitchen that is then served without passing through a kill step you can make your clients ill. And then it is your reputation that will suffer.

Rather interestingly, SA Health also said, "We are anticipating that more cases will be notified for a few weeks but these will be associated with previous consumption."

Possibly none of us should ever touch salad again.

Regards

Janette Woodhouse

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A.B.N. 22 152 305 336
www.wfmedia.com.au

Head Office
Cnr. Fox Valley Road & Kiogle Street,
(Locked Bag 1289) Wahroonga NSW 2076
Ph: +61 2 9487 2700 Fax: +61 2 9489 1265

Chief Editor: Janette Woodhouse
prepfood@wfmedia.com.au

Emeritus Publisher: Adrian Farrow

Publisher: Geoff Hird

Assistant Editor: Melissa Barks

Art Director/Production Manager: Julie Wright

Art/Production: Tanya Barac, Colleen Sam

Circulation Manager: Lora Tomova
circulation@wfmedia.com.au

Copy Control: Mitchie Mullins
copy@wfmedia.com.au

Advertising Sales:

Kerrie Robinson
krobinson@wfmedia.com.au

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… well at the very least, not worse

> incomplete publication of important data has contributed to the overestimation of benefits — and the underestimation of potential risks — of replacing saturated fat with vegetable oils rich in linoleic acid

More evidence that replacing butter with vegetable oils does not decrease the risk of heart disease has emerged.

UNC School of Medicine and the National Institutes of Health scientists have cast more doubt on the traditional 'heart healthy' practice of replacing butter and other saturated fats with corn oil and other vegetable oils high in linoleic acid.

In fact, their findings, reported in the *British Medical Journal*, suggest that using vegetable oils high in linoleic acid might be worse than using butter when it comes to preventing heart disease, though more research needs to be done on that front. This latest evidence comes from an analysis of previously unpublished data of a large controlled trial conducted in Minnesota nearly 50 years ago, as well as a broader analysis of published data from all similar trials of this dietary intervention.

The analyses show that interventions using linoleic acid-rich oils failed to reduce heart disease and overall mortality even though the intervention reduced cholesterol levels. In the Minnesota study, participants who had greater reduction in serum cholesterol had higher rather than lower risk of death.

"Altogether, this research leads us to conclude that incomplete publication of important data has contributed to the overestimation of benefits — and the underestimation of potential risks — of replacing saturated fat with vegetable oils rich in linoleic acid," said co-first author Daisy Zamora, PhD, a researcher in the Department of Psychiatry at the UNC School of Medicine.

Along with corn oil, linoleic acid-rich oils include safflower oil, soybean oil, sunflower oil and cottonseed oil.

The belief that replacing saturated fats with vegetable oils improves heart health dates back to the 1960s, when studies began to show that this dietary switch lowered blood cholesterol levels. Since then, some studies, including epidemiological and animal studies, have suggested that this intervention also reduces heart attack risk and related mortality. In 2009, the American Heart Association reaffirmed its view that a diet low in saturated fat and moderately high (5–10% of daily calories) amounts of linoleic acid and other omega-6 unsaturated fatty acids probably benefits the heart.

However, randomised controlled trials — considered the gold standard for medical research — have never shown that linoleic acid-based dietary interventions reduce the risk of heart attacks or deaths.

The largest of these trials, the Minnesota Coronary Experiment (MCE), was conducted by researchers at the University of Minnesota between 1968 and 1973. It enrolled 9423 patients in six state mental hospitals and one state-run nursing home. Its results did not appear in a medical journal until 1989. The investigators reported then that a switch to corn oil from butter and other saturated fats did lower cholesterol levels but made no difference in terms of heart attacks, deaths due to heart attacks or overall deaths.

In the course of investigating the health effects of linoleic acid-rich oils, the team »

> **the team confirmed the cholesterol-lowering effect of the dietary intervention. But … the corn oil group had almost twice the number of heart attacks as the control group.**

of investigators led by Chris Ramsden, a medical investigator at the National Institutes of Health, came across the MCE study and the 1989 paper.

"Looking closely, we realised that some of the important analyses that the MCE investigators had planned to do were missing from the paper," Zamora said.

With the help of Robert Frantz, the son of the deceased MCE principal investigator, the team was able to recover much of the raw data from the study, which had been stored away for decades in files and on magnetic tapes. The team also found some trial data and analyses in a University of Minnesota master's degree thesis written by written by Steven K Broste, a student of one of the original investigators.

Using the recovered data to perform analyses that had been pre-specified by the MCE investigators but never published, the team confirmed the cholesterol-lowering effect of the dietary intervention. But they also found that in the recovered autopsy records, the corn oil group had almost twice the number of heart attacks as the control group.

Perhaps most strikingly, graphed summaries contained in Broste's thesis indicated that in the intervention group, women and patients older than 65 experienced roughly 15% more deaths during the trial, compared to their control group counterparts.

"We did not recover the individual patient data underlying those graphs and so we couldn't determine whether those differences were statistically significant," said Zamora.

She also cautioned that the other analyses were based on only partial recovery of patient data from the MCE files, so it would be premature to conclude from them that replacing saturated fats with corn oil is actually harmful to heart health.

In a much cited study published in 2013, however, Ramsden, Zamora and colleagues were able to recover unpublished data from a smaller trial, the Sydney Diet Heart Study, and there they also found more cases of heart disease and death among patients who received a linoleic acid intervention (safflower oil), compared to controls.

Following their recovery of data from the MCE study, the researchers added new data to their existing datasets from the Sydney study and the other three published randomised clinical trials of linoleic acid-based dietary interventions. In a meta-analysis of the combined data, they again found no evidence that these interventions reduced deaths from heart disease or deaths from all causes.

"There were some differences among these studies, but on the whole they didn't really disagree," said Zamora.

Why linoleic acid-containing oils would lower cholesterol but worsen or at least fail to reduce heart attack risk is a subject of ongoing research and lively debate. Some studies suggest that these oils can — under certain circumstances — cause inflammation, a known risk factor for heart disease. There is also some evidence they can promote atherosclerosis when the oils are chemically modified in a process called oxidation. □

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Janette Woodhouse

Milking it

The increased uptake of 'ready to go' breakfast solutions is partly behind the changes in the Western world's perception that milk is no longer a diet staple.

The dairy milk market in the West has declined in recent years — it is anticipated that in North America, white milk consumption will decline by a massive 2 billion litres by 2021. This decline in white milk consumption in the West is being offset by increasing consumption by the growing middle class in the East — particularly the Middle East, North Africa and China.

Why the decline in the West?

Milk is still a very nutritious food and is generally perceived by consumers to be 'fresher' than non-milk alternatives. Consumers are also more likely to agree that milk, rather than non-dairy milk, is free of additives. More also agree that milk is naturally nutritious. Dairy milk is still the 'go to' option, but non-dairy alternatives are creeping up.

However, milk has been a staple through everyone's lives and is basically taken for granted. Milk alternatives such as soy or almond milk add panache to people's perception of their diet, even though the vast majority of us (91%) regularly consume white milk.

Growth in dairy alternatives

In 2015, US sales of non-dairy milk grew 9% to reach $1.9 billion. Why are people turning to non-dairy milks? Is it as simple as that they are just thought to be 'better for you'?

According to Mintel, very nearly half of all Americans consume non-dairy milk, including 68% of parents and 54% of children under age 18. 69% agree that non-dairy milk is healthy for children under 18, compared to the 62% who agree that dairy milk is healthy for children.

Regarding non-dairy milk consumers:

- 46% drink it at least once a day (compared to 91% for dairy milk).
- 29% consume non-dairy milk for heart health (compared to 20% of dairy milk drinkers).
- 23% drink non-dairy for weight loss/control (only 8% drink dairy milk for the same reason).

Only 57% of dairy milk consumers drink it straight, whereas 69% use it along with other foods such as cereal and 61% use it as an ingredient.

Almost all non-dairy milk consumers also drink dairy milk. So as we know they have access to dairy milk, we have to assume that their non-dairy milk consumption is by choice and deliberate.

What does dairy milk have to do to become the milk of choice?

Dairy milk has to be connected with good health, good looks and being 'naturally good for you' in consumers' minds. Unless consumers feel they are getting all of these benefits, the non-dairy milk segment will continue to steal the market share:

- 67% of US consumers agree that dairy milk is naturally nutritious, while only 60% agree the same about non-dairy milk.
- 81% agree that dairy milk is free of additives (62% for non-dairy milk).
- 86% of consumers view dairy milk as fresh, compared to the 63% who agree non-dairy milk is fresh.
- The flavoured dairy milk sector grew 5% from 2014–2015 and consumers agree that there are more flavouring opportunities for dairy rather than non-dairy milk.

Milk still has the runs on the board — it just needs to become fashionable again. □

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Milk's popularity decline opens door for alternatives

Milk consumption in developed countries is set to decline, opening further potential for milk alternatives, according to research released from Canadean.

The market research company's long-term forecast to 2021 highlights dwindling consumption of white milk in the West between 2016 and 2021. White milk is defined as packaged, unflavoured milk from all animals.

Hardest hit will be North America, where a negative compound annual growth rate (CAGR) of almost 2% will reduce the market by two billion litres by 2021. Conversely, emerging markets are expecting an increase in white milk sales, led by the Middle East and North Africa region, where the market will expand at a CAGR of 4.9% in the same period.

Canadean attributes the contraction of white milk sales in developed markets to the rapid shift away from domestic breakfast consumption and concerns that the beverage is high in fat.

Milk alternatives such as soy milk are increasingly viewed as fashionable drinks and a more health-conscious choice compared to white milk. This trend is complemented by the growing popularity of veganism and increasing incidences of lactose intolerance in the general population.

"Consumers like innovation in their drinks, and this can be found in newer milk categories which appear to be more attractive than the mature white milk category. As such, soy milk and milk alternatives should expect to enjoy growth in every region in the world by 2021," said Canadean beverage analyst Abigail Kendall.

Almond milk leads new wave of dairy alternatives

Development in the dairy-alternative drinks segment has been driven by increasing penetration outside the traditional Asian market and the rise in plant-based milks such as almond, rice, coconut and oat.

Innova Market Insights, analysing global dairy launches in 2015, reported static launch numbers in Asia but rising activity in Europe. The market is also moving on from its reliance on soy to embrace a number of plant-based foods such as nuts and grains.

Soy milks still featured in over 60% of dairy-alternative drink launches globally in 2015, either as a main or secondary ingredient — down from nearly three quarters in 2011. Meanwhile, almond milks have seen dynamic growth in recent years, increasing their share to feature in over 28% of launches, ahead of rice, coconut and oat milks.

The other notable feature has been the move towards flavoured non-dairy variants and coffee drinks.

Health benefits continue to be a significant marketing platform for dairy-alternative drinks, with 90% of 2015 launches featuring a health message of some kind.

The most popular individual claim was lactose-free, used on over 47% of introductions — up from about one-third in 2011.

Interest in clean labelling appears to have boosted the use of natural and no additives/preservatives claims and these were used on 36% of launches — rising to nearly 64% if organic claims are also included. There is also rising use of non-GMO claims.

Ultraclear PP for food and beverage packaging

Milliken NX UltraClear PP for food and beverage packaging combines functionality and aesthetics in a sustainable plastic packaging.

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The material is fully recyclable and supports sustainability through its low carbon footprint during the packaging production compared to alternative plastics. Applications based on the PP are considerably lighter in weight than their PET counterparts.

Transparent extrusion blow-moulded (EBM) bottles based on the PP enable the integration of handles and complex designs in a bottle that is said to be easier and faster to empty than other solutions. Millad NX 8000 clarified PP offers lower density and weight compared to alternative plastic materials and glass and provides a one-material solution. For clear handleware bottles, the PP bottles have a density of 0.9 g/cc, compared to PET with 1.35 g/cc, and the same clarity level.

The additive creates a sustainable packaging solution by allowing temperatures during the injection moulding process to be lowered by 45°C.

To meet the trend toward packaging that extends shelf life, Milliken's ClearTint CUV is a transparent UV absorber designed for use in PP. This additive can be used to inhibit UV light transmission in injection moulding, thermoforming and blow moulding. It protects the contents of packaging from UV light while maintaining the glass clarity look of the PP.

Milliken Chemical
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Germany's gluten-free beer has its origins in Australian science

A commercially produced, full-flavoured, barley-based gluten-free beer has hit German shelves, thanks to research by Australian scientists.

Scientists from CSIRO, with co-funding from the Grains Research and Development Corporation (GRDC), have bred the Kebari grain — a barley variety with ultralow levels of hordeins, the type of gluten found in barley. The Kebari barley has now been used by German brewing company Radeberger to make Pionier gluten-free beer.

Dr Crispin Howitt and Dr Phil Larkin celebrating the launch of Pionier gluten-free beer, the first product to use CSIRO's Kebari barley.

"Using conventional breeding we've reduced the gluten levels to 10,000 times less than regular barley, which more than meets the World Health Organization's recommendation for calling a grain gluten-free," CSIRO Principal Research Scientist Dr Crispin Howitt said.

"It's really exciting seeing the first product made with the malted version of our Kebari grain; we hope it's the first of many products," Dr Howitt said.

"We're also working on a hulless version of Kebari which is preferable for use in a range of foods like breakfast cereals, soup, even pasta and flatbreads, which will be the first part of the next generation of gluten-free products helping people with coeliac disease to increase fibre, promote bowel health and enhance nutrition in their diet."

While Pionier beer is only available in Germany, CSIRO is exploring opportunities with Australian brewers to develop a local beer using Kebari barley. While it is 'ultralow' in gluten, Kebari grain cannot be called gluten-free in Australia or New Zealand under the current Food Standards Code. However, the gluten level is well below 20 parts per million, the level recommended by the World Health Organization for classification as gluten-free, so in some countries, such as Germany, products made with Kebari barley can be classified as gluten-free.

In the future, it is hoped this development will provide more variety for the global population, including 1–2% of Australians with coeliac disease and people who avoid gluten in their diet.

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			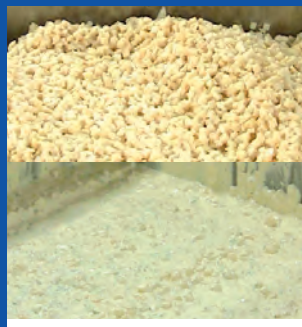
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Getting your product noticed in the supermarket

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Getting shoppers to choose your ready meals rather than another brand's, or to even select some ready meals at all, is not simple. In this article, Phillip Adcock, managing director of Shopping Behaviour Xplained, looks at the difficulties consumers face as they shop in their local supermarkets.

The explosion in product choice, combined with the constant bombardment of us with special offers, money-saving deals and other tempting communications in-store, has resulted in the creation of shopping emporia so mentally challenging that, quite simply, we are unable to make the sensible and rational decisions needed to get the best value for money when we shop. Research conducted by Shopping Behaviour Xplained (SBX) of more than 10,000 supermarket shoppers reveals that although we try to make sensible decisions as we shop, much of the time we are mentally ill-equipped to do so.

SBX Managing Director Phillip Adcock commented: "We have evolved from our ancestors, who gathered food by foraging in the forests for the ripe red berries and hunting animals. Their choices were simple. For example, red berries are sweet and ripe; green ones are bitter and best left alone. That is what our brains were originally designed to do. But now it's oh so different. In 1975, there were less than 9000 products in the average supermarket. Now there are around 50,000. Our brains simply can't rationally and objectively calculate the pros and cons of each of the different 320 cheese items, the 115 jellies or even the 100-plus different tea products in the aisle."

Multiply this experience by all the other products each of us buys during our weekly shop and you realise that popping to your local supermarket is a task that needs significant mental effort. And this is even before we attempt to work out which prices or special offers provide the best value for money.

If all this choice is bad for us, then how has it come to pass? Adcock goes on to explain. "Again, the mismatch is rooted in the ways our brains work. Essentially, we simply can't mentally process the 21st century: there's just too much to take in. For example, according to the *International Journal of Communication*, each of us consumes a staggering 34 GB (105,000 words) on an average day — and this excludes work-related data! The amount of information we each receive has increased more than five-fold since the mid-eighties."

So our poor defenceless brains, designed to choose between red and green berries, have to adopt strategies to manage what information they process. As a result, they take shortcuts — big ones! Ask a shopper what they want from their local supermarket and many will default to the least mentally taxing answer they can come up with: lots of choice and cheaper prices. We have plenty of evidence proving that neither of these responses is actually top of shopper needs, but they are the answers easiest to retrieve from our minds and give to researchers.

Leading retailers and brands love to conduct large research studies during which they talk to hundreds or even thousands of complete strangers (shoppers) and blindly believe every word they say. If it's all about the widest choice and cheapest price, how come Aldi and Waitrose are both doing so well?

Returning to the subject of choice, shoppers actually prefer less, not more, much of the time. In a series of experiments conducted by Iyengar and Lepper, one group of shoppers was presented with six different flavours of jam, while another encountered a display containing more than 30. 30% of those shopping the six-flavour display made a purchase, compared with just 3% that bought from the much larger display of 30 flavours.

In summary, our brains take shortcuts in 21st century. Scientists and researchers know this. The problem remains that there are too many out there collecting misleading consumer and shopper interview data; whether the data is valid or not appears of secondary importance. The world of retail would be a much better place if those in charge of gathering and disseminating information concentrated on getting the right answers to research questions, instead of settling for getting 'any old answer, right now'!

»

> **In 1975, there were less than 9,000 products in the average supermarket. Now there are around 50,000.**

Having explained why it is that we don't and in actual fact can't make the best decisions in supermarkets, Adcock goes on the reveal some depressing insights regarding how our brains tackle the issue of prices and special offers that bombard us in the supermarket. "Around one in five products in some supermarkets is on special offer. Presuming you spend around 40 minutes doing your big weekly shop, then you could be exposed to four different special offer messages every second in-store! No way can your brain 'do the math', as they say in America."

Once again, we are forced to take mental shortcuts just to be able to make any bit of sense of what we are faced with. Our brains have again adapted to help with this, but alas, not in a way that offers us the best value for money in the supermarket.

Have you ever stopped to consider what phrases like 'bulk purchase' or 'manager's special' actually mean? Instinctively, we've been conditioned to believe that there is some form of added value. But is there? Often, the answer is unfortunately not.

Then there is the large imposing pallet of a particular product that greets you as soon as you get to the entrance of the supermarket. This will be supported by some form of special offer message — 'Pinot Grigio wine, was £9.99, now £6.99', for example. As shoppers, we tend to respond by snapping up such a 'great deal', when what we should do is seek out the context. Find other similar products and see how much they are. Frankly, we are much less aware than we think of knowing how much products are and how much they should be. Frequently, supermarket price wars are in fact just price skirmishes. Although Asda and Tesco reduced the price of 3057 items in a 10-week period since February 2014, they increased the prices of more than 3600 items (*Daily Mail*, 12 May 2014).

Whatever the rights and wrongs of price cuts and price increases, remember that the typical supermarket contains around 50,000 lines, so cutting the price of 3000 means that 94% of products (the remaining 47,000) do not get any cheaper.

To combat this further example of human mental frailty, we need to understand what's actually happening between our own ears. The rational part of the brain, the most recently evolved neo cortex, is there to think twice before we make instinctive decisions, such as buying that buy one, get one free cat food before realising that you don't have a cat. Unfortunately, this regulatory part of our brain is relatively weak in its processing ability. Much more persuasive and powerful is the emotional part the brain, which, according to Geoffrey Miller in his book *Must Have*, operates 3000 times faster and is five times more persuasive than rational thought.

To summarise, when our modern brain is occupied (calculating prices, special offers, comparing brands, etc), it has to hand much of the decision-making over to our emotional brain — a part of the brain that relies on instinct and is much more concerned with immediate gain. It pays little or no attention to any consequences or future problems. This is one reason why we make so many poor value decisions in the supermarkets. We let our emotions decide what's best for us in terms of value for money. The same emotions that have been evolving for millions of years — much longer than money, which is a relatively recent invention, being just a few thousand years old.

If you want to take back some control over how you decide what represents value in the supermarket, you simply have to involve the more modern parts of your brain. For example, always use a shopping list and, more importantly, have the prices next to the products. Ingeniously, the supermarkets give you this very list inclusive of prices: it's called last week's till receipt.

Did you know that the human brain is responsible for using around 20% of all the energy we each consume? Thinking is hard work! So when you are out there trying to save money, make sure you prepare your brain beforehand by consuming energy-releasing foods before a trip to the shops. Don't shop tired and don't shop hungry.

Finally, consider this much-overlooked statistic: the average wage in the UK is around £12.50 per hour (*Daily Mirror*, 9 January 2014). The average weekly spend on a supermarket big shop is £98 *(Guardian,* 11 December 2013). So if you save any more than 10% off your grocery bill, then your shopping time has been more financially productive than going to work. ☐

Shopping Behaviour Xplained

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Prepared foods: how they can assist in meal preparation for the aged

*Dr Karen Abbey**

Prepared foods are those which have had some sort of process undertaken to make them useful in meal and menu planning. Unprepared foods are usually found in their natural state and often can be eaten raw or with minimal cooking from the plant or animal source. These include fruits, vegetables, grains, nuts, seeds, some meats, milk and eggs, to name a few.

An egg is a good example of a food which can be both unprepared and prepared. For example, an egg can be consumed raw in a power shake, or boiled or poached to eat. However, eggs can also be used as an ingredient in their raw state to make cakes, or eggs can be purchased ready to use either as egg whites or whole egg products, such as ready-to-eat omelettes.

The concept around prepared foods is to make meal and menu production easy, affordable and supportive to choice.

Prepared foods can be classified in a few different ways:

- **Complete meal.** This is where you open a box or packet and the meal is either ready to eat or needs to be heated to be consumed. This can also include meals which need to have simple ingredients, such as water, added. Examples of complete meals are ready-to-eat frozen meals, noodles and ready-to-eat, shelf-stable rice and meat dishes.
- **Part of a meal.** This can reduce the time it takes to put a meal together and includes when the consumer needs to add some meat or a sauce packet to bring the meal together. Examples of these are premade spice and curry pouches, pasta sauces, simmering sauces, premade soup, mousse and dessert mixes.
- **Part of an ingredient.** This is when the ingredient is premade for use, like curry pastes, spice mixes, pasta sauces and cakes mixes. There are many ready-to-use ingredients made by food manufacturers to make meal preparation easier.

Some foods can be classified across all three categories – it just depends on how the consumer uses the food in meal preparation. For example, premade cake can be a complete snack for morning tea, used with custard to make up a dessert or used as an ingredient in the example of trifle.

Our food supply is made up largely of prepared foods, and this is important as some foods need to be processed before they can safely be eaten. Unless we live a totally sustainable life, prepared foods will be found in all pantries.

Prepared foods have allowed the food supply that we have available in Australia to increase and flourish. This is largely due to the technology of preserving food through the processes of freezing, canning, and cook chill and drying. Prepared foods have also gained popularity as they provide convenience. This is an attractive feature when preparing meals for a large amount of people, like in a hospital setting or in an aged care home.

Disadvantages of prepared foods:

- Often the raw foods are so highly processed that they no longer resemble the original food. For example, potato chips no longer look like a fresh potato; biscuits do not resemble wheat grain.
- The use of preservatives, salt and food chemicals to prevent food spoilage is also required to increase shelf life, which may not be desirable from a nutrition perspective.
- Adding of additional flavour or nutrient loss during food preparation can also affect the nutrition profile of the end product.

Advantages of prepared foods:

- There is saved time and added convenience for meal preparation and food consumption.
- Foods are made available all-year round — for example, mangoes, cherries and certain vegetables — through the use of food-preserving techniques.
- Meal items can be prepared in advance and stored.
- It results in increased menu variety and flexibility.

Quick and easy menu planning

Prepared foods allow for quick meals to be put together. When catering for a large number of people, prepared food strategies need to be used to enable the meal to be served on time. Prepared foods also allow flexibility within a menu to offer different sauces, gravies and meal components to cater for different likes and dislikes.

Tackling cultural diversity

When planning meals for large groups of people from different cultures, ready-made meals can help with solving issues with menu planning. Prepared meals are also designed to have a longer shelf life, especially in freezers, and therefore can provide flexibility with menu planning. For example, when residents in aged care do not like menu items, using complete prepared meals is a useful strategy to provide meal solutions.

Prepared foods are an important part of meal preparation and menu planning. They save time and provide meal variety options. We would not be able to prepare the types of meals in the time we often have without the help of prepared foods. ☐

**Dr Karen Abbey is a foodservice specialist dietitian and the Foodservice Ambassador for Church Resources. Karen's career has covered the foodservice system, training, quality menu planning, texture modification enhancement and finding effective solutions for aged care dining and foodservice. Karen is the Director of Nutrition and Catering Consultancy and publishes the Nutrition and Catering Global Hub, a free online publication which promotes recipes, resources and valuable information to support foodservice. Karen has a passion for, and is actively involved in, promoting the importance of quality in foodservice.*

Karen is an Accredited Practising Dietitian (ADP) and member of the Dietitians Association of Australia's Food Service Interest Group. To find an APD, visit the 'Find an APD' section of the DAA website at www.daa.asn.au or call 1800 812 942.

Pack-and-seal systems for commercial kitchens

Confoil Pack and Seal Systems are suitable for commercial kitchens. They comprise custom packaging, lidding and machinery solutions, which can be tailored to the user's kitchen layout, staff ratios and cooking methods as well as the packaging requirements of their clientele.

The company offers a choice of paperboard or pulp trays, both of which act as a natural insulator, meaning the packaged meals are pleasant to handle after heating. The trays are not brittle and can withstand temperatures of -40°C to 210°C.

The transparent, heat-sealable lids allow the meal to be viewed. A generous film overhang allows for simple removal of the lidding.

Packaging options range from single-serve sizes to compartmentalised options, and many of the trays can be custom printed.

A choice of heat-sealing machinery is available, from ergonomic benchtop sealers to inline automatic models.

Confoil Pty Ltd
www.confoil.com.au

Bulla launches fairy bread ice-cream

Bulla has developed three new ice-cream flavours: Fairy Bread, Cookies & Cream and Cookie Crumble.

The flavours have joined the Lamington, Coconut Ice and 100s and 1000s range from the dairy producer.

The Fairy Bread variety features vanilla ice-cream dipped in a white choc coating and covered in colourful sprinkles. Cookies & Cream is created with cookie-flavoured ice-cream dipped in a white choc coating and covered with chocolate cookie pieces. Cookie Crumble is available in a variety pack of strawberry and chocolate-flavoured ice-creams, dipped in a chocolate coating and covered with biscuit pieces.

Metal-free, high-barrier packaging

Transparent packaging that allows consumers to see the product inside has been a growing trend on store shelves in recent years, but products that are highly sensitive to moisture and oxygen have traditionally been packaged in opaque, aluminium-based materials.

Amcor has launched AmLite Ultra, the latest addition to the AmLite range of metal-free packaging. Using Amcor's Ultra SiOx coating, oxygen barrier levels are comparable to that of aluminium, according to the company.

When tested to see how the materials would perform under extreme conditions, the material outperformed aluminium by 30% at 100 Gelbo-Flex cycles.

For users who want metal-free packaging but not transparency, versions are available with a white sealant layer, resulting in brighter printed colours by eliminating the grey background of metal-based materials.

The products offer environmental benefit by reducing material use, providing a 40% carbon footprint reduction and 21% weight reduction compared to standard aluminium-based materials, according to company testing. Additionally, it can help ensure product safety by allowing the use of metal detectors after packs are filled and sealed.

The packaging is suitable for a range of ambient dry food products, as well as medical and personal care products. It offers good sealing properties and a strong seal to create a variety of pack formats, including bags, stand-up pouches and spouted pouches, flow packs and sachets.

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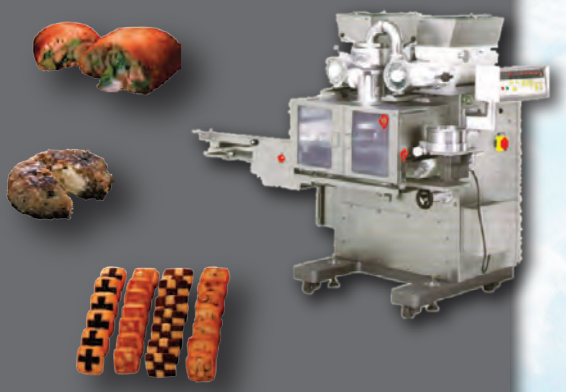

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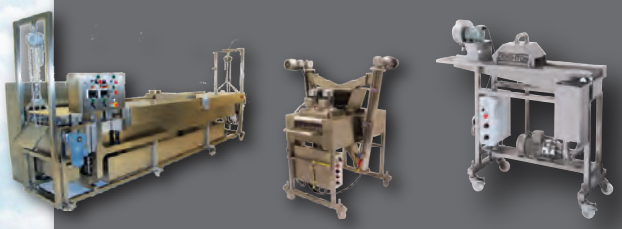

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Hot fill pumping station

The JOM Hot Fill Dos 2 pumping station provides quick and precise dispensing of liquid and solid food products up to 30 mm in diameter, depending on the food type. It is suitable for filling soups, sauces, stews, desserts and mashed potatoes into bags and containers.

The equipment is manufactured in Denmark to meet the daily rigours of a commercial kitchen environment. It is fully automatic and can be programmed to operate with consistent results.

Features includes a built-in scale to ensure and an integrated heat sealer to reduce movement of products and save time in the kitchen. All filling and bag sealing operations are controlled by foot pedals reducing possible repetitious movement injuries to staff. Changing the filling process from bags to containers only takes a few moments.

The pumping station makes the portioning of hot food products directly from a Metos kettle to the workstation faster and safer, allowing the kettle to be emptied more quickly and a greater number of cooks to be completed in each shift.

The system ensures a proper working position for all users with in-built height adjustment. Mounted on swivel castors, and incorporating an integrated air compressor, the workstation can be moved to the most convenient location.

The pumping station minimises the risk of scalding since the machine handles the food. The machine is managed via a colour touch-screen display with a user-friendly interface.

Moffat Pty Limited
www.moffat.com.au

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Non-invasive measurement

of bacteria levels in packaged ready meals

We all know that pathogenic microbes can cause product spoilage and food poisoning when eaten. The trick for ready meal producers is to minimise microbial contamination in their products and to ensure storage and transport environments do not foster the proliferation of microbes while simultaneously maximising ready meal shelf life.

Manufacturers also need to know about rates of microbial growth so that when they assign their 'best before' dates they can ensure only good quality product reaches their customers. To avoid the risk that any particular ready meal will go bad and cause illness, it is frequently given an unnecessarily short shelf life. This, of course, impacts production and retail schedules.

As microorganism growth is driven by many factors, until now it has been far from easy to accurately estimate the amount of bacteria within food containers at any given time. A better understanding of the growth process of microorganisms could reduce food waste and prevent people from being sickened by food poisoning — or both.

Now a group of researchers from Zhejiang Normal University in China and Umeå University in Sweden report a fast, accurate and non-invasive technique for monitoring bacterial growth.

"Microorganism growth is always associated with the production of carbon dioxide (CO_2)," said Jie Shao, associate professor at the Institute of Information Optics, Zhejiang Normal University, Jinhua, China. "By assessing the level of CO_2 within a given closed compartment — bottle or bag — it's possible to assess the microbial growth."

»

> **… the WM-TDLAS method is truly non-invasive, making it ideal for monitoring the status of food and medical supplies**

The researchers reported the results* in *Applied Optics*, a journal of The Optical Society (OSA).

Several detection techniques are currently capable of rapid and accurate measurements of gas compositions. Those based on optical spectrometry are most appealing because they're non-invasive, boast high sensitivity, provide instant responses and are potentially useful for assessment of bacterial growth.

"A technique referred to as 'tunable diode laser absorption spectroscopy' (TDLAS) is particularly suitable because it combines all of these properties with an ease of use and low cost," Shao said.

So the group decided to develop an easy-to-use instrument based on TDLAS to assess bacterial growth of various types of samples under a variety of conditions.

TDLAS is by far the most common laser-based absorption technique for quantitative assessments of species within a gas phase. It can be used to measure the concentration of specific gaseous species — carbon monoxide, CO_2, water or methane, to name a handful — within gaseous mixtures by using absorption spectrometry based on tunable diode lasers.

"One major advantage TDLAS offers is its ability to achieve very low detection limits, on the order of parts per billion," Shao said. "Apart from concentration, it's also possible to determine other properties of the gas under observation — temperature, pressure, velocity and mass flux."

The group's basic set-up simply involves a tunable diode laser as the light source, beam-shaping optics, a sample to be investigated, receiving optics and one or more detectors.

"The emission wavelength of the laser is tuned over a characteristic absorption line transition — of the species within the gas being assessed," Shao explained. "This causes a reduction of the measured signal intensity, which we can use to determine the gas concentration."

When the wavelength is rapidly tuned across the transition in a specific manner, it can be combined with a modulation technique called 'wavelength modulation (WM), which gives the TDLAS technique an enhanced sensitivity. It's referred to as WM-TDLAS.

By applying the technique to transparent containers of organic substances such as food items or medical samples, bacterial growth can be quickly evaluated. "Although we anticipated that the WM-TDLAS technique would be suitable for assessing bacterial growth, we didn't expect this level of accuracy," Shao noted.

In contrast with conventional and more invasive techniques that require contact with the tested items, the WM-TDLAS method is truly non-invasive, making it ideal for monitoring the status of food and medical supplies, or as a tool to determine under which environmental conditions bacterial growth is expected to be severe. "It can provide real-time analysis," Shao said.

Next, the researchers plan to enhance the technique to "allow for assessments of microbial growth in a large variety of samples — expanding beyond food items and medical supplies", Shao added. □

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**Paper: Jie Shao, Jindong Xiang, Ove Axner, and Chaofu Ying, 'Wavelength-modulated tunable diode-laser absorption spectrometry for real-time monitoring of microbial growth', Appl. Opt. 55, 2339-2345 (2016).*

Image courtesy of Alpha (via Flickr) under CC BY-SA 3.0

Coon Cheese toasties new partnership with Swimming Australia

Coon Cheese has struck a two-year deal with Swimming Australia that will see the brand play an active role at the sport's national events.

The Coon Cheese Toastie Truck will travel to events all over the country, with $1 from every $2 Coon Cheese Toastie sandwich supporting the Swimming Australia Junior Dolphins Program, a national initiative encouraging children to join their local swimming club.

The Dolphins brand will appear on Coon Cheese packaging in supermarkets around Australia.

Therapeutic food — a growing market

Janette Woodhouse

At an estimated value of $15 billion per year, the global therapeutic/medical foods market is moving into the first world.

The concept of therapeutic foods grew out of the need to care for severely malnourished children across the globe. But this is broadening rapidly as canny marketers in the Western world develop foods and meals for those with special nutrition requirements, such as the elderly, athletes, allergy sufferers and the chronically unwell.

Severely malnourished children have a risk of death nine times greater than that of their well-nourished peers, and much effort has been put in by aid organisations to return these children to health.

Traditionally, once identified, severely malnourished children (usually in the third world) were fed a specialised, therapeutic milk in in-patient facilities. This posed many difficulties, as parents often lived a long way from the health facilities and could neither afford transport to the facility nor the five or six weeks away from their other children and jobs to stay with the child being treated. So many children were simply not helped.

It was recognised that community-based treatment would be much better for both the children and the parents. However, the therapeutic milks were not readily adaptable to home environments. Time, access to potable water, hygiene constraints and access to refrigeration for any excess milk were all limiting factors.

To overcome these hurdles, food processing engineer Michel Lescanne and paediatric nutritionist André Briend invented Plumpy'Nut in 1996. Nutriset's Plumpy'Nut is a peanut paste-based product that includes vegetable oil, milk powder, sugar, vitamins and dietary minerals. Plumpy'Nut includes all of the macro- and micro-nutrients needed to restore a child to a healthy weight. The only additional item needed is water.

Image: ©Michael Zumstein/Agence Vu'.

Plumpy'Nut meets the needs of its target patients — severely malnourished children. It has a soft texture and young children like the taste. It is ready to eat as it is — no cooking is required, it has a long shelf life, it is microorganism contamination-resistant and it does not require expensive packaging. The paste does not need refrigeration and can be consumed directly from the packet. As it does not need to be mixed with water, the risk of accidental bacterial contamination is eliminated. The single-serve sachets can be stored in ambient conditions for three to four months, even at tropical temperatures.

Ready-to-use therapeutic foods

Most therapeutic foods are made of a ground-up mixture of protein, carbohydrate, lipid, vitamins and minerals. Therapeutic foods are usually produced by grinding all ingredients together and mixing them.

Ready-to-use therapeutic foods (RUTFs) are energy-dense, micronutrient-enriched pastes. The lipids used in formulating RUTFs are in a viscous liquid form and the other ingredients are usually small particles that are mixed through the lipid. The mixture needs to be homogeneous for it to be effectively consumed. The most common RUTFs are made of four ingredients: sugar, dried skimmed milk, oil, and vitamin and mineral supplements.

UNICEF is the primary global procurer of RUTF, therapeutic milk and other essential products for treating severe acute malnutrition, and also provides technical support to governments and non-governmental organisations on their application and use. Another notable procurer is Médecins Sans Frontières.

Properly used, RUTF is safe, cost-effective and has saved hundreds of thousands of children's lives in recent years. Severe acute malnutrition is a major killer of children under five, accounting for approximately 1 million deaths annually. Around 20 million children worldwide are estimated to

> **Nestlé's health business, which also includes nutritional supplements and foods for people after surgery... grew faster than the rest of the company's operations in 2015 to post sales of about US$2.1 billion.**

be suffering from this condition, of which only approximately 10–15% currently receive treatment using RUTF.

Although most RUTFs are currently manufactured in and imported from advanced economies, the technology to produce them has been introduced in developing countries with minimal industrial infrastructure. By 2012, African-produced RUTF represented 45% of the total purchased by UNICEF.

The $15 billion medical foods sector

Globally, the medical foods market is estimated to be worth about $15 billion and the major food companies are muscling in to secure their share of this growing sector. Medical foods include prescription-based powders and drinks intended to meet specific nutritional requirements to treat diseases.

Medical foods are intended for people with chronic diseases, rather than for healthy people. They must be used under medical supervision because they are intended to manage serious illnesses, like Alzheimer's disease and inflammatory bowel disease (IBS). The products have active ingredients derived from food products or dietary ingredients that are generally recognised as safe (GRAS) by FDA.

For Nestlé, the medical foods market has huge potential amid an ageing global population as the company navigates tougher times in its traditional packaged food market. Sales of frozen pizza and ice-cream have struggled. It has missed its sales growth target of 5–6% percent three years running.

"For a long time, nutrition has been seen as a sort of pseudoscience," said Ed Baetge, head of Nestlé's Institute of Health Sciences (NIHS). "For many conditions like age-related dementia, for example, there is a major clinical need for new approaches and where food can make a big difference."

Currently, scientists at NIHS in Lausanne, Switzerland, are analysing human DNA to develop personalised programs for conditions like epilepsy and intestinal disorders that are tailored to specific genetic profiles. Armed with this knowledge, the scientists will develop medical foods containing natural compounds extracted from foodstuffs like tomatoes, coffee and grapes.

NIHS was established five years ago and has spent half of its US$500 million budget, which runs to 2021, although it has »

Image: ©Michaël Zumstein/Agence Vu'

Typical RUTF composition

Moisture content	*2.5% maximum*
Energy	*520–550 kcal/100 g*
Proteins	*10–12% total energy*
Lipids	*45–60% total energy*
Sodium	*290 mg/100 g maximum*
Potassium	*1100–1400 mg/100 g*
Calcium	*300–600 mg/100 g*
Phosphorus (excluding phytate)	*300–600 mg/100 g*
Magnesium	*80–140 mg/100 g*
Iron	*10–14 mg/100 g*
Zinc	*11–14 mg/100 g*
Copper	*1.4–1.8 mg/100g*
Selenium	*20–40 µg*
Iodine	*70–140 µg/100g*
Vitamin A	*0.8–1.1 mg/100g*
Vitamin D	*15–20 µg/100g*
Vitamin E	*20 mg/100 g minimum*
Vitamin K	*15–30 µg/100 g*
Vitamin B1	*0.5 mg/100 g minimum*
Vitamin B2	*1.6 mg/100 g minimum*
Vitamin C	*50 mg/100 g minimum*
Vitamin B6	*0.6 mg/100 g minimum*
Vitamin B12	*1.6 µg/100 g minimum*
Folic acid	*200 µg/100 g minimum*
Niacin	*5 mg/100 g minimum*
Pantothenic acid	*3 mg/100 g minimum*
Biotin	*60 µg/100 g minimum*
n-6 fatty acids	*3–10% of total energy*
n-3 fatty acids	*0.3–2.5% of total energy*

projects that extend beyond then. Nestlé has also been on a US-focused acquisition spree. Earlier this year, the company signed a deal to help US biotech company Seres Therapeutics develop products aimed at restoring bacteriological balance in the digestive system. It also bought a stake in Pronutria Biosciences, a US start-up developing amino acid-based products to treat muscle loss.

"We want to have a significant impact on the company's overall profitability over the long term," said Greg Behar, who heads Nestlé's Health Science business, which markets products developed from findings at the institute's labs.

Analysts are generally upbeat about the potential of Nestlé's health business, which also includes nutritional supplements and foods for people after surgery, saying it grew faster than the rest of the company's operations in 2015 to post sales of about US$2.1 billion. Nestlé aims to increase that amount to US$10.3 billion in the next few years.

Image: ©Michaël Zumstein/Agence Vu'.

Although medical foods don't need pre-market review and approvals like drugs, they must be based on what Nestlé calls "sound medical and nutritional principles", and the FDA subjects them to monitoring.

Nestlé said that before market introduction, studies must be conducted showing that its products are safe, beneficial and effective in meeting the nutritional requirements of patients.

In addition, some of its products, like one being developed to help remission of inflammatory bowel disease, are being developed through the conventional trials process.

Foods for cancer patients

In the US, Hormel Food is launching a new medical foods line, Hormel Vital Cuisine, which includes ready-to-eat meals, nutrition shakes and whey protein powders specially designed to serve the needs of cancer patients. The company partnered with the Cancer Nutrition Consortium (CNC) to develop the line, which it says are the first products certified by the CNC organisation.

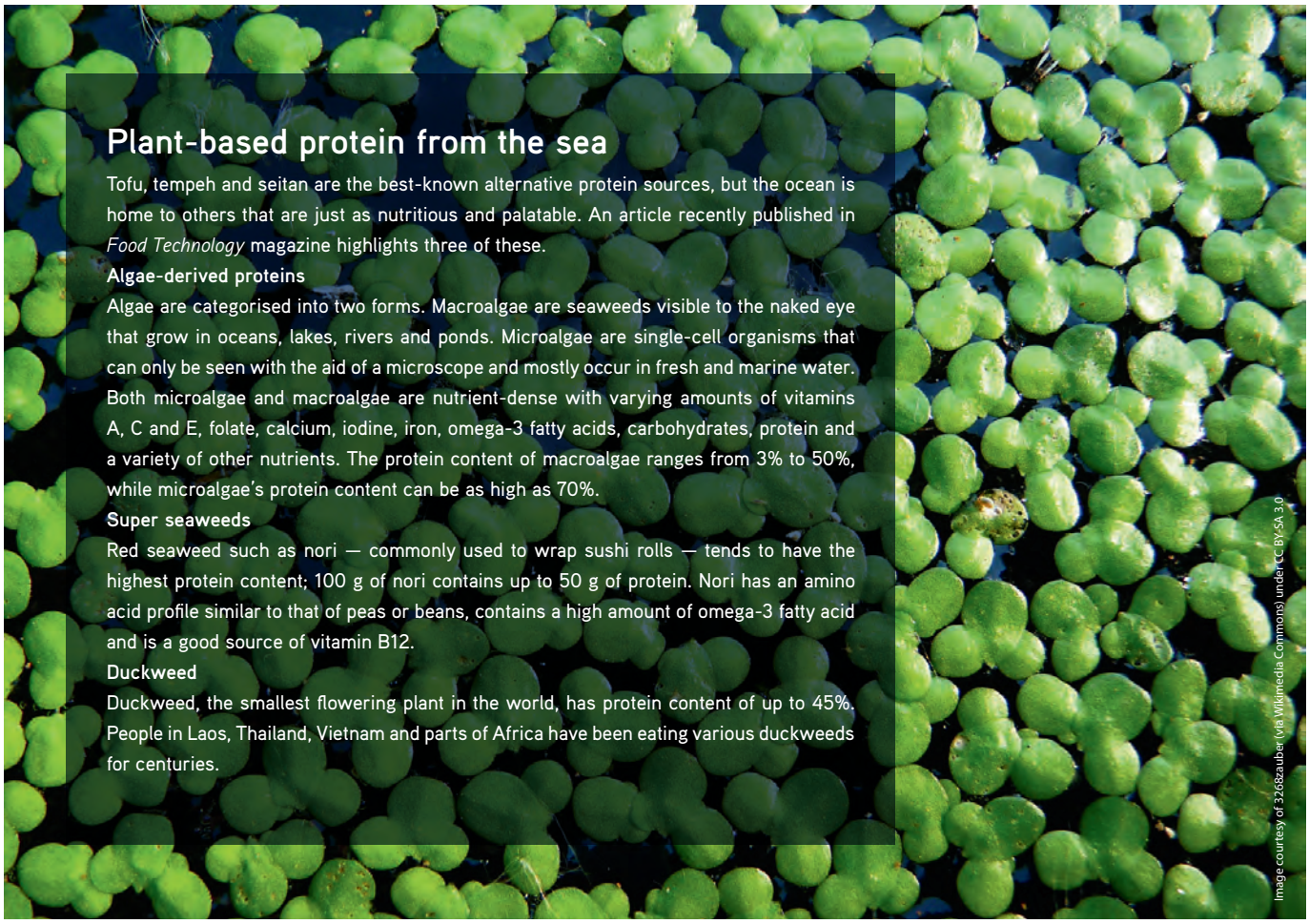
Working closely with professional chefs, including those from the Culinary Institute of America, Hormel says Vital Cuisine provides flavour and great taste as well as functionality, as product developers also ensure the essential nutrients and protein to help patients combat the loss of energy and muscle mass they endure during cancer treatments.

A portion of the proceeds from the line will go to fund CNC's research and outreach initiatives. The CNC comprises nutritionists, dieticians, oncologists and physicians from leading cancer research institutions. The RTE meals include three high-protein varieties — chicken and dumpling, vegetarian stew and beef and mushroom gravy. The meals are convenient and the company has made an effort to eliminate unnecessary ingredients known to affect consumers' taste and smell sensitivities.

> to develop personalised programs for conditions like epilepsy and intestinal disorders that are tailored to specific genetic profiles.

"During product development, we brought together researchers in both the health and culinary fields to ensure a thorough understanding of a patient's needs during various phases of treatment," said Chet S Rao, PhD, strategy and business manager for the specialty foods group at Hormel Foods. "The line was thoughtfully crafted, since many product attributes such as flavour, texture and ingredients are known to affect patients differently during their cancer journey, during which eating and drinking can be challenging."

"Most cancer patients are too tired to make a meal, or even shop for it. Yet the importance of good, consistent nutrition can't be overstated," said Dr Bruce Moskowitz, physician and chairman of the CNC. "We saw an opportunity to address these issues. So in 2014, we embarked on this endeavour with Hormel Health Labs (HHL) to improve cancer patients' quality of life." □



Plant-based protein from the sea

Tofu, tempeh and seitan are the best-known alternative protein sources, but the ocean is home to others that are just as nutritious and palatable. An article recently published in *Food Technology* magazine highlights three of these.

Algae-derived proteins

Algae are categorised into two forms. Macroalgae are seaweeds visible to the naked eye that grow in oceans, lakes, rivers and ponds. Microalgae are single-cell organisms that can only be seen with the aid of a microscope and mostly occur in fresh and marine water. Both microalgae and macroalgae are nutrient-dense with varying amounts of vitamins A, C and E, folate, calcium, iodine, iron, omega-3 fatty acids, carbohydrates, protein and a variety of other nutrients. The protein content of macroalgae ranges from 3% to 50%, while microalgae's protein content can be as high as 70%.

Super seaweeds

Red seaweed such as nori — commonly used to wrap sushi rolls — tends to have the highest protein content; 100 g of nori contains up to 50 g of protein. Nori has an amino acid profile similar to that of peas or beans, contains a high amount of omega-3 fatty acid and is a good source of vitamin B12.

Duckweed

Duckweed, the smallest flowering plant in the world, has protein content of up to 45%. People in Laos, Thailand, Vietnam and parts of Africa have been eating various duckweeds for centuries.

Image courtesy of 3268zauber (via Wikimedia Commons) under CC BY-SA 3.0

Vertical form fill seal packing lines

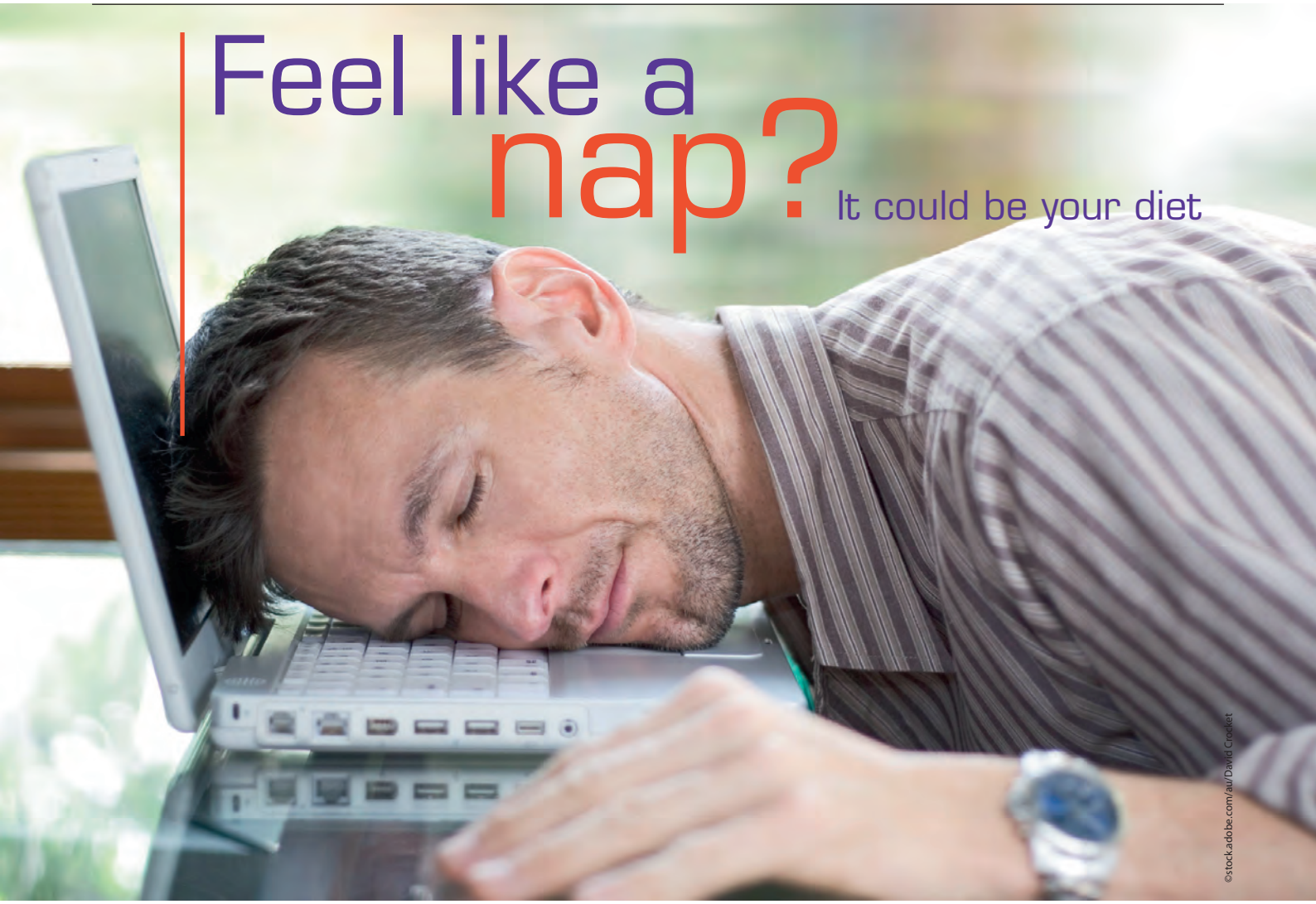
DFC Packaging offers a full range of Vertical Form Fill Seal Packing lines, providing a total turnkey system including consumables. The systems are suitable for a wide range of installations, including fresh produce, freshly peeled and diced product, wrapped chocolates, nuts and chips.

The units range in size, with the largest to date comprising eight sets of 10 head weighers over a horizontal flighted conveyor. This allows the user to pack eight different varieties of product into one box at 36 ppm. The system has the ability to pack off into two variants, the first being a VVFS Bagging Unit and the second a box filling chute.

The company custom builds systems to user requirements.

DFC Packaging Group
www.dfc.com.au

Feel like a nap? It could be your diet



University of Adelaide researchers have found that men who consume diets high in fat are more likely to feel sleepy during the day and to report sleep problems at night, and are also more likely to suffer from sleep apnoea.

This is the result of the Men Androgen Inflammation Lifestyle Environment and Stress (MAILES) study looking at the association between fatty diets and sleep, conducted by the University of Adelaide's Population Research and Outcome Studies unit in the School of Medicine and the Freemasons Foundation Centre for Men's Health.

The results — based on data of more than 1800 Australian men aged 35–80, including their dietary habits over a 12-month period — have been published this month in the journal *Nutrients*.

"After adjusting for other demographic and lifestyle factors, and chronic diseases, we found that those who consumed the highest fat intake were more likely to experience excessive daytime sleepiness,' said study author and University of Adelaide PhD student Yingting Cao, who is also based at SAHMRI (South Australian Health and Medical Research Institute).

> **those who consumed the highest fat intake were more likely to experience excessive daytime sleepiness**

"This has significant implications for alertness and concentration, which would be of particular concern to workers," Cao said. "High fat intake was also strongly associated with sleep apnoea."

In total, among those with available dietary and sleep data, 41% of the men surveyed had reported experiencing daytime sleepiness, while 47% of them had poor sleep quality at night.

About 54% had mild-to-moderate sleep apnoea and 25% had moderate-to-severe sleep apnoea, which was assessed by a sleep study among those who did not have a previous diagnosis of sleep apnoea.

"Poor sleep and feeling sleepy during the day means you have less energy, but this in turn is known to increase people's cravings for high-fat, high-carbohydrate foods, which is then associated with poor sleep outcomes. So the poor diet-and-sleep pattern can become a vicious cycle," Cao said.

"The simple message is a commonsense one, but we need more people to pay attention to it: we need to eat better; a good sleep the night before is best."

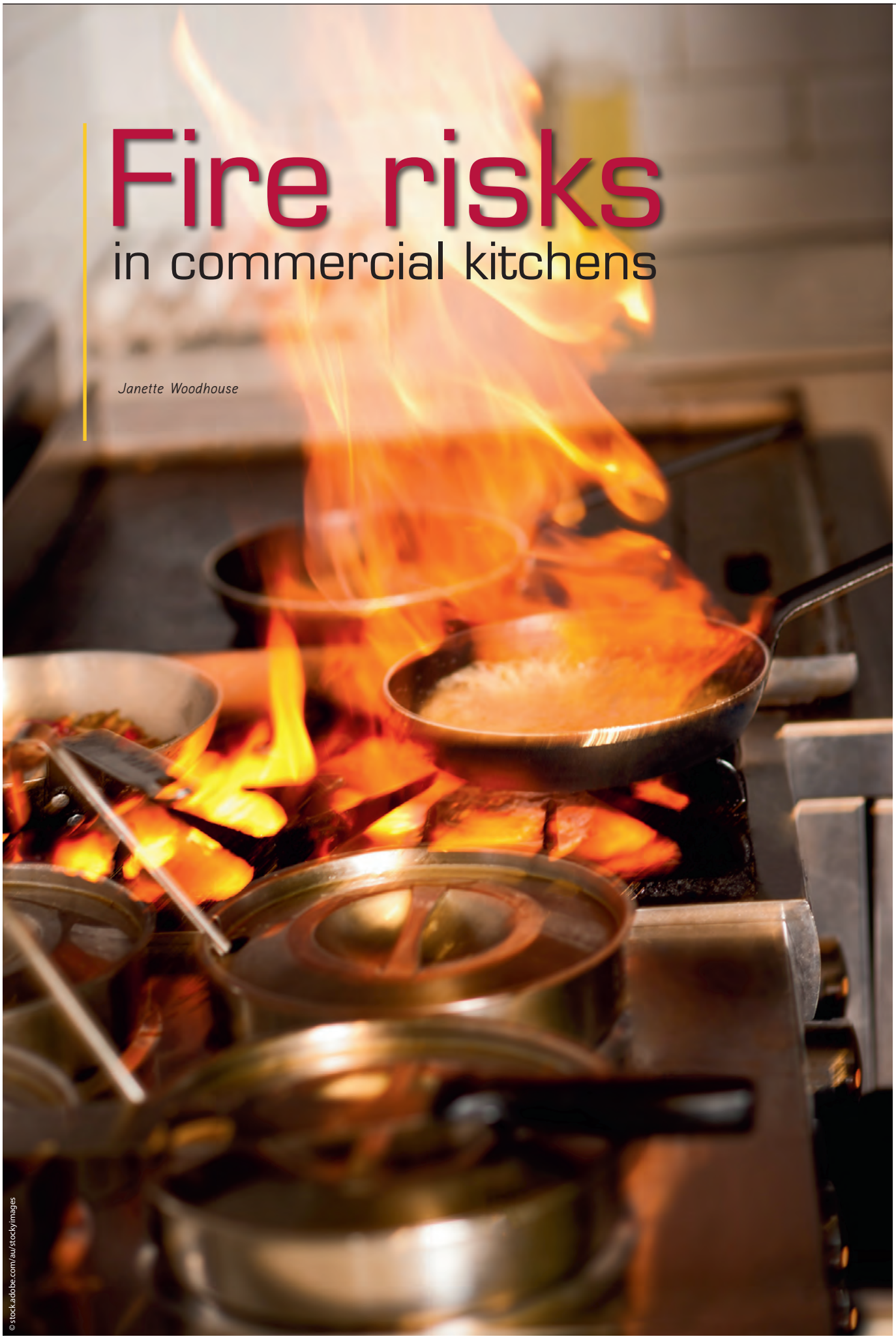
Cao said quality of sleep is often not taken into consideration in studies investigating the effects of varying diets on weight loss.

"We hope our work could help to inform future intervention studies, enabling people to achieve healthy weight loss while also improving their quality of sleep," she said.

This study has been funded by the National Health and Medical Research Council (NHMRC) and the ResMed Foundation.

Fire risks
in commercial kitchens

Janette Woodhouse



Every year, commercial kitchen fires cause millions of dollars of damage. The fires most often start in deep-fat fryers, cooking ranges, grills and other equipment. But it is the kitchens' exhaust canopies and ductwork, combined with the airflow through ducting, that can 'inflame' a minor flare-up into a major catastrophe.

Almost all types of food give off grease vapours during cooking. The kitchen exhaust system removes these vapours from the kitchen, but inevitably some of the oil and grease builds up inside the exhaust system and ducting. This grease residue is combustible at approximately 370°C. Cooking appliance flare-ups often generate temperatures above 1000°C, which can easily ignite the grease residue throughout the ventilation system, spreading uncontrolled fire throughout the whole building.

Such a series of events occurred at Heathrow Airport in 1998. The fire had spread through more than 200 metres of ducting before the 100 firemen could stop it. In the meantime, three terminals had been shut down and more than 300 flights cancelled or diverted. The physical damage bill for the fire was far exceeded by the hundreds of millions of dollars of consequent losses. In 2014, five fires in commercial kitchens resulted in $30 million worth of damage.

Fire-related hazards in commercial kitchens include:

- flames, sparks and hot gases from food preparation, which can ignite residues in exhaust ducts
- food preparation equipment left without supervision during operation
- failure to switch off equipment, especially at the end of activity
- overheated oils that can lead to spontaneous combustion
- food preparation equipment based on solid fuels
- gas blowtorches used for browning some foods
- poorly operating thermostats or a lack of thermostat or fault-detecting equipment
- faulty or overheating electrical equipment
- metal exhaust flues that conduct heat and ignite nearby material or debris
- ovens without igniters/pilot lights (lit with burning pieces of paper).

Common safety faults in commercial kitchen exhaust ventilation systems include:

- a grease removal device too close to the heat source
- poor maintenance/poor access
- split maintenance responsibilities
- ducts too close to inappropriate materials
- multiple ducts from multiple compartments
- wood-fired ovens and charcoal heaters
- incorrect installation.

How to minimise fire risks in your exhaust system

There are simple ways to avoid commercial kitchen ventilation systems fires, and it is imperative that they are implemented:

- Systems need to be designed and installed in accordance with the established rules
- Ongoing cleaning, maintenance and inspection should be targeted to the actual usage of the facility and its delivery should be verified.

Step 1: Obey the rules

The National Construction Code (NCC V1 2016) requires that commercial kitchens are provided with kitchen exhaust hoods in compliance with AS/NZS 1668.1-2015 and AS 1668.2-2012. In order for a hood to comply with AS/NZS 1668.1, the whole exhaust system must comply. These standards have been updated and it is important that designers and installers are working to the correct editions. The NCC and AS 1668.2-2012 determine where kitchen exhaust hood systems are required, the minimum ventilation rates, the construction details in terms of functionality and hygiene and, importantly, the minimum distances between the grease removal device and the heat source. The NCC and AS/NZS 1668.1-2015 specify the design and installation precautions that need to be included to mitigate the results of any fire that occurs in the exhaust system.

Step 2: Keep it clean

Keeping ventilation and exhaust systems clean and minimising grease residues will reduce the potential for fires to take over. In fact, Australian Standard 1851.6 – 2012 requires each commercial kitchen exhaust system to be thoroughly cleaned at least once a year. As well as for health and safety, compliance can be crucial from an insurance point of view.

Cleaning method options include:

- manual scraping and washing by hand
- wet washing using steam or hot water and detergent
- robotic systems using compressed air, rotating brushes, dry ice, vacuum or pressurised water.

There are companies that specialise in commercial kitchen exhaust system cleaning and maintenance. When using these companies, it is reasonable to request:

- before-and-after photographs
- a detailed system diagram of the kitchen exhaust system for future reference
- a full report on its condition
- a certificate of compliance.

> **The fire had spread through more than 200 metres of ducting before the 100 firemen could stop it.**

Step 3: Call in experts

The Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH) has released 'Fire safety — Kitchen hood exhaust systems', a free online technical bulletin that offers an in-depth look at the special fire risks associated with commercial kitchen ventilation systems.

The bulletin aims to highlight the main fire safety issues, promote a common language and improve understanding of the risks and resulting responsibilities of »

all participants in the supply chain, from design and installation through to operation and continuing maintenance.

The technical bulletin was prepared by AIRAH in collaboration with a range of AIRAH members, industry regulatory organisations, state governments, fire authorities and individuals.

Developed with a wide-ranging focus, the bulletin can be used by everyone from technical service providers and facilities managers to operators of commercial kitchens, building surveyors, body corporates, local councils, property assessors and insurance companies.

To download the technical bulletin, go to www.airah.org.au/resources.

To sum up

If you think your kitchen exhaust ventilation system does not meet current standards or represents a fire risk, you should contact an HVAC professional or kitchen exhaust ventilation company to do a fire risk assessment. The single most important thing you can do to keep your systems safe is to regularly inspect and keep the system clean. Make sure you are correctly insured and discuss with your cleaning contractor any safety hazards or compliance issues in your system. □

Delivery management platform for food vendors

Drive Yello is a delivery management platform and marketplace that allows food vendors to outsource their delivery capability.

Suitable for franchises, restaurants, chains, cafes and small food producers, the platform allows vendors to search, hire, manage, track and pay drivers for either one-off deliveries or full shifts.

Users post delivery jobs and are provided with a driver on demand. Benefits include increased efficiency, improved monitoring, reduction of administration and accessibility to a crowdsourced workforce.

Drive Yello
www.driveyello.com

Thickener solution

Trisco Foods has formulated Precise Thick-N INSTANT thickener solution. The instant liquid thickener is used to thicken a range of beverages and foods for the estimated 20% of Australians over 60 who suffer from swallowing problems or neurological-related dysphagia.

Swallowing difficulties can be a symptom of a number of diseases, including Parkinson's disease, motor neurone disease, Alzheimer's disease and stroke. A common problem amongst this group is aspiration, where patients cough or choke because food or liquid enters the windpipe. If this happens the person could go on to develop more serious problems, such as pneumonia.

Thickened fluids are key in reducing aspiration or choking risk in people with moderate to effective swallowing difficulties. With 40–50% of aged care residents suffering from dysphagic symptoms, the nutritional value and variety of current thickening products are growing issues in Australia's aged care sector.

Being lactose- and gluten-free, the neutral-flavoured thickening agent is suitable for use in a range of foods, beverages and nutritional supplements, without altering taste or smell. Suitable for hospital, aged care and in-home use, the agent thickens within 30 s with little mixing required. Single and bulk preparations are available and the pump action bottle provides easy dosing.

Trisco Foods Pty Ltd
www.triscofoods.com

Food fraud:

from Kalashnikovs to painted olives

An INTERPOL-Europol coordinated initiative to protect public health and safety has resulted in the seizure of tens of thousands of tonnes of fake and substandard food and drink.

First launched in 2011, the Opson Operations initially involved just 10 countries across Europe. This year, Opson V involved operations across 57 countries and saw more than 10,000 tonnes and one million litres of hazardous fake food and drink seized.

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Involving police, customs, national food regulatory bodies and partners from the private sector, checks were carried out at shops, markets, airports, seaports and industrial estates between November 2015 and February 2016.

A number of arrests were made worldwide throughout the operation and investigations are continuing. Among the aims of the operation is to identify and disrupt the organised crime networks behind the trafficking in fake goods and enhance cooperation between the involved law enforcement and regulatory authorities.

"Fake and dangerous food and drink threaten the health and safety of people around the world who are often unsuspectingly buying these potentially very dangerous goods," said Michael Ellis, head of INTERPOL's Trafficking in Illicit Goods unit which coordinated activities between the world police body's participating countries across the globe.

"With Operation Opson V resulting in more seizures than ever before, we must continue to build on these efforts to identify the criminal networks behind this activity whose only concern is making a profit, no matter what the cost to the public."

"Today's rising food prices and the global nature of the food chain offer the opportunity for criminals to sell counterfeit and substandard food in a multibillion [dollar] criminal industry which can pose serious potential health risks to unsuspecting customers. The complexity and scale of this fraud means cooperation needs to happen across borders with a multiagency approach," said Chris Vansteenkiste, cluster manager of the Intellectual Property Crime Team at Europol.

"This year again, the results from Opson clearly reflect the threat that food fraud represents, as food adulterations cut across all kinds of categories and from all regions of the world. Sharing knowledge in one market may prevent food fraud in another and ultimately helps protect public health and safety worldwide."

Some seizure highlights (or should that be lowlights?)

Australia

False labelling was a common thread for all types of foodstuffs around the world. In Australia, testing of 450 kg of honey revealed it had been blended or adulterated, and a consignment of peanuts had been repackaged and relabelled as pine nuts, posing a significant threat to allergy sufferers.

Sudan

Nearly nine tonnes of counterfeit sugar contaminated with fertiliser was seized in Khartoum.

Italy

Italian officers recovered more than 85 tonnes of olives which had been 'painted' with copper sulphate solutions to enhance their colour.

Greece

Officers discovered three illicit factories producing counterfeit alcohol. Police seized equipment used in the manufacturing process including labels, caps and empty bottles, in addition to more than 7400 bottles of fake alcohol and counterfeit labels.

UK

Authorities recovered nearly 10,000 litres of fake or adulterated alcohol including wine, whisky and vodka.

Hungary

Hungarian food safety officials discovered more than two tons of duck meat, destined to be sold as goose liver (foie gras).

Burundi

More than 36,000 litres of illicit alcohol were seized in addition to nine Kalashnikov rifles and ammunition along with three grenades.

Thailand

After police in Thailand carried out checks on an individual found to be transporting four tonnes of meat illegally imported from India, further investigations led to the discovery of an illicit network operating across 10 provinces. Officers recovered and destroyed more than 30 tonnes of illegal beef and buffalo meat unfit for human consumption, which had been destined for sale in supermarkets.

Belgium

In a number of cases, checks at airports identified international travellers importing illicit products. Customs officers at Zaventem airport in Belgium discovered several kilos of monkey meat; and in France, officers seized and destroyed 11 kilos of locusts and 20 kilos of caterpillars.

South Korea

Police in South Korea arrested a man smuggling dietary supplements which were being sold online as natural product but in fact contained harmful ingredients. The sale of these fake weight-loss products is estimated to have generated some US$170,000 over a 10-month period.

Indonesia

In Indonesia, officials seized 70 kilos of chicken intestines that had been preserved in formalin, which is prohibited as a food additive. In a joint National Agency of Food »

Image: From Opson IV: An illicit factory producing fake name-brand vodka was discovered by Derbyshire County Council Trading Standards team. Officers discovered more than 20,000 empty bottles ready for filling, hundreds of empty five-litre antifreeze containers that had been used to make the counterfeit alcohol, as well as a reverse osmosis unit used to remove the chemical's colour and smell.

and Drug Control, police and customs intervention, more than 310,000 illegal food products were discovered hidden behind piles of tiles in a warehouse believed to have been smuggled in by boat from Malaysia.

Bolivia

Police in Bolivia discovered a warehouse containing thousands of cans of sardines, with fake labels of a famous Peruvian brand ready to be stuck on.

Hungary, Italy, Lithuania and Romania

In Hungary, Italy, Lithuania and Romania, customs and police authorities discovered counterfeit chocolates, sweets and non-alcoholic sparkling wine aimed at children and destined for export to West Africa.

Togo

Officials in Togo destroyed 24 tonnes of imported tilapia, which was found to be unfit for human consumption.

Zambia

Police discovered 1300 bottles of fake whisky in original packaging, which had previously been stolen from a warehouse. More than 3200 cartons of diet powder drinks where the expiration dates had been modified were also seized. □

Large-capacity blender

The Vitamix XL Blender allows the efficient handling of large-volume production of pureed or blended food by nursing homes, hospitals, retirement villages, daycare centres, schools and caterers.

The blender has a 4.2 HP belt-driven motor and a large 5.6 L jug capacity. An optional 2 L jug is also available.

The blender is suitable for producing soups, smoothies, pureed food, salsas and dips. The supplied tamper stick assists with whole food processing while blending, enabling the delivery of nutrient-rich menu offerings.

Featuring variable speed control, a pulse function and a wide pouring spout, the blender is easy to operate and versatile in its applications. For safety, the machine automatically stops when the hinged cover is lifted.

Roband Australia Pty Ltd
www.roband.com.au

Food safety
from farm to fork

A variety of foodstuffs, previously only available when in season, are now commercially available all year round. The demand for frozen products and ready meals is also on the rise. This desire for the rapid and permanent availability of foods has consequences for the structure of the food supply chain because many products and ingredients are now imported and exported.

As a result, the global trade in food entails not just logistical challenges, but also food safety risks. For instance, food fraud by international suppliers — such as the European horsemeat scandal in 2013, or food-related outbreaks of disease — cannot be limited to a single region or country. In a bid to address this, consumers are calling for more transparency with regard to the provenance and authenticity of foodstuffs. They want to know the level of quality in food, what it contains, and under what conditions it was produced, processed, packaged, stored and delivered.

Securing traceability — preventing recalls

Legal requirements also have global ramifications on the efforts of the food industry to guarantee the highest possible standards of food safety. In no other industry do the slightest mistakes at any stage of the food chain have such serious consequences on consumer wellbeing as in the food production and processing industry.

»

©iStockphoto.com/Richard Clark

Food scandals such as the Dioxin Affair or the European BSE crisis in the late 1990s prompted both the foundation of the European Food Safety Authority (EFSA) in 2002 and the European Parliament and Council's adoption of Regulation (EC) No. 178/2002, which laid down the general principles of food law. This regulation requires the food industry to establish systems to enable traceability of foodstuffs across all stages of production, processing and distribution. In addition, food companies became responsible for recalling unsafe goods and products in order to prevent contamination of the food chain.

To allow them to assess the causes of a contamination, companies must be able to trace back the trajectory of their products from the producer, through the processing stages, to retailers. In the worst-case scenario, all affected foods must be withdrawn from circulation as quickly as possible. Recalls not only entail financial damage for companies, but are also damaging to brand reputation. It is therefore essential for them to implement an appropriate traceability system which offers complete documentation on the product's route through production, thereby allowing companies to minimise the scale of recalls. Identification solutions such as RFID technology, laser-based bar code scanners and image-based code readers collect all the information necessary to reliably trace foodstuffs.

Securing quality — preventing errors in production, processing and packaging

Due to the increasing consumer demand for quality, a key necessity for the food and beverage industry is quality assurance. The high demand for foodstuffs conforming to ever-more specific consumer preferences necessitates a customised approach to production, processing and packaging. To this end, the appropriate production, processing and packaging processes must be designed to be as flexible as possible while also fulfilling the need to use resources efficiently.

With respect to quality assurance, it is therefore worthwhile to monitor a large number of process parameters to discover abnormalities and errors, to reduce the amount of waste and to avoid machine downtime — all at high production speeds. Vision technology is used in the food and beverage industry to detect not only the position of goods and packaging and measure their dimensions, volume and contours, but also to check their level of quality.

This technology generates a great deal of process data, enabling better monitoring and automation of production, processing and packaging processes — whether in the primary, secondary or final packaging stage. For instance, even the most challenging gripping tasks can be executed in a way that prevents damage to the product. Intelligent, flexibly adjustable photoelectric sensors help to significantly enhance the quality and efficiency of packaging machines.

Securing data acquisition — preventing bacterial growth

For safe production, processing or filling of food and beverages, it is essential that strict hygiene standards, such as those specified by the EHEDG (European Hygienic Engineering & Design Group) or American 3-A Sanitary Standards, are observed at all times. To this end, machines and systems in the food and beverage industry are subjected not only to particularly high temperatures, but also to daily high-pressure cleaning (washdown) and aggressive cleaning and disinfection agents.

But even when such extreme conditions are in place, users would be unwise not to use intelligent sensor technology to make their production and processing procedures more efficient. They should source photoelectric sensors, bar code scanners and level, pressure and temperature sensors in rugged stainless steel Inox, or VISTAL housings. Sensors coated with PTFE (Teflon) or safety light curtains with enclosure rating IP69K offer hazardous point protection in wet areas. The sensors feature a high degree of seal tightness while also offering thermal and chemical resistance.

Choosing rugged sensors safeguards the ability to collect process data reliably, thereby guaranteeing the supply of digital information. ☐

SICK Pty Ltd

www.sick.com.au

Fish sauce lowers salt, retains flavour

Cooks, chefs and food manufacturers alike face the challenge of developing recipes that reduce sodium while retaining flavour. Consumers typically describe reduced-sodium foods as lacking in taste and flavour.

A study has appeared in the *Journal of Food Science*, published by the Institute of Food Technologists (IFT), which found that Vietnamese fish sauce added to chicken broth, tomato sauce and coconut curry reduced the amount of sodium chloride by 10–25%, while still maintaining the perceived deliciousness, saltiness and overall flavour intensity.

Fish sauces are a standard condiment in many Southeast Asian cuisines, adding a umami element to foods. Fish sauce is made by combining sea salt and long-jawed black anchovies in large vats to slowly ferment for 8–12 months, during which the protein breaks down to free amino acids and increase the umami taste. The researchers from Taylor's University in Malaysia showed that fish sauce may be used as a partial substitute ingredient for salt as a means to reduce sodium content in food, without diminishing palatability. The results could assist chefs and food manufacturers to create foods lower in sodium content that would meet the needs of consumers, healthcare providers, governmental organisations and consumer advocacy groups, without compromising taste.

Maximum-yield whey-based protein

Arla Foods Ingredients has developed a portfolio of whey-based protein ingredients that enable dairy processors to achieve maximum yield from their ingredients.

These include ingredients from the Nutrilac HiYield range, which enable dairies to make cheese, yoghurt and fermented beverages using 100% of their milk, as well as Nutrilac ingredients that enable processors to turn acid whey into added-value dairy products. In addition, Nutrilac Softcheese makes it possible to reduce fat in soft ripened cheese by 50% with no loss of creaminess and increase the final yield by up to 20%.

The high-yield whey protein solutions help processors to increase profitability and reduce waste.

Arla Foods Ingredients
www.arlafoodsingredients.com

Dysphagia cup

Dysphagia is the medical term for difficulty in swallowing. 1 in 3 Australians over the age of 65 suffer from the condition, which can result in dehydration and malnutrition.

Flavour Creations has launched a Dysphagia Cup, to enable individuals who experience difficulty holding their own cup to independently feed themselves.

The cup complements the company's range of nutritionally dense ready-to-drink products in 29 flavours and three viscosities.

The cup has an angled shape that allows the contents to be sipped without tilting the head, which is a necessary postural adjustment for people with dysphagia. It also has a suitable diameter, curvature, ribbed sides and indentations for ease of holding. The large foil lid has external ribbing and embossed texture to assist with a manual grip.

The cup is suitable for hospitals, residential aged care and those living at home in the community.

Flavour Creations
www.flavourcreations.com.au

Compliance
and hand washing

Hand washing is one of the absolute basics of hygiene in food and beverage processing, but how do you ensure compliance? Electronic monitoring can be one tool but it isn't a guaranteed solution.

Olin Business School at Washington University in St Louis shows that motivating compliance with standard processes via electronic monitoring can be a highly effective approach, despite concerns about employee backlash. However, the research also highlights that managers cannot simply 'monitor and forget', and that a long-term plan for supporting the retention of monitoring is critical.

Hengchen Dai, assistant professor of organisational behaviour at Olin, along with Bradley A Staats and David Hofmann from the University of North Carolina at Chapel Hill and Katherine L Milkman from the University of Pennsylvania's Wharton School, studied compliance with hand-hygiene guidelines among more than 5200 caregivers at 42 hospitals for more than three years.

They collaborated with Proventix, a company that uses a radiofrequency-based system to track whether healthcare workers wash their hands. More than 20 million hand-hygiene opportunities — incidences when hand hygiene is expected — were captured, each with the potential to prevent, or spread, a hospital-borne illness or infection.

The researchers found that on average, electronic monitoring resulted in a large increase in hand-hygiene compliance during their study period. Interestingly, compliance initially increased, and then gradually declined, after approximately two years. When electronic monitoring was stopped, hand-washing rates dropped, suggesting that hand-hygiene habits weren't formed.

In fact, researchers discovered that compliance rates for hand washing dropped to below the levels seen before the monitoring began — a finding that is surprising to both the researchers and healthcare practitioners.

While the findings focused on the healthcare profession, Dai said all managers should take note, no matter their field. While electronic monitoring is an important motivation and compliance tool, it's a single piece of a larger strategy.

"Individual electronic monitoring is one tool managers can use to dramatically improve standardised process compliance, but that it is not a panacea," Dai said. "Managers looking to build process compliance must think about how electronic monitoring fits within a broader system encompassing not only technology, but also norms, culture and leadership. Managers should not 'monitor and forget'." □

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