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RESEARCH AND EDUCATION FOR TOMORROW'S PRACTITIONER

NOVEMBER/DECEMBER 2022

HEART STRONG

An in-depth guide to keeping the heart nutritionally strong

IBS protocols

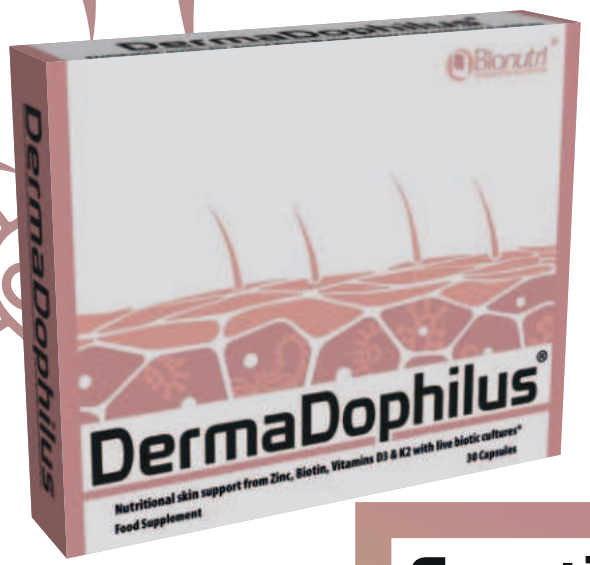
Supporting clients in managing symptoms of irritable bowel syndrome

Vitamin D – an update

Experts offer the latest updates around vitamin D recommendations

IHCAN CONFERENCES – HAVE YOU BOOKED YOUR PLACE? ✦ AN EXPERT GUIDE TO ASTAXANTHIN ✦ PRODUCT AWARDS – WHAT GETS YOUR VOTE? ✦ READER GIVEAWAYS ✦ NEW PRODUCTS TO MARKET

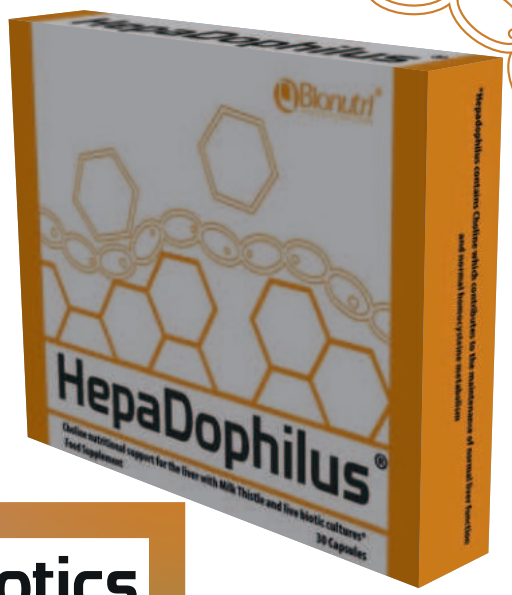
Bionutri
INTEGRATIVE NUTRITION



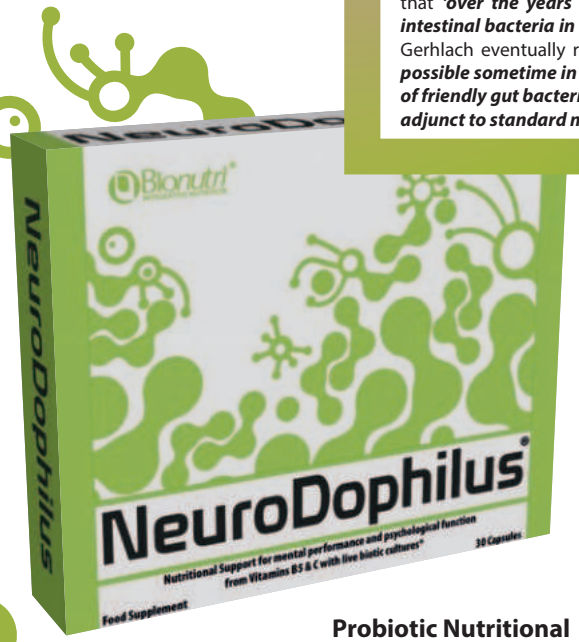
Probiotic Nutritional
Skin support

Functional Probiotics

It was in the 1970's when **Professor Franz Gerhlach**, the then head of Vaccine Research in the Department of Microbiology at the Issels Hospital in West Germany, used the opportunity to explore his passion in trying to identify the role that the intestinal bacteria played in health and disease. He went on to state that ***'over the years I have yet to see a normal or healthy composition of intestinal bacteria in any one suffering with a chronic illness'.*** When Professor Gerhlach eventually retired he went on to state that ***'I believe that it will be possible sometime in the future to identify and develop specific combinations of friendly gut bacteria that have a supportive role in human health and be an adjunct to standard medical treatments'***



Probiotic Nutritional
Liver support



Probiotic Nutritional
Support for the Nervous system

Probiotic Nutritional
Blood Glucose Support

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Welcome

As a magazine, *Nutrition I-Mag* is dedicated to education and supporting the next generation of nutritional therapists. It is why we publish the magazine and is also why we have it accredited so that readers can earn CPD points by reading it, to support them in their journey to practicing.

We are also passionate about offering practical support to the future practitioner and are proud to be associated with CNELM each year as part of its work experience programme. Once a year, we welcome one CNELM student as our Mentoring Scheme candidate, offering them the opportunity to write for us, and to see their work published.

This year, we were delighted to welcome Charlotte Hales, who is in her second year at CNELM studying nutritional science, as well as undertaking a diploma in Personalised Nutrition Practice. Charlotte turns her attention to heart health, taking a close look at the current statistics, discussing risk factors for cardiovascular disease and highlighting the nutritional interventions that can be recommended. To read more, **click here.**

Staying with the theme of education, we are also delighted to bring you the latest news for our forthcoming IHCAN Conference, which is the last one for 2022 in our conference calendar. Our November event is a virtual conference and welcomes Dr Deanna Minich and Robyn Puglia, both popular IHCAN Conference speakers. The event takes place on November 20, and places can be booked by **clicking here**.

And keep an eye out in the coming months for further details of the 2023 series of events, which will kick off in the spring.

And finally, this issue of *Nutrition I-Mag* is the time of year we launch our annual Product Awards, to offer recognition to those brands making quality products. **Click here** to find out which products are in the running and then it's over to you to vote for your winners.

RACHEL SYMONDS, EDITOR *Rachel*

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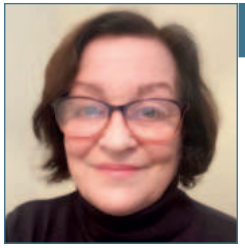
CONTENTS

OUR CONTRIBUTORS

Each issue, *Nutrition I-Mag* enjoys contributions from many leading authorities in the nutrition world. This issue, our writers include:



Sue McGarrigle

Sue McGarrigle ND DipION mBANT, mGNC is a Clinical Nutritional Therapist and Naturopath and has practiced since 2001. She is Technical Manager at Bionutri. As a lecturer to college and university students to Masters level, Sue has trained hundreds of healthcare and medical practitioners in many aspects of nutritional therapy. She writes as a regular contributor of specialist nutrition articles for magazines and newspapers and has been a guest speaker at national level. Her lectures offer a comprehensive approach to nutrition practice and practical naturopathic techniques. Sue is also a member of the BANT Professional Practice Committee.

Sarah Oboh

Sarah Oboh is registered with the Association for Nutrition and has a BSc (Hons) degree in Human Nutrition. Driven by her passion for developing tailored, personalised dietary and lifestyle interventions to target ill health, she began her career as a Nutritionist in private and public health. With a keen interest in complementary and alternative medicine, she pursued a role at OptiBac Probiotics, where she currently educates practitioners on the significance of the microbiome in health and disease.

Ben Makeham

Ben Makeham is a qualified naturopath (BHSc Nat), having studied in Melbourne, Australia, and is currently Science & Research Communications Manager at Activated Probiotics. Ben is a strong proponent of evidence-based complementary medicine, with a special interest in novel therapeutic applications of the gut microbiome and live biotherapeutics.

Lorena Carboni

Lorena Carboni is Scientific Communications Specialist with Gnosis by Lesaffre. With a Master's degree in Pharmaceutical Chemistry and Technology, Lorena specialises in natural ingredients' scientific and clinical aspects, focusing on the one-carbon metabolites, including folate (5-MTHF), S-adenosylmethionine, and Glutathione, at Gnosis by Lesaffre. Over her 20-plus years in the nutraceutical and pharmaceutical industries, she proactively collaborates with universities and academic panels of experts on educational projects and publications.

Hania Opienski

Hania Opienski, BA Hons, BSc, LicAc, BHSc, MBAcC, is a Naturopathic Nutritionist, Traditional Chinese Medicine Acupuncturist and Life Alignment Healing Practitioner. She applies a holistic approach to health using a synergy of natural Eastern, Western, and energy medicine to facilitate the highest expression of wellbeing and balance for her clients. She is the Education Lead and a Mycotherapy Specialist Consultant for Hifas da Terra UK and Ireland.

Lucy Parry

Lucy Parry MChem (Hons) joined the team at Lamberts Healthcare as Senior Brand Specialist in 2020, having completed her Chemistry Integrated Master's at the University of York. Whilst her studies were primarily focused on medicinal chemistry, Lucy's interest in health and natural products led her into the exciting field of nutrition.

News Bites

A round-up of the news from the natural health industry.

Women experiencing heightened menopause symptoms due to cost-of-living crisis, research finds

Concerning new research has revealed that women across the UK are experiencing additional challenges managing their menopausal symptoms due to the financial and emotional impact of the cost-of-living crisis.

Released as part of the recent World Menopause Day, results from the research from the British Nutrition Foundation and conducted by YouGov, revealed that just under a third (32 per cent) of women who are going through or have been through the menopause and experienced symptoms have tried hormone replacement therapy (HRT) to reduce, prevent or cope with menopausal symptoms. However, one in 10 women going through the menopause are now unable or less able to afford the cost of their prescriptions and 37 per cent are more stressed about their finances and feel that this has heightened their menopausal symptoms. In addition, nearly a quarter of women report being unable or less able to purchase particular foods (22 per cent) and vitamins (25 per cent) they feel help to alleviate their menopause symptoms.

However, whilst many turn to dietary and herbal supplements, there is low awareness among women of simple diet and lifestyle changes that can support health during and after the menopause; 40 per cent of all GB women have heard that herbal supplements can help alleviate menopause symptoms and 29 per cent of those experiencing menopause symptoms have tried such remedies despite the need for more evidence to understand the efficacy and safety of many. Yet just

over four in 10 of all women had heard about the importance of bone health during the menopause (44 per cent), when the fall in oestrogen can result in bone loss and increase risk of osteoporosis, and that ensuring adequate calcium and vitamin D intakes can help maintain bone strength for the future.

Sara Stanner, Science Director of the British Nutrition Foundation, commented: "At a time when women want to feel empowered and take control of their health by making diet and lifestyles changes to manage or cope with their menopausal symptoms, it is upsetting that the cost-of living crisis is making this more challenging. As we know that the years leading up to the menopause and beyond are critical for bone health, it is important women are able to access plenty of calcium rich foods such as dairy foods like milk and yogurt, and green leafy vegetables like spinach and kale to protect against osteoporosis in later life. They are also advised to consider taking a daily vitamin D supplement containing 10mcg during the autumn and winter months."

Further data from the study also found that 16 per cent of women who are going through menopause say that they are now working extra hours or shifts to earn more to be able to afford the things they need, while 14 per cent are now unable or less able to afford the exercise classes or gym membership they rely on to help them cope with their menopause symptoms, with exercise also being important for bone health.

Sara Moger, CEO of the British Menopause Society, added: "We're pleased to be working with the British Nutrition Foundation to raise awareness of sound diet and lifestyle information during the menopause. General awareness among women of how diet and lifestyle choices can impact and help them cope with the symptoms of menopause is growing. There is now more evidence-based advice widely available so that women are able to self-help and manage better. It is encouraging to see that 44 per cent would visit their GP or other healthcare professionals for advice and a similar number (43 per cent) would seek advice from the NHS, including the NHS website."

Motion Nutrition acquired by its manufacturing partner

It has been confirmed that Motion Nutrition has been acquired by one of its manufacturing partners, Metabolics.

In a statement from Motion Nutrition co-founder, Joe Welstead, it was confirmed that the company had been bought by Metabolics, a business that has traded since 1993 and is a well established supplements manufacturer based in Wiltshire.

Joe, who founded the business with Charlie Matthews, commented: "Since 2016, Charlie and I have been building Motion to help people stress less, sleep deeper and live happier lives. I'm delighted that the excellent team at Metabolics led by Adam Hutchin will carry this mission forward with the market-leading quality that we and our customers have come to expect from Motion.

"I couldn't have asked for a more diligent group to uphold Motion's values and continue to work with our wonderful suppliers, retailers, and consumers."

Joe added that Motion Nutrition's operations will carry on as normal while the brand joins Metabolics, alongside Nutristrength as part of the same wider group.

He went on: "Thank you to our whole team at Motion, my co-founder Charles, senior team Ant and Sunit, each of our colleagues over the years, our supportive investors and most of all our wonderful customers and brand advocates. While I *unplug* from my position of CEO, I look forward to taking on a smaller role as brand advisor to Motion Nutrition."

Top accolade for Positive Science People

A supplement brand has scooped praise in three categories at a prestigious awards.

Positive Science People, founded by Sandra Witzel, scooped silver and bronze accolades at the 2022 Nourish Awards.

Accompanied by her small team, Sandra accepted the awards after beating competition from larger and more established companies.

Sandra has lived with an auto-immune condition since her early 30s and spent that time researching nutritional support to aid her situation. At one time, she was taking dozens of separate supplements, so she decided to save herself, and others, time and money by combining them into convenient, premium products. She formed Positive Science People and worked with experts, including in-house Registered Dietitian, Rachel Redman, to perfect, produce and promote the formulas.

At the awards, Gut Health won silver in both the Gut Friendly & Fermented, and Supplements & Vitamins categories. Joint Care won silver in Supplements & Vitamins. In the same category, the holistic fatigue-fighting formula, Energy Release, won a bronze award.

Charity highlights benefits of plant-based amid cost-of-living crisis

The Vegan Society is reminding of the benefits to a plant-based Christmas for Brits struggling amid the cost-of-living crisis.

The UK's leading vegan charity has pointed out that on average, a traditional Christmas dinner with a Christmas pudding and custard dessert, picked up from one of the UK's leading supermarkets, could set you back around £35.47. However, a similar feast for up to six people, made up entirely of vegan alternatives, including nut pattles with cranberry-orange sauce and a mincemeat baklava (a twist on a traditional mince pie and cream), only totals £22.18.

The Vegan Society's Head of Campaigns, Policy and Research, Claire Ogley, commented: "There's no denying that the cost-of-living crisis is being felt up and down the country, but we don't think that should mean families should have to miss out on a festive feast this year. These findings show that cutting out certain animal products, and making some changes, could shave almost £15 off your food shop. With prices continuing to rise, it's certainly worth exploring how enjoying a vegan Christmas could help you reduce costs without having to miss out."

In Research

Nutrition I-Mag **rounds up the latest research studies in the nutrition world.**

Long Covid study reveals one in 20 hadn't recovered from virus

The initial results from one of the largest studies into Covid-19 has revealed that one in 20 people had not recovered from having the virus.

The Long-CISS (Covid In Scotland Study), which is led by the University of Glasgow in collaboration with Public Health Scotland, the NHS in Scotland, and the Universities of Aberdeen and Edinburgh, is funded by the Scottish Government Chief Scientist Office. It was set up in May 2021 to understand the long-term impact of Covid-19, and compare it with the health and wellbeing of people who had not yet been infected.

The first set of results from the ongoing study, published in the journal, *Nature Communications*, found that, overall, 42 per cent of people infected with Covid-19 reported feeling only partially recovered between six-18 months following their infection.

Reassuringly, the study found that those with asymptomatic infection had no long-term impact; and people who had been vaccinated prior to infection with Covid-19 appeared to have protection from some long-term symptoms.

However, the study found that the impact for people with long Covid were wide-reaching, with a wide-range of symptoms, and symptoms were more likely following severe infections requiring hospitalisation. The most reported long Covid symptoms included breathlessness, chest pain, palpitations, and confusion, or 'brain fog'.

Long Covid was also more likely in individuals who were older, female and those from deprived communities. In addition, those with pre-existing physical and mental health problems, such as respiratory disease and depression, were also more likely to experience long Covid.

The study found that whilst recovery status remained constant over the follow-up period for most participants, 13 per cent of people reported improvement over time and 11 per cent reported some deterioration.

The CISS study used a Scottish population cohort of 33,281 laboratory-confirmed SARS-CoV-2 infections, matched with 62,957 never-infected individuals from the general population, with both groups followed-up via six, 12 and 18-month questionnaires, with researchers able to link to hospitalisation and death records.

Using NHS health data records, all Scottish adults who had a positive Covid-19 test, as well a sample of people who tested negative for the disease, were sent an SMS message inviting them to take part in the CISS study. Individuals were then asked to answer questions online about their health, both before and after Covid-19, to determine whether the virus has had any lasting effects on their lives.

Professor Jill Pell, Professor of Public Health at the University of Glasgow, who is leading the study, commented: "While most people recover quickly and completely after infection with Covid-19, some people develop a wide variety of long-term problems. Therefore, understanding long Covid is essential to inform health and social care support.

"Our study is important because it adds to our understanding of long Covid in the general population, not just in those people who need to be admitted to hospital with Covid-19. By comparing symptoms with those uninfected, we were able to distinguish between health problems that are due to Covid-19 and health problems that would have happened anyway."

Dr Andrew McAuley, Consultant Healthcare Scientist at Public Health Scotland, added: "This study provides novel and important evidence on long Covid in Scotland. We know that being fully vaccinated against Covid-19 can reduce the likelihood of developing long Covid and therefore we encourage those who are eligible for the Covid vaccine to take the opportunity to enhance their protection by getting vaccinated."

Study confirms link with bone health and diet

A leading charity has highlighted the results of a study linking diet with bone health.

According to statistics from the Royal Osteoporosis Society (ROS), more than three million people in the UK are living with osteoporosis, which weakens bones and can increase the risk of fractures. And the charity, along with the California Prune Board, are highlighting new research which highlights the link between eating prunes and the maintenance of healthy bones.

The Pennsylvania State University study, published in the *American Journal of Clinical Nutrition*, is described as the largest clinical trial to date and reveals that researchers found just five to six prunes a day prevented bone loss at the hip in postmenopausal women and protected against increased fracture risk.

California Prune Board's health ambassador and nutritionist, Jo Travers, commented: "The research shows that prunes were found to protect bone mineral density and mitigate fracture risk at the hip in postmenopausal women, at a time in life when women tend to lose bone density rapidly. This underlines the importance of eating a balanced and healthy diet to support good bone health."

Henry Mace, Head of Partnerships for the ROS, added: "Eating foods that contain bone-friendly nutrients is key to maintaining healthy bones. California prunes are high in vitamin K and a source of other nutrients such as manganese, which is why we awarded them our Bone Health Approved accreditation mark. Looking after your bones is important at every age. Key to maintaining good bone health is regular weight bearing exercise and a healthy balanced diet."

Review suggests potential of postbiotics in GI health

A new review has found that postbiotics could offer a beneficial therapeutic approach to gut health.

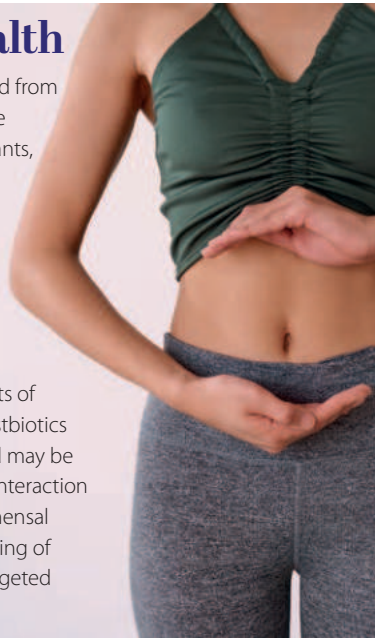
Writing in the *Gut Microbe* journal, researchers explained that an optimally operating microbiome supports protective, metabolic, and immune functions, but disruptions produce metabolites and toxins, which can be involved in many conditions. Probiotics have the potential to manage these, however, they suggested that their use in vulnerable people is linked to possible safety concerns and that maintaining their viability is difficult.

"Interest in postbiotics is therefore increasing. Postbiotics contain inactivated microbial cells or cell components, thus are more stable and exert similar health benefits to probiotics," the study explained.

Postbiotics are defined as a preparation of inanimate microorganisms and/or their components that confers a health benefit on the host and are produced from inactivated commensal bacteria. They include inactivated microbial cells, cell-free supernatants, and key components, commonly inactivated by heat.

The researchers reviewed the evidence for the clinical benefits of postbiotics in highly prevalent conditions and considered future potential areas of benefit.

In conclusion, they said: "There is growing evidence revealing the diverse clinical benefits of postbiotics in many prevalent conditions. Postbiotics could offer a novel therapeutic approach and may be a safer alternative to probiotics. Establishing interaction mechanisms between postbiotics and commensal microorganisms will improve the understanding of potential clinical benefits and may lead to targeted postbiotic therapy."



Probiotics and omega 3 supportive of elderly with low grade inflammation

Inflammation may be eased by multi-strain probiotics and omega 3 supplementation in the elderly, a new study has concluded.

The randomized, placebo-controlled trial explained that probiotic and omega 3 supplements have been shown to reduce inflammation, and dual supplementation may have synergistic health effects. Therefore, the researchers, writing in the journal, *Nutrients*, investigated if the novel combination of a multi-strain probiotic (containing *B. lactis* Bi-07, *L. paracasei* Lpc-37, *L. acidophilus* NCFM, and *B. lactis* Bl-04) alongside omega 3 supplements reduces low-grade inflammation as measured by high-sensitivity C-reactive protein (hs-CRP) in elderly participants.

In the study, 76 community-dwelling elderly participants with an average age of 71 years underwent an intervention with the dual supplement or placebo for eight weeks. In addition to hs-CRP, cytokine levels and intestinal permeability were also assessed at baseline and after the eight-week intervention.

The researchers explained that no significant difference was seen for hs-CRP between the dual supplement group and placebo. However, interestingly, supplementation did result in significant increases in the level of the anti-inflammatory marker, IL-10. In addition, dual supplementation increased levels of valeric acid, further suggesting the potential of the supplements in reducing inflammation and conferring health benefits.

"Together, the results suggest that probiotic and omega 3 dual supplementation exerts modest effects on inflammation and may have potential use as a non-pharmacological treatment for low-grade inflammation in the elderly," the researchers concluded.

New to market

Nutrition I-Mag brings you the latest product developments in the nutrition world.

SC NUTRA BROADENS PORTFOLIO

Two new products have joined the growing portfolio at SC Nutra.

The company, formerly known as Sweet Cures, has added to its Waterfall D-Mannose range with new Lemon Chewable Tablets.

Described as a delicious new way to take D-mannose, the new tablets contain the finest birch D-mannose, expertly blended with organic lemon juice powder.

Also new to SC Nutra is UniBac Infant Drops, which have been in the making for over two years. The unique formula provides two well studied live bacteria strains, *Lactobacillus rhamnosus* GG and *Lactobacillus rhamnosus* HN001 with a combined CFU count of 1.5bn per serving, which is guaranteed until the expiry of the product.

The infant friendly application delivers a daily dose of live cultures to babies easily, whether they are breastfed or taking formula. Designed with the highest quality standards to ensure infant safety when consuming the product.

NUTRITIONAL SLEEP SUPPORT

A new supplement featuring magnesium and 5HTP has been unveiled by Together Health.

Night Time is a calming formula blending five natural forms of magnesium that help calm the nervous system, along with premium hops and extracts from the griffonia herb to help promote a good night's sleep.

The supplement is pure, vegan friendly and highly effective, which is free from allergens, additives, artificial ingredients, and unnecessary fillers and comes in plastic-free, planet friendly packaging.

Boosting heart power

Good Health Naturally has announced the launch of a new and improved heart health supplement.

Heartpower+ has been relaunched to now provide 500mg Bergavit Bergamot Extract 40 per cent, alongside 6.6mg elemental magnesium from magnesium citrate per serving. Together, they provide powerful support for cholesterol balance and cardiovascular health.

The supplement is suitable for both vegetarians and vegans.

Keto focus for new Kinetic brand

Kinetic has announced the addition of the Locako keto brand to its portfolio of products.

Locako is Australia's number one low-carb and keto brand and is now available in the UK through Kinetic.

The brand was founded by Ally Mellor in 2017, and its mission is to educate people about the role nutrition plays in both cognitive and physical abilities. Ally wants to empower everyone to think better, perform better and feel better every day.

Locako promises to use only the cleanest ingredients, including collagen sourced from free range pasture-raised cows, and coconut MCT oil powder extracted without the use of chemicals or solvents.

Among the products in the range is Keto Collagen Protein Powder, which features 10g of bovine collagen per serving from pasture-raised cows, plus easy to metabolise coconut MCT oil. Also in the range is Keto Coffee Creamer, Keto Collagen Snack Bars, as well as Beauty Collagen, designed with skin, hair and nails in mind and with 8g of collagen per 10g serving, plus hyaluronic acid, bamboo silica, and Australian finger lime, which is high in folate, potassium, vitamin E and C for collagen production.

MAKING ALZHEIMER'S OPTIONAL

We bring you up to date with the latest developments in the IHCAN Conference series

September saw the return of live IHCAN Conferences, headlined by conference-favourite, Dr Dale Bredesen.

With Alzheimer's and cognitive decline being complex issues that need multiple-choice answers, not magic bullets, Neurology Professor, Dr Dale Bredesen, MD, author of *The End of Alzheimer's*, updated us on his nutrition and functional medicine-based approach that has been clinically proven to reverse cognitive decline and can easily be applied in an integrative health practice.

On the same theme, Pete Williams, MMed Sci, CSCS, IFM, presented at the conference 'Bad mouth – bad brain', which explored emerging concepts on oral bacteria, oral genomics, bacterial translocation and compromised barrier function at the mouth, gut and brain that can increase the risk of Alzheimer's.

Using a systems thinking approach based on the Bredesen protocol, It highlighted how oral bacteria, oral gene variants and lifestyle combine to amplify risk. It was filled with practical case study examples of these concepts and their application to patients.

Finally, leading spokesman on nutrition and mental health and founder of both the Food for the Brain Foundation and the Institute for Optimum Nutrition, Patrick Holford, BSc, DipION, FBANT, NTCRP presented 'Are homocysteine lowering B vitamins and omega 3 the dynamic duo for brain protection and Alzheimer's prevention?'

Just some of the comments from delegates included, "Great conference, great speakers, great food, great stands!", "Thank you to IHCAN for keep providing us with always useful knowledge and info", "Fantastic as always", and "Excellent event, one of the best, thank you".

FIRST-CLASS FEEDBACK

- 98 per cent of delegates thought the schedule was good or excellent.
- 99 per cent of delegates find the venue good or excellent.
- 100 per cent found the event good or excellent.
- 99 per cent found the event good or excellent value for money.
- 100 per cent found the event valuable.

A look ahead to November

The IHCAN Conferences return on Saturday, November 20 with a virtual event. Available to watch wherever you are in the world, you'll enjoy expert talks, a virtual expo with some of the industry's biggest brands, shorter break-out sessions and plenty of networking – all from the comfort of your own living room – or wherever you choose to join us from. Featuring:

- 'Eating the Rainbow: The Science and Clinical Application of Phytonutrients' by Dr Deanna Minich.
- Robyn Puglia. FdSc DipION. mIFM. IFMCP is a Nutritional Therapist and IFM Certified Functional Medicine Practitioner

Tickets are limited, so visit **www.ihcanconferences.co.uk/november-2022** to guarantee your space.

IHCAN 2022 conferences

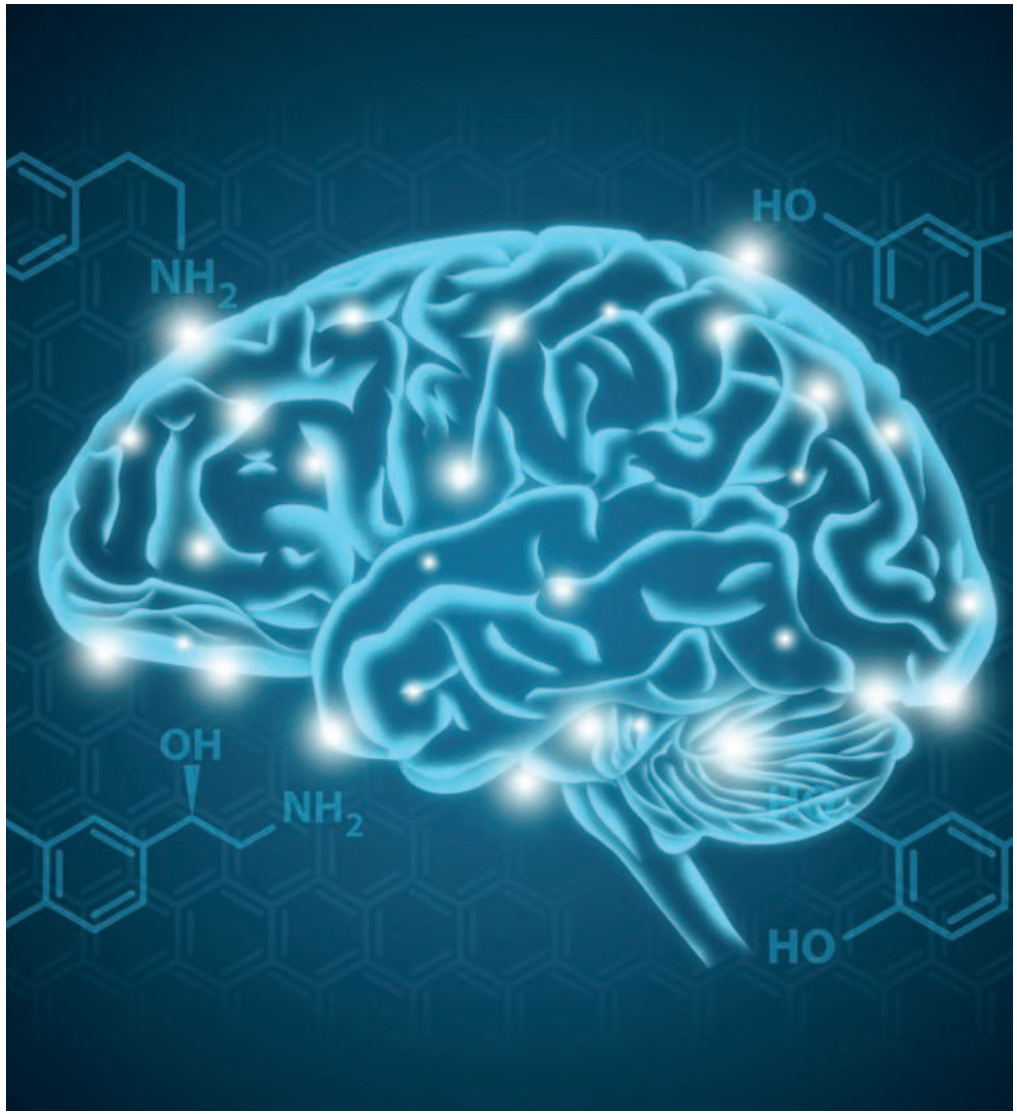
MISSED THE EVENT?

Don't worry, you can buy the downloads, which includes all the video, presentation downloads and CPD points. Simply visit **www.ihcanconferences.co.uk/downloads-2022.**

For exhibiting and sponsorship opportunities at future events, email **abigail.morris@targetpublishing.com**

Masterclasses Exclusively For Practitioners

Dispersing the 'brain fog' & maximizing cognition



What's the evidence for nutrition?

Can dietary choices really enhance cognitive performance in otherwise healthy adults? Can what we eat (and the supplements we take) help protect against, or even remedy 'brain fog'?

These are just some of the questions that our practitioner educators will explore with you in the next of our 2022 Seminar Series.

At the end of the day, we will have discussed various aspects of the topic including an overview of dietary interventions for cognition, specific formulations (and guidance for their use) and more.

Our seminars will be placed in various locations around the UK and offer networking opportunities,CPD recognition & practical guidance for healthcare practitioners.

Pharma Nord ACADEMY

AUTUMN SEMINARS 2022

OCTOBER

Thursday 6th	Bury St Edmunds
Thursday 6th	Newcastle
Thursday 13th	Exeter
Thursday 20th	Manchester

NOVEMBER

Thursday 3rd	London **SOLD OUT**
Thursday 3rd	Penrith
Thursday 10th	Bournemouth
Thursday 17th	Birmingham

DECEMBER

Thursday 1st	Brighton

Lunch and refreshments will be provided along with a £15 voucher and free products. The seminar is subject to a £29.95 booking fee.

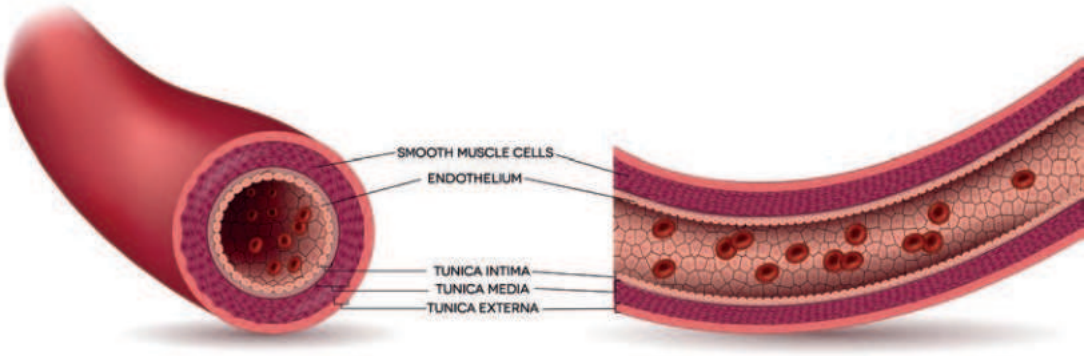
To register, head on over to pharmanord.co.uk/events

HEART SMART

A healthy heart is pivotal to overall good health, yet a significant proportion of the population are affected by heart and circulatory conditions. The list of modifiable risk factors for cardiovascular diseases is lengthy, highlighting a number of areas in which Nutritional Therapists may be able to support their clients in looking after their hearts. Charlotte Hales, *Nutrition I-Mag's* Mentoring Scheme candidate for 2022, explores the options.

The global annual number of deaths caused by cardiovascular diseases (CVDs) has risen in the last three decades from 27 per cent to an estimated 34 per cent in 2019, and is predicted to continue increasing [1]. In 2021, the WHO reported CVDs as being responsible for the most deaths globally from non-communicable diseases, accounting for almost twice as many deaths as cancers [2].

Focusing in on the UK, annual CVD-related deaths have actually fallen by approximately a half since 1961[3]. That said, more than 160,000 deaths each year are caused by CVDs and it is estimated that more than 50 per cent of us will get a heart or circulatory condition within our lifetime [3]. With figures like these, it´s clear that looking after our heart is vital. On a very positive note, especially for Nutritional Therapists and other lifestyle practitioners, a significant number of modifiable risk factors have been identified, highlighting the importance of lifestyle in maintaining a healthy heart.



ANATOMY AND PHYSIOLOGY 101

The heart plays a central role in the cardiovascular system. It continuously pumps blood around the body through the network of vessels, delivering oxygen, nutrients and hormones to tissues, and removing carbon dioxide and other waste products for biotransformation and elimination. The heart also controls heart rate and maintains blood pressure.

The heart is divided into right and left, and there are two chambers on each side. The right side receives blood returning from the body that is in need of reoxygenation. This blood is pumped to the lungs and the newly oxygenated blood returns to the heart to be sent back out to the body. Blood flow through the heart is regulated by four valves, two on each side, allowing blood to flow in one direction only and helping maintain adequate pressure.

Electrical signals are produced by the sino-atrial node in the right atrium, which travel through the heart muscle, signalling when to contract and relax, pumping the blood through the valves and out of the main arteries to the lungs and into systemic circulation.

Each heartbeat is one cycle of contraction and relaxation, and the heart beats approximately 100,000 times every day [4]. For the blood to travel through the body, it has to be under pressure. The amount of pressure is determined by the heart's pumping action, the size and elasticity of the vessels and the thickness of the blood, which together dictate how the heart delivers blood to the vessels [4, 5].

THE IMPORTANCE OF THE ENDOTHELIUM

The endothelium is a single layer of cells that line the lumen of blood and lymphatic vessels, acting as a barrier between the vessel tissue and systemic circulation. Endothelial functions include:

- Regulation of vascular tone and permeability, controlling the flow of substances in and out of vessel tissue.
- Maintenance of haemostasis and coagulation.
- Coordination of the inflammatory response.
- Induction of angiogenesis.
- Maintaining the balance between vasoconstriction and vasodilation [6].

The integrity of the endothelium is thought to be vital for vascular health, and dysfunction may be both an initiator and important factor in cardiovascular disease progression [7]. Where a healthy endothelium promotes vasodilation, oxidative protection, anti-inflammation, thrombolysis and growth inhibition, an unhealthy, dysfunctional endothelium promotes exactly the opposite [7].

These processes are regulated by dialogue between the endothelium and other cells involved in vascular function, and miscommunication between these has been associated with conditions including hypertension and atherosclerosis [8]. Potential causes of endothelial dysfunction include oxidative stress, inflammation, vitamin D deficiency, insulin resistance, hypertension and obesity [7].

Nitric oxide – produced from L-arginine in the endothelium and generated by endothelial nitric oxide synthase (eNOS) – is considered the most potent vasodilator in the body. Endothelium-derived nitric oxide is antiatherogenic and antioxidant, with its effects including enhanced vasodilation, and inhibition of platelet aggregation and leukocyte migration [9].

COMMON HEART CONDITIONS

The heart and circulatory system cause more than 25 per cent of all deaths in the UK [10], and the number of individuals living with CVDs is around twice as many as those living with cancer and Alzheimer´s disease combined [3]. This figure equates to some 7.6m people in the UK, and coronary heart disease (CHD) is the most common CVD and one of the leading causes of death [3].

Coronary heart disease, also known as coronary artery disease, occurs when the arteries supplying the heart cannot deliver enough oxygen-rich blood [11]. CHD is almost always due to complications resulting from plaque build-up, known as atherosclerosis, and is the most common cause of myocardial infarction [10]. CHD rates declined considerably between 1980 and 2010 in both men and women, however, UK death rates remain amongst the highest in Western Europe [12]. Other manifestations of CHD include angina, heart failure and arrhythmia [13]. Non-modifiable risk factors include age, sex and ethnicity, and those deemed potentially modifiable include hypertension, poor diet, elevated blood cholesterol, and a sedentary lifestyle [1].

Atherosclerosis is a progressive inflammatory condition in which lesions develop within the artery wall. Narrowing of the artery ensues due to a build-up of plaque, or atheroma, and is linked to endothelial dysfunction. Fatty streaks form when inflammatory cells bind to endothelial cell receptors, take up oxidised LDL particles, and become foam cells. The cause is thought to be multifactorial, with risk factors including elevated cholesterol levels, hypertension, diabetes and obesity, and atherosclerosis can lead to CHD and stroke, amongst other diseases, depending on the affected vessels [8, 13].

Myocardial infarction (MI), otherwise known as a heart attack, occurs when blood flow to the heart is greatly limited due to blood clot formation following the rupturing of plaque. Cardiomyocytes suffer damage and begin to die, and after 30 minutes, damage starts to become irreversible [14]. In the UK, someone is admitted to hospital due to myocardial infarction every five minutes [3]. Acquired risk factors include hypertension, high LDL and low HDL cholesterol, stress and physical inactivity [14].

Heart failure occurs when the heart is not circulating blood around the body as it should, often due to heart damage, such as following MI, hypertension or cardiomyopathy [3, 15]. Other causes include anaemia, excess alcohol intake and arrythmias [15]. Managing modifiable risk factors for MI and hypertension may reduce the risk of heart failure, and individuals with heart failure are two to three times more likely to suffer a stroke [3].

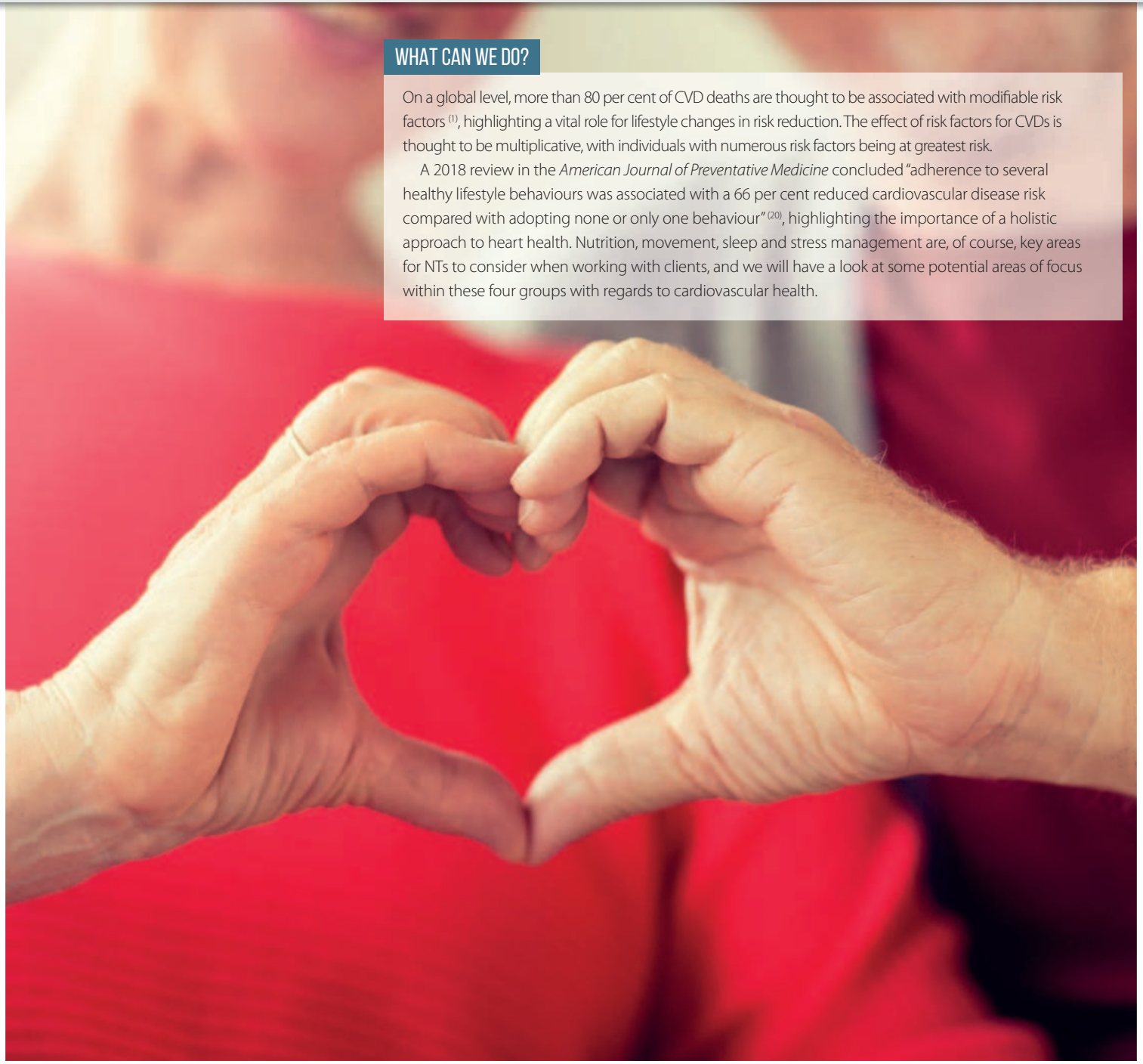
Whilst hypertension is considered one of the most important risk factors for CVDs, it is a heart condition in itself and is a major cause of premature death worldwide [16]. Hypertension refers to raised blood pressure – the force exerted by circulating blood against the artery walls. Signs and symptoms of hypertension are not always apparent and, therefore, many people are unaware that they have it. An estimated 50 per cent of heart attacks in the UK are associated with high blood pressure, and over a quarter of adults – some 15m – are thought to have hypertension, and at least half are not receiving adequate treatment [3]. Risk factors include age, family history and comorbidities, however, also include excess sodium and saturated fat intake, low intake of fruits and vegetables, physical inactivity and obesity [16].

IS HEART DISEASE A 'MAN´S DISEASE'?

Heart disease is widely considered as being a man´s disease. Whilst sex differences are apparent, CHD kills more than twice as many women in the UK as breast cancer [3] – a statistic that demonstrates the importance of busting the myth, so to speak. Men more commonly develop CVD younger and more men develop CHD than women, however, age is known to be a significant factor in sex differences [12], and death rates from CHD appear to converge with increasing age [17]. Differences in clinical presentation, disease pathophysiology and response to treatment have been observed, and women are frequently underdiagnosed with CVD [18].

Whilst pre-menopausal women appear to be somewhat protected, the risk of CVD greatly increases after the menopause, and is the leading cause of morbidity and mortality in post-menopausal women [18]. Oestrogen and testosterone are believed to play a role in CVD development in females [18], and also in the protection observed pre-menopause [12]. Oestrogen receptors in the endothelium enable oestrogen to modulate vascular function. Oestrogen may also induce the release of vasodilators nitric oxide and prostacyclin and inhibit vasoconstrictors such as angiotensin II [18]. The number of receptors may be reduced by damage caused by ageing and atherosclerosis, and lower circulating oestrogen [18]. Following the menopause, cholesterol levels also typically rise to higher levels than men, increasing CVD risk [19]. Other female-specific risk factors include gestational diabetes, hypertensive disorders of pregnancy and polycystic ovarian syndrome [19].

Potential sex differences in shared risk factors may also exist. Whilst risk of MI is around three times higher in men than women, CVD risk factors such as smoking, hypertension and type 1 and 2 diabetes appear to confer a notable excess risk of MI in women in comparison to men [17]. It is clearly important to raise awareness of the prevalence of CVD in women and be aware of the potentially increased importance some risk factors may have when considering lifestyle interventions.



WHAT CAN WE DO?

On a global level, more than 80 per cent of CVD deaths are thought to be associated with modifiable risk factors [1], highlighting a vital role for lifestyle changes in risk reduction. The effect of risk factors for CVDs is thought to be multiplicative, with individuals with numerous risk factors being at greatest risk.

A 2018 review in the *American Journal of Preventative Medicine* concluded "adherence to several healthy lifestyle behaviours was associated with a 66 per cent reduced cardiovascular disease risk compared with adopting none or only one behaviour" [20], highlighting the importance of a holistic approach to heart health. Nutrition, movement, sleep and stress management are, of course, key areas for NTs to consider when working with clients, and we will have a look at some potential areas of focus within these four groups with regards to cardiovascular health.

FOOD

As we have seen, there are a number of potentially modifiable risk factors, of which diet is one. That said, nutrition may play a role in other risk factors, such as hypertension, hypercholesterolaemia and obesity.

A client-personal approach to nutritional interventions and other lifestyle changes is vital to target those areas that are seen to be of most importance to each individual. Key nutrients and dietary patterns that may be of particular interest for heart health include, but are not lmited to:

- **Sodium:** High sodium intake, mostly consumed in the form of salt, is associated with high blood pressure and a resulting increased risk of MI and stroke [21]. The average UK intake of salt among working-age adults is 8.4g/day, 2.4g over the Government´s guideline limit of 6g-1g higher than the WHO recommendation of a 5g daily maximum [22]. A Cochrane review on a large number of participants found the lowest risk of CVD events and death occurred at an intake of 2.7-5.0g/day [23], with those consuming more or less seen to be at an increased risk of both CVD and all-cause mortality. Whilst low sodium intake is unlikely to be an issue for the majority, it may be a consideration for some.
- **Fibre:** Fibre may play both direct and indirect roles in heart health. Directly, increased intake of beta-glucans, found in oats, barley and psyllium, appears to decrease CHD risk via its action on LDL cholesterol [24, 25]. Indirectly, soluble, viscous fibre can form gels in the small intestine, reducing post-meal glucose and lipid rises, and maintaining satiety levels by slowing gastric emptying, aiding in blood sugar and body weight control [26]. Whilst greater total dietary fibre intake is linked with a decreased risk of CVDs and CHD [26], viscous fibre, of which sources include beans and oats, seems to have the strongest clinical evidence in risk reduction. Reductions in LDL-cholesterol appear to be heightened when combined with other cholesterol-lowering foods [24]. Dysbiosis has also been linked to CVD and the modulatory effects of dietary fibre on the microbiome may be another way in which fibre appears to be protective against CHD [25].
- **Antioxidant vitamins:** Strong, inverse associations between blood concentrations of vitamin C and carotenoids – considered biomarkers of fruit and vegetable intake – and vitamin E, and cardiovascular disease have been observed [27]. Antioxidants, including vitamin E, were seen to contribute to improved endothelial function in patients with type 2 diabetes, and vitamin C and folic acid were seen to reverse impaired endothelial-dependent vasodilation in cases of hyperhomocysteinaemia [9]. Vitamin C also appears to improve eNOS production, inhibiting oxidation of LDL cholesterol, which may contribute to a reduced risk of atherosclerosis, and has been linked to improvements in lipid profiles, arterial stiffness and blood pressure [28]. Optimal dietary intake of antioxidant-rich foods for chronic disease prevention may be around 800g of fruits and vegetables and 20g of nuts daily [27].
- **Dietary fats:** Specific types of dietary fat appear to contribute differently to heart health, and recommendations to replace saturated fats with unsaturated fats, and avoid trans-fats is widespread. A reduction in dietary saturated fat (SFAs) reduces serum cholesterol [29], and substitution of SFAs with polyunsaturated fats (PUFAs) has been associated with a reduced risk of CVD mortality [30]. Choice of a replacement for SFAs, however, appears to be important. Replacement with carbohydrates, particularly refined, may contribute to elevated triglycerides, reduced HDL cholesterol and increased small, dense LDL particles [31], and does not appear to lower CHD events or CVD mortality [32]. Epidemiological evidence indicates that unsaturated fats, particularly PUFAs, and/or carbohydrates from wholegrains should replace SFAs to reduce CHD risk [32,33]. Among specific PUFAs, one study identified linoleic acid as being most strongly related to a risk reduction in CVD mortality [30].

CARDIOPROTECTIVE DIETARY PATTERNS

The DASH (Dietary Approaches to Stop Hypertension) and Mediterranean diets are amongst the most studied for CVD prevention.

Decreases in cardiac events and mortality with the use of the Mediterranean diet in individuals both recovering from, and at high risk of, CV episodes has been reported [34]. Improvements in blood pressure and other risk markers in individuals with hypertension have been observed with the DASH diet in combination with increased physical activity levels [35].

Other dietary patterns that have shown significant improvements in CV risk include plant-based diets such as the Ornish Program and the LDL-lowering portfolio diet [34].

MOVE

Regular exercise is associated with a decrease in CV mortality and risk of developing CVD, and physically active individuals generally have lower blood pressure, greater insulin sensitivity and a more favourable lipid profile [36]. According to the BHF, being more physically active can reduce the risk of developing heart and circulatory diseases by as much as 35 per cent [3]. Frequency appears to be particularly important in risk reduction, and activity should be spread out across the course of the week and include muscle strengthening exercises [367].

Physical activity contributes to cardiovascular health in many ways, including:

- Enhancing production of endothelial nitric oxide.
- Regulating blood pressure.
- Increasing HDL and decreasing LDL cholesterol.
- Decreasing blood viscosity.
- Reducing plasma dyslipidaemia.
- Improving vasculogenesis.
- Increasing deactivation of reactive oxygen species.
- Enhancing glycaemic control.
- Aiding in body weight maintenance [37, 38, 39].

Aerobic forms of exercise, such as walking and swimming, may favourably influence lipid metabolism, insulin resistance and endothelial function, whereas anaerobic exercise, usually referring to high-intensity training, may have positive effects on triglycerides and LDL cholesterol. Improvements in BMI and blood pressure have been seen with both [38].

The quantity and intensity of exercise for optimal heart health remains unclear and is likely to depend on a number of factors, including age, sex and baseline CVD risk [36]. One study compared different amounts and intensities of exercise and reported that the amount of exercise seemed to be more important than intensity for lipid profile [40].

Whilst the benefits of physical activity in terms of risk reduction for CVD may be dose-dependent, over a third of adults in the UK don't achieve the recommended 150 minutes of moderate-intensity exercise per week [3], suggesting many individuals would benefit from simply doing more. Regular physical activity can also help reduce stress and contribute to improved mood and sleep – all important factors for heart health [37].

SNOOZE

The importance of sleep for overall health has become more apparent in recent years, and sleep deprivation has been implicated in a host of chronic diseases. Observational studies have linked chronic sleep deprivation to increased risk of cardiovascular events and all-cause mortality. One study suggested those consistently sleeping less than five hours per night were at greatest risk, and those achieving between seven and eight hours of sleep were said to be at lowest risk of all outcomes measured, with too much sleep also appearing to increase risk [41]. Suggested mechanisms include adverse effects of sleep debt on carbohydrate metabolism and levels of insulin and leptin, and their role in glucose metabolism and appetite, potentially contributing to obesity and the development of type 2 diabetes and insulin resistance [41,42]. Cortisol levels may also be affected, with elevated concentrations observed in the afternoon and early evening, and increased sympathetic stimulation is implicated in an elevated risk of hypertension and decreased beta-cell responsiveness [42].

There may be many reasons for sleep deprivation, and it is important to approach sleep, and potential strategies for improving sleep, in an individualised manner. Healthy sleep habits, diet, physical activity, cognitive interventions and relaxation techniques may all play a role. Considering diet, low fibre and high saturated fat and sugar intakes were linked to less restorative sleep [43]. Deficiencies in, or low intake of, some micronutrients have also been reported to affect sleep patterns:

- **Reduced sleep duration:** Vitamin B1, folate, phosphorus, magnesium, iron, zinc and selenium.
- **Difficulty falling asleep:** Alpha-carotene, selenium and calcium.
- **Sleep maintenance:** Vitamin D and lycopene.
- **Non-restorative sleep:** Calcium and vitamin C [43].

Other important considerations that may impact sleep quality include caffeine, alcohol, and stress.

MOOD

Stress is ever present in modern day life and the importance of how we as individuals perceive stress and react to stressful situations may be underestimated. Both psychological and physiological stress can negatively impact the heart, and chronic stress, both in early life and adulthood, has been linked to a greater risk of coronary heart disease [44].

Psychosocial factors may be associated with cardiovascular diseases independently of other risk factors. An increased risk of myocardial infarction has been indicated with both perceived stressors, such as work and home stress, and those that are considered to be less subjective, such as major life events [45]. Stress, anger and depressed mood have all been seen to have the potential to trigger cardiac events [44].

Helping clients to understand and decipher what they find stressful, which may not be as simple as it sounds, and that their stressors may be different to those of others around them, may be key in working towards reducing them and improving their overall health. Encouraging the incorporation of techniques such as progressive muscle relaxation, meditation and breathing exercises into daily life may be effective tools in managing stress and ameliorating its effects [46, 47].

SUPPLEMENTATION

Supplementation of some nutrients may be beneficial in reducing the risk of cardiovascular diseases and may contribute to improved heart health. Whilst the efficacy of supplementation in reducing the risk of non-communicable diseases is said to be controversial [48], many nutrients have clearly identified biochemical roles that contribute directly or indirectly to heart function and health. Such nutrients are covered over the following page.

■ **Omega 3:** Proposed cardioprotective mechanisms by which omega 3 fatty acids act include via antithrombotic properties, enhanced endothelial function and inhibition of atherosclerotic plaque formation [49]. Supplementation has been associated with decreased risk of MI, CHD events and CHD mortality [50]. Discordant interstudy findings have caused controversy regarding the benefits of omega 3 therapy. It has been suggested that a higher dose may be required in Western nations with generally low omega 3 intake to reach a clinically therapeutic level which confers CV benefits [51], and that the protective effect likely increases with dosage [50]. Conservative levels used in many studies may explain a lack of consistent results [51].

■ **Vitamin K2:** Numerous ongoing clinical trials are investigating the potential cardiovascular benefits of vitamin K2, and epidemiological evidence suggests that greater intake decreases CHD incidence, and cardiovascular and all-cause mortality [512 53]. Vitamin K2, or menaquinone, plays a vital role in heart health via regulation of calcium homeostasis, modulating systemic calcification and arterial stiffness. It activates vitamin K-dependent matrix Gla protein (MGP), an anti-calcific protein that is considered one of the most powerful inhibitors of vascular calcification [53]. High levels of inactive MGP have been associated with numerous CVD markers, including vascular and valvular calcification, insulin resistance and heart failure, whereas activated MGP may halt or slow progression of endothelial dysfunction, diabetes and heart disease [53]. MGP has been identified in human atherosclerotic plaque, and low intake of menaquinone has been observed in individuals with severe aortic calcification [52]. There are also other vitamin K-dependent proteins implicated in heart health, suggesting multiple mechanisms.

■ **Zinc:** The association between zinc deficiency and CVD development has been supported by a number of studies, and supplementation may decrease the risk of atherosclerosis and MI [54]. Oxidative stress and resultant endothelial damage and altered nitric oxide production, amongst others, may be ameliorated by zinc through its antioxidant and anti-inflammatory functions [54].

■ **CoQ10:** Studies have shown a link between coenzyme Q10 deficiency and cardiovascular disease. It has significant antioxidant and anti-inflammatory properties, and its depletion results in enhanced inflammatory processes [55]. CoQ10 concentration is elevated in highly metabolic organs, such as the heart, but may be decreased by ageing, certain medications and CVDs [55]. Supplementation may contribute to reduced inflammatory markers and clinical trials have suggested that it may effectively reduce blood pressure [55] and improve endothelial function [56]. CoQ10 appears to have a direct influence on the endothelium via enhanced nitric oxide bioavailability, and its antioxidant and anti-inflammatory activity [56]. Increased bioavailability of NO and its induction of vasodilation may contribute to the antihypertensive effect of CoQ10 [55]. CoQ10 is poorly absorbed and should be taken alongside dietary fat to improve its bioavailability [55].

■ **Vitamin D**: Increasing evidence suggests that vitamin D deficiency may adversely affect the cardiovascular system, and has been linked to an increased risk of CHD [57]. Low vitamin D levels have been linked to inflammation, impaired endothelial function, increased vascular stiffness and hypertension [29, 57, 58]. Low vitamin D status has been associated with raised levels of proinflammatory interleukin-6, potentially linking deficiency with accelerated atherosclerosis [57]. Whilst vitamin D has been proposed as a modifiable risk factor for CVD [58], further research is said to be needed to determine the role of supplementation in disease prevention [57].

■ **L-carnitine:** L-carnitine plays important roles in lipid metabolism and mitochondrial defence. It assists with energy production in the heart by aiding the transport of long-chain fatty acids into the mitochondrial matrix, promoting mitochondrial β-oxidation and triggering cardioprotective effects through decreased oxidative stress, inflammation and cardiomyocyte death [59]. Propionyl-L-carnitine (PLC), a short-chain carnitine derivative, is thought to be the most therapeutically beneficial molecule, and potential benefits associated with PLC include increased endothelial NO and eNOS production, and decreased LDL cholesterol and vascular inflammation [60].

■ **Lycopene:** Lycopene is a potent antioxidant, and epidemiological evidence suggests intake is associated with a decreased risk of cardiovascular diseases [61]. It is thought to exert its cardiovascular benefits through its antioxidant, anti-atherosclerotic, anti-inflammatory, antihypertensive and anti-platelet activities. The antioxidant activity of lycopene includes increasing production of antioxidant enzymes and protecting endothelial cells from oxidative damage [62]. It may also enhance NO bioavailability and blood flow to the endothelium, improve metabolic profile by hindering cholesterol synthesis, and reduce arterial stiffness [62]. Tomato and lycopene supplementation has been linked to significant reductions in LDL cholesterol, systolic blood pressure and inflammatory markers, and enhanced endothelial function [61].

■ **Plant sterols:** It is widely accepted that plant sterols contribute to a reduction in CVD risk by inhibiting cholesterol absorption and decreasing LDL cholesterol levels [63]. Phytosterols appear to lower LDL cholesterol in a dose-dependent manner up to at least 3g/day, and without affecting HDL levels [64]. They may also contribute to improved heart health by reducing atherogenic apo-lipoproteins, including apo-B, increasing antiatherogenic apo-lipoproteins, and lowering triglyceride levels [63].

The bottom line

Having seen the number of risk factors that have the potential to be modified with lifestyle changes, NTs really can make a difference to clients in helping them to understand how to improve their heart health and reduce their risk of CVDs now and in the future, whilst simultaneously reducing their risk of a number of other non-communicable diseases. This is the beauty of Nutritional Therapy and shows just how powerful lifestyle medicine can be.

Charlotte Hales is a second-year nutritional science student at CNELM and, alongside her degree, she is also undertaking a diploma in Personalised Nutrition Practice. Her specific areas of interest are women´s health, maternal and childhood nutrition, and gut health. On a personal level, she loves being in nature, travelling, practicing yoga, and getting creative in the kitchen.

Gut health practitioner protocol

Gut a problem? Discover BioCare's go-to products to support your gut health.

Does all health originate in our gut? Our gut is a key adaptive system that mediates many functions and is thus central to health and disease. But poor gut health, combined with the challenges of modern life and our complex environment, can often leave us feeling uncomfortable, sluggish, and sensitive to foods.

If you have clients struggling with their gut health, they could be experiencing a range of symptoms, from bloating and irregular bowel movements to food sensitivities. Gut function is complex and dependent on inter-related factors: balance of bacteria, digestion, gut integrity, and motility. We need all of these to work in harmony with each other for optimum gut health.

MICROBIOME EDUCATION

This autumn, BioCare takes apart the complex subject of gut health and takes a deep dive into the intricate world of the human microbiome. Make sure you watch the video of the Microbiome Summit Webinar online, or join them in person for one of the Gut Unravelled seminars, which are being held in multiple locations around the UK.

To find out more about BioCare's upcoming events or to book a place, visit **www.biocare.co.uk/education**, contact them on **0121 433 8774** or email **education@biocare.co.uk**

DIGESTION

Do clients find it difficult to digest foods, perhaps resulting in bloating, burping or flatulence? Do some foods sometimes not agree with them? They might need support for digestion. Our bodies have a complex and powerful system of enzymes in our gut to help us break down foods into smaller particles and use them.

POLYZYME FORTE is a comprehensive, enzyme complex for broad spectrum support. It provides eight different digestive enzymes with distinct roles: bromelain, lipase, protease, amylase, cellulose, lactase, maltase and sucrase. Designed to retain breakdown capability over a wide range of pH variances, all the enzymes are acid stable against stomach pH. Vegetarian source, acid stable enzymes which are used to assist the body's own natural process.

BALANCE OF BACTERIA

Do your clients have gut issues that started after a trip abroad, an upset stomach, or taking antibiotics? Are symptoms worse after eating, especially foods high in sugar, carbohydrates, yeast (bread, beer, wine), or fibre (vegetables or wholegrains)? Have they done a test which indicated an imbalance of gut bacteria?

MICROCLEAR is a potent botanical complex with oregano, thyme, olive leaf, barberry and wormwood for gut health and balance of bacteria. Oregano, thyme, barberry, clove and olive leaf promote healthy function of the gastrointestinal tract, as well as providing antioxidant and anti-inflammatory support. Thyme, oregano, olive leaf, and barberry also aid immunity, and the health of the urinary and respiratory tracts, providing comprehensive systemic support.

GUT INTEGRITY

Do you see clients who react to certain foods, such as those containing dairy and gluten, perhaps with pain and discomfort? They might need support for the integrity of the gut mucous membranes (gut wall). Our gut lining is made up of multiple protective layers, which guard us from toxins and pathogens. It is made up of thin mucosal tissue, which is vital for nutrient absorption and colonisation of friendly bacteria.

GI COMPLEX is a gut support complex containing vitamin A, zinc, and ginger to support the mucous membrane, the intestinal tract, and inflammation, with L-glutamine, nucleotides, and live bacteria. Vitamin A supports the gut wall (the mucous membranes of the digestive tract) and the function of the immune system, and vitamin C and zinc contribute to the protection of cells from oxidative stress. Vitamin C also supports collagen formation. Ginger helps to support digestion, contributing to the normal function of intestinal tract and may also help to manage inflammatory responses.

Nucleotides are the building blocks of our DNA, especially needed for the fast-replicating cells of the digestive tract. Our needs for nucleotides increase during periods of stress, illness, or injury.

GUT MOTILITY

Do you see clients with issues who have irregular bowel movements? Do they sometimes feel the urgency to go to the toilet, or perhaps pass a bowel movement less often than once a day? They might need to support gut motility. The movement of food and fluid through the digestive tract is essential to digestion, absorption, and excretion. Disrupted motility and consequent slowing down or speeding up of this process can contribute to a number of uncomfortable symptoms and will also have wider implications, such as nutrient malabsorption and impaired detoxification.

PREBIO NUTRIPOWDER is a unique blend of plant fibre including marshmallow, inulin, FOS, GOS, arabinogalactans, and resistant starch for digestion and regular bowel movements. Fructooligosaccharides help to maintain a healthy balance of beneficial bacteria, including *Bifidobacteria*, promoting healthy gut function. Also includes marshmallow which helps to support digestion and regular bowel movements, as well as apple pectin and acacia gum.

BioCare's gut category range has been designed to support all these areas of gut health. Visit **www.biocare.co.uk/gut** for more information or register for one of the free education events.

Recommended IBS protocols

When you consider one in five now suffer with IBS – with many more going undiagnosed – IBS ranks as an increasingly prevalent, often debilitating complaint. When it comes to the recommended approach in clinic, *Nutrition I-Mag* brings you the key advice from natural health experts.

It's a hugely complex condition, that brings with it a multitude of symptoms and triggers – making irritable bowel syndrome (IBS) one of the more difficult to diagnose. But given the huge rise in incidence we are seeing in our modern world, it's imperative that nutritional therapists are up to date with the current recommendations.

Presenting a picture of IBS rates, Alice Bradshaw, Head of Nutrition Education and Information at Terranova Nutrition, highlighted the effect of our modern living choices.

"According to recent figures, it is estimated that around 10-20 per cent of people in the UK have IBS, while many more may live with the symptoms of the condition without a formal diagnosis. Digestive health issues and IBS symptoms do appear to have increased in recent years," she explained.

"There are several factors that are prevalent in society today that predispose a larger number of people to digestive health issues. More and more people report that their lifestyle has become increasingly stressful due to erratic work patterns, changes in lifestyle and social culture and family commitments. Stress is arguably the number one trigger for digestive dysfunction due to its adverse effect on digestive secretions, neuromuscular function in the intestines and immunological health.

"Additionally, fast paced lifestyles very often do not allow enough time for proper eating habits. The ongoing interest in digestive health in the alternative health field and mainstream media, means that there is more conversation around the subject of the importance of gut health."

Claire Barnes, Technical Advisor at ADM Protexin, which has the Bio-Kult and Lepicol brands, added: "IBS is one of the most commonly diagnosed gastrointestinal (GI) diseases, in fact, the condition accounts for up to 50 per cent of visits to the doctors for GI issues.[1] According to NICE, the prevalence in the general population is estimated to be between 10-20 per cent,[2] with symptoms being 1.5 to two times more prevalent among women than men.[3]

"It is very difficult to assess the rates of IBS, due to differences in diagnostic criteria and the methods used to collect symptom data in individual studies.[4] Symptom-based diagnostic criteria such as the Rome criteria have evolved over the years, the most recent Rome IV criteria is more restrictive than Rome III criteria, which has reduced the prevalence of IBS by half, but increases the prevalence of functional constipation and diarrhoea[4,5]."

Michela Vagnini, a Nutritional Therapist and Advisor at NaturesPlus, went on: "According to the British Journal of Medical Practitioners (BJMP), the incidence of IBS is rising dramatically, especially in recent years due to the uncertainty and challenges we have seen during the pandemic and economic crisis. As we know, stress plays a major role in IBS symptoms and flare-ups, as it would affect the gut-brain axis. Also, the typical western diet and lifestyle seem to be allowing this syndrome to flourish. Greater use of processed food and unhealthy drinks may lead to more digestive problems. Additionally, being less active than ever before can also lead to digestive issues. Moreover, IBS is more common in overweight and obese people and the rise in obesity rates can have an impact on IBS cases too."

CONDITION SPECIFIC GUIDE

IBS is a common condition people seek help from practitioners but reaching a diagnosis can take time. So, let's start with the definition of IBS and what causes it.

Sue McGarrigle, Clinical Nutritional Therapist and Naturopath who is Technical Manager at Bionutri, commented: "The true prevalence may be higher as it is thought many people with IBS symptoms do not seek medical advice (NICE). IBS is a chronic, relapsing and often life-long disorder. It is characterised by the presence of abdominal pain or discomfort, which may be associated with defaecation and/or accompanied by a change in bowel habit. Causes of IBS have not been adequately defined, although gut hypersensitivity, disturbed colonic motility, post-infective bowel dysfunction or a defective antinociceptive (anti-pain) system are possible causes."

Bradshaw added: "IBS is the term used to describe a cluster of digestive symptoms that a person may experience on an ongoing basis. The contributory factors to IBS are multifactorial. Stress and poor eating habits are certainly factors, but probably more prevalent are disparities within the digestive system. These include imbalances in digestive acidity, which are very common. This can lead to gastric or stomach ulcers when acidity is chronically excessive – or conversely can lead to hypochlorhydria, where insufficient acid is available to digest food in the stomach.

"Dysbiosis, or an imbalance between beneficial and disease-causing microbes in the intestines, is also an extremely common condition that can lead to a wide array of symptoms and disease states. Small intestinal bacterial overgrowth (SIBO) is currently thought to be a causative factor in the majority of IBS patients. Many people also have an inability to efficiently digest certain

food components, leading to major intestinal distress – as in the case of coeliac disease and lactose intolerance."

Sarah Oboh, Nutritionist at OptiBac Probiotics, added: "IBS is a chronic functional gastrointestinal disorder, affecting between six-20 per cent of individuals in the UK and 11-15 per cent globally. The cause is multifactorial whereby genetic, lifestyle and environmental factors may contribute, such as diet, stress, antibiotic use and infections. Many of the aetiologies include dysfunctional gut motility, visceral hypersensitivity, alterations in the gut-brain axis, impaired epithelial barrier/increased permeability in the gut, elevated immune activation, endocrine imbalances and gut dysbiosis."

Vagnini added: "It seems that when a mother is suffering from IBS, children might be more likely to be diagnosed with IBS. The same occurs between siblings, suggesting that there could also be a genetic predisposition involved. Although it is not a life-shortening condition, studies have shown that IBS patients have an increased number of health care visits, diagnostic tests, and surgeries. IBS can also severely impact a person's quality of life. Another factor to consider is that many IBS patients have psychiatric comorbidities, especially anxiety and depression, which could also be caused or exacerbated by the syndrome."

And Dr Marilyn Glenville PhD, the UK's leading nutritionist specialising in women's health and author of Natural Solutions to IBS, went on: "The exact cause of IBS is not known but a number of theories have been suggested. One is that a stressful event such as divorce or bereavement can trigger the onset, and another is that it is triggered by a gastrointestinal infection as a person is twice as likely to develop IBS after having an attack of gastroenteritis. Another is that in some people, the nerves and muscles in the bowel are extra sensitive and can react when eating and when the bowel stretches, causing pain and spasms. Research shows that taking a course of antibiotics can increase the risk of developing IBS by more than three times."

Vagnini highlighted the risk of deficiencies: "When

following an elimination diet or when there are multiple foods that can trigger symptoms, people tend to stick to a very restricted diet. Although that might seem helpful for IBS, it could lead to nutritional deficiencies. The ability of a compromised digestive tract to assimilate and utilise vitamins and minerals from foods dramatically decreases, especially with diarrhoea and chronic inflammation.

"Fat-soluble vitamins require good bile and digestive enzyme production to be absorbed. IBS patients, especially those experiencing diarrhoea (IBS-D), might not absorb fats and fat-soluble nutrients properly. A new study in *BMJ Open Gastroenterology* found that 82 per cent of participants were vitamin D deficient. Moreover, the lower the levels of vitamin D the more severe IBS symptoms were reported.

"Iron and B12 are important nutrients often low in IBS patients, possibly because both require good gut function and other nutrients to facilitate absorption. The diet of IBS patients was found to consist of low calcium, magnesium, phosphorus, vitamin B2 and vitamin A content, hence a complete multivitamin with essential cofactor coming from organic whole foods could help an IBS sufferer prevent a possible nutrient deficiency."

McGarrigle added: "When the body isn't processing its food properly, there are some very important nutrients that might be depleted, including iron and vitamin B12, which could cause anaemia, so a B complex is recommended. Individuals should also be screened for copper–zinc imbalance as this may play a role in perpetuating the underlying pathophysiology of IBS."

If we look to commonly seen symptoms, there are some obvious markers.

Oboh advised: "IBS often presents with abdominal pain, bloating and altered bowel habits. It is categorised in the following subgroups:

- IBS-C (constipation dominant).
- IBS-D (diarrhoea dominant).
- IBS-M (mixed – diarrhoea and constipation).
- IBS-U (unspecified, varying symptoms)."

Hania Opienski, Mycotherapy Advisor at Hifas da Terra, went on: "IBS is a functional condition with widespread symptoms involving recurrent abdominal pain and diarrhoea and/or constipation, is often associated with stress, depression, anxiety or past intestinal infection."

Vagnini added: "The most common symptom of IBS is abdominal pain, where 78 per cent of sufferers reported having continuous or frequently reoccurring abdominal pain. It is often described as cramping, stabbing, sharp and constant pain. Other common symptoms include nausea and belching, feeling full quickly, often associated with heartburn, constant abdomen bloating that might get worse during the day, flatulence with possible faeces leaks, changes in the consistency and frequency of bowel movements (from constipation to diarrhoea), and stool appearance might change as well with the presence of a small amount of mucous.

"Non-digestive symptoms of IBS can include anxiety and depression, trouble sleeping, fatigue, headaches, unpleasant taste in the mouth, muscle aches, sexual problems, low self-esteem, heart palpitations, and urgent need to urinate. Changes to your symptoms should not be ignored when suffering from IBS. They are often called red flag symptoms and rectal bleeding is one of the most alarming of them. It can have different explanations, from haemorrhoids or fissures to more severe diagnoses. Always speak to your GP if you notice blood in your stool. Other red flag symptoms are unintentional weight loss, fever, shaking and night sweats, nightime symptoms that wake you up, and the onset of new different pain."

McGarrigle also pointed out: "Symptoms may include disordered defaecation (constipation or diarrhoea or both) and abdominal distension, usually referred to as bloating. People present with varying IBS symptom profiles, most commonly 'diarrhoea predominant', 'constipation predominant' or alternating symptom profiles. Symptoms sometimes overlap with other gastrointestinal disorders, such as non-ulcer dyspepsia or coeliac disease."

ACHIEVING A DIAGNOSIS

And what is the best approach to take when reaching a diagnosis of IBS?

Barnes advised: "Diagnosis of IBS is challenging due to the number of symptoms and the variability between patients. Additionally, the diagnostic criteria for IBS is often reported as being too restrictive and unclear.[8] According to NICE, an initial assessment of IBS can be made if an individual reports having had abdominal pain or discomfort, bloating or change in bowel habit for at least six months.[2]

"A diagnosis of IBS can then be considered only if the person has abdominal pain or discomfort that is either relieved by defaecation or associated with altered bowel frequency or stool form and is accompanied by at least two of the following four symptoms: altered stool passage (straining, urgency, incomplete evacuation), abdominal bloating, distension, tension or hardness, symptoms made worse by eating or passage of mucus.[2] Other features such as lethargy, nausea, backache and bladder symptoms are also common in people with IBS, and may be used to support the diagnosis.[2]

"Nutritionally, the first-line approach to managing IBS includes dietary education, whilst looking at foods responsible for the onset and worsening of symptoms.[11] Many with IBS are particularly sensitive to high FODMAP (Fermentable Oligo-, Di-, Mono-saccharides, And Polyols) foods, which includes some vegetables such as onion and garlic, some fruits (especially stoned fruits), beans and lentils, etc. Gluten and dairy are often also noted as triggers for IBS sufferers. Of particular note, processed foods which contain many hidden sugars, sweeteners, additives and emulsifiers are likely to have a negative impact on the bacteria living in our gut, which may lead to increased inflammation and a worsening of IBS symptoms."

Ben Makeham, Naturopath and Science & Research Communications Manager at Activated Probiotics, went on: "The exact aetiology for this collection of symptoms is not yet fully understood but is speculated to be multifactorial and variable between individuals with many believed to experience some degree of gastrointestinal dysmotility and visceral hypersensitivity. Research into the underlying causes of these two key factors in IBS pathophysiology (i.e. gastrointestinal dysmotility and visceral hypersensitivity) is revealing an interplay between gut microbiome disruption, endocrine and nervous system dysfunction, intestinal hyperpermeability and immune-mediated gastrointestinal inflammation.[1]

"A diagnosis of IBS can be made by a medical practitioner when all other causes for symptomatology have been ruled out and the patient fulfils the Rome IV criteria. The Rome IV criteria specifies that a diagnosis of IBS can be made when, on average, there has been recurrent abdominal pain once per week over the past three months and has been associated with at least two of the following: defecation, change in frequency of stool, and change in form/appearance of stool. Symptoms must also have begun six months prior to diagnosis[2]. Patients can be further classified into subtypes based on their predominant bowel habits, including constipation (IBS-C), diarrhoea (IBS-D), mixed bowel habits (IBS-M) or, in cases where a patient has mostly normal stool, unclassified (IBS-U)."

And McGarrigle advised: "The diagnosis of irritable bowel syndrome can be difficult as symptoms may change over time, symptoms of IBS may mimic other disorders, a precise biomarker for IBS does not exist and clients may want testing to identify the cause of their symptoms. What can be helpful is to rule out coeliac disease, gluten intolerance, inflammatory bowel disorders and infections, including parasites.

"Onset and duration information should be part of the diagnosis. Obtaining a detailed history with a few additional questions is also warranted to confirm a diagnosis. Determining whether symptoms started after an episode of a suspected infectious food borne gastrointestinal illness, as an example, could also be an indicator. It is also important to test for iron levels."

DIETARY FACTORS

A recommended dietary protocol when addressing IBS requires a range of interventions, depending on the symptom profile.

"It is useful for people to have a look at what they are eating and keep a food and symptom diary so they can detect any patterns to their symptoms. They want to keep an eye out for foods that trigger symptoms, but they may also discover that there are certain times of the day which are worse, maybe when they are tired or that the symptoms are linked to regularly stressful aspects of your week," Dr Glenville explained.

"Exclusion diets, coupled with a food and symptom diary, are often suggested and success rates can range from 15-71 per cent. Exclusion diets can exclude a number of different foods including processed meats, potatoes, citrus fruits, gluten containing grains like wheat, dairy foods, caffeinated drinks and alcohol. The diet that has risen to prominence with IBS is the FODMAP diet and involves restricting certain foods that are highly fermentable in the large intestines. Research has shown that the FODMAP diet has a 20 per cent better effect on IBS symptoms than the standard NICE IBS dietary advice given out. The FODMAP diet means restricting the intake of:

- **F** – fermentable
- **O** – oligo-saccharides (galacto-oligosaccharides and fructans) e.g. lentils, chickpeas, kidney beans, broccoli, and wheat
- **D** – disaccharides (lactose) e.g. milk, yogurt, soft cheeses
- **M** – monosaccharides (fructose) e.g. apples, pears, honey, fruit juices
- **A** – and
- **P** – polyols (sorbitol and mannitol) e.g. xylitol, stone fruits

"In my experience, for some people, the FODMAP diet works well, for others it does not. And this seems to depend on the cause of the IBS."

Opienski continued: "In Chinese medicine, how you eat is considered as important as what you eat. The mental, emotional state, pace and level of activity or distraction are all considered when making dietary recommendations. The Earth element (spleen/pancreas and stomach) is not just responsible for digestion of food, but also of thoughts and emotions. Thus, when there is stress, overthinking, irregular eating patterns and consumption of foods that are challenging to digestion can all lead to what we would now term IBS.

"Interestingly, these ancient recommendations are in line with key clinical measures now recommended for IBS such as implementing regular eating patterns, regulating stress before eating, particularly supporting the PNS by allowing time to sit, slow down and chew, to eat small to moderate-sized meals, to maintain regular physical activity and good hydration, and avoid key triggers, such as spicy food, alcohol, caffeine, high fat and insoluble fibres in general."

Makeham pointed towards the importance of understanding intolerances: "As up to 65 per cent of patients with IBS report that their symptoms are related to specific foods, it is important to investigate this fully[1]. Identifying specific food intolerances (mostly through diet and symptom diaries) and excluding them from the diet while restoring intestinal epithelial barrier integrity is important to resolve this potentially very important cause and/or exacerbator of IBS symptoms.

"Increased intestinal permeability or leaky gut has been linked to more severe IBS symptoms, including abdominal pain, and some studies have reported finding intestinal hyperpermeability in up to 50 per cent of IBS patients. One of the ways leaky gut may be triggering IBS symptoms is through its mediation of food intolerances and increased gastrointestinal inflammation. In the body, the intestinal epithelial barrier is essential for preventing the passage of unintended substances into the body, which have the potential to activate the immune system, such as partially-digested food particles. The immune response to these particles can create food intolerances that induce inflammation and contribute to symptomatology.

"The use of foods which can help to repair intestinal epithelial barrier include those high in prebiotic fibres that the gut microbiome can ferment for the production of butyrate, the preferred fuel source for enterocytes. Foods high in vitamin C, zinc and protein will also benefit intestinal repair."

Vagnini also suggested: "IBS is a very complex and multifactorial condition and dietary protocols would vary according to the individuality of each case. However, there are some key steps that would be applied in each including:

- Removing possible food intolerances and sensitivities. Usually, a practitioner would create an elimination diet plan where all possible offending foods (previously identified by the patient) and common allergens would be removed.
- Processed/pre-packed foods, highly refined carbs and snacks (crisps, cakes, biscuits and highly processed snacks), caffeinated drinks, fizzy drinks, alcohol and sodas will be removed as they are detrimental to our gut microbiome, are linked to weight gain and obesity and could contain ingredients that could trigger IBS symptoms.
- The new plan would include plenty of fresh, nutrient-dense food, organic as much as possible (as common pesticides and herbicides are associated with a disrupted gut microbiome), and pure filtered water alongside soothing herbal teas.
- Fermented foods are a good way to nourish the gut microflora. Studies

have found that regular consumption of fermented foods (such as lacto-fermented sauerkraut, kefir, and kimchi) improved participants' IBS-Symptom Severity Score (IBS-SSS) compared to control group."

Rachel Hoyle, founder of Nucleotide Nutrition, highlighted nucleotides as key components of the diet.

"Research shows that the consumption of foods with the highest nucleotide concentration are in decline," she explained. "Nucleotides are found in low levels with low bio-availability in all foods, with the highest concentrations being found in offal meats, staple foods in our grandparents' time, but rarely featuring in the modern Western diet. Offal foods, such as tripe and liver, are the best example of this decline.

"The rise of the ready meal and takeaways could have had an additional effect on the dietary intake of nucleotides. In 1974, the quantities of both respectively were 27g and 16g per person, both less than the 36g of liver. But in 2014, these had risen to 163g and 50g, a 503 per cent and 213 per cent increase respectively. The body strives to make up this dietary nucleotide shortfall, by expending extra energy to recycle or produce 'de novo' its nucleotide requirement. The impact is fatigue and ill health due to a slow response of the immune system or a poorly maintained gut lining."

FIBRE FACTS

Fibre is something that requires consideration.

"Opinions about the benefits of modifying the intake of soluble and insoluble fibres have evolved over time into more detailed analysis of the types of fibres and their impact on digestion and gut sensations," Opienski advised.

"Beta-glucans, particularly the β-(1→3, 1→6)-D-glucans found in mushrooms, a form of insoluble fibre, may be a useful functional food. Mushroom β-glucans are indigestible ingredients that beneficially affect the body by stimulating the growth and or activity of one or more strains of bacteria, improving intestinal health and rebalancing the pH, temperature and concentration values of microorganisms.

"Found in medicinal mushrooms such as lion's mane, these β-glucans come conveniently packaged by nature (in a good full spectrum product) along with a range of sterols, terpenoids, polyphenols and other active biomolecules. These compounds can both directly support gut healing via anti-inflammatory, analgesic and immune and nervous system modulating effects, as well as indirectly via the gut healing capacity of secondary metabolites (SCFAs such as butyrate) generated by the microbial digestion of β-(1→3, 1→6)-D-glucans or polyphenols in the gut."

Vagnini pointed out: "Soluble fibres (found in banana, sweet potatoes, beans, avocado, oat, Brussel sprouts, etc.) are often reported as helping in modulating gut movements and relieve abdominal discomfort. But if the person is not used to such foods, they should introduce them gradually to avoid excess fermentation."

RECOMMENDING PROBIOTICS

One of the most important factors with IBS is rebalancing the gut microbiome and to do this, probiotics are critical.

Barnes commented: "The most beneficial supplements for each individual will vary depending on the underlying causes and symptoms of their IBS. Anti-microbial agents, live bacteria supplements, prebiotics, digestive enzymes, betaine hydrochloride, digestive bitters, bile supplements, nutrients which help to strengthen the gut epithelial lining and HPA axis support may all be beneficial for IBS sufferers when used appropriately.

"Accumulating evidence supports the view that an imbalance of gut bacteria contributes to IBS.[13] In the largest trial of its kind, on the use of live bacteria supplements in IBS, 400 adult patients with moderate-to-severe symptomatic IBS-D were randomised to treatment with either the original Bio-Kult 14 multi-strain formulation or placebo for 16 weeks.[14] Bio-Kult significantly improved overall symptom severity in IBS patients and was well tolerated. Abdominal pain and frequency reduced by an average of 69 per cent and 34 per cent of participants were completely symptom free at the end of the four-month trial. Significantly though, as well as relieving IBS-D symptoms, Bio-Kult was also shown to markedly improve all aspects of Quality of Life. This includes psychological issues such as anxiety about health, depression, lack of enjoyment of life, and feelings of having to avoid stressful situations."

Vagnini continued: "Most IBS sufferers have a disrupted microbiome and fermented foods and probiotic supplements have proved to be a good way to re-establish a healthy flora and reduce symptoms. In 2020, a systemic review and meta-analysis of 59 studies suggest that probiotics may be a safe and effective treatment for IBS patients. Also, clinical trials suggest that individuals taking multi-strain probiotic supplements for at least eight weeks may get the most benefits.

"*Lactobacillus acidophilus* DDS-1 is one of the most thoroughly studied *acidophilus* strains in the industry and is suitable for children and adults. Results have revealed that participants reported improved quality of life and reduced abdominal discomfort just after three weeks. Other benefits reported were a regular stool frequency, less bloating and a reduction in perceived stress associated with digestive health. Other key strains including *P. acidilactici* KABP-021, *L. plantarum* KABP-022, and *L. plantarum* KABP-023 have been researched extensively for their ability to reduce visceral hypersensitivity and improve IBS Quality of life, two markers often used in IBS studies."

Oboh added: "Probiotics have been shown in studies to significantly reduce symptoms of IBS, but it's important to point out that not all probiotics act in the same way. Clinical studies indicate the best probiotic supplements for IBS contain strains such as:

- *Saccharomyces boulardii* (mainly for IBS-D).
- *Bifidobacterium lactis* BB-12 (mainly for IBS-C).
- *Lactobacillus acidophilus* NCFM.
- *Bifidobacterium lactis* Bi-07.
- *Bifidobacterium infantis* 35624.
- *Bacillus coagulans* Unique IS-2.
- *Bifidobacterium lactis* HN019 (mainly for IBS-U/IBS-M).
- *Lactobacillus plantarum* Lp299v.

"In individuals with IBS, decreased diversity and reductions in beneficial bacteria, (e.g. those from the *Bifidobacterium* and *Lactobacillus* species), have been observed in the gut microbiota, particularly in those with IBS-D and in individuals with more severe IBS symptoms. In the gut, these species help to create a healthier epithelial and luminal environment through the production of lactic acid and other anti-microbial actions, as well as supporting overall health. It is therefore important to repopulate the gut with specific strains of bacteria from the *Bifidobacterium* and *Lactobacillus* species which have been clinically shown to reduce the symptoms of IBS and help restore balance to the gut microbiome."

And Bradshaw commented: "Microflora supplements which provide both *Lactobacilli* and *Bifidobacteria* can significantly benefit the environment of both the small and large intestine. Among other properties, good bacteria enhance digestive processes and make the intestines inhospitable for disease-causing organisms. Some practitioners may reserve adding probiotics/microflora supplements until later in the treatment protocol if they suspect bacterial overgrowth in the GI tract."

Makeham added: "Supplementing specific strains of live bacteria can be beneficial in instances of intestinal hyperpermeability due to their ability to upregulate the expression of tight junction proteins between intestinal cells and upregulate growth factors which both help to restore barrier integrity. They may also modulate the immune system and reduce production of pro-inflammatory cytokines, helping to reduce damaging inflammation. There are a number of strains which have demonstrated such abilities in-vitro and, when clinically trialled in patients with IBS, were found to significantly reduce the severity of symptoms when compared to control."

THE ROLE OF DIGESTIVE ENZYMES

We should also remember digestive enzymes as a useful support.

Bradshaw recommended: "Since many gut-related symptoms and disorders are associated with digestive enzyme deficiencies or imbalances, digestive enzyme supplements are often essential tools in dealing with such problems. Any number of food components can trigger symptoms, so the best results are likely to be achieved with broad-spectrum products providing a wide variety of enzymes."

Vagnini added: "Optimising total gut health is essential to make sure that food can truly be the medicine and not an enemy. Hence, a combination of probiotics and digestive enzymes can help to break down the food we eat and support assimilation avoiding unpleasant fermentation and side effects. Lipase and other pancreatic enzymes can help with fats and nutrient absorption."

ADDITIONAL SUPPORT

There are some other supplements that may be supportive, depending on symptoms being experienced.

Serena Christy, Nutritionist at Pharma Nord: "Since IBS is a gut-brain disorder, the approach to supplements could depend on person to person. Magnesium may help if you are experiencing IBS-C, by helping to loosen the stool, this may in turn aid overall IBS relief. It may be best to opt for a soluble magnesium supplement that is gentle on the gut. Fibre may help those with IBS-D, by increasing stool bulk and improving laxation."

For Dr Glenville, certain botanicals are useful.

"Ginger has a number of benefits for IBS in that it can help to prevent indigestion, gas and bloating. Ginger also acts as an anti-spasmodic and it relaxes and soothes your intestinal tract," she recommended.

"Slippery elm helps calm and soothe the digestive tract by coating the lining of the intestines to reduce irritation and to calm the inflamed mucous membranes in the intestines. Slippery elm is good for both constipation and diarrhoea as it can add bulk to stools if you have diarrhoea and to soften the stools if you are constipated.

"Like slippery elm, marshmallow contains mucilage which can reduce irritation in the digestive system and can form a protective coating over irritated and inflamed intestinal mucosal membranes, so it is good for all the symptoms associated with IBS. Licorice can help to heal the irritated surfaces of your intestines and also has an anti-spasmodic effect so lessening abdominal cramps. Licorice has been shown to help with IBS especially when combined with slippery elm.

"Chamomile can reduce spasms and control 'nervous' reactions in the gut, making it less sensitive to food and other triggers. It also has an anti-inflammatory effect and can improve peristalsis (the muscular movement of the stool through your intestines). Fennel helps prevent and relieve flatulence, as well as soothing the digestive tract and reducing cramps and spasms, and peppermint has had the most research in terms of its effectiveness for reducing IBS symptoms. It can eliminate or reduce spasms, bloating, trapped wind, constipation and diarrhoea.

"Turmeric has significant anti-inflammatory effects throughout your body and has been shown to help 66 per cent of sufferers relieve the symptoms of IBS, and artichoke has been shown to reduce the symptoms of IBS by over 25 per cent. People using the extract showed a significant shift away from bowel movements which were alternating constipation/diarrhoea to a more normal pattern."

Bradshaw continued: "Digestive botanicals such as fennel seed, ginger rhizome, cardamom pod and gentian root have a considerable role to play in battling gut reactions. For example, gentian and ginger stimulate the release of protein-digesting compounds in the stomach, while fennel, ginger and cardamom relax the intestinal muscles, which may help relieve abdominal spasms and cramps and may also help release trapped wind."

Another aspect to consider for IBS support is medicinal mushrooms.

"Chinese medicine has recommended *Ganoderma lucidum* (reishi) mushroom for supporting qi and blood, soothing the mind, strengthening the spleen and nourishing the stomach for millennia. In other words, it is an adaptogen which can calm the NS, and regulate the HPA axis and digestive function, all aspects of IBS. Reishi is known for its CNS (central nervous system) HPA (hypothalamus-pituitary-adrenal) axis regulating activity, thus supporting reduction of stress, anxiety and depression. Modern research has confirmed these functions, as well as reishi's pronounced immunomodulating, anti-inflammatory, analgesic, antimicrobial and cellular protecting antioxidant actions," Opienski commented.

"Thus, reishi could be considered useful for those with IBS for addressing both root cause and some of the most uncomfortable presenting symptoms. Make sure to choose a product that has guaranteed levels of the active compounds such as β-(1→3, 1→6)-D-glucans and terpenoid compounds such as ganoderic acids to get the therapeutic benefits. Lion's mane can help regulate the digestive system, microbiota (dysbiosis) and help heal, regenerate and protect the entire nervous system (enteric, central, peripheral, myelin).

"*Hericium erinaceus* is a safe and well tolerated mushroom prebiotic that also has a local anti-inflammatory effect on the gut, as well as increasing SOD to suppress oxidative stress, with the added benefit of evidence to support its use for anxiety and stress modulation. It often contains preformed GABA, which we know is a calming neurotransmitter, and it can stimulate production of serotonin in the gut and BDNF for mood modulation."

You could also keep in mind nucleotides.

"My recommendation of a supplement for IBS sufferers is IntestAid IB, which has been independently verified in a IBS symptom clinical study (Dancey et al 2006, *Nutrition Journal*). This food supplement contains the Nutri-tide Nucleotide nutritional formula, specially formulated to deliver a balanced mix of all five of the major nucleotides providing the natural cell building blocks to support the body's demanding cell regeneration processes," Hoyle commented.

"Dietary nucleotides are essential for a healthy lining of the digestive system and help the natural good gut flora to flourish. The types of cells in the body that need nucleotides from dietary sources are good gut bacteria (especially *bifido* bacteria), gut mucosal cells, and bone marrow cells (red and white blood cells)."

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Vitamin D developments

As we move into the peak cold and 'flu season, the importance of vitamin D grows. Here, our expert panel explain the functions of this key nutrient and bring us up to date with what the evidence is telling us.

There is no doubt that vitamin D has become the best-known of the key vitamins, which only accelerated during the Covid-19 pandemic, and especially after the NHS changed its guidance during lockdown to advise everyone to take a vitamin D supplement all year round.

Its importance was backed up by data from the Health Food Manufacturers' Association's (HFMA) Health of the Nation Survey. Looking at data from 2020, it was found that almost 20m people took supplements daily compared to 16.5m the year before. And at the top of the list in terms of the most popular was vitamin D. In addition, when asked what people had taken for the first time since the pandemic began, vitamin D was answered by 63.3 per cent of people.

Helen Drake, Registered Nutritional Therapist at Cytoplan, commented: "It is difficult to quantify how many people are not getting enough vitamin D. Current statistics suggest one in five people are vitamin D deficient, although this could be higher, and deficiency is only part of the story. It appears that there are many more people that have suboptimal levels of vitamin D, although they would not be diagnosed as deficient.

"It is advisable to do a vitamin D test to see where you fit on this scale. We would consider deficiency to be under 30nmol/l, whereas optimal levels are 125-199nmol/l. Therefore, many people may have insufficient or suboptimal levels. Reduced levels of vitamin D can be common due to reduced exposure to adequate sunlight, poor absorption, genetic mutations, or other health conditions."

Rachel Bartholomew, Nutritionist at Nutri Advanced, added: "The simple answer is we don't get anywhere near enough sun. We work and play inside, our bodies are covered up, we travel in cars and live and work in cities where buildings block the sun. Liberal use of sunscreen, whilst needed for skin cancer protection, has an unfortunate downside, as it reduces skin production of vitamin D. It's easy to understand why low vitamin D is such a big health problem. Severe cases of deficiency continue to be reported and more worryingly, many may go unrecognised."

And Amy Rushton, Technical Advisor at Lamberts, went on: "Vitamin D deficiency is considered a global health issue as an estimated one billion children and adults are deficient. Research has shown that low vitamin D status is an independent risk factor for mortality, with vitamin D playing a key role in several processes, including immune function, muscle function, bone health and cardiovascular function.

"The National Diet and Nutrition Survey has shown that one in six people in the UK are deficient in vitamin D, while 49 per cent of the population are unaware of the NHS vitamin D daily recommended intake. A major contributor to this deficiency is due to the low levels of sunlight the UK receives. During the winter months, it is much harder to obtain vitamin D due to reduced levels of UVB radiation. Vitamin D is only stored in the body for up to 28 days, therefore, it is impossible to store vitamin D absorbed in the summer months to keep you going through the winter."

Ella Owen, Nutritionist at Kinetic, which has the Nature's Answer and Garden of Life brands, also pointed out: "This year actually marks 100 years since the discovery of vitamin D and its connection to sunlight. It is one of the most researched vitamins."

UNDERSTANDING THE SCIENCE

It is important to understand what vitamin D is, and the mechanisms behind what makes it such a crucial vitamin for everyone.

Andrew Thomas, founder and CEO at BetterYou, advised: "As a solar-based lifeform, we have evolved to become reliant on the sun's rays. When we left the equator and migrated towards the norther and southern hemispheres, we evolved lighter skin pigmentation to better absorb the weaker UVB radiation from the sun. Vitamin D has become crucial as we have adopted an increasingly internal existence. Vitamin D has two primary roles in our bodies. It provides the basis for a functioning immune system, providing resistance from viruses and an array of auto-immune diseases from multiple sclerosis to numerous internal cancers.

"Our bodies have evolved to synthesise vitamin D from our skin's unprotected exposure to UVB radiation from the sun. Apart from the Eskimo, there is no human group who has survived with limited exposure to the sun without supplementation. And they survive primarily due to the rich vitamin D within seal blubber and wild Alaskan salmon. For most of us, it is impossible to obtain optimal levels of vitamin D from food alone."

Catherine Gorman, Nutritionist and Health Coach at Good Health Naturally, also pointed out: "Vitamin D has certainly been under the spotlight in the last few years, as more and more research has uncovered the important role it plays in the body, from building strong bones and teeth, immunity and maybe even helping prevent some types of cancer.

"Since the discovery of vitamin D in the early 20th century, it's been synonymous with skeletal and dental health, as it plays a key role in calcium and phosphorous metabolism, both vital minerals for maintaining healthy bones and teeth. More recently, vitamin D receptors have been discovered in more than 30 different tissues in the body, including the brain, heart, skin, eyes, ovary, prostate gland, and breast, so it should come as no surprise its effects could be wide ranging. It is known that it can help reduce inflammation and is involved in glucose metabolism. Plus, many of our genes encoding proteins which regulate cell proliferation, differentiation, and apoptosis are modulated in part by vitamin D. A deficiency has been linked to cardiovascular conditions, including high blood pressure, poor immunity and neurological diseases.

"Its role in immunity was highlighted during the pandemic, when some studies suggested low vitamin D levels were associated with a higher risk of Covid-19 infection, and more severe symptoms. It is thought vitamin D may help reduce the risk of microbial infections by stimulating the innate cellular immunity, inhibiting cytokine storms by decreasing proinflammatory cytokine production, and modulating the adaptive immune response."

Bartholomew continued: "Vitamin D is best known for supporting healthy bones and preventing rickets. More recently however, research into the 'sunshine vitamin' has exploded and vitamin D is now known to be involved in almost every aspect of health.[1]

"A recent study involving more than half a million people found higher vitamin D to be linked to reduced mortality from all causes. This large-scale study also found that people with severe vitamin D deficiency had almost twice the mortality rate from all causes as those with higher levels.[2] These findings have been replicated in additional large scale studies.[3-4] The latest National Diet and Nutrition Survey has shown that deficiency rates are

on the increase and perhaps even more worrying is the increasing incidence of nutritional rickets in children; an avoidable bone-softening disease associated with severe vitamin D deficiency[5-6]."

Paul Chamberlain, Head of Nutrition and Education at Solgar and Nature's Bounty, added: "Vitamin D is crucial to bodily functions as it regulates the amount of calcium and phosphate in the body that are key to keeping bones, muscles and teeth healthy."

And of course, we need to understand – and consequently advise clients – on the most efficient way to obtain adequate levels.

"When skin is exposed to sunlight, vitamin D is made from the cholesterol in the body. The sun's ultraviolet (UVB) rays hit cholesterol in the skin cells, providing the energy for vitamin D synthesis," Chamberlain explained. "In the UK, 80-90 per cent of vitamin D is derived from skin exposure to ultraviolet B radiation from sunlight, with the remaining 10-20 per cent being derived from dietary sources."

Drake expanded further, commenting: "When the skin is exposed to UVB radiation (from sunlight) a molecule known as 7-dehydrocholesterol (derived from cholesterol) is converted to cholecalciferol, also known as D3. Cholecalciferol can also be obtained from the diet or by supplementation (D3). Cholecalciferol travels to the liver, where it is converted to 25-hydroxyvitamin D (25OHD). The kidney then converts 25OHD to 1,25-hydroxyvitamin D (1,25OHD), also known as calcitriol, which is the active form of vitamin D and possesses hormonal properties."

And Hania Opienski, Education Lead and a Mycotherapy Specialist Consultant for Hifas da Terra UK and Ireland, commented: "Vitamin D is a prohormone and exists in two physiological forms, D2 (ergocalciferol) and D3 (cholecalciferol). Vitamin D3 is the preferred form as it has been shown to increase serum vitamin D levels to a greater extent that vitamin D2. Vitamin D3 can be obtained from both dietary sources, such as oily fish and dairy products, and exposure to sunlight. Due to the limited number of foods that contain adequate vitamin D3, sunlight is the most preferable way to obtain sufficient vitamin D3.

"Furthermore, vitamin D3 produced by the skin is thought to last twice as long in the circulation compared to orally ingested vitamin D3, with 100 per cent of vitamin D3 produced by the skin having the potential to bind to the vitamin D binding protein compared to only 60 per cent of orally ingested vitamin D3."

Owen went on: "Referred to as the sunshine vitamin, vitamin D is produced naturally by the body following exposure to sunlight. Vitamin D is considered to be a hormone because it is synthesised by the skin in the presence of UV light from sunshine, before being converted into its most active form within the kidneys and liver. This is a highly effective way of obtaining vitamin D during the summer months in the UK, however, during the autumn and winter, the UV radiation is much lower so this is when supplementation would be the best way to obtain it. Even on a sunny winter's day, the sun is just not at the right angle to get enough UV light to the earth.

"Vitamin D can be stored in the body and used for a rainy day. However, it is quite common for individuals not to store enough vitamin D during the summer months to carry them through the whole winter, so this is generally the time of year that people become most deficient. As such, Public Health England advises everyone to take a supplement of vitamin D from the months from October to March."

FACTS AROUND DEFICIENCY

We know that there are issues with vitamin D deficiency, and especially among certain groups. But how big a problem is it?

"Vitamin D deficiency is increasingly common. Quite simply, our increasingly internal existence is depriving us of this essential vitamin. The widespread nature of deficiency can be put down to our ignorance of this crucial nutrient," Thomas commented.

"We are simply not being told the facts of this nutrient. For example, the Recommended Daily Amount is still 400iu or 10mcg per day. It used to be 200iu, the amount of vitamin D contained in a teaspoon of cod liver oil. The fact is that this figure is deficient for optimal health by a factor of 10."

Chamberlain went on: "It is estimated that one billion people worldwide have a vitamin D deficiency, and approximately 20 per cent of people in the UK will suffer from this. The main causes of vitamin D deficiency are lack of vitamin D through diet and lack of vitamin D through sunlight. In autumn/winter months, as nights get longer, UVB light is missing from the spectrum, so people will experience declining levels of vitamin D during these seasons."

Dr Marilyn Glenville PhD is one of the UK's leading nutritionists and author of 17 internationally bestselling books, including *Natural Solutions to Menopause*. She highlighted the scale of the problem.

"It is thought that one in five adults and one in six children are deficient. Natural food sources of vitamin D are few. It is found in oily fish and eggs. A 100g of grilled salmon contains 284iu of vitamin D, a 100g of tinned pilchards contains 560iu of vitamin D, and the yolk of one egg contains about 20iu of vitamin D. We have rickets back in the UK which we thought we had eliminated 40 years ago. Children are spending less time outdoors; they are more often sitting in front of the television or computer screens."

Drake added: "Those at risk of vitamin D deficiency include people of dark-skinned ethnicities, as their ability to absorb UV light is reduced, obese people as it has been shown that obesity can increase vitamin D deficiency, people who have reduced exposure to UV light i.e., those who work indoors all of the time, children who do not play outside, use of sun creams, covering up from the sun etc., those that live at latitudes above 37 degrees north will struggle to make adequate vitamin D from the sun, this includes the UK, and those who do not consume vitamin D-rich foods such as butter, oily fish, organ meats (which provide D3) or vegan sources such as dark leafy green vegetables and mushrooms (however, these are in D2 form which needs to be converted to D3). Hence, those following a vegan diet are at a greater risk of deficiency. In addition, those with genetic mutations of vitamin D receptors or transporters, those deficient in magnesium, as magnesium supports vitamin D bioavailability, and those with poor digestive capacity, particularly if unable to effectively absorb fats."

And, of course, as already highlighted, our increasingly sedentary, indoor lifestyles are a cause for concern.

"Sun exposure is the most natural way to obtain vitamin D but of course, it is difficult to get this exposure from October to around March in the UK," she advised.

"Those most at risk of a deficiency in the UK are those who do not go out much in the daytime, those who do not expose their skin to the sunlight and women who constantly wear make-up or cosmetics with in-built sun protection factors and may not realise they are in the beauty products."

Important to note in terms of dealing with any clients is what signs someone might exhibit if they have a deficiency.

"Signs of low vitamin D can be vague, but include muscle weakness and aches, weak bones, fatigue, inflammation, eczema, hair loss and frequent infections," Gorman advised. "A deficiency has been linked to an increased risk of illness, especially respiratory. Reviews of patients with Covid-19 found low levels of serum vitamin D are associated with an increased severity of symptoms.

"Low levels have also been linked to poor cognitive health. Studies show people with extremely low blood levels of vitamin D were more than twice as likely as those with normal levels to develop Alzheimer's disease or other types of dementia. It has also been associated with low mood and depression. It's been suggested a lack of vitamin D may increase your chances of heart disease, stroke, high blood pressure and heart attacks."

Opienski advised: "There are a range of health issues that vitamin D deficiency increases the risk of that can be much more insidious than the severe symptoms of something like rickets or osteomalacia. Signs of a mild deficiency, often seen in children, may present as weak, sore or even painful muscles. At worst, severe vitamin D deficiency, or rickets, presents with symptoms including bone pain and muscle weakness, joint deformities, and ultimately, bowed or bent bones from incorrect growth patterns.

"Signs in adults can be harder to pinpoint and deficiency can exist without obvious symptoms. These can include everything from fatigue, muscle weakness, aches or cramps to bone pain. Vitamin D deficiency in adults increases risk of osteoporosis. Symptoms such as poor immunity, frequent infections, and mood changes like SAD or depression are also common.

"Vitamin D deficiency is associated with increased risk of a number of chronic diseases including cancer risk, cardiovascular disease and diabetes, as well as bone metabolic diseases. Worryingly, there is recent evidence that vitamin D deficiency preceding infection with Covid-19 can significantly increase risk of severe or even fatal outcomes."

Rushton added: "As individuals age, there is an increased risk of vitamin D deficiency. In elderly individuals, changes in various processes result in this risk for vitamin D deficiency. Firstly, there is a reduction in the amount of 7-dehydrocholesterol in the epidermis and a lower response to UVB radiation, which can reduce the formation of pre-vitamin D3 by half. Elderly individuals have also been shown to spend less time in direct sunlight due to reduced mobility, reducing their exposure to UVB radiation. Secondly, renal function declines with age, resulting in a reduction in the activity of renal enzyme 1α hydroxylase. The reduction in activity of this enzyme reduces the amount of biologically active serum vitamin D (1,25(OH)2D).

"Individuals who have dark skin have a greater amount of melanin, which reduces their ability to produce vitamin D from UVB radiation. Melanin absorbs radiation from sunlight, reducing the amount available to make vitamin D. This has been directly proven by a study conducted on Nigerians who had albinism. It was found that those with albinism had a higher vitamin D status than individuals who had normal pigmentation."

And Thomas went on: "Low levels of vitamin D manifests in numerous ways, including low mood and depression (particularly seen as we lose the sun and enter the autumn and winter months), increased illness and viral infections and skeletal issues including bone problems like osteoporosis."

Chamberlain added: "Severe lack of vitamin D in children can result in rickets; these symptoms are muscle pain, bone pain, bowed or bent bones and deformities in joints. Rickets is very uncommon in this day and age, but children can still experience bone and joint pain. Lack of vitamin D is harder to spot in adults and sometimes can go by unnoticed; the symptoms to look out for are fatigue, bone pain, mood swings and pain in muscles."

SUPPLEMENT QUESTIONS

The general consensus is most people could do with a vitamin D supplement but how much is often a cause for debate. And then there is the form of vitamin D supplement to consider. So, what do you need to know when recommending a supplement? And what do you need to factor in around the correct advice on dosage, given there are such varying opinions?

Opienski advised: "There is debate about the upper safe limit (100mcg/4000iu/day for the UK), with people lobbying in both directions. Independent research indicates that the optimum average daily requirement is much higher than this and there is evidence in a number of conditions for dosing in the range of 10 times plus the RNI."

And Rushton continued: "Vitamin D is beneficial for everyone to take, especially during the winter and for those who feature in the subset groups who are more at risk of developing deficiency. Despite the reduced effectiveness of orally ingested vitamin D, it has the capacity to reduce the risk of deficiency."

Thomas went on: "Supplementation of vitamin D is now an essential element of modern life. I give my two-year-old 400iu daily. For adults, a maintenance dose must be equivalent to their size and body weight is a useful comparator. For most of us living a modern internal life 1000iu (25mcg) should be supplemented for every 25 kilogram of body weight."

And what about the type of vitamin D to recommend?

"It is important to ensure that the vitamin D supplement is in the D3 form. Vitamin D3 has been shown to have a significant effect on increasing serum 25(OH)D concentrations compared to vitamin D2. Additionally, as vitamin D is fat soluble, it is beneficial to consume a vitamin D supplement that is suspended in oil to aid the absorption or to take a vitamin D supplement with a meal," Rushton advised.

Thomas added: "The debate between D2 and D3 is still there but pointless. Both forms are found in the body but D3 is by far the most prolific and useful. The source of D3 is not necessarily such an issue but how it is delivered is. It should be in an emulsion or oil form, so I always recommend a liquid form."

When it comes to the current advice from Public Health England, Bartholemew highlighted: "Adults and children aged five upwards should consider taking a daily supplement containing 400iu vitamin D. In April 2020, Public Health England responded to growing concerns around high levels of vitamin D deficiency and increasing evidence on the vital role of vitamin D for immune function by recommending that everyone should now supplement with vitamin D daily, not just at risk groups.

"People who are at higher risk of deficiency, including babies under one, and all children up to the age of five are advised to supplement all year round. Exceptions are babies receiving 500ml or more fortified formula milk daily, or breastfed babies where mum is certain that her breast milk contains optimal daily amounts. However, many people are already low or deficient in vitamin D so you need to supplement with higher levels to get your levels back up to scratch if you're starting point is low or deficient. Your GP can do a simple blood test to find out."

But she added: "Many health experts have questioned whether supplementation levels set by the Government may be too low, especially when you consider that your skin can produce 10,000iu in response to 20-30 minutes midday sun exposure."

Dr Glenville went on: "When selecting a supplement containing vitamin D, choose one where the form of vitamin D is D3 – cholecalciferol. There is another form of vitamin D, D2 – ergocalciferol – but vitamin D3 is 87 per cent more effective in raising and maintaining vitamin D levels than vitamin D2. Also, recent research suggests there is a big difference between the two vitamin Ds, with vitamin D3 strengthening the immune system against infections such as Covid-19 but vitamin D2 having no effect on human health.

"The study from February 2022 in *Frontiers in Immunology* examined the effect of vitamin D2 and vitamin D3 supplementation on women aged between 20-64 for three months in winter. One group received none (placebo), the second a daily dosage of 15µg (600iu) vitamin D2, and the third 15µg vitamin D3 per day, within fortified orange juice and biscuits. The results showed that vitamin D3 could activate the immune system by making it stronger against bacterial and viral diseases, whereas vitamin D2 didn't show any impact on human health."

She went on: "Vitamin D3 appears to stimulate the type I interferon signalling system in the body, a key part of the immune system that provides a first line of defence against bacteria and viruses. Thus, a healthy vitamin D3 status may help prevent viruses and bacteria from gaining a foothold in the body. Also, blood levels of 25(OH)D3 decreased in the group taking vitamin D2 more than in the placebo group, with the suggestion that taking vitamin D as D2 could actually deplete blood levels of 25(OH)D3."

Serena Chisty, Nutritionist at Pharma Nord, went on: "It can be quite difficult to get our daily dose of vitamin D so a supplement may come in handy. I would look for good bioavailability, which ensures the supplement is increasing your serum levels and that you are getting your money's worth. Opt for one that is dissolved in oil; since it's a fat-soluble vitamin, it needs to bind to fat for effective absorption. Ensure your supplement of choice is evidence-based, which ensures safety and security in what you are ingesting."

And Gorman commented: "There are numerous products available now containing a vegan source of D3, produced from lichen extract. Sublingual sprays are often the easiest and most readily absorbed products, as well as being convenient for children."

Owen also suggested: "It is estimated that just 10 per cent of our vitamin D can be sourced from food, the remaining 90 per cent must be obtained via exposure to the sun or vitamin D supplementation. Vitamin D is a fat-soluble vitamin, so for optimal assimilation, choose a supplement that delivers vitamin D in a base of healthy oils such as extra virgin olive oil or organic pumpkin seed oil. Taking the supplement in a liquid drop or spray format allows for efficient and fast absorption of this nutrient. Choose an all-natural supplement that is free from artificial additives, gluten, dairy and common allergens."

ADDITIONAL SUPPORT

Bartholemew also pointed towards the importance of considering vitamin D with other nutrients.

"Vitamins D and K work very closely together. Vitamin D helps the body to absorb calcium from food and supplements, and rather like a chaperone, vitamin K helps to ensure this calcium is used in the bones," she explained. "Changing eating habits mean that many people don't get enough vitamin K2 from their diet. It is found naturally in high fat dairy products, liver and Japanese fermented foods such as natto. You will often find vitamin D3 and vitamin K2 (MK-7) together in supplements to support this dual role."

Gorman also pointed out: "Vitamin D supplements are often sold in a combination form with vitamin K, as the two vitamins work in synergy to support bone health. Vitamin D helps with absorption of calcium, while vitamin K helps promote the calcification of the bones."

And Owen added: "There is a synergistic partnership between vitamin D and vitamin K2. Vitamin D contributes to absorption of calcium and vitamin K2 assists transporting calcium into the bones and away from the soft tissues and arteries. It does this by working as a co-factor to activate proteins (enzymes) known as osteocalcin and MGP.

"Osteocalcin takes calcium into the bones, MGP escorts the calcium out of the soft tissues and arteries. Calcium deposits in arteries may contribute to the development of arterial plaque. As such, emerging research links vitamin K2 with the healthy function of the cardiovascular system, as well as bone health. Vitamin K2 is found in animal-derived foods, such as grass-fed meat, raw or fermented cheeses and egg yolks. It is also produced within the intestinal microbiome. Plant-based diets may be lower in vitamin K2 (unless fermented natto is consumed regularly)

"Supplementing vitamin K2 alongside vitamin D3 as part of a healthy, balanced diet can be useful for adults wanting to support the health of their bones. This is especially the case for women during menopause and post menopause, as well as the elderly, as a way to help support a reduction in onset or worsening of low bone density and symptoms of osteoporosis."

Opienski highlighted the potential of mushrooms: "For those on a vegetarian or vegan diet, finding a good quality, natural source of vitamin D is important. A medicinal mushroom product with a standardised amount of vitamin D or ergosterol (pre-vitamin D2), which will mean it has been exposed to sunlight or UV, is a good dietary source. There is clinical evidence that supplementing with ergosterol from mushrooms is as effective as a pure D2 supplement for improving serum 25-hydroxyvitamin D (25OHD) levels in as little as two weeks.

"Some medicinal mushroom products will also contain other forms of preformed vitamin D2, D3 and D4, all of which the body can use to convert into the active 25OHD. Though ergosterol and other forms of vitamin D can be found in culinary mushrooms, you can't assume all culinary or even medicinal mushrooms contain it. Levels depend on growing and processing procedures, so make sure to choose those that have ergosterol, D2, D3, and/or D4 included on the nutrition label as a standardised ingredient. Shiitake and maitake can be particularly good options."

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EXPERT ADVICE

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Q How does folate impact cardiovascular health?

LORENA CARBONI ADVISED: The terms 'folate' and 'folic acid' are often used interchangeably, causing considerable confusion.[1] Folate is the generic term given to vitamin B9, a water-soluble vitamin recognised as a critical nutrient during pregnancy, consisting of structurally related compounds, including the synthetic folic acid form, food folates, and the biologically active form 5-MethylTetraHydroFolate (5-MTHF). The bioavailability and metabolism of folates differ due to their respective chemical structures. All folates, natural or synthetic, must be converted to exert their biological activity.

Growing scientific evidence confirms folate's key role in one-carbon metabolism, the essential pathway supporting foetal development during pregnancy. Lesser known is that folate is vital for many functions, including cardiovascular health.

Homocysteine (Hcy) is a common amino acid found in the bloodstream and produced as a metabolite of methionine metabolism in the one carbon cycle. The plasmatic levels of Hcy are predictive for cardiovascular risk and determined by several factors (lifestyle, genetics, and diet). When Hcy levels are greater than normal (15µmol/L), there is a disruption of Hcy metabolism, associated with an increased risk of cardiovascular diseases.

Meta-analysis (72 studies) has demonstrated that lowering blood Hcy by 3µmol/L would reduce an individual's risk of ischemic heart disease by 16 per cent, deep vein thrombosis by 25 per cent, and stroke by 24 per cent[2]

The active 5-MTHF form of folate, offered as Quatrefolic (the glucosamine salt of 5-MTHF), supports the cycle by converting Hcy to methionine. Perturbations of one-carbon metabolism, owing to low levels of 5-MTHF, critically contribute to increasing circulating homocysteine levels and a toxic accumulation in the bloodstream[3]

5-MTHF has been evaluated as a better alternative to folic acid[4-7] and is immediately available for the body of 100 per cent of the population, including those with polymorphisms in folate-related enzymes. For instance, the use of the hypertension medication enalapril and folic acid, compared with enalapril alone, significantly reduced the risk of first stroke among Chinese adults with hypertension, but only in the subject without the polymorphism of the enzyme MTHFR (C677T genotypes, TT isoform).[8]

One trial demonstrated that 400mcg of Quatrefolic (plus B6 and B12) lowered Hcy serum levels better than conventional high-dose folic acid supplementation (5mg/day). Tested on hypertensive subjects at low cardiovascular risk (104 patients with HCys ≥15 µmol/L), the result shows significant HCys reduction compared to baseline from 21.5 µmol/L to 10.0 µmol/L. Moreover, the ideal HCys level was reached in 55.8 per cent of cases in the Quatrefolic group, and it was substantially higher than in the control.[9]

ABOUT THE EXPERT

Lorena Carboni is Scientific Communications Specialist with Gnosis by Lesaffre. With a Master's degree in Pharmaceutical Chemistry and Technology, Lorena specialises in natural ingredients' scientific and clinical aspects, focusing on the one-carbon metabolites, including folate (5-MTHF), S-adenosylmethionine, and Glutathione, at Gnosis by Lesaffre. Over her 20-plus years in the nutraceutical and pharmaceutical industries, she proactively collaborates with universities and academic panels of experts on educational projects and publications.

Q What makes lignans so unique and how can I incorporate them into a client protocol?

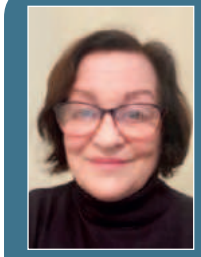
SUE MCGARRIGLE EXPLAINED: Lignans are widely found in seeds, wholegrain cereals, legumes, fruits, and vegetables and are the principal source of dietary phytooestrogens in typical Western diets and in people who do not generally consume soy foods. The intake of phytooestrogens in the general British population is low and estimated to be around 1.26-1.60mg per day due to low intake of plant protective foods and not through limited availability. This is higher in vegetarian diets.

Lignans are associated with the normal homoeostasis of sex hormones of both men and women. Research shows they may offer broad health benefits for the heart, prostate, bone, colon, breast, and skin and during hormonal changes.

Flaxseed is, by far, nature's richest source of plant lignan's than most other plant sources. While the essential fatty acids are in the oil of the flax seed, the lignans are in the fibre hull of the seed. The oil has little or no lignans. The lignan found in flaxseed is called secoisolariciresinol diglucoside (SDG). This phytonutrient is classed as a polyphenol.

What makes lignans so unique is that they are not only present in plants, but our bodies actually make them through a conversion process in the colon and they are called mammalian lignans. Lignans are not thought to be oestrogenic themselves but when SDG (from crushed flaxseed hull) is ingested, it is converted in the colon by gut microflora to the mammalian oestrogenic lignan compounds enterodiol (ED) and enterolactone (EL). Many studies have shown the important health benefits that exist due to this conversion of flax lignan in the body. (Setchell & Adlercreutz, 1988). Enterodiol and enterolactone have higher antioxidant activity than plant lignan SDG and are effective antioxidants against DNA damage and lipid peroxidation, which may occur in several diseases. (Touré and Xueming, 2010; Imran et al., 2015). A recent study showed SDG could also prevent oxidative stress associated with metabolic syndrome (Pilar et al., 2017).

The health benefits of flaxseed lignans are not only thought to be due to antioxidant activity, but also as oestrogenic and anti-oestrogenic compounds due, in part, to the structural similarity to 17-b-estradiol (Waters and Knowler 1982; Adlercreutz and others 1992). The behaviour of the lignans depends on the biological levels of oestradiol. At normal oestradiol levels, the lignans act as oestrogen antagonists, but in postmenopausal women (at low oestradiol levels) they can act as weak oestrogens (Rickard and Thompson 1997; Hutchins and Slavin 2003). Other activities related to oestrogen include the in vivo synthesis of 2-hydroxy oestrogen, a compound that may protect against cancer (Haggans and others 1999). In men, lignans prevent the metabolic errant conversion of testosterone into DHT by reducing the amount of 5a reductase enzyme in the body effectively reducing DHT. They inhibit enzymes, such as tyrosine kinase and topoisomerase, which are crucial to cellular proliferation.



ABOUT THE EXPERT

Sue McGarrigle ND DipION mBANT, mGNC is a Clinical Nutritional Therapist and Naturopath and has practiced since 2001. She is Technical Manager at Bionutri. As a lecturer to college and university students to Masters level, Sue has trained hundreds of healthcare and medical practitioners in many aspects of nutritional therapy. She writes as a regular contributor of specialist nutrition articles for magazines and newspapers and has been a guest speaker at national level. Her lectures offer a comprehensive approach to nutrition practice and practical naturopathic techniques. Sue is also a member of the BANT Professional Practice Committee.

Q Could probiotics have a role in a fertility protocol?

SARAH OBOH ADVISED: We are now facing lower fertility rates than ever before, with as many as one in seven couples in the UK struggling to conceive.[1] Scientists are increasingly looking for answers as to what is fuelling lower fertility and conception rates. Many avenues are being explored, including a small number of clinical trials which have assessed the potential role of probiotics for fertility. The vaginal tract is the most heavily populated and perhaps most biologically significant area of the urogenital microbiome.[2] What has been discovered is a continuum of diverse microbiota expanding gradually from the vagina to the uterus, through the fallopian tubes and finally to the ovaries. This negates the belief held for almost a century that a healthy uterus was sterile! The composition of urovaginal bacteria has an impact on reproductive outcomes and it's therefore important to maintain microbial balance, especially in the vaginal microbiome, which seems to play a key role in women's health and reproduction.

There are many factors that can disrupt the vaginal microbiome which, in turn, influences a woman's risk of developing bacterial vaginosis (BV), urinary tract infections (UTIs) and vaginal thrush.[3,4] BV, the most common cause of abnormal vaginal discharge in women of childbearing age, may increase the risk of pelvic inflammatory disease, infertility and preterm birth. It may also decrease the success rate of IVF implantation.[5,6,7] In addition to BV, there are other infections of the reproductive tract that may potentially affect fertility and pregnancy. These infections are related either to the presence of pathogenic microbes in the vaginal tract or the absence of protective probiotic vaginal bacteria (which should comprise 95 per cent *Lactobacillus* species).

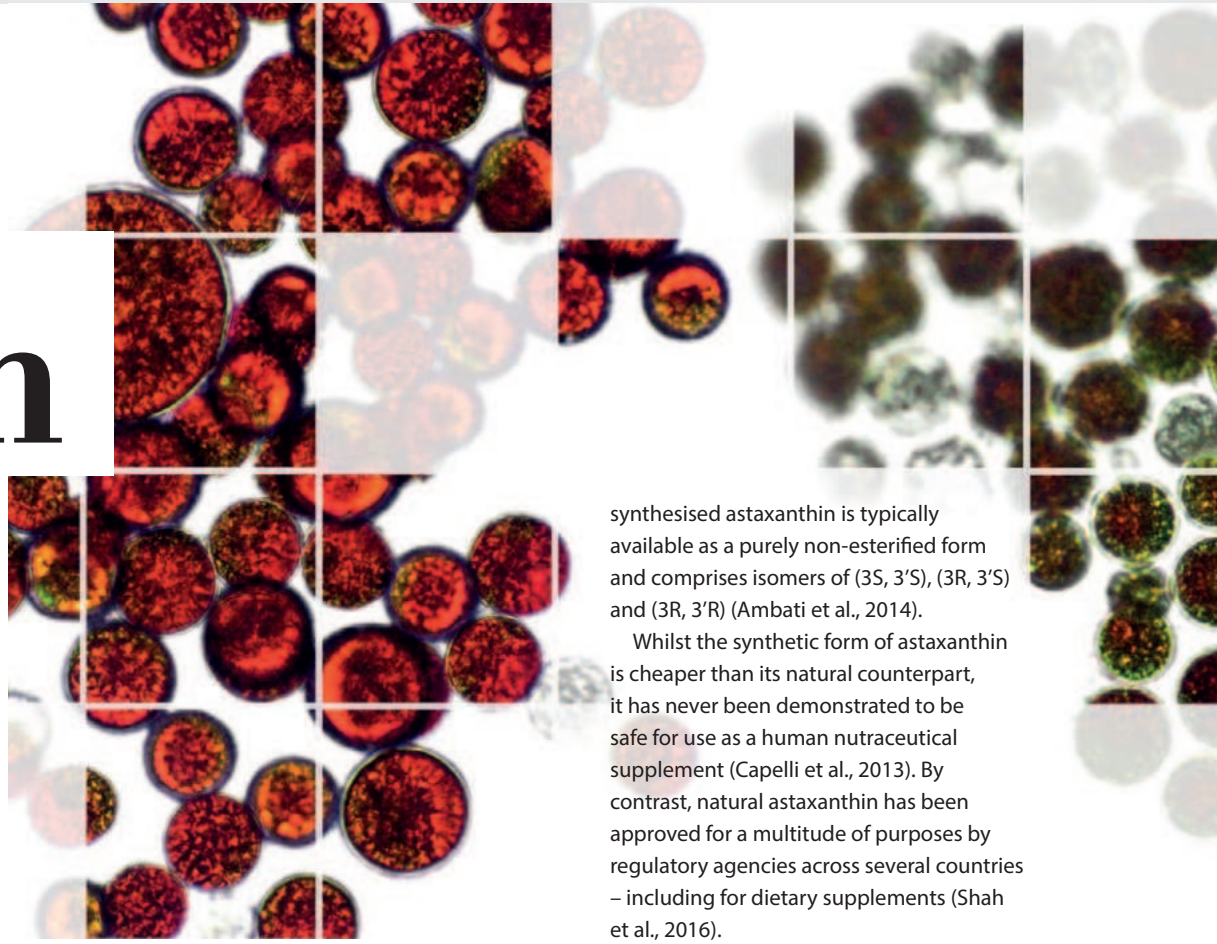
Lactobacilli could be considered the guardians of the vaginal microbiome. They can produce antimicrobial compounds that inhibit pathogen growth[4], modulate cytokines to decrease inflammation and produce biosurfactants which help to weaken pathogen biofilms. However, when their numbers are decreased, this can disrupt the balance of the vaginal microbiome, leading to acute, recurrent and/or chronic infection that might contribute to the risk of infertility.[8] The important role of *Lactobacilli* in the vaginal microbiome raises the prospect of using probiotics to address urogenital infections and help with fertility. Yet, it's important to note that probiotics work in a strain-specific and disease-specific manner – so it's not a 'one size fits all' approach and not all *Lactobacilli* strains will provide potential support for urogenital infections and fertility.[9]

Two of the most researched strains for urogenital conditions are *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14. When taken orally, they reach and colonise in the vagina of both healthy women and those with urogenital infections. These strains have been clinically shown to reduce vaginal infections and support a healthy vaginal microbiome.[10,11] By taking these well-researched probiotics to support intimate health, this could help to eliminate several barriers to fertility and may increase women's chances of conceiving and maintaining a pregnancy.[12-14]

ABOUT THE EXPERT

Sarah Oboh, Nutritionist, BSc (Hons) Nutrition, ANutr, has for over 11 years worked within the healthcare industry. Driven by her passion for developing personalised dietary and lifestyle interventions to target ill health within the diverse UK population, she began her career as a Nutritionist in private and public health. With a keen interest in complementary and alternative medicine (CAM), she decided to pursue a role at Optibac, where she supports CAM practitioners in their recommendation of probiotics in practice.

A guide to astaxanthin



Lucy Parry MChem (Hons) turns the attention on astaxanthin, one of nature's most potent antioxidants.

Belonging to the family of xanthophylls, astaxanthin is a red pigment that was initially discovered in 1938. Xanthophylls, alongside carotenes, constitute a class of more than 600 molecules collectively known as carotenoids.

Often referred to as 'oxygenated derivatives' of carotenes, xanthophylls contain one or more oxygen bearing functional group, and are commonly recognised for their antioxidative properties (Li et al., 2020). Astaxanthin is no exception to this and is often cited as one of nature's most potent antioxidants. Here, we will explore the biological effects and uses of astaxanthin.

THE ANTIOXIDANT CAPABILITIES OF CARTENOIDS

Carotenoids are a class of phytonutrients (plant chemicals) synthesised by plants, algae, and photosynthetic bacteria. Whilst the carotenoids are responsible for pigmentation (producing many of the yellow and orange colours of fruit and vegetables), they serve additional important roles in biological systems.

Many studies have focused on the antioxidant capabilities of the carotenoids. An antioxidant functions through removing free radicals from a system by reacting with them to form innocuous compounds. Though free radicals are required to sustain life processes, excess quantities can be dangerous due to their high reactivity, causing damage to cellular compounds such as DNA and carbohydrates (Higuera-Ciapara et al., 2007). Oxidative damage to biomolecules may lead to chronic diseases, such as cardiovascular diseases, chronic inflammation and rheumatoid arthritis (Uttara et al., 2009). It is thought that antioxidants can interrupt the propagation of free radicals and therefore, reduce oxidative stress.

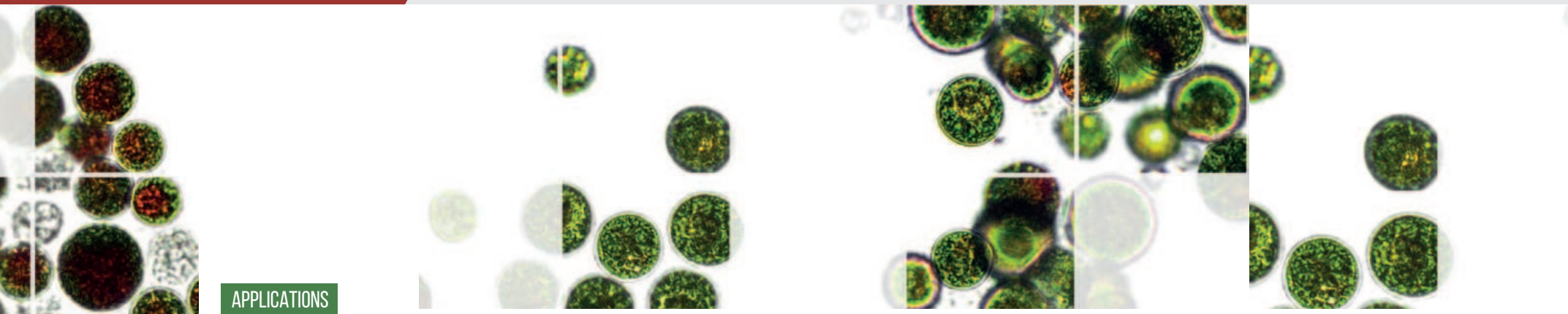
The most notable feature of the carotenoids is their polyene backbone that consists of a series of conjugated C=C bonds. Whilst this is responsible for the strong colouration of the carotenoid pigments, it is also thought that the double bonds can help to remove high energy electrons, allowing them to function as effective antioxidants (Young & Lowe, 2018).

COMMERCIAL SOURCES

Commercial astaxanthin can generally be distinguished according to its source (i.e., whether it is natural or synthetic), with this controlling the form of pigment that predominates (Su et al., 2020). Astaxanthin's primary natural source is a unicellular green alga, *Haematoccocus pluvialis*, which produces astaxanthin as a protective and potent antioxidant in response to light or environmental stressors, including high salinity, high temperature and nitrogen deficiency. Here, the pigment largely exists in its mono-esterified form as the (3S, 3'S) isomer. Conversely, chemically synthesised astaxanthin is typically available as a purely non-esterified form and comprises isomers of (3S, 3'S), (3R, 3'S) and (3R, 3'R) (Ambati et al., 2014).

Whilst the synthetic form of astaxanthin is cheaper than its natural counterpart, it has never been demonstrated to be safe for use as a human nutraceutical supplement (Capelli et al., 2013). By contrast, natural astaxanthin has been approved for a multitude of purposes by regulatory agencies across several countries – including for dietary supplements (Shah et al., 2016).

Additionally, synthetic astaxanthin is considered significantly inferior to its algal-based form as an antioxidant, with research highlighting the latter to be 20 times more potent. There is research to suggest that astaxanthin confers anti-inflammatory properties, which is unsurprising, given the extensive research that has revealed the mechanism by which continued oxidative stress leads to chronic inflammation (Davinelli et al., 2018). As a nutrient with a growing research base, on the next page are some of the most frequently cited applications for astaxanthin.

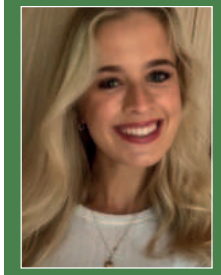


APPLICATIONS

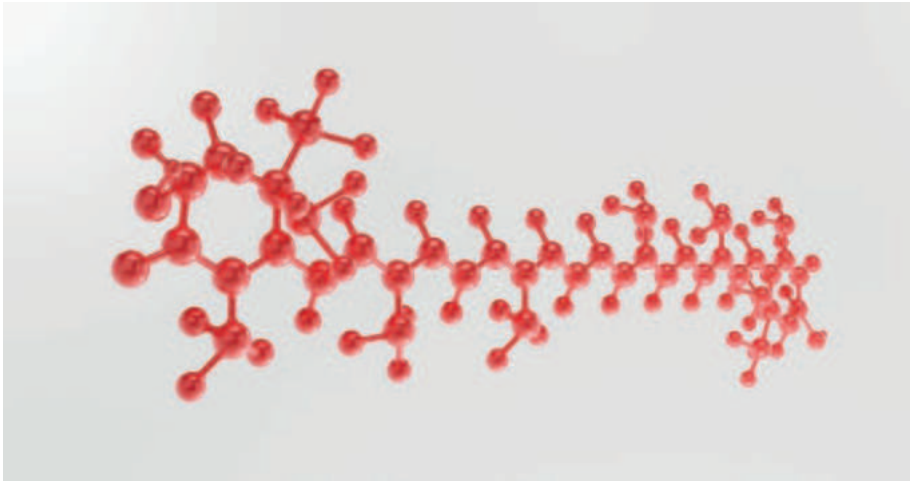
- **Immunomodulatory effects:** As a result of its antioxidant ability, astaxanthin is also believed to aid immune cell function. As immune cells contain a high amount of polyunsaturated fats, they are particularly susceptible to damage by free radicals (Park et al., 2011). A 2010 study analysed the action of dietary astaxanthin in modulating immune response, oxidative status and inflammation in young healthy adult female human patients (Park et al., 2010). Its conclusion was that dietary astaxanthin decreases a DNA damage biomarker and acute phase protein, whilst also enhancing immune response.
- **Eye health:** There is some research to suggest that astaxanthin may be efficacious in the prevention and treatment of several eye conditions, including protection against age-related macular degeneration (AMD). The death of retinal pigmented epithelium (RPE) cells is thought to play a key role in AMD pathogenesis, with this typically occurring as a result of oxidative stress damage, produced by free radicals (Giannaccare et al., 2020). In a 2012 study, AMD patients were treated with a combination of lutein (10mg), zeaxanthin (1mg) and astaxanthin (4mg) over a two-year period. The study found that patients who undertook this supplementary regime were more likely to report a significant improvement in visual acuity, in addition to contrast sensitivity and vision-related functions (Piermarocchi et al., 2012).
- **Skin health:** A Japanese trial involving 65 healthy female participants investigated the effect of oral astaxanthin supplementation on wrinkle formation and other aspects of skin damage and ageing over a 16-week period (Tominaga et al., 2017). It was determined that skin moisture content and deep wrinkles were not significantly changed in the astaxanthin-supplemented groups, whereas these parameters significantly worsened in the placebo group. A dose of 12mg/day also brought about improvements to skin elasticity, and the results confirmed the long-term safety of astaxanthin as an oral supplement. However, a recent review concluded that further experiments would be required to gain a full understanding of this area of use (Davinelli et al., 2018).
- **Cognitive function:** Astaxanthin supplementation has shown promising results in several clinical trials that measure its effect on cognitive function. For example, a 2012 study evaluated the effect of low (6mg/day) and high (12mg/day) doses of astaxanthin on male and female subjects, aged 45-64, over a 12-week period. The study concluded that astaxanthin improved cognitive function amongst participants, with the results of learning tests improving across both the low and high-dose groups (Katagiri et al., 2012).

DIETARY SOURCES

Astaxanthin accumulates in marine organisms, including freshwater algae, salmon, trout, shrimp, and lobster (Ambati et al., 2014). However, dietary sources may not always be relevant, particularly for those who consume a plant-based diet and/or those with fish/shellfish allergies. As such, an astaxanthin supplement that uses a natural material derived from Haematoccocus pluvialis offers an effective and convenient alternative.



Lucy Parry MChem (Hons) joined the team at Lamberts Healthcare as Senior Brand Specialist in 2020, having completed her Chemistry Integrated Master's at the University of York. Whilst her studies were primarily focused on medicinal chemistry, Lucy's interest in health and natural products led her into the exciting field of nutrition.



Nurturing the Good Health Naturally legacy

Good Health Naturally is a business built by the late Robert Redfern upon the principle of supporting health through innovative supplements. And since his sad death earlier this year, the family-run business continues to drive forward this mission.

Good Health Naturally has always been a pioneering brand since its innovative founder, the late Robert Redfern, discovered the power of serrapeptase. And it is his mission – that of improving health and wellbeing through quality nutritional supplements – that lives on with the company since the sad passing of Robert, a well-loved and respected figure in the industry, earlier this year.

And it is perhaps because of this ethos that Good Health Naturally has always had a natural home with practitioners, including nutritional therapists.

Lucy Redfern, Robert's daughter and Managing Director at Wholesale Health, which was set up to distribute Good Health Naturally products, commented: "Good Health Naturally was sad to announce the passing of our founder, Robert Redfern, on Friday, June 17, 2022. Robert passed away peacefully at home with his family by his side after a short illness.

"As the founder of Good Health Naturally, he felt called to improve the health and wellbeing of people's lives through the latest nutritional supplements, vitamins and minerals, along with the benefits of using natural solutions. Robert was renowned for introducing serrapeptase to the worldwide web, being an author of *The Miracle Enzyme Is Serrapeptase* and writing numerous other health books.

"His wife, Anne Redfern, is now stepping forward into his role and taking the reins of the business she originally built with Robert over 30 years ago. And I will continue to operate Wholesale Health, distributing Good Health Naturally's range of health supplements to independent retailers."

Robert and Anne Redfern

DIETARY SOURCES

Looking to business in recent years, Good Health Naturally noted a rise in interest of supplements during the pandemic.

"The pandemic prompted a lot of people to look into natural health solutions, and with liposomal vitamin C being so well-known for its immune support benefits, our Good Health Naturally PureC+ with Quercetin, was top of the list, of course, alongside our Camu Camu Extract food source Vitamin C," Lucy reported.

"Consumers also started to look at how best to support their general wellbeing alongside their immune systems, and the demand for products such as our Vitamin D3+K2 Sublingual Spray, Active Life Complete 130 Multi-Vitamins and Minerals, and our Hydrosol Silver Spray and Gel, became increasingly popular.

"Keeping up with demand has been challenging and forced us to think outside the box, adapting our business and manufacturing practices to continue supporting our customers, practitioners and independent retailers."

And what kind of impact does the company find that the pandemic is having now in terms of sustained demand?

Lucy added: "We did notice an increase in new natural health companies during the pandemic, as many people tried to jump onto what they thought of as a trend. We have the task of showing why our brand and the majority of its products have been around for so many years. Quality, strength, delivery and real results!"

One of the key elements of the business – both before, during and post-pandemic – is the importance it places on its practitioner business and the support on offer, including utilising the expertise of Lindsay Powers, Practitioner Manager, Nutritionist and Health Coach, alongside the technical nutrition team, including Catherine Gorman and Sara Gibbons.

"Lindsay, Catherine and Sara are qualified and experienced nutrition professionals with many years of experience in the industry and with Good Health Naturally. Our eBooks and health plans also guide practitioners on the best products for their client's needs. We also run regular educational webinars, which look closely at different health conditions with dietary, lifestyle and product recommendations," Lucy advised.

SUSTAINABILITY CREDENTIALS

Brands these days are having to seriously look at how sustainable they are, but how many are actually making proper change is another matter. When it comes to Good Health Naturally, this is taken very seriously and the company has made some positive strides forward.

Lucy explained: "We're proud to say that our move towards more sustainable packaging across the

whole range is almost complete, with a mixture of glass, bio-plastic and recyclable refill pouches having been introduced back in 2020. This is especially important to the Redfern family, having been brought up to recycle long before curb-side collections came to the UK."

The range today stands at more than 80 products, and as well as focusing on sustainability, there has been a big push with genuine NPD.

"Recently, we have launched a variety of new nutritional supplements, including our Ionic Vitamin B12 and Ionic Iron. We also have new additions to our liposomal range, including Liposomal B4Health, which joins in with Liposomal HySorbQ10 for energy support, PureC+ Liposomal Vitamin C with Quercetin for optimal health support and updated our bestselling sublingual liposomal supplement for eye health – MaxiFocus," Lucy revealed.

"Robert also launched a totally new product earlier this year, the certified organic Lysine Lip Balm, which includes the nourishing benefits of coconut oil, olive oil and jojoba oil, and lysine, monolaurin and zinc oxide. We've already had regular sufferers of cold sores raving that this is finally the product that works for them!"

And as we look ahead – after a very difficult time for Good Health Naturally in losing Robert – the plan is the same; to keep building on his legacy.

Lucy commented: "Good Health Naturally would like to reassure all their loyal customers and followers that we continue to be committed to delivering the highest quality supplements and products worldwide. Our products' ingredients continue to be clinically proven and supported by studies and are extensively researched, scientifically formulated, and manufactured to the highest quality standards.

"Robert's team of qualified nutritionists, who have worked with him for many years, continue to advise in the development of the range, support customers and practitioners and spread his lifetime work of a truly holistic approach to health. We have big plans for 2023, including expanding our vegan essentials range."

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Autumnal ideas

Discover the flavours of the humble shallot with these healthy recipes with an autumnal twist, courtesy of ukshallot.com.

Persian greens, beans and noodle soup with crispy shallots

Shallot and mushroom galette

Shallot brothy beans

Persian greens, beans and noodle soup with crispy shallots

A thrifty and unusual recipe, taking inspiration from the delicious Persian dish 'ash reshteh'. Excellent for using up an abundance of herbs.

Serves 6
Preparation time: 10 minutes
Cooking time: 35 minutes

Ingredients

- 450g spinach
- Large bunch of coriander
- Large bunch of parsley
- Bunch of dill
- Bunch of chives
- Bunch of mint
- 7tbsp olive oil
- 8 round shallots, peeled, 4 finely chopped and 4 finely sliced
- 2 garlic cloves, peeled and finely chopped
- ½ tsp turmeric
- 1.1l vegetable stock
- 150g wholewheat spaghetti
- 660g jar of chickpeas (we used Bold Bean Co)
- 400g tin of green lentils
- 1tbsp dried mint
- 250g natural or plant-based yoghurt

Method:

- Roughly chop the spinach and herbs.
- Set a large pot over a medium heat and add 2tbsp of the oil, add the chopped shallots and a pinch of salt. Cook, stirring regularly, until the shallots are tender and golden brown. Add the garlic and cook, stirring constantly, for a further minute.
- Add the turmeric to the pot and cook for two minutes until fragrant. Add the spinach and herbs to the pot, alongside the vegetable stock and stir to combine. Bring to the boil then reduce the heat to a simmer and cook for 10 minutes, until all of the greens are wilted. If the soup seems very thick, add a little more water.
- Break the spaghetti in half, and add to the pot with the chickpeas and lentils. Stir gently to mix into the soup and then leave to simmer for 15 minutes.
- Meanwhile, prepare the garnishes. Set a medium frying pan over a medium-high heat. When the pan is hot, add 2tbsp of oil. Add the sliced shallots and a generous pinch of salt. Cook, stirring regularly, until golden brown and caramelised, about 12 minutes.
- Wipe out the pan and add the final 3tbsp of olive oil, warm gently over a low heat. Stir in the dried mint and take off the heat.
- Add 200g of the yoghurt to the soup and mix well. Thin the remaining 50g of yoghurt with a little water.
- Taste the soup for seasoning. Ladle into individual bowls and drizzle with the thinned yoghurt, the mint oil and the crispy shallots.

SHALLOT AND MUSHROOM GALETTE

SHALLOT BROTHY BEANS

Shallot and mushroom galette

This surprisingly easy showstopper combines earthy mushrooms with sweet, caramelised shallots and tangy blue cheese.

Serves 6
Preparation time: 10 minutes
Cooking time: 1 hour

Ingredients:

- 2tbsp extra virgin olive oil
- 1tbsp unsalted butter
- 400g round shallots, peeled and halved
- 750g mixed mushrooms (we used oyster, shiitake and portobello), roughly sliced
- 4 cloves of garlic, peeled and finely chopped
- 4-5 sprigs of fresh thyme
- 125ml dry sherry
- Salt and pepper, to taste
- 320g ready rolled shortcrust pastry
- 100g blue cheese
- 1 egg, beaten

Method:

- Heat a large frying pan on a medium-high heat, add the olive oil and butter. Once melted, add the shallots in a single layer. Fry for around five minutes until golden and caramelised on one side.
- Add the mushrooms, and stir every minute or so, until they've released their moisture and are beginning to caramelise. This should take around 15 minutes.
- Add the garlic and thyme and cook for a further couple of minutes until fragrant. Add the sherry and continue to fry until all of the liquid has cooked off. Remove from the heat and season to taste with salt and pepper.
- Preheat the oven to 180°C.
- Unfurl the pastry on a lined baking sheet. Use a rolling pin to shape into an oval. Spoon the mushroom mixture into a middle, spreading it to a thick, even layer, leaving a 4cm border around the edge. Dot the mushroom mixture with the blue cheese.
- Fold and pleat the edges of the dough border over the mushrooms – leaving the centre exposed. Lightly brush the edges of the dough with the beaten egg.
- Bake for 40-50 minutes, or until the crust is golden brown in colour. Place on a cooling rack and allow to cool for five minutes before slicing and serving.

PERSIAN GREENS, BEANS AND NOODLE SOUP WITH CRISPY SHALLOTS

SHALLOT BROTHY BEANS

Shallot brothy beans

This brothy bean recipe is an autumnal staple which can be adapted in so many delicious ways!

Serves 4
Preparation time: 5 minutes
Cooking time: 20-25 minutes

Ingredients:

- 3tbsp olive oil
- 4 echalion shallots, peeled and finely chopped
- 4 cloves of garlic, peeled and finely chopped
- 1 lemon, halved
- 2 x 660g jars of white beans
- 500ml vegetable stock
- 50g Parmesan, plus the rind (optional)
- Salt and pepper, to taste
- 2 handfuls of cavolo nero
- Crispy shallots (optional)

Method:

- Heat 2tbsp of the olive oil in a large, deep pot on a medium heat. Add the shallots, garlic and lemon and cook down for about 10-12 minutes.
- Add the beans and all of their liquid to the pan, then add the stock, Parmesan rind (if using) and salt and pepper. Bring to a boil and then turn down to a simmer and cook for 10-12 minutes.
- Remove the Parmesan rind and the lemon, squeezing it against the side of the pot to release all of its juices. Stir in the cavolo nero and allow to wilt.
- Divide between four bowls, drizzle with the remaining olive oil, gratings of Parmesan, the crispy shallots if using, and lots of black pepper.

SHALLOT AND MUSHROOM GALETTE

PERSIAN GREENS, BEANS AND NOODLE SOUP WITH CRISPY SHALLOTS

I-Mag giveaways

We showcase a selection of giveaways on offer to readers this issue.

Epigenar PEO Blackcurrant Seed Oil

An excellent source of essential fatty acids, Epigenar Blackcurrant Seed Oil supplies parent essential oils (PEOs), linoleic acid and alpha linolenic acid, as well as a complete, synergistically balanced form of other fatty acids. PEOs are whole, unadulterated forms of the two essential fats needed by the body as they occur in nature. From these oils, the body can make the derivatives, such as EPA and DHA, without risk of causing imbalances which may be harmful.

I:Win: We have three to give away.

Nucelotide IntestAid IB

Harnessing nucleotide power to help support and maintain long-term digestive health, IntestAid IB is a proprietary blend of nucleotides (Nutri-tide IB) with added vitamins and amino acids. IntestAid IB contains the exclusive Nutri-tide Nucleotide nutritional formula, specially formulated to deliver a balanced mix of all five of the major nucleotides, providing a natural approach to support long-term bowel health, a healthy intestinal mucosa (gut lining) and gut immunity.

I:Win: We have 10 60-capsule pots to give away.

Nutri Advanced Immune Protect

Immune Protect is a one-a-day formula designed to provide daily immune support with vitamins C and D, minerals, zinc and selenium, and the flavonoid, quercetin, in optimal forms that are well-absorbed. Suitable for adults and children over the age of 10, this easy to take capsule can be taken throughout the year to support immune function. Quercetin has been included as an important antioxidant, protecting our cells from oxidative stress, and helping to increase the absorption of vitamin C.

I:Win: We have 25 to give away.

FutureYou Cambridge ProBio 8+

ProBio 8+ from FutureYou Cambridge has three billion colony-forming units designed to encourage a healthy gut balance. The formulation incorporates eight specially selected strains of bacteria and includes Probioact technology for increased stability. ProBio 8+ is a broad-spectrum formulation especially developed for daily maintenance and balance of intestinal health of adults by preventing dysbiosis and has been shown to reduce gastrointestinal symptoms in healthy adults in just six weeks. Each pack contains a month's supply, is vegan friendly and gluten-free.

I:Win: We have three packs to give away.

The Global Leader in Mushroom Nutrition Products

MRL

Mycology Research Laboratories Ltd.

Website:
www.mycologyresearch.com

Founded in the United Kingdom in 1998, Mycology Research Laboratories Ltd. (MRL) has an extensive library of proprietary mushrooms strains (which ensures the correct specie and variety) to give you confidence in the identity of the mushrooms.

MRL´s proprietary cultivation technology consistently cultivates uniform, contaminate-free biomass powder. Hericor-MRL is cultivated in accordance with both ISO 22000:2018 certification (in Europe) and to EU/UK organic standards.

Hericor-MRL biomass powder is then filled to FSSC 2200 standards in the Netherlands. The product is available in either 100gr or 250 gr powder forms with 2 g spoons.

Hericor-MRL

Enzyme Nutrition to Maintain a Healthy Digestive Immune System

Hericor-MRL promotes a healthy digestive system for those with compromised digestive function. Besides supplying beta-glucans, Hericor-MRL provides three important enzyme groups:

Enzymes that prevent oxidative stress:
- Laccase
- Superoxide dismutase

Enzymes that inhibit cellular growth:
- Protease
- Glucose amylase

Enzymes that promote detoxification:
- Peroxidase
- Cytochrome-P 450

▼ Distributors of MRL products:

Natural Dispensary Ltd
Tel: 01453-757-792

Aneid UK Ltd
Tel: 01582-485-209

Breakspear Medical
Tel: 01442-261-333 ext: 291