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Nutrition I-Mag

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RESEARCH AND EDUCATION FOR TOMORROW'S PRACTITIONER

MAR/APR 2018

FERTILITY IN FOCUS

Understanding the
issues around
conception

ALLERGY ACTIVATION

An essential guide
to combating
hay fever

COGNITIVE FUNCTION

Nutritional support for
a healthy brain



• Nutrition is a world of Pathways •



• To be nourished the pathways should be open •



• Opening pathways, not beating down the door •



• Organisms you would expect to find in the best fermented foods like Sauerkraut, Kefir or Suguki •



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Welcome



Innovative, clean, ethical and efficacious are all words we associate with the products that are used and recommended by Nutritional Therapists, and we should be proud, as an industry, of benefitting from brands that are committed to excellence, to guiding practitioners through using such products, and to leading the way when it comes to developing superior products.

And in this issue of *Nutrition I-Mag*, we are delighted to praise some of those brands by revealing the winners of our annual Product Awards. Whether winning an accolade or being highly commended, we are delighted to be able to bestow recognition on brands that are dedicated to the work of Nutritional Therapists. Click here to find out who has won.

This issue is one packed full of advice from a panel of leading experts, and on a range of topics. Whether it is leading authorities discussing the issues around fertility, or experts highlighting the best approach around

cognitive decline, our latest issue is full of advice to help you as part of your studies.

And don't forget that by reading *Nutrition I-Mag*, you can help yourself as this is a CPD accredited magazine by BANT, which means you earn valuable CPD points, while helping to develop your knowledge base.

In other news, we are excited to soon be kicking off our conference season; the first IHCAN Conference of 2018 takes place on March 17 on the theme of Autoimmunity and is now sold out. Find out more about the rest of the 2018 series on page 16 or visit www.ihcanconferences.co.uk for full details and to reserve your place.

Rachel

RACHEL SYMONDS, EDITOR

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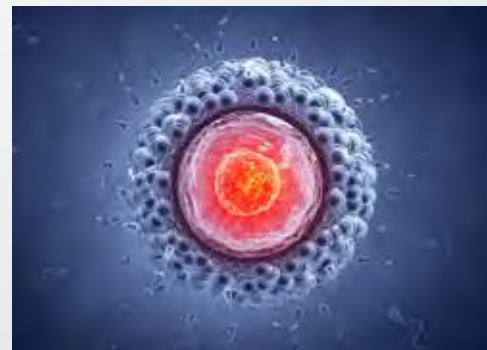
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NUTRITION I-MAG GIVEAWAYS



in partnership with



NUTRITION I-MAG EXCELLENCE IN EDUCATION AWARD

We're on the look out for stand-out students who have excelled in the past year. You may have excelled academically, received glowing reviews from tutors or colleagues, or maybe you've gone that extra mile to help students in your class. Whatever the reason, we want to reward students of nutritional therapy for all their hard work and commitment.

The award is being run in partnership with **Nutri Advanced**, one of the leading suppliers of high quality nutritional supplements to practitioners in the UK. **Nutri Advanced** is passionate about nurturing students throughout their educational journey and hope these awards will inspire students to move into practice and form successful businesses that lead people towards living healthier lives.

So, if you think you deserve this award, or know someone who does, take two minutes to tell us why at:

www.nutritionimag.com/educationawards

Entries close Monday August 1, 2018, winner will be contacted by telephone on August 15, 2018.

NEW

THE WINNER RECEIVES:

- One hour per month of phone advice from Nutri Advanced, with guidance on how to set up your practice when you graduate
- £500 worth of free products from Nutri Advanced
- Free print subscription to *IHCAN* magazine for one year
- Free place at the September's IHCAN Conference
- Chance to write a mentoring scheme feature in *Nutrition I-Mag*
- Free lifetime subscription to *Nutrition I-Mag*

OUR CONTRIBUTORS

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



Dr Michael Murray

Dr Michael Murray is the Chief Science Officer at Enzymedica, makers of Enzyme Science. Dr Murray is the author of over 30 books, including *The Encyclopedia of Natural Medicine*, and has been named 'The Voice of Natural Medicine' by *Nutrition Business Journal*. Dr Murray leads the Enzymedica team in creating new innovations in product development, as well as leading research efforts to create next generation formulas. In addition, Dr Murray works closely with the Roskamp Institute in Sarasota, FL.



Dr Marilyn Glenville

Dr Marilyn Glenville PhD is the UK's leading Nutritionist specialising in women's health. She is the former President of the Food and Health Forum at the Royal Society of Medicine, a Registered Nutritionist, Psychologist, author and popular broadcaster. For over 30 years, Dr Glenville, has studied and practiced nutritional medicine specialising in the natural approach to female hormone problems.



Natalie Lamb

Natalie Lamb Dip NT mBANT is a qualified Nutritional Therapist, who studied a three-year diploma in Nutritional Therapy at the College of Naturopathic Medicine (CNM) and is a member of The British Association of Nutritional Therapists (BANT). Natalie saw clients in a private clinic in London for two years before joining Probiotics International (Protexin), manufacturers of Bio-Kult and Lepicol ranges.



Rose Holmes

Rose Holmes, Dip.ION, BSc (Hons), PGCE, mBANT, CNHC is a Registered Nutritional Therapist with a special interest in chronic illness, circadian rhythm disruption and healthy ageing. She is the Education and Training Manager at Rio Health and provides training to other practitioners and health professionals on natural therapies.



Katherine Pardo

Katherine Pardo BSc (Hons), Dip ION is Head of Nutrition at nutritional supplement company, Nutri Advanced, one of the leading educators in the field of Functional Medicine. She originally trained as a Nutritional Therapist at the Institute for Optimum Nutrition in London and is committed to helping people make realistic and sustainable food and lifestyle choices for improved health and wellbeing.



Dr Elisabeth Philipps

Dr Elisabeth Philipps DPhil BSc (Hons) BSc Nut Med FNTF is a renowned nutritional consultant and experienced speaker. She has years of clinical experience running her own private practice, alongside managing practitioner training for Nutrigold and delivering corporate client wellbeing programmes around the country. She is regularly sought after to provide expert opinion for the media, appearing on National Health Radio and in the national press.



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News bites

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

Students encouraged to enter inaugural Excellence in Education Award

Entries are coming in for the newly launched Education in Excellence Award, in partnership with Nutri Advanced.

Nutrition I-Mag has teamed up with Nutri Advanced to create the accolade, which is designed to recognise students who have demonstrated commitment to learning.

Awards are open for nomination, which can either be done by the student themselves, or by their tutor. Once nominated, you will then be asked to fill out a detailed application as to why you believe you are a deserving winner.

And it is worthwhile entering the awards, as a number of prizes are up for grabs; as well as securing the award, the winner will benefit from one hour per month of phone advice from Nutri Advanced, which can include both nutritional advice and/or setting up practice advice, as well as £500 of Nutri Advanced products.

The winner will also receive free subscriptions to *Nutrition I-Mag* and *IHCAN* for one year, the chance to write a mentoring scheme feature in *Nutrition I-Mag*, and will also win a place at the September IHCAN conference.



Nutri Advanced's Head of Nutrition, Katherine Pardo BSc (Hons), Dip ION, commented: "At Nutri Advanced, we are passionate about helping educate and develop students into successful healthcare practitioners. We know it can be a challenge to start your own practice and that's why we have created the student award in partnership with *Nutrition I-Mag*, to sponsor and support a student who is looking to make the move into practice.

"Nutri Advanced has a team of nutritional experts, who are well known for providing support to practitioners on conditions, regulations and supplements. They also provide a wealth of training materials for self-development, useful patient friendly information and work closely with industry influencers, such as functional medicine practitioners, Jo Gamble and Pete Williams. As the selected student, you would be able to tap into this knowledge with the monthly mentorship, along with £500 of free product to kick start your practice."

To enter, visit www.nutritionimag.com

Little improvement in Scottish diet revealed in new report

An updated report has highlighted the continued challenge for people in Scotland to adopt a healthier diet.

Food Standards Scotland has launched two new reports which reveal the huge challenge for people in Scotland to follow a healthier diet and reduce their risk of diet related diseases.

The updated Situation Report from 2015 by Food Standards Scotland, *The Scottish Diet: It Needs to Change 2018*, shows that two out of three adults and almost a third of children living in Scotland remain overweight or obese two years on from the original report. Around 20 per cent of the calories and fats we eat, and around half of sugar intake, still comes from discretionary foods, such as confectionery, cakes, biscuits, pastries, crisps and sugary drinks. The report again reinforces that we need to reduce these by at least a half as a first step towards meeting the Scottish Dietary Goals and improving the nation's health.

The updated Situation Report also shows that some people in Scotland are consuming large amounts of calories from alcoholic drinks, with average male and female drinkers consuming 1,100 and 810 calories a week respectively from beer, wine and spirits. This is roughly half a day's worth of calories per week.

The second report published by Food Standards Scotland monitors purchases and price promotions from retailers and shows no real improvement in the amount of calories, fats and sugar purchased in Scotland from 2010-2016. The results show that while there is a welcome decline in sugar from soft drinks, this has been offset by increases in sugar purchase from other foods.

The research also showed that retail price

promotions have recently decreased

by around three per cent, but continue to be skewed towards less healthy categories; we are still buying 36 per cent of our overall calories on price promotion, and this can be over 40 per cent of purchases in some Scottish retailers. Worryingly, we are encouraged to buy up to three-quarters (74 per cent) of confectionery on a price promotion.

Geoff Ogle, FSS Chief Executive, commented: "These results are disappointing but unfortunately, not unexpected. For diets to change, we need to see price promotions rebalanced and shoppers encouraged to buy healthier foods, with less sugar, fat and salt, by making these more affordable. What is particularly disappointing is seeing the reduction of sugar in soft drinks being negated by increased sugar purchase from other food products. However, we hope to see more improvements in response to the sugar levy and reformulation programme launched in March 2017.

"There is some good news though, as public attitudes are changing, with an increase from 50 per cent to 64 per cent of people in Scotland being concerned about our unhealthy diets, and support for taking action to improve our food environment, including calories to be displayed on menus when eating out of the home. For this shift change to happen though, we need individuals, industry and Government to work together."

Public Health Minister, Aileen Campbell, added: "These reports provide yet more evidence that we must take a bold approach to tackling Scotland's diet and obesity problem, which is why we are developing an ambitious and daring innovative strategy."



Higher Nature acquired by owner of Tree of Life

The supplement company, Higher Nature, has been acquired by the same company that owns the wholesaler, Tree of Life, it has been confirmed.

Health Made Easy (HME) is a company of three shareholders, including John Weaver, who is CEO of Tree of Life, whose aim is to invest in the health category. In 2007, they invested in Petty Wood, which was sold two years ago, and seven years ago, they acquired Tree of Life.

It has been confirmed that HME acquired Higher Nature in December, but John explained that the supplement company and Tree of Life will continue to be run as separate businesses.

"HME is effectively an umbrella group for investments in the health and wellbeing space. We have two now and we will continue to invest in further opportunities in the category," he commented.

"Higher Nature presented an excellent opportunity to take a brand that was innovative, highly ethical and clean. It was a great opportunity for us to utilise our knowledge and investment into this area. The plan is to invest and grow the brand. We only completed the deal at Christmas, so it is early days and we are still putting our plans in place. But we will be investing in the brand in order to grow it with our retailers."

He continued: "We want to grow it as an independent business, and focus on the key benefits that we see, which are clean, pure and ethical. It is a brand with substantial nutritional knowledge too and we feel this has been a little undersold in the last few years so we want to take it back to what it was doing when it first started."

BetterYou praised for innovation

Natural health company, BetterYou, has been named the most innovative brand by scooping a national award.

The company won the Most Innovative Brand accolade at the Feel-Good Brands (FGB) Awards 2018, beating four other hopefuls to scoop the top spot thanks to its commitment to unique delivery mechanisms.

The FGB Awards, which celebrate the passion, drive and energy of feel-good brands, are voted for by the public and an independent and voluntary group of industry experts and practitioners.

Andrew Thomas, founder and Managing Director of BetterYou, commented: "Giving customers the most accessible and convenient way to supplement key nutrients missing from modern day diets is the most important thing for us as a brand.

"New product development is the lifeblood of the company and we will continue to invest in research and creating products that make a real impact on the quality of people's lives."

Andy Brattle, Chair of the FGB Judging Panel, added: "This was a tricky category and we debated the shortlist long and hard. What we all love about BetterYou is their passion for innovation, and the way they continue to research and develop great products that can change people's lives for the better."

BetterYou continues to invest in new product development to create innovative supplementation methods, having recently launched a Vitamin D3 + K2 Oral Spray and MagnesiumSkin Body Butter and Lotion. The company is also proud to be working in partnership with the University of Sheffield to study effects of vitamin D on IBS.

Cold weather prompts PHE to issue warning

Public Health England (PHE) has issued a health warning due to the arrival of colder weather.

The cold weather snap at the end of February prompted PHE doctors to remind people of how they can take care of themselves to avoid falling ill.

Dr Thomas Waite, from PHE's Extreme Events team, commented: "Heating homes to at least 18C will help keep you healthy. Also, make sure you eat warm food, move about at home and wear several thin layers instead of fewer thicker ones. Those of us who are fit and well can also do lots to help others – and with

weather like this, some will need help. If you're able to, consider clearing snow or ice from pavements and paths, see if friends, family or neighbours who are left housebound by the weather need anything fetching and if you know anyone over 65, or with young children or with heart or lung conditions check to see if they're ok.

"Cold temperatures inside and out can make you ill and can even kill. Prolonged cold weather like this can be a challenge to all of us; remember that staying warm helps keep you healthy."



In Research

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

Major new trial confirms probiotic supplement dramatically improves debilitating IBS gut symptoms



A new study using a 14-strain probiotic supplement has found that it dramatically improves abdominal pain in IBS patients, as well reducing anxiety.

Described as the largest-ever double-blind randomised controlled trial of probiotic supplements in

IBS-diarrhoea type patients, the study focused on 360 patients who had IBS with diarrhoea as their predominant symptom (IBS-D).

The patients who took the probiotic supplement, Bio-Kult, which was used in the trial, reported a 69 per cent decrease in abdominal pain, compared to 47 per cent in a group who took a placebo.

The four-month study, conducted by the University of Bangabandhu Sheikh Mujib Medical University, in Dhaka, Bangladesh, also found that the number of patients who rated their symptoms as moderate to severe at the beginning of the study was reduced by 86 per cent in the Bio-Kult group, compared to only 52 per cent in those who took a placebo. Furthermore, a total of 33.7 per cent in the Bio-Kult group reported that all their symptoms had disappeared at the end of the 16 weeks. This was in comparison to just 12.8 per cent in the placebo group.

And it didn't end there; as well as relieving IBS-D symptoms,

Bio-Kult was shown to markedly improve all aspects of Quality of Life (QoL), evaluated using a 34 point IBS-QoL questionnaire. These included psychological issues, such as anxiety about health, depression, lack of enjoyment of life, and feelings of having to avoid stressful situations.

Study leader, Professor Shamsuddin Ishaque, commented: "Over a period of 16 weeks, Bio-Kult produced statistically significant improvements in all key symptoms of IBS-D compared to placebo, including the severity and frequency of abdominal pain. The magnitude of these changes with Bio-Kult was also very impressive."

Dr Ashton Harper, Head of Medical Affairs at Protexin Healthcare, which has the Bio-Kult brand in its portfolio, added: "IBS is a significant problem that decreases quality of life and places an enormous economic burden on healthcare systems globally. In the UK alone, as many as eight million of us suffer with this chronic condition. A safe and convenient IBS treatment that is capable of reducing pain by nearly 70 per cent, not to mention completely resolving symptoms in more than a third of patients, demonstrates a profound benefit and holds great promise for this major medical concern."

Dr Philip Burnet, Associate Professor at Oxford University, a leading UK expert on the gut microbiome/brain axis, added that it was the reduction in dysphoria (unease or generalised dissatisfaction), and health worries that were particularly noteworthy.

"The influence of gut bacteria on the brain is a topical area of research in neuroscience and the microbiome-gut-brain-axis is considered a potential therapeutic pathway for brain disorders," he commented. "Using probiotics that influence brain function, or the so called 'psychobiotics', may in the future help alleviate conditions such as depression and anxiety.

"Indeed, there is a strong link between depression and IBS, and some researchers have suggested that mood disorders themselves may arise from dysbiosis (a microbial imbalance within the body, such as within the gut."

Dr Burnet pointed towards another recent study by the University of Cork, which has demonstrated that a single-strain probiotic, *B.Longum*, reduced depression scores in 22 IBS patients.

"Importantly, the Bio-Kult formulation not only contains *B.Longum* but also several other probiotic strains that have been reported to have psychotropic effects in both mouse models of anxiety and depressed mood, and in preliminary human studies," he explained.

Professor Glenn Gibson, Professor of Food Microbiology at the University of Reading, said few effective therapies for IBS exist and it was extremely encouraging to see the positive results of the Bio-Kult study.

"The mechanism of action is likely to be positive influences of the probiotic on gut microbiology – known to be both positive and negative for health. This user-friendly and safe approach offers new hope for millions of IBS patients worldwide," he said.

Researchers develop tests to indicate autism in the young



New blood and urine tests have been developed by researchers at the University of Warwick to help diagnose autism in children.

The academic team who conducted the international research

believe that their new blood and urine tests, which search for damage to proteins, are the first of their kind and could lead to earlier detection of autism spectrum disorders (ASD) and, consequently, children with autism could be given appropriate treatment much earlier in their lives.

ASDs are defined as developmental disorders, mainly affecting social interaction, and they can include a wide spectrum of behavioural problems. Since there is a wide range of ASD symptoms, diagnosis can be difficult and uncertain, particularly at the early stages of development.

The team, which is based at the University's Warwick Medical School, involved academics at the University of Warwick's Warwick Systems Biology group, the University of Birmingham, the University of Bologna, the Institute of Neurological Sciences, Bologna, and the Don Carlo Gnocchi Foundation ONLUS. The Warwick team worked with collaborators at the University of Bologna, who recruited 38 children who were diagnosed as having ASD (29 boys and nine girls) and a control group of 31 healthy children (23 boys and eight girls) between the ages of five and 12. Blood and urine

samples were taken from the children for analysis.

They found a link between ASD and damage to proteins in blood plasma by oxidation and glycation – processes where reactive oxygen species (ROS) and sugar molecules spontaneously modify proteins. They found the most reliable of the tests they developed was examining protein in blood plasma where, when tested, children with ASD were found to have higher levels of the oxidation marker dityrosine (DT) and certain sugar-modified compounds called 'advanced glycation end products' (AGEs).

The team's research also confirmed the previously held belief that mutations of amino acid transporters are a genetic variant associated with ASD.

The paper, Advanced glycation endproducts, dityrosine, and arginine transporter dysfunction in autism – a source of biomarkers for clinical diagnosis, has been published in *Molecular Autism*.

The team was led by Dr Naila Rabbani, Reader of Experimental Systems Biology at the University of Warwick, who said: "Our discovery could lead to earlier diagnosis and intervention. We hope the tests will also reveal new causative factors. With further testing, we may reveal specific plasma and urinary profiles or 'fingerprints' of compounds with damaging modifications. This may help us improve the diagnosis of ASD and point the way to new causes of ASD."

The next steps are to repeat the study with further groups of children to confirm the good diagnostic performance and to assess if the test can identify ASD at very early stages, indicate how the ASD is likely to develop further to more severe disease and assess if treatments are working.

Expectant mums should supplement with vitamin D to reduce obesity risk in child



Researchers have suggested that mums who supplement with vitamin D during pregnancy can help to prevent obesity in their offspring.

That is according to a new study published in *Paediatric Obesity*, which found that vitamin D deficiency during early pregnancy can increase the chance of creating overweight children.

The study set out to investigate the association of maternal 25(OH)-vitamin D [25(OH)D] status with offspring obesity and cardiometabolic characteristics in 532 mother-child pairs in Greece.

It was found that around two-thirds of participating mothers had 25(OH) D concentrations <50 nmol L⁻¹. Offspring of women in the low 25(OH) D tertile were found to have higher body mass index standard deviation score and waist circumference at preschool age, compared with the offspring of women with higher 25(OH)D measurements on covariate-adjusted analyses.

The researchers concluded: "Exposure to very low 25(OH)D concentrations in utero may increase childhood adiposity indices. Given that vitamin D is a modifiable risk factor, our findings may have important public health implications."

Andrew Thomas, founder and managing director of natural health company, BetterYou, which specialises in vitamin D, commented: "This study highlights once again the importance of vitamin D and why 'at-risk' groups need to be vigilant. As pregnant women have increased vitamin D requirements, 3000iu of vitamin D a day is not only perfectly safe but is considered an optimal dosage for protecting mum and baby."

New to market

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

INFLAMMATORY FIGHTER FROM CYTOPLAN



Cytoflan has introduced its new and improved Phyte-Inflam food supplement, now boasting liposomal curcumin and gingerols.

Phyte-Inflam is a natural phytonutrient herbal complex, comprising curcumin from turmeric, and gingerols from ginger root.

The piperine previously present in the supplement has been removed and the new formulation provides liposomal curcumin, which Cytoflan says is better tolerated, more bio-effective, and has fewer medication interactions.

Research has shown that the bioavailability of curcumin is generally poor, and this has limited its therapeutic usefulness. The liposomal form of curcumin has been found in research to be significantly more bio-effective, with absorption being 45 times higher than standardised curcumin.



IMMUNE SUPPORT

OptiBac Probiotics has relaunched its popular 'For daily immunity' supplement, which it describes as stronger, streamlined and more effective.

The supplement now consists of a 'flu-busting' single strain probiotic, *Lactobacillus paracasei* CASEI 431, proven to reduce influenza-like illness in over 20 human clinical trials. Each capsule contains five billion bacteria, making it twice as strong as before, and 80mg vitamin C for an added immune boost.

Soraya Janmohamed, Co-founder, commented:

"We're very excited to be upgrading this supplement, and adding another extensively researched strain to our range. With *L. paracasei* CASEI 431, we are confident that this product is one of the very best options on the global market for those specifically looking for a probiotic to support immunity."

PROTEIN POWER FOR PULSIN

The nutritional snack brand, Pulsin, has launched its first range of naturally flavoured protein powders.

The powders come in two classic flavours – vanilla and chocolate. The new Chocolate Pea Protein Powder is vegan (17g of protein per 25g serving), while the Vanilla variety is vegetarian, made with whey protein, which has 22g of protein per 25g serving.

Pulsin launched flavoured protein after listening to feedback given to them from their customers, who will now have the choice of a powder that is high in protein, healthy and natural but without compromising on taste.



A WEEK OF WELLNESS

Pukka Herbs has unveiled its 7 Day Kits range designed to naturally support everyday health and wellbeing.

The four kits contain Pukka herbal teas and food supplements, which are blended with 100 per cent organic, medicinal-grade herbs, targeting specific wellbeing needs, from improving concentration and focus, to calming an anxious mind, encouraging undisturbed sleep and protecting against seasonal infections.

The kits, Night Time, Relax, Turmeric Brainwave and Seasonal Wellness, has been blended by Medical Herbalist, Sebastian Pole, Pukka's co-founder, Master Herbsmith and an Ayurvedic practitioner.

A herbal wellbeing guide and downloadable digital tips are included with each kit, offering a simple and affordable introduction to holistic health.



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BANT News

The latest developments from the leading professional body for Registered Nutritional Therapists, BANT.



BANT LAUNCHES PLEA TO GOVERNMENT AGENCIES TO STOP PROMOTING CONSUMPTION OF PROCESSED FOODS AND FOCUS ON REAL FOOD

Does making an omelette or grilling a piece of fish or meat take longer than reheating a pizza in the oven?

The answer is an emphatic no.

Following news reports that Public Health England is launching a campaign to cap the number of calories in fast-food items, the British Association for Applied Nutrition and Nutritional Therapy (BANT) finds it very difficult to understand why Government agencies are promoting the consumption of industrialised foods over real food.

To combat this topsy-turvy Governmental advice, BANT continues to promote its Wellbeing Guidelines campaign to encourage British people to eat more real, unprocessed food.

BANT also calls for some grass-roots changes to the approach to the obesity crisis; the reintroduction of home economics classes in school, education about healthy eating and how diet and lifestyle can influence health over the short and long-term for everyone, and promotion by Government agencies of the consumption of real, unprocessed food, rather than the usual reliance on the industrial food

manufacturers to modify their offerings.

More British people than ever before are overweight or obese. The OECD 2017 obesity rankings classified the UK as the sixth most obese nation in the world, a truly dubious honour. Obesity and its related conditions are complex issues, which require interventions at multiple levels to achieve both effective prevention and successful treatment and this is putting an unbearable burden on our National Health Service. The wellbeing of the British people depends on a total rethink of the way food and health are considered in this country, not a continual tinkering of outdated science. The people of Britain deserve better. They deserve good health.

Miguel Toribio Mateas, Chair of BANT, commented: "The causes of obesity are multifactorial and can include increased stress levels, systemic low-grade inflammation, lack of exercise and choice of foods and their preparation/cooking methods, amongst others. There is growing evidence that minimally processed foods like non-starchy vegetables and fruit are more satiating and elicit less of a



glycaemic response than ultra-processed foods, so prevalent in typical British diets. Additionally, minimally processed foods are associated with a decreased risk of cardio-metabolic disease."

BANT experts carefully developed a set of Wellbeing Guidelines, based on the latest science and research in the field of nutrition for optimal health. The BANT Wellbeing Guidelines were specifically designed to provide clear, concise, easy to understand information, avoiding outdated information and research, and addressing some of the most common health concerns. The most frequent reasons people seek nutritional advice is to address weight loss and/or for general health and wellbeing. These issues are addressed by BANT

with the following:

THE WELLNESS SOLUTION (<http://bant.org.uk/wp-content/uploads/2015/09/WELLNESS-SOLUTION-IMAGE.jpg>)

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BANT Registered Nutrition Practitioners are regulated by the Complementary and Natural Healthcare Council (CNHC) that holds an Accredited Voluntary Register (AVR) for the Professional Standards Authority for Health and Social Care (PSA). A recent report by the Royal Society for Public Health and the Professional Standards Agency made a key recommendation that AR practitioners have the authority to make direct NHS referrals, in appropriate cases, to ease the administrative burden on GP surgeries.

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Last year, we welcomed a record number of delegates through the doors of the Cavendish Conference Centre for the IHCAN Conference series, and already this year, bookings for the 2018 offering confirm another big year ahead.

The first conference of 2018 takes place on Saturday, March 17 and focuses on autoimmunity, where we welcome the fantastic Dr Tom O'Bryan, DC, to address delegates for the entire day, presenting 'Development of Autoimmune Disease, a Comprehensive Approach to Stabilization and Arresting Future Progression'.

A world expert on gluten and its impact on health, Dr O'Bryan is an internationally recognised and sought-after speaker and workshop leader, specialising in the complications of non-coeliac gluten sensitivity, coeliac disease, and the development of autoimmune diseases as they occur inside and outside of the intestines.

Tom is considered a 'Sherlock' of chronic disease and metabolic disorders, treating from an evidence-based functional medicine perspective. He holds adjunct faculty positions with the Institute for Functional Medicine and the National University of Health Sciences. He has trained thousands of practitioners around the world in advanced understanding of the impact of food-related disorders and the development of individual autoimmune diseases.

What that doesn't tell you is that Tom excels in telling a fascinating story, with highlighted references to current research papers punctuating his presentation. He's read all the journals, so you don't have to. He is always up to date.

Delegates love Dr O'Bryan, so much so that we are delighted to confirm

that he will be sole speaker for the whole March conference.

With four and a half hours of education, a healthy gluten free buffet lunch, refreshments through the day, plenty of time to network with exhibitors and peers, and a free goodie bag, you don't want to miss out on our first IHCAN Conference of the year.

WHAT ELSE TO EXPECT

Following the March Conference, the rest of the year is set to be just as exciting, with big names including Neurologist, Dr Dale Bredesen, leading authority on natural medicine, Mike Murray, Naturopath Ben Brown, and Sports Scientist, Andy Blow, being just some experts already confirmed to speak on a variety of topics, with several more exciting speakers to be announced shortly.

The 2018 IHCAN Conferences will be bigger and better than ever, providing cutting-edge research in nutrition and functional medicine, among other topics at your request. Must-attend events for the whole industry, we expect spaces to fill up very quickly so we recommend you book now.



SUMMIT SUCCESS

Saturday, June 30 is the date for the renowned IHCAN Summit, which for 2018 will coincide with the Naturopathic Nutrition Association (NNA) annual meeting.

You can bolt on this event for £65 – saving another £25 – when booking your place at the IHCAN Conferences.



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Nutritional excellence

The time has come for us to reveal the deserving winners of the *Nutrition I-Mag* Product Awards.

The votes have been cast and counted, and we are delighted to be able to reveal the winners of our coveted *Nutrition I-Mag* Product Awards.

These accolades are important because they are voted for by you, our student and recent postgraduate Nutritional Therapists, and we are delighted to announce which brands have scooped an award or been highly commended.

Here's to another year of product excellence.

BEST ALTERNATIVE PRODUCT/SERVICE

Winner: SWAMI



It's been called revolutionary, some say life changing: imagine walking into your local book store, picking up a popular diet book, and watching it miraculously write itself for you in front of your very eyes! That's the power of SWAMI.

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receive a personalised 50-page book, containing a full prescription for optimal health. Included is a unique meal planner, cookbook and SWAMI Mobile so that you can always have your food lists available.

Commenting on the win, Wendy Richards, who represents SWAMI, said: "Many thanks to all who voted for SWAMI. We look forward to training more therapists to use it as a tool in their practice."

Highly commended: Nucleotide Nutri-tide

BEST NEW PRODUCT

Winner: Lepicol Lighter



Gaining extra pounds isn't always down to over consumption or lack of exercise. In fact, the bacteria in our guts can have a huge influence on what we crave and how much weight we gain.

Lepicol Lighter is a new scientifically developed natural food supplement, which could assist your customers' weight loss journey. It contains glucomannan, which in the context of an energy-restricted diet, can contribute to weight loss. In addition, chromium can help maintain blood glucose levels

and seven strains of live bacteria keep the gut healthy.

"It's wonderful to have been voted Best New Product to the market by the readers of *Nutrition I-Mag*. To know that

Lepicol Lighter is making an impact on people's lifestyles via practitioners in its first

year is tremendous," commented Brand Manager, Hayley Milne.

Highly commended: CNS Adrenal Function Profile

BEST VMS

Winner: Epigenar Curcumin Forte



The micellar liquid form used for epigenar Curcumin Forte gives the highest bioavailability, with maximum uptake as validated by reputable research.

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A delighted Stephan Smits, Managing Director at Rio Health, which has the epigenar brand in its portfolio, commented: "Rio Health is both

humbled and proud to accept this award. We endeavour always to provide the best products and service and we thank practitioners and loyal customers for their continued support."

Highly commended: Nutri Advanced Probioplex



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Dr Amy Lee, GP

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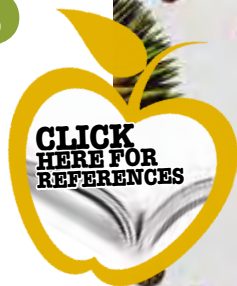
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ATTACKING ALLERGIC RHINITIS

Nutrition experts discuss the options to consider when supporting clients with seasonal rhinitis.



When we arrive at the spring months, attention invariably turns to the effect of pollen on those that suffer with hay fever, given that it is so prevalent at this time of year. But little focus is placed on other allergens which commonly affect hay fever sufferers, not to mention other conditions so closely linked to allergies.

It is important to be aware of what allergic rhinitis actually means, and the allergens that this applies to, especially as – for various reasons – increasing numbers of people appear to be suffering.

“Allergy UK² provides the following statistics on the prevalence of allergic rhinitis (hay fever) and other associated allergies; allergic rhinitis is the most common form of non-infectious rhinitis, affecting between 10-30 per cent of all adults and as many as 40 per cent of children,” commented Nutritional Therapist, Hannah Braye, Technical Advisor at Protexin, which has the Bio-Kult and Lepicol brands.



"The UK has some of the highest prevalence rates of allergic conditions in the world, with over 20 per cent of the population affected by one or more allergic disorder. A staggering 44 per cent of British adults now suffer from at least one allergy and the number of sufferers is on the rise, growing by around two million between 2008 and 2009 alone. Almost half (48 per cent) of sufferers have more than one allergy."

Nutritional Therapist, Jenny Hall, Technical Services Assistant at Viridian Nutrition, added: "Estimates of the prevalence of allergic rhinitis range from as low as nine per cent to as high as 42 per cent worldwide. Not only are the symptoms of allergic, non-allergic and mixed rhinitis often indistinguishable from one another, but also the differential diagnosis of non-allergic rhinitis is common."

Egzona Makolli, Technical and Commercial Nutritionist at Kinetic, which has brands in its portfolio including Garden of Life, Nature's Answer and OM, continued: "Hay fever is common in the UK as it affects around one to five people at some stage of their lives. The latest survey from Allergy UK shows that allergies including hay fever are currently on the rise, with up to 30-35 per cent of people being affected at some stage of their lives.

"It is not known why some people suffer from hay fever and others do not. Currently, there is some evidence that hay fever is hereditary and people who suffer from asthma or eczema are more likely to develop hay fever. There is also a theory that Western countries have a higher rate of hay fever and allergies because of a lack of early childhood exposure to infectious agents, microorganisms and parasites, which increases susceptibility to allergic diseases such as hay fever by suppressing the natural development of the immune system. This is referred to as the 'hygiene hypothesis',

although there is a lack of studies to confirm this hypothesis."

DEFINITION OF RHINITIS

"Allergic rhinitis, otherwise known as hay fever, is a systemic inflammatory pathogenesis in response to pollen exposure and is associated with other inflammatory disorders, including asthma, rhinosinusitis and allergic conjunctivitis. The major symptoms include anterior or posterior rhinorrhoea (nasal drip when fluid exits via the nostrils or nasal drip that exits the nasal cavities into the throat), sneezing, nasal itching and nasal congestion. Besides irritation of the mucus lining of the eyes and throat, hives and skin itching," Hall explained.

"Non-allergic rhinitis is characterised by onset after age 20, female predominance, nasal hyperactivity, perennial symptoms and nasal eosinophilia in approximately one-third of the population. Positive tests for relevant specific immunoglobulin E (IgE) sensitivity in the setting of rhinitis do not rule out mixed rhinitis and may not rule out non-allergic rhinitis. The significance of symptom exacerbation by non-allergic triggers in the setting of allergic rhinitis remains to be determined and could be an additional important factor."

Braye continued: "Hay fever (also known as seasonal allergic rhinitis), is a skewed immune reaction to inhaled pollen released from local trees, grasses and flowers. The allergic response causes inflammation of the mucosal lining of the nasal passages, throat and eyes, causing symptoms such as sneezing, coughing, itchy, red or watery eyes, blocked or runny nose, loss of smell, itching, headache and tiredness due to interference with sleep.¹

Makolli added: "Hay fever causes a release of histamine by the immune system in response to the substance or stimuli that the body is allergic to, which

causes the symptoms. The most common symptoms of hay fever include sneezing, coughing, a runny or blocked nose, itchy, red or watery eyes, itchy throat, mouth, nose and ears, loss of smell, pain around forehead, headache, earache and feeling tired."

"A staggering 44 per cent of British adults now suffer from at least one allergy and the number of sufferers is on the rise, growing by around two million between 2008 and 2009 alone. Almost half (48 per cent) of sufferers have more than one allergy."

RISE IN PREVALENCE

There appears to be various reasons why allergic rhinitis is on the rise.

"Allergies such as hay fever are said to be a malfunction of the immune system. One potential explanation for this malfunction is the 'hygiene hypothesis', which suggests the sterile environment of the Western world has reduced our interaction with a wide range of micro-organism ('old friends'), necessary to enable healthy development of the gut microbiome and immune system.³ This potentially results in an imbalance between type 1 and type 2 cytokine immune responses that favour the development of IgE-mediated allergies, such as hay fever⁴," Braye explained.

"The rise in popularity of infant formulas and a move away from breastfeeding may also have played a role, as immune factors in breast milk have been shown to contribute to the gut microbiome and intestinal lining, offering protection against atopic conditions.⁵ Increasing exposure to environmental factors, such as air pollution

and new man-made chemical compounds, along with increasing stress levels and diets increasingly low in essential fatty acids and antioxidants may also be implicated.⁴ All of these factors, along with the over-prescription of antibiotics in recent years, are likely to have had a negative impact on the gut microbiome.”⁴

Max Wiseberg, founder of the organic pollen balm barrier, HayMax, added: “Between a third and a fifth of the population suffer from hay fever. This is expected to grow to over half in just a few years. Nobody really knows why, but there seems to be some correlation with pollution, so it may be that, as the number of particulates increases, this has an effect, causing people who have never suffered before to start reacting to pollen in the air. In the 2015/6 Allergy UK study on The Impact of Hay Fever, 87 per cent reported that their allergic rhinitis affected their sleep (or their child’s sleep), 92 per cent of respondents said that their symptoms affect their work, school or daily routine and 81 per cent reported that their allergic rhinitis affects their mood in a negative way.”

Makolli reminded that the focus should be on strengthening the immune system.

“Hay fever, or in general allergies, are usually associated with watery eyes and other symptoms but tiredness is also a common issue linked with hay fever. A weakened immune system may also be linked with hay fever as a healthy immune system is crucial to fight off allergies, such as hay fever, as the immune system is made up of an internal defence system, which attacks and destroys foreign substances,” she explained. “When the immune system is working well and is in balance, it helps protect against harmful substances. When the immune system is not in balance, this increases the chances of increasing hay fever symptoms. A strong immune system is important in keeping hay fever

symptoms at ease and preventing other acute infections making symptoms worse.”

And Hall pointed out: “Furthermore, absence of early antibiotic exposure, exclusive breastfeeding for the first four months of life, vaginal delivery, furry pets in the home during infancy, lack of maternal antibiotic use during pregnancy, and maternal animal exposure during pregnancy all were associated with lower rates of allergic conditions. Thus, contributing to the theory that increased antibiotic use and hygienic environments contributes to a less tolerable immune function with the risk of hypersensitivity to non-life-threatening substances.”

LINKED CONDITIONS

Unfortunately, it seems that those who suffer with hay fever are also more susceptible to developing other health-related issues.

“Hay fever is considered an allergic/atopic disease alongside eczema, asthma and allergies. It appears they are often interlinked, with many sufferers developing more than one of the conditions (referred to as the ‘atopic march’).⁶ Common immune and gut alterations are often observed in atopic individuals, with dysbiosis⁷ and gut hyper-permeability⁸ associated with all of the conditions,” Braye explained.

Hall continued: “Allergic rhinitis may result in sleep disturbance, daytime fatigue and lethargy, depression of mood-cognitive function, besides the impairment of the sufferer’s quality of life. Due to its prevalence, allergic rhinitis is classed as a major chronic respiratory disease. Recent research has repeatedly associated allergic rhinitis with affective disorders, such as depression and anxiety. Epidemiologic studies showed that a diagnosis of major depressive disorder is 1.7 times higher in allergic rhinitis patients than non-allergic subjects.

Furthermore, it has been reported that those with allergic rhinitis are at a significantly increased risk of panic attacks. The suggested mechanism of action is the psycho-neuroimmunological relationship, interlinking neurological, endocrine and immune activity.

“An interesting study evaluated a large cohort of children for allergic rhinitis and potential co-morbidities. It was reported that among four- eight-year-olds, allergic rhinitis and non-allergic rhinitis were associated with asthma, eczema and food hypersensitivity. Furthermore, 25 per cent of eight-year-olds with allergic rhinitis also had oral allergy syndrome.

“One explanation for the additional conditions to





allergic rhinitis is bacterial colonisation within the excess mucus within the nasal cavity, thus, leading to upper respiratory infections. For co-morbidities that involve sensitivities it is suggested that rhinitis precedes further sensitisation, thus, initially stimulating local rhinitis without IgE activation that may progress to IgE activated immune response."

"As hay fever elevates histamine levels in the body, a low-histamine diet during hay fever season is advocated by some as a way of reducing histamine load on the body and some studies indicate it may be beneficial in atopic conditions."

SYMPTOM REDUCTION

Be sure your clients know the factors that can exacerbate symptoms.

"There is the potential to modulate or exacerbate the allergic response through diet. For instance, foods that cause sensitivity may mediate the immune response. Furthermore, there is a suggestion that pesticides from food stimulate a low grade inflammatory response that in those predisposed to allergies may then experience greater exacerbation of allergic rhinitis," Hall explained. "An assessment of the dietary habits of schoolchildren was evaluated to find that those who ate sweets and animal fats three or more times weekly had a greater incidence of allergic rhinitis.

"Conversely, it may be what we don't consume; vitamin D deficiency can impair epithelial barrier integrity, leading to increased and inappropriate mucosal exposure to antigens and a sensitised immune imbalance that compromises immune tolerance."

Braye continued: "As hay fever elevates histamine levels in the body, a low-histamine diet during hay fever season is advocated by some as a way of reducing histamine load on the body and some studies indicate it may be beneficial in atopic conditions,¹⁴ (especially for those who have sub-optimal DAO enzyme activity)."¹³

Jenny Bodenham, Nutritional Therapist at Higher Nature, explained: "Some people with an allergy to pollens (particularly tree pollens) may experience cross-reactions between certain foods and their pollen allergy, causing an itchy mouth or throat, although usually allergens are easily inactivated by cooking, processing and digestion. Food and drinks that contain histamine or cause the body to release histamine include alcohol and fermented foods and so are best avoided. Adopting an antioxidant-rich, anti-inflammatory diet may be helpful for many people. One study has suggested that consuming a traditional Mediterranean diet, rich in fruits, vegetables and nuts, during childhood has a beneficial effect on symptoms of asthma and rhinitis⁽⁵⁾ These findings are consistent with results from previous studies on the protective association of a diet rich in various fruits and vegetables with asthma and allergic rhinitis."⁽⁶⁻⁹⁾

Ensuring you have properly analysed a client's dietary status is also crucial.

"Firstly, it's key for a Nutritionist to do a full dietary analysis to find out if the sufferer is consuming any foods high in histamine and whether any foods trigger their symptoms. The protocol which I usually recommend based on current literature is to try to reduce dairy intake as studies have shown that many people prone to allergic reactions can struggle with their dairy intake; try alternatives such as almond milk or cashew milk, which are fortified with nutrients," Makolli advised.

"Eat plenty of anti-inflammatory foods before the pollen season, such as berries, rooted vegetables, tropical fruits

like pineapple, avocados, fish and healthy oils, such as flaxseed and pumpkin seed oil. Fermented foods such as wine, cheese, vinegar and soy sauce, over ripe fruits and vegetables also contain a high amount of histamine. Processed meats, shellfish, alcohol and dried foods are high in histamine."

In terms of why some people are affected and others aren't, Wiseberg said it's important people know their trigger.

"Because we are all different! Some people have nut allergies and some don't. People who are allergic to pollen will only start to react when the pollen entering their body goes over a certain level – their trigger or sensitivity level. Some people know that when the pollen count is medium, they won't suffer, but if it goes up to high, they'll be in trouble. I also believe that we are different at different times So, on a day when we are a bit tired and low, it is possible that we are more susceptible than when we are feeling happy and energetic. In other words, our own trigger level can go up and down," he explained.

IN PRACTICE

In terms of an effective protocol, the experts offer their insights into what you could recommend.

Dietary wise, Braye suggested: "As hay fever is essentially an inflammatory condition, following an anti-inflammatory diet, high in antioxidants and phytonutrients from colourful fruit and vegetables, and omega 3 fatty acids from oily fish, hemp, flax and chia seeds is advisable. Certain foods high in the flavonol quercetin may be particularly beneficial, due to its anti-allergic activity (discussed overleaf). The main food sources of quercetin are vegetables such as onions, garlic and broccoli, fruits such as apples, berries and grapes, some herbs, tea and red wine.⁹



"Eliminating or reducing pro-inflammatory foods, such as sugar, refined carbohydrates, vegetable oils and trans-fats from processed foods is also advisable. There is some evidence to suggest a positive correlation with high arachidonic acid (AA) intake and the development of hay fever and other allergic diseases.¹⁰ Therefore, some may find limiting foods high in AA (such as meat and dairy products) beneficial. Having said that, bone broth, made using the bones and cartilage from organic grass-fed animals, is believed by many practitioners to help support epithelial integrity in the gut (where 70 per

cent of our immune cells reside),¹¹ by providing a number of nutrients such as collagen, glycine, gelatine and glutamine, which help to maintain the integrity of the gut mucosa and intestinal barrier."¹²

Hall added: "An anti-inflammatory diet which includes the removal of gluten-rich, dairy, added sugar, high fructose corn syrup foods due to their inflammatory effect. Replace with oily fish, algae for omega 3s, plus nuts and seeds, such as flax, almonds and walnuts, which have greater quantities of omega 3 essential fatty acids and would contribute to the full spectrum of metabolites from the omega 3 pathway.

Further anti-inflammatory benefits can be had from compounds such as turmeric and boswellia.

A diet rich in a variety of vitamin C rich fruit was reported in the International Survey of Allergies and Asthma in Childhood Surveys to have an inverse, dose-dependent association to rhino-conjunctivitis."

In terms of specific product recommendations, Hall suggested it is useful to start with foods such as organic black seed oil, organic black seed, bee pollen or propolis in January each year.

"This supports the dampening of the non-necessary IgE response associated to allergic rhinitis. Logging nutrients and symptoms can be useful in designing a personalised nutrition regimen," she explained.

There are some key nutrients that should be incorporated too.

Hall suggested: "Although it is well documented that vitamin D plays a modulatory role in immune function,

it is further reported that maternal vitamin D intake can influence the child's incidence of allergic rhinitis. It was observed that 100iu vitamin D intake during the first and second trimester of pregnancy reduced the likeliness of childhood allergic rhinitis by 21 per cent, subsequently, an additional 100iu reduced the incidence by a further 20 per cent. Black seed (*Nigella sativa*), often referred to as a cure all, has shown to have anti-allergenic activity. It is thought to come from its primary bioactive; thymoquinone. Both the organic cold-pressed seed or ground seed can be useful. Studies have reported a reduction in allergic and inflammatory markers in response to black seed administration. Furthermore, a specific reduction in nasal congestion, runny and itchy nose and sneezing was observed."

Braye suggested: "The flavonol, quercetin, is known for its anti-allergic properties, and is therefore a useful addition to any anti-allergy protocol. Quercetin is thought to act as an antioxidant, inhibit histamine release, decrease pro-inflammatory cytokines, and suppress interleukin IL-4 production. It may also improve Th1/Th2 balance, and restrain antigen-specific IgE antibody formation, whilst also inhibiting lipoxigenase, eosinophil and peroxidase.⁹ Quercetin appears to work synergistically with vitamin C."¹⁸

Makolli highlighted bromelain, an enzyme from pineapple.

"It has been shown to relieve hay fever in many clinical studies. One study showed that 85 per cent of participants who took bromelain had complete resolution of breathing difficulties and airway inflammation," she explained, adding: "Vitamin C has shown to be a potent immunostimulant and anti-inflammatory supplement. A combination of vitamin C with bioflavonoids has shown to provide a natural decongestant and help alleviate hay fever associated symptoms. B vitamins can be helpful in ➤

Nutrition ^{I-Mag} Product Showcases

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Although the beneficial effects of live bacteria supplementation have been shown even when commenced at the height of allergy symptoms, it may take time to influence the gut microflora balance and elevated immune responses, especially in the adult population. Multi-strain live bacteria products such as Bio-Kult with 14 live bacterial cultures, may therefore be more effective in hay fever when used as a preventative measure. Hay fever sufferers should therefore consider supplementing with a multi-strain live bacteria formula on a continual basis year round, or at the very least in the lead up to the spring and throughout the summer. For more information, visit www.bio-kult.com



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managing histamine production, as all B vitamins are necessary for the proper functioning of the immune system and may help reduce symptoms overall. Vitamin E, a potent antioxidant, has shown to help reduce symptoms of nasal congestion by reducing inflammation associated with hay fever. Omega 3 fatty acids can help reduce inflammation in the nasal passages, which can open the airways to enable a better breathing capacity and reduce severity of symptoms."

Bodenham suggested: "Sulphur is thought to stabilise cell membranes and scavenge hydroxyl free radicals, which trigger inflammation. Research suggests that supplementing MSM, a sulphur containing compound, at a dosage of 2,600 mg/day for 30 days may be effective in the reduction of symptoms associated with seasonal allergic rhinitis."⁽¹⁴⁾

Bodenham also highlighted vitamin C.

"Exposure to pollens and air pollutants leads to the production of reactive oxygen species and the resultant oxidative stress is thought to be a contributory factor in inflammation of the airways.⁽¹⁵⁾ Vitamin C is a potent antioxidant, as well as a natural anti-histamine, appearing to prevent the secretion of histamine and increase its detoxification.^(16,17) Human data testing the effect of vitamin C on bronchial responsiveness in patients with allergic rhinitis found that administration of 2g of vitamin C significantly decreased airway hyper responsiveness compared with placebo," she said.⁽¹⁸⁾

And also keep in mind the power of Pycnogenol.

"Pycnogenol is a pine bark extract from the pine forests of Landes De Gascoigne, France. Standardised to proanthocyanidins, Pycnogenol has shown great efficacy on improving the symptoms of allergic rhinitis. Initially, an in-vitro study confirmed Pycnogenol's ability to counter the cascade of events that led to allergic rhinitis symptoms by blocking the action of

histamine. Then, in human studies, a positive trend for hay fever relief was observed, closely followed by the confirmation of seasonal relief from starting Pycnogenol supplementation prior to the pollen season. In addition, further benefits have been reported that include the improvement of airway inflammation," Hall explained.

And be aware that there is much that can be done in advance to avoid such symptoms.

"Although beneficial effects of probiotic supplementation have been shown even when commenced at the height of allergy symptoms,¹⁷ it is hypothesised that they may be even more effective when taken for a period prior to hay fever season as a preventative measure.¹⁷ Hay fever sufferers should therefore consider supplementing with a multi-strain probiotic formula throughout the year, or at least for a month or two before hay fever season, as well as in the spring and summer itself," Braye explained.

There are also some lifestyle considerations, and other products to keep on hand.

Wiseberg suggested: "Many people have also found acupuncture to be helpful before the season. And once you start to experience the symptoms, you can use an organic pollen barrier balm, which is proven to trap pollen, and an acupressure band."

GUT STRONG

As with so many issues, the health of the gut is absolutely crucial.

"The gastrointestinal system plays a central role in immune system homeostasis, with the gut-mucosal lining housing approximately 70 per cent of the body's immune cells,¹¹ which are supported and influenced by a diverse microflora.¹⁵ Our beneficial gut bacteria also play a crucial role in supporting gut barrier function by helping to maintain tight junctions between epithelial

cells lining the GI tract¹⁶," Braye explained.

"Although beneficial effects of probiotic supplementation have been shown even when commenced at the height of allergy symptoms,¹⁷ it is hypothesised that they may be even more effective when taken for a period prior to hay fever season as a preventative measure."

"Taking a probiotic supplement containing 14 different strains may be of benefit to hay fever sufferers, due to their ability to modify the gut flora, modulate the immune system and restore a healthy gut lining.¹⁶ In fact, a recent 2017 study found that supplementing with a multi-strain probiotic formula, containing *lactobacilli* and *bifidobacterium* species for eight weeks, helped to alleviate hay fever symptoms and improved quality of life during allergy season in hay fever sufferers.¹⁷ The precise mechanisms for the beneficial effects associated with supplementation are not entirely clear. However, the researchers hypothesised that it might be down to an increase in regulatory T cells, which help to keep the immune system in balance and boost tolerance to hay fever symptoms."

Hall added: "Viable bacteria support the immune function and so upon investigation, it has been reported that *Lactobacillus* and *Bifidobacterium* appear to prevent allergy recurrences, alleviate the severity of symptoms and improve the quality of life of patients with allergic rhinitis. It is suggested the effect occurs through immune system modulation and the induction of cytokine production, which cause a dominant TH1 response in allergic patients by modulating the TH1/TH2 balance effect." ●



THE COGNITIVE SWITCH



With so many factors contributing to an increased risk of cognitive decline, *Nutrition I-mag* presents an essential guide to understanding the brain.



Cognitive deficiencies can begin mildly, and for some, don't actually progress much beyond this. But for other sections of the population, they can move onto other more serious issues, such as dementia, speech difficulties and mental agility. All of these problems can have other linked issues, such as loss of interest in life, lack of independence and isolation, and so when trying to assess a client with cognitive deficiencies, there are a great many factors to take in account.

Isabelle Nunn, Technical and Commercial Nutritionist at Kinetic, confirmed: "An individual suffering from mild cognitive impairment is at higher risk of developing conditions like Alzheimer's disease or another form of dementia. Issues related to cognitive decline include a loss of memory, thinking speed, mental agility, judgement, language and understanding. With those changes, there is sometimes a gradual loss of interest in life, experiencing hallucinations, a loss of independence, as well as the ability and interest in socialising.

"In general, it begins with cognitive deficiencies, which progress to impaired orientation and disordered behaviour, with a loss of independence. Alzheimer's should be suspected in people of 55 years or older who present with deterioration of short-term memory, personality changes, and atypical mood changes. Such changes should be taken seriously in anyone older than 40."

Dr Elisabeth Philipps PhD, Nutritional Therapist, who manages practitioner training for Nutrigold, added: "Cognitive decline causes slight but noticeable and measurable decline in cognitive abilities, including memory and thinking skills. During the early stages, these changes are not severe enough to interfere with life or independent function but people with MCI (mild cognitive impairment) are more likely to develop Alzheimer's disease or other dementias than people

without MCIs.

"Generally speaking, symptoms include forgetting important information that would previously have easily have been retained, for example, remembering future appointments, recalling past conversations or recent events (known as amnesic MCI) or thinking skills may also be affected, including the ability to make sound decisions, judge the time or sequence of steps to compete a complex task or, or visual perception (non-amnesic MCI). The ability to multitask is also diminished.

"Globally, the number of people living with dementia is on the increase, from 46.8m back in 2015 to 131.5m predicted in 2050, resulting in a 281 per cent increase. In the UK, there are currently 850,000 people estimated to be living with dementia. As expected, these numbers are also predicted to rise."

"MCI stems from shrinking of the frontal lobe, especially the prefrontal cortex, the medial temporal lobe, especially the hippocampus and the cerebellum, though this appears to only occur in ageing males. Brain white matter also degrades, leading to disorganised brain networks, with declining levels of inhibitory neurotransmitter GABA and also dopamine, both important for learning and memory. If you have MCI, you may also experience depression, anxiety, apathy, irritability and aggression."

FOCUS ON DEMENTIA

When referring to cognitive decline, the most common

condition that is discussed is dementia, something that is becoming a greater issue if the stats are anything to go by.

"Globally, the number of people living with dementia is on the increase, from 46.8m back in 2015 to 131.5m predicted in 2050, resulting in a 281 per cent increase. In the UK, there are currently 850,000 people estimated to be living with dementia. As expected, these numbers are also predicted to rise," Nunn commented.

We need to understand dementia – and the fact there are so many different forms – to be able to understand clients and their needs.

Aimee Benbow, Technical Manager at Viridian Nutrition, explained: "Dementia describes a set of symptoms that can include memory loss and difficulties with thinking and problem solving. Alzheimer's disease is the most common neurodegenerative disease that causes dementia in the elderly. Alzheimer's disease (AD) is characterised by increased abnormal levels of amyloid plaques, which disrupt normal cell function and cause death to neurons in the brain. This eventually leads to overall shrinkage of the brain.

"As the ageing population increases, the prevalence of AD has increased globally and AD has become one of the leading causes of disability and death among the elderly. An update by dementia UK shows that there will be 850,000 people living with dementia in the UK by 2015 and that dementia costs the UK £26 billion a year¹."

Phillipps also advised: "Age is the biggest factor in developing MCI and dementias, though there are also familial history traits in some cases. Gender may also play a role, with 65 per cent of people living with dementia (estimated at 850,000¹) in UK being women². Cortisol levels have also been linked to brain health with chronic stress."³



So, what risk factors do you need to be aware of in terms of why people develop dementia?

Nunn explained: "About a third of a person's risk of developing Alzheimer's disease may be due to modifiable lifestyle factors, according to reports from the University of Cambridge. Looking at Alzheimer's disease, although several associations have been found, only four risk factors were then set. These were namely increasing age, the presence of apolipoprotein E-epsilon 4 allele, familial aggregation of cases and Down Syndrome (McDowell, 2001). The epsilon 4 allele of the apolipoprotein E gene (APOE4) on chromosome 19 is regarded as a true susceptibility factor for the onset of the late and prevalent form of Alzheimer's disease. There is a genetic component in the development of Alzheimer's."

Phillipps added: "Major non-modifiable risk factors

include age, gender and familial history. However, there are many modifiable risk factors that can combine to affect cognitive health, including:

- Diet, alcohol, gut microbiota.
- Nutrient status, for example, low vitamin D levels
- Health status, for example, cardiometabolic risk factors increase risk of MCI and dementias, including diabetes mellitus, hypercholesterolemia, hypertension, metabolic syndrome, obesity, vascular disease, high homocysteine.
- Lifestyle and activity, for example, insomnia, obstructive sleep apnoea, chronic stress, sedentary behaviour, social isolation.
- Environment, for example, medications and toxin exposure.

"On a whole-systems level, these risk factors combine to translate into chronic inflammation, aberrant hormonal patterns and brain vascular changes affecting neurotransmitter levels, cognitive processing, regional brain structure and function."

And Benbow continued: "There are a number of modifiable risk factors which are associated with cognitive decline and dementia. Smoking is connected with a large number of degenerative diseases and the same is true for dementia. A meta-analysis of prospective studies in the *American Journal of Epidemiology* found that elderly smokers have increased risks of dementia and cognitive declineⁱⁱ. This is likely due to the hardening of the arteries and toxins found in cigarettes.

"High blood pressure (hypertension) and atherosclerosis has also been linked to cognitive decline including ADⁱⁱⁱ and hypertensive treatment is associated with a reduced incidence of dementia in the elderly^{iv}. Inactivity, or lack of physical activity, is also considered a risk factor in dementia. Exercise improves blood circulation, which is important for cognitive health. A

prospective study highlighted that regular exercise is associated in a delay in the onset of AD in those over the age of 65 years^v."

SAFEGUARDING COGNITION

Prevention, of course, is the approach we should take with all areas of our health, but this is particularly true with regard to maintaining the health and function of the brain.

"Working on these modifiable risk factors can help to safeguard the brain and reduce the risk of cognitive decline with age. Maintaining a healthy weight, with a good diet rich in fruit and vegetables, with little or no processed foods, taking part in regular physical activity and quitting smoking are all good preventative actions to ensure the long-term health of the brain," Benbow explained.

Nunn added: "From a more clinical perspective, essentially, since there are no cures for Alzheimer's, there are ways that can help prevent it, slow its progression or reduce symptom severity, especially in its early stages. Overall, potential therapeutic targets include enhancing cholinergic transmission, restrictive oxidative stress and inflammation, prevention of B-amyloid formation and toxicity and elevating circulating levels of oestrogens and other neurotrophic agents, such as nerve growth factor."

And Nunn also pointed towards the below factors to take into account in terms of diet and lifestyle factors.

■ **"Stimulation of the brain:** Keeping the brain active is very important to engage the maintenance and development on new neuronal pathways, be it a regular game of scrabble, or backgammon or even learning a new language.

■ **Smoking and alcohol:** Alcohol in large amounts can affect the health of our brain cells and the

communication between these. Heavy drinking, as well as smoking, should be avoided.

■ **Obesity:** The lack of physical activity accounts for the largest proportion of Alzheimer's cases in the UK, Europe and in the UK. So, aim to move as often as possible, even if it is for short bursts of time, aiming for that target of 10,000 steps and more on a daily basis. Exercising with friends has shown to be useful, especially when the motivation is low and will help keep the activity fun and sociable. Physical activity in whichever way you go about it, will help to also keep the other risk factors at bay (i.e. blood pressure and diabetes). The aim is to achieve 30 minutes of moderate activity at least five times a week and two sessions of muscle strengthening per week.

■ **Exercise** to help lose weight or maintain a stable weight will reduce your risk of obesity, high blood pressure and diabetes. It will also reduce the risk of cardiovascular disease and vascular dementia in particular.

■ **Blood pressure and diabetes:** Must be kept under control as they are associated with a higher risk of dementia.

■ **Elimination of neurotoxins**, especially with respect to sporadic or non-familial Alzheimer's disease (in addition to, of course, reducing inflammation) should be considered. Aluminum is a neurotoxin linked to dementia, Alzheimer's disease, autism and Parkinson's disease. Therefore, avoiding the presence of aluminum in deodorants, in pans, in materials used at home, drinking bottled or filtered water may help. Aluminum is also present in some food, medications, such as antacids and even baby formula. Watch out for its presence in prepacked/ready-made meals."

Phillipps pointed towards the importance of sleep. "We can't do much about advancing years but we

can make modifiable changes to the ageing process, support healthy balance of gut microbiota and keep inflammation under control. In fact, around a third of a person's risk of developing Alzheimer's disease may be due to modifiable lifestyle factors.⁴ For example, two studies of 3,400 people followed their sleep patterns for more than two decades and those who suffered from nightmares and insomnia in middle age were more likely to experience cognitive impairments in old age⁵," she explained.

"To improve sleep quality and the other modifiable MCI risk factors, consider dietary changes – reduce refined sugars and processed foods, increase vegetable intake, minimise caffeine and alcohol, keep hydrated, lifestyle changes – daily activity including aerobic and resistance training, stop smoking, manage stress, for example. meditation and mindfulness.

"Starting these changes early (aged 30-40) will support long-term healthy cognitive neural networks and brain health. A personalised lifestyle approach, rather than just relying on drug monotherapies, is more appropriate to supporting the many biochemical pathways and mechanisms that underpin healthy brain function.

NUTRITIONAL INTERVENTION

More and more research is confirming the power of nutrition for the brain, particularly in reducing the risk of developing cognition problems.

"Nutrition plays a crucial role in brain health, where adequate dietary intakes, as well as nutritional status, both have important effects on brain functioning. Research shows how the energy intake and specific nutrient's excess or deficiency obtained from the diet will differently affect our cognitive processes, behaviour, neuro-endocrine functions, emotions and

synaptic plasticity, with either potential protective or unfortunately, detrimental effects on neuronal physiology," Nunn confirmed.

"Starting these changes early (aged 30-40) will support long-term healthy cognitive neural networks and brain health. A personalised lifestyle approach, rather than just relying on drug monotherapies, is more appropriate to supporting the many biochemical pathways and mechanisms that underpin healthy brain function."

And Phillipps advised: "Processed foods and those high in saturated fats and refined sugar, chronic caffeine and or/soda consumption⁷ and alcohol can all impair short and long-term brain function, affect neurotransmitter levels and damage neuronal networks. Numerous studies now demonstrate a link between pro-inflammatory foods and diets and the increased risk of developing MCI and dementias.⁸ In part, this is due to the health of the gut and the interaction between the gut microbiota and brain function.

"There are some very interesting studies that demonstrate this key link between diet and cognitive impairment, where consumption of a Western Diet (WD) that is high in saturated fat and added sugars negatively impacts cognitive function, particularly mnemonic processes that rely on the integrity of the hippocampus^{9,10}. This also has huge implications for younger generations and the prevalence projections of dementia in the UK – 850,000 cases of dementia in the UK, rising to one million cases in 2020 and two million

cases in 2050¹¹.”

Antioxidants are absolutely critical when it comes to the brain, for multiple reasons, and these should be a focus, say the experts.

“Foods rich in antioxidants aid brain health by quelling free radicals which the body naturally produces which, in turn, can have damaging, oxidative effects on the body. Research has shown that those low in plasma levels of vitamin E, a fat-soluble antioxidant, have a higher risk of developing dementia in later years^{vi}.”

Nunn added: “Antioxidants include food sources of vitamin C and E as these helps to protect our body cells from oxidative stress and keeps them healthy. Oxidative stress is the result of an imbalance between the production of harmful unstable molecules, called free radicals, and the body’s ability to counteract those. It can be caused by stress, medication, our diet and the environmental pollution, amongst other things. It is, therefore, important to include plenty of those nutrient dense foods, also termed as antioxidants, in the diet, to counteract those harmful effects.

“Vitamin C food sources also help to support the normal functioning of the nervous system. (EU Nutrition And Health Claims, 2015). Antioxidant levels are also very high in some superfoods, such as matcha green tea, purple corn, acai berry, maqui berry, and purple cabbage, amongst others. Longitudinal and cross-sectional comparisons of 442 subjects showed that higher levels of ascorbic acid and beta-carotene plasma levels are associated with better memory performance in people aged 65 and older. Dietary antioxidants also include peppers, citrus fruits, cantaloupe, squash, and pineapple.”

An antioxidant-rich supplement may well be advisable.

“Vitamin C supplementation (2000mg, carotenoids (25 000IU retinol equivalents) and vitamin E can further help to boost ‘free radical scavenging’, in addition to a



diet packed with antioxidants. A placebo controlled clinical trial of 2000IU of vitamin E given daily to patients with moderate Alzheimer’s disease showed that vitamin E helped to slow down functional deterioration (Grundman, 2000; Mecocci, P. and Polidori, M.2012),” Nunn pointed out.

Understanding the importance of lipids is also advisable when working in this area.

“Swapping types of fats from saturated and trans-fats to an intake of polyunsaturated and monounsaturated fats is associated with a lower risk of developing dementia. Replace deep fried food, processed foods, which can contain trans-fats, and cut down on the saturated fats like butter and ghee. Replace all these with organic coconut oil for any cooking involving high heat, and olive oil, hempseed oil, flaxseed oil and other cold pressed organic oils for drizzling on food,” Nunn advised.

“Fish is a good source of docosahexaenoic acids

(DHA), the fatty acids which are depleted in the brains of patients with Alzheimer’s disease. Omega 3 fatty acids in the form of DHA help to maintain normal brain function, with a daily consumption of at least 250mg (EU Nutrition And Health Claims, 2015). A serving of salmon fillet can provide you with up to 240mg, vary your sources of oily fish to contribute to your general intake.”

Benbow added: “Diet and nutrition are essential factors in cognitive health. Good fats including omega 3 fatty acids and, in particular, docosahexaenoic acid (DHA), play a key role in the structure of the brain and the ability of the cells to communicate. Plasma levels of DHA have been linked to dementia risk with those in the higher quartile being at a reduced risk of the disease .”

In addition to this, opting for anti-inflammatory foods is crucial.

“Anti-inflammatory diets high in vegetables and low in refined carbohydrates, rich in essential fats and lean protein. Dr Dale Bredeisen is leading the way in understanding the role the diet and nutrition plays in reversing cognitive impairment and even Alzheimer’s disease and dementias¹²,” Phillipps explained.

“This protocol advocates frequent consumption of vegetables, including cruciferous vegetables, onions, sweet potatoes, beetroot, some fruits, including grapefruit and avocado, olive oil, MCT (coconut oil), organic pasture raised eggs, green tea and wild caught fish; reducing consumption of coffee, meat, legumes, nightshade vegetables, non-tropical fruits like berries and starchy veg like peas; and avoid dairy, high glycaemic fruits, gluten, grains, high mercury fish, processed foods and simple carbohydrates.”

GO FOR THE MED

There are countless studies on the positive impact of the Mediterranean diet, with many focusing on the brain. But

why?

Nunn explained: "The Mediterranean diet is a well-accepted and proven diet, with essential components that can help delay the onset of cognitive decline such as Alzheimer's (Perng et al.2016). Packed with antioxidants, natural and wholefood ingredients, healthy fats, plenty of fibre from legumes, vegetables and fruits, it is also a diet that is higher in seafood and fish than animal-based protein sources. Olive oil is a staple in their cuisine and the active compounds found in olives have shown to exert protective effects. (Lourida et al.2013).

"A diet with high levels of vitamins B6, B12 and folate and a moderate intake of red wine appear to be protective. And healthy amounts of saturated fat obtained from coconut oil (Perng et al.2016), oily fish, avocado, olive oil, nuts and seeds. Coconut oil, in particular, is a rich source of beta-HBA and is known to be the brain's superfuel (Perlmutter, 2018). When consuming meat, aim for grass-fed and organic in moderation. Cows fed with grains instead of grass have meat that becomes higher in inflammation producing omega 6 fats than their grass-fed counterparts. In addition, the corn and grain fed to cattle is often genetically modified, and unfortunately, it then introduces worrisome proteins into non-grass-fed meat."

THE RIGHT RECOMMENDATIONS

If you are highlighting a nutritional programme to a client to safeguard cognition, there are some key product areas to highlight.

- **Essential fats:** Phillipps suggested: "Essential fatty acids in terms of omega 3 EPA and DHA, which can be found in high potency fish oils or krill oil."
- **Coenzyme Q10:** Nunn explained: "More research is yet to be found that looks into the effect of CoQ10 in cognitive decline. We do know that as we age naturally,

our levels are reduced and that CoQ10 also helps to protect neurons from harmful free radicals so may be of support."

- **B vitamins:** "B vitamins, including vitamin B12, should be checked, especially if you follow a vegetarian or vegan diet," Phillips explained.

- **Lion's mane:** A mushroom that can help stimulate and nourish the Nerve Growth Factor. "The Nerve Growth Factor (NGF) is a neuropeptide that acts as a neurotrophin, chemicals that help to stimulate and control neurogenesis or the growth of new neurons. NGF essentially plays a key role in the maintenance, survival and regeneration of neurons or nerve cells. NGF gene therapy has been studied as a potential treatment for neurodegenerative disorders such as Alzheimer's," Nunn advised.

- **Ginkgo biloba:** "A herb that has shown to exert an effect on memory through its action on enhancing memory and mental alertness by improving cerebral circulation, as well as acting as 'antioxidants'," Nunn explained.

- **Vitamin D:** Levels should be checked, Nunn advised, and corrected, especially if at a pre-disposed risk of dementia.

- **Phosphatidylserine:** "Phosphatidylserine is a phospholipid and an important compound in the cell membrane. It is this structure which allows the correct cell assembly and signaling, which is essential in the environment of the brain. This phospholipid is naturally found in high concentrations in the brain and is obtained from foods such as fish but can be found as a supplement," Benbow suggested.

- **Ashwagandha:** Known as a 'Medhya Rasayan', or mind rejuvenator, in Ayurveda, ashwagandha is used in enhancing memory and overall brain functioning. "Modern studies have indicated important brain antioxidant, neuro-protective, and memory-enhancing activity of ashwagandha and its active components, withanolides^{viii},"

Benbow explained.

- **Probiotics:** Phillipps recommended: "Gut support through *Lactobacilli* and *Bifidobacteria* probiotics and *Saccharomyces boulardii*."

INTERESTING RESEARCH

The body of evidence around the brain and its connection with diet and lifestyle continues to grow.

So, what do the experts pinpoint as some of the most interesting developing areas?

"Latest research looks into the role of the diversity of our microbiome in brain health and diversity. Research looks into populations who are exposed to a higher diversity of bacteria all around them, from when in utero through to being adults," Nunn highlighted.

"These individuals are at lower risk of hyperimmune or auto-immune situations, and inflammatory markers are commonly reduced in those individuals. This, in turn, results from a lower brain-barrier permeability, as Dr Perlmutter points out, and the ability of several things, such as fungi or the herpes simplex virus, to get to the brain.

"Living in a modern western world also means more antiseptics, antibiotics, cleaning agents and so on. Lowering haemoglobin A 1c and therefore the process of glycation has also been found to be useful in nurturing the microbiome and in Alzheimer's disease. This is because it is the process of glyating proteins that increases inflammation and free radical production. Besides the environment we live in, our diets also depict the amount of exposure to bacteria we have since a young age and this affects future generations. The diversity of our microbiome can be influenced through our diet, environment and if needed the intake of specific strains of live bacteria to support our levels, while also repairing and healing the gut." ●

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Resolving conception issues can be complex and requires a multi-faceted approach. Here, leading experts in the field discuss the options.

FERTILITY FACT-FINDING



It's a concerning statistic that at least 25 per cent of couples will struggle to conceive, with the average time taken to fall pregnant now being recorded at more than one year. The reasons for this are certainly mixed, but what is generally agreed by experts is that modern lifestyles, the fact that couples leave it later to have a family these days, and our nutrient depleted states all play a part.

Dr Marilyn Glenville PhD is the UK's leading Nutritionist specialising in women's health, former President of the Food and Health Forum at the Royal Society of Medicine and the author of a number of internationally best-selling books, including *Getting Pregnant Faster*. She commented: "At least 25 per cent of couples planning a baby will have trouble conceiving, with one in four women experiencing a miscarriage and more and more couples are turning to fertility treatments to help them have a family. On average, young couples can expect to wait an average of three years before conceiving, and, as a result, very few doctors will consider a diagnosis of infertility until after at least a year has passed.

"Over the past 20 years, fertility problems have increased dramatically. Also, male infertility is said to be on the increase as sperm counts have reduced by 53 per cent in the last 50

years. As infertility rates continue to climb, more and more experts are looking at nutritional deficiencies as a potential cause of infertility or delayed conception."

Fertility expert, Zita West, added: "NHS figures suggest around one in seven people have fertility issues in the UK. It can take up to a year of having regular, unprotected sex to fall pregnant, so anything longer than this and couples should seek advice. I am definitely seeing more couples coming to me with problems, and especially in younger couples. Stress and lifestyle play a huge role in fertility, and I think the work hard/play hard attitude many people have can cause issues. Stress seems to be on the rise for so many people now and this wreaks havoc with hormone levels in both sexes."

Jenny Hall, Nutritional Therapist and Technical Services Assistant at Viridian Nutrition, pointed out: "In the UK, the average age of the first conception was 29 years in 2013, compared to 27 years just two years earlier (2011). Although this is an area of personal choice, it is suggested that often fertility awareness is low, possibly due to poor understanding of the reproductive cycle and fertility."

DEFINING 'INFERTILITY'

It is a term commonly used, and couples may describe themselves as infertile, when in fact they are struggling to conceive.

Mark Whitney, Nutritional Expert, Academic Advisor to the Irish Institute of Nutrition & Health and Managing Director at Pillar Healthcare, explained: "The World Health Organization defines infertility as the inability to conceive after one year of unprotected intercourse. Infertility can be primary (before the birth of a child) or secondary (after the birth of one or more children). One in every four couples in developing countries have been found to be affected by infertility.

"The ability to have a child is taken for granted by most people and by society in general, but one person in six will not conceive on their own and seek help to achieve a pregnancyⁱ."

"As infertility rates continue to climb, more and more experts are looking at nutritional deficiencies as a potential cause of infertility or delayed conception."

When we are examining the issues that hinder our fertility, we need to discuss the couple. Men and women are affected almost equally, with 30 per cent due to male factors, 30 per cent due to female factors. The other 40 per cent is often due to a mixture of problems, or is referred to as 'unexplained'ⁱⁱ. Conception and pregnancy are complicated processes that depend upon a number of factors, including:

- The production of healthy sperm by the man.
- Healthy eggs produced by the woman.
- Unblocked fallopian tubes that allow the sperm to reach the egg.
- The sperm's ability to fertilise the egg when they meet and its DNA quality.
- The ability of the fertilised egg (embryo) to become implanted in the woman's uterus.
- Sufficient embryo quality."

Penny Shaw, a student Nutritional Therapist, who works at G&G Vitamins, continued: "Cohort studies show that women born in 1971 showed a higher level of childlessness than those born in 1944. There is evidence to suggest that male infertility has been diminishing by two per cent each year.

That rates are on the rise is evidenced in data

surrounding the IVF industry.

"A report into the IVF market forecasts that the global market is expected to garner \$21.6bn by 2020, registering a growth rate of 11.6 per cent during the period 2013-2020. Rising rate of infertility is the key factor driving the growth of the IVF market," Whitney pointed out. "On the basis of geographical region, the global IVF market is segmented as North America, Europe, Asia-Pacific, Latin America, Middle-East and Africa. Europe commanded the highest share of 37.0 per cent of the global in-vitro fertilization market in 2015, whereas Asia-Pacific is estimated to grow at the highest CAGR of 18.40 per cent during the forecast period 2015-2020^{iii,iv}."

BARRIERS TO CONCEPTION

The first investigation to take place if dealing with fertility issues is around what might be blocking a woman from falling pregnant.

"Fertility is multi-factorial, so it is important to look at every aspect of the couple's health, emotions and lifestyle. So, diet, stress, alcohol and smoking can all have an impact on fertility for both the man and woman. A growing number of women are waiting until their careers are established before they try to conceive, so this can make conception more difficult," Dr Glenville pointed out.

"If a couple has a combination of four negative lifestyle factors (including tea/coffee, smoking and alcohol) it can take a couple seven times longer to get pregnant¹."

West pinpointed five issues that come up time and time again in clinic.

- **"Only having sex during the ovulation period:** Some couples try to 'save up' sperm for the ovulation period, and then barely have any sex at all through the month.



Whilst it's true that you're most fertile during this time, you can still try to conceive every two or three days regularly throughout the month to maximise your chances.

■ **Mistiming ovulation:** If you have an ovulation predictor kit, or if you're charting your basal body temperature or using the calendar method to try to identify ovulation, you may think it makes sense to have sex the day of ovulation – but that may be too late. After ovulation, the egg can be fertilised for only about 24 hours. If you're wrong about ovulation, you'll have to wait to try again the next month. Also, as sperm has the potential to survive for up to 24-48 hours, it is highly recommended for you to have sex on alternate days four to six days prior to ovulation and continue doing so for another four to six days after it.

■ **Having too much sex:** Some couples assume that conceiving is a simple formula; the more sex you have, the easier and sooner you'll conceive. But more isn't always better. If it's for reproductive purposes alone,

having sex multiple times a day or even every single day could cause 'burnout,' and the couple may begin to view sex as little more than a pre-ovulatory chore which does nothing to aid conception.

■ **Neglecting your own health and wellbeing:** To maximise fertility, it's important to make nutritional and lifestyle assessments of both your diets, work-life balance, your relationship, and also knowledge and awareness of your own fertility. Mind, body, emotional and psychological factors, such as stress levels or poor diet and how you are managing them can all adversely affect your chances of conception. Hormonal balance is so important when it comes to fertility, and all of these cause huge issues on hormone levels within the body.

■ **Not getting help soon enough:** No one wants to admit they may have a problem, but if you are aged 30 or over and have been trying to conceive for more than a year, then it's best to seek medical advice. Many couples also wrongly assume that the woman may have a problem, when, in fact, in 15 per cent of couples it will be solely a male fertility problem and in around 25 per cent there will be a problem with both partners."

Jenny Bodenham BA(Hons), Dip.ION, Nutritional Therapist at Higher Nature, added: "Whilst research indicates that older couples are more likely to be unable to conceive, factors other than age, such as stress, obesity/metabolic syndrome, endocrine imbalance, nutritional deficiencies, oxidative stress and environmental and dietary toxins are all thought to play their part in affecting the chances of conception."

And Hall advised: "Obesity is known for its association with health conditions, such as diabetes and heart disease, yet less commonly debated, obesity is also linked to infertility. Epidemiological data suggest that obesity accounts for six per cent of primary infertility. Unfortunately, data also show that patients

with a BMI greater than 30 have up to 68 per cent less chance to have a live birth following their first 'assisted reproductive technology' cycle compared with women with a BMI less than 30. Equally, low BMI and underweight individuals are suggested to be associated with lower pregnancy rates."

UNDERLYING ISSUES

Whitney believes we need to look more at an overall plan, rather than pre-conception alone

"The peri-conceptual period, and throughout pregnancy and lactation, should be viewed as a continuum; too often these three stages are treated and discussed separately from both a scientific and a public health perspective. We should attribute equal weight to each nutrient and ensure that our dietary plans, protocols and supplements cater to the requirement of the individual, and not to any specific nutrient hierarchy that we have imposed. In this vein, I would look to consume a range of foods from a broad and diverse nutritional protocol, whilst looking to ensure that any supplement regime is supplying a full spectrum of nutrients at effective dosages," he explained.

But most importantly, he said, it should be an individualised approach.

"Every nutritional therapist will have a different approach. That approach can be tailored to the individual and their needs, as each person is different. In my experience whilst I was practicing nutritional therapy, I keep asking myself the question, why? I asked this of myself in respect to nutrition, anatomy and physiology and I asked this of the person," he explained.

"I also focused on three key aspects. They are diet and supplementation, lifestyle and their mental health. Nothing can be accomplished if one's mental health is the barrier. Obviously, I am not a psychologist, but



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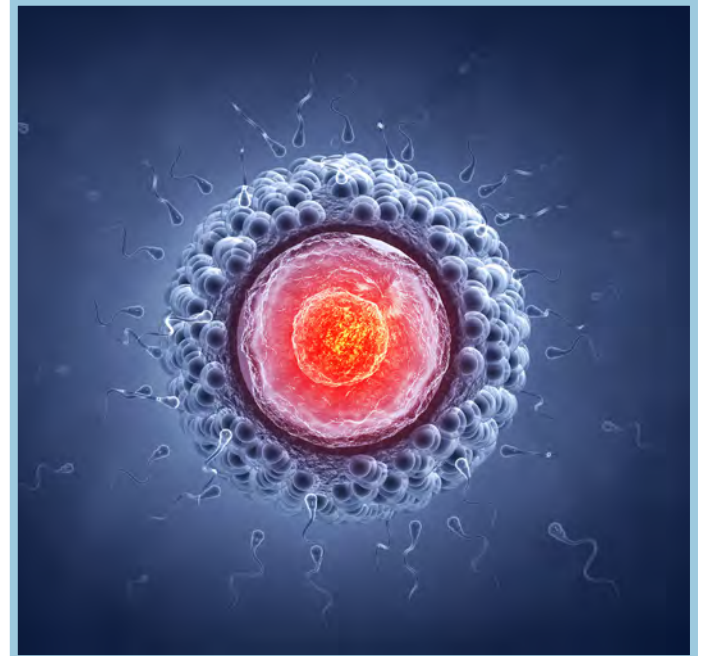


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we can be supportive of this. Their lifestyle has to be supportive of their health and health goals. The WHO recommend that strategies for tackling chronic diseases shift away from reactive acute health care toward promotion, prevention and control, with interventions to address both the underlying causes and to reduce the development of chronic conditions and complications for people at high risk or with established chronic disease. How we choose to live our lives and the decisions we make will benefit or impair our health. Then, our main role is to make sure that there are no dietary deficiencies, no repercussions from the diet we consume and using nutritional supplements appropriately to supplement our diets."

Dr Glenville continued: "I would suggest that couples see a Nutritional Therapist if they have not conceived within six months of trying. They should also be seeing a reproductive medicine specialist, especially if the woman is over 35, in order to rule out any medical reason that they are not conceiving, for example, blocked fallopian tubes. With nutrition, the aim is to check for any nutritional deficiencies and also to look at other issues, such as adrenal stress and digestive problems, which would affect absorption of nutrients."

NUTRITIONAL DEFICIENCIES

The effect of nutritional deficiencies can be huge when it comes to a couple conceiving and many experts advise this is the cornerstone of addressing fertility issues.

"Any nutritional deficiency can impair our fertility. The late great Dr. David Smallbone, M.B., Ch.B., L.R.C.P., M.R.C.S., M.F. Hom., F.C.O.H., a former President of the Food & Health Section of the Royal Society of Medicine (UK) once stated: 'I believe that providing adequate nutritional materials can and does influence the body

systems. It becomes apparent that important systems, such as the endocrine system, can be affected by correct nutrition but it needs time and six months is not an unreasonable amount of time, especially when several years of nutritional abuse lie behind the problem. Unless the nutritional requirements of the body are specifically catered for, it is highly unlikely that full health can be expected'," Whitney explained.

So, what specifically should you be aware of?

"Dietary factors can have a huge impact on fertility. It has been reported that trans fats in the diet are related to reduced fertility, whilst omega 3 essential fatty acids have the opposite relationship. Furthermore, micronutrient deficiencies can reduce fertility; of upmost importance appear to be folate, vitamin B12 and vitamin D for female reproduction, plus zinc for male reproduction," Hall explained.

Shaw added: "General, all round macro and micro nutrients are deficient. Most researched nutrient deficiencies can be iron and folic acid. Other deficiencies can be B6, zinc, magnesium essential fatty acids and protein. Both men and women could benefit from a general multivitamin. Men could benefit from zinc, selenium, L-Carnitine, vitamin C, 5-MTHF, B12 in particular. Women could benefit from 5-MTHF, zinc, B6, B12, vitamin C, selenium, and magnesium, in particular."

EATING FOR CONCEPTION

In terms of what to cut out, Bodenham recommended: "Avoid trans fats, which interfere with the essential fatty acid pathways and may increase the risk of anovulatory infertility, artificial sweeteners, additives, preservatives and chemicals, alcohol (studies suggest a negative effect on fertility levels for both partners⁽³⁾), caffeine, refined sugar," she explained.

And then the focus should turn on the right foods to

increase.

"Put the emphasis on a healthy diet, with good amounts of vegetables and also fruit, with particular emphasis on the vegetables. Male fertility research is now focusing on antioxidants so the amount of different coloured fruits and vegetables we can incorporate into the diet is important," Dr Glenville recommended.

"Eat unrefined carbohydrates, go for organic food where possible, include oily fish, nuts and seeds and avoid or reduce added sugar in foods and drinks. Eating the right type of fats is particularly important for fertility. Just small increases in the consumption of trans fats can double the risk of anovulatory infertility. Also, for problems with ovulation like PCOS, substituting just five per cent of the calorie intake as vegetable protein rather than animal protein reduces the risk of not ovulating by 50 per cent."²

Bodenham continued: "Plenty of colourful antioxidant-rich fruits and vegetables, such as kale, spinach, Brussels sprouts, broccoli, green, red and yellow peppers, tomatoes, carrots, berries and oranges. Protein-rich foods, such as chicken, turkey, eggs, fish, nuts, seeds and legumes, which provide important amino acids as well as a host of vitamins, minerals and essential fats, complex carbohydrates, such as wholegrains, including brown rice, oats and wholemeal bread to provide fibre and important nutrients, such as magnesium, selenium, chromium and B vitamins, and oily fish, nuts, seeds and their oils provide the omega 3 and 6 essential fatty acids."

West highlighted the importance of both iodine and choline for conception.

"The best source of choline is eggs, especially, egg yolk. Many women can be deficient in choline so it's necessary to include it in your diet as it's needed for early foetal development," she explained, adding:

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"Foods such as samphire are a really good source of iodine, which is vital for the thyroid and ovaries."

Shaw added: "Optimise nutritional status, increase fruit and vegetable quantity per day, unoxidised poly unsaturated fatty acids in nuts, seeds, fish, 0.8-1g of protein per KG of body weight and a diet high in antioxidants."

CUT THE TOXINS

As already discussed, what you put in your body can have a huge impact on health, and consequently, the body's ability to conceive.

"Caffeine can be an issue for fertility as it is known that having four cups of a caffeinated drink a day makes it 26 per cent less likely that a woman will conceive³ and drinking only two cups of coffee (200mg of caffeine) a day is associated with a 25 per cent increased risk of miscarriage.⁴ And problems with sperm health are connected with increased coffee intake⁵," Dr Glenville explained.

"Alcohol will also make it more difficult for the woman to get pregnant⁶ and that applies to the man too. Alcohol can lower sperm counts and will also block the body's ability to absorb fertility boosting nutrients like zinc. It can also cause abnormalities in the head of the sperm, which is important for healthy fertilisation.⁷

"A woman is twice as likely to get pregnant if she doesn't smoke compared to a woman who does.⁸ And smoking is linked to an increased risk of miscarriage.⁹ We know that chemicals in tobacco smoke can damage DNA in sperm, which can make it harder to conceive because fertilisation can't take place or if it does, it can increase the risk of a miscarriage as nature will always work on survival of the fittest. abnormal)."

Other toxins are also a concern, as Hall explained: "An investigation into the effect of environmental pollutants

on couple fertility revealed that polychlorinated biphenyls had the greatest effect on both male and female infertility. Subsequently, persistent environmental pollutants were found in semen, follicular fluid, and genital tract fluid, thus suggesting a role in reduced fertility in both sexes."

FOLIC ACID

One of the best-known nutrients for couples planning a child is folic acid, and its importance must not be underestimated.

Hall explained: "The Scientific Advisory Committee on Nutrition have lobbied for the mandatory folic acid fortification of flour since 2006. It was reported that a sub-optimal folate status is associated with neural tube defects and so fortification of common foods, such as bread, were deemed a viable option that would support folate status without supplementation in those who may have sub-optimal levels. Consequently, countries that have implemented folic acid fortification have experienced large reductions in the incidence of neural tube defects. Furthermore, it was observed that women undergoing 'assisted reproductive technologies' had significantly greater successful live births when serum folic acid and vitamin B12 status were greater than average."

Bodenham added: "Folic acid is, however, not the only B vitamin that is important during the pre-conceptual period; vitamin B6 is crucial for hormone balance and B12 is thought to help improve low sperm counts⁽⁷⁾. B vitamins and folic acid also support healthy homocysteine levels – raised homocysteine has been associated with pregnancy complications and miscarriage⁽⁸⁾."

ESSENTIAL FATS

Dr Glenville explained: "The omega 3 fatty acids have far reaching effects for both male and female fertility. Sometimes, immune problems may be affecting a

ZINC

"Low zinc status is believed to be an important risk factor for low sperm quality and idiopathic male infertility⁽²¹⁾," Bodenham explained. "Found in high concentrations in both the male reproductive organs and sperm, zinc supplementation is thought to improve sperm count and testosterone concentration, as well as playing a role in antioxidant status and folate absorption⁽²²⁾."

"In women, zinc plays a vital role in hormone regulation, egg production and the maintenance of proper follicular fluid levels. Low levels of zinc are thought to cause DNA damage and research on the role of zinc and copper in pregnancy suggests that maternal deficiency of one or both trace elements may be associated with the occurrence of spontaneous abortion⁽²³⁾."

Another mineral, selenium, is important, with Hall commenting: "Selenium is reported as a key mineral required for normal sperm production (spermatogenesis) and plays an essential role in the generation of phospholipid hydroperoxide glutathione peroxidase. A study combining 400IU vitamin E with 200mcg selenium for 100 days in infertile men found significant improvements in semen quality and motility and therefore improved pregnancy rates."

woman's ability to get and stay pregnant. One of the immune antibodies measured is called antiphospholipid antibodies (APAs). These blood-clotting antibodies can prevent implantation and cause recurrent miscarriage by attacking the cells that build the placenta.

"The medical treatment for this is blood thinners like aspirin and heparin. But research has shown that omega 3 fish oil given to 22 women with APAs who ➤



already had three or more miscarriages went on to have 23 pregnancies (one woman has twins) without a miscarriage.¹⁰ Omega 3 fatty acids are also important for male fertility because semen is rich in prostaglandins, which are produced from these omega 3 fatty acids. Men with poor sperm quality, abnormal sperm, poor motility or low count, can have inadequate levels of these beneficial prostaglandins and by supplementing with omega 3 fish oils there was a significant increase in

VITAMIN D

Vitamin D is critical here.

"Seventy per cent of men and women tested at our clinic have less than optimum levels of vitamin D, and this plays a critical role in reproductive health. Deficiency of the vitamin is common amongst the UK population. contributing to normal cell division, the normal functioning of the immune system and healthy inflammatory response," West explained.

Hall added: "The Lifestyle and Fertility Study reported that women with serum vitamin D status >50nmol/L and met the estimated average requirement of 400iu daily had greater incidence of successful live births, when compared to those with sub-optimal, thus suggesting vitamin D status plays an important role in reproductive health. Furthermore, vitamin D receptors are found in the reproductive tissues of both men and women, suggesting a regulatory role of reproductive processes.

"A cohort study identified a positive association between total vitamin D intake and chance of conceiving a clinical pregnancy. There were a significantly higher number of pregnancies and live births among women who met the daily recommended amount of vitamin D and with sufficient serum levels."

sperm count compared to a placebo¹¹."

COQ10

Coenzyme Q10 is another hugely important consideration.

"Coenzyme Q10 is a vitamin-like substance that is contained in nearly every cell of the body. It is important for energy production and normal carbohydrate metabolism. Because of its role in energy production, it is a significant nutrient for men if sperm motility is poor. Coenzyme Q10 is concentrated in the mitochondrial mid-piece of the sperm and provides energy for movement and all other energy-dependent processes in the sperm cell depend on it," Dr Glenville explained.

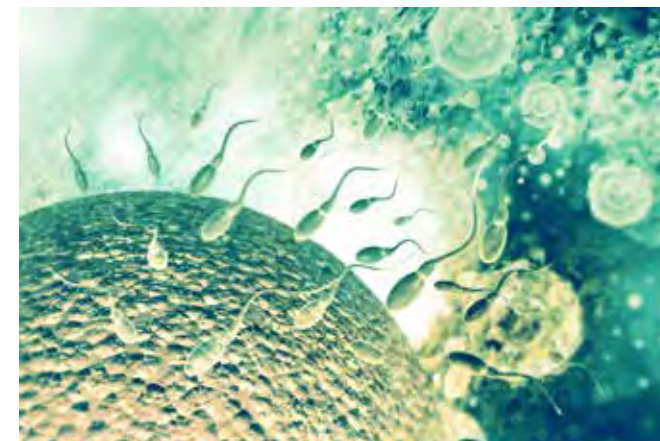
"For women, it is now thought that coenzyme Q10 may be helpful for women who maybe have been told they have 'old' eggs because of their age and this nutrient could be helpful in improving egg quality.

ANTIOXIDANTS

Certain antioxidants are known to be valuable for conception.

"Vitamin C is a primary water-soluble antioxidant known to recycle vitamin E and improve fertility outcomes in women with luteal-phase defects. Vitamin C plays a crucial role in the synthesis of collagen, growth and repair of ovarian follicles and development of the corpus luteum. Vitamin C is best co-prescribed with bioflavonoids, which strengthen capillaries, prevents miscarriage and breakthrough bleeding during pregnancy," Hall explained.

"Vitamin E is a well-documented antioxidant and has been shown to inhibit oxidative damage to sensitive cell membranes. A randomized controlled trial, that investigated the effect of vitamin E (600mg daily for 12 weeks) on spermatozoa demonstrated an improvement



in the function of spermatozoa, therefore enhancing the ability of the sperm to penetrate the egg. A further study found that men who experienced infertility showed an improvement in the levels of lipid peroxidation, sperm motility and led to improved conception rates when supplemented with vitamin E, compared to placebo."

AMINO ACIDS

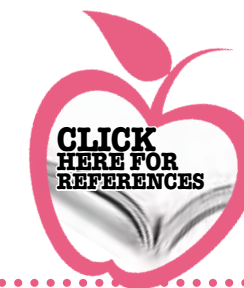
Keep in mind some specific amino acids that are powerful for conception.

"Two amino acids, L-arginine and L-carnitine, are particularly important for male fertility. The L-arginine is essential for healthy sperm production and protects the sperm against oxidative damage¹⁴," Dr Glenville explained. "The higher the levels of L-carnitine in sperm cells, the higher the sperm count and motility.¹⁵

Hall added: "Arginine is required for the replication of cells, making it essential in sperm formation. It also acts as a biochemical precursor in the synthesis of putrescine, spermidine, and spermine, which are thought to be essential to sperm motility. Results indicated improved sperm motility as well as greater sexual satisfaction." ●

EXPERT ADVICE

Our panel of nutritional experts offer readers advice on dealing with a variety of issues.



Q

I have a number of older clients regularly complaining of poor digestion – why does this appear common when people age, and is there a recommended programme I can follow to support better gut transit?



NATALIE LAMB ADVISED: Our bodies are changing all the time, influenced by the environment around us, the food we eat and, of course, with age. Some changes could be due to be the cause of a longer period of poor nutrition and/or lifestyle choices, as opposed to a definitive consequence of old age.

Composition, diversity and activity of the gut microflora is seen to change with age, with fewer *bifidobacteria* and *lactobacilli* and a less diverse range of species.¹ Composition appears to correlate with whether they reside in the community, day-hospital, rehabilitation or in long-term residential care.² Interestingly, higher levels of beneficial *bifidobacteria* were seen in traditionally living elderly rural

Japanese, who consumed a high intake of dietary fibre than those living in urban areas.³

Digestive function and food choices appear to change with age:

- Reduced stomach acid levels,⁴ subsequently comprising protein digestion⁵ and possibly resulting in greater putrefaction by certain bacteria in the large colon.

- Decreased digestive enzyme production.⁶
- Reduction in absorptive capacity.⁷
- Decreased intestinal motility
- Altered gut immune function.⁸
- Reduced desire to cook.
- Loss of sense of taste and smell.
- Decreased appetite.
- Poor chewing ability – dentures or reduced muscle strength in the jaw.

■ Impaired movement can negatively impact on the ability to shop for and cook and on the stimulation of colonic muscle.

Insufficient dietary fibre or water in the diet will cause the faeces to move more slowly. Encourage clients to eat more natural wholefoods, particularly vegetables or to supplement with a gentle fibre, such as psyllium husk, shown to be much gentler than wheat bran⁹ and without the side effects of laxatives.¹⁰ Psyllium is also popular in cases of loose stools due to its ability to absorb excess liquid and thereby improve stool consistency.¹¹

One solution to help balance the gut flora is to consume fermented foods or an easy to take probiotic supplement. Improvements in constipation in the elderly have been seen with probiotics, increasing stool frequency by 24 per cent in one study.¹² Additional digestive enzyme supplements and probiotic bacteria have been demonstrated to relieve lactose intolerance, support a healthy gut lining and to improve lactose digestion.

Prebiotics selectively stimulate the growth and/or activity of beneficial

bacterial species already resident in the colon.¹³ *Lactobacilli* and *bifidobacteria* are more efficient at fermenting these and produce a lot less (if any) gas. Found naturally in foods such as Jerusalem artichokes, onion, garlic, asparagus, chicory, leeks and bananas, or purchased in a supplement form (for example, GOS, FOS and inulin). Prebiotic foods and starchy vegetables could, however, cause some bloating in some people until their levels of *bifidobacteria* are increased so it is wise to increase intake gradually.

THE EXPERT



NATALIE LAMB Dip NT mBANT is a qualified Nutritional Therapist, who studied a three-year diploma in Nutritional Therapy at the College of Naturopathic Medicine (CNM) and is a member of The British Association of Nutritional Therapists (BANT). Natalie saw clients in a private clinic in London for two years before joining Probiotics International (Protexin), manufacturers of Bio-Kult and Lepicol ranges.

Q

From a nutritional perspective, what does the science tell us about what our skin needs to be healthy?

KATHERINE PARDO EXPLAINED: It is now widely accepted that the health of your skin is a reflection of what's going on inside your body. Most of us strive to have healthy, glowing, plump-looking skin and the science would strongly suggest that this should start from within. Limiting our exposure to harmful external factors is only half the story; by also nourishing our skin with the proper nutrients, we can help to improve the appearance of our skin, and slow down the inevitable signs of ageing.

Oxidative stress, from external or internal sources, is one of the most significant factors affecting prematurely ageing skin, and long-term exposure to the sun's UV rays and cigarette smoke are perhaps the most damaging of all. Oxidants are highly destructive because they destroy fats, proteins, connective tissues and can even damage your DNA.

One of the most significant steps you can take to protect your skin against this type of damage is to reduce exposure to oxidative stressors, and by increasing your intake of antioxidants through the diet. Antioxidants are found in rich supply in brightly coloured fruits and vegetables and it's recommended that we now aim for nine portions a day in order to meet our body's antioxidant requirements.

Your skin needs water like a balloon needs air. Deprive your skin cells of water and they will become shrivelled and saggy, like a deflated balloon. Not only do you need to drink plenty of fresh filtered water daily to support healthy digestion and elimination, flush out unwanted toxins and to keep your skin cells plump and taut, you also need to make sure your diet

contains high quality sources of protein and beneficial omega 3 and 6 fats as these help the skin to retain its moisture and improve hydration.

Every cell membrane contains essential omega 3 and 6 fats and these fats keep the membranes soft and smooth. Membranes that don't contain enough fat struggle to retain water and quickly lose their plumpness. In fact, skin problems are among the first signs of a deficiency in essential fats. Symptoms such as dry, flaky, itchy, inflamed skin can often be dealt with simply by adding more essential fats into the diet.

Collagen is a crucial structural component of skin. It is a tough, special type of connective tissue, made up of bundles of protein fibre, and is a bit like the 'glue' that holds skin together. Vitamin C is essential for collagen production, so it's important to maintain an optimal daily intake, especially as you get older, when collagen's ability to respond to daily stresses is reduced.

Whilst collagen provides strength and rigidity, elastin is what gives skin the elasticity to stretch and then return back to shape. It is believed that changes in the structure of elastin may be one of the factors involved in the development of wrinkles as we age. Both collagen and elastin are bound in a fluid made up of several substances, including water, just one of the reasons why water is so important for youthful skin – it supports the function of these vital skin structures. A deficiency in vitamin C can weaken elastin fibres as you age so it's crucial to include plenty of this essential nutrient in your diet to support youthful skin and elasticity.



Youthful, radiant, glowing skin is a reflection of optimal health overall. So the good news is that the steps you take to look after your skin will naturally benefit your wider health too.

It is also crucial to replace key nutrients that are easily depleted with age, such as CoQ10 and water-soluble nutrients such as vitamin C that are needed daily. You can even make use of supplemental collagen for an extra boost, along with unique plant compounds, such as Maritime bark extract and citrus and rosemary extracts that have been shown to reduce wrinkles, improve elasticity, smoothness and firmness.

THE EXPERT



Katherine Pardo BSc (Hons), Dip ION is Head of Nutrition at nutritional supplement company Nutri Advanced, one of the leading educators in the field of Functional Medicine. She originally trained as a Nutritional Therapist at the Institute for Optimum Nutrition, in London, and is committed to helping people make realistic and sustainable food and lifestyle choices for improved health and wellbeing.

Q

I see clients with varied digestive complaints; in which cases would it be right to recommend a digestive enzyme, and what should my clients know when it comes to the right type?

DR MIKE MURRAY EXPLAINED: One of the biggest mistakes many nutritionally oriented practitioners make is thinking a patient's digestive problems are being caused by the foods they are eating. In many cases, it is not the foods, but rather the lack of proper digestion.

A major advancement in nutritional medicine is the development of potent digestive enzyme formulations. These products have the capacity of surpassing our own digestive enzyme efficiency in breaking down the foods we eat.

Lack of proper digestion due to stress, ageing and genetics can lead to decreased secretion or activity of digestive factors, especially digestive enzymes. Lack of digestive enzymes are responsible for a lot of digestive complaints, ranging from minor gas, pain, nausea, and bloating to severe malabsorption and malnutrition. Lack of enzymes are also clearly responsible for the development of food intolerances.

Not only can digestive enzyme supplementation make the dietary approaches to food intolerance work better, in many cases, enzyme supplementation may be more useful than dietary changes. This statement also applies to the popular low FODMAP diet. According to one clinical

trial, simply providing the enzyme alpha-galactosidase alone may produce equal results to a low FODMAP diet without the elimination of so many health promoting foods, as well as eliminate symptoms of the irritable bowel syndrome.¹

Digestive enzymes, especially proteases and lipases, are also an important protective factor against small intestinal bacterial overgrowth (SIBO). Insufficient output of digestive enzymes from the pancreas is associated with many symptoms associated with SIBO and may represent a key underlying factor in many cases. Digestive enzymes are also the likely host defence mechanisms within the gut that prevents the formation of biofilm.

In the past, digestive enzyme supplements have primarily been derived from animal sources, but as concluded in a recent review "the growing study of plant-based and microbe-derived enzymes offers great promise in the advancement of digestive enzyme therapy".² There is no question that these newer preparations are significantly improved over what is generally considered the standard of care.

Plant-based and microbe derived enzymes are stronger, work faster, have greater activity in a broader pH range, and

are more stable than animal sources of proteases, lipases, amylases, and other digestive enzymes.

One of the key things for practitioners to look for are products that use technology, such as the Thera-blend process, to carefully select of variants (isoenzymes) of each digestive enzyme category and to then mix these isoenzymes to be effective throughout the entire gastrointestinal tract. Most supplemental enzyme formulas are effective or active within a very narrow pH range. That can lead to failure to produce clinical results. Therefore, it is important to choose enzyme preparations that are active throughout the entire gastrointestinal tract.



THE EXPERT



DR MICHAEL MURRAY is the Chief Science Officer at

Enzymedica, the makers of Enzyme Science, the practitioner brand of thera-blended enzyme supplements created for clinical application. Dr Murray is the author of over 30 books, including *The Encyclopedia of Natural Medicine*, and has been named 'The Voice of Natural Medicine' by *Nutrition Business Journal*. Dr Murray leads the Enzymedica team in creating new innovations in product development, as well as leading research efforts to create next generation formulas. In addition, Dr Murray works closely with the Roskamp Institute in Sarasota, FL. This non-profit organisation performs cutting edge research for many organisations and is renowned for research on Alzheimer's disease and other complex diseases.



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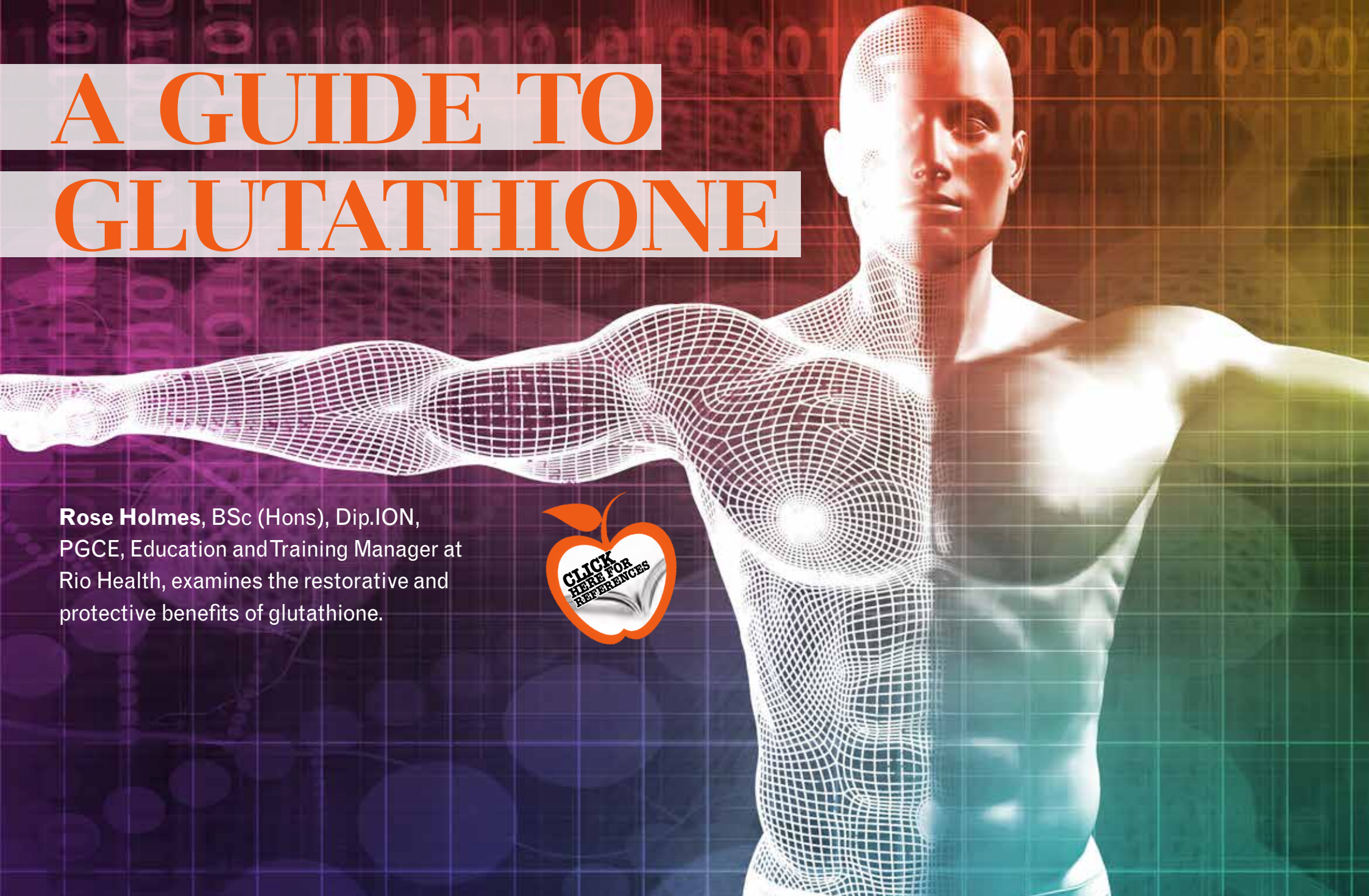
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A GUIDE TO GLUTATHIONE

Rose Holmes, BSc (Hons), Dip.ION,
PGCE, Education and Training Manager at
Rio Health, examines the restorative and
protective benefits of glutathione.



Sometimes referred to as the body's master antioxidant, glutathione repairs, protects and defends body cells, aiding the healing response when inflicted with extreme oxidative damage.

Glutathione is critical to cell survival; depletion sensitises cells to a wide variety of oxidant stressors, indicating the importance of balanced glutathione levels for protection against endogenous low-level oxidant exposureⁱ. Lowered levels of glutathione correlate with several human diseasesⁱⁱ.

Glutathione (γ-glutamylcysteinylglycine) is a tripeptide synthesized in the body from the amino acids, L-cysteine, L-glutamic acid, and glycine. Glutathione synthesis is tightly regulated and is determined by cysteine availability and the activity of glutamate cysteine ligase (GCL), the rate-limiting enzymeⁱⁱⁱ. Cysteine is found in most high-protein foods and in some plant foods (for example, lentils, seaweed, and broccoli)^{iv}.

The glutathione molecule has a sulfhydryl (SH) group (contributed by cysteine), which may account for the strength with which it donates electrons. A sulfhydryl is a functional group consisting of sulphur bonded to a hydrogen atom and is also called a thiol. The coupling of 2 thiol/sulfhydryl groups results in a disulphide bond (aka disulphide bridge); disulphide bonds connect amino acids in protein formation.

Glutathione exists in two states: GSH (reduced) and GSSG (oxidised). In the reduced state, glutathione sulfhydryl (GSH) can neutralise reactive oxygen species via the ability of (the thiol group of) cysteine to donate a reducing equivalent. Once an electron has been donated, GSH becomes reactive and liable to react with another reactive glutathione, pairing to form GSSG – glutathione disulphide, the oxidised state, which is neutral and non-toxic.

The ratio of GSSG to GSH is an important factor in maintaining oxidative balance of the cell. Glutathione reductase catalyses the reduction of GSSG to the sulfhydryl form (GSH)^v and aids maintenance of this balance.

FUNCTIONS OF GLUTATHIONE

Functions of glutathione include detoxification, antioxidant defence, maintenance of thiol status and modulation of cell proliferation^{vi}. Glutathione (GSH) has an important role in aiding neutralisation and removal of toxins, binding with toxins, particularly heavy metals, to form a water-soluble substance capable of excretion through the liver.

"Functions of glutathione can be grouped broadly in three overlapping categories; antioxidant, detoxifier and immune system enhancer^{viii}."

Glutathione is found in all body cells, with the highest concentration found in the heart, muscles and liver, where it plays a critical role in protective processes, including detoxification and reduction of peroxides and radicals. In addition, via GSH:GSSG ratio, glutathione has a number of other functions, including maintenance of redox state, protein synthesis, microtubular function (re intracellular transport), adenylate cyclase regulation (re conversion of ATP to cAMP and intracellular signalling) and transport and release of neurotransmitters^{vii}.

Functions of glutathione can be grouped broadly in three overlapping categories; antioxidant, detoxifier and immune system enhancer^{viii}.

Arguably the most important naturally-occurring antioxidant in cells, glutathione has high electron-donating capacity and high intracellular concentration, thus great reducing power^{ix}. Unlike other antioxidants which are obtained through the diet, glutathione is an endogenous antioxidant; it functions in conjunction with exogenous antioxidants, such as vitamin C and vitamin E, allowing these antioxidants to be recycled.

Glutathione also provides the key enzyme system for detoxification of many noxious substances. Glutathione

transferase enzymes (GSTs) catalyse detoxication of electrophilic compounds (i.e. those which accept electrons) by conjugation to glutathione^x. The glutathione conjugation reaction is the first step of the mercapturic acid pathway, one of the most important detoxication processes, and specific GST forms are involved in the conjugation of carcinogens^{xi} and organophosphorus pesticides^{xii}.

Glutathione is the cofactor for glutathione peroxidase (GPx) detoxification of peroxides. GPx utilises GSH to reduce lipid hydroperoxides to GSSG and water; hydrogen peroxide and lipid peroxides are detoxified by reduced glutathione, generating oxidized glutathione^{xiii}. GPx are a group of enzymes, many of which are selenium dependent^{xiv}, each occurring preferentially by cell type, in specific tissues. Glutathione depletion may result in increased intracellular peroxide levels and increased oxidative stress, and lipid peroxidation and oxidation of proteins and nucleic acids may occur^{xv}.

Regarding immune enhancement, glutathione appears to be critical in sustained functioning of the immune system and may enable production of white blood cells. Studies confirm the essential role of intracellular GSH in lymphocyte proliferation^{xvi} and cysteine, the rate-limiting amino acid in glutathione, has been shown to have a regulatory role in the immune system, being released by macrophages, and regulating immunologically relevant functions of lymphocytes^{xvii}.

Recently, scientists from Luxembourg University found glutathione primes T-cell metabolism regarding inflammatory responses; glutathione may improve immune cell activity, which may improve immune response against pathogens and cancer^{xviii}.

WHAT AFFECTS LEVELS?

According to Dröge and Breitkreutz (2000), immune system function is enhanced when there is 'a delicately balanced intermediate level of glutathione'^{xix}. Immunological functions in diseases associated with a cysteine and glutathione deficiency

may be significantly enhanced and potentially restored by supplementation^{xxx}. Reduced ability to detoxify (due to depletion of GSH) may account for lowered immune function and increased vulnerability to infection.

Glutathione depletion may be the result of internal or external factors. DNA repair, recycling of vitamins C and E, and immune defence are some internal factors which deplete glutathione. External factors include heavy metals^{xxxi}, alcohol^{xxxi} and pharmaceuticals^{xxxiii}.

Various substances besides the constituent amino acids glutamate, cysteine and glycine may promote GSH production; these include N-acetyl-cysteine (NAC)^{xxv}, α -lipoic acid^{xxv}, selenium^{xxvi} and vitamin B6^{xxvii}. Daily consumption of GSH supplements was shown to be effective at increasing body compartment stores of GSH^{xxviii}.

ROLE OF GLUTATHIONE IN AGEING AND DISEASE

Glutathione has been referred to as 'Master Defender' of the brain, heart, lungs, eyes, and liver, and of vibrant youth and energy^{xxix}, and a PubMed search reveals more than 50,000 human studies on glutathione.

Its important antioxidant and detoxification roles mean glutathione depletion may have widespread effect beyond the liver, and association has been found with disease occurrence and progression. For example, depletion has been shown to perturb the nitric oxide system, resulting in severe hypertension in normal rats^{xxx} and, in humans, hypertensive patients have reduced activity and decreased content of antioxidant enzymes, including glutathione peroxidase, catalase and superoxide dismutase (SOD)^{xxxi}. Other studies have shown that combined values of glutathione peroxidase activity and total antioxidant status are significant determinants of age-related macular degeneration status^{xxxii}.

Glutathione levels may decline in a variety of tissues during ageing, predisposing these to the effects of stress^{xxxiii}.

Neurodegenerative diseases have shown association with increased age and dysfunction of glutathione in the brain; a 2005 review of the effects of stress and ageing on glutathione metabolism found Parkinson's disease the most strongly associated with GSH metabolism dysfunction^{xxxiv}. Data suggests GSH levels in specific brain regions may provide a biomarker for Alzheimer's disease^{xxxv} and whole blood glutathione may be a useful biomarker in PD^{xxxvi}. Antioxidant and detoxification functions of glutathione suggest an important role for this tripeptide in the neurological, as well as immune system; GSH redox imbalance may be a primary cause of brain disorders^{xxxvii}.

Glutathione levels are reduced also in HPU (Hemopyrrolactamuria)^{xxxviii}, a metabolic disorder that results in improperly synthesised haem molecules, causing large amounts of zinc, vitamin B6 and manganese to be excreted from the body. Haem is the building block of haemoglobin, as well as of cytochromes, the enzyme components used in the mitochondria for cellular signalling and energy production, and in the P450 pathway of liver detoxification.

Chronic infections (for example, Lyme disease and co-infections) are thought to be one of the causes of HPU (aka KPU/kryptopyrroluria); Dr Dietrich Klinghardt has found Lyme patients consistently present with low glutathione levels^{xxxix}; for many Lyme patients, nutrient and GSH status improves with nutrient supplementation alongside antimicrobials^{xl}.

A deficiency in these nutrients is common amongst the population, and many people might benefit from supplementation due to its ability to reduce oxidative stress. Glutathione can be supplemented for protection against age-related conditions. In cases of chronic or severe illness, glutathione may be taken either as a food supplement (capsules) or by injection. Look for reduced glutathione; the cost reflects the poor stability of glutathione and thus expense of producing a quality product.



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BSc (Hons), Dip.ION,
PGCE is a Nutritional

Therapist with special interest

in chronic illness, circadian rhythm disruption and healthy ageing. She is the Education and Training Manager at Rio Health, a supplier and distributor of natural products from around the world. The company specialises in South American botanicals, offering a selection of high quality, whole-plant botanicals and extracts. Rio Health is the UK distributor for NutraMedix, epigenar, Green Magma and Silidyne.



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Leading the way in mycotherapy

Hifas da Terra is pioneering when it comes to mycotherapy, and the last 12 months has seen huge growth. Rachel Symonds found out more about the future plans for this innovative brand.

The market for mycotherapy, better known as medicinal mushrooms, has moved on hugely in the last year or so, as increasing numbers of people become aware of their power. Of course, this has signalled a rise in the number of brands on the market, but one brand that has led the way in terms of excellence and education is Hifas da Terra.

The company has been around since 1999, having been founded to bring the power of mushrooms to a wider audience. And, in the last year, the company has gone from strength to strength.

"In the UK, our team has grown over the last 12 months. We now have a dedicated team of Nutritional Therapists, who support practitioners who use Hifas da Terra products in their clinical practice, as well as consumers who want to find out

how best to use our supplements for their individual need," commented Biologist and founder, Catalina Fernandez de Ana Portela.

"We have started a practitioner dedicated Facebook group, called Mycotherapy with Hifas da Terra, where we discuss protocols and give advice on any client cases presented to our team by our members. We have also scheduled a series of webinars presented by our in-house team of practitioners. These 40-minute webinars focus on offering bite size information on mycotherapy on various health conditions, from diabetes, digestion, heart disease and many more."

THE HIFAS PRINCIPLES

Hifas da Terra's expertise lies in mycotherapy, and



Founder, Catalina Fernandez de Ana Portela

the expertise within the business means that it has always been a favourite among Nutritional Therapists.

But how does the company position itself in terms of its point of difference?

"Unique mushroom strains developed and refined from years of research and client feedback. Our 11 mushrooms are chosen, cultivated and extracted in specific ways to ensure maximum results. Our team consists of a group of dynamic biologists, researchers, health practitioners and medics, including recognised oncologists, whose expertise provides an invaluable contribution to our company's success," Catalina explained.

She also highlighted the importance of potency and strength,

commenting: "At Hifas da Terra, we produce supplements at a variety of therapeutic strengths to suit our clients particular needs. Our in-house research team is tirelessly working on innovation of our products, assuring the best quality and strength medicinal mushroom supplement available on the market. Our Onco line contains the highest dosage of mushrooms extracts ever produced."

And finally, she highlighted the organic seal and full traceability of ingredients.

"Not many supplement companies in the world can vouch to be able to have control of its production, from growing our own strains to cultivation, extraction of active compounds to

packaging," Catalina added.

"Not many supplement companies in the world can vouch to be able to have control of its production, from growing our own strains to cultivation, extraction of active compounds to packaging."

The products are regularly inspected by the Hifas da Terra quality control team in its laboratories in Spain, are produced to Good Manufacturing Practice standard, and comply with all the strict requirements. They also have the organic European seal.

There is no doubt the market for medicinal mushrooms has become hugely competitive, but Hifas da Terra was one of the early pioneers and focuses on high standards.

Catalina pointed out: "Mushroom supplements of our standard are of purity and quality. Mushrooms act as sponges, and can absorb contaminants from the soil they are grown in. It is this property that makes them a fantastic soil regenerator. However, this also means that mushrooms not grown in strictly controlled and organic environments can contain pollutants and contaminants that are detrimental to human health. We pride ourselves on the purity of our organic certified products that are produced to the pharmaceutical GMP standard.

"What's also missing in the market is the continued support we give to practitioners with our immense education tools, including one-to-one training on mycotherapy, and the launch of our new education portal, together with the International Mycotherapy Institute."

HERO PRODUCTS

The range of Hifas da Terra products spans a host of health areas, and Catalina pinpointed its leading ones.

"One of our star products is Mico-Leo, extract of the Lion's



Mane mushroom (*Hericium erinaceus*). Lion's mane is simply remarkable. Particular compounds we found in our strains – hericenones and erinacines – help modulate the gastrointestinal mucous epithelial membrane repair, leaky gut syndrome and restore balance of the beneficial gut bacteria. Recent studies have shown that these compounds also help stimulate Nerve Growth Factor (NGF), which plays an important role in peripheral neuropathies, especially in those related with diabetes, and regeneration of the myelin sheath – multiple sclerosis and other neurodegenerative diseases,” Catalina explained.

“The extraction process is carried out under strict climatic conditions to preserve the levels of concentration of the main active ingredients, amino acids, enzymes, proteins, minerals and vitamins.”

“This mushroom has been also shown to slow down cognitive decline in dementia conditions, such as Alzheimer's disease. Lion's mane is also highly recommended for those that go through menopause as some compounds that help regenerate NGF have been shown to reduce menopausal symptoms – hot flushes, irritability, anxiety, and sleep disturbance.”

In terms of the production process, all Hifas da Terra products are grown in the natural environment at its headquarters under the ancient chestnut forests of Galicia, in North West Spain. Growing medicinal mushrooms requires temperature control, which creates the optimal environment for growth.

“The majority of our mushrooms are grown on



hardwood logs naturally, whereas mycelium (i.e. the root) does not require all of this process and, therefore, it is much cheaper,” Catalina explained.

“The extraction process is carried out under strict climatic conditions to preserve the levels of concentration of the main active ingredients, amino acids, enzymes, proteins, minerals and vitamins. After harvesting and drying carefully selected mushrooms, they are powdered in a process designed to preserve 100 per cent of the essential ingredients. The powdering process is adjusted for each product to ensure its stability and its optimal absorption properties.

“To better understand the strength of the products, it takes 150kg of raw reishi mushrooms to produce 15kg of dried reishi mushrooms. This amount will then produce 1kg of our reishi extract, our high potency range for chronic disorders.”

Catalina adds that despite the market growing, and more products coming to market, Hifas da Terra will continue to do what it does best.

“Apart from the superior quality of our products, we offer dedicated practitioner support. We provide expert advice and one-to-one training to all of our practitioners and guide them through using our products for their specific client need. Our in-house practitioners are also available for specific consultations via calls or Skype. No one else is offering such a service free of charge,” she explained.

“We are planning further expansion of our team to be able to support more practitioners around the UK, the rest of Europe and soon the U.S. We also have numerous upcoming events in the pipeline, from webinars to seminars and talks. Our aim is to educate practitioners and give them confidence to use our unique products in their practice.”●

CPD DIRECTORY

If you want to top up your CPD points, take inspiration from these forthcoming events.

BANT Supervision Group

Would you like to grow your nutrition business and build confidence? Why not join a Nutritional Therapy Supervision Group and benefit from targeted support for your particular Nutritional Therapy dilemmas?

March 7 AM – Tunbridge Wells

March 7 PM – Shoreham-by-Sea

March 15 – Richmond

May 2 AM – Tunbridge Wells

May 2 PM – Shoreham-by-Sea

May 3 – Richmond

CPD hours: BANT two hours

Speakers: Carmel Buckley

Cost: £30

Website: bant.org.uk/members-area/bant-supervision/meet-the-supervisors/#Carmel_Buckley

BANT Supervision Group

March 14 – Manchester

April 25 – Manchester

CPD hours: BANT 2.5 hours

Speakers: Dalbinder Bains

Cost: £30

Website: bant.org.uk/members-area/bant-supervision/meet-the-supervisors/#Dalbinder_Bains

BANT Online Supervision Group

March 19 – online

CPD hours: BANT two hours

Speakers: Carmel Buckley

Cost: £30

Website: bant.org.uk/members-area/bant-supervision/meet-the-supervisors/#Carmel_Buckley

BANT Supervision Group

March 19 – Colchester

March 23 – Woolpit

April 30 – Colchester

May 18 – Woolpit

CPD hours: BANT two hours

Speakers: Fiona Mealing

Cost: £30

Website: bant.org.uk/members-area/bant-supervision/meet-the-supervisors/#Fiona_Mealing

BANT Supervision Group

April 20 – Hereford

CPD hours: BANT two hours

Speakers: Debbie Lewis

Cost: £30

Forthcoming webinars...

Target Publishing, which publishes *Nutrition I-Mag*, hosts a series of free webinars for practitioners. Register at www.ihcanconferences.co.uk/webinar



Organised by the
IHCAN Conference Team

Viruses and Viral Infections: Natural Therapies



Presented by Rose Holmes,
Nutritionist, BSc, Dip.ION, PGCE
Tuesday, March 6, 6.30pm-7.30pm

Viruses have the capacity to enter cells, snip off sections of DNA or RNA and weave them into their own genetic structure; they are said to 'aid the intermingling of all life forms on earth'.

Whilst many viruses do not cause disease and are necessary components of their host's life, these particles are also infectious agents that may result in a variety of symptoms and,

in some cases, death. Viruses evolve faster than anything else of the planet and can cause the common cold and cold sores, as well as epidemics and pandemics.

In this webinar, we will discuss:

- Viral respiratory infections.
- Viral encephalitis infections.
- Gastrointestinal viral infections.
- Herpesviridae family of viruses (including HSV, EBV, varicella zoster and cytomegalovirus).
- Human Papillomavirus (HPV) and association with some cancers.
- Strengthening the immune system.
- The threat of emerging viruses.
- Acute, chronic and latent infections
- Immunodeficiency.
- Diet and lifestyle to support anti-viral protocols.
- Herbal anti-virals and mechanisms by which these have effect.

Forthcoming webinars...

The Gut: Where Bacteria and Immune System Meet



Presented by Christina Georgallou
BSc (Hons), DipCNM
Tuesday March 20, 6.30pm-7.30pm

It is now understood that the gastrointestinal wall is home to 70 per cent of the cells that make up the immune system. The gut microbiota that resides in the gastrointestinal tract provides essential health benefits to its host, particularly by regulating immune homeostasis. Moreover, it has recently become obvious that alterations of these gut microbial colonies can cause immune dysregulation, leading to autoimmune disorders and allergies.

During this webinar, Christina Georgallou will review the advances in our understanding of how the gut microbiota regulates innate and adaptive immune homeostasis and the evidence validating a strain specific probiotic approach to supporting a client's immunity in practice.

Great Minds: Optimising Brain Health And Performance With Natural Nootropics



Presented by Phoebe Liebling BSc (Hons)
DipNT mBANT mNNA rCNHA rGNC
March 27, 6.30pm-7.30pm

Modern lifestyles are extremely taxing to our mental faculties and nervous system. Rarely do we consider food as the fuel for our brain. We are constantly stimulated by externalities, often reducing the quality of our sleep, mood and cognitive function. All these factors affect our mental performance, our ability to deal with oxidative stress, and our rate of neurodegeneration. It's time we placed the brain at the centre of our holistic approach to health.

Through lifestyle, food and supplemental choices, how can we support our brain to operate at its highest level, while increasing our chances of disease-free longevity?

This webinar will focus on the micronutrients required by the brain for long-term performance and health, with an introduction to Motion Nutrition's new range of nootropics, formulated by Miguel Toribio-Mateas: Power Up and Unplug.

Digestive Enzymes: Clinical Considerations in IBS, SIBO, Dysbiosis and the Leaky Gut



Presented by Dr Michael Murray
Tuesday May 8, 6.30pm-7.30pm

An in-depth look into the underlying core issues in these common GI disturbances, along with a focus on the clinical use of plant and microbial derived enzyme, will be presented. From dealing with food intolerances, incomplete digestion, biofilm, and microbial adherence, there is a growing scientific rationale on the use of digestive enzymes in a wide range of functional GI disorders.

Some of the questions to be answered in the webinar include; Is fecal pancreatic elastase a true indicator of pancreatic enzyme insufficiency? What causes biofilm formation and how can digestive enzymes help dissolve biofilm? What role do digestive secretions play in the prevention of SIBO? How do digestive enzymes influence the microbiome? Plus, there will be a question and answer session at the end of the webinar.

Look out for more free webinars planned for 2018. For more information about webinars, including the topics and the speakers, visit www.ihtcanconferences.co.uk/webinar.



FLOUR FANTASTIC

Christine McFadden reveals the versatile uses of flours for creating health-infused dishes.



Triple chocolate brownies



Roasted tomato and Gruyère cheese tart



Lime leaf-scented blancmange with sesame brittle



Triple chocolate brownies (Makes 16)

Coffee flour adds significant depth of flavour to these chocolate-rich brownies. The batter may seem sloppy, but the coffee flour absorbs more liquid than other flours because of its unusually high fibre content.

INGREDIENTS:

- 60g (2¼ oz) plain flour
- 10g (¼ oz) coffee flour
- 2tbsp unsweetened cocoa powder
- ½ tsp freshly ground black pepper
- 140g (5oz) dark chocolate (at least 75 per cent cocoa solids), broken into small pieces
- 110g (4oz) unsalted butter, diced
- 2 eggs, organic or free range
- 150g (5½ oz) golden caster sugar
- Seeds from 1 split vanilla pod
- Pinch sea salt
- 4tbsp cacao nibs

METHOD:

- 1 Preheat the oven to 180°C/Gas Mark 4, positioning the rack just below the middle of the oven. Grease the base and sides of a 20cm (8in) square cake tin. Line the tin with baking parchment and grease the paper too.
- 2 Put the flours, cocoa powder and black pepper in a sieve set over a bowl. Muddle with your fingers, then push through the sieve. Repeat once or twice more until the mixture is a uniform colour.
- 3 Place the chocolate and butter in a bowl, and melt in the microwave or over a pan of boiling water (see cook's note).
- 4 Put the eggs, sugar, vanilla seeds and salt in a large bowl. Whisk lightly for about 20 seconds, then stir in the melted chocolate mixture. Using a wooden spoon, gently fold in the flour mixture and the cacao nibs until just combined – it's important not to overmix.
- 5 Pour the mixture into the prepared tin, levelling the surface with a wet palette knife. Bake for 20-25 minutes, rotating the tin every 10 minutes, until a skewer inserted in the centre comes out with a small amount of crumbs sticking to it, rather than completely clean. If there is wet mixture sticking to it, bake for another three minutes and check again.
- 6 When you take the tin out of the oven, tap it on the work surface to release air from under the crust. This helps the surface to dry and the mixture underneath to have the desired fudgy texture. Leave in the tin to cool completely before turning out on to a wire rack.

Roasted tomato and Gruyère cheese tart



Lime leaf-scented blancmange with sesame brittle



Cook's note: Melt the chocolate and butter by microwaving on medium for three minutes, stirring every 30 seconds. Alternatively, melt in a bowl set over boiling water.

Roasted tomato and Gruyère cheese tart

(Serves 8-10 as a snack or 6 as a light meal)

Gluten free pastry is rarely as crisp as wheat flour pastry. That said, this quinoa flour pastry is a good solution when a tart is a must-have – for a picnic or buffet lunch, for example. With added rice flour and xanthan gum to help bind the dough, the pastry is lovely to work with, tastes good and looks great when baked. Topped with juicy roasted tomatoes and nutty Gruyère cheese, the tart is packed with flavour. Make the roasted tomatoes in advance and keep in the fridge until ready to use.



INGREDIENTS:

- 150g (5½ oz) quinoa flour
- 90g (3½ oz) rice flour
- 1½ tsp xanthan gum
- Pinch sea salt
- 150g (5½ oz) unsalted butter chilled, diced
- 4 egg yolks, organic and free range, lightly beaten
- 1½ -2tbsp water
- Vegetable oil for greasing

METHOD:

- 1 Preheat the oven to 150°C/Gas Mark 2.
- 2 To make the filling, arrange a single layer of halved tomatoes on a roasting tray. Sprinkle with olive oil, sea salt flakes, freshly ground black pepper and a good few pinches of muscovado sugar. Roast for 1½ to two hours, rotating the tray every 30 minutes, until the tomatoes are shrivelled but still slightly moist. Set aside to cool.
- 3 For the pastry, put the two flours, xanthan gum and sea salt into a sieve set over a bowl. Muddle with your fingers, then push through the sieve once or twice until well blended. Get your fingertips nice and cold, then lightly rub in the butter. Hold your hands well above the bowl so that the flour drifts gently down, incorporating air as it does so, and you can see any fragments of butter that still need rubbing in. Mix in the egg yolks with a fork, followed by enough of the water to make a dough.
- 4 Tip the dough on to a floured work surface and knead briefly until smooth. Gather the dough into a ball, then flatten it into a thick disc about 12cm (4½ in) in diameter, ready for rolling out. Wrap in greaseproof paper and chill for 30 minutes.
- 5 Preheat the oven to 160°C/Gas Mark 3. Lightly grease a 28cm (11in) loose-based tart tin.
- 6 Using a well-floured rolling pin, roll out the pastry on a large piece of baking parchment to a rough-and-ready circle measuring about 33cm (13in) in diameter. Place your tart tin upside down over the circle. Lift up the four corners of the parchment and fold them towards the middle of the underside of the tin. Using both hands, hold the corners in place and quickly turn the tin over, allowing the dough to flop into the base of the tin. There will be inevitable cracks – just press the dough together.
- 7 Pass a rolling pin over the top of the tin to trim surplus dough; save the trimmed dough to patch any cracks. Using the side of your index finger, press the dough into the edge of the tin to raise it slightly above the rim. Line the base with foil and weigh down with baking beans, making sure they fill the base and go all the way to the edge. Bake blind for 15 minutes, rotating the tin halfway through.
- 8 Remove the foil and beans and check that the pastry hasn't cracked; if there are cracks, patch with the reserved dough trimmings. Bake for five to seven minutes more, until the pastry is pale golden. Remove from the oven and raise the temperature to 180°C/Gas Mark 4. Put a baking tray in to heat.
- 9 Arrange the tomato halves in the pastry case in concentric circles. Sprinkle the cheese evenly over the top. Beat the eggs lightly, then stir in the cream, herbs and salt and pepper to taste. Mix well, then pour into the pastry case and immediately put in the oven (see cook's note). Bake for 20 minutes or until puffy and golden. Serve hot or warm.

For the filling:

- 12-14 plum tomatoes, halved crossways
- Extra-virgin olive oil
- Sea salt flakes
- Freshly ground black pepper
- Muscovado sugar
- 150g (5½ oz) Gruyère cheese, coarsely grated
- 4 eggs, organic or free range
- 125ml (4fl oz) organic double cream
- 2tbsp oregano or marjoram leaves, chopped



Cook's note: Once you've filled the pastry case, immediately put it in the oven on the heated baking sheet. This will quickly set the filling and stop it seeping through any cracks in the pastry.

Lime leaf-scented
blancmange with
sesame brittle



Triple chocolate
brownies



Lime leaf-scented blancmange with sesame brittle (Serves 4-6)



Extract taken from *Flour* by Christine McFadden (Absolute Press, £26)
Photography © Mike Cooper.

One of my favourite desserts, this is an irresistible combination of soft, scented milky blancmange and gleaming shards of crunchy brittle. Sesame flour adds subtle flavour and helps thicken the blancmange. You can buy it in good supermarkets, health food shops and online.

INGREDIENTS:

- 3 large double-lobed lime leaves, fresh or frozen but not dried
- 600ml (1 pint) whole milk, preferably organic
- 4tbsp cornflour
- 4tbsp sesame flour
- 3tbsp caster sugar, or to taste

For the sesame brittle:

- 200g (7oz) caster sugar
- 4tbsp toasted sesame seeds

You will need:

- Up to six 150ml (5fl oz) metal heart-shaped moulds or ramekin dishes

METHOD:

- 1 Remove the tough stalk from the lime leaves and roughly shred the leaves. Save a few shreds as a garnish and put the rest in a saucepan with all but four tablespoons of the milk. Slowly bring to a simmer over a medium heat. Remove from the heat and leave to infuse for about 20 minutes.
- 2 In a second saucepan, blend the cornflour and the reserved four tablespoons of milk to a smooth slurry. Stir in the sesame flour and caster sugar. Strain the infused milk on to the slurry, stirring to mix. Bring to the boil, whisking constantly until thickened – about three minutes. Simmer gently for another three minutes, continuing to whisk. Pour into the moulds, leave until cool, then chill for two hours, or until set.
- 3 Meanwhile, make the sesame brittle. Line a baking sheet with a sheet of silicone. Pour the sugar into a heavy-based saucepan over a medium heat. Let the sugar melt without stirring, shaking the pan occasionally until all the sugar has dissolved. Increase the heat slightly and bring to the boil. Let it bubble away for a few minutes until evenly golden. Stir in the sesame seeds and boil for a few more seconds. Pour on to the silicone-lined baking sheet, tilting it so that the brittle spreads in a very thin layer. Once it's set solid, break into shards or small fragments.
- 4 When ready to serve, turn the blancmange out on to serving plates. Decorate with two or three sesame shards and a sliver of lime leaf.



Cook's note: When making the sesame brittle, watch the bubbling sugar like a hawk. It can burn very quickly. The brittle will keep for a week or more as long as it's stored in an airtight container. If the blancmange is reluctant to leave the moulds, invert the moulds over serving plates and cover with a tea towel soaked in hot water and wrung out. Give the plate and mould a shake to release the blancmange.

Triple chocolate brownies

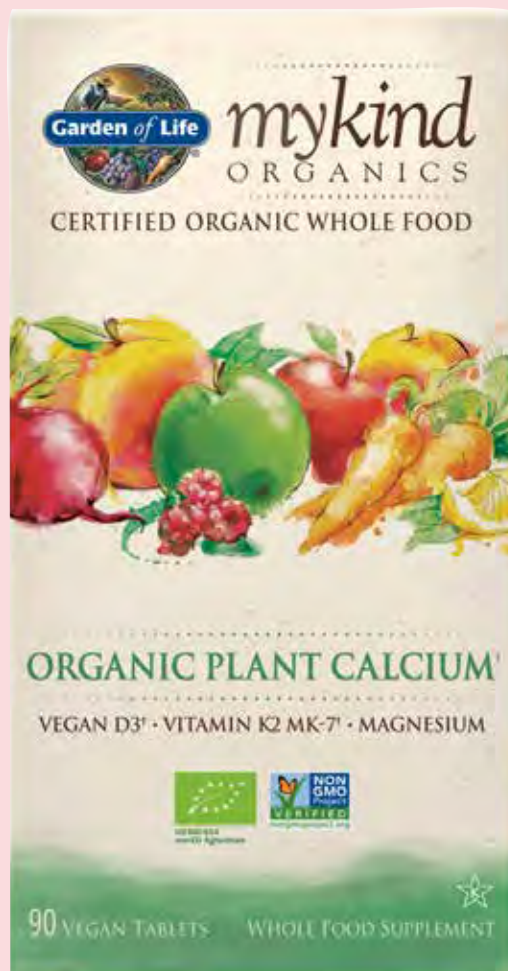


Roasted tomato and Gruyère cheese tart



I-Mag giveaways

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



GARDEN OF LIFE MYKIND ORGANICS PLANT CALCIUM

Garden of Life *mykind* Organics Plant Calcium is a unique bone-supporting formula made from organic plants, including 20 powdered fruits and vegetables. Discover the wonder of 80mcg (107 per cent RI) of vitamin K2 MK-7 in its most bioavailable form obtained from fermented organic and non-GMO project verified natto beans. Garden of Life *mykind* Organics Plant Calcium also provides vitamin D3 from lichen (plant source) in its biologically active form, at a meaningful dose of 1000iu (25mcg) and key minerals obtained from organic plant algae, such as calcium, magnesium, strontium and vanadium. Certified organic, non-GMO Project Verified, vegan and gluten free (RRP £34.99).

🍏 **I-Win:** We have five to give away.



SWEET CURES WATERFALL D MANNOSE

Waterfall D Mannose is a monosaccharide, similar to glucosamine. *E.Coli* has sticky fimbria, which attach to D mannose like Velcro. Ingested D Mannose cannot stay in your body and attached bacteria are gently removed during urination. Waterfall D Mannose is from Sweet Cures, in York, trusted for bladder care in clinics and pharmacies throughout the world.

🍏 **I-Win:** We have five packs of 1g tablets to give away.



NUTRIGOLD OMEGA SMART

Omega Smart is a unique blend of premium fish and seed oils containing omega 3, 6, and 9 fatty acids in a combination with lecithin and lipase, which aid absorption of fats in the digestive tract. Taking 250mg per day of omega 3 fatty acid DHA contributes to normal brain function.

🍏 **I-Win:** We have 10 pots of 90 capsules of Omega Smart, worth £17.67, to give away.

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