



Nutrition I-Mag

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NOVEMBER/DECEMBER 2021

CONCEPTION QUESTIONS

**The nutritional protocols
to support fertility**



Addressing vitamin D deficiency

How you can help clients
ensure adequate levels of
this critical vitamin

Practitioner guide to mycology

An expert review of the application
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Welcome



discussed is vitamin D, a nutrient that was considered so important to general health that the Government changed its advice during the pandemic that everyone should take a supplement all year-round, instead

The focus on our collective health in the last 18 months has been unprecedented, with a rapid rise in demand for all manner of supplements since the pandemic first struck.

While such demand has now slowed, what the pandemic has undoubtedly done is brought into sharp focus the role specific nutrients have in different areas of our health, especially with regard to immunity and respiratory infections. One of the most widely

of just the autumn and winter.

With this increased focus on vitamin D, we have also seen huge amounts of research begin, investigating the impact of vitamin D on infections, specifically Covid-19, opening up a whole new avenue when it comes to potentially reducing the effects of the virus. While research is ongoing, the fact that such time and investment is going into expanding our understanding – and hopefully usage – of one nutrient is encouraging.

And so, we come to this issue of *Nutrition I-Mag* and our feature on vitamin D. We have gathered a panel of experts, who explain the various functions of vitamin D, how to identify and address deficiency, and the effects of not getting enough. Click here to read more.

We were also delighted to see the long-awaited return of the in-person IHCAN Conferences in September, and we bring you a full report of the day here. Looking ahead, we have a virtual event taking place in November, with places available for booking by clicking here.

RACHEL SYMONDS, EDITOR

Rachel

NUTRITION I-MAG, Target Publishing Limited, The Old Dairy, Hudsons Farm, Fieldgate Lane, Ugley Green, Bishops Stortford CM22 6HJ

t: 01279 816300 e: info@targetpublishing.com www.nutritionimag.com

Meet The Team

EDITOR Rachel Symonds **CONTRIBUTORS** Sue McGarrigle, Julie Lamble, Rachel Redman
SALES & PUBLISHING DIRECTOR Ruth Gilmour e: ruth.gilmour@targetpublishing.com **KEY ACCOUNTS DIRECTOR** Abigail Morris e: abigail.morris@targetpublishing.com
SALES MANAGER Maria Francis e: maria.francis@targetpublishing.com **DESIGN/PRODUCTION**
 Annabelle Duggan e: annabelle.duggan@targetpublishing.com
MARKETING DIRECTOR James Rix e: james.rix@targetpublishing.com
ACCOUNTS Lorraine Evans e: accounts@targetpublishing.com
MANAGING DIRECTOR David Cann e: info@targetpublishing.com

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NUTRITION I-MAG GIVEAWAYS

OUR CONTRIBUTORS

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



Sue McGarrigle

Sue McGarrigle is a Clinical Nutritional Therapist and Naturopath and has practiced since 2001. Sue works for Bionutri, advising and helping practitioners in their various practice matters. As a lecturer to college and university students to Masters level, Sue has trained hundreds of healthcare and medical practitioners in many aspects of nutritional therapy. She writes as a regular contributor of specialist nutrition articles for magazines and newspapers and has been a guest speaker at various national conferences.



Keeley Berry

Keeley Berry is a nutritional expert and NPD Manager at BetterYou. She studied Biomedical Science before starting her career as a Molecular Biologist. Keeley is a member of the product and technical department at the natural health brand, and is key to developing and delivering innovative, world-leading pill-free supplements in the UK.



Helen Ford

Helen Ford BA Hons, Dip ION, mBANT, CNHC is the Head of In-house Nutrition at The Glenville Nutrition Clinic.



Jennie Porch

Jennie Porch is a Registered Nutritional Therapist (mBANT and CNHC) and NLP Practitioner, who specialises in women's health, practicing in person and online through her practice, Nutrio. Jennie is a Module Leader and Lecturer on the undergraduate BSc (Hons) Nutritional Science programme at CNELM. Prior to working in nutrition, Jennie has a background in Neuroscience and 15-plus year career in clinical trials and regulatory affairs in the pharmaceutical industry.



Martina Della Vedova

Martina Della Vedova graduated in Functional Genomics, in Italy, and she obtained a Masters in Genetics in Paris. She then developed a passion towards nutrition and in London, she qualified as a Nutritional Therapist. She is a member of BANT and is CNHC registered, and works as Nutritional Advisor and Nutritionist at NaturesPlus



Julie Lamble

Julie Lamble is a qualified Nutritional Biochemist and Registered Nutritionist, with over 20 years' experience in the health food trade, specialising in food supplements. She is the Product Trainer and Nutrition Advisor for Minami products.

News Bites

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

Folic acid fortification for UK cautiously welcomed

News that folic acid is to be added to non-wholemeal flour across the UK has been welcomed, but a warning has been issued that women must still be encouraged to supplement.

Prime Minister, Boris Johnson, confirmed the news, commenting: "Few things are as important as a baby's health – and folic acid fortified flour is a quick, simple win to enhance their development. This will give extra peace of mind to parents and families, as well as helping boost the health of adults across the country."

The NHS strongly recommends women who could become pregnant or are planning a pregnancy take a 400mcg folic acid tablet every day before pregnancy and until they are 12 weeks pregnant. This advice will continue, but with around 50 per cent of pregnancies in the UK unplanned, it is hoped this move will increase folic acid intake nationally to protect more babies, especially where a pregnancy is unplanned and supplements are not taken early enough.

The Government added that the public health decision is not anticipated to require major overhaul for industrial-scale flour producers. Folic acid will need to be added to the labelling of all foods made with flour – as is the case with other fortification.

In Northern Ireland, Health Minister, Robin Swann, commented: "In Northern Ireland, we have a higher incidence of birth defects due to folic acid deficiency, which disproportionately impacts on those living in areas of higher social deprivation. The fortification of flour with folic acid is already an established measure in 80 countries globally. Including in Australia, New Zealand and Canada, where there has been a reduction in

neural tube defects as a result."

The charity, Shine, which provides specialist support for those with spina bifida and/or hydrocephalus, welcomed the news, with its CEO, Kate Steele, commenting: "Although we firmly believe that all types of flour should have been included in the mandate, Shine is delighted by the Government's decision to support mandatory fortification of the most commonly consumed flour in the UK with folic acid – a move we've campaigned for over many years.

"In its simplest terms, the step will reduce the numbers of families who face the devastating news that their baby has anencephaly and will not survive. It will also prevent some babies being affected by spina bifida, which can result in complex physical impairments and poor health. It's over 20 years since the first countries adopted this important public health measure and started to benefit from a significant reduction in the incidence of pregnancies affected by neural tube defects. Now, at long last, people in the UK will share at least some of that advantage."

However, the Health Food Manufacturers' Association (HFMA) has raised concern. It welcomed the move as a first step towards better folic acid consumption across the nation, saying that whilst there is no question that overall folate status of the general population will improve as a result of mandatory fortification, raising awareness and education of the need to take a 400mcg folic acid supplement while trying to conceive and during the first trimester of pregnancy will become even more important.

In its concerns, the HFMA pointed out that while fortifying flour

will help to reduce risk of neural tube defects, such as spina bifida, particularly in unplanned pregnancies, despite this new measure, women planning a pregnancy should continue to take a 400mcg supplement while trying to conceive. They added that it is estimated that seven slices of bread per day are needed to achieve the recommended intake of folic acid for protection against neural tube defects.

Dr Michèle Sadler, Scientific Advisor to the HFMA and lead author of the approved EU Health Claim application for folic acid's role in reducing the risk of neural tube defects, commented: "In addition to this welcome announcement, Government advice remains that women should take a 400mcg supplement of folic acid daily for at least a month prior to conception and until 12 weeks of pregnancy. Whilst we welcome the folic acid boost from non-wholemeal bread and other flour products, women should still continue to take a supplement for maximum protection."

Graham Keen, Executive Director of the HFMA, added: "There is no question that the overall folate status of the general population will improve as a result of mandatory fortification. There is, however, a real risk that this programme may have the reverse of the intended effect. If thorough awareness and education is not provided, women are at risk of relying solely on, say, a couple of slices of toast each day as their source of folate. This modest intake would not sufficiently protect from NTDs and if it detracts from the message to take a folic acid supplement could, perversely, not achieve the desired increase in folate status among the demographic that needs it most."

Consumers more in tune with ingredient labels, post-pandemic

A new report has revealed that 63 per cent of consumers have been more attentive to ingredient listings in the last year.

The data was taken from Vitafoods' new *State of the Nation* consumer report released ahead of Vitafoods Europe 2021.

Compiled with FMCG Gurus, the company's second *State of the Nation* report examines consumer attitudes, buying behaviour, and preferences in health and wellness.

Heather Granato, VP Content Health & Nutrition at Informa Markets, commented: "Discovering what drives consumers is key to designing successful nutraceuticals products. Through real-world consumer data, the *State of the Nation* highlights that now is the time for brands to take stock, consider the evolving landscape, and leverage the latest insights to fuel their innovation."

Mike Hughes, Head of Research and Insight at FMCG Gurus, added: "Analysis of our latest consumer data for the *State of the Nation* shows we're entering a new era of health and wellness post-pandemic. The global Covid-19 pandemic inspired a new way of thinking about health – one that's more holistic, proactive, and positive – so-called positive nutrition."

"As well as looking to proactively boost their defences against disease and their health markers across the board, we found 63 per cent of consumers were also more attentive to ingredient listings in the last year, and nearly half of people made a change to their diet in order to be more sustainable. This creates an opportunity for brands to bring together the health of mind, body, and planet in this new era."



QUEEN'S AWARD HONOUR FOR SUPPLEMENT BRAND

BetterYou has welcomed Her Majesty's Lord-Lieutenant for Queen's Awards to be presented with its accolade.

The Yorkshire-based natural health brand was announced as the recipient of the Queen's Award for Enterprise, Innovation 2021 and has now been presented with the accolade by Andrew Coombe, the Lord-Lieutenant for South Yorkshire.

In the presence of the entire 56-strong workforce and the Mayor of Barnsley, Cllr Caroline Makinson, Mr Coombe presented the official citation and winners' glassware to BetterYou's Founder and CEO, Andrew Thomas, and Executive Chairman, Robin Whitbread.

One of the most prestigious accolades in UK business, the pioneering natural health brand is one of just a handful of south Yorkshire businesses to receive Her Majesty's recognition. Specialising in pill-free nutritional supplements, BetterYou received the Innovation Award for its development of an oral spray delivery method for supplementation – an effective and convenient alternative to traditional tablets and capsules.

The occasion also marked the first time that the BetterYou team came together under one roof since before the Covid-19 pandemic, with some newer colleagues finally meeting face-to-face for the first time.

Thomas commented: "It's an honour to receive such a prestigious award and one that truly reflects the importance of a team at the top of its game."

We pioneered this technology for the growing number of people who cannot or prefer not to take tablets and it's fair to say that we remain the best in the world. Yes, I'm immensely proud to receive the award but I'm more proud of the team that has helped us get here."



(From left), Andrew Coombe, Cllr Caroline Makinson, Andrew Thomas and Robin Whitbread

Prebiotics in sports nutrition forecast for growth

There is set to be rapid growth in the prebiotic sport category in 2022, according to a new analysis.

Clasado Biosciences commented on the significant potential for prebiotics in sports health, which the business expects to be a key focus for brands in 2022.

Experts from the company's Research & Development division believe that an entirely new category is opening up within sports and active nutrition, a category expected to see a 10.9 per cent compound annual growth rate (CAGR), according to intelligence firm, Grand View Research.

Dr Lucien Harthoorn, R&D Director at Clasado Biosciences, which has the Bimuno range in its portfolio, explained: "We are at one of those landmark turning points in global sports nutrition. Science around the gut microbiome – and the role of our beneficial gut bacteria – demonstrates that there are real advantages to a better-supported gut, including from a sports and athletics perspective."

"The gut microbiome appears to influence our capacity for exercise performance, playing a role in generation, storage and expenditure of energy obtained from diet, as well as inflammation, redox reactions and hydration status. Excitingly, gut-focused sport and active health products is a new category that's ready to develop – the path for innovation is clear and open."

Dr Harthoorn added: "Brands looking to the future of sports health and the foundations of gut health should be keeping a close eye on prebiotics, one of the most rapidly-increasing ingredient categories available to formulators. The science behind prebiotics is strong and becoming more compelling all the time."

"We're excited to see prebiotic sports health make real waves in 2022. Gut health and sports nutrition are both on the rise – a convergence that can have real long-term strategic benefits for health and nutrition brands. The time for innovation is now!"

CHILDREN LEAD THE WAY IN ENVIRONMENTAL CONCERN THROUGH DIETARY CHOICES

A new national survey from *BBC Good Food* has revealed that more than 20 per cent of children are already vegan or would like to be, and a further 21 per cent would like to be vegetarian.

BBC Good Food Nation, an independent nationwide survey, asked over 1,000 children (aged five-16) about their attitudes to food, cooking and eating, finding that eight per cent are following a vegan diet, and 15 per cent of those not following a vegan diet would like to. Furthermore, 13 per cent are vegetarian and 21 per cent of children would like to be vegetarian.

In terms of other environmental considerations, 44 per cent of children surveyed said they would like there to be no plastic packaging on food in 10 years' time, however, only 37 per cent think this will happen.

The children surveyed were keen on spending time in the kitchen experimenting with new dishes and cooking – almost three-quarters of children (73 per cent) said they would like to try different kinds of foods, and would like to cook more (74 per cent) and bake more (77 per cent) at home.

Christine Hayes, Editor of *BBC Good Food*, commented: "It was fascinating to survey children's eating habits, behaviours and opinions around food. The findings are revelatory and show that far from being fussy eaters, children want to take over the nation's kitchens – baking and preparing meals, trying different kinds of foods. They are passionate about exploring alternative diets and methods of food production that could be more sustainable for the planet.

"However, they lack kitchen skills and food preparation experience in some areas which *BBC Good Food* will address in the coming months with a fun and practical learning programme."



Vegetarian Society supports those in need

The Vegetarian Society has announced it has delivered its 100,000th meal to foodbanks.

The food box scheme that puts meals on the tables of people who use food banks reached the major milestone with an incredible 100,000 meals being distributed to people across the UK.

The Vegetarian Society launched the scheme back in March 2020 in response to the impact of Covid-19 and rising food poverty. Each Vegetarian Society food box contains the ingredients and recipes to provide people with eight meals.

A spokesperson for Newcastle West End Food Bank, where the milestone box was delivered, commented: "The meal boxes provided by the Vegetarian Society are an imaginatively thought out nutritious lifeline that allows the foodbank clients to look beyond the reality of the same weekly food parcel whilst allowing them to cook new meals by following the

recipe cards."

Lance Bell, Head of Campaigns and Engagement at the Vegetarian Society, added: "When we first started getting our food boxes out, we didn't know at the time we'd be sending out over 100,000 meals. The food boxes seem to be doing something really special – the boxes make people feel cared for and looked after.

"Not only do the boxes give filling meals, they also introduce cheaper, nutritious recipes that can be made again and again. The need to help people has unfortunately grown, and the Vegetarian Society food boxes are needed just as much as ever."

Funding has come from individual donors, companies the Vegetarian Society works with, and from the Barclays Community Aid package and the National Lottery.

To donate, visit www.vegsoc.org/foodbank.



Sweet Cures announces new Sales Manager

Gary Torbuck has been appointed as Sales Manager for supplement manufacturer, Sweet Cures, as part of the company's plans for growth.

The well-known industry figure joins from his role as UK and Republic of Ireland Sales Manager at OptiBac Probiotics, where he spent almost seven years. Prior to that, Gary was

also the first sales manager for Higher Nature and was also Sales Manager for BioCare.

His focus at Sweet Cures will be on product training, new product development and working with retailers on how to increase their consumer sales and margins.

In Research

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

Study confirms healthy diet in children leads to better mental health

An observational study at the University of East Anglia has concluded that children who eat more fruit and veg have better mental health.

The peer reviewed observational study, published in the journal, *BMJ Nutrition, Prevention & Health*, is said to be the first to investigate the association between fruit and vegetable intakes, breakfast and lunch choices, and mental wellbeing in UK school children.

It shows how eating more fruit and veg is linked with better wellbeing among secondary school pupils in particular, and children who consumed five or more portions of fruit and veg a day had the highest scores for mental wellbeing.

The study was led by UEA Health and Social Care Partners in collaboration with Norfolk County Council, and the research team say that public health strategies and school policies should be developed to ensure that good quality nutrition is available to all children before and during school to optimise mental wellbeing and empower children to fulfil their full potential.

Lead researcher, Professor Ailsa Welch, from UEA's Norwich Medical School, commented: "We know that poor mental wellbeing is a major issue for young people and is likely to have long-term negative consequences.

"And there is a growing recognition of the importance of mental health and wellbeing in early life – not least because adolescent mental health problems often persist into adulthood, leading to poorer life outcomes and achievement. While the links between nutrition and physical health are well understood, until now, not much has been known about whether nutrition plays a part in children's emotional wellbeing. So, we set out to

investigate the association between dietary choices and mental wellbeing among schoolchildren."

The research team studied data from almost 9,000 children in 50 schools across Norfolk (7,570 secondary and 1,253 primary school children) taken from the Norfolk children and Young People's Health and wellbeing Survey. Children involved in the study self-reported their dietary choices and took part in age-appropriate tests of mental wellbeing that covered cheerfulness, relaxation, and having good interpersonal relationships. The team looked at the association between nutritional factors and mental wellbeing and took into account other factors that might have an impact, such as adverse childhood experiences and home situations.

Professor Welch added: "In terms of nutrition, we found that only around a quarter of secondary school children and 28 per cent of primary school children reported eating the recommended five-a-day fruits and vegetables. And just under one in 10 children were not eating any fruits or vegetables. More than one in five secondary school children and one in 10 primary children didn't eat breakfast. And more than one in 10 secondary school children didn't eat lunch."

Dr Richard Hayhoe, also from UEA's Norwich Medical School, went on: "We found that eating well was associated with better mental wellbeing in children. And that among secondary school children in particular, there was a really strong link between eating a nutritious diet, packed with fruit and vegetables, and having better mental wellbeing.

"We also found that the types of breakfast and lunch eaten by both primary and secondary school pupils were also significantly associated with wellbeing. Children who ate a traditional breakfast experienced

better wellbeing than those who only had a snack or drink. But secondary school children who drank energy drinks for breakfast had particularly low mental wellbeing scores, even lower than for those children consuming no breakfast at all.

"According to our data, in a class of 30 secondary school pupils, around 21 will have consumed a conventional-type breakfast, and at least four will have had nothing to eat or drink before starting classes in the morning. Similarly, at least three pupils will go into afternoon classes without eating any lunch. This is of concern, and likely to affect not only academic performance at school but also physical growth and development.

And Professor Welch concluded: "As a potentially modifiable factor at an individual and societal level, nutrition represents an important public health target for strategies to address childhood mental wellbeing.

"Public health strategies and school policies should be developed to ensure that good quality nutrition is available to all children both before and during school in order to optimise mental wellbeing and empower children to fulfil their full potential."





Ginseng linked to bone health in postmenopausal women

A new study has suggested that ginseng extract may help improve bone health in women, post-menopause.

The researchers, writing in the *Nutrients* journal, explained that ginsenosides are active compounds that are beneficial to bone metabolism and have anti-osteoporosis properties. However, very few clinical investigations have investigated the effect of ginseng extract (GE) on bone metabolism. And so the study aimed to determine the effect of GE on improving bone metabolism and arthritis symptoms in postmenopausal women with osteopenia.

The 12-week randomised, double-blind, placebo-controlled clinical trial was conducted with a total of 90 subjects, who were randomly divided into a placebo group, GE 1g group, and GE 3g group for 12 weeks based on the random 1:1:1 assignment to these three groups. The primary outcome is represented by bone metabolism indices consisting of serum osteocalcin (OC), urine deoxypyridinoline (DPD), and DPD/OC measurements. Secondary outcomes were serum CTX, NTX, Ca, P, BsALP, P1NP, OC/CTX ratio, and WOMAC index.

It was found that the GE 3g group had a significantly increased serum OC concentration. Similarly, the GE 3g group showed a significant decrease in the DPD/OC ratio, representing bone resorption and bone formation. Moreover, among all the groups, the GE 3g group demonstrated appreciable improvements in the WOMAC index scores.

The researchers concluded: "In women with osteopenia, intake of 3g of GE per day over 12 weeks notably improved the knee arthritis symptoms with improvements in the OC concentration and ratios of bone formation indices like DPD/OC."

Antibiotic trial finds little effect in treating chest infections in children

A new study – said to be the largest trial of the antibiotic amoxicillin for treating chest infections in children – has concluded it has little effect.

The largest randomised placebo-controlled trial of amoxicillin for treating chest infections in children, one of the most common acute illnesses treated in primary care in developed countries, has found it is little more effective at relieving symptoms than the use of no medication. The study, published in *The Lancet* and funded by the National Institute for Health Research (NIHR), was led by researchers from the University of Southampton and supported by centres at the Universities of Bristol, Oxford and Cardiff.

While research so far in adults has shown that antibiotics are not effective for uncomplicated chest infections until now, there has not been the same level of research in children.

And so, researchers sought to test whether amoxicillin reduces the duration of moderately bad symptoms in children presenting with uncomplicated (non-pneumonic) lower respiratory tract chest infections in primary care. The trial recruited 432 children aged six months to 12-years-old with acute uncomplicated chest infections from primary care practices in England and Wales, who were then randomly assigned to receive either amoxicillin or a placebo three times a day for seven days. Doctors or nurse-prescribers assessed symptoms at the start of the study and parents, with help from their children where possible, completed a daily symptom diary.

Only a small, non-significant, difference in the duration of symptoms were reported between the two groups: children given the placebo had symptoms which were rated moderately bad or worse for around six days on average after seeing the doctor, and those given antibiotics got better only 13 per cent quicker. Furthermore, this was true even for the groups of children where the doctor heard sounds in the chest, the child had a fever, where the doctor rated the child as more unwell, the child coughed up phlegm or had a rattly chest, or the child was short of breath.

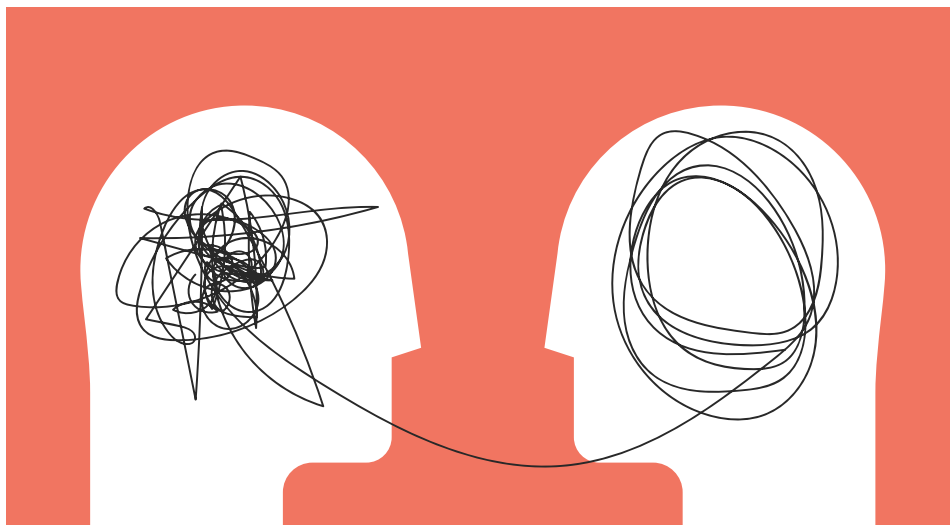
Paul Little, Professor of Primary Care Research at the University of Southampton and the study's lead author, commented: "Children given amoxicillin for chest infections where the doctor does not think the child has pneumonia do not recover much more quickly. Indeed, using amoxicillin to treat chest infections in children not suspected of having pneumonia is not likely to help and could be

harmful.

"Overuse of antibiotics, which is dominated by prescribing of antibiotics in primary care, particularly when they are ineffective, can lead to side effects and the development of antibiotic resistance. Antibiotic resistance is one of the biggest threats to the health of the public, and in future could make much of what is currently routine medical practice very difficult or impossible – such having surgical operations or supporting people who are being treated for cancer."

Alastair Hay, a GP and Professor of Primary Care at the University of Bristol's Centre for Academic Primary Care, and one of the study's co-authors, added: "Our results suggest that unless pneumonia is suspected, clinicians should provide 'safety-netting' advice such as explaining what illness course to expect and when it would be necessary to re-attend but not prescribe antibiotics for most children presenting with chest infections."





Allergies and mental health risk studied

Researchers have concluded that allergies including asthma and hay fever are not linked to mental health traits.

Allergic diseases such as asthma, atopic dermatitis and hay fever do not cause the onset of mental health conditions or vice versa, according to the findings of the new University of Bristol-led study published in the journal, *Clinical and Experimental Allergy*.

Researchers from Bristol Medical School: Population Health Sciences (PHS) and School of Psychological Science wanted to find out whether allergic diseases actually cause mental health traits, including anxiety, depression, bipolar disorder and schizophrenia or vice-versa.

First, the researchers sought to isolate the effects of these allergic diseases by applying a scientific technique called Mendelian Randomisation, which allowed them to identify genetic variants linked to these allergic diseases and then investigated how these variants were causally related to the presence of mental health conditions based on a sample of 12,000-344,901 individuals.

Although researchers identified

observational associations between allergic disease and mental health traits, these were not replicated in the team's causal analysis. Little evidence of a causal relationship between the onset of allergic disease and mental health was found, suggesting that the observational associations found were due to confounding or other forms of bias.

Dr Ashley Budu-Aggrey, Senior Research Associate at Bristol Medical School: PHS and the study's lead author, explained: "Common mental health disorders such as anxiety and depression are some of the largest contributors to the global burden of disease and the prevalence of these and allergic disease has been increasing for some time. Disentangling the nature of the relationship between allergic disease and mental health helps answer an important health question and suggests that the onset of allergic disease does not cause the onset of mental health traits or vice versa.

"This, however, does not rule out a potential causal effect upon the progression of disease which is yet to be investigated and could help uncover novel treatment strategies for allergic disease or mental health traits."

Vitamin A investigated in link to restoring smell after Covid

A new research project is examining whether vitamin A could bring back sense of smell after Covid.

Researchers at the University of East Anglia and James Paget University Hospital have launched the project to see whether the nutrient could help people regain their sense of smell after viral infections, including Covid-19. This follows previous research from Germany, which has shown the potential benefit of vitamin A, and the UEA team will explore how this treatment works to help repair tissues in the nose damaged by viruses.

They hope that the study, which has been funded by the National Institute for Health Research (NIHR), could one day help improve the lives of millions around the world who suffer from smell loss, by returning their fifth sense.

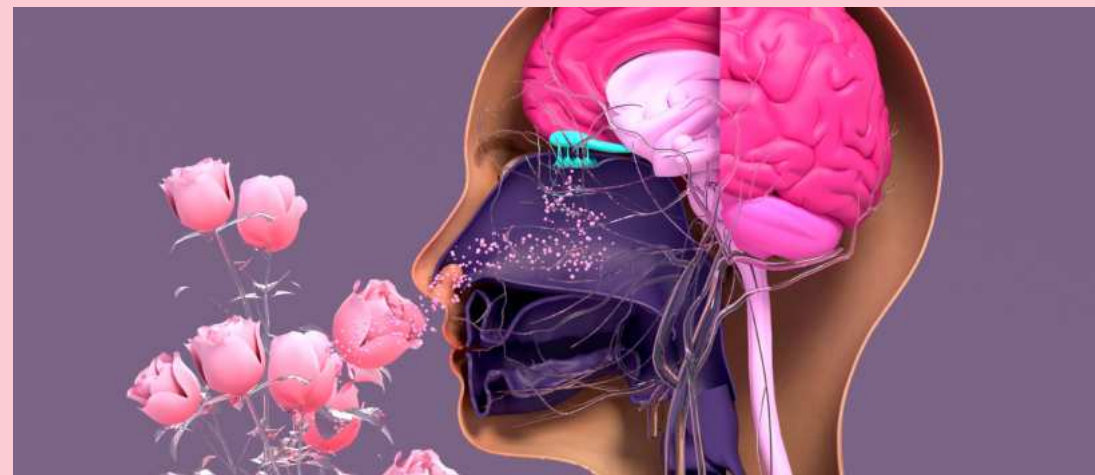
Smell loss expert, Professor Carl Philpott from UEA's Norwich Medical School and James Paget University Hospitals NHS Trust, explained: "Even before the Covid-19 pandemic hit, smell loss was thought to affect an estimated five per cent of people, with viruses accounting for one in 10 of those. And around one in 10 people who experience smell loss as a result of Covid-19 report that their sense of smell has not returned to normal four weeks after falling ill.

"It's a big problem, and our previous research has shown the impact of smell loss – including depression, anxiety and isolation, as well as risk of danger from hazards such as gas and spoiled food, and changes in weight due to reduced appetite.

"A key problem for patients and their clinicians is the lack of proven effective treatments. A recent study from Germany showed that people treated with vitamin A nasal drops improved twice as much as those in the untreated group."

The research team will work with patients who have lost their sense of smell due to a viral infection. They will either receive a 12-week course of nasal vitamin A drops or inactive equivalent drops, and have their brains scanned before and after the treatment. The scans will be compared to those of a control group who have not been treated with vitamin A drops.

To take part in this trial, patients need to be referred to The Smell and Taste Clinic at the James Paget University Hospital by their GP. Recruitment is expected to begin in December. To find out more, visit www.rhinology-group.uea.ac.uk/apollo-trial or contact apollo.trial@uea.ac.uk





New to market

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

IMMUNE ESSENTIAL

New to the Higher Nature line-up is a supplement targeted at the immune system.

Pro-Immune is a high strength, triple action one-a-day immune support capsule containing 10bn live bacteria, which is a powerful combination of seven *Lactobacillus* and *Bifidobacterium* strains, together with elderberry extract and zinc.

The capsules are free from added sugar and sweeteners, and suitable for adults and children over 11 years and vegetarians and vegans.



Vitamin C focus for Jan de Vries range

A new 1000mg timed release vitamin C supplement has been added to the line-up at Jan de Vries.

The tablets provide high strength vitamin C, equivalent to 1000mg per tablet, in a gradual, timed-release format to help optimise absorption.

This new product allows the body to use what it needs throughout the day, providing better absorption and longer-lasting action. It also contains rosehip and acerola extract.

It's one of five new supplements in the Jan de Vries range of natural and holistic healthcare products and is suitable for vegetarians and vegans.



Men's health additions for NaturesPlus

GI Nutra Probiotic Men is the latest launch for NaturesPlus.

The new supplement provides 60bn live probiotic cells representing 21 diverse strains which are optimal for men's health.

It is designed to support a healthy reproductive system, testosterone production, digestive system health and the maintenance of a healthy immune system.

The supplement has been formulated with *Lactobacillus reuteri* BM36301, shown to reduce intestinal free radicals, reduce inflammation and improve testicular health. Prebiotic fibre and saw palmetto have also been added.



TOTAL GUT SUPPORT

BodyBio has announced the launch of a new supplement to offer total microbiome support.

Postbiotics are described as the newest biotic, a sister compound to pre and probiotics, which refer to the end products created by probiotics in the large intestines.

There are several postbiotics, including butyrate, which is where BodyBio has focused with its new product, Sodium Butyrate, a short chain fatty acid, which can support those with Crohn's, ulcerative colitis, IBS, autoimmune diseases and obesity.

WE'RE BACK

A look back at the first in-person education event since the pandemic.

It's been a long time coming but live in-person IH CAN Conferences finally returned to London after an 18 month pause due to the restrictions on large scale gatherings.

The atmosphere was electric, as practitioners from across the UK could once again learn face-to-face, as well as meeting – and doing business with – 30 exhibitors.

Georgia Barnes, Event Manager, explained: "There's nothing like a live event to grow knowledge, foster excitement and inspire – that's why we were proud to bring the IH CAN Conferences back to a live audience in London. It's been a tough 18 months for the whole event industry, so I want to personally thank everyone for their ongoing support, and we can't wait to see you all again soon."

The event began with Dr Elisabeth Philipps, a clinical neuroscientist and functional medicine practitioner, who drew on her scientific knowledge and clinical experience to cast some light on the endocannabinoid system (ECS), how to understand and integrate it into practice and how to modulate this system through diet and food supplements.

Anne Pemberton followed Dr Philipps, where she questioned 'How much of a difference do genes make when determining the lifestyle approach for your client?'. She explored what the evidence tells us about genetic single nucleotide polymorphisms associated with low-carbohydrate approaches and diabetes.

This led on perfectly to 'low-carb GP, Dr David Unwin, the doctor who is revolutionising the NHS's treatment of diabetes with nutrition. Dr Unwin recently celebrated '100 and not out!' – his 100th case of drug-free T2D remission. In his session, he explored how to improve clinicians' ability to maintain approaches that show initial promise, including how to reframe failure.

Some delegate comments collected from the evaluation forms included "It was fantastic, I loved it, thank you!", and "Loved the conference and all the speakers, thanks for such a great conference".

Others said, "It's been an excellent day, thank you!", and "Just so pleased. Thoroughly enjoyed the conference and the planning was excellent, and layout and organisation".





COULDN'T MAKE IT?

If you couldn't make the day but still like the sound of the talks, you can purchase the post-show downloads, which include all the video and presentations from the day. Visit <https://www.ihcanconferences.co.uk/downloads-2021/> for more information, and to buy

BACK FOR GOOD

Live in-person IH CAN Conferences return for 2022 in March, with a packed year planned.

In the meantime, we will be back with another virtual event this November. Look out for more information and to book your place at [ihcanconferences.co.uk](https://www.ihcanconferences.co.uk)

Listen to the talk by Neuroscientist, Dr Elisabeth Philipps, at the IH CAN Conference in September, exclusively for *Nutrition I-Mag* readers.

The talk, The Endocannabinoid System & Gut-Brain Axis: CBD Support for a Healthy Gut & Mind, asked delegates how often they consider the endocannabinoid system in cases of anxiety, depression or dysregulated gut microbiome.

NaturesPlus GI Nutra Pro-Bio

Discover how the gut health range from leading supplement brand, NaturesPlus, can support your clients.

A diverse microbiome is the key to good health. We are seeing numerous, recent studies supporting this knowledge, and new and exciting research is readily available on just how important gut microbiota is for a long and healthy life. Consumers are now switched on to the importance of gut health and the demand for healthier lifestyle choices and nutritional supplements to support this has never been higher.

We know that diet, lifestyle, and other factors tend to disrupt gut bacterial balance. However, evidence shows that supplementing with key species can help restore this balance. A gut populated with the right bacteria can greatly help improve overall vitality, health, and wellbeing.

NaturesPlus knows all bodies are not the same and every person has different needs. The company created a line of specially targeted products designed to provide the additional support you need.

Each GI Nutra Pro-Bio formula contains unique strains of bacteria to support issues that concern women, men, children, and those needing mega benefits. GI Nutra Pro-Bio are enhanced with powerful prebiotics, to maximise bacterial performance in the body. Acid and bile resistant, and shelf stable, so no need to refrigerate, as well as being non-GMO, yeast and gluten free.



GI NUTRA PROBIO MEGA

This supplement is unparalleled in its strength and diversity. Much higher than the average formula with many more strains, GI Nutra ProBio Mega has been modelled on those living in rural, natural areas without stress, environmental toxins, or processed food, to help rebalance the microbiome in a targeted and specific way. This unique formula contains 120bn live bacteria in 35 unique strains and includes six clinically backed strains tailored for specific functions. These are the only strains to have demonstrated an improvement in visceral hypersensitivity, using a validated scale (VSI) in a randomised clinical trial. The magnitude of the

improvement in 'IBS Quality of Life' is comparable to standard prescriptions.

GI NUTRA PRO-BIO WOMEN

Each vegetarian capsule contains a highly effective dose of 18 clinically backed strains, tailored for women of all ages. With 60bn live bacteria, including clinically backed *Lactobacillus plantarum* KABPTM-061, *Lactobacillus reuteri* (LR08) and *Lactobacillus rhamnosus* (Lra05), all specially selected for their role in women's health. Including whole cranberry, which has been used for women's health for centuries in traditional herbal medicine.



GI NUTRA PRO-BIO MEN

Specifically formulated to address men's health, this unique formula contains 60bn live bacteria in 21 unique strains, including four clinically backed strains, *Streptococcus thermophilus* (ST1447), *L. acidophilus* DDS-1, *L. reuteri* (BM36301TM) and *Bifidobacterium bifidum* (ST1778). Also includes saw palmetto, which is the most prescribed herb by men's health specialists.



GI NUTRA PRO-BIO KIDS

Delicious, sugar-free, mixed-berry chewable supports kid's health. This unique formula contains seven billion live bacteria in 16 unique strains, including *P. pentosauces* KABP-041 and *B. longum* KABP-042, scientifically proven to promote good flora and overall health in infants.

With a powerful, concentrated prebiotic fibre complex from green banana, acacia, and chicory, to boost the viability of beneficial strains, while diminishing that of harmful bacteria. This prebiotic blend is an incredible



PRACTITIONER SUPPORT

Order direct from NaturesPlus and receive the products at cost price, saving up to 50 per cent. You will also benefit from online training, product samples, literature, marketing supplies and customer support. Contact NaturesPlus on 0800 9173084 or email uksales@naturesplus.com

source of resistant starch and natural soluble fibre inulin, an important source of fuel for friendly bacteria.

NaturesPlus.



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We select the highest quality, purest and most efficacious ingredients to go into all our products.

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We share our wealth of knowledge from the forefront of nutritional research through the Nutri Advanced online resource hub and host a variety of seminars and lectures with leaders in the industry.

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Vitamin D in the spotlight

It's been the nutrient of note during the Covid-19 pandemic. And with expanding research and growing awareness, this critical nutrient is set to remain centre stage, and for good reason.



Given its prominence in the last 18 months in relation to vitamin D's potential ability to reduce the severity of respiratory infections, including Covid-19, you'd imagine this is a nutrient at the top of everyone's list in terms of supplements of importance. Yet deficiency is known to be such a global problem that many governments now recommend we supplement with vitamin D and there is rising concern at the impact deficiency could be having on our health.

Keeley Berry, Molecular Biologist and NPd Manager at BetterYou, which specialises in vitamin D, commented: "Vitamin D deficiency is a worldwide issue, with around one billion people across the globe experiencing inadequate levels and around ten million people across the UK expected to be at-risk of deficiency. The ongoing encouragement over the last 18 months to work from home and limit our social activities has only increased our already indoor lifestyles – ultimately putting our ability to produce this essential nutrient naturally under a heightened threat."

Helen Ford, Head of In-house Nutrition at The Glenville Nutrition Clinic, went on: "With millions of people across the UK being forced to spend more time indoors with lockdown over the last year, vitamin D deficiency is a growing problem. Increased time spent at home means that many of us may not be getting the same amount of vitamin D naturally from the sunshine that we normally would by being outside either commuting to work, exercising, or seeing friends and family."

"I am shocked at how widespread vitamin D deficiencies are and have been routinely testing for vitamin D in my clinic and in some instances the level is so low that the lab has said it is undetectable. It is so important to

have sufficient levels of vitamin D because research has shown that this versatile nutrient plays a key role in keeping us in good health, both mentally and physically. We have rickets back in the UK, which we thought we had eliminated 40 years ago. Children are spending less time outdoors; they are more often sitting in front of the television or computer screens."

And Martina Della Vedova, Nutritional Advisor and Nutritionist at NaturesPlus, also pointed out: "According to the journal, *Clinical Nutrition*, vitamin D deficiency in the UK touches 20 per cent of the white population, 30 per cent of the black population and 50 per cent of the Asian population. It is a very common issue that needs attention since this nutrient is linked so much with our health. In the last couple of years, with challenging exposure to viruses, more time spent indoors, more stress, and maybe slipping into a less active way of life, we could have deepened the lack of this precious vitamin."

Anya Mustard, Clinical Educator at Nouveau Healthcare, reiterated the scale of the problem.

"Vitamin D deficiency is a global public health concern and the issue in the UK is certainly known. It is thought that one in five adults and one in six children are deficient in vitamin D in the UK. Some people are naturally more predisposed to be at risk of deficiency and this has certainly been exacerbated in the last year due to a nationwide lifestyle alteration and encouragement to stay at home," she commented. "Interestingly, speculation linking vitamin D to immune health and in further relation to Covid-19 has been widely documented, increasing awareness in this space and making many people aware of the vitamin for health."

DEFICIENCY RISK

So, why is it the case that vitamin D deficiency is so widespread in the UK, and what do you need to know in terms of who is most at risk?

"There are some groups classified most at risk, these include elderly population who may not get as much sun exposure or who wear additional layers of clothing, babies, children, pregnant women and those that are breastfeeding. Medical conditions affecting fat absorption such as Crohn's disease, cystic fibrosis and coeliac disease can reduce the ability to absorb vitamin D," Mustard commented.

"In terms of factors that reduce the conversion, these include using SPF of 30 or higher, which blocks vitamin D production, showering immediately after sun exposure, which can wash out the vitamin D produced, wearing clothes that fully cover the body, avoiding the midday sun and a person's nutritional status as magnesium and cholesterol are required to effectively produce vitamin D. It's certainly important to recognise that vitamin D status should be considered by everyone in the UK, especially between October and March due to a lack of UVB radiation."

Berry went on: "The colour of our skin can impact the amount of vitamin D our bodies are able to naturally produce from sunlight. This is because those with darker skin tones have a higher level of melanin, a natural barrier towards the UVB rays needed to penetrate the skin. Melanin competes with vitamin D receptors, meaning that darker skin types allow less UVB to enter, and consequently produce less vitamin D. This may be useful for high UVB exposure nearer the equator, but it is problematic here in the northern hemisphere. Add to this, the fact that research indicates Asian ethnicity is associated with reduced intestinal permeability and ethnicity should be a consideration when addressing vitamin D intakes."

Ford went on: "Vitamin D helps with other conditions as diverse as type 2 diabetes, heart disease, joint pains and arthritis, dementia, autoimmune diseases, fertility, autism, and allergies. If you are trying to get pregnant or having recurrent miscarriages, then it is important that your vitamin D level is checked because it is known that having good levels of vitamin D helps the body maintain a pregnancy by effectively switching off the part of the immune system that could reject a baby as only half the DNA is the mother's."

In terms of identifying deficiency among clients, the experts explain that there are some obvious symptoms.

"Symptoms of a vitamin D deficiency can present as common health conditions such as headaches, muscle soreness and poor bone and tooth health, catching frequent coughs and colds and even fatigue and low mood. These signs are often attributed to other lifestyle factors, so if you're concerned that your levels may be low, it may be sensible to get your vitamin D levels tested," Berry commented.

And Della Vedova advised: "Vitamin D deficiency can manifest in many forms, from general tiredness and fatigue to aches and pains, poor mood, poor immune response and getting sick very often, or be completely asymptomatic for the most time until it reaches extremely low values and only then show quite severe forms of the symptoms listed above. Many factors can worsen our vitamin D status and for this reason, it is very important we run regular check-ups with the guidance of a health practitioner to keep our levels in the safe zone."

Guru Dev Seth, founder of supplement brand, Good Guru, added: "Symptoms of vitamin D deficiency can include muscle weakness, pain, fatigue and depression. However, for many people, the symptoms are subtle. Yet, even without symptoms, too little vitamin D can pose health risks. Profound vitamin D deficiency is particularly common among infants and children aged less than five years, pregnant and breastfeeding women, people aged over 65 years, people who have limited exposure to sunshine, and people with darker skin."

THE FUNCTIONS OF VITAMIN D

There are many reasons that vitamin D is known to be critical to our health and research continues to expand on this.

Nutrition expert and author, Patrick Holford, advised: "Whatever the source of vitamin D, it has to convert into 25-hydroxyvitamin D, which acts more like a hormone than a vitamin. It used to be thought that vitamin D's only role was to 'fix' calcium into bone, hence deficiency results in rickets in children and osteoporosis in older adults. But, in the last 20 years, it's become clear that vitamin D has many other roles in the body, including controlling cell growth and inhibiting growth of cancer cells, boosting immunity, strengthening muscles, and reducing inflammation.

"It also influences over 200 genes. It may also be helpful for preventing depression, especially in the winter, reducing infections, as well as the risk for numerous diseases including diabetes, heart disease and cancer, but also multiple sclerosis and other auto-immune and neurological diseases such as dementia and Parkinson's. In short, it's a no-brainer to keep your vitamin D level close to optimal."

Rose Holmes, Nutritionist and Education and Training Manager at Rio Health, added: "Because of its roles in skeletal health, immunity, brain function and many other aspects of whole-body health, vitamin D is especially important during periods of growth, including in pregnancy and in childhood. The main functions of vitamin D are to regulate serum calcium and phosphorus in the body, to improve calcium absorption and build strong bones and teeth, to assist in suppressing cholesterol uptake in the arteries, to act as an inflammatory mediator and to regulate immune activity.

"As seen during the current viral pandemic, low levels of this very important essential nutrient associates with poor outcome when the body is stressed by infection or illness. Vitamin D deficiency has been linked to a wide variety of health problems including osteoporosis, depression, insomnia, diabetes, asthma, chronic pain, fibromyalgia, psoriasis, heart disease immune issues, including cancer and autoimmune diseases."

Mustard continued: "Vitamin D is crucial for a large extent of functions, yet to date we only have full understanding of one of them. The major proven biological function of vitamin D is to promote calcium and phosphorus absorption in the gut to enable normal bone mineralisation. This is critical to prevent rickets in children and osteomalacia in adults and further along with calcium helps protect older adults from osteoporosis. However, this is far from the whole story. Further research points to vitamin D's role in modulating the immune system and the neuromuscular system, cell growth and regeneration, as well

as mood and cognitive function."

Della Vedova went on: "Vitamin D is a fat-based vitamin that plays an important role in human wellbeing. Vitamin D is a key nutrient that contributes to the normal function of the immune system, normal muscle function, normal absorption and utilisation of calcium and phosphorus, and maintenance of normal bones and teeth in adults and children.

"As we age, our absorption capabilities decrease naturally, and our needs might rise to keep everything in check: the aging population is at high risk to be low in vitamin D. Vitamin D helps to reduce the risk of falling associated with postural instability and muscle weakness. Falling is a risk factor for bone fractures among men and women 60 years of age and older. It also helps to reduce the loss of bone mineral in postmenopausal women: low bone mineral density is a risk factor for osteoporotic bone fractures."

Berry added: "Normally produced in the skin using energy from sunlight, mainly ultraviolet

B (UVB), vitamin D is often referred to as the 'sunshine vitamin' and it's a powerful nutrient that can significantly impact our mood, energy levels, muscle, and bone health. One of the main nutrients when it comes building strong bones and muscles, vitamin D regulates calcium, magnesium and phosphate within the body and too little vitamin D can cause soft and mis-shaped bones. It also supports muscle function, allowing us to stay active by enhancing mitochondria – the 'powerhouses' of our bodies cells – which are responsible for turning energy from the food we eat, into energy for those cells.

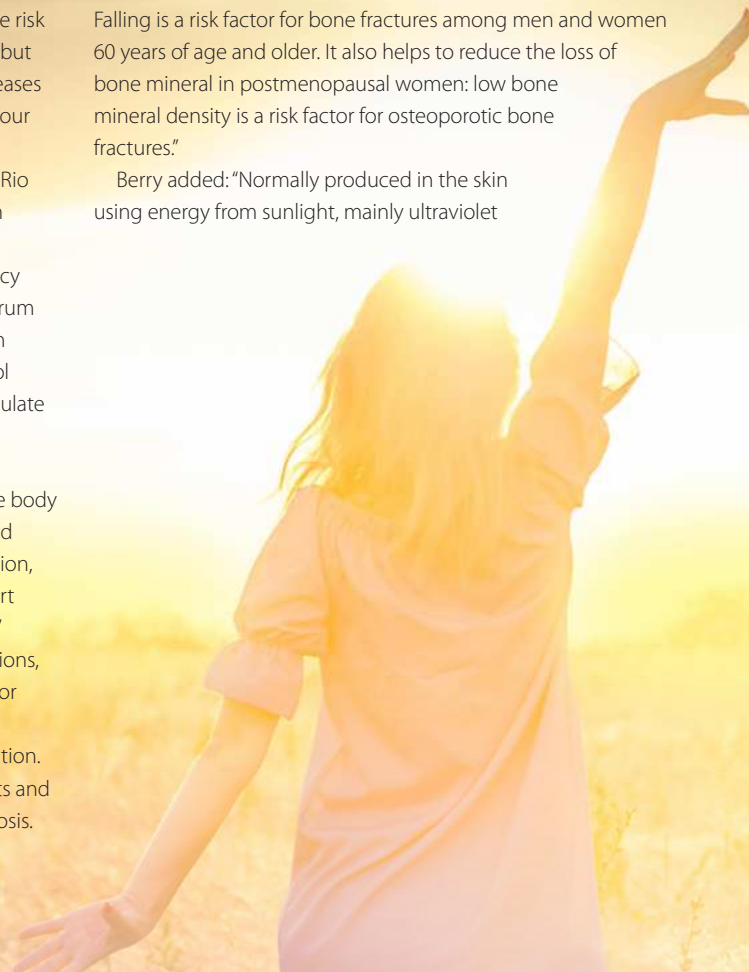
"Though what vitamin D is arguably known for is its role in immune health as it is crucial in defending the body against bacteria and viruses, with many studies finding links between vitamin D deficiency and poor immunity. What's more, researchers have found that low levels of this vital vitamin are linked to a higher risk of sleep disorders, poor sleep quality and shorter sleep duration, as well as depression, autoimmunity, and weight gain – so it's important that we all maintain healthy levels year-round.

And Holmes also discussed the Covid-19 link.

"It is interesting to note that some of the earliest reports of Covid-19 mortality risk included those with darker skin and the obese. One difference between the Covid-19 pandemic and most past pandemics, is that the young have been, for the most part, not as badly affected; the reasons for this are not entirely clear but it has been suggested that this may relate to the fact that Coronaviruses spread widely in the community and the immune systems of children may provide protection, or they may interact with Coronaviruses differently," she commented.

"Other groups that were considered at high risk from Covid-19 included those with cancer, those with certain blood conditions, those with lung conditions (including severe asthma, severe COPD, cystic fibrosis), those on immunosuppressant medication, and those with certain heart or kidney conditions. As this Coronavirus latches its surface proteins especially to receptors on lung cells, it may cause inflamed lungs; when these Coronavirus surface proteins gain entry into cells via the ACE2 receptor (ACE2 receptors are present in many tissues including heart, kidney, oral mucosa and lung), the virus is able to hijack and kill healthy cells.

"Those with some long-term lung conditions are considered at increased risk of severe symptoms from this virus. However, more recently, it was determined that Covid-19 was no more severe in those with asthma, and that asthma-sufferers might even have less likelihood of hospitalisation – possibly because some asthma treatments limit the ability of Coronavirus to attach to the lungs."



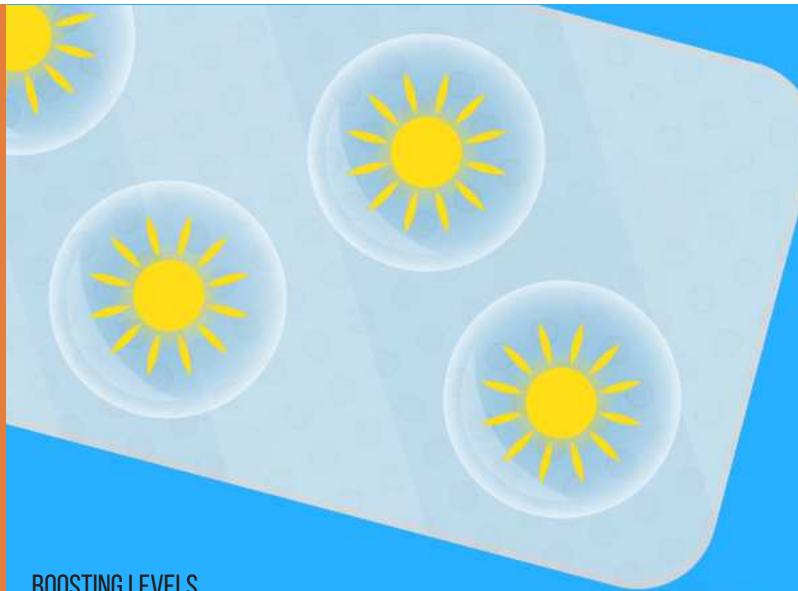
TO TEST

Such is the concern around vitamin D deficiency that testing is much more available these days.

Berry commented: "When it comes to pinpointing your vitamin D status, I advocate testing your levels as this will help to indicate how much vitamin D the body needs. This is easily done either through visiting your GP, or by purchasing an at-home finger prick test. Testing will provide a rapid insight into your vitamin D level, allowing people to make informed decisions about their supplementation needs. For anyone deemed deficient or insufficient, it's wise to re-test levels following 12 weeks of supplementation to ensure your levels have increased appropriately. Regularly testing levels will also indicate the quality of any supplement that you are taking, as absorption levels may vary.

"It's important to monitor our level of vitamin D as long-term effects of deficiency can include rickets in children and osteomalacia in adults – these are both characterised by softening of the bones and bone pain and can eventually lead to symptoms such as bowlegs, which are typically associated with these diseases."

And Della Vedova also suggested: "Here in UK, the sun during fall and winter months is not strong enough to make us convert enough of the active form of vitamin D, and so relying only on the outdoors exposure during these times of the year would be insufficient. For this reason, I would suggest to test before the colder seasons start and take action accordingly. It is likely that levels are not at the top of the chart and most likely a supplement would serve us well. During summertime, for healthy stress-free individuals only, outdoor time could be enough. For all the others, testing again would be very helpful to know if supplementing throughout the year is recommended."



BOOSTING LEVELS

There are certain foods that contain vitamin D, and while these are to be recommended, it's considered that supplementation is crucial, especially in autumn and winter when we're outside less.

Berry advised: "Eighty to 90 per cent of our vitamin D stores are provided by the sun and for people living in the northern hemisphere, the amount of UVB radiation is not sufficient to produce adequate amounts of vitamin D. Even during the summer months, it is predicted that up to 13 per cent of the population will be deficient.

"Due to clothing, cosmetic skin protection and our increasingly indoor existence, our skin's unprotected exposure to sunlight is drastically reducing and our body's ability to make its own vitamin D declines as we opt to protect our skin from the sun. This is because UVB rays are required to convert cholesterol in our skin cells into our very own self-made vitamin D.

"We know that vitamin D is stored in the body for only 40 to 60 days, so taking a supplement – based upon specific blood levels – is the best way to keep our vitamin D levels at their optimum. Not just during the winter months, but year-round. Last year, Public Health England (PHE) updated its guidance urging us all to consider taking a daily vitamin D supplement to support overall wellbeing as our bodies are not exposed to enough natural sunlight to produce the hormone."

When it comes to food sources, Ford commented: "Only about 10 per cent of vitamin D comes from food, but natural food sources of vitamin D includes oily fish and eggs. A 100g of grilled salmon contains 284IU of vitamin D and a 100g of tinned

pilchards contains 560IU of vitamin D, the yolk of one egg contains about 20IU. Mushrooms produce vitamin D when exposed to sunlight, but this is only vitamin D2 and not D3, so this is not the best way to get enough vitamin D in the optimal form to correct a deficiency."

But there are factors to consider when recommending a vitamin D supplement. "When it comes to choosing the best vitamin D supplement, the raw materials and ingredients used are especially important for those following a plant-based diet. Many traditional tablet and capsule supplements use fillers to bulk out their formulations, so I advise vegans and vegetarians to thoroughly check the ingredients listed on any supplement they intend to use," Berry suggested.

"Specifically looking at the different forms of vitamin D, the D3 form is far superior to the D2 form, though the majority of vitamin D3 comes from the lanolin contained in sheep wool. There are vegan-friendly versions available that come from a lichen source, so again, people following a plant-based diet should be vigilant when purchasing their vitamin D supplement."

Ford continued: "When selecting a supplement containing vitamin D, choose one where the form of vitamin D is D3 – cholecalciferol. There is another form of vitamin D, D2 – ergocalciferol, but vitamin D3 is 87 per cent more effective in raising and maintaining vitamin D levels than vitamin D2."

Considering how to take vitamin D is also important.

"For some, tablets and capsules may not be a suitable method of supplementation as many of us struggle to absorb nutrients through the gut or we simply find them difficult to swallow. An alternative such as a pill-free oral spray is a fantastic way to supplement and as vitamin D is fat soluble, it's perfectly suited to an oral spray delivery as it relies on the bloodstream for transportation throughout the body – the faster the nutrient can enter our bloodstream, the sooner our body can benefit from it," Berry commented.

And Holmes added: "Vitamin D has shown effective absorption rates when oral-spray delivered. Studies show overall better absorption via sprays applied to the inner cheek compared with capsules. In addition to providing superb absorption and faster onset action, oral sprays are convenient to use. Mouth spray formulations deliver direct, act fast and are conveniently best choice in many cases.

"Microdroplets sprayed onto the highly permeable soft tissue of the oral cavity delivers nutrients to a veins-rich area from which these may quickly enter the circulatory system. By direct delivery to the bloodstream, nutrients in oral sprays bypass the digestive system where many nutrients may be lost. Individuals with digestive inefficiencies thereby have better opportunity to benefit from oral-spray-delivered nutrients."

CORRECT LEVELS

And what about dosage in terms of a daily supplement?

Berry advised: "No 'one size fits all' solution exists for vitamin D supplementation and PHE's recommendation of 400IU (10mcg) per day is simply not effective for everybody. In fact, last year many doctors and healthcare professionals advocated for vitamin D supplementation of doses up to 4000IU per day, or at least 2000IU for healthy adults.

"Additionally, the Endocrine Society has acknowledged the association between vitamin D dosage and body weight, recommending that those who are considered overweight or obese supplement with levels 1.5 to three times higher, respectively. Supplementation should be based upon specific blood levels though, and a 'loading' dose of double or triple this may be required if you're deficient, to elevate levels to optimal. But what does 'optimal' look like?

"The official measurement for insufficient serum levels is under 50nmol/L, with lower than 25nmol/L being considered deficient. Anything above 50nmol/L is considered fine and there is no guidance for what would be considered 'optimal'. Knowing how volatile our levels are and how dependant on sun exposure they are, such a target level is inadequate. Research clearly suggests that most auto-immune disease associated with low vitamin D can be effectively resisted with a serum level between 100 to 150nmol/L (40 to 60ng/ml). This is the optimal level I consistently recommend aiming for, through daily supplementation."

And Mustard also pointed out: "A statistical error in the calculations of the meta-analysis for which recommendations were based on has shown that they were too low by a factor of five-10. Statistical calculations of therapeutic results have confirmed that doses are many times higher than previously recommended by official authorities. Therefore, we suggest a daily intake of between 3000-4000IU for adults to achieve or maintain acceptable levels.

"Interestingly, the higher a person's vitamin D level, the higher the metabolism of vitamin D, activating additional genes and, in turn, increasing requirements. To supplement at home, the most natural form is vitamin D3 (cholecalciferol) as this is the same form as what we would naturally make from sunlight."

Holford went on: "I used to think that supplementing 15mcg

(600IU) a day, assuming you get some from sunlight and fortified foods, should keep you close to optimum. This may be enough in the summer, but it certainly isn't enough in the winter months.

"The RDA in the UK used to be 5mcg, but the EU and US recommended intake has been increased to 15mcg a day. I consider a total intake of 30mcg (1,250IU) to be closer to the optimum level in the summer if you spend at least 20 minutes outdoors in shorts and t-shirt. You only make significant amounts of vitamin D when your shadow is no longer than your body, as a rough guide. Thirty minutes of sun exposure a day may provide you with the equivalent of 10mcg. Those eating fish and eggs may achieve a further 5mcg.

"In the winter, you'll probably need 1,600iu to 2000iu (40-50µg) vitamin D3 needed to achieve at least 75nmol/l. This is also what you need for optimal disease prevention. For optimal immune function, for example, during winter 'flu season, you'd be wise to supplement a bit more, 3,000IU a day. Since vitamin D stores in the body and takes several days to convert into the stored form, taking a weekly dose i.e., seven times 3,000IU equals 21,000IU a week, is just as effective."

And Guru Dev Seth added: "The Vitamin D Council recommends that healthy adults take 2,000 IU of vitamin D daily -- more if they get little or no sun exposure. There's evidence that people with a lot of body fat need more vitamin D than lean people."





IHCAN Conferences Virtual Event

Saturday 20 November 2020 (09.55 – 17.30)

- World-class speakers
- Virtual expo
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DR CHERYL
BURDETTE, ND,
naturopathic
physician



**'Glowing and Growing
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MARK MARSLAND,
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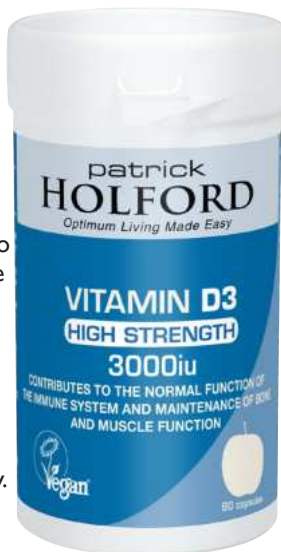


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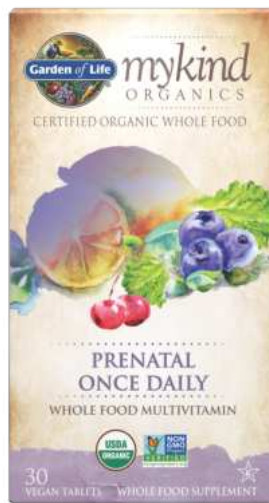
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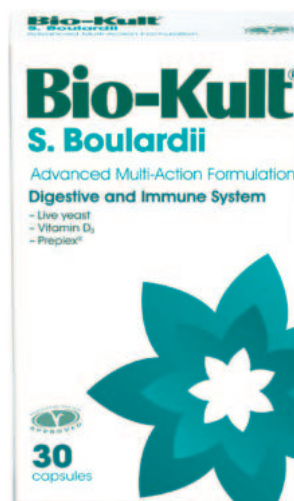


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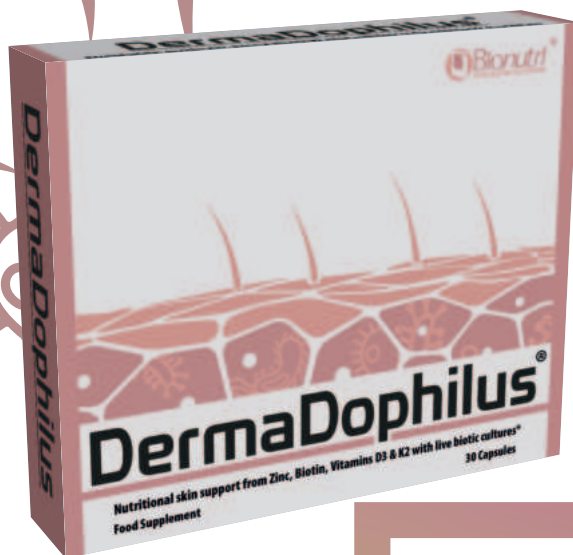
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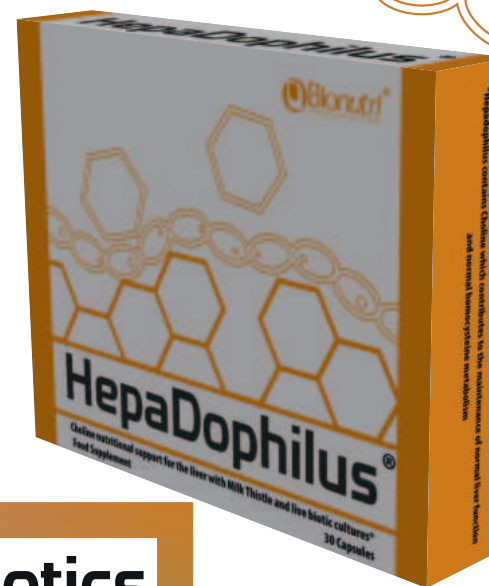
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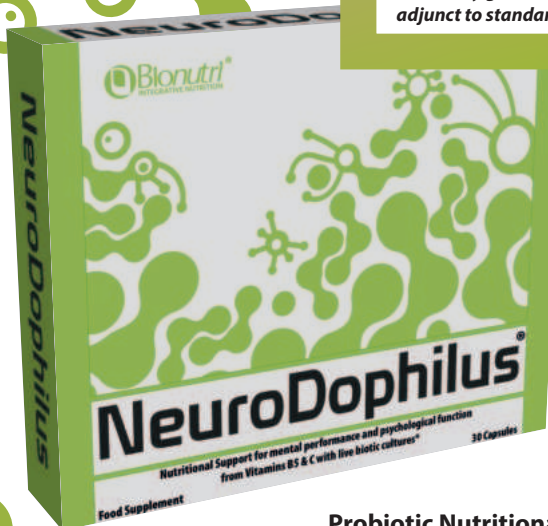
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As always, Bionutri will be presenting a series of weekly webinars throughout November. To join us for any of these events which are free to attend, you can just follow the link or the QR Code at the bottom of the page to sign up. Simply sign up for a weekly notification on the week's upcoming talk.

The launch of our new functional probiotics range will see 2 dedicated talks, we'll also have our in-house botanist presenting a purely plant based talk.

The use of Stimulating Herbs in Nutrition and Naturopathic Practice.

Presented by Edward Joy

3rd November 11am-12pm

A look into the world of herbal stimulation, its benefits in nutrition and its drawbacks with a overview of the different herbs that can be utilised

Functional Probiotics in supporting the Liver and Blood Glucose.

Presented By Sue Mc Garrigle & Edward Joy

10th November 11am-12pm

The first talk of the functional probiotics series looks at the way specific lactic acid organisms can support an over burdened liver and influence blood sugar through the digestion and work of secondary metabolites.

Functional Probiotics in Supporting the Skin and Nervous system

Presented By Sue Mc Garrigle and Edward Joy

17th November 11am-12pm

The second functional probiotics talk looks at how specific organisms can support the relationship between the gut and deep tissue, how the gut can influence our skin and nervous system.

www.bionutri.co.uk/webinars-2021



Fertility in the modern world

A common reason people can seek the advice of a Nutritional Therapist, issues around fertility can be complex. Here, experts offer their insights into the approach you could take in clinic.

There appears to be an upward curve in terms of the numbers of people reporting fertility issues. The reasons for this are, of course, varied, and often involve a combination of factors. But there seems to be a growing link between our often nutrient-depleted diets, sedentary lifestyles and high stress living.

As Michela Vagnini, Nutritional Therapist and Advisor at NaturesPlus, advised: "Infertility is a relatively common condition, greatly affecting couples medically and psychologically. According to NHS UK, around one in six couples in the UK will experience difficulties conceiving, this equates to approximately 3.5m people across the country. Around 84 per cent of those will successfully conceive after trying for 12 months if

they have regular unprotected sex (every two or three days).

"Infertility is usually only diagnosed when a couple have not managed to conceive after a year of trying. Most of the time, we think about fertility as a woman's issue, but over 30 per cent of infertility cases involve male factor problems alone, and 30 per cent of cases involve problems with both partners."

And Helen Ford, Head of In-house Nutrition at The Glenville Nutrition Clinic, added: "Over the past 20 years, fertility problems have increased dramatically. One in six couples now find it difficult to conceive and a quarter of all pregnancies can end in a miscarriage and more and more couples are turning to fertility treatments to help them have a family."



COMMON FACTORS

There is much to consider when looking at fertility, not least because there is a man and a woman involved here. Often, experts find there is not one sole reason that could be a barrier to conception.

“From a medical point of view, infertility is believed to be caused by the following factors: ovulatory failure (including polycystic ovary syndrome), tubal damage, endometriosis, and male problems. However, the most common cause of infertility is ‘unexplained’, which means that following thorough investigations, doctors can find no specific or identifiable medical problem at the root,” Ford advised.

“But this is where a natural approach can come into play. If a couple fails to become pregnant, there is obviously something causing the problem. It’s no good labelling infertility ‘unexplained’. The answer is to look deeper – at lifestyle factors, nutritional deficiencies and even emotional elements.”

Vagnini also pointed out: “There are two types of infertility: primary infertility, where someone who’s never conceived a child in the past has difficulty conceiving; secondary infertility, where someone has had one or more pregnancies in the past, but is having difficulty conceiving again. It affects approximately five per cent of the population. Secondary infertility can be just as devastating as primary infertility, and it is important to recognise that it is important for people not only to have a family, but to have the size of family they want.

“There are many different risk factors that can play a huge part when it comes to fertility. Many of the risk factors for both male and female happen to be the same, while other risk factors are gender specific.

■ **Age** – fertility declines with age in both men and women, although to different extents. After the age of 35, a woman is about 30 per cent less fertile than she was in her early 20s. The chance of successful conception in each natural menstrual cycle drops to five per cent in women by the time they turn 40. The main effect of age on female fertility is a reduction in ovarian reserve, i.e., the number and quality of eggs that remain in the ovaries. Pregnancies conceived in older women have a higher chance of carrying chromosomal abnormalities and therefore miscarriage. Age also affects the success rates of infertility treatments, such as IVF.

■ **Weight** – being overweight or obese (having a body mass index of 30 or over, with a body fat levels that are 10-15 per cent above normal) can overload the body with oestrogen and affect ovulation. In women, obesity is associated with anovulation, menstrual disorders, infertility, difficulties in assisted reproduction, miscarriage, and adverse pregnancy outcomes. Weight is also a risk factor for men. A new study from Harvard

School of Public Health (HSPH), finds that overweight and obese men are more likely than their normal-weight peers to produce lower numbers of sperm, or even no sperm at all.

■ **Sexually transmitted infections (STIs)** – several STIs, including chlamydia, can affect fertility. Chlamydia and gonorrhoea are important preventable causes of pelvic inflammatory disease (PID) and infertility. Untreated, about 10-15 per cent of women with chlamydia will develop PID. Chlamydia can also cause fallopian tube infection without any symptoms. PID and ‘silent’ infection in the upper genital tract may cause permanent damage to the fallopian tubes, uterus, and surrounding tissues, which can lead to infertility. STDs can also cause infertility in men. The process can be similar to how PID damages a woman’s fallopian tubes. The structures of the male reproductive tract, including the epididymis and urethra, can be damaged by infection with an untreated STIs. Viral infections and immunodeficiency caused by HIV can also reduce semen quality in men.

■ **Smoking** – infertility rates in both male and female smokers are about twice the rate of infertility found in non-smokers. Smoking negatively affects the DNA (genetic material) in eggs and sperm, which could lead to miscarriages or have a negative effect on the future child’s health. Chemicals (such as nicotine, cyanide, and carbon monoxide) in cigarette smoke speed up the loss rate of eggs. Menopause can occur one to four years earlier in women who smoke (compared with non-smokers). Male smokers can suffer decreased sperm quality with lower counts and motility and increased numbers of abnormally shaped sperm. Smoking might also decrease the sperm’s ability to fertilise eggs.

■ **Alcohol** – the safest approach is not to drink alcohol at all to keep risks to your baby to a minimum. Drinking too much alcohol can also affect the quality of sperm. The chief medical officers for the UK recommend adults should drink no more than 14 units of alcohol a week, which

should be spread evenly over three days or more.

■ **Environmental factors** – exposure to certain pesticides, solvents and metals has been shown to affect fertility, particularly in men. A very interesting article published by Joseph Pizzorno on the *IMCJ integrative Medicine: a clinician’s journal*, explains how environmental toxins cause infertility in basically four ways: endocrine disruption, damage to the female reproductive system, and damage to the male reproductive system, and impaired foetal viability.”





THE ROLE OF NUTRITIONAL THERAPY

So, how much of a role does our nutrition play in fertility? And from a nutritional and lifestyle perspective, what factors need to be considered in terms of what could be a barrier to conception?

Ford advised: "Although it goes without saying that a healthy diet is crucial to a successful pregnancy and a healthy baby, many people are unaware of the fact that diet can help to correct hormone imbalances that may affect your ability to conceive. The natural approach to fertility is and has been enormously successful, largely because fertility is multi-factorial, meaning that there are many, many elements that can be at the root of your fertility problems.

"A study conducted by the University of Surrey showed that couples with a previous history of infertility who made changes in their lifestyle, diet and took nutritional supplements had an 80 per cent success rate. Given that the success rate for IVF is around 25 per cent, it's worth considering these options.

"Research shows us that people who have diets high in fats, trans fats (the really bad ones in crisps, biscuits and fried foods), sugars and processed foods are more likely to suffer from reduced fertility and miscarriage. A good fertility friendly diet is high in fruits, vegetables, and high fibre foods such as complex carbs and pulses.

"Red meat can promote inflammation, where omega 3 rich oily fish is powerfully anti-inflammatory. Sparing the precious antioxidants by promoting an anti-inflammatory environment is especially helpful. We recommend reducing to one portion or less of red meat per week and increasing your fish intake and trying to incorporate some vegetarian meals weekly."

And Vagnini highlighted other factors to

consider with any nutritional protocol.

"Other nutritional factors to consider when planning for a baby are gut health to improve nutrient absorption, eliminate excess toxins and hormones detoxified by your liver, modulate immune system response. Chronic inflammation can really hijack your fertility and increase risk of miscarriage," she advised.

"Detoxification to eliminate any damaging toxins, excess hormones and environmental pollutants. A good liver complex can make a difference. Choose a blend containing milk thistle, dandelion, artichokes, boldo, turmeric and all nutrients essential for liver detoxification pathways I and II.

"Also, it is important to avoid trans fats, synthetic sweeteners, soda drinks, GMO, refined sugars, alcohol and high caffeine consumption as they are all linked to poor egg and semen quality, and infertility. Don't look just at the food you eat, but also at the chemicals you are exposed to. Look at what is around you, from housecleaning products, perfumes, paints and new furniture, body care products, moulds and EMF. Radiofrequency (RF) EMF and extremely-low-frequency (ELF) MF have been classified as possibly carcinogenic to humans (Group 2B) by the International Agency for Research on Cancer (IARC).

"Research on radiation and male fertility has looked into currently available studies on radiofrequency electromagnetic fields (RF-EMF). It showed that they have deleterious effects on sperm parameters (like sperm count, morphology, motility), affects the role of kinases in cellular metabolism and the endocrine system, and produces genotoxicity, genomic instability and oxidative stress. The production of reactive oxygen species (ROS) is potentially leading to cellular or systemic oxidative stress affecting oocytes health as well."



MANAGE DEFICIENCIES

It could be that testing for certain nutrients is required for clients, given the critical role they play in conception, both for man and woman.

When considering the nutrients of importance, Vagnini commented: "Micronutrient deficiencies in pregnancy can lead to health consequences to the foetus. Examples of efficacious single micronutrient interventions include folic acid to prevent neural tube defects and miscarriages, iodine to prevent cretinism, zinc to reduce of preterm birth, and iron to reduce the risk of low birth weight. Hence, even GP and midwives are now suggesting a prenatal multi to expecting mothers as soon as they find out to be pregnant. But optimal nutrient levels are also essential for preconception and fertility.

"Micronutrients receiving most attention in fertility and commonly provided as supplements, include vitamins A, D, E, folate, B12, B6, and C, iron, zinc, iodine, copper and selenium. In a randomised controlled trial in 60 women at risk of preeclampsia, Rumiris et al showed that a mineral and vitamin combination reduced very early pregnancy loss by 29 per cent. Also, borderline low iodine and selenium deficiency are known to have

an adverse effect on ovulatory performance. Oxidative stress has been shown to cause very early pregnancy loss and antioxidant minerals and vitamins have been shown to improve the outcome of pregnancy."

And, of course, supplements are hugely important when it comes to conception.

"There is now a great deal of scientific knowledge about the use of nutritional supplements and their beneficial effects on both male and female fertility. As you will see, these supplements can be very effective in rebalancing your hormones, as well as improving you and your partner's overall health, which are so vital for successful conception," Ford advised.

"Scientific research has shown that certain vitamins and minerals can increase your chances of getting and staying pregnant. In order to maximise your chances of conceiving it is very important that you and your partner are in optimum health. By eliminating nutritional deficiencies and improving sperm production and mobility, you can dramatically increase your chances of getting pregnant. In order to do this, it is essential that you are obtaining the right nutrients and in the right

quantities to enhance your success. Supplements are necessary because even the best diet in the world may not contain all the nutrients you need to give you the best chance of conceiving."

And in terms of the specifics, she went on: "It is important to have a good multivitamin and mineral supplement that is designed for fertility. This multi would contain a number of key nutrients that are important for women.

"It is well known that folic acid can prevent spina bifida. Folic acid is undoubtedly important, but it is just part of the very important B-complex family of vitamins that are necessary to produce the genetic materials, DNA and RNA. The methyl form makes it easier to absorb if there are any conversion issues."

Vagnini added: "Vitamin D can be one of the most common deficiencies we see in both men and women. Observational studies show that vitamin D deficiency is a risk marker for reduced fertility and various adverse pregnancy outcomes and is associated with a low vitamin D content of breast milk. In men, vitamin D displays a role in regulation of

testis function, influencing male fertility.

"Omega 3 are essential to produce quality eggs and sperm and increase chances of successful ovulation and conception, especially during IVF and IUI assisted fertility procedures."

Let's also not forget about key minerals too.

"One that it is often overlooked is iron deficiency anaemia. Iron deficiency may play a critical role in human infertility, oocyte quality and may even play a role in endometrial receptivity. When suggesting iron, opt for an effective therapeutic dose that can improve total blood health in a short time, without the side effects usually seen with regular iron supplements. Ideally, you want an amino acid chelated iron with co factors," Vagnini suggested.

Ford went on: "Zinc and selenium minerals are important antioxidants, they are essential in protecting egg quality and the DNA within. These minerals are found in nuts and seeds, and we recommend that you include a daily portion of mixed varieties. Zinc also plays a significant role in balancing hormones. It is necessary for how we use our reproductive hormones, oestrogen and progesterone, and is also involved in thyroid hormone production. As the master regulator of hormones, the role of the thyroid is extremely important."

Moving onto antioxidants, if a client doesn't eat much fruit and veg, they can be lacking. When it comes to supporting fertility, supplements should be suggested.

"Vitamins C and E are very important antioxidants, particularly in women over the age of 35. They work together, as vitamin C is water-soluble and vitamin E is fat-soluble. Egg quality is a major concern as we age and is a critical factor in the success of both natural conception and assisted conception treatments, such as IVF," Ford explained.

Vagnini continued: "Poor semen quality is associated with decreased antioxidant capacity. Both increased free radical production and reduced seminal plasma antioxidant capacity have been reported in infertile men. Vitamin C, vitamin E, coenzyme Q10 (CoQ10), carnitine, selenium, zinc, copper, and carotenoids are all excellent nutrients to help reduce oxidative stress caused by free radicals. Coenzyme Q10 is also used in high dosages in women around the age of 40 or above with reduced ovarian reserve or poor ovarian response (POR) to stimulation."

She went on: "As mentioned, tissue oxygenation and blood flow are an important factor in fertility. Herbs like pine bark extract, lycopene, pomegranate, maca and nettle are key when addressing the male partner. Nettle is a multipurpose herb in traditional medicine for which some antioxidative and anti-inflammatory properties have been identified. Researchers in men's health have reported an increase quality of spermatozoa, especially against damaging effects of smoking.

"Supporting libido is an important stage to maintain the couple good harmony. B vitamins, especially B5 and active B6 (P5P), herbs like damiana, maca, ginseng and tribulus can be helpful for both partners. Remember, your supplements should be organic too, not only your diet. Stay away from the so-called 'natural' sources and look for the organic certification on the label!"



CONSIDER STRESS

Another major reason for conception issues relates to our stress levels, given excess stress knocks on to so many areas of our health.

“Stress is a huge factor in fertility, but it is sometimes hard to not feel stressed when all you can think about is having a baby. Make sure there are strategies put in place to help alleviate stress, including deep breathing, warm baths with lavender oils and yoga,” Ford advised.

Vagnini went on: “Stress can affect a couple relationship and cause low sex drive. Combined with weight gain and possible sleep issues, low self-esteem can arise and also contribute to a reduced will of intimate time with the partner. Depression and stress may have a direct effect on the hormones that regulate reproduction and affect sperm production or ovulation. When assessing fertility issues, a therapist should always consider the psychological side of it as stress can be a cause and/or a consequence of subfertility.

“When evaluating a fertility case, particular attention should be paid to stress levels, work/life balance and sleep quality. It would be hard to follow a plan if a client is under major stress and not sleeping properly. Last thing we want is to add extra pressure onto an already challenging situation.

“Personally, whenever I have to deal with stress and lift mood, I prefer using a complex of different nutrients and herbs. Adaptogens are regularly used in clinic to assist the thyroid, adrenals and the whole endocrine system, which will be highly strained by tension and anxiety. My favourite herbs are lemon balm, holy basil and ashwagandha, for positive outlook and peace of mind, L-theanine, Siberian ginseng and rhodiola with added magnesium and B vitamins for stamina, focus and concentration.”



SUGGESTED PROTOCOL

So, if fertility becomes an issue, what kind of protocol could a Nutritional Therapist recommend?

Ford advised: "I recommend breaking it down approximately:

■ **If you have been trying to conceive for six months** – if you are under the age of 35 and have been trying unsuccessfully to conceive for six months, follow the dietary and supplement suggestions given below for three months. At the end of this period, begin trying to conceive again. Give yourself six months before embarking on any fertility treatments or investigation by your doctor or a gynaecologist.

■ **If you have been trying for six months and are over 35** – follow the recommendations but visit your doctor and ask for tests to begin during that first three-month period. If you are given a diagnosis of unexplained infertility, then try for six months on your own before going for medical treatment.

■ **If you have been trying to conceive for 12 months or more** – if you are under the age of 35, follow the suggestions below for three months. Then try on your own for six months before embarking on fertility tests."

You may also want to suggest certain tests.

"First, I would start with vitamin D test, it is a relatively cheap and easy test that can be prescribed or done in clinic. It could also be referred to the GP with a full blood count including B12, folic acid, iron, thyroid functions, hormonal levels, sperm analysis and STIs," Vagnini suggested. "Omega 3:6 ratio test would be another important test to run, alongside a gut functioning test to create an effective gut healing plan. Then other tests would be prescribed by the GP or fertility clinic – my advice is to liaise with them and work alongside their recommendations."

Looking more generally, Vagnini went on: "A clean and organic diet is essential to achieve pregnancy and optimise fertility treatment outcome. Usually, I start with assessing gut function and run a gut healing plan if needed. After that, a detox plan for both partners, including lots of seaweeds and leafy vegetables and reduce intake of red meat and increasing omega 3-rich foods. As water is essential, I would check their hydration levels and suggest to mix water with an organic green juice complex with lots of herbs, greens and algae to increase trace minerals levels, support detoxification and lymphatic system.

"Then, I would work with either a Mediterranean diet approach or a more ketogenic/low carbs diet plan, depending on the cause of the fertility issue and the person. An appropriate exercise regime might be necessary to reduce stress, improve body composition and increase insulin sensitivity."





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Each year, we launch a search for the top products that have made a difference to the lives of your clients with the *Nutrition I-Mag* Product Awards.

For 2021, we bring you a wide range of products that are in the running for an accolade, across a range of categories, some new, some more established but all important in the nutritional therapy market.

But we need you, our readers, to tell us what is deserving of an award, and so we ask for you to read about all the products up for an accolade over the following pages, and then to cast your vote by clicking **here**. Your reasons for voting are your own, but we look forward to hearing from you.

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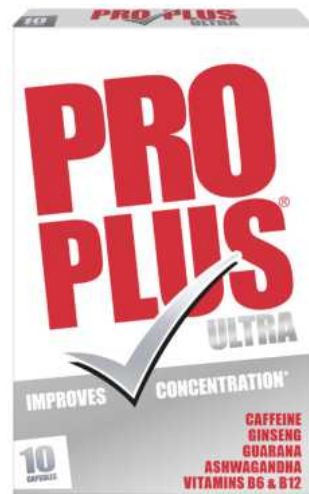


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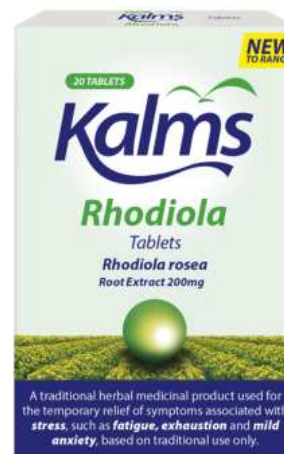
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Feel Supreme Lion's Mane Mushroom extract

Natures Plus Menopause Support

Kalms Rhodiola

Practitioner Supplies Co-ton



Medicinal mushrooms - a practitioner guide

Nutritional Therapist, Jennie Porch, examines how you can incorporate medicinal mushrooms into client protocols.

Imagine a time before pharmaceutical medicines existed, when humans relied on the medicinal power of plants to heal. One such medicinal agent trusted for thousands of years and throughout multiple cultures around the globe was mushrooms.

Cultures with an awareness of fungi as medicines included the ancient Greeks who, according to the Greek physician, Hippocrates (circa 450 BCE), drank mushroom extracts for their anti-inflammatory effects and to cauterise wounds. Around 500 AD, the Chinese alchemist, Tao Hongjing, described several medicinal mushrooms, including ling zhi (reishi). Even the Ice Man, Ötzi (circa 3200 BCE), was found carrying a pouch with the fungi amadou and birch polypore on his journey in the Alps.^[1]

Mushrooms can nourish, heal, poison, or rouse a hallucinogenic journey. In excess of 14,000 mushroom species are known, approximately 3,000 are edible, 700 demonstrate medicinal properties and 140 are poisonous.^[2]

Only recently have our scientific skills progressed to a level that can unlock the secrets of ancient wisdom, finally validating the historical therapeutic uses of mushrooms, with mechanistic rationale and clinical evidence.

The breadth of medicinal mushrooms' therapeutic uses spans as wide as the cultural history runs deep; the vast abundance of bioactive constituents in mushrooms are the basis of their diverse actions.



Jennie Porch is a Registered Nutritional Therapist (mBANT and CNHC) and NLP Practitioner, who specialises in women's health, practicing in person and online through her practice, Nutrio. Jennie is a Module Leader and Lecturer on the undergraduate BSc (Hons) Nutritional Science programme at CNELM. Prior to working in nutrition, Jennie has a background in Neuroscience and 15-plus year career in clinical trials and regulatory affairs in the pharmaceutical industry.



BIOACTIVE CONSTITUENTS

Perhaps the most celebrated of the medicinal mushrooms' bioactive ingredients is β -glucans, a polysaccharide found in fungi cell walls. However, there are thought to be hundreds of other bioactive ingredients in medicinal mushrooms that may be of significance to human health. These include several other polysaccharides, along with polysaccharide-peptide complexes, phenolic acids, sterols (including ergosterol, biological precursor to vitamin D2), terpenoids, proteins, and nucleotides.

A summary of popular medicinal mushrooms, their common and scientific names and major bioactive ingredients are listed below [adapted from ^{[1],[4]}]:

COMMON NAME	SCIENTIFIC NAME	BIOACTIVE CONSTITUENT	CONSTITUENT TYPE
Lion's mane	<i>Hericium erinaceus</i>	Hericenone A Beta glucans	Phenol Polysaccharide
Cordyceps	<i>Cordyceps sinensis</i> , Caterpillar mushrooms	Adenosine Cordycepin	Nucleotide Nucleotide
Turkey tail, Coriolus, Yun zhi	<i>Trametes versicolor</i> (<i>Coriolus versicolor</i>)	Polysaccharide peptide (PSP) Polysaccharide K	Polysaccharide peptide Polysaccharide peptide
Maitake	<i>Grifolia frondosa</i>	Fraction-DM Grifolan	Polysaccharide (beta glucan) Polysaccharide
Reishi, Lingzhi	<i>Ganoderma lucidum</i>	Ganodermic acid	Terpenoid
Shiitake	<i>Lentinus edodes</i>	Lentinan	Terpenoid

Technology continues to innovate, affording new extraction, purification, and characterisation methods to isolate novel mushroom-derived compounds. As the scientific search deepens to understand the 'how' behind medicinal mushrooms' ancient uses, unnamed compounds are continually added to the list for further investigation.

It is these bioactive constituents that give rise to the vast array of physiological actions reported for medicinal mushrooms. The most widely characterised actions are stimulation of the immune system, and modulation of both innate and adaptive immune systems (immunomodulation), along with antioxidant, anti-tumour, anti-cancer, antiviral, anti-parasitic, antibacterial, antifungal, antinociceptive, anti-hypercholesterolemic, detoxification, anti-diabetic and hepatoprotective activities ^[2,3].

Since each mushroom species combines a cocktail of potentially hundreds of bioactive constituents, each has a unique health-promoting signature. Therapeutic applications, therefore, vary across the landscape of mushroom species. Selecting a target therapeutic mushroom, or combination, may therefore take some skill on behalf of the practitioner. That said, since each medicinal mushroom has the potential for multi-spectrum therapeutic applications, theoretically, one mushroom may be employed to support multiple symptoms, thus affording some flexibility.



NUTRIENT VALUE

Owing to their richness in proteins, minerals, and other nutrients, medicinal mushrooms provide more than a therapeutic role; they also nourish.

The vast repertoire of nutrients contained in medicinal mushrooms (including amino acids, polyphenols, iron, selenium, potassium, zinc, B vitamins and vitamin D2), mean they also earn their culinary stripes ^[4]. Additionally, the insoluble fibres (including chitin) and polysaccharides act as prebiotics, supporting a healthy intestinal microbiome ^[4,5].

While mushroom nutraceuticals for therapeutic use are one option, dietary inclusion in meals is a more accessible option for general health. Manufacturers are also developing new products, such as medicinal mushroom powders, that can be added to fortify meals such as soups, sauces and smoothies.

FOCUS ON IMMUNOMODULATION

A key therapeutic mechanism of medicinal mushrooms, well-established in laboratory experiments and with a growing bank of preclinical and clinical studies, is their ability to stimulate and modulate the immune system. This property has, in particular, been applied to support the body's response against cancers and viruses ^[1].

Mushroom compounds exert their immune modulating properties through a variety of molecular mechanisms. One of which is by influencing the production of cytokines, the immune system messengers secreted by cells responsible for regulating the innate and adaptive immune system ^[6].

Studies show a varied profile of cytokines expression elicited by different mushrooms species ^[2].

MUSHROOM	CYTOKINE EXPRESSION
Reishi	IL-1, IL-2, IL-6, TNF- α , and interferon-gamma (IFN- γ)
Maitake	IL-1, IL-6, and IL-8
Turkey tail, shiitake	IL-1, IL-2, IL-6, IL-8, TNF, and interferons

The benefits to immunological function, by enhancing cell-mediated immunity, have been demonstrated in an RCT in healthy subjects. Regular consumption of a reishi complex resulted in increased T helper cells (CD4+ & CD8+), and significantly enhanced the production of the Th1 cytokine, interferon-gamma (IFN- γ) (all $p < 0.005$) ^[7,25].

Oncology treatments target the Th1 pattern of cytokines (including IFN- γ), which stimulate a cellular immune response that can promote anti-tumour mechanisms. Natural killer (NK) cells, CD8+ T cells and macrophages, are stimulated and deployed to enhance tumour cell destruction. Hence, mushrooms that increase IFN- γ and drive a Th1 response, are a focus for cancer support ^[1,2,8].

One of the reasons that mushrooms can cause immune activation is due to components of mushroom cell walls (particularly β -glucans), which contain pathogen associated molecular patterns (PAMPs). These signal antigen invasion to the host, triggering pattern recognition receptors (PRR) and toll-like receptors (TLRs) to initiate signalling pathways that coordinate innate and adaptive immune responses ^[2,9]. The immune responses triggered include cytokine production and activation of dendritic cells, macrophages, neutrophils, and monocytes and NK cells ^[2].

Note that mushrooms appear to affect cancer through both immunomodulation and/or by affecting on the tumour directly (for example, via cell cycle arrest, anti-angiogenesis, anti-proliferative effects) ^[1,9,10].

Aside from cancer support, the immunomodulatory action of medicinal mushrooms can be employed to support general health by enhancing immune surveillance against invading pathogens ^[9].





CLINICAL SAFETY

Along with their therapeutic activity, the active substances within the mushroom extracts have also been researched for biochemical interactions and toxicity. In comparison to conventional medications medicinal mushrooms have shown minimal drug interactions and adverse events ^[1].

An in vitro evaluation of the inhibitory potential of eight fungal extracts on the CYP450 (isoforms CYP3A4, CYP2D6, CYP2D9) liver enzymes showed no significant inhibition suggesting interactions with medications is low risk ^[11].

Manufacturers do advise some caution is exercised with reishi and concomitant use with anticoagulants may require dose adjustments. However, an RCT reported no clotting issues with seen with reishi administration ^[12].

Medicinal mushrooms, therefore, offer one of the safer options to use as adjuvants alongside conventional therapeutic approaches.

SPECIES SNAPSHOT

A review of a selection of popular medicinal mushrooms centring around emerging evidence from clinical studies.

The medicinal qualities of mushrooms are widely cited, however, despite the evidence-base growing rapidly over the past decade, much research is performed inside the laboratory with few intervention studies performed to modern clinical trial standards. Further evidence from prospective well-designed studies would help guide therapeutic strategies and treatment regimes.

REISHI

Reishi has the most clinical research and ongoing trials of all the medicinal mushrooms, primarily showing promise as an adjunct to conventional cancer therapy.

A meta-analysis demonstrated that patients who had been given reishi, alongside chemo/radiotherapy, were more likely to respond positively compared to conventional therapy alone due to its potential to enhance tumour response and stimulate host immunity. Reishi-treated patients demonstrated increased percentage of lymphocytes (CD3, CD4, CD8), and reported an improvement in quality of life and side effects ^[13].

Laboratory research demonstrates the radio protective effects ^[14] as well as anti-inflammatory actions ^[15] of reishi extracts, properties which may also be

supportive during cancer treatments.

Clinical trials involving reishi include antiviral activity to HPV ^[16], improving fitness in fibromyalgia ^[17], antioxidant capacity against pathogenesis of atherosclerosis ^[18] and as a hepatoprotector ^[19].

Perhaps it is the antioxidative capacity and the ability to curb oxidative stress, that has earned reishi its ancient status as an anti-ageing agent and the notable title of 'elixir of external youth'.



MAITAKE

Investigations are ongoing in using maitake to prevent and improve diabetes, obesity and metabolic-related syndromes, however, the main body of this research lies in *in vitro* and *in vivo* studies. In animal models of obesity and diabetes, administration of maitake extracts reduced blood glucose and triglyceride levels and adipose tissue. Following on from this, a small four-week human study involving subjects with prediabetes resulted in decreases in triglyceride levels ^[21].

An RCT in polycystic ovary syndrome (PCOS) suggests that maitake supplementation may induce ovulation in PCOS patients, possibly by insulin sensitising effects ^[22].

Other areas of research investigate the immunological and anti-cancer effects of maitake mushrooms; although published clinical trials are limited (maitake use in myelodysplastic syndromes ^[23]), a number of studies are currently ongoing ^[24].



TURKEY TAIL

Clinical evidence points towards the use of turkey tail in supporting defences against cancer and viruses.

A meta-analysis reports intake of turkey tail has survival benefits in cancer patients, particularly in breast, gastric and colorectal cancers ^[25]. An RCT with PSP derived from turkey tail reported a slower progression of advanced non-small cell lung cancer ^[26].

Anti-viral clinical trials are limited although preliminary RCT using both turkey tail and reishi was conducted on the clearance of oral human papillomavirus (HPV, serotypes 16 and 18). After two months, the clearance of HPV in the turkey tail plus reishi group was 88 per cent versus five per cent in a group taking another fungi, *Laetiporus sulphureus* ($P < 0.001$) ^[27].

A very recent 2021 retrospective observational study demonstrated the therapeutic efficacy of a vaginal gel containing turkey tail extract in women with cervical uterine HPV infection. Statistically significant results were seen in remission at colposcopy and cytology and clearance of HPV DNA over six months ^[28].



LION'S MANE

Clinical studies with lion's mane are limited, however, currently focus on the areas of cognitive function and depression/anxiety.

A recent (2019) 12-week RCT with lion's mane supplementation evaluated for improvement of the cognitive functions using the Mini Mental State Examination, reported significantly improved cognitive functions ^[29].

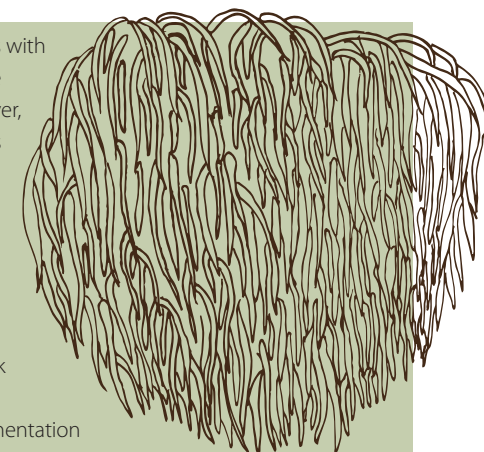
Other clinical trial results with lion's mane supplementation report a reduction of depression and anxiety ^[30].

The potential neuroprotective benefits of lion's mane bring promise for its use in the prevention and management of neurodegenerative diseases. Current trials under active recruitment focus on the area of neurodegenerative diseases as well as cognition and mood ^[31].

Despite medical and technological advances, the burden of health issues increases. As this burden grows, we crane our heads backwards to discover, through modern eyes, how nature supported our health in ancient times.

The fungi kingdom appears to offer a treasure trove of possibilities to harness the extraordinary power of natural medicine. The strength and breadth of responses in human systems appear significantly greater than human responses to plants. One may speculate that the enhanced medicinal benefits we observe from the fungi kingdom is down to our closer phylogenetic relationship than to that of the plant kingdom ^[32].

Glancing beyond the limited, but growing, clinical research, and across the abundance of *in vivo* and *in vitro* research, there is a sense that there is merely a scratch in the surface of the potential of medicinal mushrooms.





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EXPERT ADVICE

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



Can you explain why omega 3 is essential for optimal mental health?

JULIE LAMBLE ADVISED: The two most important omega 3 essential fatty acids for good health are docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA).

These long chain essential fatty acids are vital components of the phospholipids that form our cell membranes. These protect our cells and also provide efficient communication between them, which plays an important part in our mental health.

Studies have suggested that low levels of DHA may be associated with less grey matter, a part of the brain that is involved in our emotions, decision making and self-control. This lack of grey matter is linked to a smaller brain size, which ages more quickly and may be more susceptible to age-related cognitive decline, mild cognitive impairment and progression of mental health disorders.

Alzheimer's is a progressive brain disease that slowly causes impairment in memory and cognitive function, where no cure is available and is the most common type of dementia. It has been found over a seven-year period that people who consume fish once a week or more had 60 per cent less risk of developing Alzheimer's disease compared to those who never or rarely ate fish. It is apparent that this effect was prominently due to DHA and not EPA. The lowest amount of DHA that offered some protection was just 100mg per day.

How DHA has a beneficial action for Alzheimer's disease

is not fully understood, however, it may have a reductive effect on the formation of amyloid plaques, which build up in the condition. DHA may also work like non-steroidal anti-inflammatory drugs and lower arachidonic acid, an unsaturated fatty acid, which is linked to causing the disease.

Omega 3 has also been found to be deficient in people with certain mood disorders, such as depression and anxiety, and inflammation has been identified as the main contributory factor. In this instance, EPA is considered the most important omega 3 fatty acid, since it may have more beneficial anti-inflammatory effects.

Several studies have shown that taking EPA in high intakes can improve depression, with 2g a day being the most effective, or a ratio of 2:1 or 3:1 of DHA to EPA respectively.

EPA, in particular, is able to reduce proinflammatory immune chemicals (including cytokines and interleukin-1 beta), which can be elevated by psychological stress and have suppressive effects on our central nervous system. Many anti-depressants work similarly by inhibiting the release of these inflammatory cytokines and their elevations are associated with the severity of depression.

It is, therefore, clear, that omega 3 is vital for good mental health throughout life by preserving cognitive functioning and also by reducing mental decline and mood disorders that impair our brain health.



ABOUT THE EXPERT

Julie Lamble is a Nutritionist and works as Consumer Trainer-Adviser to the supplement brand, MINAMI.



Can you detail why is it important to have different strains of bacteria in your diet and the best recommendations to make?

MICHELA VAGNINI ADVISED:

Diverse gut bacteria play an important role in our overall health. They metabolise nutrients from food and certain medications, protect the intestines from infection and produce vitamin K, which contributes to normal blood clotting. A lack of bacterial diversity has been identified in people with IBD, types 1 and 2 diabetes, obesity, atopic eczema and coeliac disease.

Studies also show that certain strains of bacteria could be key to preventing or treating some diseases, including a connection between unhealthy gut microbiome and cardiovascular disease. A healthy gut is also a healthy immune system, improved digestion and mood. Research shows that healthy gut bacteria can alleviate depression and anxiety.

Fermented foods are foods that contain natural bacteria that have been left to age. The bacteria feed on the natural sugars in the food and break these down into other components, such as gasses, organic acids or alcohol. Fermented foods include sauerkraut, kefir, kombucha, natural yoghurt, kimchi, tempeh, miso, and pickles.

Prebiotic foods include bananas, garlic, onions, leeks, Jerusalem artichokes, asparagus and chicory. Probiotics are found in natural yogurt, sourdough bread, some cheeses and also some non-dairy yogurts. It's also beneficial to use a supplement to ensure you are getting a broad enough spectrum of beneficial bacteria.



ABOUT THE EXPERT

Michela Vagnini is a Nutritional Therapist and Reflexologist. She studied at the College of Naturopathic Medicine (CNM London), where she graduated as Nutritional Therapist in 2012 and has been practising in her own London clinic, focusing on family health, cooking classes and talks. Michela has been working in the natural health industry for over 12 years and is very passionate about complementary therapies and tasty healthy food. Alongside her clinic job, Michela is working as Nutritional Advisor and trainer for NaturesPlus.



How can we minimise the threat of chronic low-grade inflammation?

RACHEL REDMAN SUGGESTED: The involvement of chronic low-grade inflammation in the pathophysiology of 'modern' chronic conditions is undeniable. Chronic inflammatory diseases represent the most significant cause of death in the world, with three in five deaths worldwide being caused by so-called non-communicable diseases, such as ischaemic heart disease, stroke, chronic respiratory diseases, cancer, obesity, and diabetes. So how can we, as health practitioners, help our clients minimise or manage this threat?

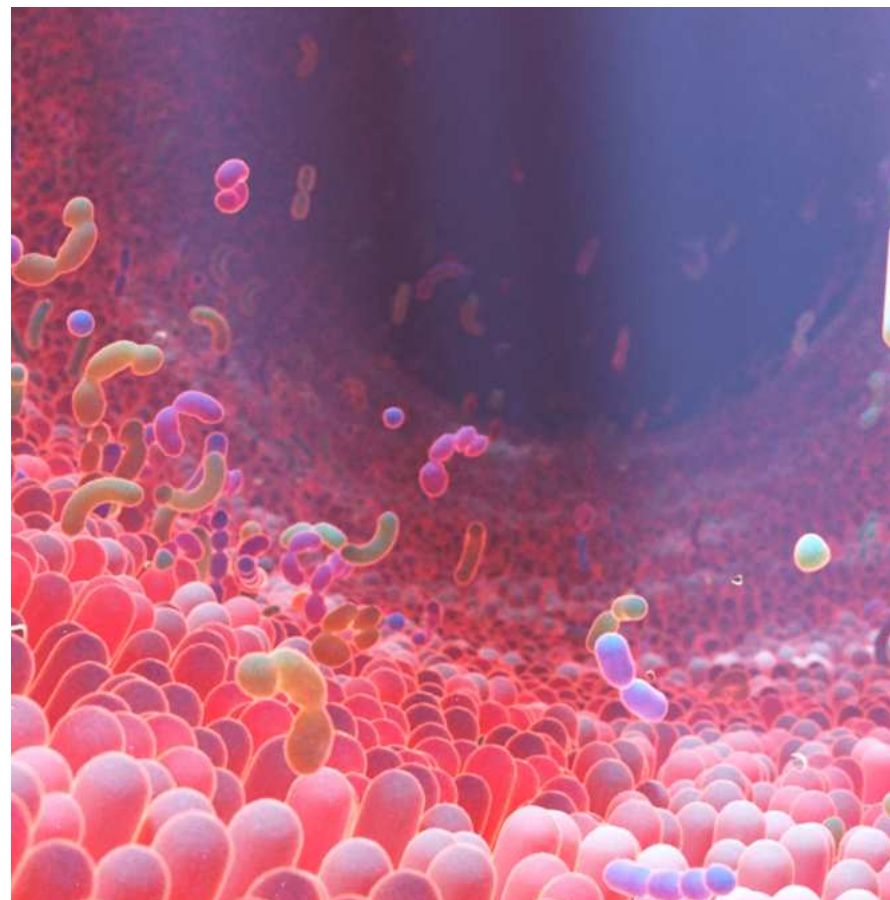
We know our gut microbiome profoundly affects our health in a systemic way, not least through our immune function: through the development and maintenance of our mucosal immune system, protection against invading pathogens, and maintenance of our gut integrity. Gut permeability to bacterial lipopolysaccharides (LPS), a potent inflammatory stimulant found on the outer membrane of certain gut bacteria, appears to be an important trigger for low-grade systemic inflammation. Certain members of the gut microbiota have also been found to induce mimics of human antigens and trigger the production of autoantibodies to normal human proteins and hormones, including leptin, peptide YY and ghrelin. Some, therefore, suggest that the energy-dense, nutrient-deprived Western diet's influence on our gut microbiome could be partly responsible for triggering/progressing autoimmune conditions, alongside other environmental and genetic factors.

On the flip side, diets rich in whole plant foods and fermentable fibres can influence immune function and tolerance through gut microbial fermentation and production of short chain fatty acids. Butyrate, for example, controls human dendritic cell maturation, cells considered to be 'gate keepers' of the immune system. Alongside lifestyle factors such as regular exercise, good sleep hygiene, avoiding smoking, excessive alcohol and managing stress, dietary interventions can play a big part in minimising the risk of developing or enhancing low-grade inflammation.

The Mediterranean diet, one of the most studied and best-known diets worldwide, is well-recognised for its anti-inflammatory and overall health benefits. Primarily a plant-based diet, it includes an abundant and diverse range of wholegrains and fermentable fibres, plenty of legumes, nuts and seeds, to positively influence the gut microbiome; a wide variety of brightly coloured fruits and vegetables providing natural antioxidants and polyphenols; a low to moderate intake of dairy produce, eggs, fish (favouring oily fish) and poultry; low meat consumption; extra virgin olive oil as primary source of fat, thereby supporting a low $\Omega 6$: $\Omega 3$ fatty acid ratio; and a moderate consumption of resveratrol-rich red wine, alongside meals.

The role of micronutrients in regulating inflammation and immunity is also well recognised, yet many nutrients fall short of optimal in the typical UK diet. Magnesium and vitamin D are known to suppress inflammatory mediators, while vitamin E, vitamin C, zinc, and selenium act as potent antioxidants to reduce oxidative stress, among others. It is, therefore, critical to avoid micronutrient deficiencies, or suboptimal intakes, and where necessary, high quality nutritional supplementation should be considered. There is also growing evidence of the anti-inflammatory, antioxidant, and in some cases, prebiotic benefits of other compounds and herbal extracts, such as CoQ10, quercetin, certain amino acids, herbs and spices. These include garlic, curcumin, cinnamon, black or cayenne pepper, ginger, fenugreek, oregano, rosemary, green and black tea, to name a few.

In stark contrast with the typical nutrient-deprived, low-fibre, Western-style diet, high in refined carbohydrates, processed foods, and saturated fats, the Mediterranean diet offers clinically-proven health benefits and a more sustainable way of eating, which can benefit us, our clients and our planet.



ABOUT THE EXPERT

Rachel Redman BSc. RD. is a Registered Dietitian working with Positive Science People, a UK-based nutritional supplement producer, which shares her immense passion for improving people's health, wellbeing and quality of life. A member of the British Dietetic Association and affiliate member of BANT, Rachel has 20 years' experience working in the NHS, nutrition and healthcare industries.



The power of kefir



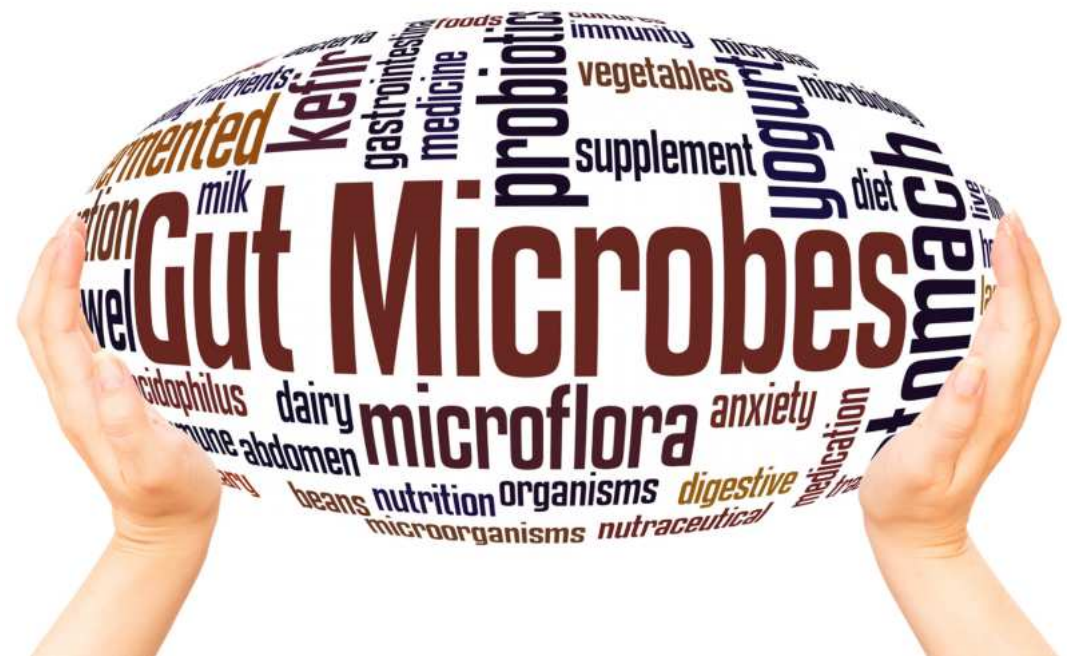
Sue McGarrigle, Clinical Nutritional Therapist and Naturopath, examines how to support gut health with kefir.

The contribution and sphere of influence of the human microbiome to host biology cannot be overestimated. The microbiome has a significant impact on our health and on associated diseases.

From birth, our own unique microflora increases in diversity and stability, maturing our immune system and influencing our wellbeing. By age two-three, the gut microbial communities

should have developed a richness and diversity that is characteristic of a healthy adult gut. Unfortunately, there are a lot of people, including children, who lack optimal digestion, who can't tolerate certain foods or eat what they want, who lack nutrition through malabsorption and dysbiosis and who have compromised barrier function – some key fundamentals of health.

Diet is an important factor in shaping the adult gut microbiota. Lack of hydration, fermented, butter and plant foods, enzymes and diversity in diets promotes an unfavourable and less resilient inner environment. Microbial imbalances, inflammation, toxicity, and poor membrane health (from the effects of challenges of life) not only affect overall health but also our innate ability for self-healing, leading to tissue weakness and disease.





CHOOSING KEFIR

As we age, our microbiota may become more vulnerable and with decreased efficacy of the ageing immune system, become more susceptible to environmental and pathogenic challenges. Day by day, we are seeing new evidence emerge of how micro-organisms are implicated in various aspects of our health. How much do we know about these communities?

The links to transient and resident micro-organisms and their influences is fascinating, not least because the trillions of microbes inhabiting our intestine often produce unique states in the gut through their collective activities and cooperative metabolism.

At Bionutri, we revere the drink kefir and look closely into the fine balance of organisms responsible for the fermentation. One in particular, *Lactobacillus kefir* has been of great interest to us for the synergistic role it plays with other organisms in the kefir grain. In the right environment, the kefir grain will exist in a state of simultaneous symbiosis until its catalysis, the results of which provide many of the kefir and kombucha drinks worldwide. Bionutri is not trying to recreate or replicate the kefir drink. Our interest lies in how the process involved in creating a glass of kefir can be replicated in the human gut to support good nutrition.

I have recommended transient probiotics regularly and see them as a simple but important naturopathic step forward in providing the body with a profound and nourishing way back to health by influencing our own commensal population. I have found there to be consistently positive results without over-stimulation and burden on an already weakened system. What better or fundamental way to help individuals and enable their own restoration, whether as a fresh culture or an instant supplement?



Sue McGarrigle is a Clinical Nutritional Therapist and Naturopath and has practiced since 2001. Sue works for Bionutri, advising

and helping practitioners in their various practice matters. As a lecturer to college and university students to Masters level, Sue has trained hundreds of healthcare and medical practitioners in many aspects of nutritional therapy. She writes as a regular contributor of specialist nutrition articles for magazines and newspapers and has been a guest speaker at various national conferences.

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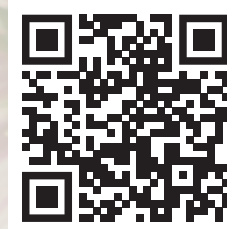
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Banana muffins



Celeriac and chestnut pie with mushroom sauce



Feta, chilli and thyme scones



Walnut and honey soda bread



Banana muffins

Next time you have a couple of bananas turning brown in the fruit bowl, don't even think about throwing them out! Make these tasty breakfast treats instead, which have a lovely nutty flavour from the spelt or wholemeal flour.

Serves 10

Prep: 20 minutes

Cook: 30 minutes

Ingredients:

- 125g self-raising flour
- 125g spelt or wholemeal flour
- 100g caster sugar
- 2tsp baking powder
- 1tsp bicarbonate of soda
- 1tsp mixed spice
- 2 large ripe bananas
- 75g butter, melted
- 2 free-range eggs
- 125ml milk

To serve:

- 50g banana chips
- 200ml yoghurt or crème fraîche
- 1tbsp honey

Method:

- Preheat the oven to 190°C. Mix the dry ingredients in one bowl and mash the bananas in another. Add the melted butter, eggs and milk to the mashed banana and whisk to combine everything. Make a well in the dry ingredients, then gradually mix in the wet ingredients with a fork. Try not to overwork the flour, otherwise the muffins will be dense and heavy.
- Spoon the mixture into 10 paper cases set out in a muffin tray or moulds to support the sides (you can use silicon moulds or individual Yorkshire pudding moulds). If you like, place a banana chip on top of each muffin.
- Bake for 20 to 25 minutes in the pre-heated oven until the muffins are coming away from the sides of the cases. Cool and then serve with the yoghurt or crème fraîche, scattered with the remaining banana chips and drizzled with honey.



CELERIC AND CHESTNUT PIE
WITH MUSHROOM SAUCE



FETA, CHILLI AND
THYME SCONES



WALNUT AND HONEY
SODA BREAD



Celeriac and chestnut pie with mushroom sauce

Celeriac is an under-used vegetable with an earthy, nutty taste. It makes a great cold side dish grated and mixed with a combination of mayonnaise, Dijon mustard and lemon juice. This cooked dish is an ideal autumnal supper.

Serves 6

Prep: 20-30 minutes

Cook: approximately 1 hour

Ingredients:

- 400ml double cream
- 100ml whole milk
- 2 cloves of garlic, peeled and crushed
- 2 or 3 sprigs of fresh thyme
- 500g potatoes, peeled
- 500g celeriac, peeled
- 2-3tbsp cornflour
- 2tbsp olive oil
- 300g mixed fresh mushrooms (such as button, oyster, porcini)
- 100g cooked chestnuts
- 300g puff pastry
- 2 egg yolks, beaten with a little milk

Method:

- Heat the cream and milk in a large saucepan with the garlic and thyme to infuse.
- Slice the potato and celeriac quite thinly (2-3mm): a mandolin is useful here, although a sharp knife can do just as well. Add the celeriac and potato to the saucepan and simmer for five to seven minutes until the vegetables are starting to soften.
- Drain and reserve the liquid. Mix the cornflour with a

little of this to form a smooth paste. Pour the infused milk and cream back into the pan and thicken by stirring in the cornflour paste. Bring it back to a gentle simmer, then pass the sauce through a sieve and set aside.

- In a separate pan, heat the oil while you slice the mushrooms. Fry them in the oil, increasing the heat as the water comes out of the mushrooms to give them a little colour. As they start to dry out, take the pan off the heat.

- Butter or oil a pie dish and layer half the potato and celeriac in the bottom. Add a layer of the mushrooms and cooked chestnuts, then a final layer of celeriac and potato. Pre-heat the oven to 200°C and leave the pie filling to cool while you roll out the pastry.

- Cut out a lid from the puff pastry a little larger than your dish and brush the rim of the dish with a little of the egg yolk. Use strips of excess pastry to line the rim of the dish and form a border to stick the lid to. Lay the pastry lid over the dish and press down around the edges with your fingers to form a good seal. Make a couple of slits in the centre to allow steam to escape while cooking, and if you like add some decoration on top using leftover pastry cuttings.

- Brush the whole pie thoroughly with the egg wash to ensure a good glaze. Bake in the pre-heated oven for 30-40 minutes until the pastry has risen, the filling is piping hot and the whole lid is golden brown. Serve with the reheated mushroom sauce on the side.



BANANA MUFFINS



FETA, CHILLI AND THYME SCONES



WALNUT AND HONEY SODA BREAD

Feta, chilli and thyme scones

Spread with apple chutney and served warm with a salad on the side, these savoury scones make a lovely summer lunch.

Serves 4

Prep: 15 minutes

Cook: 15-20 minutes

Ingredients:

- 350g self-raising flour
- 1tbsp baking powder
- ½ tsp salt
- 50g butter
- 1tbsp olive oil
- 100g feta, cubed
- 10 olives, coarsely chopped
- 1tsp dried thyme
- ½ tsp dried chilli flakes
- 300ml milk
- 1 egg, beaten with a little milk

Method:

- Pre-heat the oven to 200°C.
- In a large bowl, combine the flour,

baking powder and salt. Rub in the butter and oil until the mixture resembles breadcrumbs, then add the feta, olives, thyme and chilli. Make a well in the centre and add the milk using a metal spoon to fold the mixture together into a dough, which should be quite sticky.

• Without handling the dough too much, press it gently into a round, about 3-4cm thick. It can help to use floured hands to stop the dough sticking. Cut into eight wedges and place onto a parchment-lined baking sheet.

• Brush the scone wedges with the egg wash to give them a good glaze. Bake for 15-20 minutes in the pre-heated oven until they are well risen and a lovely golden colour on top. Serve warm with accompaniments of your choice.



CELERIAC AND CHESTNUT PIE
WITH MUSHROOM SAUCE



BANANA MUFFINS



WALNUT AND HONEY
SODA BREAD





Walnut and honey soda bread

Sweet and savoury at the same time, with an incredible depth of flavour, this is a quick bread which can be made by a reasonably early riser to give friends or family a lovely breakfast. Alternatively, make this to serve with your cheeseboard.

Makes one loaf

Prep: 15 minutes

Cook: 30-40 minutes

Ingredients:

- 200g walnuts
- 150g honey
- 500g wholemeal flour
- 4tsp baking powder
- 10g salt

Method:

- Preheat the oven to 200°C and lightly oil a baking sheet.
- Divide the walnuts into two roughly equal piles. Put one half into a food processor or a mortar, then blitz or crush with the pestle to

a coarse powder. Using your hands, break the other pile of walnuts into large, rough chunks.

- Put the honey in a pan with 300ml of water and heat gently until the honey dissolves.
- Put the flour, baking powder, salt and all the walnuts into a large bowl and stir to combine. Pour in the honey water and mix to a soft dough.
- Turn the dough out onto a lightly floured surface, shape it into a rough, round loaf and place on the oiled baking sheet. Slice a deep cross into the top, going almost right the way through to the baking sheet.
- Bake in the pre-heated oven for 30-40 minutes, until well risen and golden brown. Remove, set aside to cool and serve as soon as possible. At the very latest, eat within 24 hours.



FETA, CHILLI AND
THYME SCONES



CELERIAC AND CHESTNUT PIE
WITH MUSHROOM SAUCE

THE
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HEALTHY RECIPES FOR YOU AND YOUR PLANET

The Climate Change Cook Book – Healthy Recipes for You and Your Planet, by Peter Taylor, is published by Meze Publishing.



BANANA MUFFINS

New to Nutri

A pandemic has done nothing to slow the NPD programme at the innovative Nutri Advanced. With a range of new launches, *Nutrition I-Mag* hears from the team about the plans for the future and its commitment to supporting practitioners.

When the pandemic hit last year, for many, it was a case of focusing on getting through the process, meaning new product launches were put on the backburner.

But for Nutri Advanced, the innovation continued, and the company has continued to develop and launch new products for its practitioner audience.

Katherine Pardo, Head of Nutrition & Education at Nutri Advanced, explained: "NPD is a core part of our business, and we didn't want to let it slip throughout the pandemic, as the demand for new and innovative products was still there, albeit with a slightly different focus.

"The main difficulty has been the disruptions in the supply chain though – none of our product reformulations or new product developments have been straightforward, with numerous changes needing to be made due to lack of availability of raw materials, or delays in manufacture. Our stock control systems have been severely tested over the last 18 months and we're still continuing to feel the effect of that. As well as delays due to Brexit obviously, which has brought all manner of licensing issues and delivery issues with it.

"But thankfully, our practitioners have been very patient and understanding when we have had unavoidable delays, but hopefully, most of the time they remain unaware of all the logistical difficulties going on behind the scenes."

SUPPORTING PRACTITIONERS

As a business with its foundations with practitioners, supporting them during the pandemic was of paramount importance to Nutri – and the team clearly put in a lot of time and thought into how best to do that.

"Practitioners have and always will be extremely important to us, and throughout the early stages of the pandemic, it was so difficult for them to make such a sudden transition to remote working that we really felt it was important to help support them whilst their business landscape was changing so profoundly," Katherine explained. "We started up our informal Nutri Hour training during this time to keep up the contact with our practitioners, as many of them weren't able to continue their consultations due to legal restrictions or they simply weren't set up to conduct consultations remotely. Now, of course, Zoom has become part of our daily language, but at the time, it was a very scary proposition for a lot of practitioners."

In addition, the company also ran its Gut Programme with practitioners during the first lockdown, which was completely over-subscribed.

Katherine added: "I don't think we could have anticipated just how much the practitioners wanted to invest in their training and, of course, at the time, many of them had the free time in order to do it. We have continued with the Nutri Hour ever since and we've had a huge range of speakers covering a multitude of topics, so we've had great numbers

booking onto those and some fantastic feedback from our practitioners.

"What we've really tried to do is to support practitioners with their businesses during all of the uncertainty and we'll continue to do that in any way possible whilst they get back on their feet. We also appreciate that this is a difficult time to be graduating from college and starting out in business, so we're reaching out to all of our recent graduates to encourage them to take advantage of our practice development team."

When it comes to adapting during the pandemic, there was clear demand for specific products.

"Probably like a lot of supplement companies, we experienced a massive spike in demand for our immune products, certainly earlier on. At the start of the pandemic, our vitamin C products, zinc, our vitamin D range and our beta glucans product, ImmunoBlast, were all flying out of the door, and we could barely keep up with demand," Katherine recalled.

"We also saw a massive uplift in our Multi Essentials range throughout the entire period. And then we saw the same pattern again last winter as schools reopened and case numbers started to rise, but patterns are starting to return more to normal now. We'll have to see what happens as we go further into the 'flu season, but people definitely seem to be more switched onto the idea of looking after their own health as a result of the pandemic."



NPD HIGHLIGHTS

Looking in greater detail at the latest NPD successes, there have been a number.

Katherine revealed: "Our MegaMag PeriMeno Plus was one of the first products launched after the pandemic hit, and it shot straight into our top 10 products and has remained there ever since. Obviously female health, especially for older women, has been a major talking point and has gained so much media coverage, it was obvious that the appetite was there for a product that really works in supporting symptoms associated with the peri-menopausal transition.

"We also ran our PeriMenopause Programme shortly after launch, which drove demand for the product even higher. It has to be one of our most successful launches of recent years."

Another key product launch was Immune Protect, a simple immune support formula with added quercetin, which was created to help meet the demand for a high quality daily immune support.

"Algae-Sourced Calcium, a natural calcium product, Vitamin K2 Drops and Vitamin A Drops have also all been launched in the last year or so and we're seeing sales grow well for all of them," Katherine went on.

Looking further at the female health offering, this is a key range for Nutri Advanced, so, how can we expect it to be developed?

"We've been focusing on extending our women's health range of late to meet the rise in demand, but we have core products that have been around for ages that are always amongst our best sellers, so we've been trying to educate more about those products too," Katherine advised, adding: "Multi Essentials for Women, MegaMag Fem Balance and Estrolium, for instance, have been key products in our range for a long time and always get amazing

reviews and testimonials.

"We have now just introduced our Multi Essentials for Women 50+, which has some added natural algae-sourced calcium to support healthy bones, as well as botanicals, turmeric, ashwagandha and bacopa to support stress, vitality and memory. And we've made it iron-free as it's aimed at older women who are generally no longer menstruating or are menstruating less frequently. As mentioned before, our MegaMag PeriMeno Plus has been one of the most significant additions in recent times, but we also have our standalone Algae-Sourced Calcium too, which, although not solely aimed at women, has picked up a lot of sales in that area."

With such a commitment to developing the Nutri range, what kind of process does this respected business go through to bring a product to market?

"It's very much a collaborative process; it's headed up by our Product Manager, Gemma Khoo, who has built up an enormous amount of experience and expertise over the 14 years she's been with us," Katherine explained. "We all contribute ideas and suggestions, which come from all sorts of places, including our own practitioners, market research, scientific journals and papers, articles, supplier suggestions and trade shows, and then we take the best ones forward for further research so we can see exactly what the science says in terms of ingredient efficacy, required dosage, safety etc.

"Once we're sure we want to move ahead with an idea then Gemma and Laura, in our Product Development team, will liaise closely with our suppliers, trialling numerous formulations until we're happy with what we've created. We'll usually get test samples produced and that's our final chance to make any adjustments, and then we can place the order and launch it to our practitioners. I've made it sound a lot simpler than it actually is, but you get the general gist of it."

And how can you as practitioners expect to see the new launches supported?

Katherine went on: "It varies depending on the formula to be honest. Some formulas require very little promotion or education, and others require a lot. If it's a simple formula like vitamin A, which has good general recognition amongst practitioners and their clients, then we don't need to do much more than inform practitioners that we now have it in stock.

"For other products that are more innovative or a bit more complicated in their formulation, then we invest a lot of time and effort (and money) into making sure that we promote the product and educate around it



appropriately so that practitioners really understand how to use it in their practice, how it works, the science behind it and how to convey these messages to their clients. This can involve webinars, a Nutri Hour, maybe a programme, a product training video, educational materials and research papers, and specific client information that helps the practitioner to explain to their patients why they are recommending the product.

"We can't do it for every single product, but it's not always necessary. MegaMag PeriMeno Plus for instance already had the understanding there for people to use it straight away – they understood our magnesium formulas and they understood the perimenopause as everyone was already talking about it. We might also put an introductory discount on a product to encourage practitioners to try it out with their clients, and often they'll try it themselves too."

So, looking ahead, what can we expect to see NPD wise?

"I can't say too much, but we've got some exciting projects in development in the field of women's health, energy and brain health. I can't give you any more details than that but watch this space, and I would definitely encourage practitioners and students to sign up to our newsletter to get the latest product news and launch information hot off the press," Katherine advised.





I-Mag giveaways



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

BETTERYOU D3000 ORAL SPRAY

Vitamin D is a powerful nutrient that can significantly impact our mood, energy levels, bone and immune health, yet our increasingly indoor existence is putting our ability to produce this vital vitamin naturally under a heightened threat.

Providing your essential daily dose of vitamin D, BetterYou D3000 Oral Spray delivers scientifically substantiated levels of vitamin D to support optimum health, in a highly effective daily oral spray.

I:Win: We have 10 to give away.



Neocell



Neocell is a leading collagen powder. The collagen peptides are clinically tested for results and ethically sourced to be pure, safe, non-GMO, and gluten free. Inside of you is your own personal fountain of youth. We know what it takes to illuminate your beauty from the inside out and Neocell has the science to back it up.

I:Win: We have five to give away.

MakeWell bundle

MakeWell's ImmuneDefence contains vegan vitamin D and vitamin C as Ester-C to maintain normal function of the immune system. It has combined this with beta glucan from yeast and Isenolic, a special olive leaf extract, as well as extracts from astragalus, cordyceps, rhodiola and andrographis.

MakeWell's groundbreaking new supplement, NAD+ Fatigue Resist, delivers the whole NAD+ coenzyme molecule, as well as over 20 other nutrients (including Veri-te Resveratrol), designed to achieve improved energy levels, and aid cellular health through the protection from oxidative stress.

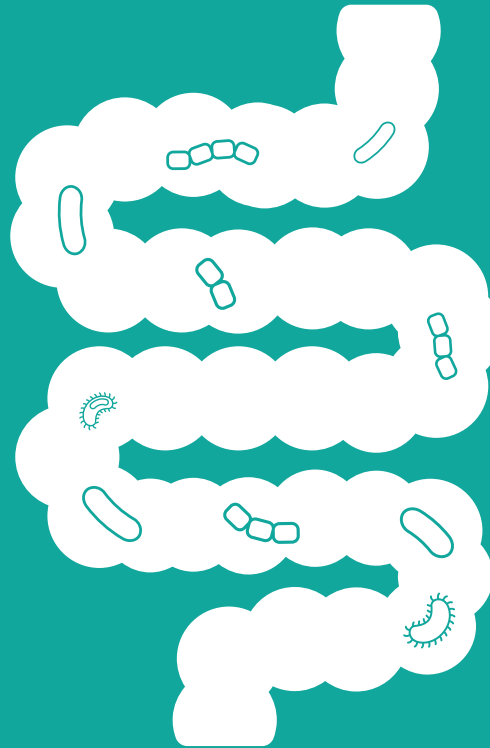
I:Win: We have five bundles to give away, each featuring ImmuneDefence and NAD+ Fatigue Resist.





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