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V for vitality

As we ramp up for another edition of Vitafoods, we devote a lot of editorial space in this issue to a cross section of the supplements and functional ingredients that will mirror the vast halls of Palexpo in Geneva during early May. Every year, consumers are becoming more conscious about the nutritional content of the food they eat. On the other hand, non-communicable diseases (NCDs) that are often linked with diet and lifestyle are still major concerns, especially in the developing world.

Anne Bucher, director-general for health and food safety at the European Commission, tells us in our Food safety section, starting on page 150, about how regulations and collaborating stakeholders are addressing these issues to promote healthier food choices, but the hard work is still revealing itself. This comes as a new Global Burden of Disease (GBD) study published by the Institute for Health Metrics and Evaluation reveals that, from 1990 to 2017, there was a 41% decrease in communicable diseases and neonatal disorders, yet, at the same time, a 40% increase in NCDs. “We are using the wrong ammunition for a very significant problem,” commented João Breda, WHO programme manager for nutrition, physical activity and obesity.

Considering 60 million people in Europe alone have diabetes, 55% of the adult population is overweight or obese, and two thirds of premature deaths are caused by NCDs, the time to act has never been more urgent. One catalyst for change is certainly coming from, once again, WHO with its REPLACE programme, a step-by-step guide to eliminate industrially produced trans-fatty acids from the global food supply.

So, more nuanced methods are needed to meet the problem head on, rather than glancing off it or, worse yet, missing it altogether. With all that will happen at Vitafoods, this should certainly be a priority everyone can agree on.

Carl Friedmann, editor





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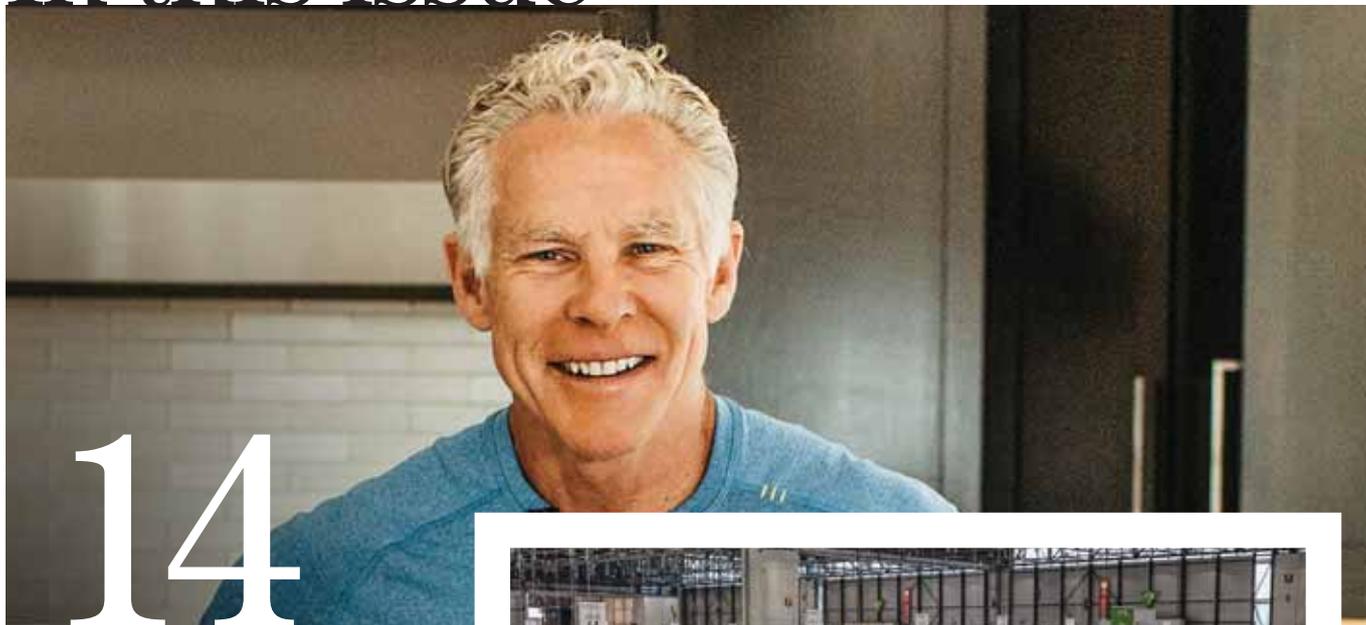
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40% of global consumers eat sweet spreads with a spoon

AAK global consumer survey, 2018



AAK

"The long-suspected problem of gluten contamination in restaurant foods that has been reported by patients likely has some truth behind it."

Dr Benjamin Lebwohl, Columbia University Medical Centre

Analysis: free-from markets

'Free from' is a catch-all term that can encompass products free from any specific ingredient, usually those linked to an allergy or intolerance. Gluten and dairy (including lactose) are the most mainstream avoidance ingredients within the 'free from' space. Demand for gluten-free and dairy-free products has soared in recent years as awareness of intolerances has grown, and many consumers have started to opt for such products as a lifestyle choice, rather than due to a specific allergy or intolerance. Almost a quarter of innovative food and drink products launched in 2017–18 were tagged as gluten-free, while 9% were tagged as dairy or lactose-free.

A significant proportion of consumers globally (62%) say they are always or often influenced by a product's impact on their health and well-being when choosing both food and soft drinks. 'Free from' purchases are already closely linked to health, with purchases driven either by necessity or by the perception that eliminating gluten or dairy from diets is healthier. When considering what is 'healthy' consumers are primarily thinking about products that are natural, or offer a balanced nutritional profile in terms of nutrient content, including fat, protein and carbohydrates. By contrast only a very small proportion of consumers associate gluten-free or dairy-free with being inherently 'healthy'. It is therefore important that manufacturers ensure 'free from' products align with other healthy attributes to appeal more broadly to today's health-conscious consumer needs.

When analysing the consumption of gluten and dairy ingredients globally, 38%

of consumers in a GlobalData global consumer survey claimed to be trying to either limit their intake of gluten or avoid it entirely. Fewer consumers, around one in five (19%), claimed to be doing the same for dairy. This suggests that innovation holds more potential in the gluten-free space than in dairy-free, given the proportion of consumers likely to be actively seeking out gluten-free products. However, despite the market for dairy-free goods appearing smaller, the recent movement towards veganism and a more plant-based approach to eating is likely to see demand for such products soar. Indeed, in the US alone, the proportion claiming to follow a vegan diet increased by over four percentage points in just four years to 5.7% in 2018.

Regarding gluten-free and lactose-free, around half of consumers have deliberately purchased products featuring each claim. Lactose is a sugar found in cow's milk, and is the component most commonly found to be the cause of intolerance or allergy to dairy products. Despite intolerance being a key driver underlying the purchasing of gluten or dairy-free products, the majority of those purchasing these products are doing so for other reasons. The majority of consumers who claim to purchase these products do so because they perceive them to be healthier, rather than for a more specific medical need. Exploring purchasing habits by region, it can be seen that generally consumers in Europe and Asia-Pacific are most driven to purchase 'free from' products due to

perceptions that they are healthier rather than necessarily due to intolerance.

Consumers globally tend to have a neutral view of gluten; most do not particularly see it as being positive for their health, but just 28% actually consider it to be negative. This unfavourable view is higher among some segments, however, particularly those already buying gluten-free products (33%), reiterating the role health perceptions play in driving demand. Women and those on higher incomes are also more likely to take a negative view of gluten. It is important that 'free from' formulations align with broader health trends to appeal to their target audience; for example, by ensuring products are made with natural ingredients, or are low in sugar.

Dairy ingredients are perceived less positively for health than some popular plant-based alternatives. Plant-based alternatives to cow's milk products have become mainstream in recent years, including products made from ingredients such as almonds, hazelnuts, soy and oats, which are positioned as a direct replacement for cow's milk in many products. Aside from intolerance, many consumers are turning to these dairy alternatives because they perceive them to be healthier than milk, or lactose. Just over half (56%) of consumers perceive milk protein as positive for their health, while over three quarters think the same of almonds. Such positive sentiment is helping drive the boom in dairy-free options such as nut milks.

For further information, visit www.globaldata.com.

68%

Consumers find the concept of a product formulated with the lowest number of ingredients possible appealing.

62%

Global consumers say they're always or often influenced by a product's impact on their health and well-being when choosing both food and soft drinks.

25%

A quarter of innovative food and drink products launched in 2017–18 were tagged as gluten-free.

9%

Innovative food and drink products launched in 2017–18 were tagged as dairy or lactose-free.

Source: GlobalData

Allergen impact

€55-151 billion

Avoidable indirect costs of failure to properly treat food allergies in the EU each year.

615%

In the 20 years to 2012 there was an increase in the rate of hospital admissions for anaphylaxis in the UK.

Doubled

The prevalence of peanut allergies among children in Western countries in the past

10 years.



5.4 million

People in the UK are currently receiving treatment for asthma, which can be triggered by food allergies.

16% mean

National surveys show prevalence rates of rhinitis of between 5.9% (France) and 29% (UK).

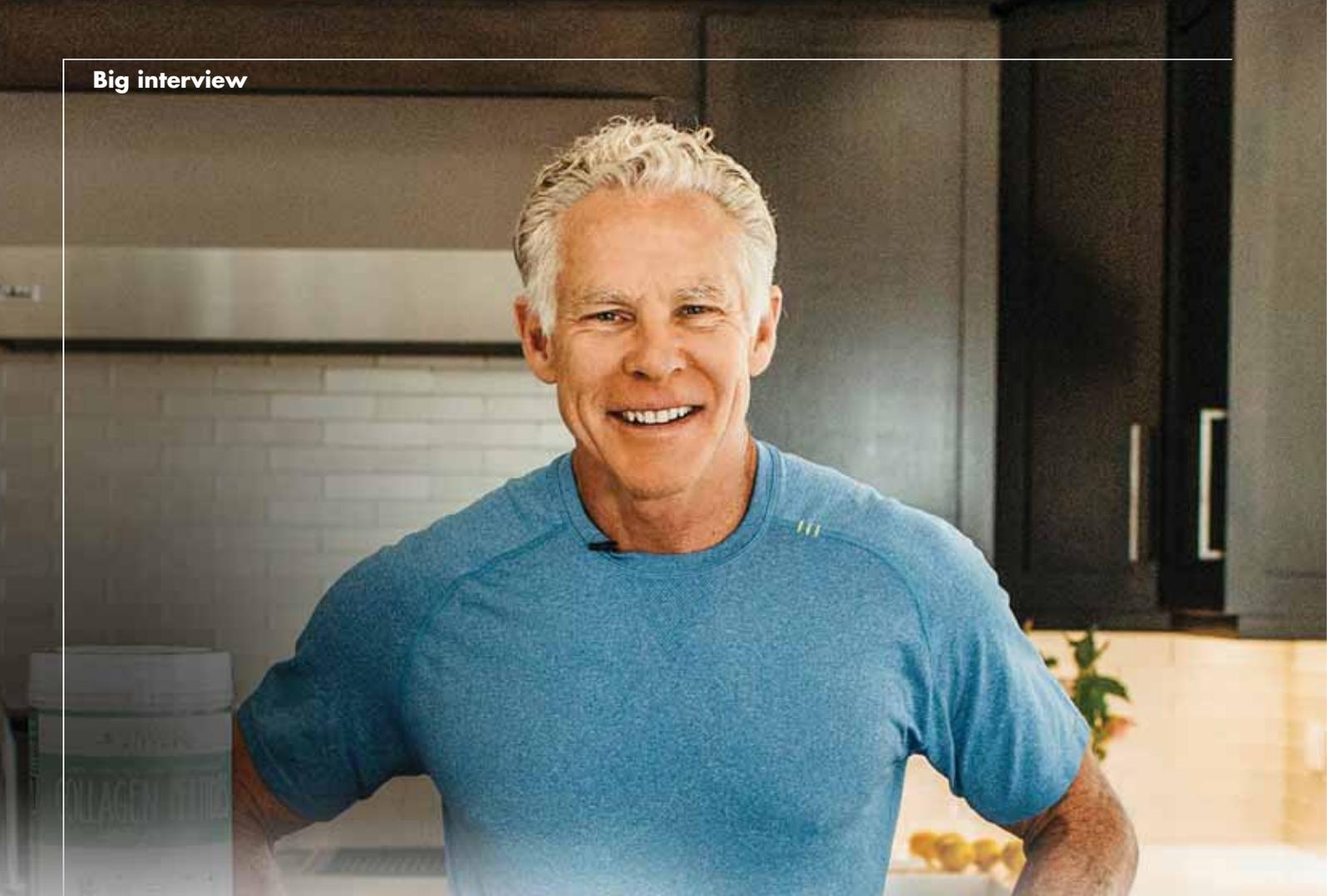
Top 10 categories of 2018 product launches making gluten-free claims

1. Savoury snacks
2. Cereal bars
3. Concentrates/powdered drinks
4. Yogurt
5. Breakfast cereals
6. Functional drinks
7. Tea
8. Sweet cookies/biscuits
9. Ice cream
10. Pasta

Top 10 categories of 2018 product launches making dairy-free claims

1. Milk
2. Yogurt
3. Cereal bars
4. Concentrates/powdered drinks
5. Savoury snacks
6. Sweet cookies/biscuits
7. Functional drinks
8. Frozen desserts
9. Soy drinks
10. Chocolate

Source: The World Allergy Organisation and GlobalData



A recipe for growth

When a food industry giant moves into a niche market, as Kraft Heinz did with its acquisition of Primal Kitchen, it is a sign that it is planning for a future in which these market segments will grow into the mainstream. Jim Banks speaks to Primal co-founder **Mark Sisson** about this acquisition and examines how big companies are set up to tap into fresh and original ideas.

Healthy eating should no longer be referred to as a fad. It is a perennial subject of discussion, particularly as consumers become better equipped with facts about the nutritional value of the foods they buy. It is a trend that has always been present in the market but has gained greater momentum as the general public better understands the link between food and health.

Beneath the broad banner of healthy eating, however, many different approaches to nutrition constantly emerge. Understanding and engaging with these new ways of looking at dietary habits can be a major challenge for the big global food companies, which find it hard to penetrate niche markets, and the big brands of which may, in some cases, impede them from doing so. Nevertheless, these giant companies

seem to understand that they must continue to track current and future trends in nutrition, and they have tried to develop platforms through which they can do so effectively.

One recent example of a major food company investing in a growing health trend is the purchase of Primal Nutrition by Kraft Heinz. The acquisition, which closed in January for a sum in the region of \$200 million, brings a global food company firmly into the market for fans of the paleo diet.

Eating a diet made up of foods that were available in the Palaeolithic era – known as the paleo diet – means focusing on nuts, seeds, lean meat and vegetables. The underlying principle is that the human body is naturally adapted to eat the kinds of food that were available to primitive people in their hunter/gatherer phase, rather

than the kinds of processed foods that modern people regularly consume.

Primal Kitchen, the key brand name of Primal Nutrition, makes paleo-friendly products including mayonnaise, avocado oil and dressings that contain no processed or artificial ingredients, no added sugars, no soya and no canola oil. As such, it is undoubtedly operating in a niche market, but as the maker of the number one selling condiment – mayo made with avocado oil – and the number one selling salad dressing in the natural grocery market segment, it is predicted to generate \$50 million in net sales in 2019.

Embrace disruption

The ethos behind Primal Kitchen pitches it towards a young and health-conscious demographic. It is seen as a young, vibrant and dynamic brand focused on condiments and healthy snacks that are better for the consumer, in terms of health, than traditional alternatives.

One of the co-founders, Mark Sisson, embodies the values of the brand. A former endurance athlete – he once placed fifth in the US Marathon Championship and fourth in the Hawaii Ironman competition – he founded the company in 2015, having already spent many years writing and lecturing on the benefits of high-quality fats and protein through his blog, MarksDailyApple.com. His motto is ‘eat like your life depended on it’, and it is that sentiment that led him to start marketing condiments that contain no dairy, gluten, grains or soy, and that contain beneficial fats and high-quality proteins.

“When you eat a real food diet, focused on clean protein and vegetables, it is the sauces, dressings, toppings and sides that make a meal exciting,” Sisson explains. “Before Primal Kitchen, most options on the market contained processed oils, sugar, additives and other ingredients, with mayonnaise and salad dressings being some of the biggest offenders. I started Primal Kitchen to entirely re-envision pantry staples – like mayonnaise, dressings and oils – with healthy ingredients and delicious flavour.

“Since launching my blog and my bestselling books, readership and sales have doubled every year,” he adds. “This trend has continued with the introduction of Primal Kitchen. Consumers are more educated than ever and are looking for healthy, nutritious products that don’t necessitate compromising on flavours they love. Primal Kitchen disrupted the mayo, condiment and dressing industry, not by upending or destroying it, but by highlighting the coming shift. A growing number of people care about the quality of their packaged food and are willing to pay for it. This interest is only going to grow.”

The deal sees Primal Kitchen continue as an autonomous company under its own management but

enables it to leverage Kraft Heinz’s assets and infrastructure to bring its products to a wider audience and to continue developing new products consistent with its core values.

“The Primal Kitchen team has built an amazing portfolio of the world’s best-tasting, health-enhancing, real-food pantry staples,” said Paulo Basilio, US zone president for Kraft Heinz, when the deal was completed. “We are excited to partner with the company’s strong team to drive growth across multiple categories and reach more consumers looking for these amazing products.”

A springboard for success

The move to acquire Primal Kitchen showed that Kraft Heinz is diverging, to some extent, from its more familiar strategy of large-scale acquisitions. It is also in line with similar moves by some of its competitors, which have moved into the areas of healthy and ethical nutrition during the past decade.

One example is the acquisition in 2014 of Annie’s Homegrown by General Mills. Another company founded by an entrepreneur with a love of healthy – and socially conscious – nutrition, it grew from Annie Withey starting to sell her Mac & Cheese from the trunk of her car in 1989 to a business with \$7 million in annual revenue before it was bought out. Working under the General Mills banner, the company has been able to extend its range of organic food – having introduced more than 50 ‘New Certified Organic’ products – and make its products available to a wider audience across the US.

What sets apart the efforts of Kraft Heinz is its creation of a specific platform for investment in the future. Primal Kitchen joined Kraft Heinz under the company’s Springboard platform, which was created to enable the food industry giant to establish partnerships with US brands that it classifies as disrupters within the industry. It is a clear strategy of looking for and embracing new food trends, and helping them grow into broader and more sustainable market niches.

Springboard’s focus is on inspired entrepreneurs

6.4%

The rise in organic food sales in 2017.

Organic Trade Association

\$200 million

The amount spent by Kraft Heinz to acquire Primal Nutrition.

Kraft Heinz

Left: Primal Kitchen co-founder Mark Sisson.

Below: The company uses avocado oil as an alternative ingredient.



\$50 million

The amount Primal Kitchen is expected to generate in net sales in 2019.

Primal Kitchen

and authentic business propositions within four key categories that the company believes will have a strong influence on the food and beverage space in the years ahead – natural and organic, speciality and craft, health and performance, and experiential brands.

“We believe these brands are shaping the future of the food and beverage space,” says David Van Himbergen, head of Springboard at Kraft Heinz. “Our Springboard Incubator programme has been designed to be a best-in-class programme to nurture, scale, and accelerate growth of the next generation of food and beverage brands, while staying close to entrepreneurs, new ideas and consumer trends.

“Founders continue leading their businesses with support and expertise from Kraft Heinz in go-to-market capabilities, research and development and consumer insights,” he adds. “We are committed to support and partner with teams that will impact the future of our industry. In addition, we actively search for emergent, authentic brands that can expand into new categories, and look to build a network of founders to help shape the future of foods and beverages.”

“Consumers are more educated than ever and are looking for healthy, nutritious products that don’t necessitate compromising on flavours they love. Primal Kitchen disrupted the mayo, condiment and dressing industry, not by upending or destroying it, but by highlighting the coming shift.”

What the incubator specifically provides is a collaborative work environment, as well as access to business resources including dedicated workspace, state-of-the-art pilot plants and commercial kitchens at the Kraft Heinz Innovation Centre in Glenview, Illinois. For emerging brands, the insight into world-class management practices, global operating scale, and extensive food safety and quality capabilities can be transformative.

“One thing I didn’t realise until I got into this business – the packaged food business – is that smaller companies all eventually butt up against a ceiling,” says Sisson. “At some point, the smaller guys simply don’t have access to the same avenues of distribution as the larger guys. This isn’t negotiable. If you want to expand, you need access. From the beginning I wanted to put high-quality mayo, condiments and dressings – the ‘extra’ stuff that provides much of the added fat and sugar in the Western diet – in millions of homes. I couldn’t do that without access to those distribution channels, those industry connections and that capital. Now I can.”

“This partnership gives my team the resources needed to grow the brand’s reach and recognition, and to expand our sales with a broader distribution network,” he adds. “We’ll also have greater ability to develop and introduce new products to consumers that will help make clean and conscious eating both easy and exciting.”

A world of opportunity

To see what food trends might be seen as opportunities for growth in the near future, one can look at some of the companies that were included in the first Kraft Heinz incubator class last year. The initial group of five disruptive brands included a number of companies focused on healthy eating.

Poppilu, for instance, is a Chicago-based antioxidant lemonade brand that uses the highest-antioxidant fruits in the world – aronia berries. Quevos, which aims to help eliminate sinful snacking, makes salty and crunchy egg-white chips, which are low in carbohydrate and fat content, and high in protein.

Another brand brought into the incubator, Cleveland Kraut, is a player in the fermented foods market. Ayoba-Yo makes a nutritious alternative to traditional beef jerky and meat sticks, thanks to a 400-year-old family recipe. Kumana, best known for its signature Venezuelan-inspired Avocado Sauce, creates original sauces that represent a diverse range of flavours from around the world.

Among the key themes, therefore, are health and nutrition, world flavours and fermented foods. Other trends that could gain more ground in the near future include vegan and vegetarian foods. Although these are already well established in the market, the trend for going meatless is gaining momentum, so more alternatives to meat may well become mainstream, possibly even laboratory-grown meat grown from animal cells without the need to kill an animal.

Another established trend that is likely to gain ground is gut health. Probiotics, which have proved effective in helping people with a range of medical conditions and, for healthy consumers, increased their vitality, could well grow beyond a niche market to become staple ingredients in the diets of health-conscious consumers.

This plays into the growing awareness of what constitutes a healthy diet for people who are expecting to live longer than any previous generation. Healthy ageing is an area that urges food companies to create products that specifically look at the body’s need to ensure healthy bones, joints, brains and immune systems. Whichever trends show the most significant growth, the key factor is that big companies, like Kraft Heinz, are taking a structured approach to identifying, developing and supporting the brands that will shape the future. ●

Get the balance right

Chris Lee, managing director, global health and nutrition network, Europe, at Informa Exhibitions, opens the debate on whether naturally sourced or sustainably produced ingredients will take the lead in shaping the food and nutraceuticals supply chain of the future, a topic that will be prominently discussed at **Vitafoods Europe 2019**.

According to a recent report by the World Resources Institute, the growing global population will require 56% more food by 2050 than in 2010, an increase that would demand a landmass nearly twice the size of India.

Sourcing that additional food in a sustainable way, however, presents an issue. For manufacturers of fortified products and supplements too, many of our naturally sourced ingredients are already being

extracted using methods that are unsustainable – and that is without a population rise of three billion.

What is more, to meet the targets set out in the Paris Agreement that aim to keep global warming below 2°C, we need to reduce greenhouse gas emissions by 11 gigatonnes. How, then, can the nutraceuticals industry meet increased demand for food and natural ingredients while creating a more sustainable global supply chain? ▶



56%

More food will be required by 2050 than in 2010 as a result of the growing global population.

World Resources Institute

The concern goes beyond simply being able to deliver sufficient amounts of produce; Jose Graziano de Silva, director-general of the UN's Food and Agriculture Organisation, has called for a "transformative change in our food systems", highlighting how "the coexistence of undernutrition, obesity and micronutrient deficiencies... is spreading and affecting almost every country in the world".

The increasing prevalence of malnutrition in developed countries, or 'hidden hunger', is largely down to the accessibility and availability of convenience foods that are high in calories but lacking in nutrients. Yet growing populations mean there isn't always enough of the natural, nutrient-rich foods to meet demand.

"The increasing prevalence of malnutrition in developed countries, or 'hidden hunger', is largely down to the accessibility and availability of convenience foods that are high in calories but lacking in nutrients."

Is naturally sourced really sustainable?

A huge change is currently under way in the marketplace. The Mintel Global New Products Database (GNPD) found that 9% of all food products launched in Europe in 2018 were vegan, doubling from 5% in 2015, while research by Nielsen found 68% of shoppers would be willing to pay more for foods and beverages that don't contain ingredients that they perceive are bad for them. Additionally, 53% of those surveyed say the exclusion of undesirable ingredients is more important than the inclusion of beneficial ones. The question here is 'what makes something undesirable?'. There is an education piece to be done, particularly with regard to fortified foods and supplements – the fact something is processed doesn't make it bad for you, or 'unclean'. What is far more important is

the consideration about the sustainability of the entire supply chain; while the advantages of using naturally sourced and plant-based ingredients are far ranging, and they provide a number of proven health and wellness benefits, their production is often anything but sustainable.

The soybean, for example, is one of the most important edible plants known, with seeds that are high in protein, vitamins, minerals and insoluble fibre, making it a quality energy source that is also good for constipation, high cholesterol and type 2 diabetes. Unfortunately, the huge demand for soy is leading to deforestation as large swathes of land are cleared to make way for soy plantations. In turn, the carbon dioxide released into the atmosphere when forests are logged and burned contributes to climate change.

The same can be said of palm oil; a great source of tocotrienols, the product is found in nearly 50% of packaged products and in everything from ice cream to soap. Its popularity, however, has not only led to severe deforestation but also the deaths of an estimated 100,000 orangutans over the past 16 years. Meanwhile, the omega-3 industry is coming under scrutiny for unsustainable fish farming methods as fish stocks decrease.

Although natural foods such as these can be produced sustainably – for example, the omega-3 algae market is expected to grow at a CAGR of 11.5% between 2018 and 2023 – it is harder to do so while still meeting demand. Natural supply – as well as the land required to grow the produce – may not be sufficient as the world's population nears the 10 billion mark. One argument is to bring more land under agricultural production, but this would spell the end for many of the Earth's remaining forests, peatlands and wild areas, releasing the carbon in them and hastening climate change. What then, is the answer?

Sustainable production

The farming methods used play a major role in creating a more sustainable food supply chain. For example, industrial farming has built up a reliance on artificial fertilisers and intensive farming techniques. While this revolutionised ways of growing crops in the 20th century and enabled huge population growth, continuing down the same path today would have dangerous effects, including air and water pollution and soil decay.

Instead, sustainable methods, such as organic farming and agroecology, could enable a shift towards a more long-term solution. While organic farmers must adhere to strict rules on how they grow their crops and raise their stock, including using antibiotics only if necessary and cutting

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Above and below: Vitafoods Europe 2019 will be a fantastic opportunity for industry insiders to network.

out chemical fertilisers and pesticides, agroecology employs a broad range of techniques that seek to minimise the environmental impact of farming but without formal inspections and certifications.

The importance of plant health on sustainable production isn't going unnoticed, with the UN declaring 2020 the International Year of Plant Health. Up to 40% of global food crops are lost to pests every year at a cost of around \$70 billion, while plant diseases cost the global economy around \$220 billion. The aim of the 2020 focus is to put a global spotlight on improving plant health, in a bid to both improve economic development and address wider issues including hunger, poverty and threats to the environment.

Food waste must also be considered when thinking about a more sustainable food supply chain. Currently occurring throughout production, food handling and storage, processing, distribution

and consumption, one quarter of food produced for human consumption goes uneaten. Reducing food loss and waste by 25% by 2050 would help close the food gap by 12% and the land gap by 27%.

A newer technique, but one that is being increasingly trialled and implemented, is to reuse what would have traditionally been considered as food waste, such as vegetable peel and fruit pulps. For example, potato peel extract is being researched as an antioxidant in food systems due to its high phenol content, while the EU's BIORICE project is looking at how to recover peptides from industrial rice by-products for use as added-value ingredients in nutraceuticals and functional foods.

Although consumer demand is the driving force behind a lot of the new developments we are seeing, there are areas where we can help educate consumers to ultimately improve the sustainability of our industry. Take naturally sourced and nature identical ingredients, for example. While the clean label movement would favour the natural ingredients, it is often the case that these have a larger environmental footprint than their synthetic counterparts. With global research finding that only 44% of consumers trust industrially prepared foods, transparency is key, and this is increasingly becoming the key purchasing driver. It is here, then, that we can work together to communicate the importance of considering the sustainability of the entire supply chain rather than one individual product, and to look beyond terms such as 'natural' in order to have the biggest impact.

The right package for progress

Food packaging has moved into the spotlight in recent years, following a huge consumer backlash



9%

Food products launched in 2018 were vegan.
GNPD



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A leading producer of sunflower vitamin E

AOM is a leading producer of natural ingredients derived from vegetable oils. Its antioxidant and nutrition products deliver powerful protection and fortification to many consumer products across multiple industries worldwide. The company offers the widest range of natural tocopherols available, and pioneered the use of sunflower and rapeseed to satisfy the need for non-GMO, allergen-free ingredients.

AOM, a pioneer in the industrial extraction of sunflower-sourced vitamin E, recently reinforced its position as a leading producer through the implementation of a new production plant in Valencia, Spain.

With an investment of more than \$10 million at the first stage, this project marks the start of the company's manufacturing operations in Spain, making it the first fully integrated manufacturer of tocopherols, sterols and sterol esters in Europe, and the only company with plants in both hemispheres.

This milestone will enable AOM to increase its production volumes, better serve customers in Europe and more efficiently source raw materials in the region.

SunE – the only all-natural vitamin E

The unique and exclusive properties of the sunflower source make it the only natural vitamin E product available in the market.

Sunflower naturally has a d-alpha tocopherol concentration of over 90% of the total tocopherols, making it the ideal source for high-concentration, all-natural vitamin E. Unlike other forms of vitamin E that claim to

be 'naturally sourced' or to contain 'natural identical vitamin E', SunE can be known as the 'natural vitamin E product'.

The reason for this is that while the sunflower source only needs physical processes to be concentrated, due to its richness in alpha-tocopherol, other sources need to be chemically modified – with processes such as methylation – to achieve acceptable performance when converting other isomers into alpha-tocopherol. ●

For further information

www.aomsa.com.ar/en



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Vitafoods Europe **V**

Stand H182

100 years of passion for plants

Since 1919, **Kräuter Mix** from Germany has been standing for health and taste, with a huge amount of experience in supplying herbs, dried vegetables and spices. As a leading production and trading company it brings nature into the food, medicine and pet food industries. High-quality herbal raw materials are its passion and the basis of its business.

At Kräuter Mix, the name tells the story – and not only in view of the family name of the owners, Christoph and Bernhard Mix, who are the third and fourth generation to lead the family business of over 420 employees. Some 650 products – from anise to chives and coriander to onions – belong to the rich assortment, as is proved by the manifold aromas and fragrances in the spacious production halls and individual storehouses.

Kräuter Mix buys raw materials and sells the finished products to customers all over the world. Many of the natural products produced by the company, which are also available in organic quality, can be found in the herbal teas and fruit tea blends, spice creations and ready-made meals of renowned brands. Since demand is continually growing, the company, which has been certified repeatedly for its quality and sustainability, has grown steadily in recent years.

A cornucopia of goods

Kräuter Mix has convinced numerous business partners around the globe with its experience, its knowledge and its expertise. 2,000 customers from industry and trade in the sectors of food, tea, pharmaceuticals, extracts, spirits and animal feed have made the company what it is today. As one of the leading suppliers in herbs, dried vegetables and spices in the world, operating in 70 countries and generating about half of its turnover through exports. Among its long-standing customers are groups and companies like Unilever, Nestlé, Frutarom, Mondelez, Kotanyi, Van Hees, Twinings and Kneipp.

Kräuter Mix's customers find that it supplies a comprehensive spectrum of



Kräuter Mix is a family business that boasts 420 employees, all helping in the production and distribution of its natural products from Germany to clients worldwide.

air-dried herbal raw materials. The company offers dried vegetables, dried mushrooms, culinary herbs, spices, superfoods, herbal raw materials, phytopharmaceutical active ingredients and medicinal herbs, as well as medicinal teas, herbal and fruit teas – which are available as individual ingredients and as mixtures. It supplies the 650 raw material groups, of which 150 are in certified organic quality, in almost all processing and refined forms – for example, cut in different sizes, ground, rubbed, chopped, as whole goods, in slices, strips and diced or as granulate. This results in more than 3,500 different articles supplied in the established quality of Kräuter Mix.

Opportunities to outsource

It is not always worth it to carry out all the steps in the processing and storage of herbal products on your own. For this, Kräuter Mix has a number of solutions. It offers production and trading companies the possibility to outsource processes and to use its modern high-performance production and storage capacities for their goods, combined with the company's decades of experience – irrespective of, for example, hot and cold grinding, GMP-

certified processing or just-in-time delivery. Controlled and documented processes ensure a maximum degree of safety and reliability for Kräuter Mix's customers even when outsourcing.

Kräuter Mix places particular value on sustainability. Community involvement, social justice and ecological responsibility are not empty phrases for the company. It makes the topic come alive in all its facets in manifold ways and in different projects, and have been doing so for many years. The company believes that it can only develop successfully in harmony with its environment and the natural resources. Uncontaminated soils, clean air and clean water are essential prerequisites for producing its high-quality products of nature.

To this purpose, Kräuter Mix has an in-house team of experts who support its buyers. Their task lies in ensuring sustainable procurement structures and quality standards, qualifying suppliers and comprehensively helping them in continuous further development. ●

For further information

www.kraeuter-mix.de



100 YEARS PASSION FOR PLANTS

Our Company

- Year of foundation: 1919
- Staff: approx. 420
- Turnover 2018: approx. € 115 Mio
- Export quota: approx. 50 %

Our range of products

- Dried vegetables, dried mushrooms, culinary herbs, spices, spice blends, superfoods
- Herbal raw materials, phytopharmaceutical ingredients, medicinal herbs, medicinal teas
- Herbal and fruit teas
- Services: Germ reduction, protective treatment of stocks, raw material refinement (cleaning, cutting, grinding, mixing, hand picking), logistics, storage

Philosophy & Values

- Systematic customer orientation
- High quality and safety of our products and services
- Employees with an entrepreneurial mindset and continuous learning
- Social and ecological responsibility

Core Competencies

- Worldwide raw material procurement from the best cultivation and collection areas
- Gentle raw material refinement on modern, high-performance production systems (incl. GMP)
- Integrated quality management
- Logistics and infestation-protected storage





The microencapsulation expert blazing a trail in the field of nutrition and functional ingredients

Vegan coconut MCT oil powder

Meal replacement
shakes or smoothies



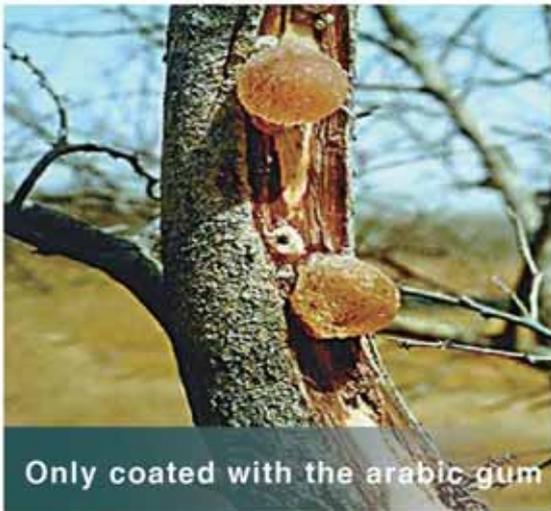
Keto coffee/
Tea creamer



Energy beverages or
bars for sports nutrition



Product highlights



Only coated with the arabic gum



100% Pure coconut oil

Exhibition schedule



■ May 7-9th 2019, Geneva
Palexpo
Booth No.F44



■ December 3-5th 2019,
Paris Nord Villepinte
Booth No.6C160

Add:No.49,DDA,Dalian 116600,P.R.China

Tel:+86 411 65864688 / 65864677

Email:info@innobio.cn

Website:www.innobio.cn

Vegan coconut MCT oil powder for keto diet trend

INNOBIO is a microencapsulation expert blazing a trail in the field of nutrition and functional ingredients. The company's microencapsulation is an advanced technology that wraps the solid or liquid packed by the natural nutrition ingredients to form the hermetic or non-hermetic microcapsule. The product's natural nutrition will acquire better bioavailability, improved stability, good flowability, increased solubility, better taste and a longer shelf life.

The ketogenic (keto) diet is a high-fat, low-carbohydrate diet. Its key metabolic mechanism is thought to be the generation of three major ketones (beta-hydroxybutyrate, acetoacetate and acetone), providing brain cells with an energy source more efficient than glucose.

MCT for keto diet

Medium-chain triglyceride (MCT) is quickly metabolised and has a strong ketogenic effect in the human body. It is derived from natural palm kernel oil, coconut, and the intrinsic sympathomimetic activity (ISA) family of triglycerides, containing predominantly caprylic acid (C8:0) and capric acid (C10:0). Compared with other fats, MCT is more rapidly broken down and absorbed directly through the gut wall. It is then transferred to the liver for energy release and almost fully metabolised for energy before being stored as fat tissue.

“Compared with other fats, MCT is more rapidly broken down and absorbed directly through the gut wall. It is then transferred to the liver for energy release and it is almost totally metabolised for energy before being stored as fat tissue.”

The classic keto diet provides 60–80% of dietary energy through 16–20 carbon atom long-chain fatty acids. However, the MCT keto diet only provides about 45% dietary energy, which is a more acceptable and easier-to-maintain alternative, allowing a larger carbohydrate content in daily diet.

INNOBIO knows the keto diet field very well and has launched an innovative product solution – vegan coconut MCT oil powder. The product is derived from coconut oil sourced from trusted manufacturers in

Sri Lanka, the Philippines and Indonesia. It is only microencapsulated with the arabic gum, without any kind of emulsifier from palm. The arabic gum is the dried exudate from the stem and branches of Acacia seyal or Acacia senegal from Africa. It provides 100% acacia soluble fibre with no sugar content that can claim 'no-added sugar' or 'sugar-free' on the product label.

High-fat, low-carbohydrate formula

MCT content can be up to 70–75% in the powder, while the remaining 25–30% is dietary fibre. The products low-carbohydrate, low-GI value is due to the prebiotic fibre arabic gum, which

is used as the only coating material without any other carbohydrates. The product contains uniform and free-flowing particles, which prevents clumping and sticking, and means that it's easily stored and handled while formulating. It can easily disperse and form a homogenous emulsion in cold and hot water, and in acidic, neutral or alkaline conditions, making it a great choice for instant beverages, shakes or smoothies. It can be easily flavoured according to the target preference



Vegan coconut MCT oil powder is derived from coconut oil sourced from manufacturers in Sri Lanka, the Philippines and Indonesia.

because of its neutral taste and smell. The high content of MCT oil emulsified in the powder provides a neutral, smooth and creamy texture.

Applications as meal replacements

INNOBIO vegan coconut MCT oil powder can be made using the patented Cold Water Dispersion (CWD) or Water Dispersion Powder (WDP) microencapsulation technologies. Its main applications are as meal replacement shakes or smoothies, keto coffee or tea creamer, and as energy beverages or bars for sports nutrition. INNOBIO will be present at Vitafoods Europe at booth F44, where more information will be available on the company's vegan coconut MCT oil powder. ●

For further information

en.innobio.cn

Stake out a health claim

Netherlands-based contract research company **NIZO** uses human challenge models to aid in proving its clients' health claims to the industry.

NIZO provides scientific and clinical expertise to help companies worldwide prove health claims for their products. From investigating the mechanism of action (MOA) to substantiating the health benefits of a company's food ingredients or products, NIZO combines outstanding scientific knowledge with innovative trial execution and microbiome expertise.

NIZO uses 'human challenge models' to make decisions on the most promising ingredient, to determine the best way forward in the development of the product or to demonstrate health benefits. As an added value, NIZO can help in developing the ingredient or test product with NIZO's extensive expertise in product development and application.

Human challenge models are a unique approach to induce a physiological response in healthy subjects and to investigate how an active ingredient modulates this response. NIZO applies human challenge models in the areas of metabolic health, immune response, infection resistance, gut barrier, skin health and physical health.

The strategic benefits of human challenge studies at NIZO include alignment with EFSA requirements for scientific substantiation of, for example, gut and immune response health benefits. With regard to financial benefits, NIZO boasts a smaller requirement of subjects and shorter timelines compared to population studies with random exposure to stressors.

Elsewhere, the scientific benefits include reproducible outcomes and high correlation between clinical outcome parameters, subject symptom scores and biomarkers of infection. In terms of organisation, the company possesses high subject compliance in following study guidelines and low subject drop-out rates. Finally, the technological benefits include inimitable ingredient application, and product development of the test product and placebo.

To find out more about NIZO's clinical and microbiome research, potential clients can visit the company at stand F140 at Vitafoods Europe 2019 on 7-9 May 2019 in Geneva, Switzerland. ●

For further information

www.nizo.com



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www.nizo.com

The most sustainable plant-based omega-3

French microalgae culture expert **Fermentalg** exploits the full potential of long-chain omega-3s with its all-natural range of DHA oils. Most recently, the company launched its innovative DHA ORIGINS 550 product.

At the origin of plant life, microalgae are a well-established source of health ingredients – most notably long-chain omega-3s, such as DHA. While microalgae represent a rich, sustainable and renewable source of various healthy compounds, some technological and environmental challenges remain to exploiting the full potential. Fermentalg has not only overcome many of these hurdles – converting microalgae strains into health benefits – but goes a step further, contributing to a healthier and safer planet.

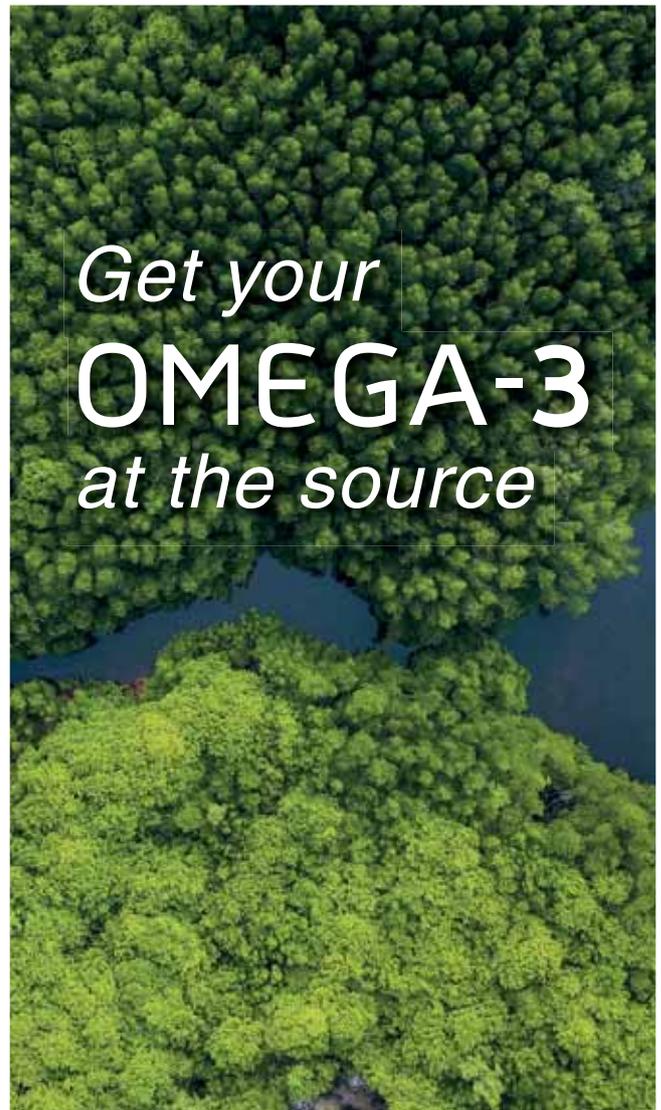
Fermentalg keeps a close control at every step of the value chain. This starts with sourcing strains while respecting the principles and spirit of biodiversity regulations. Fermentalg has built a unique bank of over 2,000 algal strains over the past 10 years. Those have been purified and cryoprotected to maintain all their original benefits, and represent a rich resource for current and future nutritional or food ingredients. All work is now carried out from this bank, leaving nature undisturbed, and the company then applies the centuries-old technique of fermentation to carefully selected microalgae.

The closed fermentation production process minimises the need for essential resources, such as water and energy, as compared with open ponds. Where extraction is required to isolate specific health compounds, Fermentalg does so without resorting to organic solvents; keeping the product as natural and as close to its origins as possible. The whole process from strain bank to product is closely monitored to ensure a pure, consistent and sustainable supply, as well as full traceability to food and supplement manufacturers.

When DHA ORIGINS 550 launched in 2018, Fermentalg proved it was on the right path to bringing innovative ingredients to life. The product has a naturally high content of DHA in the oil, which avoids the need to apply additional physical or chemical concentration steps. Another benefit is that it is also naturally low in saturated fatty acids, providing a better nutritional profile to health-conscious consumers. Now also available in capsule format, this new offering in the omega-3 landscape has already attracted a lot of attention. •

For further information

www.fermentalg.com



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GENEVA
BOOTH K72

Thanks to its proprietary bank of **over 2000 native strains** and its scientific expertise, Fermentalg has been screening, selecting and growing microalgae for over a decade.

Fermentalg offers you **DHA ORIGINS®**, a sustainable range of high quality Omega-3s to provide the health benefits you need in your food products dietary supplements. Our strain of *Schizochytrium sp.* naturally produces the highest levels of DHA commercially available as well as lower levels of saturated fatty acids.

www.fermentalg.com



Fermentalg®
Algae you can trust

A new take on gut health

Founded in 1972, **Solabia** develops and manufactures molecules and active ingredients for the cosmetics, pharmaceutical and nutraceutical industries. The company's latest approach to gut health, BioEcolians, helps to improve the well-being of those suffering from intestinal disorders.

BioEcolians is an alpha-glucosaccharide (GOSalpha) composed of a glucose chain linked by alpha(1-2), alpha(1-4) and alpha(1-6) bonds. BioEcolians' originality and characteristics are due to the linkage between saccharide units and to the alpha(1-2) linkage that makes it non-digestible. The nature of its bonds guarantees its acidic and thermal stability.

A recent clinical study carried out by Solabia demonstrated that BioEcolians open a novel approach to gut health. The study was conducted in double blind against a placebo on two groups of 25 subjects each. The active group was given a daily dose of 2g during a period of 28 days.

The results, according to Solabia, demonstrated that BioEcolians contributes

to improving the well-being of people who suffer from intestinal disorders. With its prebiotic activity, BioEcolians contributes to preventing microbiota imbalance, avoiding digestive discomfort. It stimulates the probiotic strains and confirms the results previously observed in vitro and in its prebiotic activity. Moreover, BioEcolians also reduce the sensation of digestive discomfort (bloating, pain), with an average 50% decrease of the symptoms, and improve the bowel movement (average of 72%).

Interior effects

A key beneficial effect of BioEcolians is its action on beta-defensin secretion. The beta-defensins antimicrobial and anti-inflammatory activities reinforce innate

immunity, preventing the damages and the loss of permeability of the intestinal barrier. The immunoregulatory properties of these peptides allow them to directly kill certain pathogenic bacteria, to stimulate the defences of the body and to reduce the inflammation by inhibiting the production of pro-inflammatory cytokines. All these effects allow BioEcolians to help avoid the damages and the loss of permeability of the mucosa by strengthening the intestinal barrier.

With its enhanced proven efficacy, BioEcolians is a simple and effective solution to simultaneously stimulate the good gut flora, alleviate digestive disorders and boost innate immunity. ●

For further information

www.solabia.com




Bioecolians

Novel approach to gut health

- Induces antimicrobial peptides (Defensins)
- Reinforces gut innate immunity
- Re-equilibrates the microbiome
- Reduces pain and bloating
- Low active dose and rapid effects

Visit us at Vitafoods
Geneva booth **K58**

 www.solabia.com - contact.nutrition@solabia.com

Improve and protect cognitive brain functions

BIONAP's COGNIGRAPE powder extract has been clinically proved to slow down the process of brain ageing, among other impressive health benefits. Here, the product's range of advantages are detailed in full.

The increase in life expectancy is associated with gradual ageing of the population. This epochal change creates new needs. Ageing is not a burden, and every person should have the opportunity to live a long life, making valuable and important contributions to society, and enjoy a high quality of life.

Moreover, information is faster and more attainable than ever. We are constantly solicited by an uninterrupted flow of data and our cognitive performances are continuously challenged. In this context, improving attention, language and memory performance, has become a need in order to adapt and perform in modern life. Cognitive health, or ageing healthily in general, is a very hot topic in the market right now and consumers are demanding natural and sustainable products that not only work but are backed by science.

“COGNIGRAPE is clinically proved to slow down the natural process of brain ageing after only 12 weeks of supplementation.”

A young head on old shoulders

COGNIGRAPE is a standardised powder extract from the juice of Sicilian red grapes. Due to the rich and particular presence of proanthocyanins and anthocyanins, it is able to improve cognitive performance and prevent brain ageing.

Studies have shown that consuming fruit and vegetables may reduce the risk of neurodegenerative disorders and improve cognitive performance in the elderly. These protective, healthy effects can be attributed to the antioxidant properties of the compounds contained in these foods. In particular, in vivo studies and clinical trials have proved that grape juice seems to help ward off neurodegenerative dysfunction

and can enhance cognitive functions. The polyphenol-rich grape juice supplements benefitted neurocognitive function in older adults with mild memory decline. Subjects displayed improved verbal learning, a reduction in semantic interference on memory tasks and an increase in neural activation in cortical regions, along with improved functions. These effects were mainly attributed to flavonoid compounds, including anthocyanins and proanthocyanidins. Other research has indicated that anthocyanin and proanthocyanidins can cross the blood-brain barrier to perform a neuroprotective effect.

COGNIGRAPE is clinically proven to slow down the natural process of brain ageing after only 12 weeks of supplementation. Studies have proved that oral administration of grape polyphenols can improve the antioxidant status in the brain.

It can also promote basal synaptic transmission in the hippocampus, leading to the prevention of free-radical induced neuronal damage and the prevention of amyloid beta-protein aggregation into high molecular weight oligomers.

Passed the test

The effect on brain function has been reevaluated in randomised, double-blind, placebo control clinical trial carried out on 111 subjects of healthy older adults (aged 55–75). Cognitive and neuropsychological status of each subject has been evaluated in treated (250mg/day) and not treated group at the baseline and after 12 weeks by using Mini-Mental State Examination (MMSE) and

Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). Moreover, scale-evaluating tests for anxiety and depression have been used for the assessment of general neuropsychological condition and to exclude any interference of mood on cognitive performance. At the end of the study, a significant increase in MMSE and RBANS score was observed in the COGNIGRAPE group in comparison with the baseline and placebo group, leading to a significant improvement in different items such as attention, languages and immediate and delayed memory. In addition and unexpectedly, an interesting improvement of mood status occurred in the COGNIGRAPE group that could be related to the better cognitive performance and general neuropsychological subject condition. COGNIGRAPE supplementation has been clinically proved to:

- support brain functions and activities after 12 weeks (250mg/day) of supplementation
- improve in healthy older subjects, several cognitive skills such as attention, language, visuospatial/ constructional abilities and immediate and delayed memory
- lead to interesting benefits in the general mood status, specifically related to depression and anxiety status too.

In conclusion, a daily intake of COGNIGRAPE as part of a healthy lifestyle can be considered a natural and safe way to help preserve certain brain functions, and to improve attention and cognitive performances. ●

For further information

www.bionap.com

Discover the essence of nature

NATECO₂ stands for over three decades of experience in extracting natural substances with CO₂. The company is an expert in the field of supercritical carbon dioxide (scCO₂) custom manufacturing, with a broad range of innovative technologies associated with the scCO₂ process.

Three decades ago, NATECO₂ started as a young entrepreneur in the hop industry with a highly sophisticated process – supercritical CO₂ extraction. Since then, a sustainable technical development has taken place, which guarantees a steady progress of NATECO₂ and its business. In the meantime, it has become evident to the customers in the food and beverage, cosmetics, and pharmaceutical industries, that the use of scCO₂-extracted products offer distinct advantages – for example, an inert atmosphere, moderate conditions during processing and absence of organic solvents and oxygen. As customers focus more and more on naturalness, quality and environmentally friendly processes, the CO₂ technology strengthens its position as an innovative and sustainable process.

“The biogenic CO₂, used for extraction features, has received generally recognised as safe (GRAS) status and can be used for food and cosmetics, without any limitations and is recovered during the process.”

It's only natural

Natural oils, fats and waxes are the predominant ingredients obtained via scCO₂. NATECO₂ is well experienced in extracting a wide range of products from R&D stage to industrial scale, like piperine from pepper, aroma from vanilla, omega-3 fatty acids from algae or active compounds from Valerian or Mistletoe. Powders containing anti-inflammatory ingredients or radical scavengers can, for example, be generated from hops or carrots. Occasionally, the deoiled natural materials are the target compounds. Compared to usual defatting processes, the oil can be removed nearly completely

and the shelf life of products increases significantly. In addition, protein or carbohydrate levels rise automatically. With this method, highly valuable sunflower or pumpkin protein powders can be generated, which are perfect for sports or vegan diets. Another application for CO₂ extraction is the purification of raw materials, where products can be deodorised or pesticides can be removed.

Safe in the hands of quality

The biogenic CO₂, used for extraction features, has received generally recognised as safe (GRAS) status and can be used for food and cosmetics, without any limitations and is recovered during the process.

Besides production services, NATECO₂ also offers contract R&D

services, such as feasibility studies, product development options or process optimisation. As previously mentioned, successive scaling-up from pilot to production quantities is completely manageable. Furthermore, consultancy is offered from initial case studies all the way up to the implementation of a new CO₂ plant.

Product quality and process control is guaranteed by our in-house laboratory, equipped with state-of-the-art analytical devices, which even enable supercritical chromatography. But the quality of a product does not only depend on proper extraction and a

well-established process. The handling of raw materials also has a tremendous influence on the effectiveness of the extraction and therefore plays a decisive role in the final product yield and quality.

Besides, the refined products have to be treated, according to their individual requirements, upon extraction. As a result, a variety of drying, milling, mixing, pelletising and storage possibilities are necessary and exist on the premises. Of course, NATECO₂ is certified according to ISO 9001, ISO 14001, Organic/BIO and Kosher. Even ISO 22000 certification has been in place since March 2019.

Individual customer support

According to the current strategic alignment, NATECO₂ implemented a counter-current column to refine pure aromas and flavours. Finally, a new powder generation process, based on the PGSS technology, was established to obtain tailored particles out of viscous plant extracts. R&D and analytical capabilities were extended and the consulting team was reinforced in order to guarantee individual customer support.

At the moment, NATECO₂ is investing in two new extraction units to enlarge their capabilities with business, aiming for them to be operative by 2020 (8×4,000L) and 2022 (2×1,000L).

To learn more about CO₂ technology and its various possibilities, visit NATECO₂ at the Vitafoods Europe exhibition in Geneva, Switzerland, on 7–9 May 2019. ●

For further information

www.nateco2.de/en



NATECO₂



Extracting the essence of nature

Extraction of natural products
using supercritical CO₂



The Best ingredients for a better life

#FaravelliNutraDivision

EXCIPIENTS / MINERALS SALTS / YEASTS / ANTIOXIDANTS / AMINOACIDS / SUGARS AND DERIVATES /
VITAMINS / PROTEINS / FIBERS / FATTY ACIDS / SWEETENERS / WEIGHT CONTROL AGENTS / CHOLESTEROL
CONTROL AGENTS / IMMUNE SYSTEM BOOSTERS / ARTICULAR PROTECTION AGENTS / NATURAL CAROTENOIDS



The best ingredients for a better life

Tiziana Ferrari is the coordinator of **Faravelli Nutra Division's** Italian team, and has been working with the company for several years, managing a team of sales and technical support managers. She talks about Faravelli's product list and some major trends in the nutraceutical industry at the Italian and global level.

When was the Italian team of Faravelli Nutra Division formed and what is the scope of the division?

Tiziana Ferrari: Faravelli Nutra Division is one of the youngest departments at Faravelli, a company that was founded in 1926 in Milan. The Nutra Division was created almost 10 years ago and, in a decade, it was able to grow and become very active and well positioned in the market. I coordinate a team of valuable professionals that are able to support customers at a commercial and technological point of view.

The division offers food supplements and functional food producers a large portfolio of ingredients coming from international suppliers. The range includes excipients, minerals, yeasts, antioxidants, amino acids, sugars and derivatives, vitamins, proteins, fibres, fatty acids, sweeteners, herbal extracts, weight control agents, cholesterol control actives, immune system boosters and natural carotenoids.

“A longer life brings new opportunities; however, it all depends on a crucial factor – health and wellness – with bone health being one of the key elements.”

Personalised nutrition seems to be a major current industry trend. What is your opinion on its importance?

I do agree that the personalisation of nutrition has been indeed a very important trend lately. We have seen that food supplements and functional foods launched in the marketplace are increasingly meant to offer the highest nutritional profile and solutions for very specific concerns, such as bone health, cardiovascular health, healthy ageing and anti-inflammatory actions.

You mentioned healthy ageing. Why is ageing such a major concern for the society?

The global population is getting older and living longer, as we all well know, and Italy is currently ranked as the second-oldest country worldwide, with over 29.4% of the population being aged 60 or over.

On the other hand, it looks like Italian seniors are luckier than their counterparts in other countries. According to Niccolo Marchionni, professor of gerontology at the University of Florence, when speaking in Rome at the 2018 national congress of the Italian Society of Gerontology and Geriatrics, only over-75s should be considered 'elderly' in Italy, as Italian seniors remain active for longer than what the norm is elsewhere.

Since the population is getting older and living longer, it is very important that people keep feeling good and healthy. A longer life brings new opportunities; however, it all depends on a crucial factor – health and wellness – with bone health being one of the key elements.

As distributors, we are constantly monitoring the global scenario with the aim of anticipating markets' and customers' needs. In Faravelli, we have worked on senior nutrition for a while, focusing our attention on ingredients and combinations of ingredients for targeted and focused needs. Therefore, our range is constantly adding products aimed to address health issues for ageing populations, such as menopause, prostate inflammation, osteopenia and cardiovascular diseases.

What ingredients for ageing men and women feature in your portfolio?

Among the products in our portfolio, I would first state Vitamin K2. It supports bone health, heart health and helps in dealing with menopause effects. K2VITAL vitamin is a vitamin K2 product produced by our partner Kappa Bioscience.

Another very interesting ingredient that is specific for male food supplements comes from *Ajuga reptans*, which is particularly well known for its antibacterial, antimycotic, astringent, diuretic and antineoplastic properties. The most important active ingredient extracted is the phenylpropanoid teupolioside, which has proved to be very helpful in cases of prostate inflammation and benign prostatic hyperplasia (BPH). The commercial name for the *Ajuga reptans* extract is TEUPOL by ABRResearch, an Italian biotech company, which developed a biotech platform to produce teupolioside from suspension cell culture. TEUPOL 10P and TEUPOL 25P are the ABR commercial names of the active ingredient teupolioside, titrated at 10% and 25% respectively, and are novel food-authorised ingredients.

I would also highlight ACTEOS 10P from ABRResearch. It is the commercial name of the active ingredient verbascoside, titrated at 10%, and extracted and purified from *Lippia citriodora* suspension cell culture. It has proved to have various biological properties, including anti-inflammatory activity and very good effects in the reduction of symptoms in chronic pathologies and conditions affecting the nervous system, while also supporting cognitive health. ●

For further information

en.faravelli.it/nutra

Beneficial fruit extracts

Euromed is a leading producer of standardised herbal extracts and natural active substances for the pharmaceutical, nutraceutical, food and cosmetics international industries. Inspired by the Mediterranean diet, Euromed has launched a range of Mediterranean fruit extracts with evidence-based health properties.

Euromed's Innovation Centre has perfected extraction technologies that provide Mediterranean fruit extracts in standardised, clean and versatile formats. The heart-friendly Mediterranean diet (Mediet) with its regular consumption of fruit and vegetables (up to 10 portions per day), and extra virgin olive oil (up to six tablespoons a day), supports longevity and superior quality of life, and lowers the risk of cardiovascular disease, diabetes and obesity. Euromed Mediterranean fruit extracts are inspired by the health benefits of the Mediet.

Euromed's Innovation Centre identifies, extracts and researches key beneficial phytochemicals in the Mediet, achieving powerful fruit extracts without the fruit calories. At a new 8,000m² dedicated extraction plant in Murcia, Spain, locally and

carefully grown and collected pomegranates, olives, figs and artichokes are transformed into premium extracts – Pomanox, Mediteanox, Abalife and Cynamed. Through eco-friendly technologies, such as the Pure-Hydro Process – a water-only extraction system – the fruit extracts are free from any toxins and potentially contaminant residuals of chemical solvents.

Products on offer

Pomanox is a patented pomegranate whole-fruit extract rich in the polyphenol punicalagin, which improves endothelial functions, normalise blood pressure and support several other health functions relevant to healthy ageing.

Mediteanox is a patented olive fruit extract with high content of the powerful

heart-friendly natural antioxidant hydroxytyrosol, documented to support blood circulation and reduce cholesterol levels. Secret to Live is a patented oily preparation of extra virgin olive oil enriched with Mediteanox.

ABAlife is a patent-pending fig fruit extract standardised for abscisic acid (ABA), clinically proven to reduce postprandial blood sugar and insulin levels.

Cynamed is an aqueous dry extract of the edible part of the artichoke, combining the well-known digestive properties of chlorogenic acid with bifidogenic and microbiome-friendly inulin, to take care of the entire digestive tract. ●

For further information

www.euromed.es

Pomanox™ and Mediteanox™: Powerful Natural Allies for Vital Health

NEW PUBLICATIONS SUBSTANTIATE HEALTH APPLICATIONS OF POMANOX™ AND MEDITEANOX™

pomanox

Mediteanox

Pomanox™: A patented pomegranate whole fruit extract rich in polyphenol punicalagin. Scientifically proven in multiple published studies to improve endothelial functions, normalise blood pressure and provide other important health benefits. Results from an academic clinical trial published in March 2019 found significantly improved sport performance outcomes in trained cyclists, after only two weeks daily supplementation, compared to placebo (1).

Mediteanox™: A patented dry or liquid olive fruit extract, water soluble and oil dispersible, available in standardised hydroxytyrosol concentrations up to 40%. Results from an academic study published in March 2019 indicate complementary cardiovascular benefits of Mediteanox™ and Pomanox™: the 20-week clinical trial in 67 middle-aged subjects identified significant decrease in harmful LDL cholesterol oxidation, normalisation of blood pressure and improved endothelial function compared to placebo (2). Pomanox™ and Mediteanox™ can help support healthy cardiovascular function.

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References: 1) Torregró-García A, et al. Pomegranate Extract Improves Maximal Performance of Trained Cyclists after an Exhausting Endurance Trial: A Randomised Controlled Trial. *Nutrients* 2019, 11, 721; 2) Quirós-Fernández R, et al. Supplementation with Hydroxytyrosol and Punicalagin Improves Early Atherosclerosis Markers Involved in the Asymptomatic Phase of Atherosclerosis in the Adult Population: A Randomized, Placebo-Controlled, Crossover Trial. *Nutrients* 2019, 11, 640

EUROMED
Nature & Science

A natural solution for a healthy heart

Dr Jonathan Jones, product development manager and digital health scientific adviser at **Monteloeder**, details the importance of a healthy heart and the benefits of the company's Metabolaid in maintaining and supporting well-being.

The heart is one of the most important muscles we have, ensuring correct oxygenation of the tissues for a correct functioning of the whole body. Therefore, it is of utmost importance to maintain the heart as healthy as possible. However, with our current lifestyle, it is at times very difficult to maintain our heart in top condition. Strategies to maintain a healthy heart include eating well, exercise, quitting smoking and limiting alcohol consumption.

In this sense, the Mediterranean and the DASH diet have been considered to be the most efficient dietary options to improve heart health. As for exercise, the World Health Organisation (WHO) recommends at least 150 minutes of moderate-intensity aerobic exercise a week, which not only helps avoid cardiovascular disease but also obesity, diabetes and other non-communicable diseases. Thankfully, awareness is growing worldwide, and many people are changing their daily eating and lifestyle habits to maintain a healthy heart.

Natural solutions from the Mediterranean to maintain a healthy heart

Monteloeder is a company based in south-eastern Spain, with over 20 years of experience in supplying Mediterranean-based plant extracts, as well as developing proprietary blends focused on maintaining a healthy lifestyle, such as for sports performance, beauty from within, weight management and anti-ageing. In this sense, Monteloeder has created a patent-protected, natural botanical ingredient, based on proprietary-technology extract lemon verbena (*Lippia citriodora*) and hibiscus (*Hibiscus sabdariffa*) extracts, called Metabolaid. The hibiscus has been



Metabolaid has been shown to help maintain a healthy heart, when accompanied by an adequate diet and physical exercise

traditionally used in many parts of the world, in the form of a tea or cold beverage. It is also used as a natural alternative to help maintain a healthy heart and for weight management. Lemon verbena is another plant widely used as a tea or other such beverages. Studies have shown that lemon verbena has significant benefits in overall health and well-being.

Round-up of the results

The active compounds of the two extracts have been scientifically demonstrated to act synergistically, activating the 5' adenosine monophosphate-activated protein kinase (AMPK) metabolic pathway. AMPK is a metabolic switch, acting upon various tissues, including the adipose tissue, muscles and blood vessels. In the adipose tissue and muscles, AMPK promotes the use of endogenous fatty deposits in the form of energy, whereas in the blood vessels, vasodilatory effects have been observed.

Clinical studies showed that, with a single daily 500mg dose of Metabolaid, volunteers presented significant

improvements in body fat content, total cholesterol, LDL cholesterol and triglycerides. Overall, this translates in Metabolaid being an ideal product to help people reach their goals when undergoing a diet and exercise regime. Furthermore, the participants reported significantly improved quality of life (assessed through validated questionnaires), including more vitality, and better mental and physical health.

In conclusion, maintaining a healthy lifestyle has become a top priority for many consumers, and besides adopting an adequate diet and exercise, sometimes they look for something more. To this regard, Monteloeder has developed a proprietary blend based on lemon verbena and hibiscus extracts. Scientific evidence shows that Metabolaid helps individuals maintain a healthy heart, when accompanied by an adequate diet and physical exercise.

The work presented with Metabolaid has been partially financed by the EU's Horizon 2020 research and innovation programme under grant agreement number 783838. ●

For further information

www.monteloeder.com

Beauty from within

Lipofoods has launched a line of microencapsulated botanical ingredients with numerous health benefits. The company's new Curcushine microcapsules boast anti-ageing benefits, preventing the process from within.

As nutrition and diet play a big role in skin appearance, there is a growing demand for solutions dubbed 'beauty from within'. It is common knowledge that the ageing process is driven by the lifelong accumulation of molecular damages, mainly due to reactive oxygen species (ROS) produced by mitochondria as well as random errors in DNA replication.

Curcumin is turmeric's main bioactive polyphenol with numerous health benefits. Curcumin has been shown to delay skin ageing by protecting its structures and proteins, such as collagen and elastin, from oxidative and inflammatory damages. Furthermore, antioxidant properties of Curcumin can reduce ROS in cells and eliminate the effects of advanced glycation species (AGEs) on the divergent regulation

of gene expression of receptors of AGEs by several mechanisms.

Several studies conclude that turmeric/curcumin products and supplements, both oral and topical, may provide benefits for skin health. However, the potential of curcumin is limited by its poor bioavailability.

Lipofoods introduces its new line of microencapsulated botanical ingredients supported by proprietary science with proven efficacy. For the first launch of the line, Lipofoods has partnered with the Italian company Sphera Encapsulation, which is dedicated to the research and development of the field of nano and micro-encapsulation.

The debut product, Curcushine microcapsules, comprises a highly bioavailable microencapsulated curcumin

source for the 'beauty from within' market, with proven anti-ageing benefits. The product's innovative patent-pending delivery system transforms curcumin into a highly bioavailable product, thanks to the natural encapsulant matrix that protects and embeds the curcumin. Curcushine microcapsules have been shown to significantly reduce ROS levels, demonstrating its potent antioxidant effect on human dermal fibroblasts, preventing skin ageing from within.

Curcushine microcapsules can be readily incorporated into a wide range of nutraceutical applications and beauty drinks due to its high solubility. ●

For further information

www.lipofoods.com

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Lipofoods Lubrizol

Inside Beauty Solutions by Lipofoods

Science-based mood support products

Kangcare is a bioscience-based company that focuses on developing proven bioactive ingredients to improve its customers' physical and spiritual well-being.

Kangcare is committed to providing proven bioactive ingredients, innovative health and beauty solutions and services in the life science sector that improve users' quality of life. As modern society becomes more health conscious, there is an increased willingness to take responsibility for one's own physical well-being, for healthy ageing and for achieving a successful work-life balance. Supplements, medical and dietetic food, and nutritional foods are enjoying wider acceptance. Kangcare's products are used globally across a wide range of markets, supporting a healthier, and more sustainable and enjoyable way of life.

Kangcare offers high-quality ingredients and solutions to help its customers to achieve the health benefits, right taste, texture and appearance that the consumers want from their food, health and nutritional goods. Kangcare's solutions have focused on the area of mood support for years. To enhance the effects of the above ingredients, Kangcare is now developing formulations by combining different ingredients, which drew wide attention at Vitafood, as well as Health Ingredients China (HiC).

Kangcare provides six product lines: Oilgin Algae Oil DHA, Oroyal Gamma Oryzanol, Purerbe Siberian Ginseng Extract, Purerbe Ginkgo Biloba Extract, Purerbe Rhodiola Rosa Extract and Pleanine L-Theanine.

Kangcare can provide relevant solutions, guaranteed reliable results for, and access to:

- designation and optimisation of formulations
- contract manufacturing of supplements
- mixing and blending
- spray drying and microencapsulation
- standardisation and customisation of ingredients.

The company achieves all of this by taking advantage of its specialist staff, and its well-developed facilities and laboratory – which is equipped with all the instruments and thoroughly validated methods necessary for the safe and precise control of quality. ●

For further information

www.kangcare.com



NUTRITION FOR LIFE, BELIEF FOR HEALTH

Mood Disorders: A problem that can never be neglected

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Oroyal™ Gamma Oryzanol

Purerbe™ Siberian Ginseng Extract

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Purerbe™ Rhodiola Rosea Extract

Pleanine™ L-Theanine

OUR VALUE-ADDED SERVICES

- Designation and Optimization of Formulations
- Contract Manufacturing of Supplements
- Mixing and Blending
- Spray Drying and Microencapsulation
- Standardization and Customization of Ingredients



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Location: Nanjing, China

Their survival explains their strength

Acadian Seaplants is the largest independent marine-plant-processing company of its type in the world and a global leader in marine plant products. As a fully integrated company, Acadian is responsible for every stage of its innovative operation including sustainable wild-harvesting, land-based cultivation, research and development, engineering, manufacturing, market development, sales and technical customer support.

Seaweeds have an ancient lineage on our planet. They were among the first multicellular organisms, here before even the jellyfish and the dinosaurs. They have survived for millennia in all manner of challenging environments, coping at times with hot sun, high-light levels, temperature extremes, ice and hungry sea creatures. Much of their coping mechanism evolved through the production of bioactive secondary metabolites, many with robust antioxidant activity, as well as protective compounds unique to seaweeds, belonging to a broad range of sulphated polysaccharides.

There's algae and then there's algae

Algae is really an umbrella term for seaweeds, which are macroalgae, and for microalgae, which are single-celled organisms. Seaweed species fall under a sub classification as brown, red or green. *Chondrus crispus*, for example, is a classification of red seaweed that has been harvested and used for its carrageenan or gelling and stabilising properties in everything from toothpaste to ice cream to face creams and beyond. There are many other species including *Ascophyllum nodosum* that is a brown variety, found only in the North Atlantic ocean and is the most researched and tested seaweed on the planet. It is used across a wide variety of human and animal product applications in soluble extracts as well as pure, raw formats.

A multitude of benefits

The power of marine plants has been drawn upon for thousands of years for their ability to prolong life, prevent disease, and impart health and wellness. Worldwide research on their unique benefits is continuously being conducted, and brown marine plants have



Marine plants have been used by humans for thousands of years for their various health benefits.

been found to be highly beneficial, followed by the red and then green seaweeds.

Nutritionally, seaweeds typically contain all the essential nutrients required for human health and wellness, with the exception of adequate calories. They are the precursors to land plants, and are an excellent source of protein, macronutrients, vitamins, minerals and fibre. Because of this, seaweed is increasingly understood to be and referred to as a 'superfood' in articles and on packaging.

The entire range of vitamins is represented in marine plants and this provides a very rich cocktail. The principal vitamins are provitamin A in the form of β -carotene and of δ -carotene, vitamin C and vitamin E. The group B vitamins are also generally well represented. Of particular interest is the presence of the vitamin B12 in certain seaweeds, which is absent in terrestrial plants.

Marine plants derive a wealth of minerals from the ocean. The mineral content covers a wide range of macro elements such as phosphorus, potassium, calcium, chlorine,

magnesium, sulphur and sodium. Marine plants also contain essential trace elements required to prevent vitamin deficiencies, including iodine and calcium, both of which are implicated in vitamin deficiencies prevalent in the world population.

What's old is new

Seaweed is not new to the health and wellness market – in nutraceutical supplements and health food use – but a couple of significant trends have created renewed interest. Consumer demand has been increasing for 'natural ingredients' for both internal and external human applications. These have driven changes with food and cosmetics formulators who are increasingly motivated to reach 'clean label' objectives involving fewer and natural ingredients. The awareness of seaweed as a natural and healthier sodium substitute is just one of the simpler examples.

Today's increasingly eco-conscious consumer is driving other trends including sourcing products that are renewable and sustainably harvested. Consumers are increasingly being diagnosed with allergies or sensitivities to certain ingredients or are choosing alternative protein choices, which results in an increasing demand for products that are gluten-free and vegan. Seaweeds fit perfectly into all these categories.

The explosion of social media, and food shows and channels have all contributed to this 'new look at an old product'. Seaweed cookbooks and cooking classes, and the entry of seaweed-based snack foods are just a few of the examples of how high-quality marine ingredients offer clean, safe and nutritionally consistent solutions. ●

For further information

seaplus@acadian.ca



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Salt shakes up the industry

Governments worldwide are required to take measures to raise awareness of excessive salt consumption in the population. The food industry is required to take more responsibility for its customers, but salt is also a vital addition to a balanced diet. **K+S KALI** shows how to take responsibility for a balanced mineral nutrition.

Salt is an essential mineral, which can be consumed in appropriate quantities as part of a balanced diet. However, the World Health Organisation (WHO) has been pointing out the damaging consequences of worldwide excessive salt consumption for several years. Recent studies by WHO have shown that many people fall ill each year as a result of the damaging consequences of consuming too much salt, such as hypertension and strokes.

At the same time, many people suffer from a potassium deficiency without knowing it. The symptoms of tiredness, exhaustion, muscle weakness, constipation or cardiac arrhythmia are rarely recognised. An insufficient intake of potassium as part of daily nutrition, combined with diarrhoea, chronic kidney or colon disease, magnesium deficiency, or the excessive loss of bodily fluids or acidosis, can cause potassium deficiency. As organisms cannot generate their own potassium, dietary intake is absolutely essential and it is therefore important that consumers take care of their nutrition.

The right mineral is key

As part of a consumer study by DLG-Food-Research, a total of 1,535 people were asked whether they knew how high the salt content was in the food they eat each day. Only 23% of participants actually look at the salt content labelled on finished products.

Hence, it is the responsibility – and also a big chance – for the industry to provide consumers with a positive nutritional balance in the long term in the form of good-tasting dishes. Having such healthy, convenient food in their portfolio, that consumers can rely on provides great differentiation for companies in a competitive market.

Coming back to the already mentioned imbalance of sodium and potassium consumption in human nutrition, enriching food with potassium chloride is the perfect way to reduce sodium chloride responsibly without having to accept a loss of flavour, while optimising the supply of minerals for the consumer with the addition of potassium.

Made in Germany

With its KaliSel product, K+S KALI provides the industry an opportunity to replace up to 30% of the sodium chloride in certain foods, while balancing the nutrition with potassium at the exact same time.

KaliSel is made in Germany and is completely natural, in that it is derived from the underground crude salt deposits that have been protected from environmental influences and contamination for more than 200 million years. From there, this extraordinary crude salt is processed into high-purity salts – a procedure that involves highly complex crystallisation and purification processes. The production takes place exclusively in secured and closed areas. As a result, the salts are effectively protected from all possible environmental influences during the manufacturing process and packaging.

With the highest-quality relevant certifications, the company meets the highest demands, in terms of quality and safety, on an international level and KaliSel meets kosher and halal requirements. The SGS Institut Fresenius in Germany audits the KaliSel product in accordance with the International Featured Standards, and the KaliSel production plant is DIN EN ISO 9001 ff-certified.

Obviously, the main functions of KaliSel are nutrition and taste; however, KaliSel not only represents an alternative to salt, but is also ideal for potassium enrichment in the production of various foods. KaliSel can also be used as a processing agent or additive; for example, it is used for carrageenan production and contributes to the better curing of some gels. ●



K+S provides the industry an opportunity to replace up to 30% of the sodium chloride in certain foods.

For further information

www.kali-gmbh.com



IS YOUR LIFE TOO SALTY?

KaliSel
Balance your mineral nutrition



For further information visit www.kali-gmbh.com
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Discover a unique marine ingredient

Fitoplancton Marino introduces its TetraSOD microalgae product, produced by drawing out the flexibility of a proprietary strain before being cultured through photobioreactor technology.

TetraSOD is a natural marine microalgae, *Tetraselmis chuii*-derived bioactive that influences antioxidant, haematologic, and metabolic and bioenergetic systems. The closed photobioreactor production system leverages patent-pending, metabolism-engineered growth conditions that are highly sustainable, honour the principles of green chemistry and remove the need for bioengineering of this special strain, indigenous to the Spanish coast.

Preclinical and clinical studies continue to reveal and validate its low dose yet potent, pleiotropic effects, impacting antioxidant response, body composition, muscular endurance and carbohydrate metabolism or glucose disposal.

A brief description of microalgae

Microalgae comprise a biomass that has been the focus of numerous ingredient innovations, such as *Chlorella*, *Spirulina*, and *Haematococcus* species. TetraSOD is produced by harnessing the robust metabolic, 'bioreactor' flexibility of a proprietary strain of *T. chuii* and cultured in cutting-edge photobioreactor technology, resulting in a complex powder that is concentrated in – and standardised to – antioxidant enzyme activity, including superoxide dismutase (SOD).

“TetraSOD is at the vanguard of microalgae innovation in relation to human nutrition, forging sustainable green chemistry with a preclinical and clinical strategic research programme.”

TetraSOD is at the vanguard of microalgae innovation in relation to human nutrition, forging sustainable green chemistry with a preclinical and clinical strategic research programme, and expanding the palette of bioactivities and salutary effects. Fitoplancton Marino



With TetraSOD, Fitoplancton Marino offers a leading healthy ageing nutraceutical.

is the company behind this unique ingredient, for more than 15 years one of the world's leading marine microalgae producers. Fitoplancton Marino with a mission to research, develop and supply microalgae-based products and functional ingredients that contribute to improve the good health and quality of life to its consumers.

TetraSOD is the most complete and comprehensive ingredient for the healthy ageing nutraceutical category, and also offers athletes and individuals with active lifestyles an increased physiological response against oxidative stress to aid performance and recovery, all in a concentrated dose.

TetraSOD is the most concentrated SOD source in the market, with science-backed demonstrated efficiency on activating the antioxidant response pathway on human cells. A controlled, university-based human study in elite, young football players reported that daily supplementation with

25mg of TetraSOD elicited significantly greater and favourable changes in maximal endurance capacity, body composition, blood markers of oxidative stress, and blood haemoglobin, unaccompanied by an increase in blood viscosity. Preclinical studies are validating its efficacy for oxidative stress in an animal model of metabolic syndrome/insulin resistance. Lastly, to date, there is no evidence that plant-derived SOD can be absorbed intact and bioactive. Elegant human muscle cell models have revealed a unique signalling effect of TetraSOD, which may explain its observed antioxidant effects: inducing expression of the antioxidant response element known as NRF2, a nexus within the antioxidant network. The same revealed an induction of primary antioxidant enzyme activities (SOD, GPX and CAT), which was further related to gene expression up-regulation of a selected set of genes involved in response against oxidative stress, including NRF2 and HMOX1.

Strong and stable

Given TetraSOD's great stability, it can be used for many different delivery systems. At the moment is being formulated for finished product in hard capsules, soft gels, tablets and powders for shakes, powders for sticks and sachets for applications to different health challenges that are affected by cellular oxidative stress. Another fundamental advantage of TetraSOD is the very small daily dosage needed for the different possible applications, ranging from 4.67mg, which would be a basic antioxidant product, to 25mg for a full spectrum of health benefits from TetraSOD. Ultimately, TetraSOD is much more than just SOD. ●

For further information

www.tetrasod.com

Get the best from berries

With a strong pharmaceutical background and expertise in bioflavonoid extraction, **Ferlux** is now expanding beyond bilberries and is introducing Trueberry, a full range of berry extracts.

In the late 1950s, Professor Henri Pourrat from the University of Clermont-Ferrand, France, started Ferlux and launched the first bilberry extract drug used for eye health. Ever since, Ferlux has specialised in the purification of European wild bilberries for drugs and supplements.

Berry extracts demand attention

Berries are also known as superfruits for their nutritional value and antioxidant capacity. While their health benefits are widely recognised and documented, from cardiovascular health to cognitive performance, sourcing may be a headache to deal with.

For optimal action, berry extracts usually claim a very high bioflavonoid content. On the other hand, given the

variety of active compounds, methods of analysis and standards, confirming a precise assay may be a difficult journey. Furthermore, given their high price, berry extracts are prime candidates for economically motivated adulteration with cheaper sources of anthocyanosides, such as peanut skin.

Health benefits and peace of mind

To help nutraceutical companies and ultimately consumers to get the best from berries, Ferlux has developed Trueberry, an entire line of berry extracts including aronia, blackcurrant and elderberry. Pharmaceutical DNA and commitment to traceability are key assets to offer fully characterised extracts. Ferlux offers ingredients it has full control of, from the raw material to the extract.

Ferlux guarantees the botanical origin, the absence of contaminants and the level of anthocyanosides with validated methods.

These different extracts are useful in a wide variety of applications. Bilberry is renowned for eye health and cranberry for urinary tract infection prevention. Science shows that aronia and blackcurrant have interesting properties for metabolic syndrome and blood glucose regulation. As for elderberry, it is a very potent natural defence against cold and flu to be used in immune system formulas.

Berry health benefits depend as much on the assay as on the botanical origin, and Trueberry extracts from Ferlux deliver only the very best. ●

For further information

info@ferlux.com

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AlzChem is a renowned German manufacturer of creatine monohydrate. The company's careful selection of raw materials, manufacturing in a certified GMP plant and precise analytical control ensure that its products are of the highest purity and quality.

Creapure, AlzChem's premium ingredient brand of creatine, is the purest form of creatine on the market and is made in the company's dedicated facility in Germany. Creapure ensures a continuous high-quality level and every lot is analytically controlled before being shipped. Creapure is the only creatine produced in the western hemisphere and is, therefore, continuously produced under strict German and European standards. All steps of the manufacturing process are continually monitored and well documented, resulting in consistent, reliable and unsurpassed quality.

“Creapure is the only creatine produced in the western hemisphere and is, therefore, continuously produced under strict German and European standards. All steps of the manufacturing process are continually monitored and well documented, resulting in consistent, reliable and unsurpassed quality.”

The process

Creapure is manufactured in a certified GMP plant that was specifically built for the production of creatine. It sets the highest standards in terms of quality,

purity and safety. AlzChem uses the hazard analysis and critical control points (HACCP) management system, which is widely used to identify, assess and control health risks in food production. Furthermore, AlzChem is certified for ISO 9001 in quality management, ISO 14001 in environmental management and ISO 50001 in energy management.

There are several ways to manufacture creatine. AlzChem uses the best and safest method of production to minimise the risk of undesirable by-products. Due to the applied production process, it is impossible for Creapure to be contaminated with the

harmful DHT (dihydrotriazine). Materials used for Creapure production are not of animal origin and, as a result, Creapure is vegetarian and vegan-friendly. A further strength of AlzChem's creatine production

is that the basic raw materials used to make Creapure are manufactured in-house and strictly monitored by AlzChem itself.

Proof of the remarkable quality

Regulators have been stepping up their oversight of nutrition ingredients, particularly in regards to impurities. The EFSA (European Food Safety Authority) recommends that a creatine product should not exceed DCD levels of 50mg/kg or DHT levels of 3mg/kg.

AlzChem has tested creatine products from all around the world, and claim that its analyses of all the samples demonstrated that Creapure is the purest source of creatine. Its study examined the average results from nine different Creapure creatine monohydrate products and 20 different generic creatine monohydrate products. The company claims that its results showed that the average amounts of DCD and DHT found in generic creatine products significantly exceeded the levels recommended by the EFSA.

Additionally, Creapure is on the Cologne List and is tested for banned substances regularly. By using only products of the Cologne List, athletes reduce the risk of unintentionally becoming the victims of doping. As Creapure is also produced in compliance with Jewish and Muslim food regulations, Creapure is kosher as well as halal-certified.

How to know if a creatine product contains Creapure

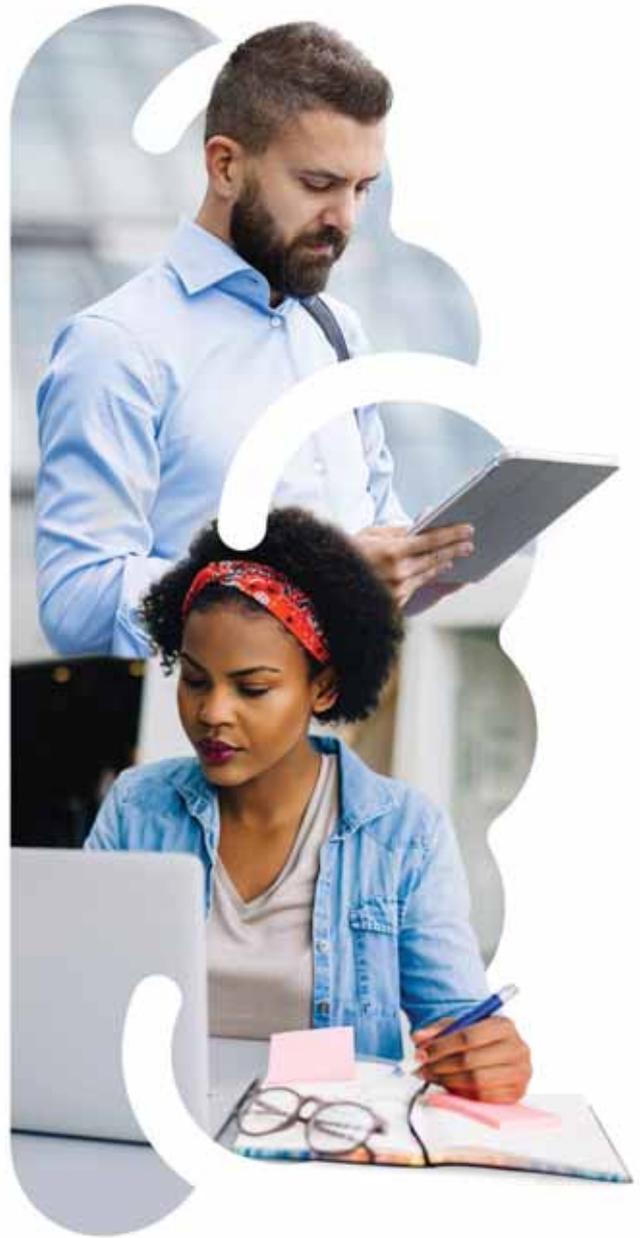
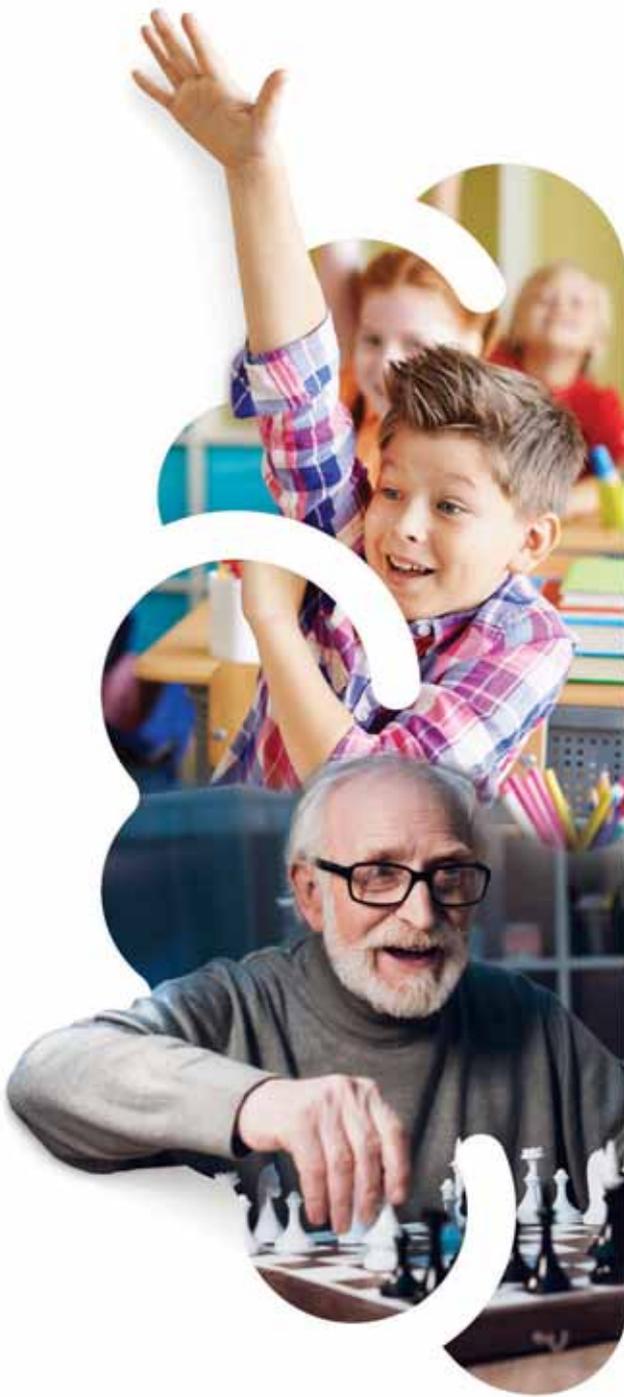
Creapure is one ingredient in a wide range of nutritional products. In creatine products where Creapure is used, there is a Creapure quality seal on the packaging so the consumer can be sure they're using one of the best and most reliable products on the market. ●

For further information

www.creapure.com



Creapure is the only creatine produced in the western hemisphere.



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*This is a business to business communication material and the statements used here have not been evaluated by any regulatory authorities. The ingredients mentioned here are not intended to diagnose, treat, cure or prevent any disease.

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074/BD/AT/03-19

Enhance memory and cognition

Age-associated memory impairment among the elderly is a growing global problem, with no safe chemical drugs available to manage its effects. Dr Deepak Mundkinajeddu, head of R&D at **Natural Remedies**, talks about BacoMind and its unique memory-enhancing properties.

What is BacoMind composed of and why should people buy it?

Dr Deepak Mundkinajeddu: BacoMind is a patented, clinically tested memory and cognition-enhancing phytochemical composition containing nine different bioactive ingredients derived from *Bacopa monnieri*, also known as Brahmi. *Bacopa monnieri* is a plant associated with cognition and memory used in traditional Ayurvedic medicine. The product has proved to be adept at improving memory acquisition and retention in children and elderly individuals, in particular.

When did the idea for the product first arise?

Despite its obvious benefits, there were clear gaps in the scientific understanding of the constituents of Brahmi responsible for its effects on memory. A standardised extract of Brahmi with clinical support was not available at the time. This prompted us to conduct our own studies, developing the best class of ingredients derived from the ingredient that we could extract.

“Bacopa monnieri has been shown to influence major neurological pathways involved in memory and cognition through cholinergic, dopaminergic and serotonergic pathways with neuroprotective and antioxidant actions.”

Cognitive and memory enhancement supplements are generating more and more interest, and there are a number of reasons as to why the market is rapidly growing.

According to a UN report in 2017, an estimated 962 million people are aged 60 years or over, comprising 13% of the global population. Currently, Europe has

the greatest percentage of its population aged 60 or over (25%). Rapid ageing is occurring in other parts of the world as well – by 2050 all regions of the world except Africa will have nearly a quarter or more of their populations aged 60 or above. At the same time there are no safe chemical drugs available to manage age-associated memory impairment, particularly in otherwise healthy populations. Therefore, demand for safer, natural options supported with modern scientific studies is growing.

BacoMind has been found to regularise neurotransmitter activity. How does this process occur?

In scientific literature, *Bacopa monnieri* has been shown to influence major neurological pathways involved in memory and cognition through cholinergic, dopaminergic and serotonergic pathways with neuroprotective and antioxidant actions. Many of the observed effects of BacoMind can be correlated with scientific studies on the plant and its constituents.

BacoMind itself has been found to inhibit three enzymes in vitro – catechol-O-methyl transferase (COMT), prolyl endopeptidase (PEP), and poly (ADP-ribose) polymerase (PARP). It has also been known to have an active effect on serotonin 6 and 2A (5-HT6 and 5-HT2A) receptors, known to influence different neurological pathways associated with

memory and learning disorders and age-associated memory impairment. At the same time, BacoMind has been reviewed by an independent panel of experts and is generally recognised as having a safe (GRAS) status.

BacoMind has been demonstrated to aid cognitive performance with several clinical trials in elderly people and children. How were these trials implemented?

BacoMind was evaluated in two randomised placebo-controlled studies involving elderly subjects for cognitive improvement. In the first study, carried out in Australia, 81 healthy participants aged over 55 received either 300mg of BacoMind or a placebo for 12 weeks. The BacoMind group showed significant improvement in verbal learning, memory acquisition and delayed recall as measured by the Rey Auditory Verbal Learning Test.

In the second study, conducted in India, people aged 50–75 years took 450mg daily for 12 weeks. This significantly improved performance in tests associated with attention and verbal memory and was also found to be well tolerated among the participants. These studies became part of meta-analysis of randomised controlled trials on the cognitive effects of *Bacopa monnieri*.

Another study showed that BacoMind (225mg daily for 16 weeks) enhanced cognition in healthy children undergoing educational programmes, as revealed by significant changes in the baseline value of working memory and short-term verbal memory post-treatment. ●

For further information

www.naturalremedy.com

The importance of transparency

Chris Gearheart, director of member communications and engagement at the Global Organisation for EPA & DHA Omega-3s (GOED), and **Harry Rice**, GOED vice-president, discuss transparency among its members, the benefits of omega-3 fatty acids EPA and DHA, and the staggering results of a recent trial into cardiovascular risk reduction.

Reputation requires a lot of time and effort to build up, but only a moment can tear it down. That is why the Global Organisation for EPA & DHA Omega-3s (GOED) exists to help the industry meet, and maintain, quality standards through best-practice guidelines and recommendations in order to accurately measure product quality.

Ingredients Insight met with Chris Gearheart, director of member communications and engagement, and Harry Rice, GOED VP, to discuss the importance of transparency among its members so that regulations are adhered to and ethical standards are maintained. It is the fundamental recipe for survival considering the

vast consumer markets that members provide for, and the pressure to remain competitive in the face of costs and resources. Of course, increasing public awareness and education is crucial in order to further advance the broad benefits of eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA) in high-quality products, but in a fast-paced world of immediacy and distraction, one of the primary challenges is getting the right information at the top of the search results.

In its annual report last year, GOED certainly emphasised its commitment to an organisational focus on quality for their membership, as well as education of industry, consumers, healthcare providers and global

regulatory bodies. Something that is at the forefront of both pursuits is a recent randomised controlled trial (RCT) into cardiovascular risk reduction that focused on patients with elevated triglyceride levels. Rice described as “staggering” the results from the trial, called REDUCE-IT, which indicated that just under 4g a day of EPA, combined with a statin, were statistically equivalent to a statin alone, when used as a prevention in reducing long-term cardiovascular events, and when the treatment group was compared with the placebo. Specific studies and broader insights into sustainability, market trends and preparations for Vitafoods in Geneva in May are further discussed here.

At the Omega 3 Summit in February in Singapore, GOED’s director of compliance and scientific outreach, Gerard Bannenberg, spoke about safeguarding the sector’s reputation and the importance of adhering to correct methods. What are some of the most efficient sources to extract omega-3s that are environmentally sustainable?

Chris Gearheart: GOED focuses specifically on EPA and DHA for any source and are beneficial for human health. Fisheries that supply the most common marine sources are managed sustainably.

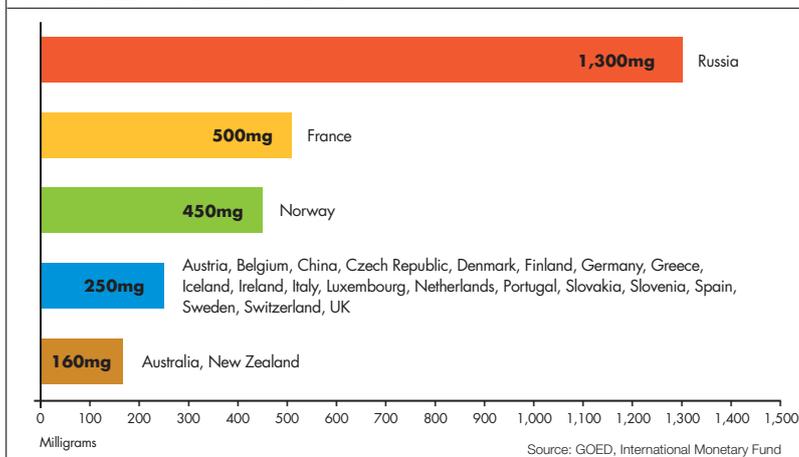
As mentioned in your 2018 annual report, monitoring and analysing omega-3 science, as well as furthering the body of research, is essential. With this aim in mind, how do you ensure your members adhere to regulatory and ethical standards?

CG: The backbone of the GOED quality standard is the GOED Voluntary Monograph and members’ public commitment to adhere to its requirements. Our randomised testing programme monitors compliance and confirms that consumers are getting quality supplements that they can trust.

What are the primary challenges of educating consumer behaviour so that promoting and consuming EPA and DHA in high-quality products is a long-term benefit?

CG: As far as nutrition coverage in the mainstream consumer media goes, EPA and DHA omega-3s attract a lot of attention, and the challenge is that too often neutral clinical trial results are framed as negative in the headlines. The science performed today is difficult to understand in 280 characters on Twitter and consumers need to look at the full body of evidence – more than 4,000 human clinical trials – to understand the importance of omega-3s for their health.

Recommended intake of EPA and DHA in the top economies of the world



As we approach another edition of Vitafoods in Geneva in May, what presence will GOED have there, and how does a platform like this help build momentum for the future of omega-3 production and consumption?

CG: The Vitafoods Omega-3 Resource Centre will feature the exhibits of 15-plus GOED members; theatre presentations on regulatory, scientific, marketing and technical topics of importance to the industry; iPad presentations that summarise new top-level insights from GOED’s work in the industry; and a first look at a brand-new clinical study database that will catalogue the entire universe of omega-3 science.

Most governments in the world recommend 250mg of EPA and DHA per day, regardless of an individual’s stage of life.

“The backbone of the GOED quality standard is the GOED Voluntary Monograph and members’ public commitment to adhere to its requirements. Our randomised testing programme monitors compliance and confirms that consumers are getting quality supplements that they can trust.”

Chris Gearheart

In light of a recent RCT into cardiovascular risk reduction that looked at patients with elevated triglyceride levels, what do you find that is encouraging in terms of the conclusions reached and what more work needs to be done?

Harry Rice: The Reduction of Cardiovascular Events with Icosapent Ethyl-Intervention Trial (REDUCE-IT) evaluated in 8,171 men and women was on whether just under 4g a day of EPA, combined with a statin, is superior to a statin alone, when used as a prevention in reducing long-term cardiovascular events in high-risk

Omega-3 facts

- GOED's newest market data shows that the omega-3 sector is now a \$1.29 billion industry, providing EPA and DHA for use in dietary supplements, infant formula, pharmaceutical, medical nutrition, pet food, and clinical nutrition markets worldwide. More than 26% of that volume serves the European market, where demand for omega-3s is increasing fastest in the clinical nutrition, and food and beverage categories.
- The Global Burden of Disease Project estimates that more than 280,000 European consumers died in 2017 due to a diet too low in EPA and DHA.
- According to GOED proprietary consumer data, when consumers in some of the largest European markets start taking omega-3s, they are seeking improved overall wellness, brain health and heart health, in that order.

Source: GOED

<4,000

The number of human clinical trials carried out on the connection between omega-3 and health.

GOED

patients with mixed dyslipidemia. The following risk reduction results from REDUCE-IT were statistically significant when compared with the placebo group:

- **25%:** primary end-point composite of the first occurrence of major adverse cardiovascular events (MACE), including cardiovascular death, non-fatal myocardial infarction (MI), non-fatal stroke, coronary revascularisation, or unstable angina requiring hospitalisation.
- **26%:** key secondary composite of cardiovascular (CV) death, MI, or stroke.
- **25%:** CV death or non-fatal MI.
- **31%:** fatal or non-fatal MI.
- **35%:** urgent or emergent revascularisation.
- **20%:** CV death.
- **32%:** hospitalisation or unstable angina.
- **28%:** fatal or non-fatal stroke.
- **23%:** total mortality, non-fatal MI or non-fatal stroke.

“As far as nutrition coverage in the mainstream consumer media goes, EPA and DHA omega-3s attract a lot of attention and the challenge is that too often neutral clinical trial results are framed as negative in the headlines.”

Harry Rice

While GOED believed the results would be positive, it did not anticipate such staggering results. Based on the data from this study, in addition to our review of past research, it seems clearer now than ever before that many of the failed (neutral results) trials beginning in 2010 were due to too low a dose. Obviously, further research will need to be conducted in order to substantiate such position.

What responsibilities do supplement companies have to the general population when it comes to promoting and marketing omega-3s as something that can reduce risks of cardiovascular disease and cancer, considering the

recent National Institutes of Health (NIH)-funded study that concluded that supplementation with n-3 fatty acids didn't result in a lower incidence of major cardiovascular events or cancer than a placebo?

HR: All companies promoting the benefits of omega-3s to consumers have the responsibility of providing truthful and not misleading information. Research should be interpreted conservatively, and the results should be qualified so they are not overstated. While the Vitamin D and OmegaA-3 Trial (VITAL) did not achieve the trial's primary outcome of significantly reducing major cardiovascular disease (CVD) events, the following results were statistically significant, providing long-awaited evidence that omega-3s do provide benefits for primary prevention:

- **Total MI:** 28% risk reduction – omega-3s 145 events versus placebo (200 events).
- **Total CHD:** 17% risk reduction – omega-3s (308 events) versus placebo (370 events).

In addition, the greatest reductions were demonstrated in those with low dietary fish intake and in African Americans. While GOED considers this noteworthy, scrutiny of the data is required to better understand these findings.

With respect to cancer, while there is a large body of evidence supporting omega-3's benefits, GOED does not recommend supplement companies talk about cancer. In the EU, there are no permitted health claims associated with cancer. On the other hand, the heart health benefits of EPA/DHA are acknowledged in approved claims related to normal heart functioning, maintenance of normal blood triglyceride levels and maintenance of normal blood pressure.

Each disease is unique in terms of treatment, so through recent studies, how do you better understand the role omega-3s play in the cardiovascular system?

HR: As much as we know about omega-3s, there remains a great deal we still don't understand. While benefits (for example, blood pressure lowering) are demonstrated in clinical trials, understanding the mechanism(s) of action is still somewhat of a mystery. While not definitively known, lowered vascular resistance through changes in endothelial function is considered a primary mechanism by which EPA/DHA may lower blood pressure. For other benefits, we are very much in the dark. In fact, according to the coauthors of REDUCE-IT, the mechanisms responsible for the benefits demonstrated in the trial are currently not known. ●



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Life-changing supplement

The market for omega-3 supplements is expected to reach \$7 billion by 2022. In the same year, **Arctic Nutrition**, maker of herring caviar supplement Romega, aims to release its first pharmaceutical. The company's founder and chief scientific officer, Hogne Hallaråker, talks about the results of a major clinical study into the product's effects on psoriasis.

The omega-3 herring caviar oil, Romega, "is not your ordinary dietary supplement", according to Hogne Hallaråker, founder and chief scientific officer at Arctic Nutrition. "Its strength is very different from any product that I've been involved with in the past."

Now, a double-blind placebo-controlled clinical study of Romega's pharmaceutical variant, currently known under a working title as Psorax35, has found it can reduce plaque psoriasis by more than 30% and significantly decrease blood lipids. In particular, levels of a specific cytokine interleukin, a protein from white blood cells found in psoriasis and other cases of chronic inflammation, fell significantly in patients who received the treatment.

Psorax35 is a more concentrated version of Arctic Nutrition's flagship supplement. "Ingredient-wise, they're very similar," explains Hallaråker. "Even so, this is not really a traditional omega-3 product." In fact, Romega also includes other components, along with the highest levels of phospholipid-bound docosahexaenoic acid (DHA) on

the market, which make it as digestible and bioavailable as possible.

"It's the complete package. Inside a fish egg, you find everything needed for new life in the ideal ratios and structure," adds Hallaråker. The level of the main omega-3, DHA, in Romega is three times that of krill oil, and the ratio of DHA to eicosapentaenoic acid (EPA) is optimal for maintaining a healthy brain and lipid profiles, comparable with mother's milk. "You could call it the oil of life," he continues. "It's perfect for generating new tissue and cells, and maintaining them. We think that Romega is the finest nutraceutical product out there."

Humble beginnings

Hallaråker does not make these claims lightly: he never planned on developing a pharmaceutical. The former marine biologist began experimenting with roe when he realised how regularly juvenile marine fish develop deformities. Postulating that there was something lacking in commercial fish feed, Hallaråker gave them ingredients from caviar instead. It worked: the fish grew more healthily.

Most importantly, Hallaråker noted that the ingredients with the most significant bearing on fishes' welfare were omega-3-bound phospholipids, which easily enter and repair the cells and tissue of small fish larvae.

This realisation eventually led to the creation of Arctic Nutrition. The company is based in Norway's pristine west coast, right beside the herring fisheries that provide it with natural, sustainable and phospholipid-rich caviar.

The next stage

So far, Arctic Nutrition has focused on studying how its herring caviar oil combats psoriasis. Of course, as a more potent form of omega-3, it also supports heart, brain, eye and joint health. However, anecdotal cases have led Hallaråker to believe that the product might have the potential to relieve chronic illness and, therefore, that getting a pharmaceutical to market will be a game-changer for the company. Clinical trials are a way for it to rigorously document what the anecdotal evidence indicates.

"Meeting the rigid guidelines for a pharmaceutical gives our product a higher-quality image," Hallaråker explains. Beyond that, pharmaceuticals can be marketed as treatments for specific conditions in a way that isn't possible with dietary supplements, so offering prescription treatments allows Arctic Nutrition to state its case more directly.

"The key issue is that Romega and Psorax35 are made from the same natural ingredients; the difference being the higher concentration of omega-3 phospholipids in Psorax35. The raw material is extremely important, in terms of physiological effect, and caviar is known worldwide." ●

For further information

<https://arcticnutrition.no>



A clinical study of Romega omega-3 herring caviar oil shows it can reduce psoriasis by more than 30%.

Prebiotic on the rise among consumers

Katrien Lambeens is the product manager of functional fibres for the ingredient manufacturer **BENEEO**. She works closely with the BENEEO Institute, which provides decisive insights into nutrition science and legislation, and the application technology consulting team at the BENEEO Technology Center. Together with these two institutions, she explains how the company actively supports customers in the development of more balanced and healthy food products.

Ever since digestive health was dubbed a 'mega-trend' back in 2010, gut health has been growing its influence in the scientific, nutrition and consumer arenas. Today, consumers are increasingly paying attention to their digestive health, with more than two thirds of consumers worldwide saying digestive health is very important to them. As understanding of digestive health grows, consumers are now recognising the wider benefits a healthy gut can have on their overall state of well-being.

Research shows that 63% of consumers recognise that digestive health plays an extremely important role in their physical health and 57% in relation to their mood. As a result, feeling good is now the main driver for consumers wanting to improve their digestive health, with one out of three doing so to either feel more active or more relaxed. These findings illustrate how consumer mindsets are changing, with many having a much greater understanding of the wider benefits associated with digestive wellness.

“Feeling good is now the main driver for consumers wanting to improve their digestive health, with one out of three doing so to either feel more active or more relaxed.”

This rising focus on inner well-being presents an opportunity for manufacturers to innovate and capitalise on the trend by offering products that promote digestive health. There are several ingredients available, such as BENEEO's prebiotic fibres Orafti Inulin and Oligofructose, to help manufacturers develop successful products that address digestive health issues and support inner well-being.



A prebiotic fermentation pattern that supports the microbiota can influence energy intake, mood and more.

The prebiotic effect

The role of the colon goes far beyond digestive health. This means that the influence of fermentable fibres, particularly ones that lead to a prebiotic fermentation pattern and positively support the microbiota, reach out to other parts of the body and influence hunger-satiety (energy intake), mood and much more.

BENEEO's chicory root fibres, inulin and oligofructose, are natural, non-GMO, clean label and clinically proven plant-based prebiotic fibres that are derived from chicory root via a gentle hot water extraction method, unlike some other fibres that are artificially or chemically made. They are the preferred nutrients for beneficial gut bacteria and therefore encourage positive modulation of the microbiota composition

to take place. This in turn improves digestive health and inner well-being by supporting normal bowel regularity and a healthy gut microbiota by increasing beneficial bacteria. There is a comprehensive body of high-quality scientific studies (in excess of 150) available covering several of these aspects that confirm the health benefits of BENEEO's chicory root fibres.

As well as a wealth of scientific studies, BENEEO also has an exclusive EU health claim for its inulin in promoting digestive health. The authorised health claim under article 13.5 is, “chicory inulin contributes to normal bowel function by increasing stool frequency”, which can be combined with general health-related well-being claims under article 10.3 that includes, “chicory inulin promotes digestive health”, “chicory root fibre supports a healthy and balanced digestive system” and “with prebiotic fibre”.

Popularity of 'prebiotic'

Aiming to make the most of this increased consumer interest in digestive health, BENEEO conducted research to see if the

prebiotic message was popular as an on-pack logo linked to its health claim for inulin. This is because article 10.3 of the EU Health Claim regulation allows for the use of simpler statements linked to the approved health claim – if the approved health claim also appears somewhere on pack. BENEEO undertook the research in Germany, Italy, the UK, Russia and the US, and the majority of consumers in all countries agreed that “the term prebiotic sounds healthy” and two out of three European respondents (73%) viewed the term ‘prebiotic’ to be appealing.

With more consumers coming to understand that prebiotic products are good for them, BENEEO decided to introduce the dedicated ‘prebiotic’ logo to enable manufacturers to tap into this positive consumer awareness. The logo can only be used in conjunction with the company’s exclusive EU health claim, “Chicory inulin contributes to normal bowel function by increasing stool frequency”, when BENEEO Orafiti Inulin is used in a product. With its prebiotic logo, BENEEO offers manufacturers a simple, yet highly visual way to promote digestive health to consumers.

Put it into practice

While consumer interest in digestive health is certainly increasing, taste remains the most important factor. Being soluble and having a mild sweet taste, BENEEO’s Orafiti Inulin and Oligofructose deliver an appealing mouthfeel, texture and taste in applications such as dairy, bakery, cereals and more. This presents food manufacturers with the opportunity to help consumers keep their digestive systems healthy, naturally and with ease, without having to make any major changes to their diet or sacrifice on taste or texture.

BENEEO’s portfolio of prebiotic chicory fibres is one of the most versatile on the market, which means that the company can offer ingredient solutions for almost any application customers are looking for. The experts at the BENEEO Technology Center and the team for market insights and consumer intelligence are constantly conducting research into the latest market trends and most popular ingredient applications worldwide. This insight is then used to develop new recipe concepts

that package functionality and health benefits into favourable products that consumers will enjoy. Importantly, these concepts then undergo trials to ensure that BENEEO ingredients can deliver in terms of performance, taste and texture.

There is clearly an appetite for products that promote good digestive health among consumers. Ingredient providers such as BENEEO are now creating very real ways for manufacturers to make the most of this trend. The wide range of drinkable and edible product ideas available from the BENEEO Technology Center, which incorporate BENEEO’s prebiotic chicory root fibres for added health benefits, provide a wealth of opportunities for manufacturers that are looking to innovate. Developing products using such ingredients can help manufacturers promote digestive health for the long term, meet consumer demand for inner well-being and stay ahead of the competition. ●

For further information

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Inner wellbeing is all about feeling good. Seize the day with chicory root fibre.

Consumers gained knowledge and interest in the effect fibres have on overall health; founding their understanding of prebiotics positively influencing their wellbeing. The role nutrition plays in our health has evolved from being physical as people are also interested in what it means for their emotional status. Their understanding of “Feeling Good” ranges from being comfortable to being in a good mood. In both, BENEEO’s chicory root fibres can play a crucial role: Orafiti® Inulin and Orafiti® Oligofructose can exert a positive effect on people’s sense of wellbeing and quality of life.

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AB-Biotics is the creator of AB-LIFE, a 100% natural probiotic formula of human origin, composed of three *Lactobacillus plantarum* strains – CECT7527, CECT7528 and CECT7529 – that act synergistically to reduce LDL cholesterol of endogenous origin and triglyceride levels.

Dyslipidaemia is a global health concern that affects more and more people every day. Western lifestyle is the main cause of the unhealthy high levels of LDL cholesterol (LDL-C) and triglycerides (TGs), which increase the risk of cardiovascular disease (CVD). According to the most recent report by WHO, 31% of all global deaths are caused by CVD.

Together with the concern about dyslipidaemia among physicians there is also a trend, especially among general practitioners, to demedicalise and to encourage patients to engage in the control of their raised cholesterol and TGs levels. In addition, patients have an increasing preference for more natural, alternative solutions.

“Unlike other alternatives, AB-Life maintains efficacy in low-cholesterol diets by reducing endogenous cholesterol.”

Within this scenario, AB-Biotics offers a novel solution – AB-LIFE, a powerful tool to combine with healthy lifestyle and education

to increase patient engagement in the nutritional therapy for dyslipidaemia. It has been shown to reduce LDL-C by up to 14.6% and TG levels by up to 16.2% in just three months. AB-LIFE probiotic formula consists of three *Lactobacillus plantarum* strains – CECT7527, CECT7528 and CECT7529 – acting synergistically to reduce the endogenous source of cholesterol, which represents around 75% of the total source of blood cholesterol. Then, unlike other alternatives, AB-LIFE maintains efficacy in low-cholesterol diets by reducing endogenous cholesterol.

Foods and beverages have been supplemented with sterols and other compounds that only target exogenous

cholesterol obtained from the diet. This is why AB-LIFE represents a breakthrough in the dyslipidaemia approach.

Effects on exogenous sources of cholesterol

This probiotic affects exogenous sources of cholesterol through an exclusive mechanism of action – modulation of the enterohepatic cholesterol cycle. The three strains of AB-LIFE reduce intestinal reabsorption of bile salts thanks to their high bile salt hydrolase (BSH) activity.

Basically, BSH activity deconjugates the bile salts while they remain in the gut. Then, less deconjugated bile acids are reabsorbed into the bloodstream. This reduces the amount of recirculated bile salts to the liver, thus forcing the liver to pull out cholesterol from the blood in order to synthesise bile salts de novo, thus reducing levels of LDL-C in the blood.

Triglyceride levels

The deconjugated bile acids can be metabolised into secondary bile acids, which in turn bind to the TGR5 receptors in various tissues. This induces an increment of caloric expenditure, especially in muscle and adipose tissue, causing a reduction of circulating TGs in the bloodstream.

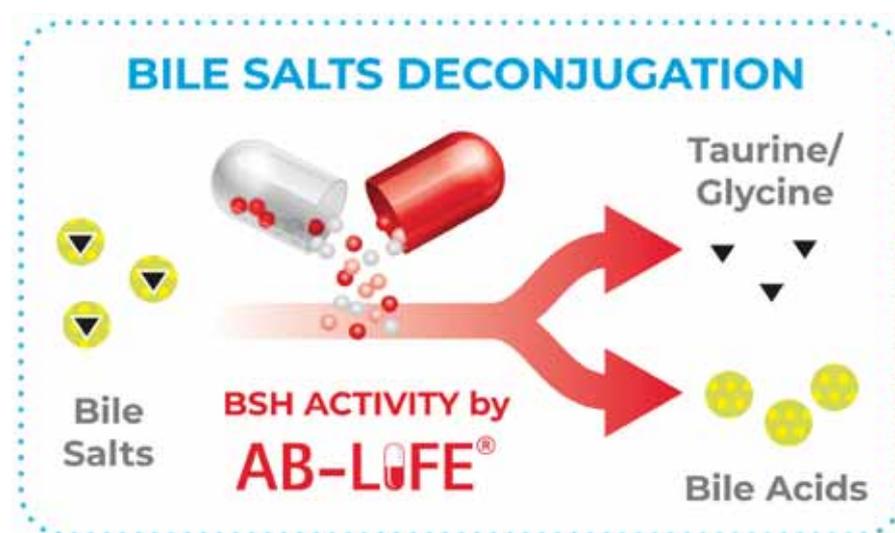
Further possibilities

AB-LIFE's mechanism of action opens up a new window of possibilities yet to be widely used. It could be used in functional dairy products to obtain meaningful reductions of LDL-C. Unlike sterols, AB-LIFE can be ingested at any time of the day; it does not need to be taken with a meal to be effective.

Moreover, the addition of AB-LIFE will cause the product not only to reduce cholesterol but also decrease the circulating TG levels, which could potentially be used to treat a fatty liver. ●

For further information

www.ab-biotics.com



AB-LIFE has physiological Bile Salt Hydrolase (BSH) activity, its main mechanism of action.

High-stability live bacteria in probiotics

Probiotics are inherently sensitive bacteria and require particular conditions to survive, causing a range of handling issues for suppliers. Shai Karlinski, VP sales and marketing at **Anlit Advanced Nutrition Supplements**, talks about creating great-tasting long-life probiotics that allow for the high stability of live bacteria in ambient conditions.

The development of new probiotic supplements grew by an average of 26.5% between 2012 and 2017. What factors are driving this?

Shai Karlinski: The past decade has seen a growing interest in probiotics. While, in the past, they were solely associated with gut health or post-antibiotic treatment, these days their broader health benefits are more widely known. For instance, it is now readily acknowledged that probiotics can aid heart health and weight loss, and immunity to sickness and viruses.

While cutting-edge research continues to investigate their potential, probiotics are increasingly prevalent in wider culture – on television, in magazines and online. Most high-ranking medical television shows discussed probiotics at least two to three times in the past year for various condition-specific applications.

We currently sell probiotics to more than 20 different countries in four different continents, so it is clear that there is a significant demand for these products.

“As live bacteria, probiotics need to be kept alive until they enter the digestive system to be effective. One of our missions was to create a platform that guards live bacteria, keeping it in an active state for 24 months.”

What are the key challenges in making probiotics?

The main challenge is the handling issue. Probiotics are very sensitive and need special conditions to survive. As live bacteria, probiotics need to be kept alive until they enter the digestive system to be effective. One of our missions was to create a platform that guards live bacteria, keeping it in an active state for 24 months.

As with all supplements, the products' taste, texture and odour also need careful consideration.

Anlit's ProBites Long-Life Probiotic (LLP) technology isolates factors that negatively impact the stability of live bacteria. How was this implemented?

When our research and development team approached this project, they first consulted with leading researchers in the worlds of microbiology and probiotics to explore the factors that influenced the stability of the bacteria.

A major factor that was isolated was the humidity issue. The solution for this was threefold, and involved devising a special production process, building a strict and monitored production environment and creating a multilayered package. Once applied, we could see the results on the stability data of the LLP technology.

Using our breakthrough model we created an edible product that is not only tasty but also gives a stabilising

environment to live bacteria for 24 months in ambient conditions. The current solutions in the face of the stability issue are limited to high overages, refrigerated supply chains, microencapsulating the bacteria, or simply declaring the amount of bacteria on a given production date. Our LLP technology solves these issues, providing a turnkey solution that does not require



Anlit's feminine probiotics use beneficial live bacteria to aid genitourinary tract health.

a high-operational cost, and gives our customers a tasty product with a high standard of quality.

Which products is Anlit showcasing at the upcoming Vitafoods convention in May?

Anlit is a research and development-oriented company, and we will continue to innovate in the sector. In the short term, we are leveraging our LLP technology to present a line of condition-specific products based on live bacteria activity. At the next Vitafoods convention, we will officially present our new line of feminine probiotics. Feminine probiotics contain a powerful blend of beneficial live probiotic bacteria and cranberry extract working in synergy to support genitourinary tract health. The supplement contains a blend of six different strains of live bacteria. ●

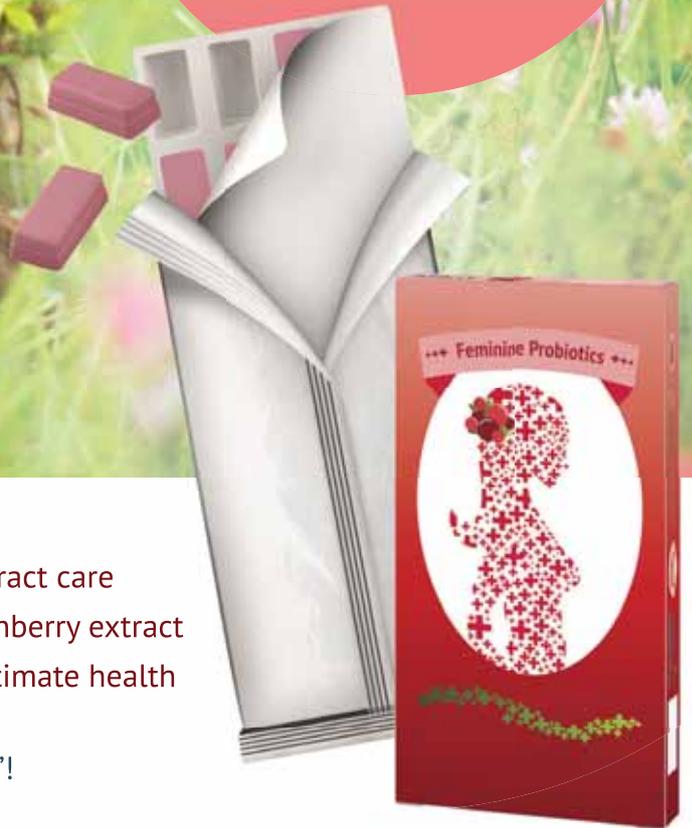
For further information

www.anlithealth.com



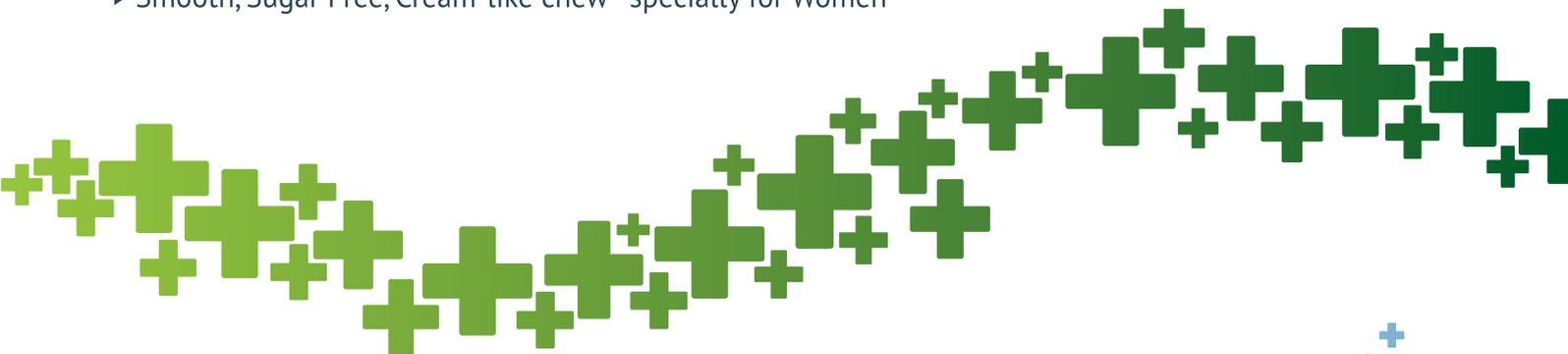
Feminine Probiotic Bites

the best probiotic carrier for your brand



- ▶ Natural and fun way for the complete feminine tract care
- ▶ A blend of 6 different strains of bacteria and Cranberry extract
- ▶ Optimal combination of strains for a women's intimate health

- ▶ An innovative technology "LLP - Long Life Probiotic"!
- ▶ High stability of live bacteria in ambient conditions
- ▶ Smooth, Sugar Free, Cream-like chew - specially for Women



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May 7-9 2019 / Booth No L81

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Support mother and infant well-being

DuPont Nutrition & Biosciences is on a mission to ensure that mothers and babies remain in peak physical condition during and after pregnancy. The benefits of its HOWARU and CARE4U products have been demonstrated by scientific research, including the Probiotics in Pregnancy Study.

DuPont Nutrition & Biosciences is a world leader in microbial biotechnology, and health and nutrition, with the broadest range of clinically documented probiotics available in the marketplace. Recent developments in molecular biological techniques and joint-venture initiatives have allowed DuPont Nutrition & Biosciences to spearhead the commercial development of new microbiome, science-based solutions for improved health and wellness.

Over the past few years, for instance, state-of-the-art studies with probiotic supplementation in pregnant and breastfeeding women have provided new insights into the immune health of expectant mothers and their infants.

The key to a healthy pregnancy

Diet and lifestyle are key to a healthy pregnancy, and healthy maternal nutrition has a profound influence on the development of the gut microbiota and immune system during foetal and postnatal periods. Keeping mothers healthy during pregnancy is vital to the development of children.

Microbial colonisation of the digestive tract of the infant begins at birth, when the mother becomes the primary source

of bacterial species. Clearly, the mother's health plays a critical role at this stage, and disruption of the development of the microbiota and immunity of the infant during this period has been linked to the development of allergies and eczema.

A number of important studies – including human clinical trials – have shown that pregnant women and their infants can benefit from probiotic dietary supplementation during pregnancy and beyond.

The Probiotics in Pregnancy (PiP) Study

The primary aim of this human clinical study was to assess whether probiotic supplementation in pregnant women with *Lactobacillus rhamnosus* HN001 (HN001) produces immune benefits for babies. Important secondary aims of the study were to consider the effects of probiotic supplementation on postnatal depression (PND) and anxiety, and the risk of gestational diabetes mellitus (GDM). In a two-centre, randomised, double-blind, placebo-controlled trial, the probiotic HN001 (6x10⁹ CFU) was taken daily by pregnant women from 14 to 16 weeks of gestation to six months post-term, if breast feeding. The probiotic was

administered in capsules to mothers, and the evidence collected and reviewed to uncover a number of major findings and health implications.

HOWARU's impact on PND and anxiety

In the Western world, 10–15% of women suffer from PND, which affects the mother's ability to care for her new infant and quality of life. PND can be associated with persistent depression and, in a few cases each year, death from suicide. Women are often reluctant to take antidepressant medication in pregnancy, or while breast feeding, so safe and effective therapies are needed to reduce the risk from PND and postnatal anxiety, and to support the management of their symptoms.

There is a growing amount of literature linking gut microbiota to brain physiology, function and behaviour via the microbiome-gut-brain axis. Microbial dysbiosis is associated with many health problems – including depression and anxiety – as alterations in the pattern of gut microbial composition in healthy adults has been shown to influence mood.

Mothers from the PiP study were invited to complete a questionnaire about

Figure 1. Depression and anxiety scores in the probiotic treatment (HN001) and placebo groups

Depression score	Mean score	Standard deviation	Univariable effect size (95%CI), p-value	Multivariable effect size (95%CI) p-value
HN001	7.7	5.4	-1.2 (-2.4, -0.1) p=0.035	-1.2 (-2.3, -0.1) p=0.037
Placebo	9.0	6.0		
Anxiety score	Mean score	Standard deviation	Univariable effect size (95%CI), p-value	Multivariable effect size (95%CI) p-value
HN001	12.0	4.0	-1.1 (-1.9, -0.2) p=0.014	-1.0 (-1.9, -0.2) p=0.014
Placebo	13.0	4.3		

Source: DuPont and EBioMedicine.

Figure 2. Treatment effects on the prevalence of GDM, according to IADPSG and NZ definitions

	HN001		Placebo		RR	95%CI (%)	P	P multiple imputation
	Prevalence (%)	95%CI (%)	Prevalence (%)	95%CI (%)				
IADPSG	8.2	4.6,13.1	13.8	9.2,19.5	0.59	0.32,1.08	0.08	0.12
NZ	2.1	0.6, 5.2	6.5	3.5,10.9	0.32	0.11,0.96	0.03	0.07

Source: DuPont and *British Journal of Nutrition*

their psychological well-being, thinking back to when their child was one to two months of age. There were 380 participants in the study and the majority of the questionnaires were completed online, with the median age of the children being 2.1 years, although some questionnaires were completed at research centre visits at six or 12 months after birth.

Mothers in the probiotic treatment group reported significantly lower depression and anxiety scores than those in the placebo group (see Figure 1, which shows multivariable and univariable effects). Further statistical analysis showed that when more than one effect is considered – including infant colic and the time since birth when questionnaires were completed – probiotic scores still remained significantly associated with reduced depression and anxiety scores. The scores indicated that the oral consumption of probiotics may be useful to manage post-partum depression and anxiety.

HOWARU and GDM

Dietary changes with economic development have led to increasing problems of obesity and associated diseases. GDM increases the risk of pre-eclampsia, miscarriage, pre-term birth, foetal macrosomia, induction of labour and C-section. GDM also increases the risk of later maternal/child obesity and type 2 diabetes.

Mothers from the PiP study were evaluated for GDM using the International Association of Diabetes and Pregnancy Study Group (IADPSG) and New Zealand guideline definitions of glucose tolerance tests (GTTs). The tests were given at 24–30 weeks gestation following a 12-hour overnight fast. The results indicated that there were significant differences between the HN001 group and placebo group (see

Figure 2 for daily consumption of probiotics lowering the prevalence of GDM).

Subpopulation analysis revealed that HN001 supplementation may benefit those with a higher risk of developing GDM during pregnancy, who have a higher maternal age (>35) at conception or previous GDM diagnosis.

HOWARU and vaginal health

Bacterial vaginosis (BV) is the most common infection in women of reproductive age and is characterised as an imbalance of the vaginal microbiota caused by the overgrowth of atypical bacteria. Typically, 10–30% of women experience BV during pregnancy.

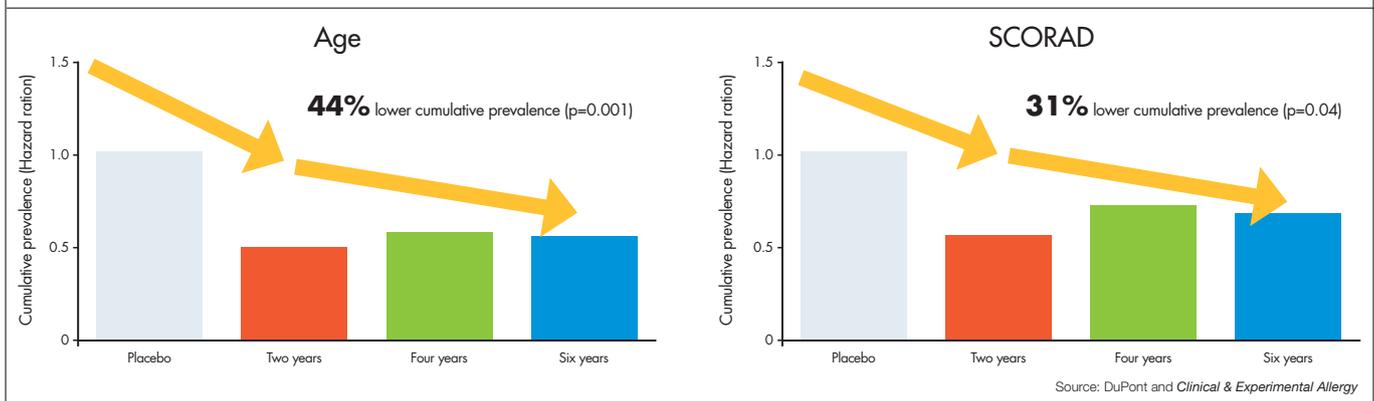
BV is usually treated by antibiotics but, unfortunately, recurrence of infection is common and most women try to avoid any medication during pregnancy. Based on a review of scientific literature, most studies support the use of probiotics for reducing the risk or alleviating symptoms of BV.

Mechanisms by which probiotics work include competitive exclusion of the pathogens from nutrients; interfering with pathogen adhesion; the production of antimicrobial metabolites, such as bacteriocins, hydrogen peroxide and lactic acid; supporting a natural acidic vaginal pH; and modulation of mucosal immune functions. The healthy human vagina is colonised predominately by *Lactobacillus* and the number of lactobacilli in the vagina



Many women are reluctant to take antidepressant medication in pregnancy, so safe and effective therapies are needed to reduce the risk from PND and postnatal anxiety.

Figures 3 and 4. 'UK Working Party's Diagnostic Criteria' by age and SCORAD cumulative prevalence by age



of women with BV is significantly lower than that of healthy women.

A 14-day dietary supplementation with HN001 and *Lactobacillus acidophilus* La-14 (5×10^9 CFU) plus lactoferrin (50mg) taken twice daily has shown that, in healthy women, there is colonisation of the vagina with these microbes that persists at least one week after intervention. Vaginal pH remained in the healthy range throughout the study.

“BV is usually treated by antibiotics but, unfortunately, recurrence of infection is common and most women try to avoid any medication during pregnancy. Based on a review of scientific literature, most studies support the use of probiotics for reducing the risk or alleviating symptoms of BV.”

In a similar study with women who had intermediate vaginal microbiota, as well as signs or symptoms of vaginitis/vaginosis, Nugent scores were used to assess alterations in vaginal microbiota after a 15-day supplementation with HN001 and La-14 (5×10^9 CFU) and lactoferrin (50mg) taken twice daily. The study showed that the Nugent Scores improved to normal levels in the probiotic group, but not in the placebo group. Significant improvements in vaginal symptoms were also found in the probiotic group.

Overall, oral consumption of probiotics HN001 and La-14 support healthy vaginal microbiota. These studies indicate that it is possible to protect women’s health during pregnancy. Taking HOWARU Protect Prenatal+ daily during pregnancy supports women’s overall well-being, providing immune, mood and vaginal benefits.

HOWARU Protect EarlyLife reduces eczema and allergic sensitisation in infants and toddlers

Another study has also shown that HN001 supports the development of immune health in infants and children. In a two-centre, randomised, double-blind, placebo-controlled trial, the probiotic HN001 (6×10^9 CFU) was taken daily by pregnant women from 35 weeks gestation to six months post-term, if breast feeding. At

ages two, four, six and 11 the prevalence of eczema and allergic sensitisation – as measured by the ‘UK Working Party’s Diagnostic Criteria Atopic Dermatitis’ and SCORing atopic dermatitis (SCORAD) – scores were significantly reduced in the probiotic groups compared to the placebo subjects (see Figures 3 and 4).

CARE4U human oligosaccharide (HMO) for infant and toddler formulas

Breast feeding is the gold standard for neonatal nutrition; however, breast milk is a complex and unique fluid that contains classical nutrients and thousands of bioactive components, including HMOs. HMO 2’-fucosyllactose (2’-FL) can, however, mimic some of the health benefits of breast milk. Improved and scalable production methods for 2’-FL and other

HMOs from DuPont Nutrition & Biosciences, along with appropriate clinical studies, support new and enhanced commercial infant formula development.

With in-house research using an infant colon simulator – Enteromix – and state-of-the-art scientific techniques, it has been shown that CARE4U 2’-FL:

- is highly bifidogenic and may act as a decoy for pathogens
- reduces pathogenic adhesion in epithelial cells
- produces metabolites when fermented with *Bifidobacterium longum* ssp. *infantis*, which support the integrity of gut epithelium
- helps to shape a healthy microbiota for infants
- is well tolerated in infant formula.

Important outcomes for women during pregnancy and beyond

Safe and well-tolerated probiotics from DuPont Nutrition & Biosciences support the immune health of women during pregnancy and beyond, with positive health benefits for mothers and their breast-fed or formula-fed infants. These product innovations continue to ensure that DuPont Nutrition & Biosciences remains a world leader in the provision of health-enhancing ingredients, including targeted probiotics and prebiotics. DuPont Nutrition & Biosciences will be at stand J10 at Vitafoods Europe 2019 on 7-9 May in Geneva, Switzerland. ●

References available on request.

For further information

www.dietarysupplements.dupont.com

Proved suitable for human consumption

Human residential bifidobacteria (HRB) feature in many of the probiotics developed by **Morinaga Milk**, offering a variety of health benefits including the maintenance of intestinal health and the reduction of body fat.

Morinaga Milk has been conducting research on *bifidobacteria* for many years. The research shows that *bifidobacteria* naturally reside in the human intestine, especially in infants. Such bacteria are called human residential *bifidobacteria* (HRB). The research also discovered that only HRB species are capable of certain functions. Unlike non-HRB (non-human residential *bifidobacteria*) species, HRB species are particularly effective at using the human milk oligosaccharides (HMOs) in breast milk; the species can also tolerate lysozyme, a 'natural antibacterial factor'. These characteristics allow HRB species to colonise the infant gut, contributing to the development and maturation of a healthy microbiome. These findings show that HRB species are natural and suitable for consumption by adults and infants, and this concept of 'HRB is suitable for human consumption' is Morinaga Milk's philosophy.

Flagship probiotics originated from healthy infants

Bifidobacterium longum BB536, the flagship probiotic of Morinaga Milk, is a strain of *bifidobacteria* living naturally in human intestines. BB536 is well known for its stability, quality and wide-ranging effects, shown by 170 scientific reports, including numerous clinical studies. BB536 attained GRAS status (GRN 000268) in 2007 and has been used in more than 30 countries throughout the world for over 40 years.

One of the main effects shown by multiple clinical studies is the maintenance of intestinal health. In one clinical study, 39 women prone to constipation consumed 100g of yogurt with BB536 for two weeks. Compared with general yogurt products containing only lactic acid bacteria, intake of yogurt with BB536 improved the stool

frequency and reduced the level of ammonia in faeces. Additional effects, including prevention of infection, anti-allergy benefits and others, have been described in clinical studies. Morinaga Milk provides BB536 not only for dietary supplements and infant formulas, but also for cultures used in yogurt and yogurt drinks.

Approved by more than 100 NICU hospitals in Japan for use with immature infants, *Bifidobacterium breve* M-16V is well known for its strong safety profile and efficacy in infants. M-16V's safety and its effect to promote healthy growth of premature infants are highly evaluated by medical professionals. M-16V has been used in more than 100 Neonatal Intensive Care Units (NICU) in hospitals throughout Japan. M-16V attained not only FDA-notified GRAS status, but also GRAS status for infants (GRN 000453 and GRN 000454) in 2013.

“Unlike non-HRB (non-human residential bifidobacteria) species, HRB species are particularly effective at using the human milk oligosaccharides (HMOs) in breast milk; the species can also tolerate lysozyme, a ‘natural antibacterial factor’.”

A unique probiotic to reduce body fat

Bifidobacterium breve B-3 is a special *bifidobacterium* selected in light of the relationship between the gut microbiota and obesity. B-3 has a unique function that restores the intestinal barrier and inhibits the chronic inflammation inside body that causes obesity. According to a DBPC study by Morinaga Milk, 52 men and women with high body mass indexes (BMI) consumed B-3 capsules for 12 weeks. The result showed that

the amount of body fat was significantly decreased in the B-3 intake group compared to the placebo group.

High use of human milk oligosaccharides

Bifidobacterium infantis M-63 is highly capable of using human milk oligosaccharides in breast milk. M-63 is considered to be adapted to the intestinal environment of humans, especially infants. An in vitro study found that M-63 can prevent the growth of rotavirus. A clinical study provides evidence that M-63 promotes the improvement of irritable bowel syndrome symptoms.

Safety and quality

Safety and quality are the biggest concern for consumers. Morinaga Milk's highly safe *bifidobacteria* are manufactured at

a facility that is FSSC and halal-certified. The bacteria are free of dairy compounds, gluten, allergens and GMOs, and are available in capsules, sachets, tablets, and in powder form for application in powdered drinks, cereals, chocolates, protein powder and so on. Morinaga Milk will continue to pursue research on *bifidobacteria* and to provide evidence-based products for making human life healthier. ●

For further information

www.morinagamilk.co.jp/english

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The health benefits of probiotics

Research into the potential health benefits of probiotics is growing across the supplements industry. Bérengère Feuz, marketing director for **Lallemand Health Solutions**, talks about how the company is investigating new ways in which its formulations can help alleviate health segments that include infants, adults, athletes and seniors.

Can you explain a bit about Lallemand Health Solutions and its expertise in the development and production of probiotic strains?

Bérengère Feuz: It's honestly a source of tremendous pride for us at Lallemand Health Solutions that we have been developing quality probiotic products since 1934. We are also one of the few probiotic companies to oversee over 40 proprietary strains and more than 500 custom formulated products. On the global front, we have four GMP-certified facilities dedicated to the production of probiotics and this year we are opening another new probiotic production facility in Mirabel, Quebec. It's also important to note that our probiotic production plants are certified to the highest quality standards – cGMP, Pharma GMP, Health Canada (NNHPD), USP Quality Systems GMP audited (Canada), ISO 9001 and ISO 22000 (France).

Can you tell us more about the range of probiotic formulations that the company currently offers?

Our products are targeted towards specific populations, from infants to senior citizens, and across health segments that include gut health, natural defences, women's health, brain-gut axis, oral health and sport.

In March 2019, we launched an amazingly innovative capsule technology, COMBOCAP[®]Biotics, creating a brand-new probiotics category by doing so. This new capsule has a moveable membrane, which allows the creation of an unlimited variation of unprocessed wet-and-dry probiotic combinations that were previously unavailable because of ingredient incompatibility.

When it comes to our products, EXPERT[®]Biotics shines. This line-up uses

our proprietary LACIDOFIL, PROBIOKID, PROBIO[®]STICK, and IBACILLUS+ as well as other strains including LAF[®]TI B94, *S. Boulardii*, LAF[®]TI L10, ROSELL-71, and ORALIS SB. If we break down some of our clinical studies per strain for EXPERT[®]Biotics, you begin to get a sense of where the science behind our products really comes into play. LACIDOFIL, for example, has been documented in 26 clinical health studies in children and adults in particular for the prevention and treatment of AAD and acute diarrhea in pediatric GI disease. LAF[®]TI B94 has been documented in five gut health clinical studies including irritable bowel syndrome in children and teens.

Another interesting product line is our customisable UNIQUE[®]Biotics. We work with our customers to help them create a custom probiotic formula by narrowing down the choice of Rosell, Lafti or Harmonium probiotic strains with other required ingredients. This ensures our customers receive a unique formulation that is efficacious and stable. UNIQUE[®]Biotics are available in many dosing forms – sachets, sticks, blisters and caps – as well as different types of packaging.

What would you say are the main trends currently driving the sale of nutraceuticals?

One of the most significant trends that we've identified driving sales is that consumers over the age of 55 in developed markets are beginning to play a central role in the increased consumption of nutraceuticals not only as a means of preventative healthcare, but also as a means to alleviate many of the ailments associated with the ageing process. We expect the sales of nutraceuticals to this age group will rapidly continue to increase

as research indicates that between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%. Another big push we have identified comes from millennials, who make up about 20–25% of the global population. They are a remarkably health-conscious group who distrust big brands, and processed foods and drinks. Millennials express their principles through their purchasing power, and these younger consumers are solidly pro-supplement, perceiving nutraceuticals as integral components of a healthier lifestyle. We expect millennials to be explosive in terms of market growth as this population becomes aware and better educated on this category, and adopts nutraceuticals and probiotics into their lifestyle as they push into their senior years.

What will the next generation of probiotics look like?

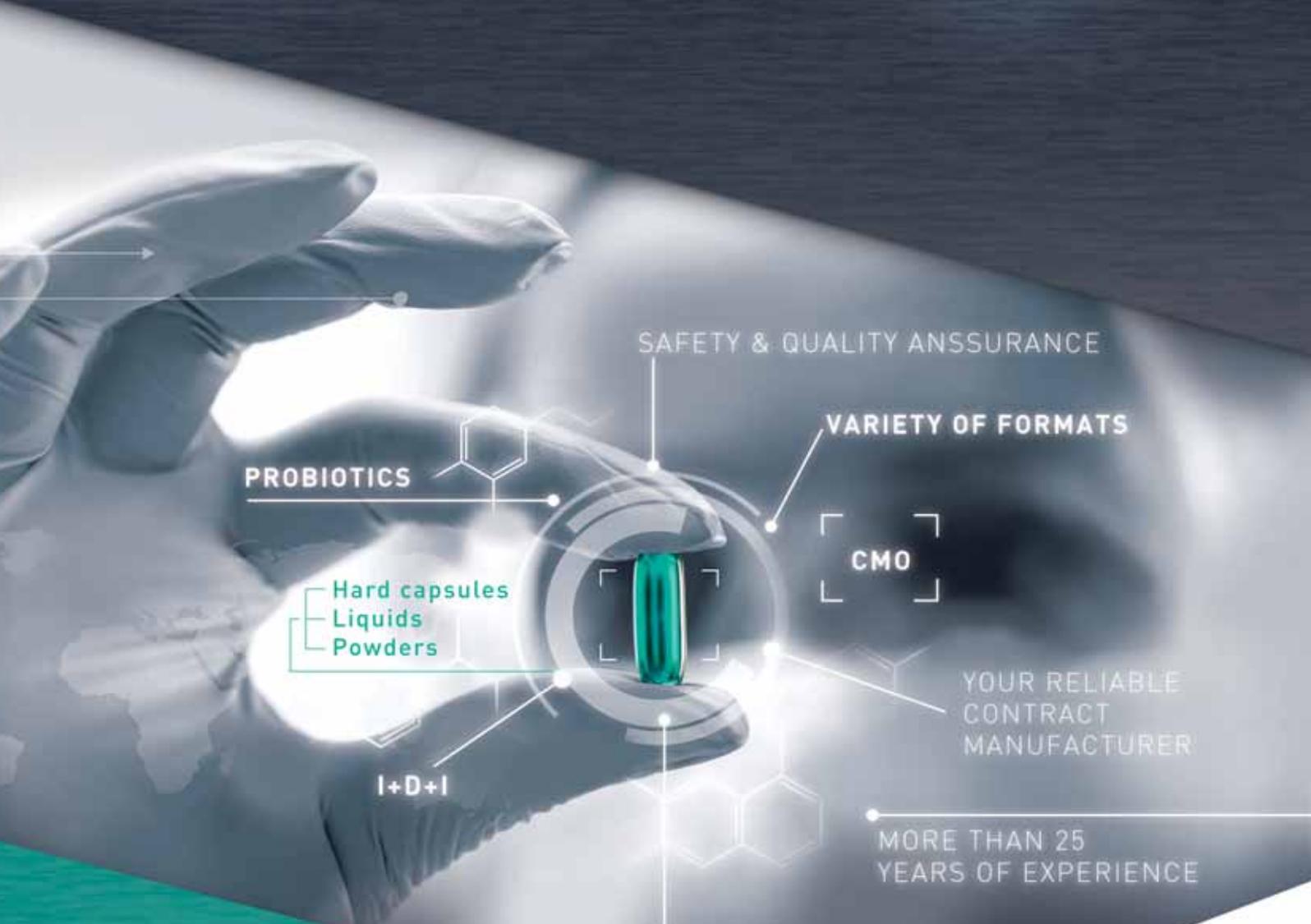
Research is now focused on trying to identify markers in microbiota in order to find ways to prevent or diagnose health problems and diseases. To that end, new species of commensal bacteria have been identified, such as *Akkermansia* or *Christensenella*. However, the potential health benefits of these new species still need to be documented with clinical studies to confirm their benefits. Specific challenges relating to the use of these new probiotic bacteria include the ability to be able to produce them on a large scale as they are full anaerobes, and have local health authorities accept their widespread use in conventional medicine. ●

For further information

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Ahead of the curve

From humble beginnings, **Korott Laboratories** has grown into a prestigious company with nearly 30 years of experience in manufacturing high-quality food supplements and pharmaceutical products. Pablo García, director of business development, explains how cutting-edge technology has made the company more efficient.

Korott was founded in 1991. How has the company changed since then?

Pablo García: Korott was founded by two pharmacists and a doctor, with five employees on a premises of 100m². The company originally focused on the study and application of medicinal plants, a discipline known as phytotherapy. These days, the company develops pharmaceutical, nutritional and cosmetics products and has more than 18,100m² of working space with 145 employees. We specialise in galenic formulation, manufacturing items such as hard capsules, powders (sticks, envelopes, stand-up-packs and cans) and liquids (ampoules, bottles, vials or shots). Our commitment to creating high-quality products has been consistent throughout our 28 years of service, fuelling our continuous growth as a company.

“Our recent investment in technology systems allows us to communicate and register all of the processes and the participants involved in making our products. This has facilitated a detailed understanding of our working processes, which can be improved through continual analysis.”

How has recent investment in your company enhanced your production capacity?

Investing more than €4 million in our food supplements centre has increased our production capacity significantly. Our offices and logistics warehouses are connected through cutting-edge technology that allows us to better trace the ingredients used in our production processes, and we can now undertake most of the analysis that products require internally. Our

working relationship with experts in microbiota and immunoregulation has led to a new collaborative project, whereby products are developed by carrying out clinical trials with probiotics and other added value ingredients. We have also participated in clinical studies in atopic dermatitis, psoriasis and other therapeutic areas with positive results.

Korott has made its commitment to customer support clear, working with a range of clients to support their needs. Is there a specific client that you have worked with for a long period of time?

We have enjoyed a fruitful collaboration with Mercadona, the largest chain of supermarkets in Spain, since 1999. For Deliplus, one of Mercadona's top suppliers, we have developed a range

of products, including food supplements, natural medicines, cosmetics, nutricosmetics, cotton derivatives and repellents.

Customer support is immensely important to Korott as a company, whether we are working for larger retailers or working for pharmaceutical companies with added-value products or brand management.

The needs of retailers and pharmaceutical companies continually change, so a different kind of assistance

is often required when it comes to the product development process. One of our biggest assets is that we have a team capable of dealing with a wide variety of demands.

As a company, you pride yourselves on producing high-quality products. What procedures are in place to ensure that you maintain those standards?

We follow the GMP standard in all the production units and this year we have obtained the IFS certification with 96% punctuation. Our recent investment in technology systems allows us to communicate and register all of the processes and the participants involved in making our products. This has facilitated a detailed understanding of our working processes, which can be improved through continual analysis. We operate rigorous quality assurance systems to avoid any cross-contamination in all our production lines. Consequently, we are able to produce products that are gluten-free, lactose-free and suitable for vegetarians.

How will the global supplements market develop in the future?

We expect to grow as we increase our business relationships with customers internationally. Today, the market is more fragmented, but there are growing opportunities with different target groups. An ageing population, lifestyle changes in younger people and an increasingly nutraceutical approach to medicine are areas that could potentially birth new market opportunities. ●

For further information

www.korott.com

Innovative, user-friendly orodispersible powder

EXDEN supplies its customers with finished products that meet the most specific quality criteria in the field of probiotics. Thanks to its network of suppliers, the company selects the best probiotic bacteria strains, produced in HACCP, ISO and/or GMP-certified workshops, to meet its customers' specifications.

If innovation is part of EXDEN's DNA, it is through an in-depth knowledge of the food supplement market and carefully listening to its customers' needs, and that is how the company develops new services and products. With Easymelt, the result of a development by EXDEN's R&D team, the company offers an innovative and user-friendly orodispersible powder in stick form. This product is formulated according to four main specifications – technological, nutritional, appetite and ease of use.

The technological specification applies to Easymelt's design, in that it is easy to consume and dissolves quickly in the mouth. The formula benefits from

a physical process of combining components developed by EXDEN's teams. The powder is packaged in a stick that ensures optimal viability.

Its nutritional specification covers how Easymelt combines a non-GMO corn dextrin and polyols (sugar-free sweeteners), which provide a sweetening effect without intense sweeteners or sucrose. Easymelt is also designed with oral health in mind and can be supported by a legal health claim (EU R1924/2006).

EXDEN has done a lot of work to make Easymelt appetent, or desirable. The different formulas are available in four flavours, obtained by using natural

flavourings. The company makes use of numerous experts in order to offer a range of discreet and pleasant flavours.

For the purpose of user-friendliness and ease of use, Easymelt is packaged in a stick, as mentioned previously. This presentation is not only practical, but also ensures optimal stability and, as a result, benefits from the Probiopack label, a framework of which every step is designed to offer a finished product that meets the expectations of EXDEN's customers and consumers. ●

For further information

www.exden.fr/en



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Delay the onset of type 2 diabetes

Pep2Dia is **Ingredia**'s new bioactive that regulates blood sugar levels after meals.



Pep2Dia can help people avoid type 2 diabetes by reversing prediabetes.

Pep2Dia is a patented milk protein hydrolysate with an active dipeptide aminopeptidase (AP), specifically designed for prediabetes to help manage blood sugar levels. AP peptide acts as an inhibitor of the alpha-glucosidase. This digestive enzyme hydrolyses polysaccharides into glucose and allows absorption. Its inhibition lowers blood sugar levels.

Pep2Dia is the result of extensive research and collaboration between Ingredia's scientists and LIENSs-CNRS La Rochelle University in France. Pre-clinical and clinical studies support Pep2Dia's action to reduce postprandial glycaemia with a significant effect versus the placebo.

Diabetes – a world public health concern

Today, more than 350 million people around the world live with high blood sugar glucose. In 5–10 years, if nothing is done, the people with prediabetes – who have a higher-than-normal glycaemia in the morning, fasting – will become diabetic. Everywhere, diabetes is on the rise and it affects 8.5% of the adult population.

Diabetes leads to adverse effects on health, and in the long run can affect eyes, kidneys, feet and cause heart conditions or stroke. This chronic disease is one of the causes of premature mortality, but type 2 diabetes can be avoided because prediabetes is reversible, and Pep2Dia can help people achieve this. ●

For further information

www.ingredia.com

A woman with dark hair, wearing a white tank top, is shown in profile with her arms outstretched and head tilted back, looking up towards the sky. She is outdoors with green foliage in the background. A red circular logo with the word "Lactium" in white is positioned above her head. A red line connects the logo to the text "Inner peace Outer strength" below her.

Lactium

Inner peace
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Beyond the gym

Whey has risen from being a niche product used in sports and nutrition supplements to a favourite among general food manufacturers. Will Moffitt speaks to **Fraser Tooley**, president of the European Whey Processors Association (EWPA), to discuss the myriad uses of whey, its change in public perception, and how a renewed focus on the environment and sustainability is changing the industry.

It was David Jenkins, a Scottish track and field athlete and silver medallist at the Munich Olympics, who created the first carbonated protein drink. Crafted in his garage in Carlsbad, California, Jenkins's product was a 'recovery optimiser' for athletes called Pro Optibol. It first appeared in health food stores in California and Hawaii in 1988, finding popularity among cyclists, distance runners and triathletes.

What most consumers didn't know at the time was that the drink was made with whey, the watery residue left over from cheese curdling. In post-Second World War US, whey was largely seen as a nuisance, driving cheese factories in dairy states to dump thousands of litres of the stuff in nearby rivers.

Gradually, fitness experts and nutritionists started to wake up to the value of this high-protein substance, with modern ultrafiltration techniques concentrating the whey into a digestible form. The result was whey protein concentrate, a blend of 80% protein and 20% carbohydrates, minerals, vitamins, lactose and fats.

Using microfiltration processes to separate components at a molecular level, Jenkins took this a step further, crafting a 90% lean protein supplement known as whey protein isolate (WPI). These days, WPI is a staple product in most protein supplements, fuelling a market that is forecast to reach \$14.5 billion by 2023.

For Fraser Tooley, president of the European Whey Processors Association (EWPA), it is hard to tell how influential the industry has been in promoting whey's image as a nutrition and lifestyle enhancer.

"It's difficult to ascertain whether the increase in protein consumption is due to promotional activities and product availability in the whey sector," he says, "or [whether] it's a cultural thing. The reality is always somewhere in the middle, but we've seen growing consumer interest in protein in the past few years."

This has been enhanced by more awareness around general nutrition and an increasing push from manufacturers to endorse the nutritional benefits in

their products. He points to the Nutri Score system – a labelling method that uses colour codes to show the nutritional value of food products that is spreading throughout Europe.

As plus points are for protein and fibre, and negative points are for salt, sugar and polyunsaturates, it's unsurprising that a lot of the dairy products score very well – whey being one of them.

Put it to use

While the sports nutrition aspect continues to be lucrative, it's whey's usage in a wider range of products and ingredients that has caught popular attention. It was listed in food industry reporter Datassential's list of trends to watch in 2018, an accolade fuelled by its inclusion in premium and artisan food products, restaurant menus and supermarket items.

For Tooley, the traditional avenues of sports nutrition and supplementation are broadening into other sectors. A more general demand for high-protein products and a growing concern for individual health have urged manufacturers to create alternatives to traditionally unhealthy snacks.

"People are saying 'I want to eat something and indulge. But wouldn't it be great if I had an extra bang for my buck,'" he says. "We are seeing high-protein ice creams, high-protein yogurts, quarks. Consumers are demanding protein and that is only going to continue."

Wheyhey is a sugar-free ice cream made from WPI that 'celebrates living outrageously well'. The company was founded in 2013, fashioning itself as a niche product for health-savvy consumers. Since then it has garnered mainstream appeal, lining supermarket shelves in UK branches of Tesco and Sainsbury's.

These days, mainstream names are following in the footsteps of niche-oriented brands, taking advantage of whey's appeal. Even the Mars Company, long associated with high-fat, high-sugar excess, has capitalised on the trend, creating high-protein versions of the traditional mars and snickers bars.

While this general lifestyle and nutrition sector continues to grow, another key area of focus has been refining infant formula to mimic the composition of mother's milk. Valued at \$56 billion in 2017, the market is expected to reach \$95 billion by 2026, and it is a product that is constantly being updated.

The next step

When it comes to infant formula and whey products in general, the growth of the 'clean label 2.0 phase' is having a significant effect, with consumers demanding greater transparency from suppliers, scrutinising the contents of these products more closely.

Tooley cites how consumers in China can now go into webcam discussions with farmers about the particular contents of mother's milk, asking detailed

questions about the processes involved before using Google maps to pinpoint where the product came from.

"It's about giving the consumer the assurance that these products are being produced in a very ethical way," he says, "whether that's [in relation to] animal welfare or environmental concerns. Some years ago, there was a bit of lip service to this, but it's now a major part of everything we do and it's part of the way we sell our products."

This has coincided with a move towards more eco-friendly farming methods, with farms in the Netherlands leading the way by encouraging and rewarding more environmentally friendly processes.

"Dairy has its issues around greenhouse gases" he says, "so a lot of work is going on at a farm level to address that. If you look at the Dutch situation there are lots of green initiatives, from solar panels through to biodiversity and genetics and reducing carbon footprint efficiency in the supply chain."

Bill of health

The changing face of medical nutrition is another area that provides an opportunity for product development in the whey sector, as advances in supplements and increasing strains on public health services have led to more self-administered treatments. For elderly patients suffering from degenerative muscle disorders, whey supplements could be invaluable.

"We know that as people get older their muscle mass declines," Tooley says. "They can get sarcopenia and that's associated with a lot of other negative health effects. We can combat that with high-quality proteins, and as the world population ages there will be growing demand for that type of product."

Despite this hunger for protein, the misconception that whey is a waste product still prevails in some quarters. For Tooley, a way of confronting this is by sticking to the nutritional facts, keeping consumers informed of whey's nutritional qualities. This has not necessarily been achieved through industry efforts, but rather individual companies promoting their products.

"As an industry, we've never been very good at doing things collectively," he says, "and part of the reason for that is that there are a lot of players and it's very fragmented. If you were to look at an equivalent like the plant protein industry, it's much more concentrated, with larger players. So it's easier to gather and motivate people to cooperate."

For the EWPA, promoting greater understanding around whey and its values is a crucial goal and something partly based on developing a more honest and transparent relationship with consumers.

As Tooley says, "We need to get the facts out there. And to do that we need to be collective to pull resources, otherwise, it's just going to be a fragmented picture again." ●

90g

The average person in the US gets a lot of protein a day.

85g

The average European is not far behind in daily protein.

75g

The average Chinese person consumes the least of this group.

UN Food and Agriculture Organisation



HEXAGON NUTRITION

Nutritionally Yours.....



Hexagon Nutrition revolves around the concept of nutrition offering fortification solutions to help address issues such as malnutrition and increase the intake of micronutrients to match the Recommended Dietary Allowance (RDA).

We are a pioneer in the field of vitamin – mineral premixes offering customized solutions to our clients spread across the dairy, oils & fats, beverages, flour and noodle applications in over 70 countries.

www.hexagonnutrition.com

Fortify food and beverages

Since 1991, **Hexagon Nutrition** has dedicated itself to offering innovative solutions that tackle the major issue of malnutrition prevalent across the globe, with a presence in over 70 countries. Its micronutrient premix business focuses on the needs of governments, multinational food manufacturers and international NGOs to fortify basic foods with the right blend of micronutrients to meet the needs of the masses.

Premixes are a blend of vitamins and minerals that could be used to fortify food and beverages that have lost their native nutrients during the refining process. Food fortification or enrichment is the process of adding micronutrients (essential trace elements and vitamins). Fortification helps meet a part of our daily recommended intake of micronutrients.

Fortification can be implemented in virtually all types of food that include – but are not limited to – dairy, rice, flour, oils and fats, and beverages.

Dairy and added micronutrients

Milk is naturally rich in vitamins A and D, but loses these micronutrients due to harsh processing techniques such as pasteurisation, homogenisation and toning. Milk – along with value-added dairy products (VADPs) such as flavoured milk, yogurts, ice creams, butter and cheese – can be fortified with various micronutrients. The micronutrient blends (premix) can be directly added in the liquid milk and homogenised thoroughly to ensure proper dispersion. Common micronutrients in milk are vitamins A, D and E, and the minerals calcium and phosphorus.

Flour fortification

Wheat flour is consumed in a range of forms that includes breads, biscuits, pastas, cakes, wafers and extruded products such as noodles. Fortification of this staple offers a great deal to consumers, satisfying caloric requirements as well as alleviating the problem of hidden hunger. The fortification of wheat flour is also a cost-effective tool for reducing micronutrient deficiencies and prevent birth defects, such as neural tube defects, which occur due to folic acid deficiency. It can also



Wheat flour fortification is a cost-effective tool for reducing the incidence of micronutrient deficiencies.

potentially reduce the incidence of iron deficiency and iron deficiency anaemia. Common micronutrients in flour are vitamins B9 and B12, and the mineral iron. Further optional micronutrients that can be introduced to the product are zinc, vitamin A, thiamine, riboflavin, niacin and pyridoxine.

Oils and fats

Fortifying oil with vitamins A, D, E and K is an excellent strategy to combat deficiencies and their after-effects. Most other applications, such as margarine and bakery shortenings, could also be fortified with fat-soluble vitamins like vitamins A, D, E and K. While other vitamins are equally important, the global deficiency rates of vitamin D is significantly high. Vitamin D plays a major role in decreasing the risk factors for chronic diseases like certain common cancers and autoimmune disorders. Vitamins A, D, E and K are fat soluble, making oil an excellent carrier of these vitamins.

Beverages and their opportunities

Beverages are one of the most desirable mediums that can carry micronutrients

and also counter vitamin deficiencies. There is a wide range of beverage categories that could be fortified – fruit juices, fruit nectars, vegetable juices, enhanced water, aerated drinks, energy drinks and sports drinks, to list just a few examples. Beverages are being fortified to target specific conditions such as bone and joint health, brain development and cardiac health by enriching the product with nutrients that have been demonstrated to address specific conditions. Common micronutrients in beverages include powdered forms of vitamins A and D, and vitamin C and B complex. Beverages also frequently include minerals like zinc, magnesium, selenium and calcium

Hexagon Nutrition's micronutrient premixes are also used to fortify rice, noodles and seasonings, confectionery products, gummy bears, dietary supplements, cereals, jams, oat bars, protein bars and animal feed, among other application areas. ●

For further information

www.hexagonnutrition.com



Lonza

UC-II® UNDENATURED TYPE-II COLLAGEN

MOVING WITH THE TIMES™



UC-II® UNDENATURED TYPE II COLLAGEN

UNIQUE MODE OF ACTION

The UC-II® ingredient has been clinically proven to stimulate cell-signaling cascades, which triggers the natural repair mechanisms in the joint and contributes to the formulation of new cartilage⁽¹⁾.

A study⁽²⁾ has demonstrated that UC-II® undenatured type II collagen can improve the wellbeing, mobility and joint flexibility of people with osteoarthritis, and was found to be statistically more effective than a combination of glucosamine and chondroitin, according to the West Ontario and McMaster Universities Osteoarthritis Index (WOMAC).



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TYPE II COLLAGEN

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For more information, please contact us at UC-II@lonza.com

Move with the times

Dominik Mattern, associate director of business development, consumer health and nutrition at **Lonza**, explains how, as demand for joint health products continues to increase, the unique mode of action of UC-II undenatured type II collagen, in addition to the formulation potential of the Licaps liquid-filled capsules, offers supplement brands new opportunities to drive innovation and ensure products stand out from the crowd.

A holistic approach to supporting health has become increasingly prevalent in recent years, and consumers of all ages understand how different lifestyle choices – such as diet – can impact on physical and mental well-being. Joint health is a category that continues to evolve, with maintaining mobility a key consideration across generations. At the same time, food supplements are an increasingly popular and convenient way to achieve multiple health benefits and support ageing well. Indeed, a survey of supplement users commissioned by Lonza and conducted by the Natural Marketing Institute (NMI) in Germany, Italy and France found that 76% of Boomers and 69% of Gen X would consider purchasing a joint health product.

UC-II – an ingredient backed by science

Consumers are putting pressure on manufacturers to develop effective, safe and innovative joint health supplements with ingredients backed by strong scientific evidence. UC-II undenatured type II collagen is one such ingredient. A clinical study has shown it can significantly improve joint function, mobility and flexibility in healthy subjects.

“Consumers are putting pressure on manufacturers to develop effective, safe and innovative joint health supplements with ingredients backed by strong scientific evidence. UC-II undenatured type II collagen is one such ingredient.”

The unique mechanism of action of the UC-II ingredient is based on a type of immune response towards collagen within the joint. Following ingestion, the intact type II collagen reaches specialised



Manufacturers are creating innovative supplements for the joint-care market.

lymphoid follicles found in portions of the small intestine. Once the UC-II undenatured type II collagen makes contact with these areas, known as Peyer's Patches, it starts interacting with a special class of cell that goes on to produce several regulatory molecules that are transported by the body to the joint. Known as cytokines, these regulatory molecules induce joint resident chondrocytes to begin producing more type II collagen and other constituents that make up the structural matrix of the joint. Ultimately, this maintains the viscoelastic and compressive properties within cartilage, and offers support in maintaining healthier joints for longer.

Deliver product differentiation

The performance and consumer appeal of the UC-II undenatured type II collagen can be further optimised through the choice of dosage format. Capsules are the preferred

dosage form for the UC-II ingredient, as they enable the safe and secure containment of the undenatured type II collagen – in addition to being easier for consumers to swallow. For example, Lonza's next-generation Capsugel Vcaps Plus capsules enable the formulation of the small 40mg required dose of the UC-II ingredient in a tiny, convenient, fast-dissolving capsule.

Through the combined technology of Lonza's UC-II undenatured type II collagen with other trending ingredients in the joint health space, new opportunities are also created to differentiate products. Vitamins C and D, for example, can be delivered alongside the UC-II ingredient in Lonza's Vcaps Plus capsules to meet EFSA health claims on joint health. Closely aligned to joint health is bone health, and combining Lonza's UC-II ingredient with vitamin K2, via Lonza's Capsugel Licaps liquid-filled vegetarian capsules, can also help to achieve a novel, synergistic bone and joint health product with high efficacy. This ultimately helps to achieve a turnkey solution that addresses the concerns of active consumers looking to maintain mobility as they age. ●

For further information

www.lonza.com

Red dawn

Natural astaxanthin is one of the fastest-growing super ingredients, yet educating the market about the many benefits the carotenoid has to offer remains a challenge. Christian Doherty talks to **Scott Steinfeld**, CEO of the Natural Algae Astaxanthin Association (NAXA), about making the breakthrough into the mainstream.

Wonder ingredients have a long history. From fenugreek for weight loss to witch hazel for anti-ageing, scientists, botanists, engineers (and not a few cranks) have all hailed their latest discovery as the missing ingredient that will deliver unrivalled health benefits, help with weight loss and restore youthful vigour.

In recent years, carotenoids have led the way. These antioxidants have been shown to help with a range of conditions from eye health to cellular damage. And that is not to mention their ability to convert to vitamins. Indeed, considerable research now shows that many of the non-vitamin A carotenoids exhibit an even greater range of health benefits, from lycopene (found in tomatoes and watermelon), and lutein and zeaxanthin (peppers, squash and corn).

However, the most beneficial carotenoid of them all – recently dubbed the ‘King of Carotenoids’ – is astaxanthin. As the pigment that helps give certain animals their distinctive red colouring, astaxanthin has in the past five years risen to become one of the fastest-growing super ingredients.

It is hardly surprising that many producers and consumers in search of a new superfood are excited by the properties and potential benefits – compared with other carotenoids, astaxanthin is more than 50 times more powerful than beta-carotene.

Nature’s bounty

In terms of its occurrence in nature, seafood is the most common source of astaxanthin, with wild Pacific sockeye salmon top of the league for concentration (incidentally, given that they produce

400% higher levels of astaxanthin than their farm-raised counterparts, 'wild' is the key here).

However, animals don't produce astaxanthin alone but derive it from the food they eat, principally microalgae, which grow in the saltwater oceans as well as fresh bodies of water.

According to the Natural Algae Astaxanthin Association (NAXA), compared with all the other sources, *Haematococcus pluvialis*, a freshwater algae, is the richest source of astaxanthin in nature. It can also accumulate up to 50g of astaxanthin per kilogram of dry biomass under environmental stress, such as elevated temperature or UV exposure.

However, so far, the ingredient has yet to make the breakthrough into widespread mainstream consciousness, despite its clear benefits. And Scott Steinfeld, chief executive of NAXA, admits that the formidable task of educating the market as to the many benefits natural astaxanthin offers is a challenge.

But, he says, the current gap in understanding around the ingredient also represents the biggest single opportunity.

"The fact is that the awareness of astaxanthin is just not at a level to be truly beneficial to the people who can benefit from it," he says. "And that leads to two things – it is both an immense opportunity, and an immense canvas of space to try and contribute to this education. As a result, it becomes almost mind-boggling to try and develop a targeted strategy."

Raise the profile

So how does NAXA intend to boost the profile and understanding of astaxanthin?

"Well, it mainly focuses on the fact that natural astaxanthin has many clinically studied benefits, and while trying to summarise those is a challenge, we try to focus on key areas with the most science," says Steinfeld.

To that end, NAXA is engaged in a coordinated campaign to educate consumers and producers of the many benefits of astaxanthin.

"What we are trying to do is work through our brand manufacturers that carry astaxanthin to try and promote the awareness of it," Steinfeld explains. "We are also going to try and expand to achieve a little bit more direct-to-consumer education as well. That gets expansive and expensive, so from that standpoint we're going to do the best we can."

And that's not all. Steinfeld is also keen to point out that alongside the education efforts, there remains another important issue to address.

"It is crucially important that we make sure that producers and consumers understand the difference between natural algae astaxanthin – which is a significant and clinically proven ingredient – and synthetic astaxanthin," he says.



NAXA is now firmly engaged in showing the differences, in large part by working with clinicians and brand holders to help others to understand the difference. Alongside that, NAXA's efforts to establish astaxanthin as a mainstream ingredient have centred around labelling, where the acknowledgment by the marketplace that adulteration or mislabelling of astaxanthin-derived *Haematococcus pluvialis* will be discovered and not allowed has been, Steinfeld argues, a critical breakthrough.

Astaxanthin is the pigment that helps give certain animals their distinctive red colouring.

"What we are trying to do is work through our brand manufacturers that carry astaxanthin to try and promote the awareness of it. We are also going to try and expand to achieve a little bit more direct-to-consumer education as well."

"Two years ago there were some brands mislabelling natural astaxanthin derived from *Haematococcus pluvialis*," he says. "NAXA discovered those brands and worked with the brands to correct the situation. In our most recent round of testing this adulteration and mislabelling wasn't found."

Get the message right

However, Steinfeld believes it is clear that more needs to be done to understand precisely how best to identify and exploit the opportunities for astaxanthin. He reports that while NAXA has conducted some market research to determine more where the opportunity exists, it has yet to fully formulate what precise message resonates best for consumers. ▶

2,000%

The amount natural astaxanthin is more effective at eliminating free radicals than synthetic astaxanthin.

Nutrafoods

Supplements & functional ingredients



Seafood is the most common source of astaxanthin, with wild Pacific sockeye salmon offering the highest concentration of the carotenoid.

“We do need to do more of that to discover which specific target to message,” he concedes. “Claims in efficacy seem to be based on what we have heard back from the brand holders – messaging that we have most in our arsenal. Also, an element of astaxanthin – of natural algae astaxanthin specifically – that is unique to the ingredient, is that it is one of the very few ingredients that pass through the blood-brain barrier.”

And, considering the demographic changes that are happening across the world, particularly in the more developed world, where cognitive impairments and dementia are much more acknowledged and feared, there exists a huge potential market segment waiting to be tapped.

“It is crucially important that we make sure that producers and consumers understand the difference between natural algae astaxanthin – which is a significant and clinically proven ingredient – and synthetic astaxanthin.”

It is that fact that excites many keen to push astaxanthin’s greater adoption. “It is certainly an important aspect,” Steinford says. “And it is one that we are going to focus on at least initially, because we do believe that it provides some significant benefit opportunities that don’t exist in other ingredients. We recognise the growth of that category and believe that it is most important and valued as a benefit to consumers.”

Hit the target

Steinford hopes to build on success already achieved – according to NAXA, over the past five years the marketplace for natural astaxanthin has developed, with greater trust of supply and quality, while growing in popularity and awareness. The appreciation and usage of natural astaxanthin continues to increase, as demonstrated by the number of products using the ingredient, as well as the increased indications and dosing.

However, there are precedents that do cause some concern. How to market such a beneficial ingredient without selling it as a panacea? It is a danger Steinford recognises.

“All we can really control is what we say, and that is the advantage of an association – it becomes more of a focused message based on several members’ input, not just a variety of brand holders making their own claims,” he says. “So the power of our membership is going to allow us to deliver that message in a much more targeted way.

“Now second to that, yes, the opportunity and threat with astaxanthin as an ingredient is that it does contribute significantly to many areas of benefit, and it is easy to get wrapped up in all of the various opportunities where education advancement exists, but in reality you do need to focus. The real problem is that it confuses the consumer. That was something I learned in the other ingredients I have dealt with is that if you do go too broad, it lends itself to confusion and more stifling of the messaging.”

Next steps

So what of the future? Steinford is measured in his assessment of what will be achieved in the next 12 months.

“I think we will be having a similar conversation in saying that we still have a long way to go in terms of achieving consumer awareness of the ingredient itself,” he reflects. And, despite the recent growth in awareness, the CEO is sanguine about establishing astaxanthin over the long term.

“I’ve been involved with other ingredients for 20 years and there is a significant runway of opportunity for astaxanthin to grow and develop. There have been too many ingredients developed right through in a very quick fashion – think weight loss or similar categories such as that – and they don’t have the sustainability that a product like astaxanthin has with its multiple benefits and it being scientifically proven as well as having realised expectations.”

Simply put, NAXA is well aware that the sustainable success of the ingredient will take some time and resources.

“That’s another advantage of the association and unfortunately or fortunately, depending on how you look at it, science is shared once it is out there, and the impetus to develop new science comes from the standpoint of benefitting others,” Steinford reflects.

“So sharing the science – from an association standpoint – makes more sense because there is also a shared cost and that is another element that we are looking to achieve. We are very hopeful that the next few years will prove to be enormously successful for this remarkable ingredient.” ●

400%

The amount of the higher levels of astaxanthin in wild Pacific sockeye salmon compared to their farm-raised counterparts.

Marine Drugs

Algal oils – a cleaner, sustainable alternative

As demand for omega-3 rich supplements continues to grow, **Progress Biotech** has created a range of algal oils that provide consumers with a cleaner and sustainable alternative to traditional fish oils. Jaap Peters, CEO and founder of the company, discusses the merits of this innovative approach.

Since the 1970s, when Danish researchers Hans Olaf Bang and John Dyerberg published studies connecting the low rate of heart disease among Inuit residents in Greenland to their oily diets, fish oil supplements have become a major health supplement.

Even so, these products have their drawbacks. Most krill and cod liver oil supplements are strongly flavoured and not suitable for vegetarians and vegans. Dutch company Progress Biotech has addressed this problem by extracting the omega-3 fatty acid Docosahexaenoic acid (DHA) from algae, producing a flavourless, colourless and vegan-certified alternative to rival fish oils.

DHA makes up the highest proportion of omega-3 in the brain and retina. The European Food Safety Authority (EFSA) recognises the role of DHA in contributing to normal brain function and vision, recommending a daily dose of 250mg.

“Algal oil production is an obvious way to bring a new type of plant-based omega-3 product to the market, ensuring that customers get a high-quality and ultra-clean product.”

Through its innovative extraction practices, Progress Biotech produces algal oil from the species *Schizochytrium*, without using any solvents. The oil is then refined and concentrated according to EU standards. This method results in a pure, very stable oil, rich in DHA, which is available in a range of concentrates of 40–80% DHA.

The search for sustainability

For Jaap Peters, founder and CEO of Progress Biotech, the decision to move towards algal oils was triggered by a more sustainable approach to food. “These days,



Progress Biotech's move towards algal oils was triggered by a more sustainable approach to food.

we need to be careful what we do and what we eat,” he says. This move was spurred by two main factors – an awareness of the decreasing volume of fish in the ocean and a sense that completely clean fish are hard to come by.

“We have taken that requirement for fish oils,” he says, “and asked, ‘can we find a different way to make these fatty acids without using fish waste as a source’.”

Speaking of the various clean standard organisations in the fish oil market, Peters is sceptical as to whether fish can ever be fully classed as 100% clean.

“Even if you know where fish are caught, you can not be sure where the fish has been or what it has been feeding on,” he says. Contaminants and pollutants accumulate in the food chain and will remain present in the fish oil.

The greater awareness of how fish and marine organisms are contaminated is supported by evidence from increasingly sophisticated analysis techniques. Many of the chemicals accumulated in the food chain of the fish are very persistent and should be avoided.

“For Progress Biotech,” says Peters, “algal oil production is an obvious way to bring a new type of plant-based omega-3 product to the market, ensuring that customers get a high-quality and ultra-clean product.”

“It is the ideal alternative to fish oils – it’s much cleaner,” he continues. “We can trace the produce all the way back to the first cultivation. We grow it in stainless steel tanks instead of open ponds. So we meet all the highest standards of nutrition.”

Progress Biotech's founder is quick to clarify that algal oils aren't just for vegans; rather, they satisfy a more widespread approach towards conscious eating. “Lots of people are debating the carbon footprint that is associated with meat,” he says.

The commercial opportunities that come with developing a more palatable product are also an exciting factor for Peters, and look set to shape his company's future aspirations for years to come.

“The oil has no flavour or odour,” he says. “This opens new possibilities for product development in food bars, nutritional products, yogurts, drinks and so on. You can make powders with it, you can combine it in infant formula and follow on milk. There are lots of possibilities.” ●

For further information

www.progressbiotech.com

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C₃ Complex®, Guggul,
Black Cumin, Capsaicin,



DigeZyme®, ElimReal®,
Prebiotic fibers, DGL,
LactoSpore® probiotic,
Black cumin, Ginger,

Satiereal®, Fucoxanthin,
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becarre
the natural sign

Radiant skin and less stress

Becarre Natural is a centralised sales and marketing organisation for selected manufacturers of plants extracts, providing natural products supported by studies. GliSODin, a natural antioxidant distributed by the company, fights against oxidative stress and free radicals. This orally administered superoxide dismutase imbues the skin and immune system with a range of health benefits, and could improve cognitive function.

With its enhanced, proven bioefficacy, GliSODin – one of the most powerful antioxidants – better prepares skin for the sun's rays, fighting against its damage and boosting the effects of sun creams, alongside its actions against all other facets of ageing.

Several ways of improving the bioavailability of exogenous superoxide dismutase (SOD) have been tested, from the extra protection provided by coating to complexation systems. Developed and supplied by Isocell, and marketed in Europe by Becarre Natural, GliSODin is an SOD melon extract processed into a specific matrix of gliadin. It not only offers enteric protection, but also acts as a real SOD vehicle or conveyer due to its specific bioadhesive properties, which work with the epithelial cells of the small intestine – the place where SOD must be assimilated to be effective. Its bioavailability and bioefficacy have been proved in published clinical studies.

The oral way

GliSODin – the bioavailable SOD – can be included in all formulations, from tablets to capsules and drinks. Studies have shown the positive effects that orally administered GliSODin has on skin – sun protection, oxidative stress and anti-ageing – cardiovascular health and the immune system, in addition to its other related properties. The properties of oral GliSODin are supported by more than 25 clinical studies, which are often used as a point of reference.

Safeguard against the sun

GliSODin acts as a shield against oxidative stress by preparing the body to protect against UV attacks.

In addition to the cellular antioxidant protection demonstrated repeatedly, a double-blind study showed that supplementation with GliSODin reduces the intensity and duration of skin redness for fair, healthy skin that has been exposed to UV radiation. GliSODin significantly increased the minimal erythema dose, thus properly preparing the skin for sun exposure while improving tan speed and quality.

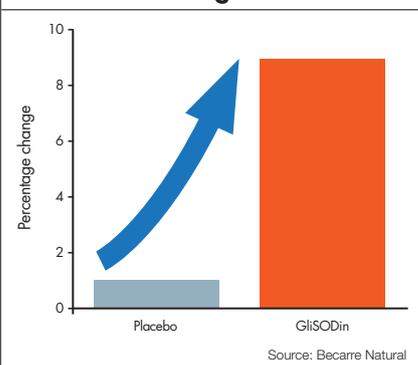
Another open clinical study was performed on 150 photosensitive subjects who were supplemented with GliSODin, in combination with a regular application of sunscreen during the summer period. It found that 73% reported the synergy between sun cream and GliSODin prevented the appearance of solar allergies (benign summer lucites).

More recently, a clinical study showed that the GliSODin formula significantly reduced hyperpigmentation (-25%) and pigment macules (-14%) caused by the sun after 90 days of supplementation. It has also been proposed for GliSODin to help fight against the adverse effects of radiotherapy – and there are studies to demonstrate its benefits after skin surgery.

Cell protection

GliSODin protects the cells against the negative effects of oxidative stress by remaining active in the intestinal passage by engaging the internal system

UV radiation required to induce burning



of antioxidant enzyme defences and limiting cell death, which results from oxidative stress.

Metabolic syndrome

GliSODin has also shown its beneficial effects in an in vivo study that used ultrasound imaging for the analysis of the intima-media thickness (IMT) of the carotid artery. A number of studies have highlighted the relationship between carotid IMT and the presence and severity of atherosclerosis – a major risk factor for cardiovascular disease. Complex SOD allowed a reduction in the progression of IMT, as well as lipid oxidation decrease.

Cognitive effects

GliSODin could also reduce the loss of cognitive function linked to stress, according to a published animal study from Japan, which showed lower levels of oxidative stress and better performances in maze memory. ●

For further information

www.becarre-natural.com

Alcohol-free liquid herbal formulas

While global interest in health supplements is increasing, the widespread inclusion of ingredients deemed impermissible for children and adults with specific dietary restrictions has served to exclude many people from participating in this new trend. Kevin Remington, president and chief operating officer at **Cedar Bear Naturales**, discusses how the company's TincTract process delivers alcohol-free liquid herbal formulas suitable for people of all ages and faiths.

What makes Cedar Bear different to other liquid herbal formula suppliers?

Kevin Remington: Cedar Bear has achieved many 'firsts' in the herbal products industry. We were the first to introduce good-tasting liquid herbs to the marketplace as well as full lines of liquid herbal 'formula' blends for adults, children and pets. Cedar Bear was also the first liquid herbal products company to be kosher-certified (Scroll-K) and approved for Passover manufacturing by OU Kosher, and for quality control (QC) standards manufacturing before there was an FDA cGMP regulatory standard.

"We use glycerin as our extraction medium because it grants us access to the beneficial constituents of the hundreds of different herbs we include in our formulas, separating the beneficial elements from the outer husk without damaging them."

Can you tell us more about Cedar Bear's TincTract technology?

We developed our revolutionary TincTract technology at Cedar Bear with the intention of making alcohol-free liquid herbs, using the Pureodine process for making its mono-element triiodide glycerite of nascent iodine product. We've been using the TincTract process since 1982; it's now in its 10th generation of trade-secret enhancements and improvements.

We use glycerin as our extraction medium because it grants us access to the beneficial constituents of the hundreds of different herbs we include in our formulas, separating the beneficial elements from the outer husk without damaging them. After

all, our customer's well-being is our first priority. Ultimately, we want to give the public an alternative to other supplements on the market. It is with that principle in mind that we offer 100% alcohol-free dietary supplements made from glycerin.

What are the advantages of glycerin as an ingredient in liquid dietary supplements over and above alcohol?

Firstly, no alcohol – which possesses denaturing and inert-rendering properties – is ever used in the making of a TincTract-made product. This means that when we say our products are alcohol-free, that is

exactly what they are. This is very important for people who cannot or will not consume anything alcohol has come into contact with, such as those individuals living in accordance with Islamic dietary laws. The TincTract process is a multistep, serialised technology that uses different steps for removing different components from an herb. The 'cold' step, for instance, does not go above 100°F, thus preserving the heat-sensitive components of the herbs being used. A TincTract-made herbal product also possesses the aseptic quality of not needing to be refrigerated after opening, especially considering that no added preservatives are used in our range – and TincTract-made products taste remarkably good.

What certification do your liquid dietary supplements enjoy?

In addition to being kosher-certified and FDA cGMP-inspected, our QC documentation and continual follow-through is extensive and extremely detailed. Our QC staff are well trained, and part of their job description requires they seek continuing education and training in QC methodologies and protocols, as well as the latest issues regarding FDA cGMP policy.

How can other companies use Cedar Bear to offer their customers something new?

Cedar Bear offers all our products to our customers as a private, white label opportunity. We can also create custom herbal formulas that will allow them to put an exclusive formula on the market. Cedar Bear Naturales has been on the forefront of creating innovative products and formulas in the dietary supplement industry for the past 20 years. We created the first formula line dedicated to children, and for pets and horses. Cedar Bear Naturales also created the first glycerite of pure nascent iodine and our iodine continues to have a strong market presence. Cedar Bear can show its customers what we can do for them and their customers by offering the original glycerite herbal dietary supplement. We place our creative power and knowledge at our customers disposal to help them design and bring great-tasting herbal supplements into the hands of their own customers. ●

For further information

www.cedarbear.com



Private Label Liquid Herbal Supplements

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- ✓ Use Cedar Bear™ as an Ingredient to Enhance Your Own Products
- ✓ Provide Your Business With High Quality Private Labeling Solutions

Cedar Bear™ offers high quality private label herbal supplements to help you grow your business. We were the first to create a private label herbal supplement that:

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Inside the power plant

US-based non-profit the Good Food Institute is at the forefront of efforts to turn the public at large on to sustainable, plant-based alternatives to meat. *Ingredients Insight* talks to CEO **Bruce Friedrich** about challenging preconceptions, engaging with the mainstream food industry, and why 2018 was a landmark year for sustainable protein.

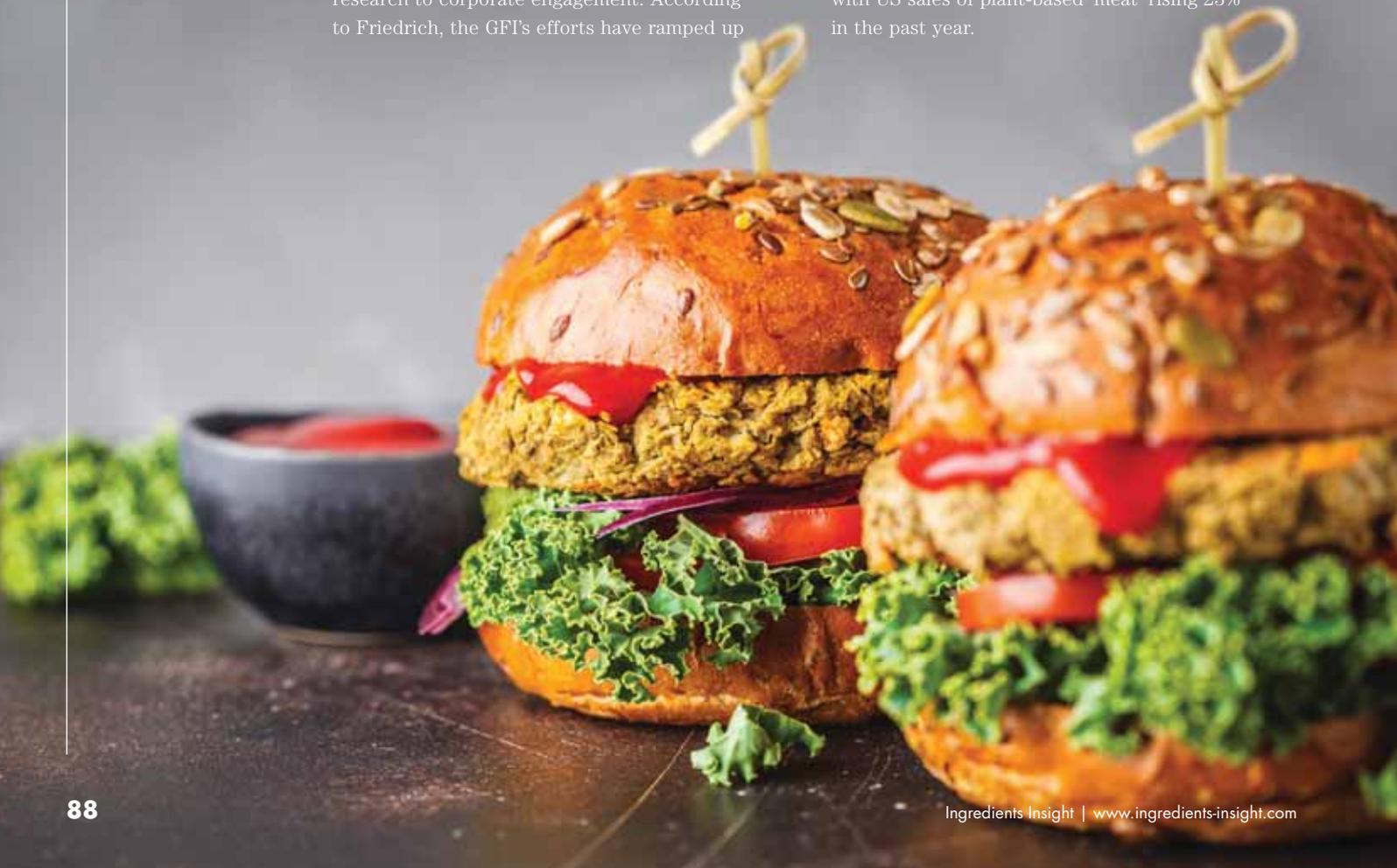
As CEO of the Good Food Institute (GFI), Bruce Friedrich is one of the most influential advocates of plant-based foods. Since 2015, when the former head of campaigns at PETA founded the institute with \$540,000 from Mercy for Animals, (with support from former GE CEO Jack Welch and his wife), the GFI has become a leading voice in the effort to drive the public away from animal meat to a more sustainable alternative.

The institute's 65 employees work across a range of departments, from lobbying and scientific research to corporate engagement. According to Friedrich, the GFI's efforts have ramped up

recently as the market for plant-based foods continue to grow.

Indeed, Friedrich describes 2018 as a landmark year for sustainable protein. Sales of meat alternatives rose by 22% last year, and 18% the year before, according to Euromonitor International.

With the addition of natural-channel sales data, the total plant-based alternative retail market is worth over \$4.1 billion – and a closer look at the recent GFI research shows that the total plant-based 'meat' category is worth over \$767 million, with US sales of plant-based 'meat' rising 23% in the past year.



Carrot not stick

That trend reflects Friedrich's belief that trying to shame people into quitting meat and turning to vegetarianism or veganism was a strategy doomed from the start. "We need to change the meat, because we aren't going to change human nature," he recently said to *The New York Times*. Instead, the GFI now works with willing partners to invest in the technology and science to develop plant-based products for a mass market.

So far, plant-based 'meat' companies have had the most success, but the Good Food Institute is also putting significant resources into helping companies that want to grow meat cells in labs.

In partnership with its collaborators, which include a range of university research departments and innovative start-ups, the institute remains committed to its mission to "Foster innovation, mentor start-ups, accelerate the science of sustainable protein, forge partnerships with big food corporations, and advocate for a level playing field through work in Congress and with regulatory agencies."

In practice, that means offering support to innovative companies, helping them with marketing, design, legal, business, media, and other support to a select number of early-stage companies producing clean and plant-based products. It also means underwriting (via grants) research into plant-based foods across the world. So far that has seen the GFI fund work in universities and institutes in the US and Europe as well as Israel and China.

Encouraging signs

So, how would Friedrich characterise the past 12 months in terms of the progress made in promoting the use of plant foods?

"It is not progress GFI has made specifically, but progress in promoting plant-based foods has been truly stunning in the past year," he says.

Plant-based foods are clearly the hot sector of the food industry today and only getting hotter.

"What else can you say about a market growing at 23% (plant-based 'meats') and often limited only by the ability to produce plant-based 'meat' products quickly enough?" he says. "Beyond Meat and Impossible are, basically, selling all they can produce – if they could produce more, they could sell more."

Given all that, Friedrich admits it is hard to choose a highlight from the recent successes.

"Our corporate engagement team has been working with so many companies and institutions that our monthly reports are filled with accomplishments that could be a highlight for an entire year," he says.

"But I think restaurants are often where the public first comes into contact with new food items,

so we do our best to encourage the biggest chains to add and feature plant-based entrées. A number of restaurants made big strides, jumping up in our Good Food Scorecard.

"Who would have expected that plant-based burgers would be huge sellers at White Castle, TGI Fridays, A&W and Carl Jr's? The stats of year-over-year growth at the retail level are also amazing."

Challenging the status quo

It is not all plain sailing, of course. The plant-based movement faces headwinds from a number of directions. The meat industry is a formidable presence that isn't going anywhere, meaning producers of plant-based foods face Friedrich an uphill struggle to market and position their products in a sector where 'real' food dominates.

Friedrich cites recent cases of beef and farming industry groups bringing pressure to bear in order to persuade legislators in more than a dozen states to introduce laws that would make it illegal to use the word 'meat' to describe burgers and sausages that are created from plant-based ingredients or are grown in labs.

"We face the ongoing problem of the general move by some to try to suspend the First Amendment and stifle innovation," Friedrich reflects, adding that much of the institute's advocacy work is focused on challenging preconceptions not just about animal meat (though that does form a part of its missions) but also on persuading the industry that there is a whole new raft of customers – and hence money to be made – out there in search of a healthier, more sustainable diet. So is the industry waking up to the new opportunities?

"There is no doubt about that – just look at the statistics in our Market Research and Restaurant Scorecard," Friedrich says. "Both Tyson (the largest meat producer in the US) and Nestlé (the largest

\$3.7 billion

The value of plant-based alternatives (to conventional animal foods) retail market.

GFI

'Meatballs' can be plant-based, satisfying a demand for alternatives to classic dishes.





Soybean 'meat' has become a popular alternative – though chicken products have also received lab-based developments in San Francisco.

food company in the world) have both announced they are getting involved the plant-based 'meat' business too. This comes after Tyson invested in plant-based-meat pioneer Beyond Meat.”

Friedrich sees the increased enthusiasm among 'traditional' food producers to invest in alternatives as a real benefit and something that should be encouraged in the same way as the fossil fuel energy sector is praised for investing in renewables.

“It was an open question of how the meat industry would react to the rise of plant-based 'meat' [and clean meat],” he says. “And although some elements are fighting this trend, overall, the food industry is embracing this move to producing 'meat' and dairy directly from plants.”

Friedrich points to the recent Carl Jr's Super Bowl ad that promoted the chain's new plant-based burger.

“When the wagon of change comes,” says the old cowboy (now embracing yoga), “you need to ride along with it.”

Enter the mainstream

“Plant-based 'meats' are making great strides far beyond the niche of vegetarians and health-conscious eaters,” says Friedrich. “Plant-based burgers and sausages are increasingly available at fast food chains and major sporting venues.

“It was only a few years ago that plant-based milks were a negligible portion of the market, relegated to a dusty corner of the local Co-op. Now they are 13% of the market and still growing. Plant-based 'meats' are well positioned to follow this same trajectory. Similarly, plant-based cheeses and yogurts are growing quickly as well.”

And there's little sign of the innovation running out of steam. Recent advancements have highlighted the progress being made by some of the sector's most forward-thinking companies.

Take JUST, a San Francisco-based manufacturer of plant-based alternatives, which recently

announced it had successfully produced a range of chicken products, lab grown from the cells of a chicken feather. And it plans to go beyond poultry into beef, having recently partnered with a wagyu beef producer, the Japanese company Toriyama, to create a lab-grown wagyu beef, but there's no release date for that just yet.

Work with the enemy

The GFI's work has seen it work with and endorse a diverse – and surprising – range of organisations. Far from treating legacy food retailers and producers as the enemy, Friedrich is among a newer wave of activists who believe that engaging with the bigger players – and not castigating them as pariahs – is far more likely to lead to greater progress.

Indeed, his time at PETA saw Friedrich graduate from demonstrating outside McDonald's restaurants (with fake Unhappy Meals, filled with bloodied plastic chickens) to negotiating with the company and praising it when it improved the living conditions of its egg-laying hens.

He is not alone in taking a more pragmatic, less dogmatic approach. Pat Brown of Impossible Foods spoke for many when he recently said, “All the education and all the awareness of the problem, and concern about the problem, doesn't solve the problem,” he said to *The New York Times*. “We just need to deliver the same value to consumers, but use better technology to produce it.”

Friedrich's is among many who are convinced that the direction of travel is slowly but decisively moving away from meat.

“People have little loyalty to meat per se,” Paul Graham, Silicon Valley investor and founder of Y Combinator, recently tweeted. “If you made something that was cheaper and tasted better, most carnivores would switch. Once that shift started, social pressure against eating meat would grow rapidly. It would seem, and in fact would be, perverse.

“Predictions about the future often turn out to be false, but I'm going to risk predicting a rapid switch away from meat at some point,” Graham said. “It is rocket-science hard, but no harder, and there is a huge amount of money to be made. Ergo it will happen.”

With that in mind, it is not surprising that Friedrich is optimistic that the gains made so far will continue into the next few years, where environmental, social and public health pressures will all combine to threaten the hegemony of 'real' meat.

And while the meat industry remains a behemoth in terms of its economic and lobbying power – particularly in the US – it is increasingly clear that the plant-based sector is where the real energy lies. ●

17%

Growth in sales of plant-based alternatives in 2018.

GFI

79%

Proportion of retail food stores selling plant-based 'meat' in the US.

GFI

Turn up your energy

Spanish natural ingredients innovator **Nektium** successfully launched its caffeine replacement ingredient Zynamite, a proprietary standardised extract of *Mangifera indica* leaves, during Vitafoods Europe in 2018. The natural, patent-pending innovation, containing the principal active compound mangiferin, has a remarkably similar mechanism of action to caffeine without the typical negative side effects such as jitters, nausea, anxiety or increased blood pressure.

The increasing concern about adverse reactions of caffeinated products prompted the FDA to issue a guide to US industries in April 2018, warning that products containing high concentrations of caffeine can present a significant or unreasonable risk of illness or injury, and are a significant public health threat.

Caffeine losing steam

Convergent results of Nektium's in vitro, ex vivo, in vivo studies, and five double-blind, randomised placebo-controlled clinical studies in collaboration with the University of Las Palmas de Gran Canaria,

Spain, and the Justus-Liebig-University in Giessen, Germany, demonstrated that Zynamite – a patent-pending proprietary mango leaf extract, ideal for boosting mental and physical energy – is a perfect match for sports performance and cognitive enhancing products. These studies showed that Zynamite is safe and effective, enhances mental activation and calculation performance, gives faster reaction time, reduces stress and fatigue, and enhances mean power output and peak power output during sports performance.

Nektium's R&D team, led by medical doctor and ethnobotanist

Dr Nigel Gericke, succeeded in their quest to find the perfect alternative for caffeine, anticipating likely future bans or limitations of caffeine ingredient usage. The fact that Zynamite was honoured with the Nutraingredients Sports Nutrition Award last year, and is again a nominated finalist in this year's competition in the Nutrition Research Project category, is testament that this popular innovation has a very promising and long-term future. ●

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From the underground to the open market

New regulations governing the sale and production of marijuana derivatives in California shed light on an interesting sector, which could rapidly grow across the US and, potentially, other global markets. Jim Banks speaks to **Chris Coggan**, CEO of Therapy Tonic, about how the world's view of CBD and THC is changing, and what the new regulations mean.

In late 2018, the US state of Michigan passed Proposition 1, making it the first Midwestern state to legalise marijuana. In doing so, it became the 10th US state to vote for legalisation of the drug for recreational use, while 33 endorse its use for medical purposes. The legalisation of both medical and recreational marijuana in the US is creating a market for its main derivatives – tetrahydrocannabinol (THC) and cannabidiol (CBD) – as ingredients in many food and beverage products, and it is a market with enormous potential.

“There is a great market here, though it is smaller than projected because of the regulatory landscape,” says Chris Coggan, CEO of California-based company Therapy Tonic. “It could be a \$5 billion market just in California, and across the whole of North America it could be worth \$30 billion.”

Therapy Tonic exists to create innovative and healthy alternatives to the traditional consumption of marijuana for medical and therapeutic purposes. Its products, which are usually used as additives to drinks, deliver a consistent and measurable dose of THC, which is the main psychoactive compound in cannabis. It has a range of medical applications including the treatment of conditions such as insomnia, glaucoma, nausea, pain, muscle spasticity and anxiety.

But wait, there's more

Coggan also runs Therapy Pure Essentials, which focuses on products containing the hemp derivative CBD, which has many similar applications, but which

is also used to treat seizures, inflammation, psychosis, migraines and depression. Unlike THC, CBD has no psychoactive effects. While both compounds have similar structures and bind with cannabinoid 1 receptors in the brain, CBD binds very weakly and can, in fact, interfere with the binding of THC and so reduce its psychoactive properties.

The creation of Therapy Tonics came from a sincere belief in the naturopathic properties of THC, which had long been used – illegally – by those seeking to relieve pain and pursue a healthier way to medicate many common ailments. Now that consumption of THC, in California at least, is not a clandestine activity, Coggan is keen to promote its benefits as an ingredient and to meet the needs of a rapidly growing market with high-quality products that deliver a known and measured dose of the compound.

“There are large demographics coming online as consumers, such as professional women between 26 and 45, and senior citizens. They have grown up with marijuana being demonised and there is a stigma around it still. My grandma will never smoke a joint. So, we have to help them control the dose for medical and recreational use, which is why we have developed additives for coffee. We sit at the cross section of three markets – the \$21 billion coffee market, the functional drinks market and the cannabis market,” he explains.

“Many people use our drinks like creamer in their coffee. The aim is not necessarily to get high. It is about relieving pain, taking the edge off, quelling anxiety and increasing focus. It is about finding the functional dose that makes your day better.”

A joint effort to regulate the market

The challenge of regulating a market that has previously operated illegally and in which the legal and controlled alternatives must compete, is a complex one. The transition from an underground market to a legal and transparent industry demands not only a clear and consistent set of rules to enable business to operate effectively, but also the management of public perceptions.

At the start of 2019, a new set of permanent California cannabis regulations came into force, replacing the emergency regulations that had been in effect since 2016. The new rules include the final cannabis regulations issued by the Bureau of Cannabis Control, the cannabis cultivation regulations from the Department of Food and Agriculture, and the manufactured cannabis regulations defined by the Department of Public Health’s Manufactured Cannabis Safety Branch.

The Medicinal and Adult-Use Cannabis Regulation and Safety Act (MAUCRSA) creates the general framework for commercial cannabis in California. The state’s new rules contain some key points for the



control of the growth and transportation of cannabis, including a policy of allowing deliveries anywhere in the state, regardless of local municipalities’ bans, in what is seen as a victory for manufacturers. Another positive step was the decision that retailers will be responsible for child-resistant packaging, which could potentially save on cost for manufacturers and growers.

While contract manufacturing is not fully endorsed under the new rules, it may be allowed in certain circumstances. Licensed producers of edibles can potentially make and package products on behalf of an unlicensed business, but there is complex process to navigate in order to make this possible.

“Many people use our drinks like creamer in their coffee. The aim is not necessarily to get high. It is about relieving pain, taking the edge off, quelling anxiety and increasing focus.”

There are also concerns in the industry that the reliance on the state’s track-and-trace system, Metrc, means production and shipment are vulnerable to any disruption to the system’s operation. Furthermore, the new regulations continue to stipulate that testing labs must own all of the vehicles that collect samples for testing, which brings a significant cost burden.

“Regulators still do not understand the market,” says Coggan, who is a member of lobbying group California Cannabis Manufacturers Association (CCMA). “Our goal is to achieve practical regulations and a recognition of the industry. The latest rules were 18 months in the making and the regulators have been working with us. We helped them to clean up the rules.

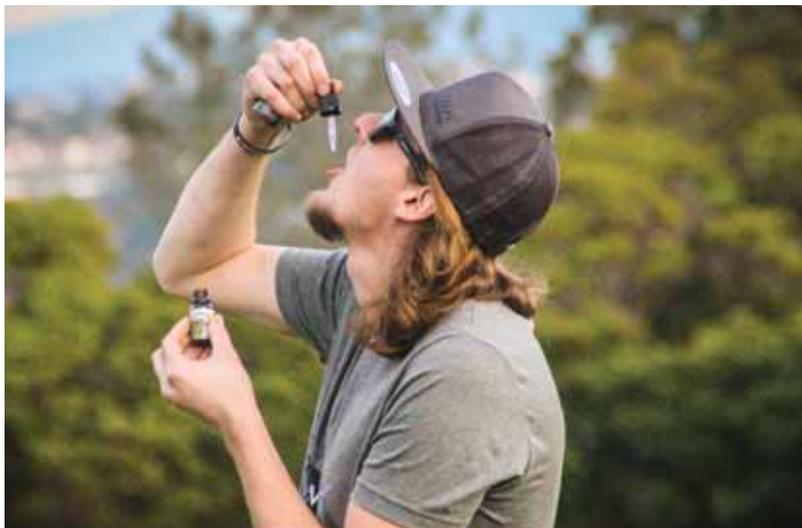
“The government has two key focal points – first, public safety and second, tracking the new legal market to extract taxes. As a manufacturer, we pay 24% excise tax at state level, 5% at municipality level and then

CBD can be infused into coffee products to make the idea of its consumption more acceptable.

10

The number of US states in which recreational marijuana is legal.

US Government



New oils can be used on the go, and treat pain and anxiety.

there is the sales tax that the customer pays. Consumers end up paying 50% tax, which means that the illegal market remains cheaper. The fact is, however, that legal products are safer. There are, for instance, stricter pesticide controls than in the tobacco industry, and tracking is more stringent than in the pharmaceutical industry,” he adds.

The rules on pesticides are indeed stringent. California is the only year-round sun-grown state in the US but if a cannabis crop is grown next to other crops on which pesticide is used, then the cannabis may fail its final testing and have to be destroyed. There are also clearly defined caps on potency for edible cannabis products, which can only contain 100mg of THC per package or 10mg per serving. All products also require resealable and child-resistant packaging, which causes concern among manufacturers about the environmental impact of secondary or tertiary packaging.

“There are still many issues to clean up in the regulations but, so far, most manufacturers have been over-compliant,” says Coggan. “The packaging issue is a hard one to solve, given the focus on public safety.”

“I became politically engaged two years ago and I have seen a mutual respect and dependence evolve between manufacturers and regulators, who have often used our language in the regulations. One area in which we are still hogtied, however, is research.”

Reap the rewards of collaboration

Cannabis, though legal in some states, is still seen as a Schedule 1 narcotic at a federal level. This classification is largely for substances with high abuse potential, no medical use and severe safety concerns, and it includes heroin, LSD and cocaine.

“Our industry really needs the highest standards and we must meet them because California will be the biggest cannabis market in the world,” notes Coggan. “We need education and engagement with the public, but it is a very challenging environment. Track and

trace from seed to sale accounts for 47% of our wholesale costs before anything else, including labour costs. Compliance costs here are really high.”

Despite all of the remaining challenges, Coggan has high hopes for the development of the industry, partly because of the good working relationship that has been developed with the state’s regulators. He believes, however, that what is needed is more research in order to engage with the public and with regulators from a strong platform of evidence about how cannabis compounds can be used safely and effectively as ingredients.

“In California, both medical and adult use are regulated, so it is the only place to build a brand outside the state or even outside the US,” he remarks. “With THC and CBD, however, there is a lot of evidence about its efficacy, but there are few peer-reviewed studies.

“The next battle will be CBD. There are thousands of shops that sell it here, but the Department of Health stated that it was still viewed as a Schedule 1 narcotic, as a shot across the bows of the hemp industry, which is worth \$1 billion in California. In the new regulations here, however, it is only Schedule 6, so there is progress.”

Some parts of the new regulations, which contain many positives for manufacturers, were nevertheless unexpected and present barriers to producers who want to broaden their market and build an effective model for the industry.

“A deregulated market has stifled innovation and created a high barrier to new entrants,” says Coggan. “Some elements of the new regulations came out of left field. For instance, they outlawed co-manufacturing or white label manufacturing, even though this is really important for the cannabis market. It is also hard to get state licences, as only 36% of municipalities allow cannabis activity, many of which have caps and mandate green zones that are set a minimum required distance from, for instance, schools and churches.

“The regulators have, however, figured out a workaround. They want transparency, but by changing the definition of ownership they are able to audit anyone involved in the production of cannabis, even if it is through a co-production agreement. It is a temporary solution, but it gives more opportunities for smaller manufacturers to branch out on their own, particularly as more municipalities open up.”

In fact, a regulated market could, according to Coggan, lead to a decrease in crime, including drink driving. In an industry that has the potential for enormous growth, there is an opportunity to establish a model that works for consumers, manufacturers and regulators. Nevertheless, everyone expects that process to be slow. ●

\$1 billion

The value of the Californian hemp industry.

US Government

Hemp for a healthy diet

Hemp juice is on the up and there are several surprisingly good reasons why it is becoming the next new superfood. **Kama Hemp**'s organic juice is safe and healthy for people to consume as part of their diet.

Kama Hemp is the only organic hemp juice and powder available on the market worldwide. As the purest green drink with the greatest health benefits, it is high in calcium, zinc, B12, vitamins A and E, magnesium, phosphorus, selenium and iron, and it naturally contains cannabidiol (CBD).

has a potentially positive effect on health beyond basic nutrition, promoting optimal health that helps reduce the risk of disease. The company uses a specialised process to preserve the cellular structure of the plant that eliminates oxidation, preserving the precious enzymes and nutrients.

compromise. The group also freeze-dries its organic juice to make Kama Hemp capsules. This process retains the aroma, flavour, colour, shape and the entire nutritional content.

Kama Hemp juice and powders are nutritionally high-quality organic foods that are desired because of their CBD content, and broad range of essential minerals and vitamins. The effectiveness of Kama Hemp juice as a high-quality organic food and its ability to work even harder than other green juices come from its interaction with the company's endocannabinoid system. The plant's full nutritional value can only be achieved by consuming the whole plant. ●

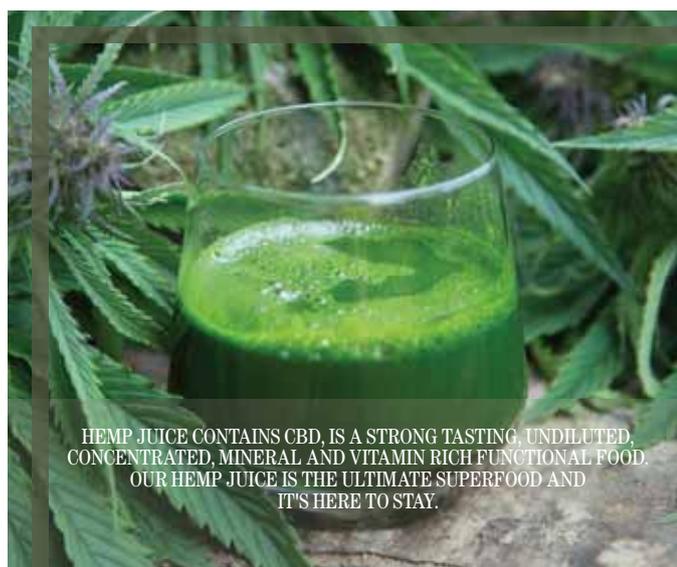
“Kama Hemp juice and powders are nutritionally high-quality organic foods that are desired because of their CBD content, and broad range of essential minerals and vitamins.”

Kama harvests the hemp crop at the peak of its growing season to ensure that the best-quality juice is captured. Kama Hemp juice is the ultimate functional food. Kama Hemp juice

Its organic hemp juice is a potent food that delivers high-quality nutrition to a living form. Kama Hemp's juice is immediately frozen to maintain the living enzymes, organics and nutrition without

For further information

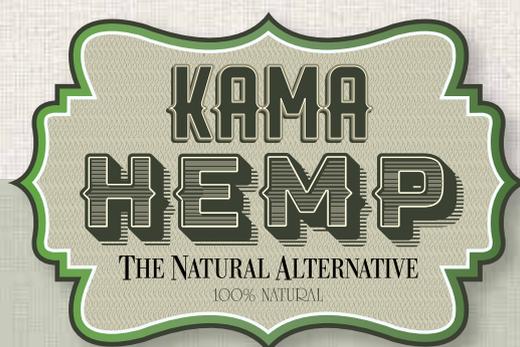
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Europe's leading CBD producer

The natural health field has been revolutionised over the past decade by the introduction of an entirely new niche market centred around the cannabis-derived compound cannabidiol (CBD). As consumers have sought CBD products of consistently high quality and potency, **KannaSwiss** has become the leader among European producers.

Cannabidiol – better known by the abbreviation CBD – is a compound found in the cannabis plant that has been found to offer an astounding array of potential health benefits. Studies have shown that CBD can be used to treat a diverse range of conditions such as chronic pain, anxiety, depression, insomnia, inflammation, glaucoma, epilepsy, Parkinson's disease, multiple sclerosis and more. Research has even indicated that it can help prevent cancer.

What's more, it offers its numerous benefits without the psychoactive side effects derived from the more famous cannabis compound THC. To put that another way, those that consume CBD don't get high.

“We've been committed to providing products of the highest possible quality from day one. This means we cut no corners when it comes to crafting high-purity, high-potency products available in a plethora of delivery methods.”

Boris Blatnik, KannaSwiss

A leader in innovation

Over the past several years, KannaSwiss has quickly established itself as the front runner among European CBD producers. It has built this reputation upon a foundation of high-quality, wide-ranging products.

According to KannaSwiss chief strategy officer Boris Blatnik, “We've been committed to providing products of the highest possible quality from day one. This means we cut no corners when it comes to crafting high-purity, high-potency products that are available in a plethora of delivery methods.”

Operating out of its production laboratory in Switzerland, KannaSwiss puts its CBD

extract through several processes that are rare among its competitors, to ensure that every batch consistently delivers the maximum levels of CBD and other health-boosting compounds while eliminating impurities. The resulting products offer unrivalled potency, quality and shelf life.

CBD users tend to seek specific delivery methods that are tailored to their condition and lifestyle. Accordingly, KannaSwiss offers an unparalleled range of products.

Historically speaking, this has included a variety of CBD oils, tinctures, and hemp flowers and briquettes. At Vitafoods 2019, the company will expand its offerings to include several symptom-specific transdermal creams and capsules used to treat issues relating to sleep, muscle

soreness, mood and sexual health, as well as its brand-new SWIZZY CBD beverages, and a line of CBD pet treats for dogs and cats. In addition to its own product lines, KannaSwiss produces over 1,000kg of CBD isolate every month for bulk wholesale. This allows companies that would like to launch their own brands to have access to CBD extract of the highest quality.

Branding for broad appeal

One key aspect of the company's success involves its branding. KannaSwiss has been careful to present its products in a manner reflective of the fact that they



CBD products are part of a burgeoning market sector, of which KannaSwiss is at the forefront.

are medicinal tools. Their sophisticated aesthetic is essential when it comes to differentiating from other cannabis-related products that are intended for the outdated ‘stoner’ culture.

As Blatnik explains, “KannaSwiss products are for everyone and anyone seeking natural relief for their health condition without unwanted side effects. We've branded and packaged our products accordingly.”

In its earliest iterations, the company offered its products via direct online ordering and delivery, but as its popularity and demand has soared, KannaSwiss has expanded its operation to include a hub in Austria that handles large-scale shipping to distributors.

As the market for quality CBD products grows, the company is poised to offer more and more product lines to meet the demand. As a result, it is expected to maintain its position as the leader in its field. ●

For further information

www.kannaswiss.com

Quality hemp extracts

The properties of cannabis have been used in food and herbal medicine for centuries. **MH medical hemp** produces and supplies the highest-quality cannabis extracts and APIs made in Germany.

Hemp is among the oldest types of useful and ornamental plants in the world, and can be called a true 'all-rounder' thanks to its versatility. It is particularly valued as a renewable resource for textiles, paper and building materials, and is also used in the production of high-quality foods and everyday applications.

With increasing interest in the therapeutic potential of cannabidiol (CBD), hemp proves itself to be one of the most significant plants for humankind.

A wonder ingredient

CBD is often the main cannabinoid used when creating fibre and commercial hemp, and it is the second most widely used cannabinoid that is derived from the hemp plant for medicinal purposes. In fibre hemp, CBD is found at a concentration range of approximately 0.5–2.0% in the upper third of the plant and in the flowers.

Its lack of psychotropic effect poses a huge advantage as it can be safely consumed without risking intoxication and, as so, does not prevent patients

from working.

Numerous studies have found that the cannabinoids in cannabis – specifically CBD – display potent antioxidant properties. Through their high concentrations of

CBD, hemp extracts can neutralise the effects of free radicals, and protect against neurodegenerative disorders and age-related brain changes. Current research also suggests that the antioxidant properties of cannabis may indeed hold therapeutic potential for a number of inflammatory and neurodegenerative disorders. This is one of the benefits of CBD oil that promotes it as a natural health-enhancing agent.

Quality is key

MH medical hemp is an innovative company and technological trailblazer that specialises in the extraction of CBD, as well as the development, production and global marketing of hemp-based cannabinoids and products containing CBD.

“Through its high concentration of CBD, hemp extracts can neutralise the effects of free radicals, and protect against neurodegenerative disorders and age-related brain changes.”

The company guarantees high-quality raw materials that meet even the most stringent quality requirements of the food, cosmetics and pharmaceutical industries. For this purpose, it uses the CO₂ extraction method, the safest and purest way of extracting natural material. Due to its low environmental impact, and the non-existent toxicity of its solvent, this form of extraction is considered one of the most environmentally friendly methods available.

With its years of experience – over two decades' worth – and its effective and efficient team of expert staff, MH medical hemp provides its customers with the best-quality products available.

It offers bulk CBD-rich hemp extracts, CBD oils and isolated CBD to global manufacturers looking to create their own line of CBD products.

Its CBD can be added to a number of products, allowing customers to create their own CBD-infused brand simply and effectively. This gives them the tools to break into the booming CBD market.

CBD can be used for numerous products, including topically applied

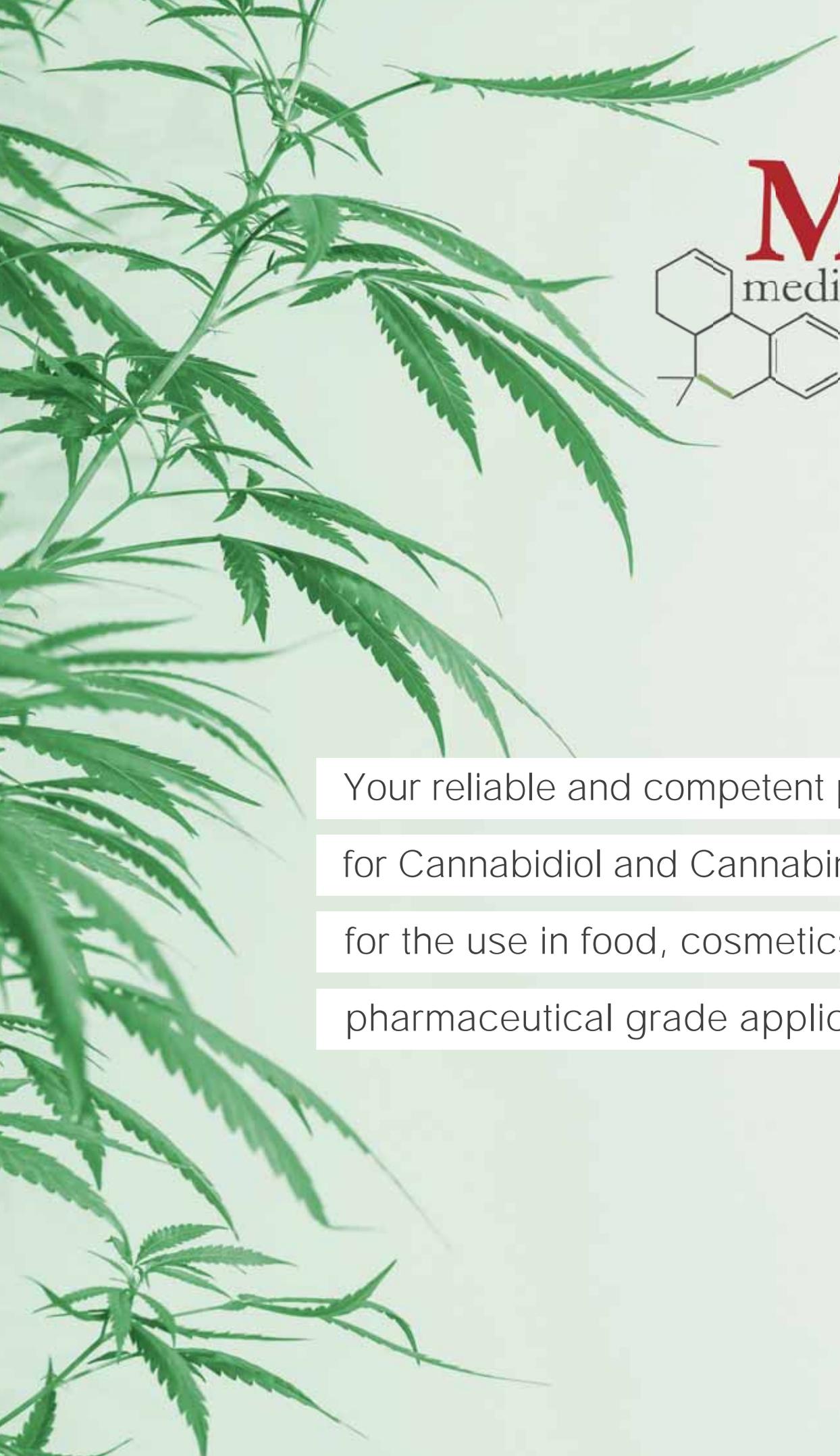
salves; essential oil blends; flavoured CBD oil tinctures; infused coconut oils; bath and body products; vaporiser eliquids; pet treats; transdermal patches; and edible goods from confectionery to supplement powders.

A healthy lifestyle is built upon a well-functioning endocannabinoid system. From endocannabinetic regulators like CBD, to essential fatty acids, MH medical hemp products restore and maintain this important system. ●

For further information

www.medicalhemp.com





Your reliable and competent partner
for Cannabidiol and Cannabinoids
for the use in food, cosmetics and
pharmaceutical grade applications.

A gold standard for testing

PhytoVista Laboratories is a UK-based testing facility that looks into checking and regulating the application of CBD and hemp into a host of articles, such as beverages and foodstuff. Nick Clarkson, PhytoVista's CSO, explains the importance of thorough and regular testing in the CBD industry, and the many advantages that PhytoVista provides its customers.

The CBD industry is anticipated to surpass a value of \$22 billion by 2022. Away from the US and Canada, demand for CBD and hemp products is blossoming, fast. Its surge in popularity across the UK and Europe is impossible to ignore; more and more sectors are recognising the potential and looking for innovative ways to harness this new-found desire for everything CBD. From hemp food products, clothing and building materials, to top-quality medicinal CBD products and cosmetics, consumers are realising the benefits of the cannabis plant extract in their droves.

“While quality is important to many suppliers of CBD products, as with any booming industry, there are many who operate with little concern for what their products contain, testing is vital to help the industry grow and improve quality for consumers.”

A flourishing global food craze

In particular, the hemp and CBD food and beverage market is growing exponentially. Infusing food and drinks with CBD is an alternative – and considered more pleasant – way for the substance to be ingested into the body. By adding the plant extract to tea, coffee, energy bars, cakes, pancakes, frozen yogurt, cocktails and even burgers, it is making the benefits accessible to a vast number of consumers. Restaurants, bars and cafés across the UK are looking to make the most of this trend that

offers enormous marketing potential. The demand for CBD products has given many the opportunity to be innovative with menu items and their names – a restaurant in London now has Gin & Chronic firmly on their drinks menu; the humble gin and tonic infused with CBD oil.

People want as natural a diet as possible, and hemp seeds are quickly gaining recognition as a ‘superfood’. Rich in protein, fibre and antioxidants (vitamins A, C and E), they help boost and protect the immune system by reducing oxidative stress of cells, which is thought to be the cause of various diseases, including some cancers.

They have also been proved to lower cholesterol, which in turn reduces the risk of heart disease.

Beyond the health benefits of hemp seeds, ingesting hempseed oil, otherwise known as hemp oil, can also aid the consumer in a number of ways. This is primarily because it contains the optimum 3:1 ratio of omega-6 and omega-3, as outlined by the World Health Organisation (WHO) – no other nut or oil contains this ratio. These two essential fats play an important role in brain function and have been proved to help fight against cardiovascular

disease, Alzheimer's and certain cancers. While hemp oil has been a common additive in body care products for some time, only recently has the digestion of it become more of a mainstream trend.

The importance of testing raw materials and finished products

Despite the CBD food and beverage market currently being an emerging and unregulated environment, precise testing and batch certification of raw materials, as well as the finished products, are important to ensure they are safe for consumption.

In the UK, the level of THC (a psychoactive constituent found in cannabis plants) in any product must remain below 0.2%.

It is necessary that extracted CBD is tested before it is bought from suppliers. Methods to extract cannabinoids from cannabis plants, such as supercritical CO₂ extraction, use solvents and there is a chance that some potentially harmful substances are left over – this is not ideal considering the estimated number of regular hemp-derived product consumers is 375,000 in the UK alone. Under EU regulations, solvents are permitted in the processing of food and beverage products, but the types and amount of residue considered safe are clearly defined, hence the importance of accurate testing.

Just like everyone in the agricultural industry, numerous hemp growers will use pesticides on their crops to increase the chances of successful growth. Testing for these toxic chemicals is imperative to ensure the health of

unsuspecting consumers isn't at risk. Manufacturers should all test their products to ensure they are conforming with specifications, and in this unregulated environment, consumers can also find assurance by testing anything they have purchased for unsafe residues.

Inspired by nature, driven by science

PhytoVista Laboratories was founded in February 2017 to provide analytical services across a range of industries, including the testing of CBD and hemp products, to give credible evidence that products are exactly what manufacturers say they are. The PhytoVista team understands and monitors regulations in the food and beverage, cosmetics and vaping industries, in order to best advise customers who are looking to test their products in order to enter the UK CBD market.

After significant investment in laboratory equipment and three months of scrupulous development undertaken by Nick Clarkson, chief scientific officer of PhytoVista, the company introduced its first cannabinoid and terpenes (further constituents found in cannabis plants) test to the market and has since completed its 1,000th test, further establishing itself as a trusted and auditable laboratory that provides expert chemical testing services.

"While quality is important to many suppliers of CBD products, as with any booming industry, there are many who operate with little concern for what their products contain," says PhytoVista's CSO, Nick Clarkson. "Testing is vital to help the industry grow and improve quality for consumers."

"PhytoVista is the leading testing facility in the UK for hemp and CBD products, and is establishing a 'gold standard' for testing in the CBD industry."

Why organisations choose PhytoVista

"PhytoVista is the leading testing facility in the UK for hemp and CBD products, and is establishing a 'gold standard' for



Using state-of-the-art equipment, PhytoVista can accurately test for 14 distinct cannabinoids and 21 terpenes.

testing in the CBD industry," Nick Clarkson explains.

The team at PhytoVista understands the importance of food safety and accurate labelling when bringing a new food product to market. Using state-of-the-art equipment, PhytoVista can accurately test for 14 separate cannabinoids and 21 terpenes, as well as for pesticides, microbial contamination, heavy metals, residual solvents and mycotoxins in hemp-based and non-hemp-based products. Beyond this high level of accuracy, the laboratory also operates to GLP) and ISO 17025 standards, with the aim to be ISO accredited at the end of 2019.

Recent developments at PhytoVista Laboratories have allowed the team to further improve the analytical CBD and hemp-testing services on offer to retailers, distributors, manufacturers and consumers.

Not only do PhytoVista's customers benefit from market-leading testing

than sending to testing facilities in Europe, allowing the fully tested products to be available on the market faster – this can give an advantageous edge in what is fast becoming an incredibly competitive industry.

The advantages of terpene testing

While most of PhytoVista's testing is completed to ensure products are of the highest quality and contain no harmful elements, terpene testing is undertaken to provide manufacturers with interesting scientific information about what they are hoping to put on the market. Terpenes are a group of naturally occurring compounds produced by plants that are responsible for giving a particular plant its distinctive taste and aroma. When certain terpenes are combined with cannabinoids, beneficial healing properties are developed that can positively affect mood and vitality.

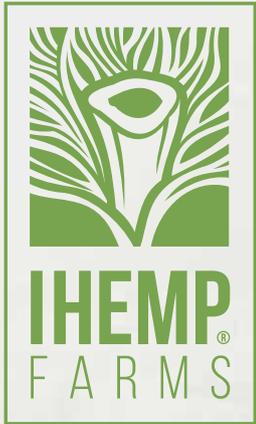
All this may not seem overly advantageous to manufacturers at first glance as their product already contains these elements, but through a simple test and without having to add anything extra, it now has increased marketing potential. ●

If you have or are developing a CBD food product, get in touch and quote PHYTO15 for 15% off your first analysis.

facilities, experienced staff and rigorous methods, but also from an incredibly sleek operation and excellent customer service. The UK-based laboratories mean there is a quicker turnaround

For further information

www.phytovistalabs.com



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In 2018 we set up a team of engineers and started design and works on our new line of business – Hemp Titans™. Based on our experience working with farmers we are addressing the low success rate in harvesting and processing of hemp crops – streamlining the value chains through custom machinery.



SECURE SUPPLY OF RAW MATERIALS

MULTITUDE OF
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In 2020 we will offer the complete range of hemp raw materials and start utilizing them in the paper production, renewable feedstock, building, industrial applications. Our R&D projection – EnterHemp™, based in Hamburg, Germany is dedicated to push the boundaries of hemp-based product development.

HEMP IS A LOT MORE THAN CBD!



Spilling onto the shelves

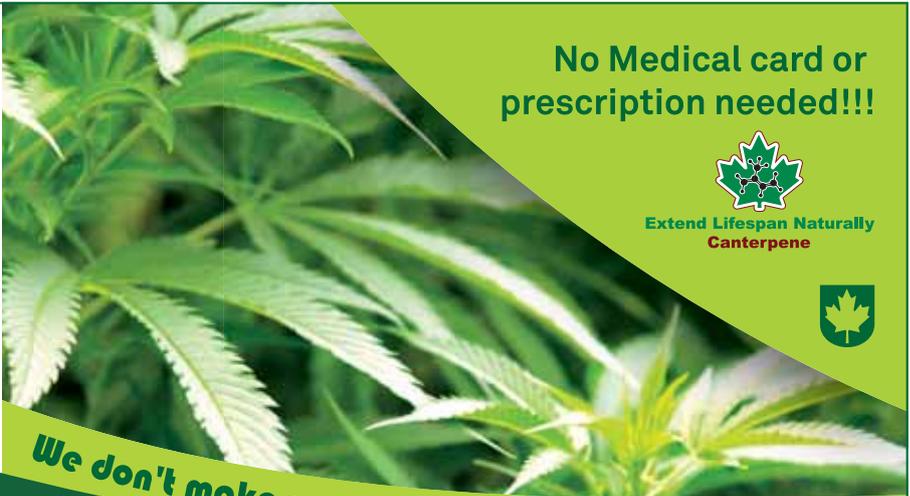
Legalisation efforts around hemp and cannabis have led to a boom in CBD, also known as cannabidiol, products. **Chris Lee**, managing director, Global Health and Nutrition Network, Europe, at Informa Exhibitions, discusses how these changes are making CBD-infused food and beverages a trend to watch.

Mention the word ‘cannabis’ and reactions may vary wildly, often depending on the prevailing view of the plant and its derivatives with which a person grew up. From the 1930s, when ‘Reefer Madness’ set a tone of paranoia in order to urge teenagers not to experiment with the drug, to the modern era, when it is increasingly viewed not as a drug but a potent source of derivatives that can be used to benefit physical and mental health, there has been a huge shift in perception.

In the US, medical marijuana is legal in 33 states and Washington, D.C. Recreational marijuana is also legal in 10 states. The principal derivative, tetrahydrocannabinol (THC) has, therefore, become more widely researched for its health benefits. In the 10 states that have sanctioned recreational marijuana, it is also possible to use the other main derivative, cannabidiol (CBD).

Indeed, the end of 2018 marked a turning point for the global CBD market. Canada recently passed its Cannabis Act, which makes the purchase, possession and use of cannabis lawful for anyone of legal age, and its pending legalisation of cannabis foods and beverages is expected to pass in October 2019. Furthermore, the New Zealand Government announced in November 2018 that hemp seeds are now treated “as any other edible seed”.

Meanwhile in Europe, CBD, with a maximum of 0.2% THC, has been legal for public consumption in France, the world’s leader in hempseed production, since November 2017. Crossing the channel to the UK, it is lawful to sell hemp extracts as food supplements, and the trend has rapidly spread across the country, with numbers of cannabis oil users increasing from 125,000 in 2017 to 250,000 in 2018, according to the Cannabis Trade Association. ▶



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Muskoka C.B.D. company was established in 2017. We deal exclusively with Canterpene Hemp biomass. Canterpene Bio Derivatives (CBD) trace amounts of 10µg/g THC or less. They are a dietary supplement that can be safely consumed by kids, adults and pets as part of their daily diet. Canterpene Bio Derivatives are legal, and are not psychoactive, meaning that they do not cause one to "get high".

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Our topical cream and body butter infused with Full Spectrum Canterpene Bio Derivatives are reported by our customers to have provided relief for skin conditions and muscle and joint pain. Canterpene extract, Cocoa Butter and Shea Butter along with other great carrier and absolute oils with essential oils are products suitable for use by Men, Women, Children and pets alike.

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Goat Milk, Aloe and Glycerin Soaps with RAW Canterpene moisturize and treat skin as you wash. Aloe hair and body bars are a luxurious way to maintain hygiene and with very little packaging contribute less of a carbon footprint.

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A blend of MCT (Medium Chain Trycliceride) Coconut based oil and Canterpene Bio Derivative. A dietary supplement that promotes great health and homeostatic balance in all humans and mammals alike.



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Cold pressed virgin coconut oil is custom compounded with Full Spectrum Canterpene extract. For a balanced homeostasis one capsule a day can provide measurable benefits.

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The result is the CBD revolution shifting into a higher gear as food and beverage manufacturers around the globe begin to explore the full potential of the hemp-derived product.

Research into health benefits

To see why interest in CBD products is on the rise, one simply has to look at the wide range of therapeutic uses to which it is put. As one of more than 100 cannabinoids found in the cannabis plant, CBD is suitable for use as a remedy because it has no psychoactive properties. There is no 'high', but it can have a noticeable effect on a range of physical and mental conditions.

Cannabis in its natural state has been used as a means of pain relief for nearly 5,000 years, and CBD can deliver some of the same effects. The human body contains what is known as the endocannabinoid system, which plays a role in regulating sleep, appetite, pain and the response of the immune system. CBD acts on the body's endocannabinoid receptors and among the noticeable effects are a reduction in inflammation and in the sensation of pain. As a result, CBD – sometimes in combination with THC – has been used to treat the pain associated with conditions such as arthritis and multiple sclerosis.

Another key use of CBD is the treatment of depression and anxiety. Back in 2017, the World Health Organisation (WHO) identified depression as the second-largest contributor to disability and health loss, citing it as a leading underlying cause of the 128,000 suicides that occur each year in the WHO European region. Indeed, World Health Day 2017 focused primarily on depression and its effects on global health.

At the time, WHO regional director for Europe Dr Zsuzsanna Jakab noted that, "Although depression can be treated and prevented, at least 75% of all people suffering from major depression do not receive adequate treatment."

Fast forward to 2018, and WHO cited depression as the leading cause of disability worldwide, suggesting that efforts to tackle it are not achieving the goal or alleviating the problem, despite the availability of effective psychological and pharmacological treatments. Medication to treat depression often comes with the risk of side effects – ranging from insomnia and headaches to addiction and sexual dysfunction – but CBD is not a prescribed medication and comes without these potential downsides.

Firstly, CBD is not addictive and has, in fact, been studied as a potential intervention for people who exhibit addictive behaviours. Preclinical data shows that CBD could be an effective treatment for generalised anxiety disorder, social anxiety disorder, OCD, PTSD and panic disorder. A study published in



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2017 by researchers at universities in Brazil showed that, in rats, CBD could disrupt the consolidation of specific and generalised fear memories via dorsal hippocampus CB1 and CB2 receptors.

One study in humans has shown that, against a placebo, CBD significantly reduced the anxiety and cognitive impairment of people undergoing a public speaking test. Furthermore, CBD oil has been shown to interact with the brain's serotonin system, which regulates mood and social behaviour, and has been used to treat insomnia and anxiety in children.

Now available in the UK, the US, Canada and many other countries, CBD oil is most commonly consumed as an additive to drinks. Many cafés offer it as an extra ingredient in coffees, and the oil is often widely available in shops for consumers to use at home.

Changes in global laws and regulations are causing a boom in hemp-product retail.

“Now available in the UK, the US, Canada and many other countries, CBD oil is most commonly consumed as an additive to drinks.”

Legal confusion could limit growth

Inevitably, the changes in law have led to a wave of new product launches, driven at this stage, perhaps, by novelty value. From 2013 to 2017, there was a 34% average annual increase in the number of new food and drinks launches with hemp ingredients globally, according to Innova Market Insights.

Despite this, however, businesses must remain cautious, as there has been some confusion around the legality of hemp products among companies and the public. Incorrect information about the lawfulness of hemp extracts in Europe has spread far and wide online, and companies must make sure their sources are trustworthy. On top of that, the CBD movement is still met with suspicion, ruled by its link to cannabis. In France, for example, French Minister for

40%

US CBD sales jumped in 2017, hitting \$367 million.

New Frontier Data

\$820 million

The estimated total retail value of all US hemp products last year, including food.

Agricultural Marketing Resource Center

1/3

China was the largest seller of hemp in 2018, accounting for about a third of all global sales (\$1.2 billion).

New Frontier Data

Health Agnès Buzyn has pledged to close the loophole in France's stringent anti-drug legislation and put establishments selling CBD products out of business within weeks.

A growing market

Despite this, it is unlikely that the interest in CBD will wane anytime soon, especially as information on CBD's health and wellness benefits becomes increasingly available and consumer demand continues to rise. For example, CBD gummies ranked third in the 2018 Google Trends' Year in Search 'food' category results and, according to cannabis research firm New Frontier Data, products containing cannabidiol and other types of hemp will rise nearly 10-fold to \$2.6 billion by 2022.

Also driving this growth is the sustainability of CBD. An annual plant, hemp is cultivated in over 30 countries globally and has the capability to replenish soil with more nutrients than it takes to grow – proving itself a lucrative cash crop for farmers, as well as a quality choice for the increasingly health and environmentally conscious consumer. The result is an industry that is sitting up and taking note of what was once an alternative ingredient, and even big players around the globe are watching.

Coca-Cola, for example, is “closely following the growth of non-psychoactive CBD as an ingredient in functional wellness beverages around the world”, according to a statement released in September 2018, while PepsiCo's founder, Hugh Johnston, told CNBC in October 2018 that the company will look critically at investigating cannabidiol.

“Undoubtedly, CBD is simultaneously the most exciting and challenging market of products derived from hemp.”

Examining the functional future of CBD

With the world keeping a close eye on the developments of CBD as a functional ingredient, a host of new launches during the past few years, and increasing consumer awareness and demand, the hemp market is anticipated to experience a significant breakthrough in 2019.

Considering this, Vitafoods Europe 2019 and the Vitafoods Education Programme will be exploring what the future holds for CBD products and how the industry is set to develop over the next 12 months. This will include a look at the collaboration required to shape a more sustainable future for the nutraceutical industry, and the role that naturally derived and sustainably sourced ingredients, such as hemp products, can play in achieving this.

Joerg Gruenwald from the Committee for Botanical Dietary Supplements and Herbal Medicines in Germany will chair the panel on 'CBD and hemp extracts: exploring the potential'. As part of this discussion, Dr Heike Stier, senior consultant at Analyze & Realize in Germany, will examine the law regarding the use of hemp extracts in foods in the EU, as well as CBD's future prospective as a functional ingredient.

Beyond CBD: hemp as a wholefood

Undoubtedly, CBD is simultaneously the most exciting and challenging market of products derived from hemp. Its potential as a health treatment and its status as a compound derived from marijuana ensure that this paradox is likely to be perpetuated for many years to come. In other forms, however, hemp is already a familiar ingredient in products regularly stocked on supermarket shelves.

The market for non-dairy alternatives to milk continues to grow apace. This is driven, in part, by more consumers deciding to reduce the amount of lactose in their diet and choosing plant-derived substitutes as an alternative to lactose-free milk. Soy and almond milk helped to carve out this niche in the market, but flax, cashew and, increasingly, hemp-based products are also growing in popularity. As well as the benefits some consumers believe this brings to their nutrition, plants cost less to grow than cows do to rear, as they require less labour, less water and less space.

As a result of this, some dairy farmers have, where it is permitted, begun to experiment with the growing of hemp. This has been seen to a small extent in New Zealand, for instance, where the dairy industry is a central pillar of the economy, as farmers look to respond to the growing tendency of consumers to reduce their intake of dairy products in favour of plant-based alternatives.

Hemp milk is made from hemp seeds, which contain plant protein, essential fatty acids such as linoleic acid, and a range of minerals including calcium and iron. Different brands add further nutrients including vitamins and additional calcium. The result is a milk alternative that is free of common allergens such as lactose, soya and gluten, and is a good source of protein.

The seeds themselves have also become a common ingredient in many snack foods, or as an ingredient in their own right for use in cooking and garnishing salads. Whether it is the use of hemp seeds, or products containing CBD, it is clear that hemp is going to play an ever-larger role in the food industry, though it must overcome some regulatory hurdles governing its cultivation and sale in some parts of the world. ●

The last word in hemp

Naturally Splendid Enterprises (NSE) works exclusively with clients to develop mainstream and niche products that result in commercially successful bars, bites and granolas that are distributed globally. NSE offers custom formulation services that include contract manufacturing, processing, private label, proprietary ingredients, and R&D – ultimately creating enhanced, value-added products.

NSE boasts over 10 years' worth of experience in retail line development, associated technologies and well-established, trusted relationships in the food industry.

The company takes great pride in the collaborative approach it takes with its clients, while always maintaining its value base of producing sustainable, high-quality, innovative and nutritious products. With several of the highest-grade food standards certifications in the industry, NSE's Bar Makers facility operates with a Safe Quality Food (SQF) Level 2 certification, which provides its clients with assurance that the products they buy meet the international standards for food safety and quality. NSE

remains committed to leading with assurance and quality.

NSE manufactures a wide variety of bars, bites, granolas and mueslis for in-house brands, and is contract manufacturing for a wide range of clients from SMEs to internationally recognised brands. As a certified hemp processor, NSE is able to offer bulk hemp ingredients and products that include hempseed, hemp protein, hemp oil and by-products.

NSE is committed to providing omega-based ingredients to ensure a better quality of life for humans, pets and livestock, and works with manufacturers and distribution partners around the globe to provide hemp-based omega ingredients.

NSE's HempOmega has the ability to greatly enhance existing product lines. Its micro-encapsulating technology can be used to create customised formulations, resulting in new, unique products.

NSE believes in the power of innovation to create change. Its corporate responsibility commitment is to maintain morally sound policies, systems and procedures to ensure that the company is creating products and biotechnologies that have a positive impact on its consumers, the economy and the environment. ●

For further information

www.naturallysplendid.com



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Where technology meets tradition

SolMic Research and EMBL, the European Molecular Biology Laboratory – Europe's flagship laboratory for the life sciences – now combine their strengths in a collaboration to conduct mode of action studies for selected plant extracts employed in traditional Chinese medicine (TCM).

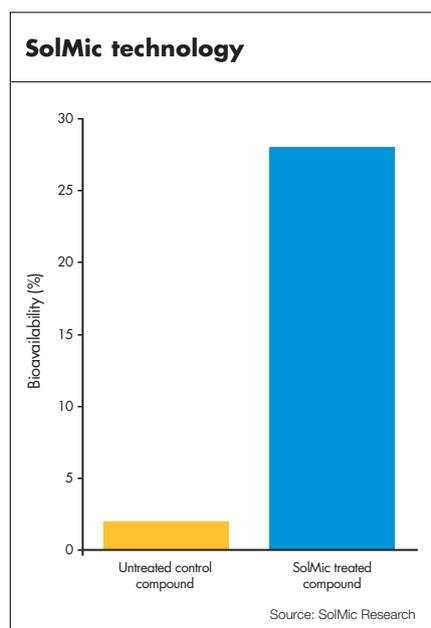
SolMic technology produces very stable micelles, which keep lipid-soluble compounds trapped in micelles below the critical micelle concentration (CMC) and significantly increase the absorption of these molecules from the intestine, making them bioavailable in the cells and tissues of the organism. The result is faster and higher absorption with SolMic treated nutrients.

The proof is in the pudding

In summary, SolMic technology overcomes problems of water solubility and stability of fat-soluble, essential and important ingredients. SolMic processes these substances, mimicking the natural process of micellisation to achieve the highest bioavailability. The SolMic products have unique recipes and are developed by experienced nutraceutical experts, pharmacists and physicians to achieve the desired activity for their customers.

The SolMic technology offers a number of advantages over its competitors:

- The active ingredients are made water-soluble.
- Solubilised substances packed in micelles are protected from degradation – for example, against light, stomach acid and enzymes released from the intestinal tract.
- Its micelles can cover significantly unpleasant smell and taste.
- Micellisation results in stable homogenous, transparent mixtures.
- The uptake from the gut into the blood system of fat-soluble ingredients is significantly increased.
- Micelles containing different ingredients can be easily mixed and blended with water soluble components such as water-soluble B-vitamins or vitamin C.



The SolMic treated compound showed in-vivo bioavailability >15 times higher than the control compound.

- The broadest applicability for numerous recipes have already demonstrated no materials from genetically modified organisms
- All products are produced in Germany at the highest technical standards.

Where technology meets tradition

Natural extracts, such as active ingredients of plants, are the origin of medicine and widely used for medical applications, especially in China, where they play a central role in traditional Chinese medicine (TCM). However, despite empirical evidence over thousands of years, molecular mechanisms for the effectiveness of TCM in the treatment of various diseases are still lacking in most cases.

Natural extracts pose additional challenges, including lack of standardisation, limited stability and

insufficient water-solubility for use in biological assays to achieve reliable results. Moreover, complex extracts, often including dozens of different ingredients, are broadly active in a panoply of assays, making it impossible to determine modes of action by conventional methods.

SolMic's proprietary technology portfolio allows the stable preparation of water-soluble extracts containing water-soluble and insoluble ingredients.

Professor Matthias Hentze, director of the European Molecular Biology Laboratory (EMBL), works in the fields of molecular medicine, systems and RNA biology. His lab developed the method of enhanced RNA Interactome Capture (eRIC) that allows for the highly parallel investigation of responses by RNA-binding proteins. Applied to SolMic's extracts, eRIC could deliver important information on molecular pathways affected by the application of the selected extracts. "SolMic has found a key to overcoming a critical limitation for the molecular characterisation of the modes of action of TCM extracts – reliable and reproducible water-solubility of the components to be studied," says Hentze. "We are excited to apply EMBL's methodologies, including proprietary technology developed by my laboratory, to unlock some of TCM's secrets."

"We are excited to join forces with EMBL, to tackle the challenge of establishing a strong scientific rationale for the use of traditional herbal medicines in the treatments for diseases in the fields of cancer, inflammation and metabolic disorders," says Dr Wolfgang Schönfeld, CEO of SolMic Research. ●

For further information

www.solmic-research.com



The European Independent Medical Cannabis Company

www.emmac.com

enquiries@emmac.com

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The science of CBD

With Europe's CBD market projected to grow over 400% through 2023, it is no wonder that the investment, medical and wellness communities are keen to capitalise on the latest CBD innovations. Dr Barbara Pacchetti, **EMMAC Life Science's** chief scientific officer and one of Europe's most experienced researchers and developers of medical cannabis products, talks about her unique experience with cannabis, including the successful manufacture and registration of the first EU-GMP-approved CBD isolate.

Can you explain, in layman's terms, the difference between medical cannabis, cannabinoids and CBD?

Dr Barbara Pacchetti: 'Medical' simply means that its use is therapeutic and happens through the administration of a pharmaceutical preparation. With cannabis today, where therapeutic use is approved, it is strictly related to the use of the flower of the plant *Cannabis sativa* L., which is the botanical name of the plant. The cannabis chemotype for therapeutic use, formally 'medical cannabis', has a specifically high content of delta-9 tetrahydrocannabinol (THC). This is significantly different from the chemotype defined as 'industrial hemp', which is characterised by a high content of cannabinoids such as cannabidiol (CBD) and a THC content, which has to be less than 0.2% for Europe. This is the fundamental difference.

The prescription of medical cannabis is regulated country by country. Medical doctors can prescribe cannabis for specific illness conditions, such as nausea and chemotherapy-related vomiting, asthenia,



Medical cannabis is obtained from the flower of the plant *Cannabis sativa* L.

some spasticity conditions and a wide range of pains, including neuropathic. Pain treatment has been promising, considering the clear advantage of cannabis over opioids with regard to their conventional use and associated overdosing issues.

Why is CBD so exciting – what is different about it?

I've seen so many plant-based compounds discovered by ethnobotanicals research, but only a very few of them have achieved the status of being shown to be effective – whatever their intended use, as a medicine or nutraceutical. Because of this, I like to call CBD 'the discovery of this millennium' when it comes to natural active compounds for health and wellness.

It has come to the attention of people worldwide in an unusual way compared with other wellness nutraceuticals – its popularity is surely to do with it being related to the cannabis plant. Cannabis through the centuries has been a big contradiction – is it a medicine to be used or an addictive drug to avoid? Recently, however, its health benefits are being recognised beyond wellness purposes, becoming a therapeutical device by the registration of the first medicine based on cannabidiol.

What are the opportunities for businesses with CBD as an ingredient?

Research reveals that CBD, the non-psychoactive compound of cannabis, has important and significant effects in modulating several metabolic pathways that drive both our wellness and illness. This means that CBD can provide health solutions for multiple wellness and medical conditions. A specific example is that there's evidence to show that CBD plays a significant role in modulating inflammation pathways, which are the pharmacological

base of some disease-related conditions, such as chronic pain, skin disease, sleep and anxiety disorders, and atherosclerosis-related disorders.

What is EMMAC doing to address the opportunity? Why is EMMAC's approach different?

EMMAC's fundamental criterion is an evidence-based approach, as with the development of any medicine. EMMAC's mission statement is "bringing together cutting-edge scientific research with the latest innovations in cannabis cultivation extraction and production" and the formulation of reliable products based on these criteria.

We believe that the growth of cannabis in the medical sector must be supported by robust science. Our wellness programme gathers information from our broad research into medical plants. This involves preclinical and clinical data, including randomised clinical trials for the treatment of pain, nausea and vomiting in major hepatopancreaticobiliary (HPB) surgery, and for pain related to other conditions in neurological disorders.

Our wellness research programme includes sport nutrition and athletic conditions like cardiovascular health, inflammation recovery, mental stress and fatigue. Skin is another area we're focusing on, including immune system inflammation-related disorders that can affect skin of all ages, from children to adults. EMMAC is also investing in technologies to improve the delivery of cannabinoids in various forms of administration to simplify patients' lives, which is our main concern, alongside their quality of life and health, whatever the type of their illness and health conditions. ●

For further information

www.emmac.com



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Trim the fat

The World Health Organisation (WHO) is committed to eliminating industrially produced trans-fatty acids from the global food supply, which it says would constitute a major victory in the global fight against cardiovascular disease. *Ingredients Insight* looks at WHO's REPLACE campaign and how trans fats impact health.

Last year, the World Health Organisation (WHO) released REPLACE, a step-by-step guide for the elimination of industrially produced trans-fatty acids from the global food supply.

WHO is steadfast in its conviction that eliminating trans fats is key to protecting health and saving lives, and estimates that every year, trans fat intake leads to more than 500,000 deaths from cardiovascular disease.

Industrially produced trans fats are contained in hardened vegetable fats, such as margarine and ghee, and are often present in snack food, baked foods and fried foods. Manufacturers often use them as they have a longer shelf life than other fats. But healthier alternatives can be used that would not affect the taste or cost of food.

"WHO calls on governments to use the REPLACE action package to eliminate industrially produced trans-fatty acids from the food supply," commented WHO director-general Dr Tedros Adhanom Ghebreyesus. "Implementing the six strategic actions

in the REPLACE package will help achieve the elimination of trans fat and represent a major victory in the global fight against cardiovascular disease."

REPLACE provides six strategic actions to ensure the prompt, complete and sustained elimination of industrially produced trans fats from the food supply:

- Review dietary sources of industrially produced trans fats and the landscape for required policy change.
- Promote the replacement of industrially produced trans fats with healthier fats and oils.
- Legislate or enact regulatory actions to eliminate industrially produced trans fats.
- Assess and monitor trans fats content in the food supply and changes in trans fat consumption in the population.
- Create awareness of the negative health impact of trans fats among policymakers, producers, suppliers and the public.
- Enforce compliance of policies and regulations. ▶



Oils & Fats

What VFI stands for

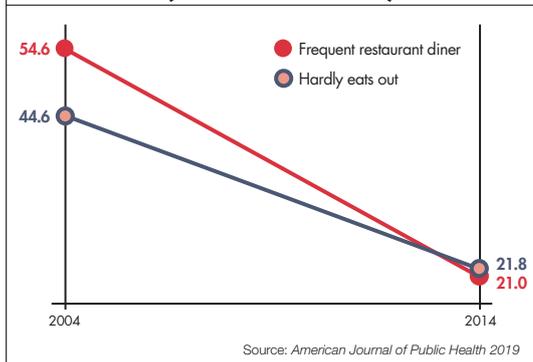
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Change in New Yorkers' trans-fatty acid levels (micromoles/litre), 2004-14



Proven benefits

Several high-income countries have virtually eliminated industrially produced trans fats through legally imposed limits on the amount that can be contained in packaged food. Some governments have implemented nationwide bans on partially hydrogenated oils, the main source of industrially produced trans fats.

In Denmark, the first country to mandate restrictions on industrially produced trans fats, the trans-fat content of food products declined dramatically and cardiovascular disease deaths declined more quickly than in comparable OECD countries.

“New York City eliminated industrially produced trans fat a decade ago, following Denmark’s lead,” said Dr Tom Frieden, president and CEO of Resolve to Save Lives, an initiative of Vital Strategies. “Trans fat is an unnecessary toxic chemical that kills and there is no reason people around the world should continue to be exposed.”

But to ensure that the benefits are felt equally around the world, action is needed in low and middle-income countries where controls on the use of industrially produced trans fats are often weaker.

“Banning trans fats in New York City helped reduce the number of heart attacks without changing the taste or cost of food, and eliminating their use around the world can save millions of lives,” said Michael Bloomberg, WHO global ambassador for non-communicable diseases, three-term mayor of New York city and founder of Bloomberg Philanthropies.

“A comprehensive approach to tobacco control allowed us to make more progress globally over the last decade than almost anyone thought possible. Now, a similar approach to trans fat can help us make that kind of progress against cardiovascular disease, another of the world’s leading causes of preventable death.”

Elimination of industrially-produced trans fats from the global food supply has been identified as one of the priority targets of WHO’s strategic plan, the draft 13th General Programme of Work (GPW13), which

will guide the work of WHO through 2023. GPW13 was on the agenda of the 71st World Health Assembly, held in Geneva last May, and, as part of the UN’s Sustainable Development Goals, the global community has committed to reducing premature death from non-communicable diseases by one third by 2030. And all indications point to the fact that global elimination of industrially produced trans fats can help achieve this goal.

“Why should our children have such an unsafe ingredient in their foods?” continued Ghebreyesus. “The world is now embarking on the UN Decade of Action on Nutrition, using it as a driver for improved access to healthy food and nutrition. WHO is also using this milestone to work with governments, the food industry, academia and civil society to make food systems healthier for future generations, including by eliminating industrially produced trans fats.”

Trans fat sources and effects

There are two main sources for trans fats – natural sources, such as in dairy products and the meat of ruminants such as cows and sheep, as well as industrially produced sources like partially hydrogenated oils.

“WHO calls on governments to use the REPLACE action package to eliminate industrially produced trans-fatty acids from the food supply.”

Dr Tedros Adhanom Ghebreyesus, WHO

Partially hydrogenated oils were first introduced into the food supply in the early 20th century as a replacement for butter, and became more popular in the 1950s through 1970s with the discovery of the negative health impacts of saturated fatty acids. Partially hydrogenated oils are primarily used for

Industrially produced trans fats are often present in snacks, baked foods and fried foods.



57%

Trans-fat levels dropped overall among New Yorkers over the past 10 years.

American Journal of Public Health

500,000

Every year, trans-fat intake leads to the death of people from cardiovascular disease.

WHO

New York's ban on trans fats



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As first reported in Science News, the ban on artificial trans fats in New York City restaurants is working. New Yorkers used to eating out over the past 10 years saw levels of artificial trans fats in the blood, which increase the risk of heart disease, drop following a 2006 citywide policy that banned restaurants from using the fats.

Researchers analysed blood samples of adult city residents from before and after the ban, taken as part of a health and nutrition survey that queried participants on their dining habits. The samples – 212 from 2004 and 247 from 2013–2014 – revealed a drop from 49.2 to 21.3 micromoles per litre, suggesting that trans fat levels plunged by about 57% overall.

For people who dined out frequently, the decrease was even greater – levels of the fats declined by about 62% for New Yorkers who ate out four or more times per week, according to the *American Journal of Public Health*.

An estimated one in five city residents eats out that frequently, says study co-author Sonia Angell, deputy commissioner of the New York City Department of Health and Mental Hygiene in Queens.

Artificial trans fats end up in foods like fried chicken and doughnuts, and anything fried, baked or cooked in partially hydrogenated vegetable oils. The fats increase the amount of low-density lipoprotein, commonly known as 'bad' cholesterol, in the body while lowering high-density lipoprotein, the 'good' cholesterol.

The estimated drop in the level of artificial trans fats in New Yorkers' bloodstreams is similar to what happened nationally after the US Food and Drug Administration mandated in 2006 that companies include artificial trans fats in food nutrition labels. A previous study found that from 1999 to 2010, there was a 54% decline in blood levels of the fats in a sample of US adults.

That labelling change likely contributed to the lower amounts found in New Yorkers, the researchers say. The team reports that levels of the fats dropped by about 51% in New Yorkers who ate out the least. But the fact that residents who ate out more frequently had the biggest drop indicates that the ban had its own impact beyond the national action, Angell contended.

A 2% increase in calories from trans-fatty acids in a person's diet is associated with a 23% rise in the occurrence of coronary heart disease, a previous analysis reported. A 2017 study of the health effects of trans-fatty acid restrictions found that those locations that enacted a ban on use by restaurants had fewer hospitalisations for heart attacks and strokes.

A national policy removing partially hydrogenated oils from processed foods, mandated by the FDA, went into effect in June 2018.

Source: Science News

deep frying and as an ingredient in baked goods; they can be replaced in both.

WHO recommends that the total trans-fat intake be limited to less than 1% of total energy intake, which translates to less than 2.2g a day with a 2,000-calorie diet. Trans fats increase levels of LDL cholesterol, a well-accepted biomarker for cardiovascular disease risk, and decrease levels of HDL cholesterol, which carries away cholesterol from arteries and transports it to the liver, which secretes it into the bile. Diets high in trans fat increase heart disease risk by 21% and deaths by 28%. Replacing trans fats with unsaturated fatty acids decreases the risk of heart disease, in part, by ameliorating the negative effects of trans fats on blood lipids. In addition, there are indications that trans fat may increase inflammation and endothelial dysfunction.

1%

WHO recommends a total trans-fat intake be limited in terms of total energy intake.

WHO

The fight against non-communicable diseases continues

Non-communicable diseases (NCDs) cause 15 million deaths annually of people between the ages of 30 and 70, according to WHO. By 2023, the WHO secretariat aims to support countries to achieve the sustainable development goals (SDG) target of reducing premature deaths from NCDs through prevention and treatment, and promoting mental health and well-being.

Much of the morbidity – and most premature deaths – caused by NCDs can be prevented through interventions to reduce four main risk factors – tobacco use, harmful use of alcohol, unhealthy diets and physical inactivity. Prevention efforts need to be combined with equitable access to effective treatment for cardiovascular diseases, cancer, diabetes, chronic respiratory diseases and mental health conditions. Mental health disorders account for 13% of the global burden of disease; however, the majority of people concerned have no access to treatment and care.

As the lead agency for health in the UN system, WHO aims to catalyse action globally and within individual countries. As outlined in GPW13, the WHO secretariat will work with member states and other partners to scale up efforts to implement the high-impact and cost-effective measures needed, including working through the WHO Independent High-level Commission on NCDs, the UN Inter-Agency Task Force on the Prevention and Control of Non-communicable Diseases, and the WHO Global Coordination Mechanism on the Prevention and Control of Non-communicable Diseases to persuade elected officials to make bold political choices for health.

Another round

WHO has also reinforced its leadership and technical capacity to support countries in implementing the outcome of the special session of the UN General Assembly on non-communicable diseases, and provides technical assistance and evidence-based guidance to countries on the “best buys”, and other recommended interventions for the prevention and treatment of NCDs.

There is also a concerted effort to work with other partners including civil society and the private sector to reduce the non-communicable disease burden. Evidence-based WHO guidance will support countries in reducing the use of salt and sugar, in addition to eliminating artificial trans fats and reducing antibiotics in food, stopping the marketing of unhealthy foods and beverages to children, and reducing the prevalence of physical inactivity. ●

Rely on sustainable high-quality ingredients

Responding to calls for purely natural ingredients, **SanaBio** sets the standard for corporate social responsibility specialising on organic raw materials produced ecologically sound and socially responsible.

Customers' needs have changed dramatically. For decades, they have not given much thought to their consumption, focusing on prices and neglecting the products' ingredients and origin. Today, we face a totally opposite set of values for the majority of customers – the call for transparent, ecologically sound products, made in a socially responsible way for all stakeholders, is immense.

SanaBio has spent seven years working on meeting those conditions before entering the market in 2012. The company has since become a specialist in importing, conditioning and processing vegetable raw materials, fats and essential oils for different industries such as food, cosmetics and

pharmaceuticals. The product portfolio contains more than 70 oils, fats and waxes, as well as more than 70 essential oils and extracts – for example, one of SanaBio's areas of expertise is the production of rosehip seed oil.

The products sold by SanaBio need to fulfil high internal and external quality benchmarks. It follows the hazard analysis and critical control points (HACCP) rules and good manufacturing practice (GMP) regulations of the EU. SanaBio was also organically certified (DE-Öko-013) in 2017.

In addition to SanaBio's focus on product quality, it also sets standards in corporate social responsibility. Emphasising environmental protection, the company

aims to leave zero footprint by 2025. In order to meet this agenda, SanaBio draws on sustainable packaging and recycling when plastics cannot be avoided. Reincorporating still-valuable by-products of oil production in the portfolio delivers benefits to customers and natural resources.

SanaBio is still expanding and is always looking for long-term partnerships with its clients and suppliers of organic raw materials from all over the world. These partnerships are based on mutual reliability, appreciation and transparency, because quality matters. ●

For further information

www.sanabio.eu





Rose hip
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Harvesting
the rose hip



Seeds extraction
for oil production



Organic rose hip
seed oil







Quality produced in Vienna

SENNA is a traditional Austrian company with more than 90 years of experience as a leading specialist for margarines and fat, operating in over 20 countries around the world.

SENNA has produced foodstuff in the heart of Europe for more than 90 years. The company's core competencies are the production of margarines, fats, sauces and dressings. SENNA is particularly proud to be the only margarine producer left in Austria. Its products have been continually developed with passion, as SENNA is convinced that only a major serving of passion can result in the best quality. That is why SENNA handles its raw materials with a great deal of care and experience.

As palm oil is the major raw material used to produce margarine, SENNA focuses its research and development on this topic in particular. The company wants to provide feasible information

for industry members. That is why SENNA implemented the palm oil dialogue forum in Austria to discuss the topic and provide partners with in-depth knowledge of palm oil, to enable them to make the best decision regarding their dealing with this controversial raw material.

SENNA provides products of all kind, so that every customer can choose their product depending on the greatest fit to their concerns and needs. Therefore, SENNA produces products with palm oil, with certified sustainable palm oil and without palm oil, and even without any tropical fats and oils. In total, SENNA reduced its palm oil consumption by 26% in the past five years and aims to apply solely certified

sustainable palm oil in its SENNA products by 2025.

Besides its passion for environmental sustainability, SENNA is concerned about health aspects. That is why SENNA focuses additionally on the development of products using especially healthy raw materials and ingredients – for example, omega-3, proteins and vitamins.

All of SENNA's capabilities and know-how are not only brought to life in the company's own products but are also available for partners to make use of, as SENNA is a major full-service partner for private label projects. ●

For further information

www.senna.at/en



SENNA. Passion for sustainability.

- ✓ Quality from Austria.
- ✓ More than 90 years of experience.
- ✓ Full-service partner for private label projects.
- ✓ All products can be sourced palm oil-free or either with sustainable palm oil.

senna.at/en



The new era of chocolate and nut spreads

AAK has more than 140 years of experience of innovating and customising solutions based on vegetable oils and fats. Marco Oomen, the company's global business director for chocolate and confectionery fats, explains how the fast-growing market for chocolate and nut spreads offers manufacturers a unique opportunity to expand their business.

Remember when the kids were crazy about chocolate hazelnut spread? They still are, of course, but these days there's a difference – they're not the only ones reaching for the jar. AAK's latest consumer survey shows that 60% of consumers, irrespective of their ages, have been eating sweet spreads – primarily chocolate spreads. Today, consumers of all ages are getting a taste for sweet spreads, and they are looking for exciting new flavours, great textures and, very often, a healthy touch.

The chocolate and nut spreads trend is visible globally and Euromonitor forecasts an average year-on-year growth rate of 3.7% up to 2026. According to Mintel, chocolate and nut spreads represent close to 50% of new product launches in the European spreads' category – and 70% in the Middle East and Africa, which is the sweetest region of all. When it comes to the total value of spreads sales, Euromonitor reports that France, Germany, Italy, the US and Turkey are the top five countries.

“Vegetable oils and fats are the critical ingredients in spread recipes. Representing on average 28% of the total recipe, the right choice of oils and fats is essential to achieving the desired taste, texture and stability during shelf life.”

Nutrition in a nutshell

One of the main drivers of this cross-generational consumer movement is the growing consumer awareness of nuts as a rich source of nutrients – protein, heart-healthy fats, vitamins, minerals and fibre. On top of that comes their delicious crunch and creamy taste. Peanut, almond and hazelnut are currently the leading nut spread flavours. According to AAK's 2018



Customers of all ages are eating sweet spreads as awareness of nuts as a rich source of nutrients grows.

consumer survey, 39% of global consumers eat spreads with a high content in nuts.

For manufacturers, successful inclusion of nuts in spread recipes can be a tricky challenge. Nut oil has a notorious tendency to separate, forming an unattractive oily surface layer in the jar. Fortunately, with the right recipe and process, this problem is easily solved.

Product development opportunities also lie in the trend towards spreads that are low in sugar, dairy-free or have a clean label. AAK's 2018 consumer survey revealed that 30% of chocolate consumers read the ingredient list before they buy.

The critical choice for success

Vegetable oils and fats are the critical ingredients in spread recipes. Representing

on average 28% of the total recipe, the right choice of oils and fats is essential to achieving the desired taste, texture and stability during shelf life. In products with a nutritional claim or clean label, the choice requires even more consideration.

Spread manufacturers can turn to AAK to co-develop the best solutions for the product from idea to launch. AAK's broad range of speciality fats for spreads includes many different textures, as well as non-trans, non-hydrogenated and low-saturated-fat options. Combined with the knowledge and expertise of the AAK customer innovation team, manufacturers can count on the range to meet sensory, shelf-life and nutritional goals.

Consumers of all ages can therefore enjoy soft and creamy spreads straight from the fridge, with no oil separation or loss of texture in warm climates – and the optimal healthy profile. And manufacturers can enjoy a prospering spread sales. ●

For further information

www.aak.com

Trend spotting

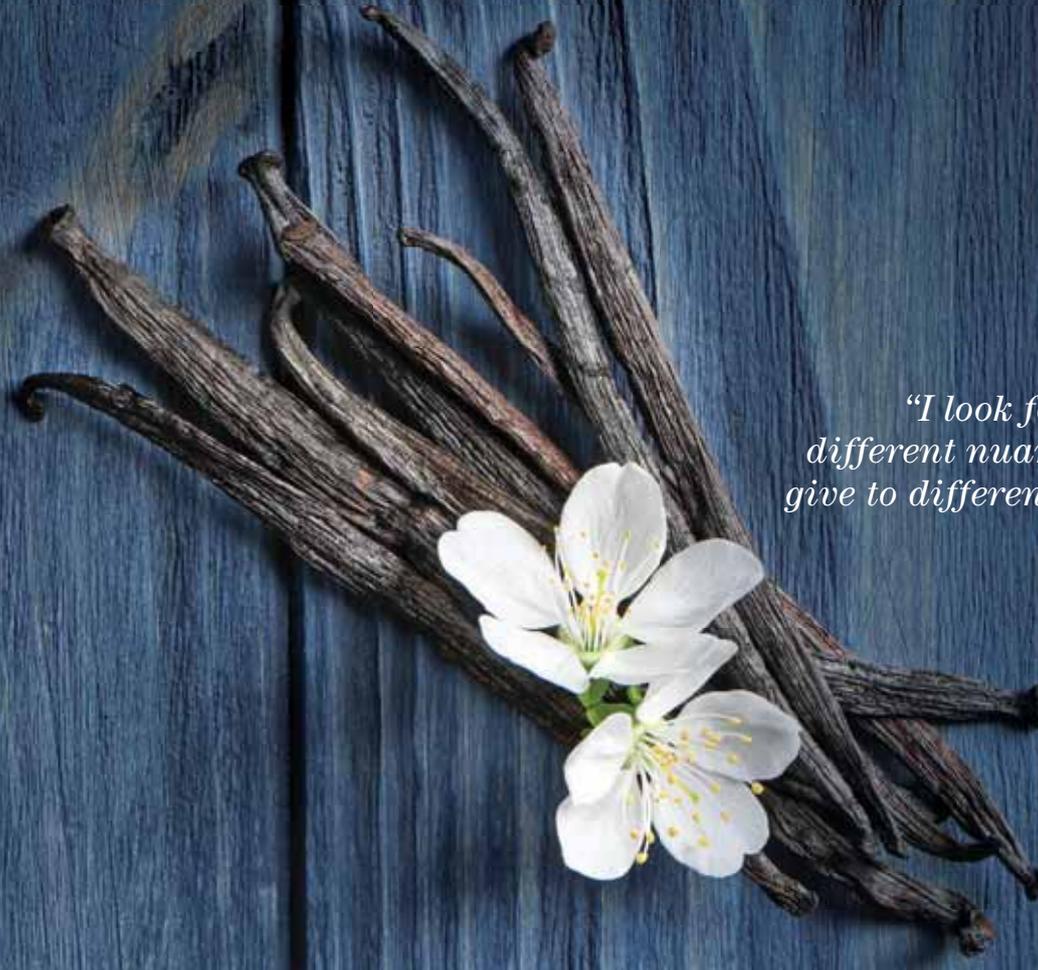
With its acquisition of Frutarom last year, International Flavours and Fragrances became the world's second-largest flavouring company. Chief scientist **Dr Greg Yep** tells Tim Gunn how the business is now positioned to make the most of the growing consumer preference for natural and clean label products.

Dr Greg Yep always checks the label. He's the chief scientific and sustainability officer at International Flavours and Fragrances (IFF), and he needs some tomato sauce. "The first thing I look at is what's in the product itself," he explains. "I look at what the sauce is made out of and how it's produced. Where it's produced is also important, so I look at where the ingredients come from."

There are supplements and energy bars on Yep's list, too. They require a slightly different type of attention. "I look at what it's going to do for me, if it's valid and based on credible science. Everything should be transparent, but it should also perform as promised; if I want energy at 2pm, I expect the product that claims to offer that to make it happen."

He interrupts himself with a laugh. "Obviously I also look at taste. Being in this industry you become a bit of a taste and scent snob. I look for and appreciate the different nuances certain products give to different teas or different ice creams."

Satisfied, Yep returns home, drops some fish oil capsules into the teapot, douses the ice cream in tomato sauce and grates an energy bar over the sink. As he puts it, "There's the science, which is based on data and information, chemistry and biology, and then there's the art of how you put those things together, how you channel your capabilities and tools into something a consumer has never seen before, something to really accentuate their whole sensorial experience."



"I look for and appreciate the different nuances certain products give to different teas or ice creams."

This scenario is partly fictionalised. Still, with so much to bear in mind when choosing what food and ingredients to buy, you might forgive shoppers who forget to think about the next step. Enter clean labelling. It's far less taxing to make an informed decision about what you're consuming when products contain "natural, familiar, simple ingredients that are easy to recognise, understand and pronounce", to quote the Go Clean Label campaign.

"I look at it from a slightly different angle," admits Yep, who won FEMA's Excellence in Flavor Science Award in 2017, but he's aware of the difficulties that beset the untrained eye. "A lot of brands want to simplify the label – on the front and on the back – and we help them try to do that with our technology."

Get it right

Much like its chief scientist, IFF puts a lot of effort into making the right purchases. In April 2017, the group acquired PowderPure, which uses its Infidri technology to eliminate water from fresh products, creating all-natural ingredients without compromising taste, nutrition or colour. A year and a half later, the flavour giant completed its biggest ever purchase, with the \$7.1 billion takeover of Israeli natural ingredient experts Frutarom, making IFF comfortably the second-biggest company in the industry behind Givaudan.

This is evidently not a weight loss fad. The year before the PowderPure acquisition, IFF's sales totalled \$3.1 billion; two years later, with both purchases completed, the number was \$4 billion. The projection for 2019, the first full year with Frutarom as part of IFF, is \$5.2–5.3 billion, a combined sales growth of approximately 5–7%.

Still, after the purchase was announced in May 2018, IFF's share price fell by 10%. Between 2002 and 2014, the company had focused entirely on organic growth, and even purchases like PowderPure were small additions. By contrast, IFF tripled its debt load to pay for Frutarom – itself the sixth-largest company in the flavours and fragrances industry – and pursue a major change of strategy. That tends to worry investors.

From the other side, however, it's an important diversification. Frutarom generates 70% of its revenue from small, mid-sized and private-label companies, whereas IFF relies on large multinationals for about half of its earnings. Despite their household names, those bigger providers of processed consumer staples are among those companies facing the biggest challenges in adapting to the clean label landscape.

That much had been clear to IFF for a while. For Yep, the group's success lies as much in its



The nuance of flavour is essential for products such as ice cream.

understanding of the consumer tastes and preferences of tomorrow as those of today. "We acquired PowderPure because we saw the trend coming," he explains. "Then we saw 'natural' as a growing consumer preference, and that's why we made the acquisition of Frutarom." Three quarters of the Israeli company's revenue derives from its natural-ingredient portfolio, areas that IFF projects to grow at twice the speed of its core markets. "The reality in research and development is that if you're relying on consumer insight it's almost too late to react because the trend's already here," Yep continues. "We have to be able to adapt and offer the developing technologies we believe the consumer will embrace in different products."

"We have to be able to adapt and offer the developing technologies we believe the consumer will embrace in different products."

As that last sentence implies, the way we get our food is neither natural nor familiar to the average shopper. Clean labelling is unlikely to change that. The closest humans ever came to understanding everything we eat might have been in the Garden of Eden – that early model for the supermarket where Adam and Eve had only to see things to know what they were. And even they couldn't stick to a diet.

Today's consumers don't necessarily get nutritional advice from snakes, but they could do with a shared legal definition of 'natural' for food labelling. After decades of obesity crises garnishing news bulletins and chemicals like butylhydroxyanisole spattering ingredients lists, it's clear they prefer the thought of the garden to that of the lab. In many products, butylhydroxyanisole has been replaced by a chemically processed

\$7.1 billion

The price IFF paid for Frutarom.
IFF



Vanilla remains a quintessential flavouring.

x30

The increase in the price of natural vanilla from 2013 to 2017.

Eurovanille

alternative called 'extract of rosemary'. When it comes to food, seeming 'natural' is in, and choosing what we can eat on the basis of what we can pronounce seems natural. Then again, so does quinoa. It's hard to split the food supply in two.

"Sometimes it's not aligned with consumer perspectives; a lot of times it's based on what the choices are," says Yep, who thinks of the binary on offer as a regulatory paradigm and doesn't have much of an appetite for picking a side. "Do we see trends moving towards natural and clean label? Absolutely, and we want to give our customers and consumers that choice. But if you look at reasons consumers prefer natural to artificial, they shouldn't be choosing one over the other because of safety. That doesn't really correlate."

In fact, the tendency to equate 'natural' with 'healthy' might be counterproductive. An easy way for food manufacturers to make labels appear

cleaner is to stop fortifying food with vitamins and minerals. According to Euromonitor International, between 2010 and 2015 there were declines in fortified iron, vitamin A and vitamin K consumption in North America, and in fortified vitamin A, vitamin C and vitamin D consumption in Western Europe. More than that, in 2016 US baker Panera tried to please customers by proactively banning ascorbic acid from its ingredients lists. Though it sounds like it might work to remove paint, ascorbic (anti-scurvy) acid is actually vitamin C.

Terms and conditions

Yep would welcome a discussion around the terms 'natural' and 'synthetic', but he prides himself on his flexibility in meeting different demands. "The reason I chose this industry is that it's an area where things aren't as concrete or black and white as you would see in pharma," he explains. Making the most of people's preferences is part of the art of flavouring. "Looking at our R&D programmes, if the consumer wants natural, we're going to give them natural; if they want artificial, we're going to give them artificial."

Not that the public's desires are quite so symmetrical. Very few health influencers are clamouring for synthetic vanillin for its own sake, or at all, despite the fact that the price for a kilogram of natural vanilla rose from \$20 in 2013 to peaks of over \$600 in 2017 and 2018. At times vanilla was considerably more expensive than silver. The rapid increase was partly caused by the series of natural disasters that have hit Madagascar in recent years, but it's a sign of things to come. While the global markets for natural and artificial food flavours were roughly equal in 2018, one projection from Allied Market Research indicates that the former may be almost twice as large as the latter by 2025.

Yep doesn't remember "natural versus artificial" being an issue until recently, and yet everywhere else in flavours and fragrances he sees similar oppositions fading into irrelevance. "Over my 30 years, the line between biology and chemistry has definitely blurred," he notes. "And today's consumers are demanding whole sensorial experiences. I go to a fragrance customer and they want to talk about taste; I go to a taste customer and they want to talk about scent. You don't separate your senses and say this is a fragrance and this is a flavour, so why should we separate things as a company? Scent is even moving into experiential areas like virtual reality and gaming. Just because we have a taste business unit, a scent business unit and a nutrition business unit, it doesn't mean I can't put them all together as the consumer would." It's only natural. ●

Achieve the perfect taste

IGH Flavours & Technology produces flavours, emulsions, compounds and extracts for the health nutrition, sport nutrition, confectionery and beverage industries. It develops new product concepts according to market needs, consumer drivers and the latest trends of the market.

These days, food trends are focused on functional products. In many cases, those drivers are 'healthy ingredients' that bring specific benefits for human well-being.

customer needs. Many of the products that seek to meet this demand lack in flavour, often having an unpleasant aftertaste, an unsavoury bitterness or sourness.

New developments

IGH is proud to launch its mixed protein and collagen instant beverages, as well as a functional ready-to-drink proposal, at the 2019 edition of Vitafoods. Its latest development is a deliciously flavoured functional drink with L-carnitine, made with an exciting combination of natural flavours – spicy and fruity flavours are married together to make a delectable and unique beverage.

You can visit booth B32 at Vitafoods 2019 to experience IGH's new products first-hand. ●

“IGH's goal as a flavour house is to help its customers with their product formulations, allowing them to hide any unwanted or unpleasant taste notes, and achieve the desired taste.”

A question of taste

Clean label seems to be the new rule for many manufacturing companies around the world – a reality that challenges IGH Flavours & Technology, as its aim is to provide healthy flavouring solutions to suit

IGH's goal as a flavour house is to help its customers with their product formulations, allowing them to hide any unwanted or unpleasant flavour notes, and achieve the desired taste by using specially formulated masking agents and natural flavours.

For further information

www.igharoma.com/en

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Drive sustainability in the vanilla supply chain

Alessandra Ognibene-Lerouillois, chief sustainability officer at **Prova**, explains the details behind her mission in the French company to integrate sustainability into business practices. Her plans to achieve this include leveraging industry-wide partnership, and engaging in supply chain collaboration and other cross sector cooperation. She also shares insights on tackling sustainability and quality issues through cross-sector efforts.

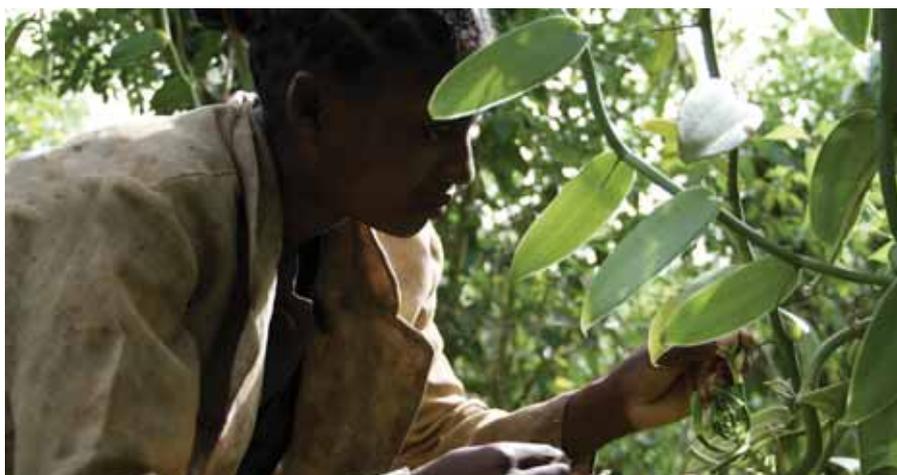
What kinds of programmes are proving most successful at stabilising revenues for vanilla farmers?

Alessandra Ognibene-Lerouillois: Programmes that focus on improving farmer livelihoods in the long term are proving to be successful on the ground. For example, providing good agricultural practices (GAPs) training to farmers, which result in higher yields and increased bean quality that can in turn be sold for more, is very effective. Supporting farmers to diversify their income sources with the implementation of other crop culture also makes a considerable impact. Finally, enabling farmers and the local communities to financially withstand the vanilla lean season – for example, by supplying them with financial management know-how – is crucial.

“The first improvement is that vanilla is sourced directly with the farmers in their fields and therefore squeezes middlemen out of the supply chain. The second involves enhancing trust and loyalty from farmers, thanks to our local team of animators, which has been working with farmers for years.”

In what ways have the initiatives improved the traceability of vanilla and how will it improve future traceability?

The first improvement is that vanilla is sourced directly with the farmers in their fields and therefore squeezes middlemen out of the supply chain. The second involves enhancing trust and loyalty from farmers, thanks to our local team



Vanilla is sourced directly with the farmers in their fields, cutting out the middleman.

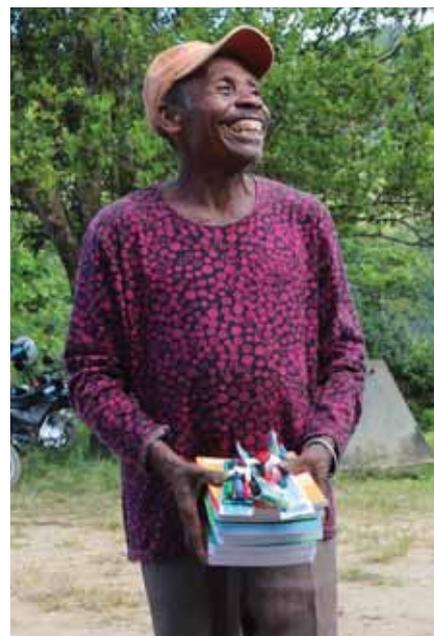
of animators, which has been working with farmers for years. By facilitating exchanges with the farmers, our animators are the direct trustful link and are the guarantors of transparent traceability between the farmers and the exporter.

sector organisations and public authorities) around one common table, tackling issues that cannot be dealt with alone as an individual actor but can, however, be accomplished as a group.

What kind of outcomes are you seeing from the Sustainable Vanilla Initiative (SVI) effort to build a more stable market?

Stakeholders in the vanilla sector have a common goal to assure the long-term stable supply of high-quality natural vanilla and to improve farmers' livelihoods.

The SVI collaborative platform unites all stakeholders (industrials, exporters,



Prova's NGO distributed over 1,240 school kits.



Efforts to motivate farmers has resulted in a reduction of their sole dependency on vanilla.

Actually, key topics such as preventing child labour in the sector, enlarging traceability, and improving quality and security have been raised to ensure the sustainability of vanilla culture in Madagascar. All actions that are jointly taken by the SVI are aimed to build a sustainably stable market for all actors. We are confident that real positive impact on the ground is being achieved through the platform's activities.

“The SVI collaborative platform unites all stakeholders (industrials, exporters, sector organisations and public authorities) around one common table, tackling issues that cannot be dealt with alone as an individual actor but can, however, be accomplished as a group.”

To what extent is Prova's partnership with SVI paying off for stakeholders at this early stage in your efforts?

The vision of embracing the power of partnership drives our business. Beyond our deep collaboration with the SVI, we are also involved in other initiatives, like the Livelihoods Fund for Family Farming. Joining forces with Livelihoods, we aim not only to build communities but to improve vanilla quality by increasing food security and preserving Madagascar's unique landscape. By doing so, we aim to



The school kits supplied by VDB NGO are vital for the community, reinforcing the importance of education.

improve farmers' revenues and provide high-quality and fully traceable vanilla to companies over a 10-year span.

Finally, we funded a separate entity, Vanille Durable Bemanevika (VDB), to contribute to the sustainability of the vanilla sector by helping farmers to become more resilient to the instability of this sector.

A successful example is our partnership with Barry Callebaut and IDH. We have been collaborating in a five-year project, to empower vanilla farmers and to help them become independent entrepreneurs. Our social, agricultural and transparency efforts

whole community of farmers that are in the villages covered by our initiatives.

VDB NGO has set up a system of distribution of over 1,240 school grade-adapted kits for children. They include pens, books, notebooks and rulers. The school kits are very important for the community and they reinforce the idea that parents need to support and take responsibility in the education of their children. As preventing child labour is one of our main priorities, we are very mindful as to which children might need some extra incentive to be sent to school. In this regard, we have identified five children who needed more help and school kits, and thus have included backpacks, uniforms and paid school fees in their kits.

We have recently completed the installation of solar panels on the roof of one of the health centres in the Bemanevika community. The centre needed power after being provided with much needed new tools such as oxygen concentrators to help newborns breathe, and a solar fridge to store vaccinations. The installation of 12 panels guarantees that access to electricity in the health centre is given for up to six consecutive days on battery, even during the rainy season. The patients now can use lights and can expect better care provided to them thanks to this access to energy. ●

motivate farmers and the results we are seeing is the slow reduction of their sole dependency on vanilla, and the production of higher-quality crops – it is a mutually beneficial model as we are also seeing improvements in the lives of individual farmers and their communities.

What is the latest news on the ground?

Two of our latest actions related to our joint program with Barry Callebaut and IDH have been very appreciated by the

For further information

www.prova.fr

Liquid smoke produced by tradition and innovation

Known throughout Germany for its beechwood charcoal products, **proFagus** has also been producing Pure Smoke for more than 20 years. Technical manager Dr Benjamin Voss talks through the company's strict production process and its mouth-watering end results.

Why is it so important to proFagus that its smoke flavourings are made in Germany?

Dr Benjamin Voss: By producing in Germany, proFagus is able to supply its customers with beechwood smoke – the preferred European taste. Our factory is located in one of the most beech-abundant regions in Europe, which enables us to efficiently secure our raw material from sustainable and certified sites and ensures that we can use the shortest possible transport routes, thus lowering our CO₂ footprint. Operating a manufacturing facility in Germany also means that we produce under the strictly controlled conditions required by German authorities and our adherence to industrial and governmental standards is secured by regular checks and audits.

From the very beginning, proFagus's goal was to optimise the use of raw materials and convert recovered material streams into various products. Today, by using all material flows that come from the carbonisation process, less than 0.1% of our output is waste. Thermal conversion of by-products covers 90% of our energy consumption, which completes the sustainable handling of the raw material and reduces the CO₂ impact of proFagus Pure Smoke products. Furthermore, the separation of tar from our flavourings means that food with proFagus Pure Smoke is notably healthier than foods smoked in the classic way.

How have technological advancements helped you to meet the requirements of today's consumers and food manufacturers?

In 2017, the strongly increasing demand for purified-smoke condensates led us to construct a completely new evaporation



Located in Germany, proFagus's new factory adheres to the controlled conditions required by the authorities.

unit with state-of-the-art technologies to further increase our production capacity. Our long history of producing smoke flavourings and innovations combine to meet the requirements of food manufacturers that want a clean, safe and consistent product, and consumers who are looking to make healthier and more sustainable food choices.

Using Pure Smoke gives manufacturers of smoked food a sustainable solution for food flavourings, including meat, fish, dairy and savoury options. At the same time, Pure Smoke increases health benefits for workers by preventing exposure to toxic components, and saves costs by reducing cleaning time and waste. Regenerating smoke from Pure Smoke products by atomisation has a range of impressive benefits. It reduces CO₂ emissions by up to 80%, the content of volatile organic compounds released from the smoke house by up to 70%, the consumption of water by more than 50%, smokehouse cleaning work by approximately 70% and energy use by 33%.

Overall, having a consistent process for regenerating smoke or the direct addition of Pure Smoke will lead to a consistent product and, consequently, to less work and reduced costs.

What have you learned about consumer tastes from 20 years in the smoke flavourings business? How do you use your technology to facilitate the optimal smoke blends?

In the past few years, new product launches that use Pure Smoke have been among the top five of all flavour components innovations. One of the benefits of proFagus Pure Smoke derives from our unique manufacturing process, resulting in a wide range of blend components. It allows for dedicated blends ranging from a mildly acidic, sweet smoke flavour to a balanced one with some ashy, burnt notes. In the end, we can already match our existing Pure Smoke portfolio to 95% of our customers' requirements.

What are your favourite smoked products? How does Pure Smoke make them better?

For me, nothing is comparable to a bockwurst with mustard, smoked to appear dark brown and cooked so the skin is crisp enough to crack when it's bitten. Knowing that it has been smoked with Pure Smoke gives me the security that the smoke is clean and controlled by European authorities. ●

For further information

www.profagus.de

NATURAL
ADDITIVES

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Pure Smoke for Fine Food

ENJOY THE UNIQUE TASTE
OF PURE BEECH WOOD!

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People behind the flavours

The Flavour Ambassador project is a pan-European campaign from the European Flavour Association (EFFA) that aims to explain the flavour industry first-hand, including interviews with flavour professionals from different departments, company sizes, countries and ages. The Flavour Ambassador community is comprised of flavour industry professionals who give an insight into their role within the industry, and moreover, offer a bird's-eye view of a flavour's journey into food and drink products. **Jimena Gomez de la Flor**, communications director at EFFA, shares with us the insights of this campaign.

As EFFA becomes more successful, could you tell us how it all started for you?

Jimena Gomez de la Flor: It all started when I joined this industry. I was impressed by the level of commitment and passion that each and every person I met showed towards their job. You can really feel that they love what they do, that they are proud to be responsible for something as beautiful as adding flavour, pleasure and joy to people's food.

I thought that it was very important to convey this passion within the flavour industry. At the end of the day, this industry is all about passion – for food, for flavours, and having passionate people behind it is what makes it so special.

At the EFFA Communications Working Group, we made demystifying the industry, and flavourings in general, a priority in our communication strategy. The flavour industry, although it has a crucial impact on final food products, is not widely known

or understood. This campaign is the result of this journey towards more transparency and opens the industry to the general public. We thought that it was important to show all the know-how and passion behind each flavour; all the different professions, processes, departments; and how they interact with each other; after all, no one is better placed than the flavour professionals themselves to explain that.

By putting a face and a background to each of the professions, we can better discover the richness of the processes, how much they are connected to the love of food, the power of emotions and memories, and how there is a personal touch from each of the people from this industry to the food that the general public can find in supermarkets.

Did you get the suspected support from the industry?

It actually exceeded our expectations. We were overwhelmed by the amount of support and enthusiasm that we received from industry professionals who wanted to take part in the project. It is also a way for our members to give their teams the deserved visibility and support. Our search for volunteers to join this project started back in May 2018 with us reaching out to our member companies and national associations. The call for volunteers was open for professionals of all ages, genders, cultures, countries and who work for companies of any size. After a few weeks, the group grew to 39 Flavour Ambassadors from 13 different countries, who represent different departments and professions varying from marketing and regulatory to flavourists and material specialists.

We made it a priority to give a fair and truthful representation of the flavour industry in Europe and were happy to be able to offer a communication platform to flavour houses of all sizes and from different countries. Based on their expertise and the different departments they work in, Flavour Ambassadors offer a different viewpoint on the many processes in flavour houses. Altogether, our community of Flavour Ambassadors paint an authentic picture of the European flavour industry.

What have been the highlights for you so far, in terms of the results of the project?

We had an inaugural event on 25 October 2018, which gathered some of the Flavour Ambassadors and our Communication Working Group members in Brussels. It also proved to be a wonderful opportunity for European flavour industry professionals to meet, network and exchange



Above: Ambassadors meet at an industry event.

Left: Antoine Kastler, EFFA president; Jean Robello, EFFA CWG board liaison; and Jimena Gomez de la Flor.

experiences. The campaign itself launched in February 2019 with our first interviews and is currently in full bloom. We are sharing the interviews in audio, video and written forms and give the ambassadors full control of their stories. You can find them on the EFFA website and social media, and also some specialised media. The EFFA website is the window to discover and explore the flavour industry, you can find information about the flavourings life cycle and all the departments involved, and now, thanks to this campaign, that information is enriched with first-hand testimonies from the people working in those departments.

“We were overwhelmed by the amount of support and enthusiasm that we received from industry professionals who wanted to take part in the project.”

We have already received very positive feedback, from both inside and outside the industry, and we are convinced that this will help to enhance people’s knowledge about all the science, passion and creativity that goes into creating flavourings.

This is the result of the teamwork of the EFFA secretariat, the EFFA Communications Working Group and our EFFA membership. I would like to thank them all. And of course, to each one of our Flavour Ambassadors, who perfectly represent the flavour industry family.

The EFFA Flavour Ambassadors project is now quite a well-developed brand, you can see our ambassadors wearing the Flavour Ambassador pin or their recognition award, feeling part of a community that speaks up for flavours. ●

For more information, visit www.effa.eu.

10%

Industry turnover is invested in R&D.

EFFA

10,000

Flavouring constituents are identified in food.

EFFA



The philosophy of clean eating – that you should only consume food products with natural ingredients – has moved from niche online dieting sites into the mainstream debate about what we should and shouldn't put in our bodies. Manufacturers have responded with the 'clean label' product, which shirks artificial additives in favour of natural alternatives. Michael Shaw talks to **Alison Borgmeyer**, a consultant at Ketchum, to find out what these means for our wallets and taste buds.

Have you heard the news? There's arsenic in your baby's food. All those sausages and ham you've been scoffing? Full of cancer-causing chemicals, best avoided. Nasty pesticides, meanwhile, are lurking in your lettuce. It's bad enough for the locusts; imagine what it might do to your gut lining.

These concerns, among others, are typical among consumers pursuing 'clean eating', popularly defined as consuming foods with recognisable, natural ingredients – in other words, avoiding processed meats and anything else that might have come into contact with an artificial preservative, sweetener or colouring.

Manufacturers have responded, in turn, by sweeping these ingredients off the packaging, resulting in what industry observers have dubbed the 'clean label' product. What's more, they're growing in number – according to the Consumer Goods Forum, a food industry think tank, the ingredients of over 180,000 such items were changed in 2016 alone, up by 80,000 from the previous year.

It's a trend that Alison Borgmeyer, a director at food consultant firm Ketchum, is abundantly familiar with. "The clean label movement has been something that's probably been going on for the past two years,"

explains Borgmeyer, who believes that this is a natural continuation of an earlier movement among consumers in the late 1990s and early 2000s that embraced low-fat products. In an effort to incorporate viable substitutes for fat and sugar, manufacturers had to find new substitutes. As a result, labels got longer and longer.

Clean label is simply a “kind of a backlash to labels looking like a chemistry assignment”, says Borgmeyer. Conversely, customers equate shorter labels with greater purity in their food. “Consumers want things to have three or four ingredients and to be as close to nature as possible. And food makers are trying to do that. However, it’s really difficult in packaged food, when you want to have longer shelf life.”

That, it seems, is where the clean label movement may eventually hit a wall. Since the second half of the 20th century, consumers in the industrialised West have grown used to the presence of processed meats, oils, sugar, colourings and preservatives in their diets. How appealing, really, is the advent of a darker, duller range of foodstuffs?

A natural appeal

Clean eating, by its definition, is healthy eating. Healthy eating, however, is not always exciting. Food manufacturers that resort to natural alternatives to artificial colours and sweeteners will not usually end up with a more visually appealing product; any switch from azorubine to beetroot juice to colour red velvet cake, for example, is going to appear more subdued in comparison than the earlier product.

This is important since, short of causing a scene by biting into desserts in the supermarket aisle, we mostly choose between different food products by sight – a cereal that comes in vivid reds and blues, for example, is judged to be sweeter, and therefore more appealing, than anything brown or grey. Pasta is another great example of this principle in action – the bestselling variants tend to appear whiter, thanks to the use of bleached flour. Refrain from using it and “the pasta – usually it’s made from durum wheat – becomes darker”, says Borgmeyer, which drives down sales since consumers associate browner versions with chewiness and a poorer overall taste profile.

Depending, of course, on the popularity of the movement, there is a risk that more products on supermarket shelves will appear muted. Desserts might be next. “If it’s a snack for a kid – parents are looking for the shortest ingredient list for that,” explains Borgmeyer. A few major confectionery labels have already made strides towards cleaner labels. In 2015, Hershey announced its commitment to prioritising natural ingredients, following on from a promise from Nestlé that they would stop including artificial flavours and colourings in their products. Even so, Borgmeyer is sceptical that clean label will



completely transform this part of the market. “I don’t think it’s the desserts and pastries, and that kind of thing where people are as much looking for a shorter ingredient list or a clean label as they are in other categories,” she says.

The rise in clean living has seen health foods migrate from specialist shops to supermarket shelves.

The cost of clean eating

What is certain is that any effort to simplify what’s on the label comes at a very real price. Natural alternatives to artificial sweeteners, colours and preservatives are more expensive to source, and that price gets passed onto the consumer. The same applies to additives used to line the packaging of the product. “If you do that with a natural preservative, like a true vitamin E, you’re going to have more expense to do that,” explains Borgmeyer. “It will have a cleaner label, and it’ll look better, ingredients-wise, but the consumer’s going to end up paying more for it.”

“People like to say they eat clean. It makes them feel that they are somehow virtuous and they’re doing something better for their health.”

The impact of these price differentials on the accessibility of clean label foods to those on lower incomes is obvious. “I do think that anything that’s in the packaged food realm that has a clean label is out of reach for the mainstream consumer,” says Borgmeyer.

Clean label isn’t just making food more expensive to produce for the consumer. The movement also disrupts supply chains among manufacturers. Borgmeyer cites the hypothetical example of a major cereal manufacturer contemplating a switch from artificial colourings to natural alternatives. “You completely have to blow up your supply chain,” she says. The logistical nightmare is even worse for the suppliers themselves, who have already undergone a rigorous procurement process only to be asked whether they are capable of switching to natural



Cereals, due to hidden sugars, have come under more labelling scrutiny.

colourings. “It’s a scramble,” says Borgmeyer. “A lot of times these suppliers are not equipped to be able to turn that around, or to do that on the scale that food makers need them to, especially those that are selling globally.”

Consumer school

If clean label food is more expensive to produce and tastes blander than its sweet and brightly coloured neighbours on the supermarket shelves, what does that tell us about the consumer that chooses to continue buying it? Many simply want to educate themselves about what they put in their own bodies.

“What I like about the clean label movement is that people are looking at the label more. They might not totally understand everything that’s on there, but at least they are kind of interested in looking at it.”

“What I like about the clean label movement is that people are looking at the label more, trying to understand more,” Borgmeyer says. “They might not totally understand everything that’s on there, but at least they are kind of interested in looking at it.”

Perhaps this is unsurprising, given the avalanche of studies over the past decade into the health positives and negatives of almost every food under the sun. Throw in mounting concerns about how human beings have wrought significant change upon the environment through climate change, and clean label is arguably a simple consumer backlash against the innovation in artificial food additives that began in the second half of the 20th century.

It might also be an extension of the dietary fads of the same period. “People like to say they eat clean,” says Borgmeyer. “It makes them feel that they are somehow virtuous and they’re doing something better for their health. And if they’re eating grass-fed butter and high-fat whatever, is that better for their health? Probably not, but at the end of the day, if they are

eating better and higher-quality foods they probably are going to benefit from a health standpoint.”

Up for debate

That argument has provoked considerable debate among other industry observers. According to Anthony Warner, a food consultant and author, many of the claims made by proponents of clean eating are backed up by junk science. In an interview with *The Guardian*, Warner excoriated the phenomenon as “just a recycling of the low-carb Atkins-style dieting” under a different name. Others question why consumers should adhere to the trend in the first place. In 2015, celebrity chef Nigella Lawson announced in a BBC interview that she was “disgusted by the mantra of clean eating”, and that she resolutely believed that “food is not dirty”.

This hostility is, in a way, a reaction against more extremist positions advocated by the fringes of the clean eating movement. Food writer Bee Wilson opened her long-form essay on the subject ‘Why we fell for clean eating’ with the story of Jordan Younger, a self-described ‘gluten-free, sugar-free, oil-free, grain-free, legume-free, plant-based raw vegan’. After a few months of following this diet, her hair started falling out. “Far from being super-healthy,” Wilson wrote, “she was suffering from a serious eating disorder: orthorexia, an obsession with consuming only foods that are pure and perfect.”

While it doesn’t seem like a majority of clean eating proponents are suffering from early-onset alopecia, there have been attempts among some advocates to push unnecessarily shrill concerns about certain ingredients into the mainstream. In October 2017, the Clean Label Project, which describe itself as a ‘non-profit focused on health and transparency in consumer product labelling’, released a study claiming that “nearly 80% of baby formula samples” that had undergone testing at their facilities were found to contain arsenic, a fact conveniently left off the product labels. A subsequent investigation by fact-checking site Snopes found that ‘the average concentration was either below the level of detection or below federal safety limits’, a heartening conclusion given that the element is commonly found in soil, air and water.

It remains to be seen for how long the clean label philosophy will continue to define the conversation around food packaging, niche views on arsenic notwithstanding. Historically, research into new artificial additives has been significant, and existing rules on their development in the US and EU have mandated intensive safety testing before they are ever brought to market. Combined with a poorer taste profile and an increased price point, clean eating – and with it, the impulse to design a cleaner label – may diminish in time. ●

Identification of saw palmetto oil by NMR and other methods

PRISPEX SL's main objective is the commercialisation, distribution and manufacture of chemical products. As a major wholesaler of industrial chemicals, it looks to strengthen the ability of nuclear magnetic resonance (NMR) testing in relation to products such as saw palmetto oil.

Saw palmetto, or *Serenoa repens*, is a palm indigenous to the southeastern US – Alabama, Florida, Georgia, Louisiana, Mississippi and South Carolina.

The fruits are eaten by an assortment of wild animals, livestock and people. When labelled as saw palmetto, *Serenoa repens* can be legally sold in the US as a herbal dietary supplement. The fruits are most frequently taken to ameliorate benign prostate hyperplasia. Saw palmetto oil inhibits the conversion of testosterone to dihydrotestosterone by 5 α -reductases. Benign prostate hyperplasia is associated with elevated concentrations of dihydrotestosterone. Clinical studies report few adverse events from *Serenoa repens* consumption, which are mostly mild.

It has been reported that in two out of six tested commercially available samples of saw palmetto extract, the level of total fatty acids was found to be less than 20%, which clearly indicates product adulteration. It is obvious that the nutraceutical industry (especially

“It has been reported that in two out of six tested commercially available samples of saw palmetto extract, the level of total fatty acids was found to be less than 20%, which clearly indicates product adulteration.”

the manufacturers of finished supplement forms) needs to have an ultimate strategy and supporting analytical methods to clearly identify adulterated (or counterfeit) saw palmetto extracts.

Identification methods

The commonly used identification methods include the ratio of the content of fatty acids, HPTLC and DNA.

- The ratio of the concentration of lauric acid to the concentration of the respective fatty acids must be in the specified range. The ratio can even distinguish the saw palmetto oil prepared by solvent hexane or supercritical extraction with carbon dioxide.
- A direct identification result can be achieved by comparing the

sequence of the zones present in the HPTLC chromatograms obtained with the reference solution and the test solution. The essence of this method is analysing fatty acids and esters in the saw palmetto oil qualitatively. The advantage is that it can directly observe and compare the differences among several samples in a short time. Meanwhile, the disadvantage is that it is easy to be disturbed by human factors. For example, the spots that are unrecognisable to the naked eye may lead to incorrect identification conclusions. More often than not, the speckle of the reference substance extracted by solvent may be different with the product extracted by supercritical fluid extraction. ▶

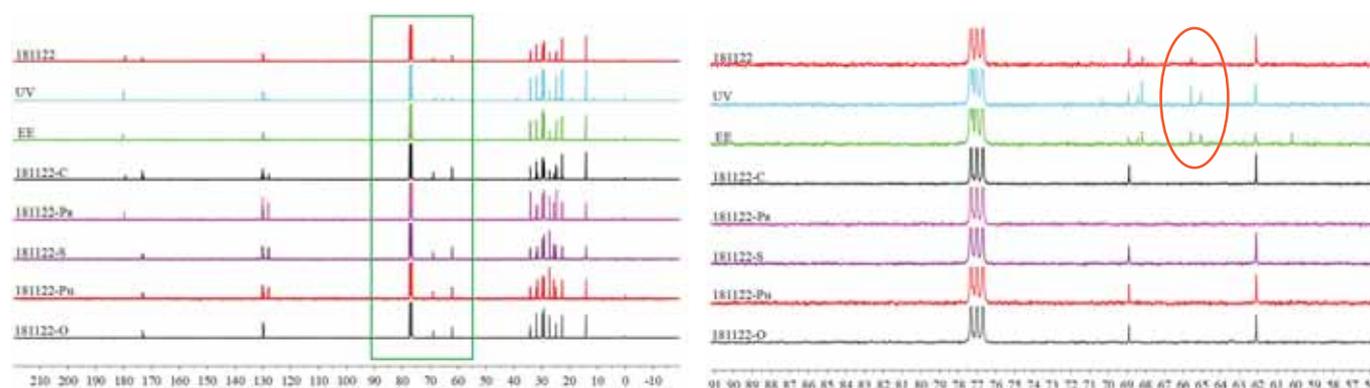


Figure 1. $^{13}\text{C}(^1\text{H})$ NMR spectra of various oils.

Company insight

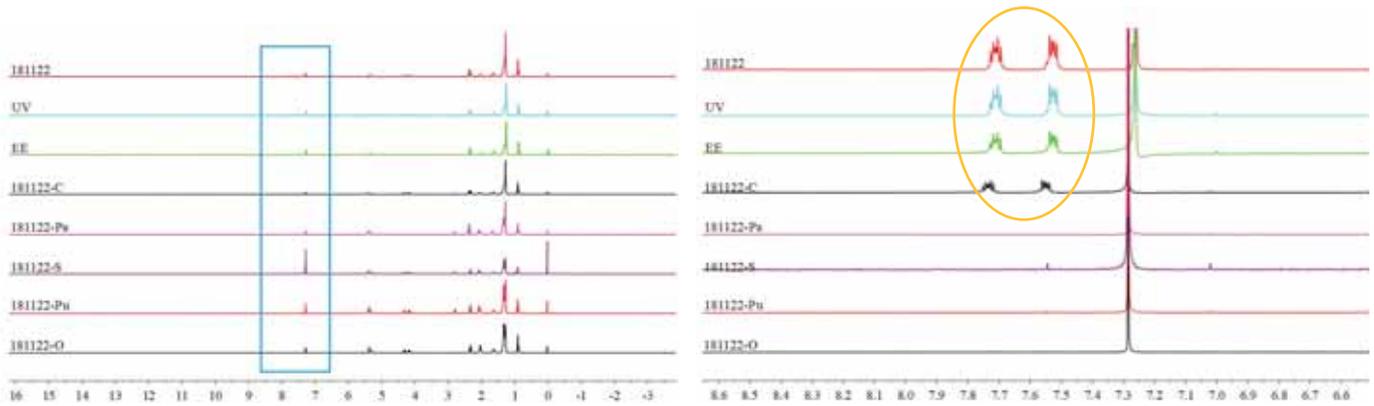


Figure 2. ¹H NMR spectra of various oils.

■ The protein coding plastid genes *matK* and *rbcl* have been sanctioned by the Consortium for the Barcode of Life (CBOL) for use in plant DNA barcoding.

of organic compounds. PRISPEX SL used NMR to try to distinguish the saw palmetto oil and other cheap oils according to the special fatty

65-68 ppm in the carbon spectrum of Figure 1 (red area).

■ It shows that the coconut oil has the same characteristic peaks with the saw palmetto oil at 7.55 and 7.75 ppm in the hydrogen spectrum of Figure 2 (orange area), which should be prevented from being misjudged in identification.

■ It can be seen that these spectra have more than 80% similarity. This is because the basic chemical constituents of vegetable oils are all advanced straight-chain fatty acids and glycerides.

■ Previous studies have shown that saw palmetto oil contains more free fatty acids and higher acid value compared with common plant oils. However, it is believed that immature fruits contain only 50% free fatty acids, while ripening fruits contain more than 90%. As a result, it is more difficult to choose the methods of identification.

The above research shows that several methods are not entirely useful for saw palmetto oil authentication. At present, the most practical identification method of the saw palmetto oil should be based on GC and HPTLC, which are in compliance with USP and EP.

PRISPEX SL aims to collect more vegetable oil samples, research the characteristic peaks to determine the compositions and source, eliminate the differences of harvesting time and processing of raw materials, and establish a database. In doing so, its actions will result in a method of NMR identification that will be more powerful and direct. ●

For further information

www.prispex.com

“PRISPEX SL aims to collect more vegetable oil samples, research the characteristic peaks to determine the compositions and source, eliminate the differences of harvesting time and processing of raw materials, and establish a database.”

Polymerase chain reaction (PCR) amplifies a specific region of a DNA target for the extracted sample. Then, the DNA is sequenced by using a next-generation sequencer. The sequences are compared with reference DNA sequence database. However, the DNA can sometimes be undetectable due to degradation or processing.

Nuclear magnetic resonance

Nuclear magnetic resonance (NMR) spectroscopy has long been used in structural analysis and identification

acid composition. The test was carried out using a BRUKER AVANCE III 400MHz on a 9.0mg/batch sample and CDCl₃ as a solvent. Scanning times were 16 ppm for the hydrogen spectrum and 1,024 for the carbon spectrum, with a spectral width of 20 ppm, 250 ppm, and a 1 s pulse delay.

Review of the results

Taking a look at Figure 1 and 2, there are a number of points worth noting.

■ The characteristic peaks of the saw palmetto oil suspected at



The fruits of the saw palmetto are most frequently taken to ameliorate benign prostate hyperplasia.

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Clean label starch – more than just E-number-free

Lyckeby Starch develops and manufactures modern, potato-based speciality starch and fibre for industries in the international food ingredients and paper markets.

What started out as a trend seems now to have settled down permanently. ‘Clean label foods’ is a growing segment, and some may even say that it is a new norm. As there is no common definition of clean label yet, it’s not unreasonable to question what we could, or should, be expected from a clean label product. Is there more to it than ‘just’ an E-number-free ingredient?

Clean label food’s shift from trend to norm

From the consumers’ perspective, the idea of clean label food seems to vary. It can be perceived as more natural or healthier, made from more recognisable raw materials and ingredients; or simply as a minimum or total absence of E-numbers on the product’s label. The absence of other ingredients has also been associated to clean label – ‘gluten-free’ or ‘all natural’ have been commonly used as clean label claims to attract consumers.

“From the consumers’ perspective, the idea of clean label food seems to vary. It can be perceived as more natural or healthier; made from more recognisable raw materials and ingredients; or simply as a minimum or total absence of E-numbers on the product’s label.”

But lately the clean label concept has grown into also including factors beyond the actual content of the food. With claims like ‘Fairtrade’ and ‘100% CO₂ compensated’, new aspects are associated with clean label foods; aspects connected to responsible food producers with products produced with concern to the future of our planet and the people involved.

At the same time as consumers put higher demands on what they put into their bodies, they are reluctant to compromise



Lyckeby Careful offers potato and waxy maize-based products, developed for a wide variety of applications.

on quality criteria such as taste, appearance and convenience. So, with an increasing number of consumers today wanting high-quality clean label food, the food industry is responding. Clean label ingredients have become an important strategic issue across the entire manufacturing chain.

Carefully produced clean label starches

Lyckeby Starch has provided the food industry with clean label starches since

2010. The portfolio of the company’s clean label starches is called Lyckeby Careful, and is carefully designed for meeting tomorrow’s needs for functional starches. It offers products based on potato and waxy maize, developed for the processes used in applications such as soup and sauces, meat application, chilled or frozen ready meals and fruit preparations.

As modified starch is widely used in ultra-high-temperature (UHT) processes for products with prolonged shelf life,

reliable UHT-tolerant clean label starches are of great importance. Lyckeby Careful 370 and Lyckeby Careful 390 are designed for extreme processes like UHT.

The latest addition to the Lyckeby Careful portfolio is a functional potato starch designed for meat application, which is intended to address the requirement of a more tolerant starch to improve texture and water binding. Lyckeby Careful 1400 has excellent water binding properties, provides a clean taste, and has a short texture. It can be used in spreadable pâtés, sausages and minced meat products where temperatures are higher, or with prolonged cooking time.

Lyckeby Starch cares about its consumers, and therefore takes responsibility. The Careful technology is developed not only to attract consumers with ingredient lists without E-numbers, but also to reduce the amount of chemicals and energy needed during the process.

Lyckeby Starch also cares about its partners’ products. Therefore, starch expertise and technical support is always included when using the company’s products. ●

For further information

www.lyckeby.com



Lyckeby Careful

Clean label starch – more than just E-number free

At Lyckeby Starch we care, therefore we take responsibility. The Careful technology is developed not only to attract consumers with ingredient lists without E-numbers, but also to reduce the amount of chemicals and energy needed during the process.

As your partner we care about your products too! Therefore, starch expertise and technical support is always included when using products from Lyckeby Starch.

We care!



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With over 6,600m² of storage facilities, **C.E. Roeper** provides natural products, hydrocolloids, functional foods, superfoods, health ingredients, waxes, resins and balsams, and certified organic or conventional material, for the ingredients industry. The company prides itself on supplying excellent-quality management and application technology services.

In today's globalised world, finding sources for raw materials is not a problem. The world has become a small place, with suppliers to be found just around the corner. However, looking behind the scenes shows another story. When it comes to substances like PAHs, complete documentation is an indispensable necessity. C.E. Roeper's aim is to fill paper documentations with life, including regular laboratory monitoring, audits with its suppliers in the countries of origin, field work in the crop regions, participation in projects to improve social standards and sustainability, business relations with its suppliers based on long-term trust.

Around the world

There's almost no country on this earth that C.E. Roeper has not visited. It buys natural raw materials from all over the world and from suppliers who have become friends over the decades of cooperation. C.E. Roeper believes sourcing does not only mean signing an order sheet, it includes crop surveys, regular audits and up-to-date market reports. Sometimes it can mean standing in the middle of the African savannah gathering beeswax.

With the company's own storage facilities run by C.E. Roeper employees on its own premises, C.E. Roeper is in a position to react flexibly to various difficulties that can arise in the supply chain – from delays in delivery to harvest-related shortages. The company provides products and services that fulfil the highest quality standards and offer value in terms of price, safety and environmental impact. It offers tailor-made solutions when it comes to packing, processing and refining. Its quality department with a staff of four



C.E. Roeper prides itself on supplying natural products to all facets of the industry.

experts offers in-house sample handling, monitoring and documentation.

More than just words

'Come to where the nature is' is more than just a marketing slogan for C.E. Roeper. Nature and natural ingredients have been the company's passion long before they became 'trendy'. C.E. Roeper has been sourcing and distributing natural raw materials since 1891, starting out with waxes, resins and balsams. Today, the company is an expert in hydrocolloids, functional foods and superfoods – all in conventional or certified organic quality.

Buying from C.E. Roeper is buying pure, unadulterated, natural ingredients from a reliable source. Its application technology will assist clients in choosing the right quality for their applications – no matter if they require a gelling agent such as carrageenan, or a thickening agent such as locust bean gum, xanthan gum or gum

tragacanth. Superfoods such as quinoa or chia, as well as health ingredients like konjac gum, guar gum or others, are also part of the company's product portfolio. C.E. Roeper will make sure to match its clients' products and production process with exactly the right product, offering solutions beyond the customary. Its customers benefit from its in-house application technology centre, offering tailor-made solutions and professional consulting.

'From distribution to solution' again, is more than just a line in a brochure. C.E. Roeper's employees live up to this promise every day. Integrity, fairness and professional honour are the heart of the company's business, as it feels responsible for its performance and reputation, seeking for mutually beneficial relationships with customers and suppliers alike. ●

For further information

www.roeper.de

ORGANIC ACACIA FIBER &



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www.ALLANDROBERT.com

The full range of fibres

Alland & Robert, an international leader in natural gums, with a strong focus on acacia gum, is focusing on acacia fibre, a range that is also available in an organic form.

A acacia fibres are highly safe all-natural food additives that come from the exudation of acacia trees. They are guaranteed to have a minimum fibre content of 90% (international method AOAC 985-29) and can be added to any product formulation to increase the percentage of fibre.

Satisfying customer expectations

Acacia fibres offer a safe and natural alternative to the food and beverage industry. To meet public and industry expectations, Alland & Robert's variety of acacia fibres include *seyal* and *senegal* grades. Both types have organic references that have been specifically developed to serve the growing demand for organic products in markets such as Europe and North America. To ensure full traceability of the gum, Alland & Robert is not only organic-certified for its manufacturing process, but is also working with African suppliers, who deliver organic raw materials approved by locally accredited organisations.

“Companies need to adapt by offering healthier and safer products to their customers. Acacia fibres are a real asset for them.”

Frédéric Alland, Alland & Robert

Meeting the needs of all industries

Acacia fibres are odourless, tasteless, colourless and highly soluble in water. This type of fibre does not present the usual disadvantages of other common fibres used in the food industry, which lead to discomfort and other side effects, plus unnatural synthetic additives and a viscous end product. Resistant to acidity and heat, acacia fibres can undergo highly complex preparation methods and have a pH that is compatible with milk proteins. Acacia fibres have been scientifically proven, with recognised prebiotic effects.



The company recently opened an advanced physico-chemical laboratory.

Bakery, dairy, beverages, dietary and health products are among the common applications for acacia fibres.

Helping the food industry with research and development

While consumers' interests for dietary food and nutrition are increasing worldwide, the food and beverage industry faces a new challenge.

“Companies need to adapt by offering healthier and safer products to their customers. Acacia fibres are a real asset for them. As an international expert in acacia gum, Alland & Robert accompanies them throughout the process,” comments Frédéric Alland, CEO of Alland & Robert. “From formulation to manufacturing, our research and development team is dedicated to partnering with our clients to help them – thanks to their in-depth expertise – develop the best product in terms of taste and safety.”

In addition to their fibre-enrichment property, acacia fibres are also the answer to texturing needs, which can be very useful to

companies looking to reduce sugar in their formulations. This is particularly interesting in the beverages industry, where soft drinks are being challenged on this trendy topic.

To respond to the needs of all clients, Alland & Robert's acacia fibre range is also halal and kosher-certified, and is suitable for vegetarians and vegans.

A high-quality, natural product

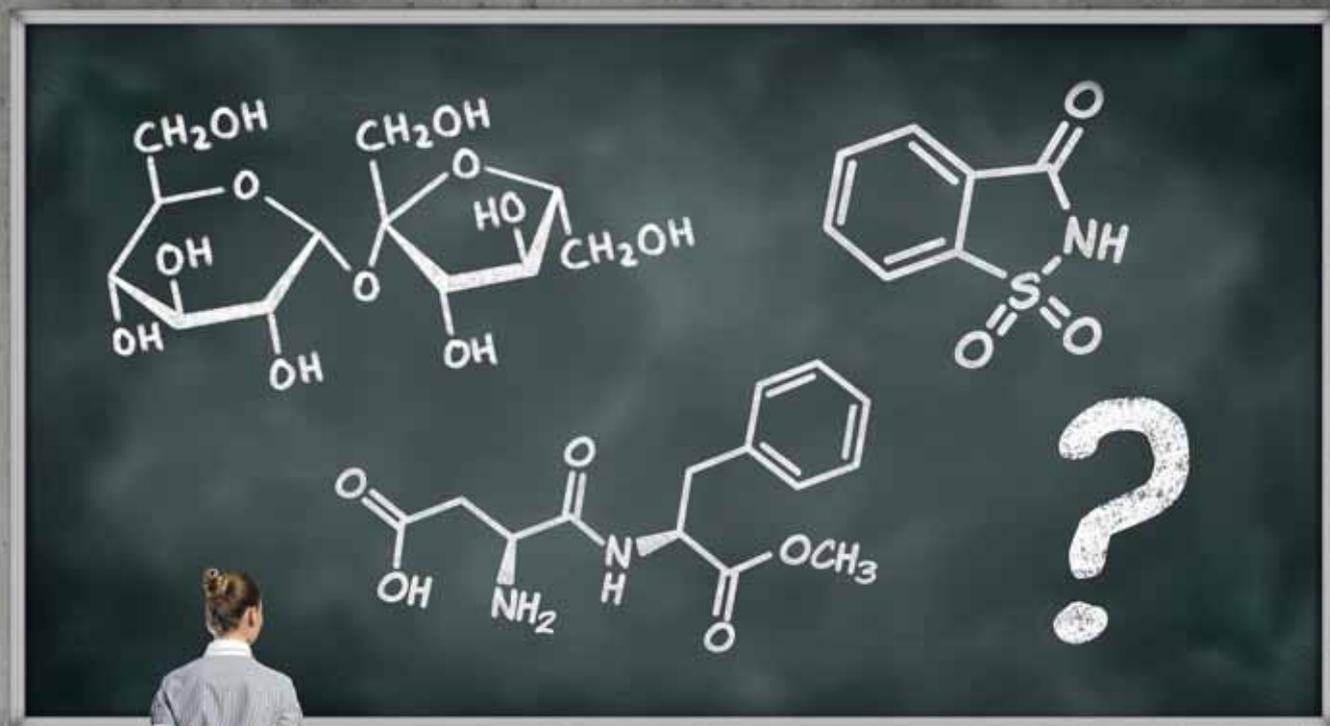
Alland & Robert is committed to the naturalness of its product and makes the most of its advantageous qualities, while carrying out strict quality checks on suppliers throughout the production process and ensuring good working conditions for harvesters. This level of control is also applied at the company's factories, with acacia fibres remaining additive-free from harvest to sale.

In order to continue offering the highest-quality products, Alland & Robert opened brand-new offices in Normandy and France in 2018, including a state-of-the-art physico-chemical laboratory, and a technological platform for applications research and customer training.

Alland & Robert will attend IFT 2019 in New Orleans on its distributor Farbest's booth 3029 ●

For further information

www.allandrobert.com



A successful formula

Vicky Pyrogianni, a consultant dietitian/nutritionist and nutrition science director to the International Sweeteners Association, discusses why low-calorie sweeteners can help food manufacturers in food reformulation efforts to create palatable products that contain less sugar and fewer calories.

Consumer interest in healthier foods and an overall improved diet has never been higher. At the same time, obesity rates and obesity-related diseases continue to rise in children and adults. Among other strategies targeting this problem, there is a public health call to the food industry to contribute to the global effort to reduce the prevalence of obesity-related health diseases by reformulating products to provide healthier options that are lower in sugar, salt and saturated fat that also meet consumer demand. In order to achieve the sugar reduction goal, low-calorie

sweeteners are a useful tool for manufacturers to help achieve products with less sugar and fewer calories, while still being palatable to consumers.

Low-calorie sweeteners and food reformulation

Health organisations globally, including the World Health Organisation (WHO), recommend that sugars should not provide more than 10% of our total energy (calorie) intake, which corresponds to 50g a day for a 2,000-calorie diet.

In practice, being hundreds of times sweeter than sugar, low-calorie sweeteners are used in minute amounts to confer the desired level of sweetness to food and drinks, while contributing little to no energy at all to the final product. This offers one major advantage to food and drinks as well as to table-top sweetener manufacturers and ultimately consumers – providing a sweet taste while eliminating or substantially reducing the calories in a food or drink when replacing sugars.

In Europe, the use of low-calorie sweeteners in a food or beverage, in almost all cases, must also result in a product that has a total energy reduction of at least 30% according to EU Regulation 1333/2008 on food additives. For consumers, this can mean a significant calorie saving, which may be especially helpful in managing overall energy balance (the balance between calories ‘consumed and burned’ during the day). A variety of food and drink products, including soft drinks, table-top sweeteners, chewing gums, confectionery, yogurts and desserts, can be sweetened with low-calorie sweeteners, in line with local regulatory requirements.

Ensuring the safety of sweeteners

When food manufacturers consider food reformulation for their products, food safety is the number one priority. The use of low-calorie sweeteners in foods and drinks is safe, as consistently confirmed by regulatory food safety agencies around the world.

Low-calorie sweeteners are among the most thoroughly researched ingredients globally. All approved low-calorie sweeteners have undergone a stringent safety assessment by food safety agencies around the world, including the Joint Food and Agriculture Organisation (FAO)/WHO Expert Committee on Food Additives (JECFA), the US Food and Drug Administration (FDA) and the European Food Safety Authority (EFSA), which have consistently and repeatedly confirmed their safety.

Weight and glucose control

There is often confusion as to whether and how low-calorie sweeteners can help in weight management and glucose control for people with diabetes. When scientists or health professionals want to understand the impact of any food ingredient on weight and glucose control, they rely on human studies that examine these effects, and especially on well-controlled, randomised clinical trials. These types of studies consistently show that low-calorie sweeteners, when used to replace sugars and as part of a healthy diet, can help us reduce our calorie and carbohydrate intake, and in



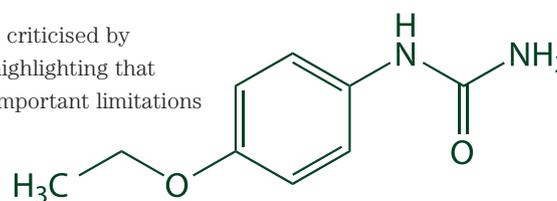
turn, contribute to weight loss or maintenance, and to better glucose control for people with diabetes.

Recently, a paper published in the *British Medical Journal (BMJ)* found that some studies did show benefits for weight control. However, they also concluded that more research was likely needed. This has been interpreted by some as meaning that the totality of the data does not support the benefits of low-calorie sweeteners in weight management, despite the fact that the studies comparing low-calorie sweetener intake to sugar intake suggested improvements in body mass index and fasting concentrations of blood glucose favouring low-calorie sweeteners, and that, among children, their intake led to a smaller increase in body mass index z-score versus sugar intake.

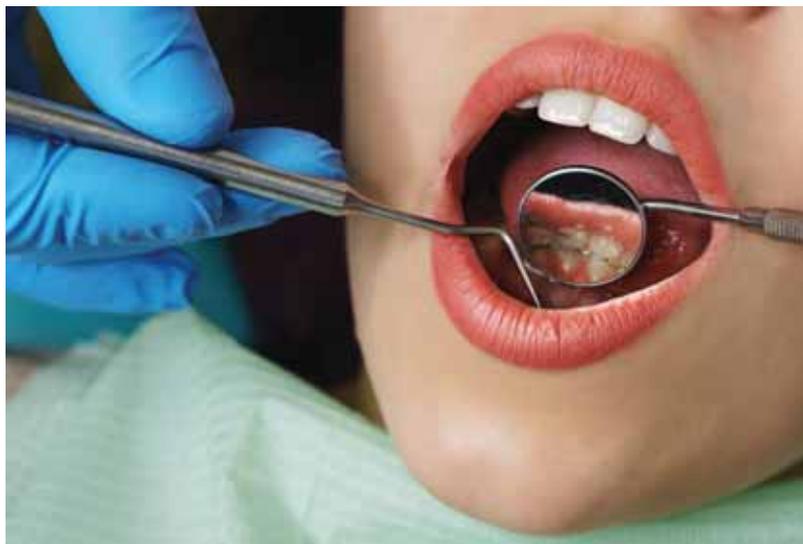
Reformulating products to include sweeteners and reduce sugar is forcing innovation.

“When food manufacturers consider food reformulation for their products, food safety is the number one priority.”

The study has been criticised by experts in this field, highlighting that this paper has many important limitations and considered only a very small proportion of the published research.



In response to the study commissioned by WHO, experts commented in the *BMJ* that, “Given global concern about continuing increases in prevalence of overweight and obesity, it is important that evidence about tools to reduce excessive weight is assessed appropriately.” Experts also pointed out that, “The conclusions [of the study] also conflict with consensus statements by several international



Dental care is a compelling reason to reduce sugar intake.

scientific groups recommending the use of low-calorie sweeteners.”

In relation to food reformulation, experts commenting in the *BMJ* article warned that, “Increasingly, reformulation of mass-market sweet products is the principal strategy for sugar reduction, in developing and developed countries alike,” and stressed that sugar reduction is urgent and “reformulation without sweeteners will not suffice”.

“Scientists and experts around the world agree that low-calorie sweeteners do help reduce body weight when they substitute for sugar in the diet, but nobody should expect them to be a magic bullet.”



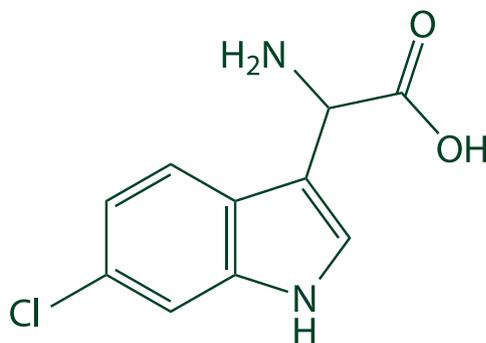
Vicky Pyrogianni

Vicky Pyrogianni, MSc, RDN, is a consultant dietician and nutritionist, who graduated from Harokopio University of Athens and is registered in Greece. She is the current nutrition science director at the ISA, with a wide knowledge of the science behind the role of low-calorie sweeteners in the human diet.

Dental health benefits should not be neglected

While not emphasised frequently, the role of low-calorie sweeteners in oral health is very important. Unlike sugar and other fermentable carbohydrates of our diet, low-calorie sweeteners are not broken down by oral bacteria, and that is why they do not contribute to tooth decay.

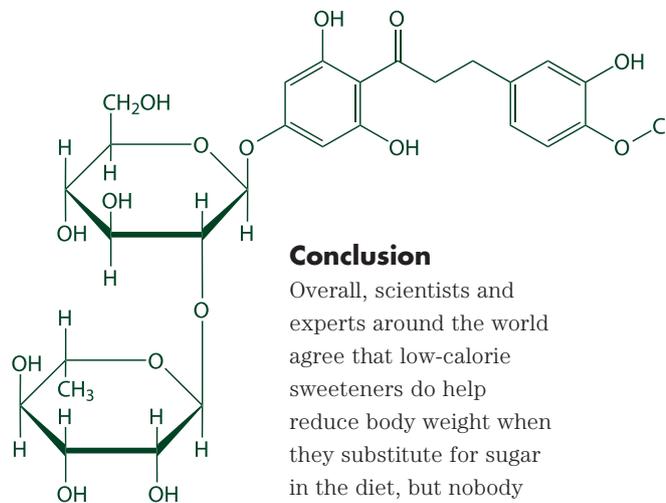
Frequent and/or high consumption of sugars contributes to tooth demineralisation (loss of



calcium and phosphate from tooth enamel leading to tooth decay), while “consumption of foods/drinks containing low-calorie sweeteners instead of sugar and as part of a varied and balanced diet and a healthy lifestyle may help maintain tooth mineralisation by decreasing tooth demineralisation”, said an authorised health claim by the EFSA in 2011.

Low-calorie sweeteners and sugar intake

Several recent studies have shown that low-calorie sweeteners can help reduce overall sugars intake, in line with public health recommendations. In recent studies in the US and the UK that analysed data from the national nutrition surveys (the US National Health and Nutrition Examination Survey and the UK National Diet and Nutrition Survey, respectively), it was found that consumers of low calorie sweetened beverages had a better diet quality, lower free sugars consumption and higher chances to meet the recommendations to reduce free sugars intake.



Conclusion

Overall, scientists and experts around the world agree that low-calorie sweeteners do help reduce body weight when they substitute for sugar in the diet, but nobody should expect them

to be a magic bullet and the single answer to the obesity epidemic, which requires a wide toolkit of strategies. Experts know that causes for overweight and obesity are multifactorial.

Low-calorie sweeteners are also tooth-friendly ingredients and can help people with diabetes manage their sugar intake without causing a spike in blood glucose levels.

Taken together, the use of low-calorie sweeteners in food reformulation is useful in providing individuals with options that have less sugar and fewer calories, and thereby in supporting public health efforts to reduce excessive body weight and to promote calorie and sugar reduction. ●



Time to reflect

High sodium intake is a global health concern, with significant implications for the use of salt as an ingredient in the food industry. Here, *Ingredients Insight* explores findings from GlobalData and the World Health Organisation to assess the progress being made.

Salt has a sodium nutrient content of 39%, and consuming excessive amounts of it can significantly increase levels of sodium in the bloodstream, contributing to high blood pressure and increased risk of heart-related health issues such as stroke. While sodium is a nutrient found naturally in other sources like vegetables and milk, the majority of dietary intake comes from salt. With salt being a key ingredient in many processed foods, the industry faces strong pressure to reformulate products and be more transparent in order to lower the amount of salt – and, therefore, sodium – being consumed globally.

Salt and sodium are often used interchangeably in nutritional labelling, depending on the terminology consumers are familiar with in particular markets. For example, in the US, sodium (the nutrient) is commonly used on labelling, while in Europe, salt (the ingredient) is instead used. Identifying ways to replace salt as an ingredient, which will in turn have positive implications for the amount of sodium contained in products, is therefore of primary concern, so terminology here will primarily refer to ‘salt reduction’ rather than ‘sodium reduction’.

Around three in five consumers globally say they are always or often influenced by a product’s impact

42%

Share of consumers who consider salt/sodium to have a negative impact on health.

WHO

5g

The recommended daily allowance of salt intake.

WHO

on their health and well-being when choosing food (62%). When considering what is 'healthy', these consumers are primarily thinking about products that are natural, or offer a balanced nutritional profile in terms of nutrient content including fat, sugar and salt. To stay relevant to today's health-minded consumers, manufacturers must respond to demand for 'healthy' food and drink through relevant innovation and reformulation. Indeed, failure to do so may ultimately harm sales going forward considering the competitive nature of the market. This is especially true where government intervention – for example levies on unhealthy products high in 'villain' ingredients such as salt – may drive up prices paid by consumers.

“Around three in five consumers globally say they are always or often influenced by a product’s impact on their health and well-being when choosing food.”

Globally, over half (54%) of consumers believe they would buy fewer unhealthy products as a result of price rises, while one in five (19%) think they would stop buying such products altogether. Advancement in ingredient innovation is paving the way for brands to develop healthier food and drink to respond to health demands; without compromising other important attributes such as taste, texture and shelf life.

Compared with 2017, more consumers then said they paid close attention to the ingredients used in the food and drinks they consumed. Greater health

awareness and access to information online is helping consumers make better-informed decisions over what is needed to meet personal health goals – in turn leading them to be more ingredient-attentive. When drilling down to specific consumer segments, it is evident that younger consumers are less ingredient attentive overall, but their attentiveness has increased by a greater margin than older cohorts. In fact, those aged 65 and over became less ingredient attentive over the same period of time (2015–17). In the long term, as younger, better-connected and informed consumers move up along the age cohorts, ingredient attentiveness is likely to continue to grow at pace. It is therefore vital that manufacturers ensure product formulations meet consumers' needs, as much as the claims on the finished product, such as 'low salt'.

Also in 2017, 29% of innovative food and 32% of innovative soft drink product launches featured claims related to being 'natural' or free from artificial ingredients. Both sectors have seen a significant increase since 2013, highlighting how innovators are responding to strong demand for natural ingredients among consumers globally. Indeed, natural ingredients are cited as the top factor that would encourage consumers to choose one brand over another; with two thirds (66%) claiming to be interested and actively buying food and drink with natural claims. The challenge for brands and manufacturers is to address this desire for natural ingredients when reducing salt content, without compromising on other product attributes, such as flavour or shelf life.

A valid pressure point

According to the World Health Organisation (WHO), average salt consumption is too high at 9–12g per person/day globally. This figure is around double WHO's recommended daily adult intake of less than 5g of salt (the equivalent of 2,000mg sodium), a level that it claims can help reduce blood pressure, and the risk of cardiovascular disease and stroke. It is a concern for the health risks associated with overconsumption of salt, which is driving many consumers to make proactive choices to reduce their risk, including opting for reduced-salt products.

Indeed, overall concern about blood pressure has increased, with almost two thirds of consumers in GlobalData's Q1 2017 global consumer survey expressing concern, up from 51% in 2014. While just a fifth of consumers are actively buying products to address their concerns about blood pressure, a further 28% were interested in doing so in the future to meet concerns. This highlights opportunities for low-salt product innovation, which



Regional focus: Republic of Moldova

In a recent WHO survey in the Republic of Moldova, it was found that salt intake in adults exceeds the WHO recommended maximum target of 5g per day by more than twofold. More than half (57.2%) of the 856 households visited consumed salt containing 15mg/kg of iodine or more, while 23% of them consumed salt that was not iodised. Awareness, attitudes and behaviours around salt and its importance indicate a need for intensive awareness and health promotion campaigns to improve the uptake of preventive strategies aimed at reducing salt consumption, and increasing potassium and iodine intake.

Therefore, a national programme for reducing salt intake and promoting increased potassium consumption in the Republic of Moldova needs to be implemented through systematic efforts, including food product reformulation; product labelling; and public education involving the health sector and the food industry, with the objective of achieving a 30% reduction in salt consumption by 2025. This would also be an opportunity to revise the criteria for iodine fortification in the adult population, aiming to correct both the deficiency still present in some people, and the excess detected in others.

Source: WHO

explicitly promotes benefits for lowering blood pressure. Promoting these benefits will be particularly attractive in Latin America where concern for blood pressure and interest in products addressing it is especially high.

Salt plays a key role in enhancing the flavour of foods to ensure they are palatable and enjoyable for consumers, and ultimately driving purchases. Indeed, when considering consumers' snacking choices, for example, flavour/taste is ranked as the most important influencer, over and above health. So however healthy a reduced-salt product is, if it doesn't taste appealing, it will be a challenge to persuade many to buy it over standard options. The fact that 'salty' flavour types are by far the most appealing to consumers when considering savoury snacks further highlights the challenges brands face in creating options that are low in salt yet meet the need for a 'salty' and flavoursome taste. A key opportunity for brands is to tap into the palates of more experimental consumers who are keen to try more unusual flavours and break from the norm. Exploring flavours, which are naturally less 'salty', but take flavour from other highly flavoured ingredients such as spices, will be a key innovation route going forward.

Nutritional yeast – a natural salt replacer?

The natural flavour-boosting properties of nutritional yeast creates opportunities for use as a highly nutritious salt replacer. As the trend for vegan diets continues to explode, nutritional yeast is emerging as an on-trend ingredient thanks to its ability to replicate a cheesy flavour in a number of dishes, earning it the nickname 'vegan cheese'. Nutritional yeast is a deactivated form of yeast, consisting of yellow flakes that are said to add a deep savoury, umami flavour to dishes, similar to Parmesan cheese. As well as offering a flavour boost, nutritional yeast is nutritionally dense, containing protein and B vitamins, while being sodium free. A number of niche brands have started to use the ingredient to boost flavour and capitalise on its vegan and low-sodium properties. Food manufacturers should explore opportunities to incorporate nutritional yeast into their products to reduce salt naturally, while also capitalising on the ingredients' other healthy credentials.

In 2013, WHO set an ambitious target for its 193 member states to reduce the global population's intake of salt by a relative 30% by 2025. With processed foods a big contributor to overall salt intake, food manufacturers are under strong pressure. This can prove challenging with salt often playing a vital role in production, not only for flavour, but by also keeping food safe, extending shelf life and creating texture. Furthermore, the industry must balance salt reduction with other health demands including low-fat and 'natural' formulations, while also maintaining sensory appeal. ●

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Natural low-sodium sea salt

Saltwell salt is a natural, clean label product with the same taste profile and 35% less sodium than other sea salts. Managing director Fredrik Enander talks about Saltwell's unique source, composition and benefits.

What is the benefit of salt reduction?

Fredrik Enander: Sodium chloride is a vital nutrient and is essential for many bodily functions. However, the use of sodium chloride throughout the world is very high, especially in prefabricated foods and ready meals. According to the World Health Organisation (WHO), the average daily salt consumption is twice the recommended amount, which is far too high and contributes to an increase in heart disease. Research shows there is a stronger connection between high salt consumption and heart diseases than between smoking and lung cancer. 2.5 million lives could be saved every year by reducing the sodium intake to WHO's recommended level.

What are some of the benefits of the potassium content in Saltwell salt? What advantages does Saltwell have over competitor sodium and potassium blends?

Potassium is considered an essential nutrient by doctors and health authorities around the world. Together with sodium, potassium regulates the fluid and acid-base balance in the body. The more sodium we ingest, the more potassium is needed to maintain a balance. While 90% of Americans consume too much sodium, less than one in 10 get enough potassium.



The water is evaporated in open ponds in the salines, under the sun of the Atacama Desert.

Because of our natural extraction process, our product is approved in the US and other countries to be sold simply as sea salt. It can be swapped 1:1 for other salts in most recipes, bringing the sodium level down to 65% without compromising the great taste that comes with normal sea salt. By contrast, salt blends that use free potassium are not clean label, and they have an unpleasantly bitter taste, which means flavour-masking agents often need to be added.

Where is Saltwell salt sourced from? Why is its sodium content so low?

Saltwell salt comes from a million-year-old underground sea below South America's Atacama Desert, the driest place in the world outside the polar regions. It's a uniquely arid and sterile environment used by NASA to mimic the surface of Mars. As you get closer you see less and less vegetation; there's no animal life. By the time you come up to the salines, there's nothing.

After the mineral-rich brine is drawn up into the salines, the sun itself causes the water to evaporate. No filters or roofs are required, as, although the air is full of oxygen, there aren't even any bugs. During the natural drying process, the sodium crystallises with potassium into one grain, making Saltwell a uniquely healthy and clean label sea salt.

How do you ensure the quality of the Atacama salt consistent?

For us, the important thing is making this unique natural resource food grade. We have many years of experience with a variety of different salts, so we pay close attention to the quality of our products. To meet increasing demand, we recently moved our cleaning and quality assurance operations to a BRC-certified facility in Cyprus.

Even before we transport the product, we carry out a lot of chemical analyses to check that nothing is wrong with it. It can't have too many trace materials, for instance. That said, as there are no insects in the Atacama, we don't have to worry about things like that. It's a very clean environment.

Once the product reaches the facility in Cyprus we clean it further using metal traps, cyclones, dryers and more. We also wash it with clean salt water, which can't absorb any of our grains. This is all vital in creating an assured product. As Saltwell salt is entirely natural, many things can vary. We ensure each batch matches the specification we promise to the customers through a lot of analyses and tests. Finally, we pack it in bags that we send to distributors across the globe.

How has Saltwell's product improved recently? What other versions are available?

Since we moved the cleaning to Cyprus we have further improved the quality with much more stable specification, better control of trace materials, and so on. The product is also less humid now, which means it has less of a tendency for caking and flows better.

We have new organic and microfine – which is a fine powder – versions. The latter is especially suited for snacks but can be used for many other applications. ●

For further information

www.saltwellsalt.com

Europe's fresh take on food law

Consumers are more aware than ever of the nutritional content of the food they eat, but non-communicable diseases, often linked with diet and lifestyle, are still becoming more prevalent. Jim Banks speaks to **Anne Bucher**, director-general for health and food safety at the European Commission, about how regulations are addressing these issues, and how different stakeholders are working together to promote healthier food choices.

In the developing world, it is sadly still true that lack of access to food and medication are major causes of mortality. Yet even in the developed world, with its sophisticated food supply chain, its huge range of nutritional choices and its advanced healthcare infrastructure, many preventable diseases are shortening lifespans and leading people to live a significant portion of their lives in poor health. Furthermore, the problem is getting worse.

The latest Global Burden of Disease (GBD) study published by the Institute for Health Metrics and Evaluation – GBD 2017 – shows that dietary factors and the supply of healthy food are crucial in tackling the rising prevalence of non-communicable diseases (NCDs), which increase the costs of healthcare and

reduce the capacity of the workforce. The study, which looks at trends in 195 countries and territories, and tracks 359 diseases and injuries as fatal and non-fatal causes of ill health, paints an alarming picture.

It found that from 1990 to 2017, there was a 41% decrease in communicable diseases and neonatal disorders, but simultaneously a 40% increase in NCDs. In developed countries, among the leading causes of early death were ischemic heart disease, stroke, lung cancer, COPD and diabetes. Worldwide, between 2007–17, mortality from cardiovascular disease increased despite the prevalence of cost-effective drug treatments, and metabolic conditions such as diabetes and fatty liver disease increased the number of years lived with disability (YLDs).



In 2017, NCDs accounted for 80% of YLDs. Back in 2017, the World Health Organisation (WHO) noted that the number of obese children and adolescents worldwide had risen 10-fold in the past 40 years and that, if current trends continue, more will be obese than moderately or severely underweight by 2022.

The scale of the problem has led to much debate among regulators. A conference in Vienna, Austria, at the end of 2018 – ‘People’s food/people’s health: Towards healthy and sustainable European food systems’ – was among many recent forums of discussion among European agencies, governments and academics. It highlighted that dietary habits and physical activity are major considerations in Europe, where 60 million people suffer from diabetes, 55% of the adult population is overweight or obese, and two thirds of premature deaths are caused by four major NCDs – cardiovascular disease, diabetes, cancer and chronic respiratory disease.

Into this challenging environment has stepped Anne Bucher, director-general for health and food safety (DG SANTE) at the European Commission (EC), who took up her post in October 2018. In 35 years working for the EC, she has focused on policy areas such as economy and finance, development and social policy, taxation and the information society, giving her the breadth of experience needed to tackle such a complex brief.

“It has been a busy few months because there are many big topics on which we need to make progress,” Bucher remarks. “Food and health are big challenges and they must remain high on the agenda for the EU. We have priorities that are fixed by the legislative timetable, but we are seeing good results already.”

Regulations influence diet

The EC’s objectives in food safety and health are to guarantee a high level of protection of human life and health; the protection of consumers’ interests and fair practices in food trade; to ensure the free movement of food and feed manufactured and marketed in the EU; and to facilitate global trade of safe feed and wholesome food. One step forward under this brief was the recent agreement on the review of the General Food Law (GFL).

The GFL aims to enhance transparency and sustainability in the EU’s risk assessment model for the food supply chain. The goal is to strengthen the reliability, objectivity and independence of the studies used by European Food Safety Authority (EFSA), and to revisit the governance of EFSA in order to ensure its long-term sustainability. “We have just completed the review of the GFL, which

makes science more transparent and which will make studies for risk assessment available to the public earlier,” Bucher notes. “The foundations of the EU’s food legislation are in the internal market. The monitoring of the market is centralised at EU level, and this is one of the most harmonised areas within the EU because there is an understanding that food must be safe and that we need to rely on scientific risk assessment.”

The new agreement stipulates that all studies and information supporting a request for a scientific output by EFSA are made public automatically when an application is validated or found admissible. This will be done at a very early stage in the risk assessment process, in an easily accessible electronic format that allows users to search, download and print the studies. There will also be a database of commissioned studies, consultations with stakeholders and the general public on submitted studies to ensure EFSA has comprehensive access to existing evidence underpinning its risk assessment, and a transparent procedure for consultation on planned studies.

EFSA will act to ensure coherent communication throughout any risk assessment in order to avoid any adverse impact on public perception as regards safety in the food chain, and to ensure that risk analysis is comprehensive, continuous and transparent.

“Food and health are big challenges and they must remain high on the agenda for the EU. We have priorities that are fixed by the legislative timetable, but we are seeing good results already.”

“We need consumers to trust in the safety systems that are in place across the EU,” remarks Bucher. “Although individual member states control the enforcement of those systems, the EC can audit them. So, we have inspectors who can go to member states and look for problems with unsafe food or fraud. We saw that happen with horsemeat a few years ago, but we have the security system in place to detect these things.”

Grow with consumers

Food safety and nutrition are the focus for regulators across the world. Canada, for instance, saw the Safe Food for Canadians Regulations (SFCR) come into effect in January. Intended to strengthen Canada’s food safety system by focusing on prevention and allowing for faster removal of unsafe food from the marketplace, SFCR introduces new licensing, preventive control and traceability

41%

A study found that from 1990 to 2017 there was a decrease in communicable diseases and neonatal disorders.

40%

But simultaneously an increase in non-communicable diseases.

Institute for Health Metrics and Evaluation



Anne Bucher

requirements for food businesses that import food or prepare food for export.

Whether in the EU, Canada or any other developed country, regulation needs to be constantly refined and updated, not least because consumers are more aware of and better informed about what they eat and where it comes from.

“Consumer demands have grown, so legislation must also evolve,” says Bucher. “We also have to ensure that food operators are compliant in terms of how they make and package food. Consumers want to be more informed and legislation imposes demanding food information obligations for producers. In this area, the EU is very advanced compared with the rest of the world.”

Currently, food producers must list all ingredients, the product’s origin, the presence of any allergens or genetically modified organisms (GMOs) and fat, salt and sugar content.

“The current debate is about whether we could add more information – such as the energy content, the nutrients contained in the food – and whether it is good or bad for your health. The food industry does, and has always done, voluntary initiatives, but we need to ensure that labelling is consistent and not misleading,” Bucher notes.

“The current debate is about whether we could add more information – such as the energy content, the nutrients contained in the food – and whether it is good or bad for your health.”

A little over a year ago, France adopted Nutri-score front-of-pack labelling, which grades the nutritional quality of food using a colour and letter coding system, to help consumers avoid eating an unbalanced diet. Many foods in Europe also feature a traffic light system, indicating high, medium or low levels of fat, saturated fat, sugar and salt. The debate is surely turning from food safety to the role of nutrition in the overall health of a society, and whether regulations can encourage, or at least enable, healthy eating.

“Such labels must really be science-based and transparent for consumers,” continues Bucher. “NCDs are big challenges for our society and we must look at them in a holistic way that encompasses not just food, but also physical activity and lifestyle. We are doing a lot of work on tobacco at the moment. The EU has done a good job of looking at the impact of lifestyle on health, but obesity is just one example of a problem that we share with the rest of the world. That must be linked to food and our legislation on food health.”

A framework for food safety and health

Further regulatory developments in the EU include the recent introduction of rules limiting the amount of trans fatty acids (TFA), consumption of which is thought to elevate the risk of atherosclerosis. The content of TFA in food cannot exceed 2g per 100g of fat.

“There are also other initiatives, though not legislation, in the health area. Many of them are about the implementation at state level of NCD policies, such as providing support financing for the dissemination of information. In Sweden, for example, GPs are asked to prescribe physical activity, so we are supporting that approach with seed financing,” says Bucher.

“But it is not just about changing the medical profession,” she adds. “There are many stakeholders whose approaches need to be changed. We need to talk to people involved in education, agriculture, industry and more. For instance, we are involving the education system with a project to distribute fresh fruit in schools. We have to bring many different sectors together including nutritionists, public authorities, urban development agencies and civil society, in order to develop specific pilot projects.”

The Vienna conference called for a systemic approach to food and health to reduce diet-related diseases. Legislation involving tax, such as the UK’s tax on sugar, is for individual states to decide, but at EC level, the focus is on building a platform for engaging many different stakeholders and to create a holistic approach. The overarching framework is provided by the UN’s Sustainably Development Goals (SDG), which include eliminating child obesity by 2030.

“A lot of consultation is needed but food safety is an absolute imperative and it must be science-based,” stresses Bucher. “Food safety is the building block of legislation but the link between food and health is increasingly important. SDG is the holistic approach and it is very important. It covers everything including food policy, environmental policy and agricultural policy. We need that kind of overall framework in order to talk to all of the stakeholders in specific areas such as food.

“It can be difficult to communicate about how we already contribute to the overall well-being of citizens of Europe, and I would love to combat the fake news that is out there in order to build consumer trust in how we assess risk,” she adds. “I would love to highlight that at a European level. What we need to promote better health and better food safety is more science-based risk assessment – and less fake news.” ●

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