



Digestive health developments

Opportunities
for
ingredient
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consumer
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Opportunities for ingredient suppliers and consumer brands

by Paul Gander

Fast-improving scientific insights into not only the physical and chemical mechanisms at work in the gut but also complex interactions between the digestive system, the microbiome and other health outcomes are opening up huge opportunities for the 'health and wellness' sector.

The consensus so far appears to be that the supplements market has, to date, succeeded only partially in capitalising on this growth in knowledge and consumer interest. Some food and drink categories and specific products have moved into this gap with greater speed and assurance. But to date, the very limited scope for specific health claims, certainly in Europe, has played its part in containing market growth across both supplements and functional foods.

European nutrition businesses are being pulled one way by lively consumer interest in gut health and in its wider implications, and the other way by strict limitations on the scope of marketing claims. Where does this leave ingredient suppliers and consumer brands? Paul Gander finds out.

Market size and evolution

In a recent report, US-based Global Market Insights put the value of the worldwide prebiotics market at more than \$4 billion. It forecast compound annual growth (CAGR) of 9.5%, taking the market size to \$8.5 billion by 2026.

A report from Transparency Market Research valued the probiotics segment in 2018 at \$6.76 billion and forecast CAGR of 8.3% to hit \$12.75 billion by the end of 2026.

As other market research organisations point out, valuing any market where substantial sales are made through online channels can be tricky.

But setting financial data to one side, underlying attitudes certainly seem to be evolving. Consumer awareness of gut health is growing, particularly among adults in their 20s and 30s, according to Mintel. It reports that, in the United Kingdom (UK), 64% of adults overall agree that actively looking after their gut health is important in



supporting wellbeing. This proportion rises to 72% in the 25-to-34 age group.

"Since 2017, there has also been an increase in the proportion of people taking vitamins and supplements to help support their digestive health," says Mintel's associate director for food and drink, Emma Clifford. "The biggest rise was in the 25-to-34 age group, with 23% citing this reason in 2019 compared to 16% two years earlier."

Mintel notes the significant gap between those UK consumers appreciating the importance of gut health and those taking supplements to support it. "People are looking to food and drink for this benefit, fuelling the explosion in fermented products such as kefir and kombucha, while the vitamins and supplements market is failing to capitalise on this trend to the same extent," Clifford says.

UK dairy brand The Collective ([see story, page 8](#)) underlines how kefir has been outperforming the wider Active Health Drinks (AHD) category, of which it is a part. It quotes IRI (market research company) figures suggesting that, while AHD as a whole (said to be worth just over £200 million) grew by only £2.12 million (1.1%) in the year to January 2020, kefir drinks alone added £5.5 million growth to the category. The Collective kefir grew by a healthy 97.1% over the same period, it says, while bigger AHD brands, such as Actimel and Benecol, are losing market share.

Consumer behaviour and understanding

As with many types of nutritional benefit, consumer understanding of gut health spans a huge range. So, at one extreme, higher-spending early adopters may differentiate between the various strains of probiotic bacteria, for example, and be aware of issues such as viable count, while at the opposite, wider-reaching end of the market, consumers may struggle to differentiate between prebiotics and probiotics.



Sophie Medlin is a colorectal dietitian and director of City Dietitians in the UK. She helps to chart the recent evolution of consumer attitudes towards digestive health. "Today, there's much more general awareness of the relation between gut health and general wellbeing, immune health, cognitive function and so on," she says.

She makes the same point about consumer awareness of the microbiome more generally and its significance. "People are interested in it, but also confused by it," she says. "Information can be extremely difficult to communicate clearly."

Here as elsewhere, she argues, the services of a healthcare professional can be invaluable in bridging the communication gap.

That is not to say that non-medical influencers and brand ambassadors do not also play an important role on social media, even for the bigger brands. "Because they are non-medical, there are no regulatory implications, but the brand still gets its message out," says Medlin.

The Collective, for example, has partnered with writer Jeannette Hyde on the consumer education side. Hyde's book 'The Gut Makeover' was published in 2015.

Innovation

Whether for supplements or functional foods, the use of multiple strains of bacteria in a single product has become far more prevalent. So, too, has an emphasis on the survivability and the viable count of those specific strains—an issue which has been given greater prominence by the International Probiotics Association (IPA).

City Dietitians has seen evidence of consumers catching up with these concerns, too. "Many are becoming savvier to differences between the probiotics count on the day they were produced and the number of living bacteria reaching the gut," says Medlin. "Manufacturers are starting to realise they need to take this into account."

New UK-based supplements brand Kinerva, which has a dual coating applied to its live bacteria ([see story, page 7](#)), points out that product labelling can be misleading. "It may only provide a cumulative count, and not the colony-forming units (CFUs) of each individual strain," says CEO Adnan Wahid.

He adds: "Some products use specific strains which are scientifically proven to reach the gut alive, and may simply be chosen for their survival rate, and not for their health benefit."

When it comes to prebiotics, strong 'natural' and organic credentials can help in supplements as well as functional food markets. As Australian company Marinova reports, the EU assessed its Maritech fucoidan extracts as being "substantially equivalent to the parental seaweeds from which they were

extracted." These long-chain polysaccharides have also been given EU Novel Foods approval.



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Adnan Wahid, Marinova CEO

Marinova has grades of its fucoidan available for functional food and beverage applications, says chief scientist, Dr Helen Fitton. In supplements, it can be delivered as a standalone ingredient or in combination. "In terms of gut health applications, the most common combination available is fucoidan and probiotic strains," she says.

The sourcing of prebiotics is proving to be another important area of innovation. In Canada, Comet Bio's Arrabina brand of arabinoxylan dietary fibre is "upcycled from farm leftovers, such as stalks, leaves and hulls", explains CEO Rich Troyer.

"Our customers, so far, have been predominantly supplement manufacturers and protein powder companies looking to add an upcycled prebiotic to their product, which helps bolster their health and sustainability claims," he says.

But growing consumer awareness of prebiotics is opening up opportunities in drinks and foods such as baked goods and even confectionery, says the company.

Introducing probiotics into novel formats can be less straightforward. While child-friendly options such as gummies have been successful in vitamin supplement markets, it is not easy to formulate probiotics in the same way, according to Medlin. Introducing sufficient active probiotics in a gummy can result in off-flavours which are hard to mask.

Digestive health does not begin and end with prebiotics and probiotics. So, while DSM is active in the probiotics area, for example, it also spells out how enzymes can play an important role in alleviating some of the gut-related symptoms of food intolerances and sensitivities.

Of the two enzyme-based products in its Tolerase range, says global marketing director for dietary supplements Kenneth Keh, one reduces discomfort linked to lactose



intolerance, while the other helps consumers with gluten sensitivity.

Regulation, claims and definitions

In many EU Member States, national advertising standards and other bodies “advise caution” when using the terms ‘probiotic’ and ‘prebiotic’, in case the product description is deemed to make specific health claims unauthorised under the Nutrition & Health Claims Regulations (NHCR).

For probiotics alone, there have been almost 400 health claim applications submitted to the European Food Safety Authority (EFSA) for authorisation, the IPA states, out of which just one Article 13.1 claim on lactose digestion was given clearance.

“All other probiotic health claims applications have been either rejected or removed in view of the uncertainty of EFSA’s assessment,” says IPA executive director, George Paraskevakos. “The most common reason for rejection was the insufficient characterisation.”

But across the EU, the situation with regard to terminology is not always clear-cut.

“Some Member States such as Italy or the Czech Republic

tolerate claims, such as ‘contains probiotics’, without pre-approval,” he says.

Outside the EU, the ability to make claims is highly dependent on intended use. In other words, if any claim is made about preventing or curing a disease or its symptoms, then the product is regulated as a drug, and a lengthy evaluation process is typically required.

“If the intention is to supplement the diet for maintenance of good health, then in the US and Australia, structure/function claims are permitted without pre-approval, provided they are truthful, not misleading and substantiated by competent and reliable evidence,” Paraskevakos reports.

This means brands marketing food or supplement products that are dependent on the benefits of probiotics are likely to face a patchwork of different requirements across the various international jurisdictions where they sell – even sometimes within the EU.

As Medlin points out, marketers have had to become more imaginative in their use of language. “You can say that a product ‘contains beneficial bacteria,’ for example, or ‘bacteria proven to be beneficial for gut health,’” she says.

Despite the sector’s lack of success with EU health claims, the IPA is focused on establishing criteria for identifying whether a micro-organism is, in fact, ‘probiotic.’ “The absence of formal criteria leaves the door wide open for the misuse of the ‘probiotic’ denomination and misinterpretation of the ‘probiotic’ concept, which is currently what the EU is experiencing,” Paraskevakos argues.

Three of its four proposed criteria cover: identification at species and strain level; safety for the intended use; and scientific documentation of probiotic status. “Finally, the bacteria must be alive in the product and in a sufficient amount to achieve the desired effect, up to the end of shelf-life and when consumed,” he explains.



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George Paraskevakos, IPA executive director

Clinical research

Around four years ago, there was much talk of industry research funding for prebiotics and probiotics within the EU drying up in the face of EFSA's apparent refusal to approve any health claims in these areas.

That perception may linger, but research still continues, in part because data is required for audiences other than consumers—and in part because markets and supply chains are often global, not regional.

Clinical research organisation (CRO) Vedic Lifesciences, based in Mumbai, India, last year saw the results published of a digestive health study which, two years earlier, it had put in place for US probiotics company UAS Labs. "They approached us for a study on 300 Irritable Bowel Syndrome (IBS) patients for two of their popular strains," says CEO and founder, Jayesh Chaudhary, claiming this as the fifth largest clinical trial ever carried out in digestive health.

"The project was challenging, because the protocol was tightly-controlled, and the ambitious recruitment had to be completed on time, across multiple sites," he reports.

More broadly, Chaudhary says: "The challenge is to recruit study volunteers with the particular

dietary habits that are required for the clinical trial results to be valid." Then again, Mumbai is a city with "First World problems, and dietary habits that are aping the west," he points out.

Regarding potential synergies between digestive health and other benefits, Chaudhary adds: "Gut health is connected to cognition, immunity, heart and other areas, so it is very important for exploratory aims to be consulted on with the CRO at the outset."

Meanwhile, at Marinova, Fitton explains that, although the company continues to conduct "gold-standard human clinical trials," this is not the only valuable research avenue open to it. "We have also found that well-designed pilot-scale trials can yield results with great commercial value," she says.

Synergistic and collaborative effects

The past five years has seen a growth in interest in the interactions between microbial activity in the gut and impacts on the brain, including cognition, memory and mood.

The IPA, for instance, this year flagged Belgian research, based on a large human group, which correlated the prevalence of certain bacterial species with a self-reported high-quality of life. Butyrate-producing bacteria appear to play a key role here.

As Medlin explains, although there is no official recognition of terms such as 'psychobiotics' (first coined, reportedly, seven years ago), there is increasing evidence that further exploration of the gut-brain axis will pay real dividends.

"In Canada, for example, researchers have run clinical trials on two probiotic strains in conjunction, and this has now been given official approval as a medical treatment for depression," she says. "There's a lot of potential in this area."

Another crossover meriting detailed attention lies in the overlap between gut

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health and the immune system. "We know that the gut is important for immunity, but establishing a link to specific probiotic bacteria is difficult," Medlin believes.

Chaudhary at Vedic Lifesciences expects to see more research around these and other potential benefits. "It is known that 70% of the immune system is linked to your gut, which is also being linked to brain, heart and other health areas," he points out.

Certain areas of potential crossover have not taken off as anticipated. Kerry Group's shelf-stable Ganeden BC30 probiotics have been included in food and drink formulations in Europe, with Wellness Lab, for example, recently starting to incorporate them into beverage mixes for foodservice.

But while there was much hope that sports nutrition might also benefit from Ganeden applications, this does not seem to have happened to any great extent.

Marinova is among the suppliers of active ingredients still investing in sports nutrition research. As Fitton explains, intense exercise is known to destabilise the microbiome, and the company has been involved in extensive trials to examine the role of fucoidan in mitigating these effects. "Preliminary results indicate a significant improvement in immune markers known to be associated with better gut health in athletes," she says.

Regarding athletes on high-protein diets, Troyer at Comet Bio says: "We are currently working with manufacturers on adding Arrabina to protein powders, in order to help athletes maintain good digestive health while training."

Another area where Comet Bio sees great potential is personalised nutrition, given that each individual has a unique microbiome. "When it comes to gut health, there is no one-size-fits-all formula," says Troyer. "This means some probiotics work better with specific prebiotics, and vice versa." While inulin will work for many consumers,

► Dual-coated bacteria

UK probiotic supplement brand Kinerva was launched in September 2019, with the unique selling point (USP) that a protective dual coating is applied, not to the capsule, but to the bacteria utilised in the product.

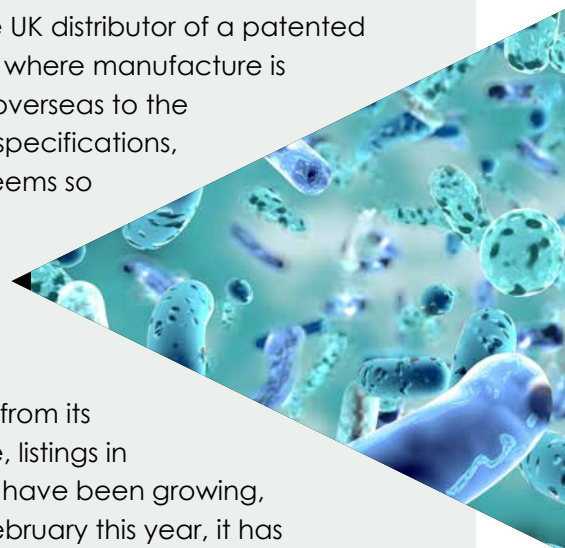
"The coating consists of a protein and polysaccharide matrix," says CEO Adnan Wahid. "Other brands use, for example, a slow-release or enteric-coated shell, which are not the same, and may use some unpleasant ingredients."

As the sole UK distributor of a patented technology, where manufacture is carried out overseas to the company's specifications, the brand seems so far to have followed a fairly smooth trajectory.

Kinerva sells from its own website, listings in pharmacies have been growing, and since February this year, it has been sold online via Amazon.

The challenges for the brand may lie, instead, around consumer communication of that all-important USP. "Consumers still need to be made aware of the types of strains and the potential effects they have, as well as the fact that probiotics are living organisms that need to stay alive until they reach the gut," says Wahid.

"It is of no benefit to have a high [bacterial] count that only survives on-shelf, and then, in some cases, by keeping it in the fridge," he claims. "Add to this the process of digestion, which is designed to kill bacteria, and you may have next to no live bacteria by the time they reach the colon."



arabinoxylan may work better for others.

This leads on to one clear area of synergistic co-activity: between prebiotics and probiotics. But however obvious this co-formulation as synbiotics might appear, product design can be challenging, as Medlin explains. "It can be difficult to include a functional dose of the prebiotic with the probiotics," she says. "As a rule, prebiotic doses do not fit easily inside capsules." One solution, she adds, can be to present the product in a dual format, with separate pre- and probiotic components.

Future markets

Consumer engagement with fermented products, including kombucha and kefir, seems likely to continue as an indicator of a wider awareness of gut health, with its expanding implications, benefitting supplements as well as foods.

City Dietitians believes synbiotic products could prove a major opportunity in supplements, but only if brand-owners grapple successfully with questions of format and presentation.

"The same is true of psychobiotics, which are a nice idea," says Medlin. However, despite signs of success in Canada, commercial potential in Europe will be, as ever, contingent on what health claims, if any, are permitted in this area.

Another area which is ripe for development, according to Medlin, is the babies' and infants' probiotic market. Products could be delivered in packaged

► The Collective kefir

The Collective UK, set up in 2011 as a joint venture with the original New Zealand dairy business of the same name, started out with a yoghurt range and launched its first kefir products in 2018.

Its bottles and tubs advertise the 'billions of gut-friendly cultures' in a front-of-pack splash, and make much of the 13 different strains of bacteria utilised.

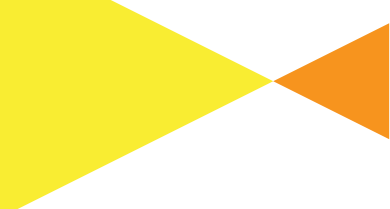
Notching up retail listings does not seem to have been a problem for the Collective, which currently sells its kefir across the UK in Sainsbury's, Waitrose, Asda, Tesco, Boots and through online retailer Ocado.

Fine-tuning the process may have posed more of a challenge. Of the 13 strains of bacteria, 12 are found typically in traditional kefir grains. "We do not use kefir grains as people would do at home, as they proved far too difficult to manage in a factory production setting," says Collective UK co-founder Amelia Harvey. "Kefir grains are also known as Symbiotic Colonies of Bacteria and Yeasts (SCOBYs). Those yeasts can give kefir some characteristics that the UK palate is less fond of, such as a strong, fizzy mouthfeel, a very fermented, yeasty flavour – and even the production of alcohol."

Yeast might also have contaminated other parts of the factory. "It could end up fermenting the fruit we add to the plain kefir, if left in a warm place, which could result in bottles blowing on the shelf," says Harvey.

Even where there is no explosion, carbon dioxide production can still be an issue. "Not long before we were due to launch our [drinkable kefir], we discovered that the bottle held too much gas, causing the bottom to bulge and wobble all over the show," she says. A solution (undisclosed) was found.





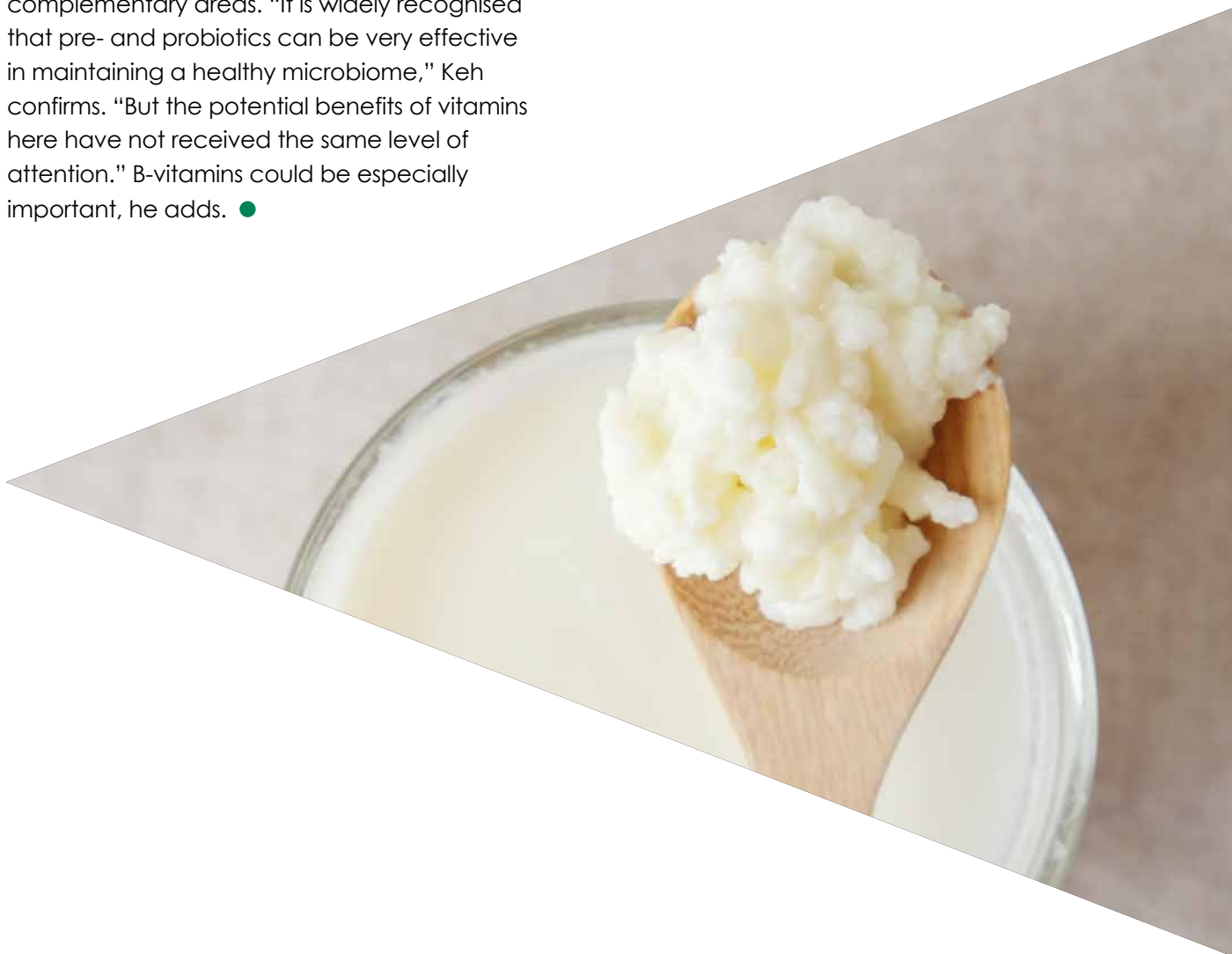
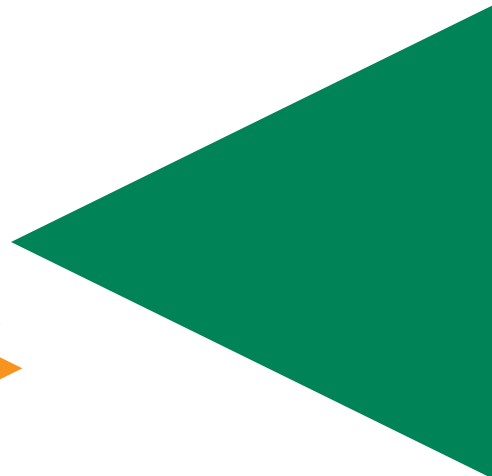
baby-foods and in supplements.

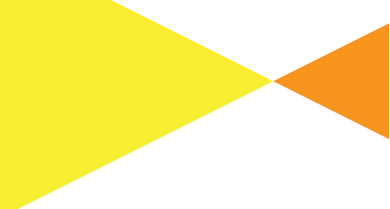
“In the supplements market, sachets can work well for kids,” she says, adding that probiotics are seen as having a particular role to play where the very young have been on a course of antibiotics or where they have been bottle-fed.

Providing a more international perspective, Chaudhary at Vedic Lifesciences says: “We can expect to see more and more claims around other benefits being targeted via gut health.”

He links renewed interest in digestive health in part to a new ‘probiotics wave’ since 2017.

Meanwhile, DSM sees plenty of scope for science-based innovation in other, complementary areas. “It is widely recognised that pre- and probiotics can be very effective in maintaining a healthy microbiome,” Keh confirms. “But the potential benefits of vitamins here have not received the same level of attention.” B-vitamins could be especially important, he adds. ●





Biographies

JAYESH CHAUDHARY, CEO AND FOUNDER, VEDIC LIFESCIENCES

An alumnus of the University of Minnesota in the US, Chaudhary has been a thought leader and innovator in human studies on dietary supplements for the past two decades or so. He has been in the food supplement space since the (US) Dietary Supplement Health and Education Act (DSHEA) of 1994. He was one of the pioneers in bringing Good Clinical Practice (GCP) and other stringent standards to natural product research.

EMMA CLIFFORD, ASSOCIATE DIRECTOR, FOOD & DRINK, MINTEL

Clifford regularly provides insight on the UK Food & Drink market with a special focus on healthy eating, and is regularly featured in the national media.

DR HELEN FITTON, CHIEF SCIENTIST, MARINOVA

Dr Fitton is recognised as a world-leading authority on fucoidan compounds. Her areas of expertise lie in polymers for biomedical applications, with a focus on natural polysaccharides from marine macroalgae. She holds a BSc (Hons) in Biochemistry from the University of Manchester, a MSc in Mineralised Tissues from University College London and a PhD in Applied Chemistry from Aston University.

AMELIA HARVEY, CO-FOUNDER, THE COLLECTIVE UK

In 2011, Harvey was the co-founder, with the late Mike Hodgson, of UK dairy business The Collective UK, forming a joint venture with the original New Zealand-based business. Formerly, Harvey and Hodgson worked together as directors at GÜ chilled desserts. Since its launch, The Collective has become the UK's fastest-growing yoghurt brand in a category which is showing overall decline.

SOPHIE MEDLIN, DIRECTOR, CITY DIETITIANS

Medlin is a well-recognised consultant dietitian, having worked in the UK's National Health Service (NHS) before moving to lecturing and research. She now runs her company City Dietitians, where she offers evidence-based nutrition solutions to individuals and companies. She is known as a product-development specialist, having formulated supplements for brands such as Heights.

GEORGE PARASKEVAKOS, EXECUTIVE DIRECTOR, INTERNATIONAL PROBIOTICS ASSOCIATION (IPA)

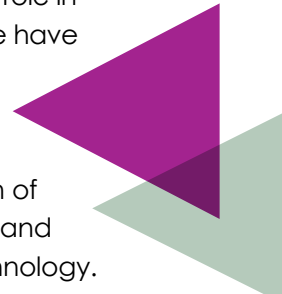
Paraskevakos has been involved in the probiotic industry since 2007, where he served in various roles from business development to account management with a globally-recognised probiotic producer. He has served on the IPA's Board of Directors and twice as president before taking up his current role in 2015. The 40 IPA members at that time have grown to a current total of over 100.

RICH TROYER, CEO, COMET BIO

Troyer brings a unique combination of corporate development, operations and finance expertise in industrial biotechnology. He was previously chief business officer of former green energy company Coskata. Before that, he was a managing director at the Blackstone Group, where he was responsible for investments in biofuel and bio-chemical companies.

ADNAN WAHID, CEO, KINERVA

Since graduating as a pharmacist in 2006, Wahid has been working in the pharmaceutical and health food industry, with responsibility for the development and manufacturing of food supplements for the UK market. He has a particular interest in innovation and bringing new concepts to market.



About Vitafoods Insights

Vitafoods Insights is a community-powered knowledge platform designed to help the industry connect, develop and progress. Bringing together the best nutraceutical minds, we focus on the trends and market developments that matter. Championing knowledge with purpose, we publish content that drives better business solutions for industry professionals.

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