

WHAT DOCTORS DON'T TELL YOU

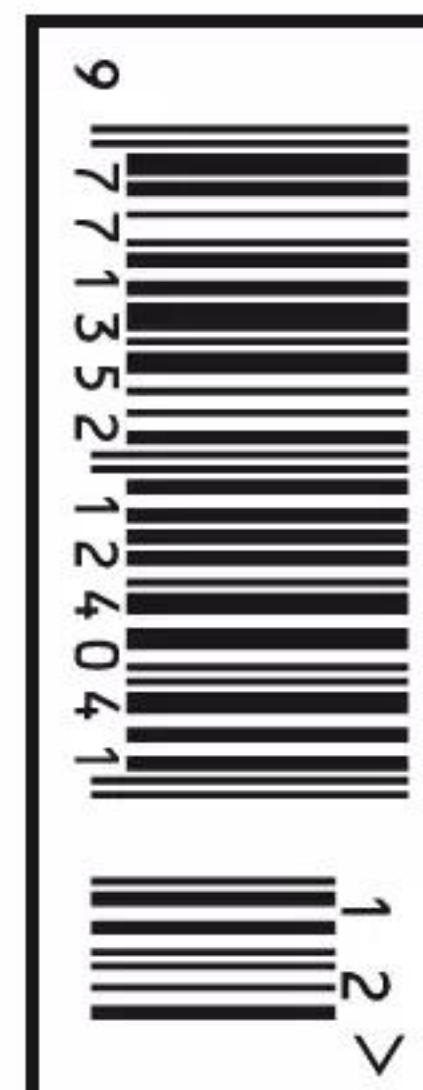
**Mental illness isn't
always in the mind**
Autoimmune attacks
can set a brain on fire

**The dark side of the
drugs for hair loss**
How the FDA buried
links to depression

PLUS Clearing the smoke around the healing effects of
nicotine • Catcha some matcha: the major health benefits
of this green tea • Have yourself a healthy little Christmas
with these tips • Our pick of low-EMF fitness trackers and
supplements to quench inflammation • Following the
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The fungi pharmacy

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Editors

Lynne McTaggart and Bryan Hubbard

COMMENT

BRAINS UNDER ATTACK

In 1967, Nobel prize winner Dr Linus Pauling, one of the founders of molecular biology, chanced across several papers written by Dr Abram Hoffer and Dr Humphry Osmond. To his astonishment, the Canadian psychiatrists were doing something unheard of: treating schizophrenic patients with niacin, a simple vitamin B3 pill. And, even more amazingly, they'd been prescribing huge amounts of the stuff—as much as 17,000 mg a day, 1,000 times the US Recommended Daily Allowance (RDA) at the time.

The RDA was set as the absolute minimum to prevent disease—in the case of niacin, to prevent pellagra. But when someone was ill, you could apparently treat it by boosting that dosage 1,000 times without a negative effect, something you could never do with drugs.

As Pauling later wrote, “I thought that these substances, normally present in the human body, and required for good health and life, deserved a name to distinguish them from ordinary pharmaceuticals, and I decided to call them ‘orthomolecular’ substances.”

Pauling coined the name for what Hoffer and Osmond had been working on since the 1950s as a novel approach to treat psychiatric patients. Osmond theorized that schizophrenics suffer from an adrenaline-based hallucinogen produced by their own bodies, and his theory led to the Hoffer-Osmond Adrenochrome Hypothesis.

Doctors like Dr William Kaufman, among the first to prescribe megadoses of B3 (as niacin or niacinamide) for arthritis, also recognized that deficiencies or larger-than-normal requirements for certain nutrients might be behind many so-called mental illnesses, such

as what is now known as ADHD. Like Osmond, Kaufman showed that a doctor could prescribe heroic dosages of certain vitamins and minerals to those patients without any resulting untoward effects. Clearly they needed far more of certain nutrients than normal.

The physician and biochemist Carl Pfeiffer took up the mantle, studying the metabolism of trace elements and minerals in various types of schizophrenia. In 1973 he founded the Princeton BioCenter and learned to divide schizophrenics into three categories of imbalances:



“So-called mental illness may have more to do with faulty biochemistry than a disorder in the brain”

1. Histapenia (low histamine)
2. Histadelia (high histamine in the blood)
3. Pyroluria (elevated pyrroles in the urine, leading to zinc and vitamin B6 deficiencies)

As Pfeiffer noted, all of these were chemically induced metabolic disorders. That meant all “true” schizophrenia “left in the ‘wastebasket’ of medicine” might simply be due to biochemical abnormalities.

All these early pioneers recognized something that medicine refused to consider: So-called mental illness may have more to do with faulty

biochemistry than a disorder in the brain. Indeed, the nutritional deficiencies were exactly what caused hallucinations, strange thoughts and even depression.

The Princeton BioCenter went on to treat thousands of patients who'd been institutionalized for schizophrenia and other “mental” illnesses. Some years ago, Bryan and I met “John,” who'd been languishing in a psychiatric hospital when he heard about the BioCenter.

He asked his family to smuggle in some supplements recommended by the center for his type of schizophrenia. Within

several weeks after he began taking the supplements, most of his symptoms disappeared, and he walked out the door and on to a normal life.

Now, decades later, many cases of so-called mental illnesses—paranoia, delusions, confusion, agitation, even seizures and depression—are being traced to an autoimmune disorder in which the immune system is actually attacking the brain.

Until fairly recently, most neurologists believed the brain was impregnable by any assaults from the immune system. But now, as our Special Report reveals

(see page 26), it's slowly dawning on medical science that the so-called blood-brain barrier is dynamic and permeable and that certain cells of the immune system can slip through and affect the brain as well as the body.

Doctors have long recognized that patients with a variety of autoimmune diseases also appear to suffer from mental illness. A majority of patients with conditions as disparate as systemic lupus erythematosus, multiple sclerosis and celiac disease display psychiatric conditions, from depression and anxiety to outright psychosis.

This is not a coincidence. Many such cases are due to autoimmune encephalitis, in which the immune system attacks certain cells in the hippocampus and frontal lobes, eventually blocking connections and leading to a host of psychiatric symptoms always put down to a separate mental disease.

In recent years, the medical community has been forced to revisit “mental” illness and acknowledge that much of it is indeed a disorder—however, the disorder is not of the brain but of the immune system. The field of autoimmune encephalitis is now exploding, and many psychiatric patients are now screened for autoimmune antibodies.

As psychiatric drugs have been found extraordinarily inadequate for treating the ever-growing categories of mental illness, and the pharmaceutical industry is reluctant to invest in new psychiatric preparations, the time to view mental illness through a new lens is long overdue.

Sixty years after the pioneering work of Pauling, Osmond and Pfeiffer, it's finally dawning on medicine that a good deal of psychosis results from a brain under attack. And once you treat the misfirings of the immune system, the untold numbers of patients being drugged in psychiatric wards may have a fighting chance to get better and, like John, get out of there.

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Lynne McTaggart and Bryan Hubbard

Dear *WDDTY* subscriber,

We went through an evolutionary shift in November 2022. Having been a print publisher for more than 30 years, with our website puffing far behind, we became a “web first” publisher. Not that the magazine was forgotten—if you’re a print subscriber, the fact you’re holding a copy in your hands is testament to that—but articles destined for a particular issue are now published first on the revamped website (wddty.com).

With the relaunch, we have also reduced the subscription types to just two: print and digital or digital-only. Print-only has disappeared, and to receive the actual magazine each month, you now opt for print and digital.

Choosing this option opens up the whole website and its many benefits to you. Yes, you’ll still get the magazine delivered to your door each month, but you’ll also enjoy:

- **Subscriber discounts:** we’ve negotiated great discounts on a range of health products and supplements. Biocare, one of the world’s leading suppliers of high-quality supplements, is the latest to offer discounts across its entire product range (see the latest offers on pages 48 – 49).
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The way you log in has changed. With the previous site, you needed your email and password, but now you need to enter your subscriber number, which is on the address label on the envelope in which your issue was delivered. We’ve produced a series of videos that help you log in and navigate the site, which you can see at wddty.com/faqs.

Once you’ve logged in, you can also access your own account, where you can change your address and see your subscriber status.

We hope that you like the changes and that you make good use of all the extra benefits your subscription now offers.

Lynne McTaggart *Bryan Hubbard*

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When the immune system attacks the mind

Some mental illness starts when the immune system turns its guns on the brain. Celeste McGovern investigates the emerging field of autoimmune psychiatry

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Is the autoimmune protocol diet the answer to your haywire hormones and chronic symptoms? Marcelle Pick thinks it could be and shares her secrets to success

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Worried about warts? Homeopath David Needleman shares his tried-and-tested remedies for getting rid of them for good

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Tobacco—and, by extension, nicotine—has a reputation for health harm, but separating the two could lead to breakthroughs in fighting Covid and other illnesses. Cate Montana investigates

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For more than 20 years, regulators have sat on data that links a drug for male pattern baldness to depression and suicide

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The last word

Many of this year's scientific discoveries contradict medical dogma, Bryan Hubbard points out. So why are we still not following the (real) science?



"Grapes contain more than 1,600 compounds, including antioxidants and polyphenols such as flavonoids, anthocyanidins, catechins, phenolic acids and resveratrol"

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EDITORIAL PANEL

What Doctors Don't Tell You is supported by some of the world's leading pioneers in nutritional, environmental and alternative medicine. Each is an authority in his or her field; many have broken new ground and inspired new practices in medicine.



Dr Damien Downing, a specialist in allergy, environment and nutrition, is current president of the British Society for Ecological Medicine, on the editorial board of *Orthomolecular Medicine News Service*, Chief Medical Advisor of cancer charity Yes to Life (www.yestolife.org.uk), and author of numerous books including *The Vitamin Cure for Allergies*.



Bruce Lipton, PhD, is an internationally recognized leader in bridging science and spirit. Stem cell biologist, bestselling author of *The Biology of Belief* and recipient of the 2009 Goi Peace Award, he has been a guest speaker on hundreds of TV and radio shows as well as a keynote presenter for national and international conferences.



Dr Sarah Myhill has worked in the UK National Health Service and in private practice since 1981. Honorary Secretary of the British Society for Ecological Medicine for 17 years, she is a frequent lecturer and author of *Sustainable Medicine* and *Diagnosis and Treatment of Chronic Fatigue Syndrome and Myalgic Encephalitis*.



Craig Sams is the co-founder of Whole Earth Foods and founder and president of Green & Blacks Organic Chocolate as well as director of Soil Association Certification, executive chairman of Carbon Gold Ltd., a carbon sequestration business, and a trustee of the Slow Food Trust UK. He has authored four books, including *The Little Food Book*.



Dr Harald Gaier is a UK-registered osteopath, homeopath, acupuncturist, naturopath and medical herbalist. Former director of medical research at The Hale Clinic and a committee member of the Prince of Wales' Foundation for Integrated Health, Dr Gaier has authored numerous scientific papers and *The Encyclopedia of Homeopathy*.



Dr Jonathan Wright, medical director of the Tahoma Clinic in Washington, pioneered nutritional medicine in the US. A board member of the American Preventive Medical Association and the International College of Advanced Longevity Medicine, he has published 11 books.

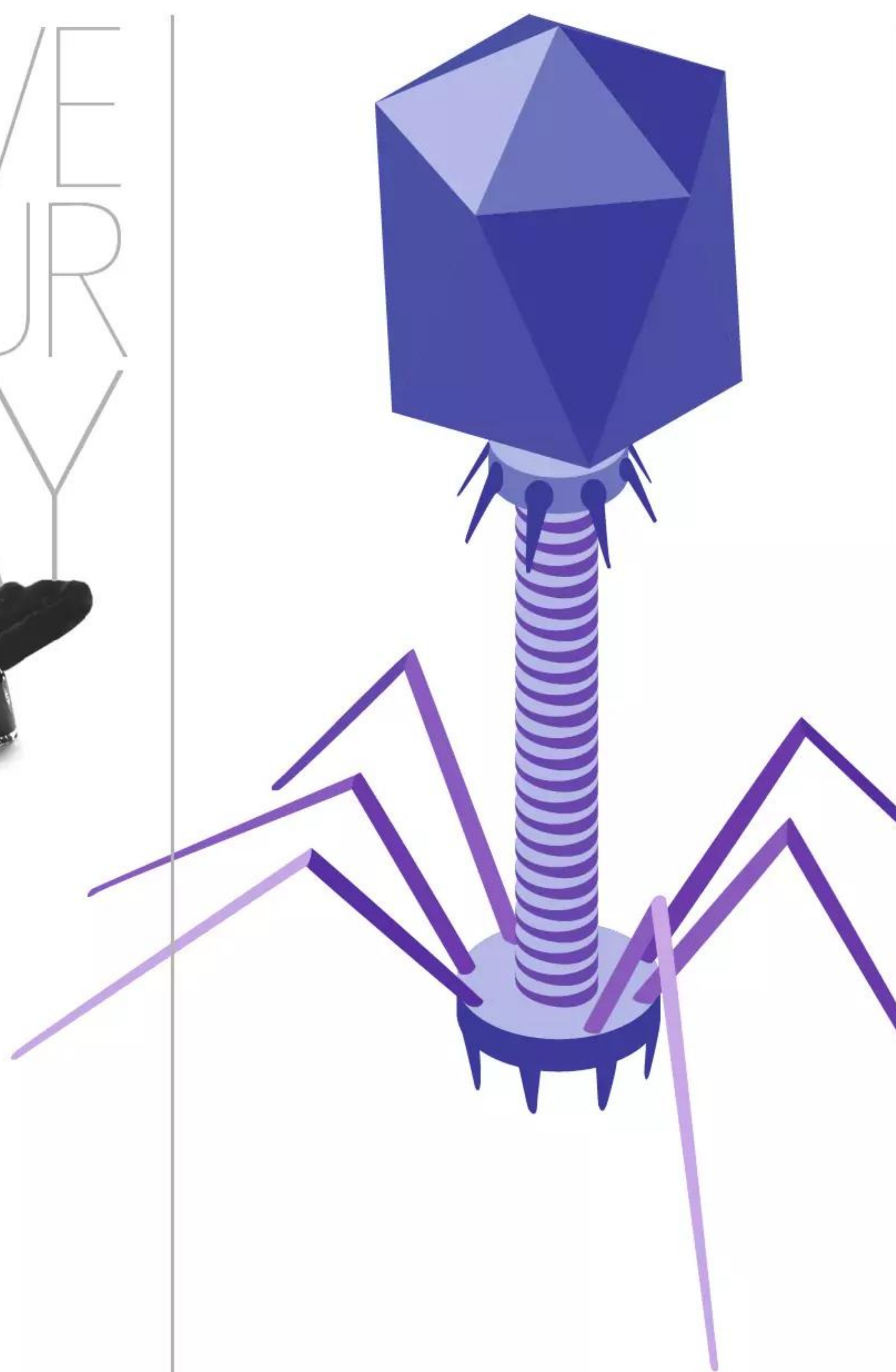


Dr Gary Smyth is a GP, homeopathic physician and academic tutor with a passion for integrative medicine. He is the immediate past president and fellow of the Faculty of Homeopathy. He is also a popular speaker at international conferences and a leading voice within the homeopathic profession.



Dr Nyjon Eccles, one of the leading integrative medicine physicians in the UK, has a reputation for his practice of evidence-based integrative medicine. Over the years he has developed specific and natural solutions for restoration of health, and these therapies are offered at The Natural Doctor, his clinic in central London.

HAVE
YOUR
SAY



Spreading the word

I have been a subscriber for many years. From time to time, I have searched for the links to specific articles and posted them on social media.

The October 2025 issue, including the information on antibiotics, is excellent. I will be posting the link for others to read.

I wonder why you have not mentioned bacteriophages as an alternative to antibiotics, though. One good reference is *The Bacteriophage: Its Role in Immunity* by Felix d'Herelle (the English translation by George H. Smith is available for free on Google Books).

As a doctor, I have been aware of the horrendous side effects of pharmaceutical antibiotics (and other chemical poisons labeled as “medicines”). The clue is in the name: anti-bacteria is anti-life.

Keep up your great work. The magazine should be read by every doctor and healthcare professional as well as by the general public!

Dr Terry Moore

WDDTY replies *Thank you for your support. Although the most recent antibiotics article didn't mention bacteriophages, we have covered the topic previously in WDDTY—way back in May 2013. Perhaps it's time for us to revisit the subject.*

WHAT DOCTORS
DON'T TELL YOU

COMMUNITY

The latest from the WDDTY Community
WDDTY's online community hub is now live. You can post questions or start discussions on any health topic as well as help out other WDDTY subscribers with your own experiences and suggestions. Simply go to community.wddty.com and sign in with your subscription ID.

Here are some of the latest posts and discussions. If you want to reply to any of the posts below, head to the Community.

Natural remedies for bladder symptoms

I have just started feeling bladder pressure, mild discomfort and an urgency to pass urine.

Apart from pelvic floor exercises, are there any other naturopathic or herbal remedies to help ease these symptoms? I would really appreciate any suggestions.

Chrissie

Replies from the WDDTY Community

Get checked for a urinary tract infection (UTI), says Soulwellness, as your symptoms suggest that could be the case. Various homeopathic remedies may help to resolve it, but it's best to see a homeopath to find the right remedy or contact a homeopathic pharmacy for advice. You could also try supplementing with the natural sugar D-mannose.

WDDTY replies See *WDDTY July/August 2025* for the best homeopathic remedies for UTIs and the *June 2021* issue for more natural solutions. But it's certainly a good idea to get checked by a doctor.

Help for a cold and gout

I am closing in on being 75 years old. I am currently in the development stage of a cold. Sore throat, nasal mucus production and the like. At the same time, gout in my right knee has flared up.

I am coping with the latter by dosing with ibuprofen, 800 mg every six hours or so, to reduce the inflammation. The former is posing more of a problem.

I know that beating the stuffing out of a virus is best left to the human immune system, but I am getting pounded with advice from my big sister (a sort of paramedic) to use aspirin to reduce inflammation. I am suspicious of doing this because of the blood-thinning aspects of using the drug.

What are the risks of using aspirin in this way?

Andie

Replies from the WDDTY Community

“Avoid aspirin; it will destroy your stomach lining,” says Stuart, while Caro and Marros both suggest using vitamin C for the cold symptoms. Take it to bowel tolerance, which means gradually increasing the dose until you notice loose stools.

Caro also mentions colloidal silver, which the 82-year old says has worked for their sore throat.

WDDTY replies See the *October 2024* and *January 2022* issues of *WDDTY* for some natural ways to fight off colds and flu. And check out the *April 2020* issue for some drug-free solutions for gout.

WHAT DOCTORS
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COMMUNITY

GET IN TOUCH: Share your views, questions and comments via the WDDTY Community. Visit community.wddty.com or scan the QR code below and sign in with your subscription ID.

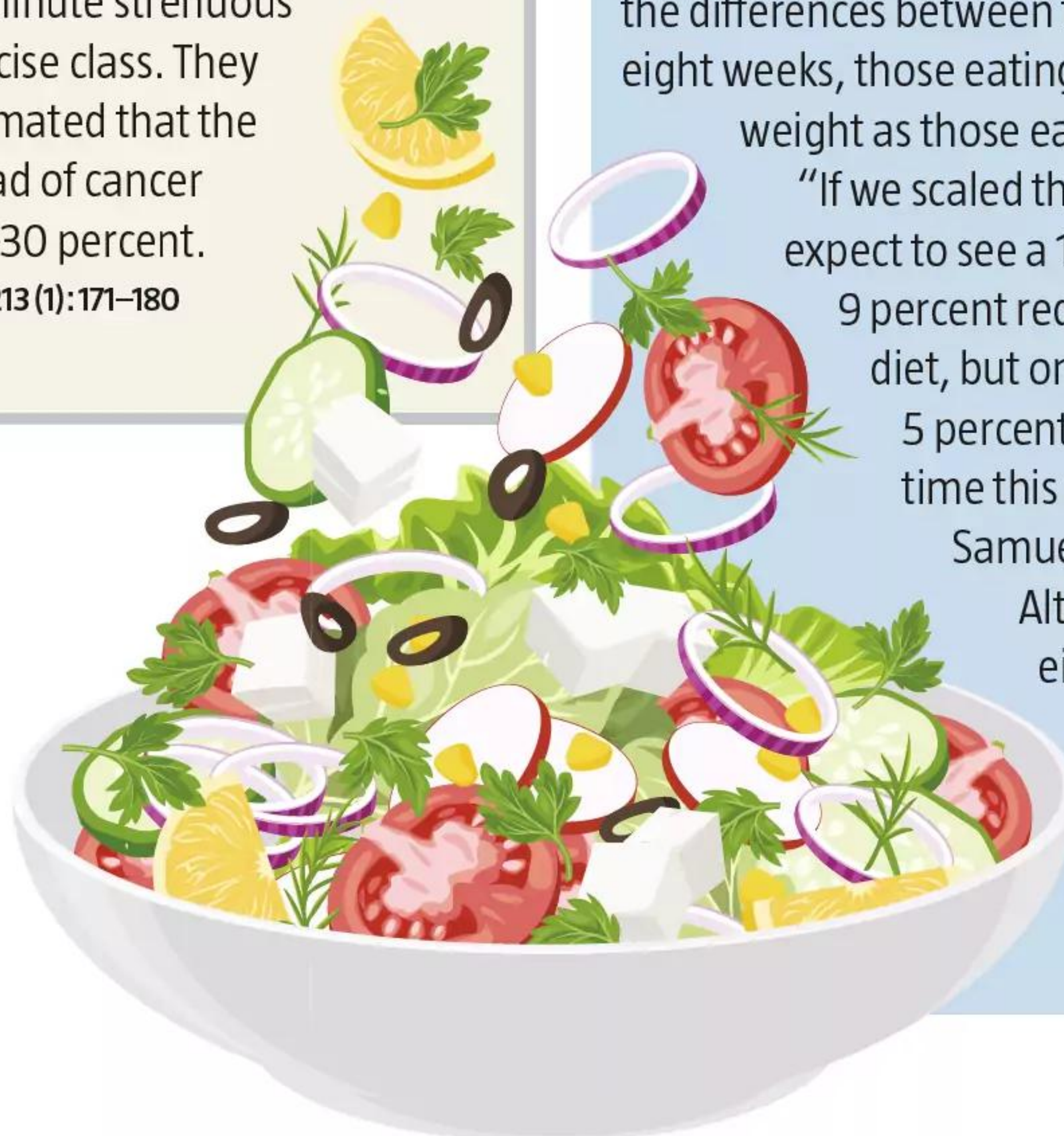




One exercise session can slow cancer spread by up to 30 percent

A 30-minute exercise class of high-intensity or resistance training dramatically slows the spread of cancer. It increases levels of myokines, proteins produced by muscles that have anticancer effects. Researchers from Edith Cowan University in Australia checked myokine levels and cancer markers in a group of women before and after a 30-minute strenuous exercise class. They estimated that the spread of cancer cells slowed by 20–30 percent.

Breast Cancer Res Treat, 2025; 213 (1): 171–180



Make pistachios your late-night snack

If you crave a snack before heading to bed, try a handful of pistachios. The nuts help improve our gut microbiome, and they do their good work while we sleep, say researchers from Penn State University.

They could be especially beneficial for prediabetics who are told to eat a carbohydrate snack, such as some toast, before they go to bed. It's supposed to regulate blood glucose levels when they sleep and wake up.

But in a three-month study of 51 people with prediabetes, the researchers found that eating 2 oz of pistachios last thing promoted "good" bacteria, such as *Roseburia* and members of the Lachnospiraceae family, in the gut. It also lowered levels of harmful bacteria.

CurrDevNutr, 2025; 9(7): 107481



Don't count calories. Cut fast food to lose weight

Want to lose weight? Then keep off the fast food, and it could be far more effective than just counting calories. You could lose up to 13 percent of your body weight in a year by eating real food — over three times more than you would on a calorie-controlled diet that includes processed food.

Researchers from University College London tested the two diets on a group of 55 people. The participants ate a diet of homemade meals, fruit and vegetables, or minimally processed foods (MPFs), for eight weeks. Then they switched to ready-meals and ultra-processed foods (UPFs).

The diets were tailored to provide nutrition matching the UK government's Eatwell Guide. Volunteers lost weight on both diets, but the differences between the groups were significant. By the end of the eight weeks, those eating MPFs had lost twice as much of their body weight as those eating UPFs.

"If we scaled these results up over the course of a year, we'd expect to see a 13 percent weight reduction in men and a 9 percent reduction in women on the minimally processed diet, but only a 4 percent weight reduction in men and 5 percent in women after the ultra-processed diet. Over time this would start to become a big difference," said Samuel Dicken, one of the researchers.

Although there were no calorie restrictions on either diet, the MPF eaters consumed fewer calories. They reported losing their food cravings and being more able to resist any occasional cravings, which could explain their lower intake.

NatMed, 2025; doi: 10.1038/s41591-025-03842-0



Lupus gets milder the older you get

Lupus—the chronic autoimmune disorder—may not be a life sentence: It can improve as people age. Doctors are finding that sufferers, 90 percent of whom are female, see their symptoms improve dramatically when they reach their 60s. In other words, the disease behaves completely differently from other chronic, progressive conditions.

Lupus causes the immune system's interferons, its first-line viral defenses, to attack the body. It can affect almost every organ, which leads to problems like heart disease, kidney disorders, seizures and anemia. But it does a complete about-turn by the time the sufferer reaches their 60s and 70s, and the disabling process just stops. Researchers from the University of California at San Francisco have seen it happen in blood samples taken from lupus sufferers of all ages.

Inflammatory markers tend to rise as we age, and it's so common that it has been called "inflammaging." But for the lupus sufferer, this process goes into reverse as the aging process somehow tempers the activity of immune system-regulating genes that are overactive in their younger years.

SciTranslMed, 2025; 17(804); eadt5550



Almost half of Ozempic weight loss is muscle loss

Yes, Ozempic can help you lose weight, but it's not just fat that's disappearing—it's your muscle, too. Losing muscle mass can cause cardiovascular disease, increase your risk of premature death and affect your quality of life, including posture and physical function.

People on GLP-1 drugs have said their muscle strength seems to be ebbing—and it's a real problem, say researchers at University of Virginia Health System.

Because of these problems, GLP-1 drugs aren't for everyone and should be restricted to people whose obesity is a health risk, such as those with type 2 diabetes and heart disease. Even then, they should combine the drug therapy with regular exercise that maintains muscle mass, eat a healthier diet and take nutritional supplements, the researchers say.

Muscle makes up around 40 percent of the total weight loss, the researchers say. Obese people usually already have lower muscle mass, and the drug increases the loss, which can affect their cardiovascular health.

J Clin Endocrinol Metab, 2025; 110(10): 2709–2717





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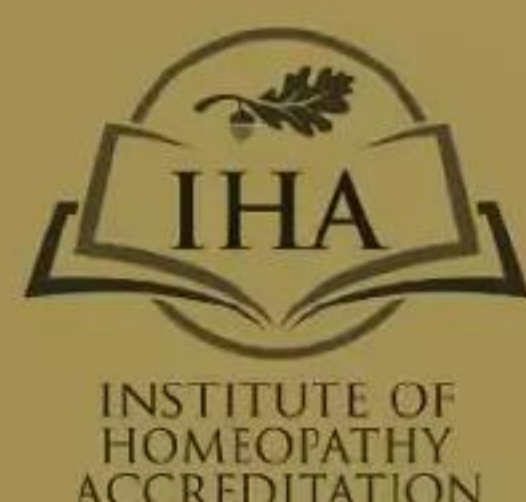
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Stevia kills pancreatic cancer cells

the researchers reported.

Stevia's cancer-fighting properties have been recognized for several years, but scientists have been unable to isolate its active elements. The Hiroshima researchers, who have isolated and evaluated the health benefits of more than 1,200 lactic acid bacteria strains from fruits, vegetables, flowers and medicinal plants, found that bacteria can do it for them.

A bacterium that grows on banana leaves, *Lactobacillus plantarum* SN13T, unlocks stevia's cancer-fighting abilities by enhancing its antioxidant properties. In a separate test, the concoction didn't harm healthy kidney cells, suggesting it attacks only cancerous cells.

Int J Mol Sci, 2025; 26(9): 4186

When stevia, the artificial sweetener, has the added twist of being fermented with bacteria isolated from banana leaves, it combats pancreatic cancer cells, a new study has discovered.

And unlike chemotherapy, it doesn't harm healthy kidney cells, say investigators from Hiroshima University in Japan. It could be an important breakthrough in combating a cancer that kills 90 percent of patients within five years.

Pancreatic cancer spreads quickly and doesn't respond to chemotherapy or radiation. But in laboratory tests, the stevia concoction killed off these cancer cell lines,

The secret of healthy agers

Is there a secret to living to 100 years—and beyond—while still being vibrant and healthy? Researchers who have been looking at centenarians think there must be something special about them. But not knowing what it is, they say healthy agers must have a superpower.

A research team from the Karolinska Institute in Sweden tracked more than 170,000 people born between 1912 and 1922 and checked their health status from age 60 to their death or to age 100.

The researchers compared each person's risk of common health problems such as stroke, heart attack, hip fracture and various cancers, and they compared those who survived to age 100 with their shorter-lived counterparts. They found the centenarians not only had lower rates of disease in late midlife but continued to have lower rates throughout their lives overall.

At age 85, only 5 percent of those who lived to be centenarians had experienced a stroke, while about 10 percent of those who died in their 90s had suffered a stroke by age 85. By the time they reached 100, just 10 percent of the healthy agers had suffered a heart attack—half as many as those who died earlier.

"This suggests that centenarians delay, and in many cases even avoid, major age-related diseases, rather than simply surviving them more effectively," said lead researcher Karin Modig.

Healthy centenarians avoid other diseases, too, the researchers discovered. They explored the well-being of 274,000 Swedes and tracked the numbers who suffered from any of 40 diseases, including high blood pressure, diabetes and heart failure, from age 70 until they died or reached age 100.

Of these, just 4,300 of the group reached their century—and, again, all of them suffered from fewer health issues.

But what's their secret? It could be diet, environmental factors, good genes—the researchers say they don't know, and so they put it down to superpowers.

GeroScience, 2025; 47(3): 3539–49
EClinicalMedicine, 2025; 87: 103396





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St John's wort is as effective as an antidepressant

The herb St John's wort really does ease mild depression, and it can be just as effective as antidepressant drugs, a major review of over 200 studies has discovered.

Saffron, probiotics and vitamin D supplements can also help, but there's very little evidence to support the other 60 or so over-the-counter (OTC) products, say researchers from Liverpool John Moores University.

They looked for clinical evidence on 64 OTC remedies for depression, and 18 showed some "promising" evidence.

Aside from St John's wort and saffron, which showed strong evidence of effectiveness, they found folic acid, lavender, zinc, tryptophan, *Rhodiola* and lemon balm appeared to work the best.

Bitter orange, Persian lavender and chamomile tea

also showed positive effects, while products with growing popularity, such as melatonin, magnesium and curcumin, showed mixed effects.

The jury's also out on cinnamon, *Echium*, vitamin C and a combination of vitamin D plus calcium. Same supplements and prebiotics, types of starch and fiber that support the good bacteria in the gut, did not seem to be better than placebo, the researchers said.

FrontPharmacol, 2025; 16: 1609605

Wasps show us how to live longer

Death, where is thy sting? For the wasp, death—and aging—can be delayed, and it's a trick that perhaps we too can learn.

The larvae of the jewel wasp can pause their development, live longer and age slower, researchers from the University of Leicester have discovered. It's all to do with biological pathways, and they think we could harness the technique and extend our own lifespan.

The jewel wasp (*Nasonia vitripennis*), an insect with distinctive metallic

coloring, has DNA similar to that of humans and a short lifespan that makes it ideal for study.

The researchers exposed jewel wasp mothers to cold and darkness, which triggered a hibernation-like state in their larvae called diapause. This natural "pause button" extended the offsprings' adult lifespan by over a third.

Even more interesting is that the diapause group of wasps aged 29 percent slower than their counterparts at the molecular level. Their epigenetic clocks ticked more leisurely, offering the first direct evidence that it's possible to developmentally tune the pace of biological aging in an invertebrate.

"It's like the wasps who took a break early in life came back with extra time in the bank. It shows that aging isn't set in stone; it can be slowed by the environment, even before adulthood begins," said Eamonn Mallon, senior author of the study.

PNAS, 2025; 122(31): e2513020122

BLOOD PRESSURE CUFFS 30% GET IT WRONG OF THE TIME

Cuffs that doctors use to measure blood pressure get it wrong almost a third of the time—especially when they're used for assessing and diagnosing hypertension (high blood pressure).

The remedy could be simple. Just raise your arm for a few seconds before the cuff is put on, and the chances of an accurate reading increase, say researchers from Cambridge University.

Use of a cuff—known as the auscultatory method—involves putting it on the upper arm before inflating it, which cuts off blood flow to the lower arm. The doctor then listens for tapping sounds in the arm through a stethoscope while the cuff is slowly deflated.

Blood pressure is given as two separate numbers: a maximum (systolic) and a minimum (diastolic) pressure. A blood pressure reading of 120/80 is typically considered "ideal."

Although it's a routine test, the cuff often gets it wrong and misses around 30 percent of high blood pressure cases, overestimating diastolic pressure and underestimating the systolic reading.

While everyone has known the cuffs often produce inaccurate readings, nobody has been quite sure what to do about it.

The Cambridge researchers created a model that replicated the way the cuff works, and they discovered that simply raising the arm before the cuff is attached improves blood flow and increases the chance of a more accurate reading.

Other tips to get a more accurate measurement are to measure only on a bare arm, avoid talking, sit in a chair with back support, keep your feet flat on the floor and rest the arm being measured on a table at chest level.

PNAS Nexus, 2025; 4(8); pgaf222



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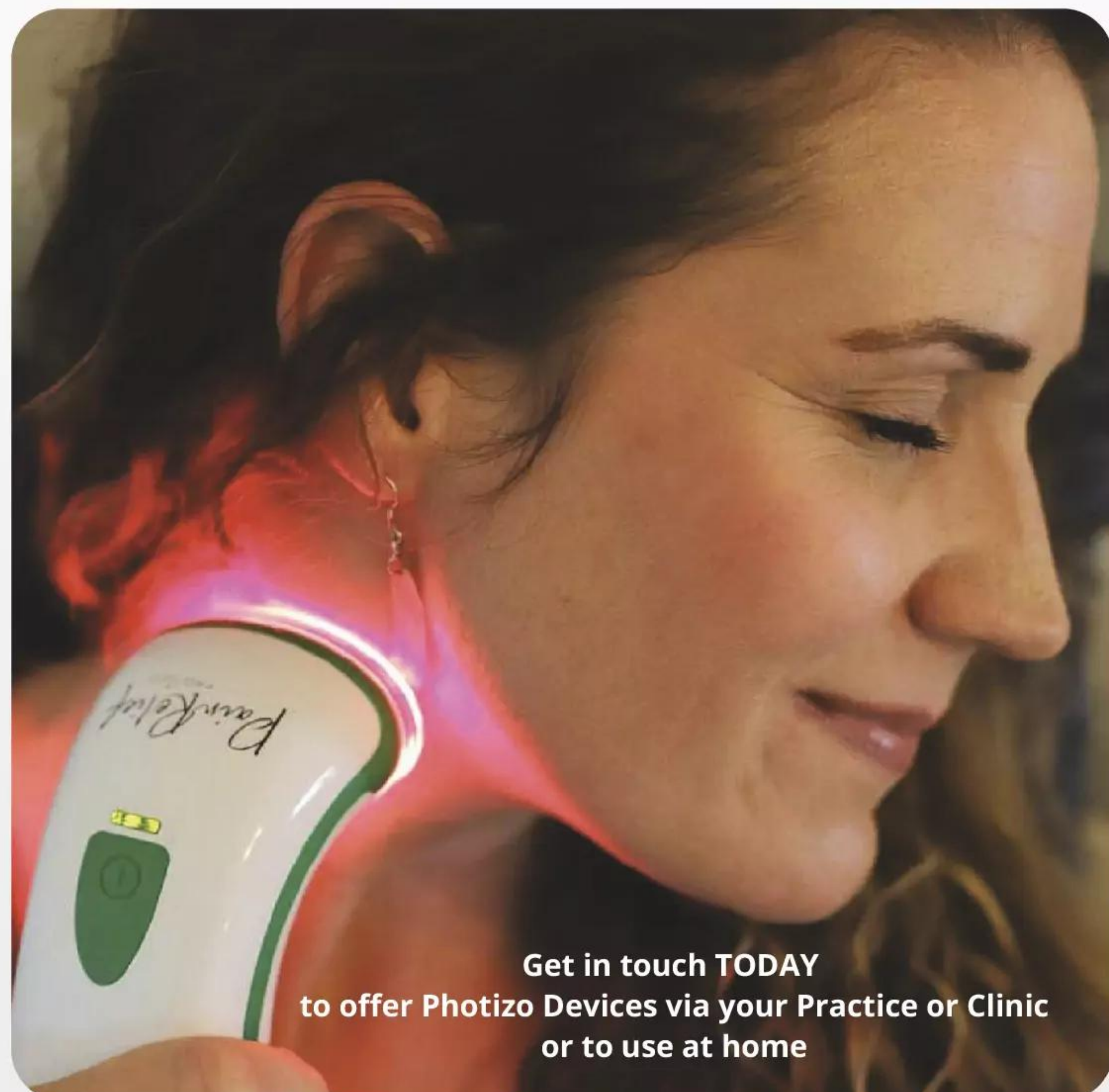
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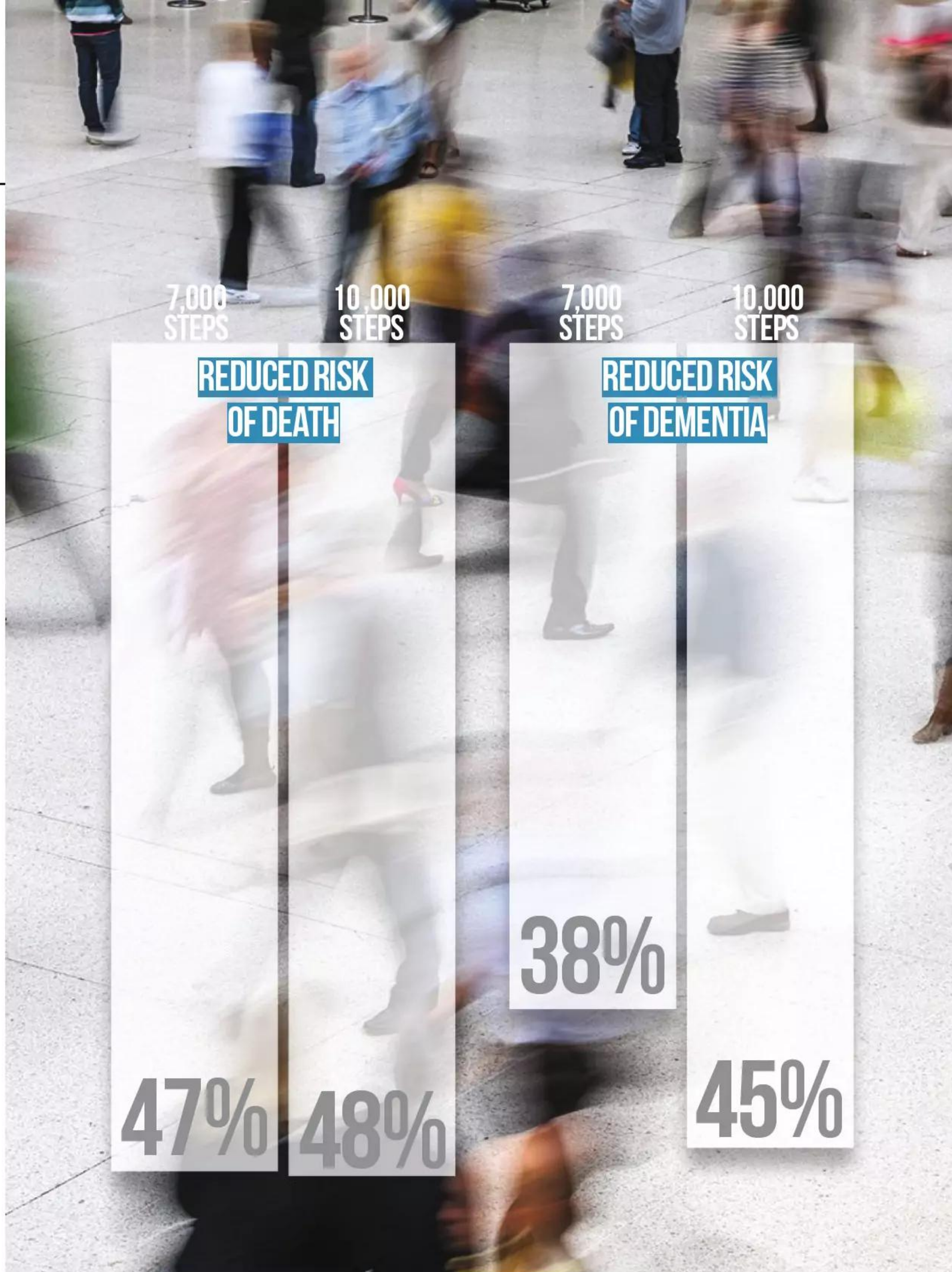
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Forget 10,000 steps — 7,000 a day halves your chances of an early death

You may not need to walk 10,000 steps a day after all. Just 7,000 is enough to halve your risk of early death and improve your heart health and cognitive abilities.

And if you're still determined to walk your 10,000 steps, the benefits are marginal, say researchers from the University of Sydney. They took another look at 57 studies that had investigated the benefits of walking.

In particular, they looked at the chances of falling, dying from cardiovascular disease or cancer, and developing chronic health problems such as cancer, type 2 diabetes, dementia and depression.

Even those who walk only 2,000–4,000 steps a day see big health benefits compared to those who walk 1,000 or fewer a day.

The researchers compared the health benefits of walking more steps a day in 1,000-step increments. Compared with 2,000 steps, they found that walking 7,000 steps a day reduced the risk of death by 47 percent.

However, walking 10,000 steps didn't reduce the risk further. Similarly, walking

7,000 steps reduced the risk of dementia by 38 percent, and the risk fell just 7 percent further for those walking 10,000 steps.

The biggest benefits were seen in those who increased their daily step count from 2,000 to 5,000–7,000.

If you're already achieving 10,000 steps a day, keep with it, the researchers say. Others who find that a few steps too far could walk up to 7,000 steps, which will still lead to great health benefits.

However, it may not be down to just the number of steps you walk; it could also be about how fast you walk.

Upping your walking tempo by 14 extra steps a minute can help with overall health and make you stronger and less susceptible to falls and fractures. Researchers from the University of Chicago who studied frail older adults say walking 100 steps a minute is the optimum and turns a saunter into a health-giving walk.

Lancet Public Health, 2025; 10(8): e668–e681
PLoS One, 2025; 20(7): e0323759



Eat french fries and get diabetes — eat boiled spuds and don't

If you have french fries (chips) three times a week, you increase your risk of type 2 diabetes. But substitute fries for boiled or mashed potatoes, and the risk is much lower, a new study has discovered.

Having three servings of French fries every week raises your diabetes risk by around 20 percent, while having boiled or mashed ones raises it by only 5 percent.

Potatoes score high on the Glycemic Index (GI), which measures the speed at which foods release sugar. Scientists don't seem to agree about the exact glycemic load of potatoes cooked using different methods, and some studies show fried potatoes score lower on the GI than boiled ones.

But the frying process also produces harmful compounds, such as advanced glycation end products, and the type of oil used for frying matters too. It's all down to the way potatoes are cooked, say researchers from Harvard T. H. Chan School of Public Health.

They took another look at three major studies that had investigated the impact of different foods on the health of 205,000 people. During the 37 years the studies ran, more than 22,000 of their participants developed type 2 diabetes.

The researchers discovered that replacing potatoes of any kind with whole grains is a good strategy to reduce your diabetes risk. The exception is rice — brown rice doesn't lower the risk, and white rice raises it further. For every three weekly servings of any potato, the rate of type 2 diabetes increased by 5 percent, and for every three weekly servings of french fries, it increased by 20 percent.

Replacing three weekly servings of potatoes with whole grains lowered the type 2 diabetes rate by 8 percent, and substituting baked, boiled or mashed potatoes with whole grains lowered the rate by 4 percent. Replacing french fries with whole grains lowered it by 19 percent. The study didn't look at whether substituting sweet potatoes would have any benefit.

So, it's not just a question of whether you eat potatoes — it's the way they're prepared that really makes the difference.

BMJ, 2025; 390: e082121



COVID-19 NEWS

Covid jabs saved the lives of just 299 young people

The Covid-19 vaccines saved far fewer lives than health authorities like the World Health Organization (WHO) kept claiming over the past several years.

The WHO estimated that the jabs saved more than 14 million lives in just the first year—and 20 million over the course of the pandemic—but Stanford University researchers have released a new analysis that shows the true figure is closer to 2.5 million lives.

Using computer modeling, the researchers found most of those saved were over-60s. Although the young were targeted in a relentless vaccination campaign, the vaccines saved just 299 people around the world under age 20 and 1,808 people aged 20–29.

Overall, 5,400 people had to be vaccinated to save one life, but this rose to 100,000 in the under-20s. Surprisingly, the vaccines saved the lives of just 2 percent of people in residential care homes even though this population was the most vulnerable.

The researchers didn't factor back in the adverse reactions to the vaccines, which have included debilitating heart problems and even death. There have been more adverse reactions reported for the mRNA vaccines in particular than for all other vaccines combined.

The analysis covers the years 2020—when the first Covid vaccines were introduced—to 2024.

JAMA Health Forum, 2025;6(7): e252223

Long Covid hits the poor the hardest

People who have financial worries, lack social support, have lower education levels and aren't eating a healthy diet are far more likely to suffer from long Covid, say researchers from across the US led by scientists from Brigham and Women's Hospital. It especially affects black, Hispanic and multiracial people, who are more likely to have these characteristics.

The researchers tracked 3,700 people participating in the Recover-Adult study that follows those who had a Covid-19 infection during the pandemic.

For details about one treatment that has worked for long Covid sufferers, see page 46.

Ann Intern Med, 2025;178(9):1287–1297



Grapes—the new superfood

Family and friends who bring grapes to hospital patients know a thing or two—the fruit contains 1,600 compounds that benefit heart, brain, skin and gut health.

In fact, grapes should join the elevated ranks of superfoods, says cancer researcher John M. Pezzuto, from Western New England University, who has reviewed more than 60 studies of grapes and their impact on health.

Grapes aid cardiovascular function, improve circulation and help balance cholesterol levels. They also support the brain, skin, gut and eyes. They even help regulate gene expression.

This is because grapes contain more than 1,600 compounds, including antioxidants and polyphenols such as flavonoids, anthocyanidins, catechins, phenolic acids and resveratrol. Although polyphenols are the single most

important compound, it's the whole grape that

creates the positive biological effects, says Pezzuto.

J Agric Food Chem, 2025; 73(31): 19262–19272

POWER UP YOUR POWER CELLS TO STAY MENTALLY SHARP



Starting to forget things?

Your power cells might just need a bit more oomph.

Early signs of neurodegeneration—such as forgetting things or losing simple cognitive skills—could

be sparked by a loss of energy in our mitochondria,

which are often described as the powerhouses of our cells (see *WDDTY* November 2025 to learn more).

For the first time, scientists have seen a direct link between mitochondrial decline and neurodegeneration—and reversed memory loss by boosting these powerhouses. So far, they've done it only in mice and in computer models, but researchers from INSERM believe their discovery holds the key to reversing cognitive decline in people.

It makes sense. The brain consumes most of the energy the body produces, and so underperforming mitochondria are likely to affect cognitive functions first by starving the neurons of the fuel they need, a problem that can progress to dementia and Alzheimer's disease.

Plenty of diet and lifestyle changes can boost mitochondrial activity. B vitamins play a significant role, as do berries and leafy vegetables, while omega-3 fatty acids from fish, flaxseed oil and walnuts also reactivate our power cells. Dark chocolate, good sleep and exercise can help, too.

Nat Neurosci, 2025; 28(9): 1844–1857

Are you suffering from painful knee joints when you walk? Making a small adjustment to the way your feet are aligned could ease the pain dramatically.

Turning the foot inward or outward by 5 or 10 degrees can give you pain relief that's even more effective than a painkiller—and slow the deterioration of the knee joint. The best foot position is a matter of trial and error, and it differs from person to person, but the effects are dramatic if you find the sweet spot, say researchers from Utah University.

They've been testing the technique on a group of 68 volunteers who have early signs of knee osteoarthritis. Half of the volunteers were shown how to properly realign their feet—inward or outward—and the rest were instead taught a sham technique that didn't alter their existing foot progression angle.

The volunteers were trained for six weeks and encouraged to practice their new gait for at least 20 minutes a day until it started to feel natural.

After a year, they reported how their knee pain had eased, if at all, and MRI scans revealed the extent of knee joint deterioration. Compared to those in the sham group, the participants who had changed their foot alignment said they had experienced less pain—and it was as effective as a painkiller, the researchers said. Scans revealed a slowing of cartilage damage.

It's an important technique, especially as people can start suffering from knee osteoarthritis in their 30s and yet wait decades until the deterioration is bad enough to justify knee replacement surgery.

The researchers are investigating ways to formalize their discoveries. They're also looking at developing a smart shoe and an app to help remind people to walk a little differently.

Lancet Rheumatol, 2025; doi: 10.1016/S2665-9913(25)00151-1

Change the way you walk to ease knee pain

The dark side of hair loss drugs

For more than 20 years, regulators have sat on data that links a prescription drug for male pattern baldness to depression and suicide

Second only to the family dog, finasteride has been touted as man's best friend. The same drug combats two of men's main worries: prostate problems, for which it's marketed as Proscar, and hair loss, when it's branded as Propecia.

But the drugs—and especially Propecia—have a dark side that has been hidden by the manufacturer and the US drug regulator, the Food and Drug Administration (FDA), for more than 20 years: They cause severe depression, and sufferers have committed suicide.

The actual numbers aren't known because it's impossible to track an adverse reaction if nobody is aware of the problem. But researchers reckon that several thousand men have taken their own lives, while hundreds of thousands have suffered from chronic depression.

Propecia has enjoyed light-touch regulation because it's "just" a cosmetic treatment, but worries about its deadly side effects were being flagged back in 2002. Eight studies published between 2017 and 2023 established that it caused neurological problems, such as anxiety and depression, and raised the risk of chronic depression by 57 percent.¹

In 2011, the FDA finally accepted that Propecia could cause depression and added it to the list of potential adverse reactions. However, it took a petition generated by patients and their surviving

families to finally compel the regulator to include a warning that it could also lead to suicide.

The FDA added the warning to the medicine's label as an informal notification in 2022 but never made it a "black box" warning—the most severe sanction before a drug is withdrawn, and which the petitioners had lobbied for. The European Medicines Agency followed suit only this year in recognizing the drug could lead to suicide.

Roots of the problem

The warnings were a long time coming: The FDA approved the drug as a treatment for male pattern baldness in 1997. It was the offshoot of Proscar, which had been approved in 1992 as a treatment for benign prostatic hypertrophy (BPH), but while it was shrinking the prostate gland, doctors were also noticing that their patients' hair was growing back.

Five years later, Propecia was launched as a treatment for male pattern hair loss. It was still finasteride, but at a recommended lower dose of 1 g a day, while Proscar was being prescribed at 5 g.

Although the drug is treating two problems, it's targeting the same biological processes. Finasteride is in a class of medications called 5-alpha-reductase inhibitors; it treats BPH by blocking the body's production of

testosterone and stops it converting to dihydrotestosterone (DHT), which is responsible for muscle mass and hair growth. DHT can also cause the prostate gland to enlarge.

Finasteride can be effective. Some studies have found it reduces DHT levels in the prostate gland by more than 90 percent and in the blood by 70 percent,² and others have found that up to 87 percent of men taking Propecia report their hair is growing back.³ But Propecia's lower dose doesn't lead to a complete elimination of DHT, and although hair loss slows, it still goes on. However, it can stop if the drug is taken for a year.

In treating BPH, long-term use of finasteride reduces prostatic volume, relieving bothersome urinary symptoms attributed to an enlarged gland, such as the urge for a nocturnal visit to the toilet. Urinary retention is reduced, and the drug delays the need for surgical intervention as well.

But it's all short-term; within 14 days after a man stops taking the drug, his DHT level returns to normal, and with it all the usual prostate problems. Similarly, hair loss comes back when men stop taking Propecia.

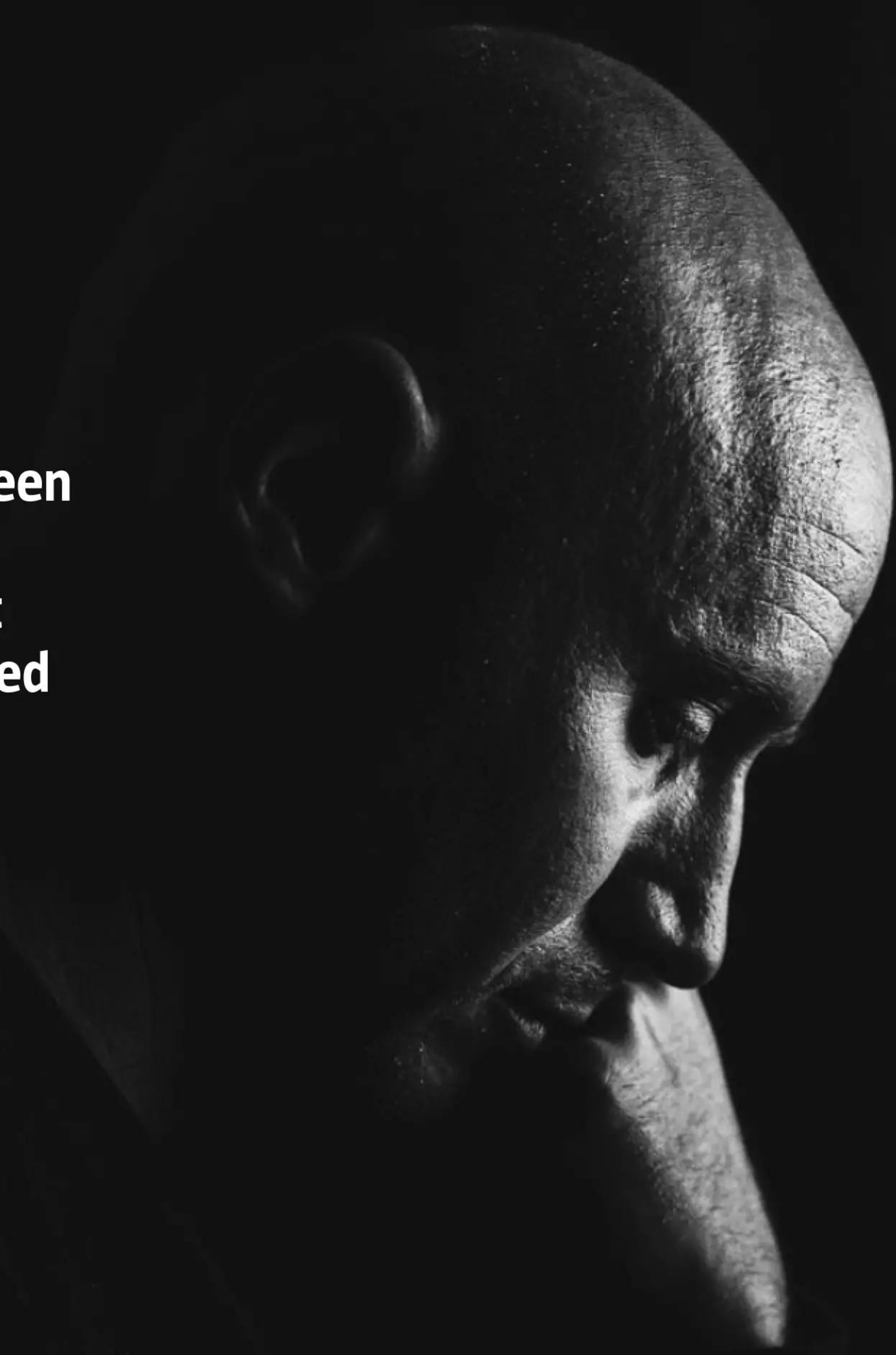
Essentially, by making men less masculine, the drug revives hair growth and reduces prostate swelling—but that's a double-edged sword. Men on either drug also report erectile dysfunction and a loss of libido.

Less of a man

Because it emasculates men, Proscar is often the first drug of choice for transgender women (men who identify as women). The drug is routinely used in combination with estrogen for its anti-androgen properties, which suppress male hormones like testosterone.

Some researchers have suggested a loss of masculinity—and specifically male sexual function—is the reason men on the drug are committing suicide, and suicidal thoughts can continue long after stopping treatment.⁴

Finasteride could also lead to a deadly type of prostate cancer. The Prostate Cancer Prevention Trial (PCPT) compared daily finasteride to placebo therapy in over 18,000 men aged 55 and older and tracked them for seven years. The good news was that the drug



Eight studies published between 2017 and 2023 established that finasteride caused neurological problems, such as anxiety and depression

reduced the prevalence of prostate cancer by 25 percent—but it also increased the rate of high-grade deadly cancer. Unlike with depression and suicide, the FDA responded quickly and issued a black box warning.³

A side effect nobody anticipated was orthostatic hypotension, or postural hypotension—dizziness when standing up quickly due to a drop in blood pressure to the brain. The problem affects around 9 percent of men on the drug, and that number doubles when finasteride is taken with another drug.

But it's the foot-dragging over depression and suicide that has bugged Professor Mayer Brezis, a public health expert at the Hebrew University of Jerusalem. For years, the manufacturer Merck and the FDA sat on their hands despite the growing evidence that was suggesting a link to depression, anxiety and suicidal thoughts.⁴

He points to eight large studies published between 2017 and 2023 that show a clear trend: People who used finasteride were far more likely to experience mood disorders and suicidal thoughts than people given a placebo. This pattern appeared consistently across various national databases, including the FDA's adverse event system and healthcare records from Sweden, Canada and Israel.

"The evidence is no longer anecdotal. We now see consistent patterns across diverse populations. And the consequences may have been tragic," said Brezis.

Not many dead

But just how many victims there have been, we just can't say. More than 8 million people around the world are using Propecia, and yet public records have been recording just a few cases of suicide among people taking it.

The FDA may well have known the problem went far deeper. Internal FDA files from 2010, cited in Brezis's review, contained entire sections redacted as "confidential," including estimates of how many people were affected.

By 2011, only 18 suicides linked to finasteride had been reported to the FDA. Based on worldwide usage, Brezis concluded the actual, but still underreported, number should have been in the thousands. "It wasn't just

Internal FDA files from 2010 contained entire sections redacted as 'confidential,' including estimates of how many people were affected



underreporting," he said. "It was a systemic failure of pharmacovigilance."

With so many drugs that treated life-threatening health problems to regulate, perhaps the FDA took a more relaxed approach to a cosmetic treatment. Merck certainly seemed to adopt that view; it didn't initiate a single study into the drug's effectiveness or dangers, and all the red-flag warnings came from trials by independent researchers.

"This wasn't about life-or-death medical necessity—this was about hair," said Brezis.

Finasteride tackles some of men's problems by blocking DHT production, but this comes with another reaction that nobody foresaw: It may also disrupt neurosteroids like allopregnanolone, which is linked to mood regulation in the brain. Animal studies have shown long-term effects on neuroinflammation and even changes in the brain's hippocampus, which regulates emotions and memory.

But stopping treatment doesn't stop the problems. Lingering symptoms, known as "post-finasteride syndrome," include insomnia, panic attacks, cognitive dysfunction and suicidal thoughts that persist months or even years after treatment ends.

All change

Brezis is calling for immediate changes in how cosmetic drugs like finasteride are approved, monitored and prescribed.

His recommendations include suspending marketing of the drug for hair loss until safety is reestablished, mandating post-approval studies with strict enforcement and systematically recording drug histories as part of suicide investigations.

He shouldn't hold his breath. Finasteride's advocates—often cosmetic clinics—still push the drug as if it's a harmless remedy.

"Think of finasteride as your hair's personal bodyguard," says one, then continues breathlessly, "Here's what I love telling my patients about hair thickening with finasteride—it's like giving your hair follicles a fresh start."

"By reducing dihydrotestosterone levels, the medication allows your follicles to produce thicker, stronger hair strands. Think of it like this: Your hair follicles are like tiny gardens. Remove the weeds (DHT), provide good soil (proper blood flow) and suddenly your plants (hair) can grow much better!"

These claims are helping to drive a multibillion-dollar industry. The demand for finasteride is growing, market commentators say.

They're predicting a steady increase in sales as populations age, and the focus on youthfulness—or at least looking young—is amplified. Annual sales of finasteride reached \$362.1 million in 2021 and are projected to reach \$546.7 million by 2031, although it still lags behind Rogaine (minoxidil), the market leader for hair loss treatment.

Talk of depression and suicide spoils the party, and any changes to regulation and safety reporting that Brezis is advocating will have come too late for the many thousands who have already taken their own lives, he says.

Tellingly, his paper was dedicated to one man—a previously healthy man who took finasteride "just" to improve his hair. Within days, he spiraled into severe psychiatric distress. He never recovered. And months later, he took his own life.

Bryan Hubbard

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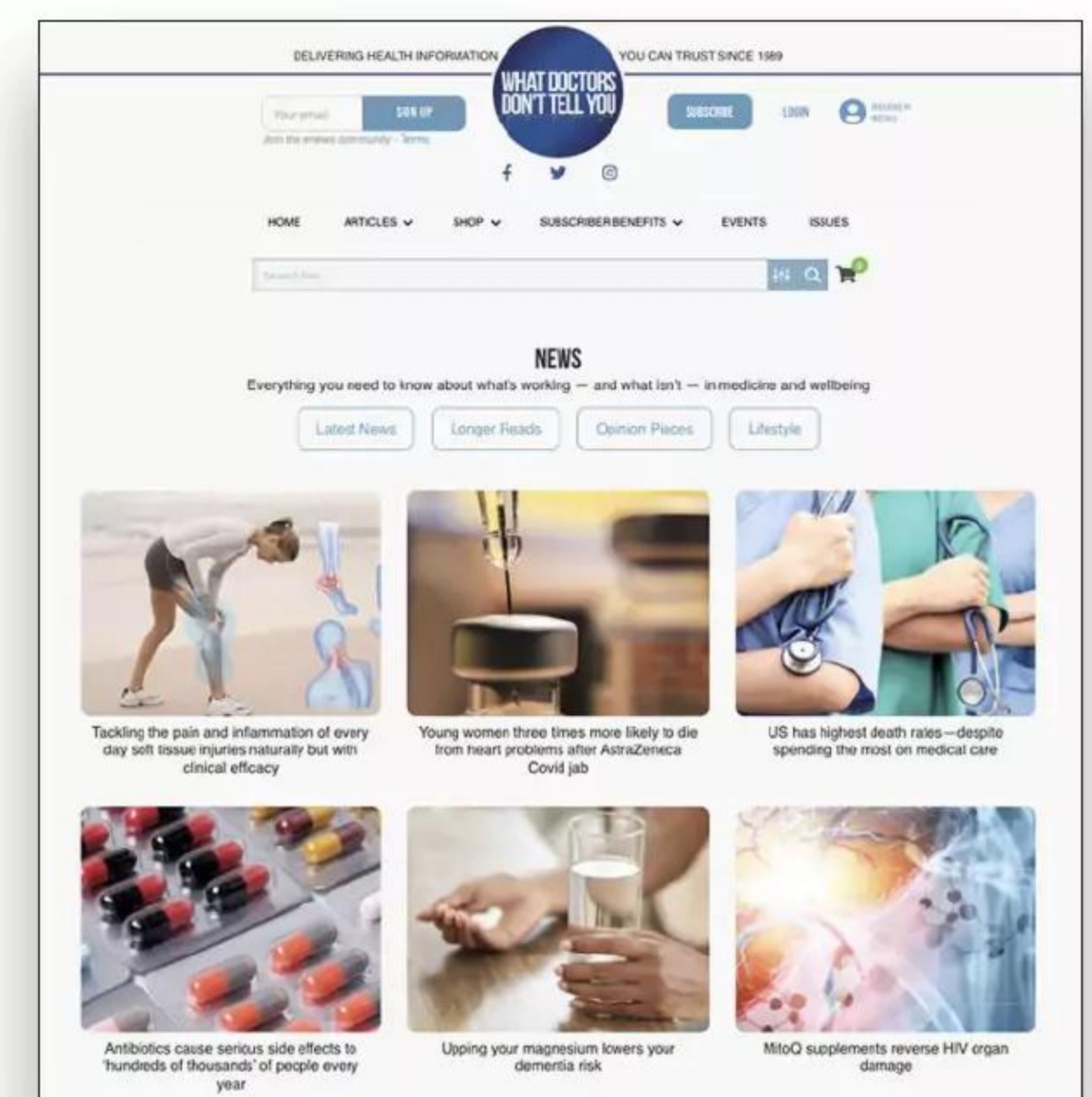
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Catcha matcha

It's the green tea that everyone's turning to—and its numerous health benefits seem to be more than hype

The smart folk drink green tea, but the super smart choose matcha. Matcha is a type of green tea, but it's processed differently, which makes it richer in health-giving antioxidants.

Matcha is a finely ground green tea powder made from *Camellia sinensis* leaves. Unlike regular green tea, whose leaves are steeped and discarded, matcha uses the entire powdered leaf, giving the drink a higher concentration of caffeine and antioxidants.

The tea is also rich in chlorophyll, an antioxidant that has cancer-fighting qualities, and L-theanine, an amino acid that promotes relaxation, improves sleep quality and enhances focus. It also contains lutein and vitamin K, which could help the elderly remain cognitively sharp, and its catechins, particularly epigallocatechin gallate (EGCG), can lower the risk of heart disease.

Its advocates would say that, perhaps, but scientists seem to agree. Researchers from Qatar University say trials have demonstrated that matcha lowers stress and “slightly” improves attention and memory.¹

It's also good to drink if you're doing resistance training exercises. Drinking it every day can help your muscles adapt and help fight off fatigue, say researchers at the Kyoto Prefectural University.²

It could even be an antidepressant, although positive results have been seen only in laboratory mice so far.³

But not all matchas are created equal; there are different grades, and some contain heavy metals or other contaminants. To choose a high-quality matcha, see our Healthy Shopping feature in the April 2025 issue, or read it on the website (wddty.com).

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Drink to your health! How matcha tea is good for you

Protects brain cells

Boosts cognitive function

Promotes relaxation

Helps regulate blood sugar

Boosts muscle mass in response to exercise

Supports a healthy gut microbiome

Aids in weight management

Lifts depression

Quenches inflammation

Prevents arterial blockage

Slows aging

Supports heart health

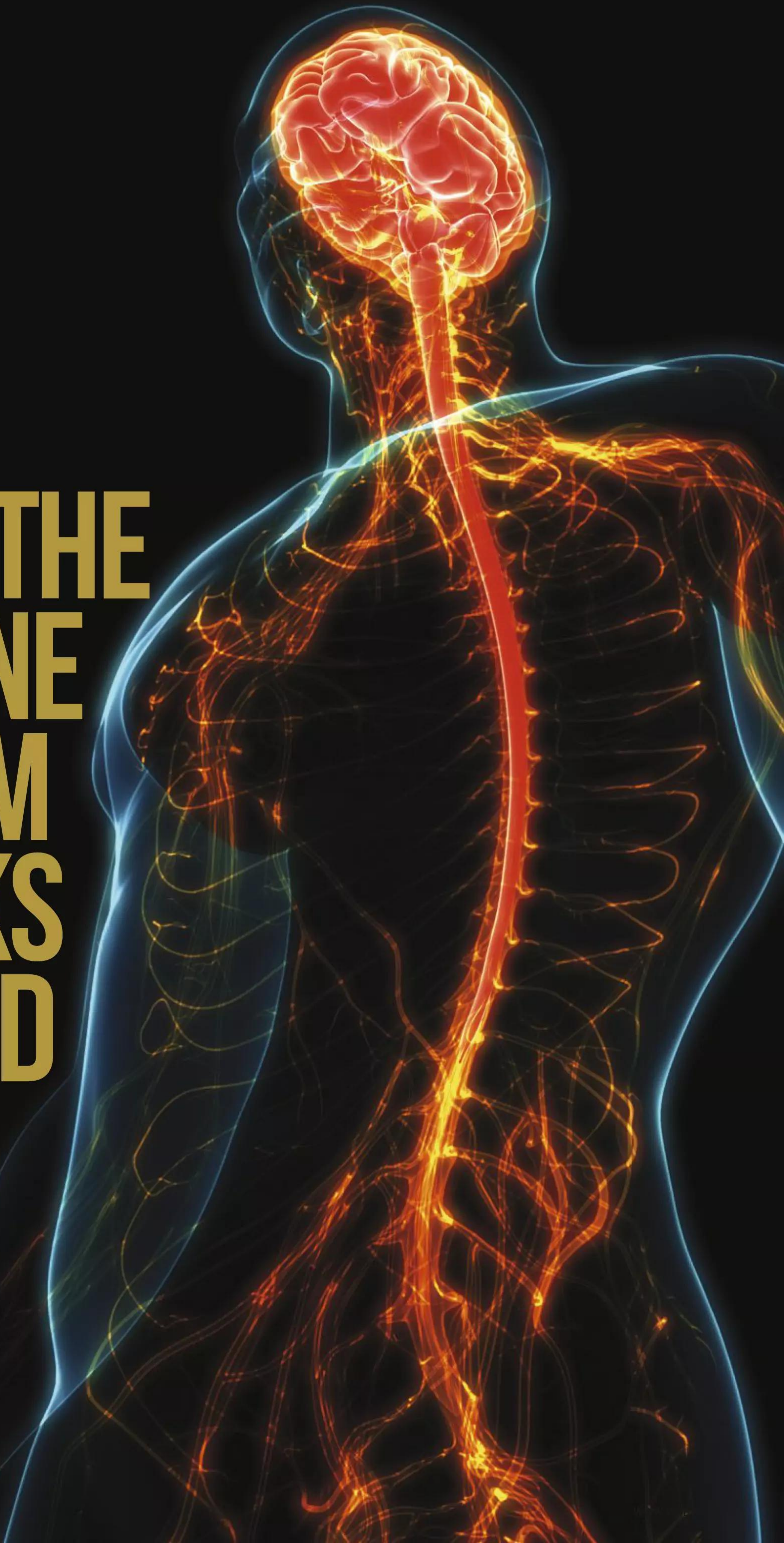
Boosts immune system function

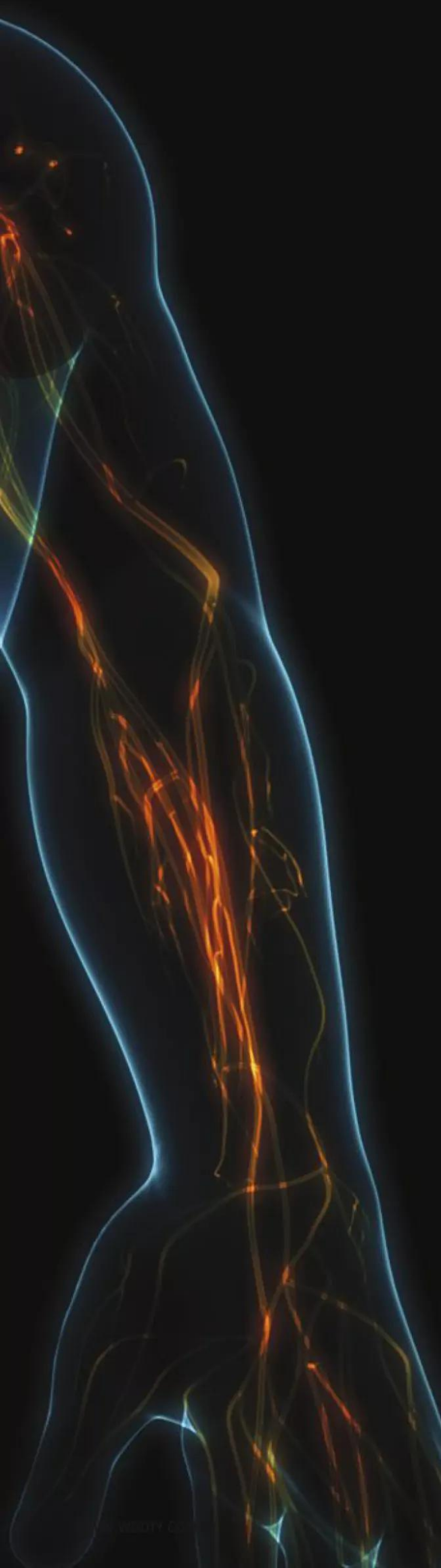
Protects the liver

Prevents and fights cancer

Promotes skin health

WHEN THE IMMUNE SYSTEM ATTACKS THE MIND





For more than a century, psychiatry has sought answers to the dark mysteries of mental illness: What makes a child obsessively wash his hands? Why does depression sometimes become so deep and linger so long? Why does reality fracture into the distorted thinking and hallucinations of psychosis for some otherwise healthy young people?

The history of psychiatry is littered with horrors born of that search—from ice pick lobotomies, insulin comas and tranquilizer chairs through Freudian psychoanalysis and into repressed sexual desires and “bad mothering.” Today’s near-automatic drug prescriptions for anxiety, depression and even “toddler bipolar disorder” rest on a scientifically unsupported brain-chemicals theory that has been listing for years.

Several new frontiers are opening, however, and one of the most important, autoimmune psychiatry or autoimmune neurology, looks not only to the brain but to the immune system. Scientists are uncovering striking evidence that mental illness sometimes results from the body’s own defenses turning against the brain. The field is forcing mainstream psychiatry to rethink long-held assumptions about causes of mental illness and offering hope for lasting treatments.

The brain is part of the body

“What excites me is that it’s breaking down the barriers between neurology and psychiatry, between diseases of the mind and diseases of the body,” says Alasdair Coles, professor of neuroimmunology at Cambridge University. He’s leading an ambitious clinical trial in the United Kingdom to test whether immune-based treatments can change outcomes for people diagnosed with psychosis (see box, page 35, for more on the PPIp2 and SINAPPS trials).

Not long ago, neurologists believed the brain lived behind a fortress wall—“immunoprivileged,” completely sealed off from immune system attacks. Today that idea has evolved, and the blood-brain barrier is now seen as a sort of dynamic, living filter, a dense mesh of blood vessels that decides what may pass from blood to brain.

Certain immune cells, specifically T cells and to a lesser extent B cells, can slip quietly through to make their immune surveillance rounds like sentinels on patrol. Sometimes these cells go rogue, however. They spark inflammation, interfere with neurotransmission and wreak havoc on brain function, including thoughts and emotions.

For decades, these immune misfires have been recognized in autoimmune diseases like systemic lupus erythematosus. As many as two-thirds of lupus patients experience psychiatric symptoms—from depression and anxiety to

Some mental illness starts when the immune system turns its guns on the brain. Celeste McGovern investigates the emerging field of autoimmune psychiatry

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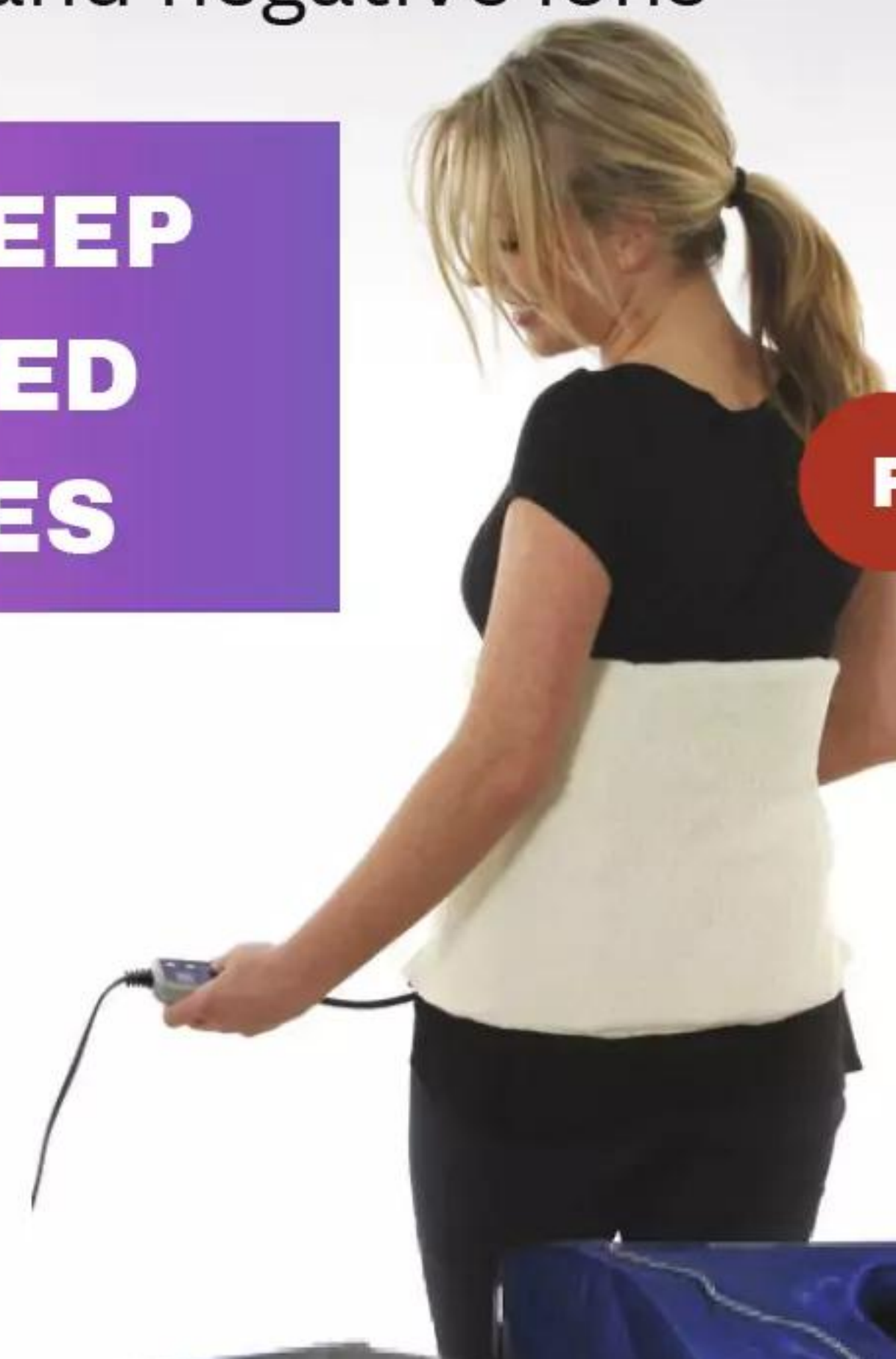
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frank psychosis—when antibodies and cytokines inflame the brain.

Other conditions, including multiple sclerosis and celiac disease, have higher rates of anxiety and depression than in the general population. They were once dismissed as the emotional fallout of chronic illness; we now know they can be direct consequences of immune system attacks on neural tissue. And more evidence is accruing that shows the overlap between autoimmune diseases and psychiatric illness is not just coincidental.¹

Amelia's case

About 20 years ago, the mystery deepened and widened with an investigation of a series of puzzling cases. Neurologist Josep Dalmau and his colleagues at the University of Pennsylvania explored one case in which a 17-year-old girl—let's call her Amelia—began a descent into madness in December 2005.

Previously healthy, she suddenly began having extreme mood swings between euphoria and despondency. Those close to her recognized she was also hallucinating.

At the emergency room of a children's hospital, Amelia's "disorganized thinking" and unresponsive "catatonia-like episodes" were noted, and she was sent to a psychiatric institute. But she was discharged shortly afterward because the staff felt she was "not cooperating" with therapy.

In the days that followed, Amelia was brought to two different emergency rooms and eventually admitted to another psychiatric unit. There nurses noted she was "emotionally detached, restless, wandering aimlessly, with episodes of yelling, and unable to carry a meaningful conversation."

She fit the diagnosis of psychosis, but thankfully one sign arose that kept her from being handed a prescription for antipsychotic drugs and put out the door again. Her body temperature was elevated, so the psychiatric unit sent her off to a medical center to rule out a meningitis infection.

At admission, hospital staff noted the teenager's episodes of unresponsiveness, or catatonia, although her brain scan was normal. A spinal tap revealed an elevated white blood cell count, so she was given antiviral and antibacterial drugs to fight infection, plus a sedative.

A few hours later, Amelia was found unresponsive—this time possibly due to multiple seizures—and transferred to an intensive care unit. Electroencephalogram (EEG) monitoring revealed no evidence of seizure activity, however. She was heavily sedated and intubated, yet multiple diagnostic tests failed to point to an underlying cause of illness.



THE GIRL HAD HAD AN OVARIAN TUMOR, CALLED A TERATOMA, REMOVED YEARS EARLIER... A PELVIC MRI SCAN FOUND A NEARLY 3-INCH CLUMP REMAINING

Pondering Amelia's puzzling symptoms, neurologists considered the girl's unusual medical history. She'd had an ovarian tumor, called a teratoma, removed years earlier. The term *teratoma* is derived from the Greek word *teratos*, which means "monster" because these tumors—once considered benign—are made up of a glob of body tissues, including sometimes hair, skin, muscle and even brain cells.

A pelvic MRI scan was ordered to see if any teratoma remained, and sure enough, it found a nearly 3-inch clump. Three days later, she had surgery to remove it and confirm its makeup.

Meanwhile, further examination of Amelia's cerebrospinal fluid revealed autoantibodies—immune system players that had trained an attack on the teratoma and were now assaulting her brain tissue. Doctors began plasmapheresis, a process of filtering her blood of these rogue autoantibodies and infusing her with immunoglobulins, healthy antibodies from donors. Heavy doses of steroids tamped down her immune system's attack on her brain.

Twelve days post-surgery, Amelia showed "striking improvement," appropriately responding to questions and breathing on her own. Several months later, she was evaluated as "normal" on a neurological examination and was back at high school, achieving good grades.

Amelia was one of 12 women and girls described in a 2007 study as having a recognizable syndrome of autoimmune encephalitis. Most had come from psychiatric centers with confusion, restlessness, agitation, frequent paranoid or delusional thoughts, and quiet staring. Most developed seizures, and they frequently required mechanical ventilation.

All had teratomas and measurable autoimmune antibodies.

Nine of the 12 made astonishing recoveries after surgery to remove the teratoma and immune-modulating treatments. Seven returned to work or school. Two of the three who did not have the teratoma removed died of "neurological deterioration."²

Friendly fire

The lead author of the 2007 paper, Dr Dalmau, is a neurologist at the Hospital Clínic de Barcelona and an adjunct professor of neurology at the University of Pennsylvania. Two years earlier, he had published a landmark paper describing four similar cases.

In their groundbreaking research, Dr Dalmau's team had developed an intricate experiment, exposing thin slices of rat brain to the cerebrospinal fluid of these first four patients. After eight months of adjustments, they finally produced four striking images—resembling ammonite fossils—that clearly showed the antibody attacker binding to a receptor for the first time.



ANTIBODIES ATTACKING COMPONENTS OF THE TERATOMA ALSO TURNED THEIR STUPENDOUS IMMUNE ARTILLERY ON THE SAME TYPE OF RECEPTORS IN THE BRAIN

Not only were the women all suffering from the same illness but it was the same antibody attacking their brains. The binding was strongest in the hippocampus (a brain region responsible for information processing, memory and spatial awareness), but a key question remained: Which receptors were being targeted?

Through trial, error and educated guesses, Dalmau's team kept going and solved the mystery: The culprit was NMDA-receptor-targeting antibodies.⁶

NMDA (n-methyl-D-aspartate) receptors are essential for learning, memory and behavior. Found throughout the brain, they enable neurons to respond to neurotransmitters, which either excite cells to fire or tamp their firing down. These basic interactions form the foundation of all thought and action.

In Dr Dalmau's patients, the antibodies attacking components of the teratoma had also turned their stupendous immune artillery on the same type of receptors in the brain. The antibodies attached to the NMDA receptors and blocked their chemical signals, and the mental unraveling began.

The new condition was called anti-NMDA-receptor encephalitis (brain inflammation). Suddenly, psychosis—once treated purely as a disorder of the mind—was revealed, in some cases, to be a disease of the immune system. What's more, it had a treatment with a 75 percent recovery outcome in people who would otherwise languish in a psychiatric bed, wander the streets or die.

The word spreads...

Within a year of Dr Dalmau's report, more than 100 patients were diagnosed with the condition.

Then, in 2009, a *New York Post* reporter, 24-year-old Susannah Cahalan, began feeling unwell. She became obsessed with the idea that her apartment was infested with bedbugs even though an exterminator could find no evidence of them. She began imagining her boyfriend was cheating on her, and then she collapsed in the newsroom.

Diagnoses ranged from mononucleosis to bipolar disorder and schizoaffective disorder (schizophrenia with a mood disorder). Her psychosis was dramatic at its height, including hallucinations of paintings coming alive and a delusion that she had the power to age people with her mind.

Her psychiatric symptoms were the main feature of her illness, but she also had a seizure in a hospital lobby. It was fortunate, in a way, because it saw her transferred to an epilepsy ward at New York University Langone Medical Center rather than a psychiatric ward—which made all the difference.

About a quarter of people with autoimmune encephalitis do not have known seizures. Even when patients are hospitalized and fitted with electrodes to record a seizure, it's like fishing. The equipment may not always catch one.

Cahalan was hospitalized for a month before neurologist Dr Souhel Najjar did something no one else



IF IT TOOK SO LONG FOR ONE OF THE BEST HOSPITALS IN THE WORLD TO GET TO THIS STEP, HOW MANY OTHER PEOPLE WERE GOING UNTREATED... CONDEMNED TO LIFE IN A NURSING HOME OR PSYCHIATRIC WARD?

had done: a “clock test.” He asked her to draw a clock with the numbers on it.

This test is ordinarily given to people with dementia or Alzheimer's disease. Cahalan drew the circle easily, as even people with severe cognitive deficits can do. But the numbers on her clock were all squished to the right half of the circle.

For Najjar, it was proof that Cahalan's disorder was neurological rather than psychiatric, and he finally ordered her cerebrospinal fluid sent to Dr Dalmau's lab for testing. A positive result made Cahalan the world's 217th patient diagnosed with anti-NMDA-receptor encephalitis.

A relatively simple combination of steroids and immune therapies (immunoglobulin treatment and plasmapheresis) led to her full recovery after several months and then the publication of her *New York Times*

best-selling memoir *Brain on Fire* (Free Press, 2012). Her story, and the work of Drs Dalmau and Najjar, exploded in the media across the globe and led to countless medical school lectures as well as a Netflix movie in 2018. As a result, more people have heard of autoimmune encephalitis.

What haunts Cahalan, though, is how narrowly she escaped indefinite shuffling through the psychiatric system because of her mental health symptoms while her immune system burned her brain. In her book, she asked, “If it took so long for one of the best hospitals in the world to get to this step, how many other people were going untreated, diagnosed with a mental illness or condemned to a life in a nursing home or a psychiatric ward?” Or to death.

That was nearly 15 years ago. Thanks to her and other patients' testimonies and the dedication of scientists like Dr Dalmau, research in the field has taken off (a PubMed search for “autoimmune encephalitis” three years ago yielded 2,000 results, but today it gives more than 12,000).

More people are being screened for autoimmune antibodies when they present with neurological symptoms of autoimmune encephalitis. Tens of thousands have been treated now.

In a case reported by the *Washington Post*, a woman who had been catatonic for 20 years and housed in a psychiatric institution “woke up” and made an astonishing recovery after her underlying autoimmune condition was treated. April Burrell was only 21 when she began to experience hallucinations and confusion in 1995. She was diagnosed with schizophrenia and, in a bizarre twist of fate, was seen by psychiatrist Sander Markx, who was only a medical student at the time.

“She would just stare and just stand there,” recalls Markx, now a professor and director of precision psychiatry at Columbia University. “She wouldn't shower, she wouldn't go outside, she wouldn't smile,



Two emerging fields

In recent years, two new frameworks—metabolic psychiatry and autoimmune psychiatry—have begun to examine the biological roots of mental illness from converging directions.

Metabolic psychiatry views mental disorders as conditions of cellular energy failure in which neurons struggle to generate or use fuel efficiently. It uses therapies including a high-fat ketogenic diet (to switch the brain's fuel source from glucose to ketones) and other mitochondria-targeted strategies to restore energy balance.

Autoimmune psychiatry, by contrast, sees many mental illnesses as friendly fire from the immune system, in which inflammation or rogue antibodies turn the body's defenses against the brain. It uses immune therapies, such as IV immunoglobulins and plasmapheresis, to quash the assault.

Yet these two stories dovetail. The immune response is one of the body's most energy-intensive processes, and chronic inflammation can cripple mitochondria, drain metabolic reserves and disrupt neurotransmission.

Meanwhile, metabolic breakdown—through insulin resistance, oxidative stress or nutrient imbalance—can inflame the immune system, breach the blood-brain barrier and expose the brain to further attack. Together, these fields suggest mental illness can arise from a vicious loop between immune activation and metabolic collapse in the brain.

The keto diet doesn't just change how the brain burns fuel—it also reshapes the community of gut microbes, which can calm the immune system and influence the brain. By cutting carbs, keto starves sugar-loving bacteria and favors species like *Akkermansia* and *Parabacteroides* that strengthen the gut barrier and reduce inflammation.

The resulting mix of fats, ketones and microbial byproducts signals the immune system to stand down, dampening inflammatory pathways that can drive both autoimmune and psychiatric illness. In this way, keto's power may reach beyond metabolism—reshaping the dialogue between the gut, immune system and mind.

To learn more about the keto diet and other ways of eating to heal autoimmune disorders, see page 36.



she wouldn't laugh. And the nursing staff had to physically maneuver her."

Nearly two decades later, one of Markx's students told him about a woman he had seen at the hospital. It turned out it was April, and Markx couldn't believe she was still at the same hospital in the same dreadful state.

He contacted her family and asked experts to reanalyze April's condition; they ran blood tests for immune markers. Sure enough, April, who had been locked inside her mind for close to two decades, was suffering from psychosis induced by her lupus. Her immune system was attacking her brain.

After she received immunotherapy, the results were astonishing. The hallucinations faded. Her awareness returned. She recognized her family again and finally went home.

... but not far enough

April's recovery has become a touchstone in the rise of autoimmune psychiatry. It raises a haunting question, though: How many others are still out there, long written off as incurable, warehoused in some institution or pacing the streets?

Twenty years after Dalmau's groundbreaking study, today most patients with first episodes of psychosis are still never screened for immune markers unless they happen into one of the large research centers. Most mainstream psychiatrists still haven't heard of autoimmune psychosis, or they dismiss the immune system involvement as a rarity.

Psychiatric guidelines still treat psychosis as a primarily psychiatric disorder unless there are neurological or systemic red flags, such as seizures, movement disorders, or a history of tumor, infection or autoimmune disorders. Yet, as the growing research shows, these red flags are frequently absent.

What causes autoimmune encephalitis?

Notably, Cahalan didn't have a teratoma. Only about one-third to one-half of adult women with anti-NMDA-receptor encephalitis do, and most men and children do not.

Removing a teratoma, when one is present, greatly improves outcome odds and reduces relapse risk. But in many other cases, including Cahalan's, the trigger remains uncertain.

Infection triggers Autoimmune encephalitis, like many mental illnesses, is known to follow infection. The most famous predecessor is herpes simplex encephalitis, but a range of viral and bacterial infections can lead to it.

Other immune-mediated brain conditions, such as PANDAS (pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections) result from an immune system gone awry. PANDAS is a sudden onset (literally overnight, in some cases) of obsessive-compulsive disorder symptoms or other abrupt behavioral changes in children, such as tics, after a Group A streptococcal infection such as strep throat or scarlet fever.

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During strep infection, the immune system produces antibodies to fight the bacteria, but some of them mistakenly attack brain tissue due to molecular mimicry—a similarity between the bacteria and the brain cells. In PANDAS, cells in the basal ganglia, a region involved in movement, emotion and habit formation, come under fire.

This causes inflammation leading to abrupt changes in behavior, motor control (such as tics), mood swings or fits of rage, trouble sleeping, regressive behavior (like bedwetting, clinginess or baby talk in older children) and a decline in school performance.

PANS (pediatric acute-onset neuropsychiatric syndrome) is a broader category that includes PANDAS but also applies when the trigger isn't necessarily strep. It may be caused by influenza, Lyme disease and Epstein-Barr virus.

Narcolepsy is a disorder that causes sleep paralysis and intense hallucinations when falling asleep, daytime sleepiness and cataplexy (sudden muscle weakness triggered by emotion). It's another striking example of the immune system turning against the brain in a way that parallels autoimmune encephalitis.

All evidence now points to an autoimmune basis of most cases of narcolepsy type 1, the kind with cataplexy. In this type, the body's own immune cells destroy a tiny cluster of neurons in the hypothalamus that produce hypocretin, a protein that regulates sleep-wake cycles.

Most research suggests the destruction occurs through molecular mimicry, the same process underlying autoimmune encephalitis. In a case of mistaken identity, immune cells primed to fight off a virus turn their assault on similar-looking proteins in the brain.

Vaccine triggers The 2009 H1N1 flu pandemic provided a vivid example of how vaccination, rather than infection, could cause autoimmune narcolepsy. Clusters of new narcolepsy cases emerged in the UK and Europe after patients were immunized with the Pandemrix flu vaccine.

More than 1,500 people, including children as young as two years old, were struck with the lifelong, devastating sleep disorder. Studies later showed that, just as in autoimmune encephalitis, the immune system's defense against vaccination wound up storming the blood-brain barrier and attacking critical neural circuits. It left behind a lifetime of prescription drugs to stay awake or sleep at the right time along with night terrors and cataplectic collapses.

The Pandemrix narcolepsy episode was a turning point in neuroimmunology. It showed that vaccination can trigger autoimmune attacks on very specialized brain tissue and confirmed that the blood-brain



STUDIES SHOWED THAT, JUST AS IN AUTOIMMUNE ENCEPHALITIS, THE IMMUNE SYSTEM'S DEFENSE AGAINST VACCINATION WOUND UP ATTACKING CRITICAL NEURAL CIRCUITS

Ryan's story

Ryan Baldrige Jr. was a bright toddler who could whiz through his flashcards until suddenly, at 18 months old, he lost the ability to speak. Doctors told his parents their son's autism was permanent, according to the *New York Post*.

Years later, a blood test revealed something different: folate receptor alpha autoantibodies, rogue immune proteins that block essential folate from reaching the brain. The diagnosis, cerebral folate deficiency, has quietly emerged as a biological subtype of autism in which the problem isn't the brain itself but immune system interference with receptors that allow folate (vitamin B9) to do its vital jobs in the brain.

As far back as 2012, research was pointing to folate receptor alpha antibodies in as many as 75 percent of autistic children compared to just 10–15 percent of children without the disorder. Scientists began recommending leucovorin, a prescription folic acid (an active form of folate) that bypasses the blocked pathway and restores folate metabolism in the brain.

Ryan began speaking again within weeks of taking leucovorin, and his parents described it as "getting him back."

This fall, the Trump administration announced FDA approval of leucovorin for autism associated with autoimmune cerebral folate deficiency—an unprecedented move that has stirred hope for those with a previously untreatable disorder that has been growing year on year and now affects 3.5 percent of American children.

barrier is far from a concrete fortress. It also demonstrated that psychiatric diseases may frequently have immune fingerprints.⁴¹

What's largely unknown to the public, and even to most psychiatrists, is there are hundreds of thousands of reports to health agencies about adverse psychiatric symptoms following vaccination. The World Health Organization's *VigiBase*—a global database—lists more than a quarter million (252,031) psychiatric adverse events.

They range from anxiety and depression to new psychoses, suicides and suicidal ideation following Covid vaccines alone. Dozens of case reports describe previously healthy patients who developed anti-NMDR-receptor encephalitis and other psychiatric conditions following the shots.⁴²

Chronic stress Ongoing stress can lead to immune system dysregulation, triggering autoimmune responses. One report highlights a case in which stress from exams and a urological surgery apparently triggered anti-NMDA-receptor psychosis in a 20-year-old woman with no history of psychiatric illness.⁴³

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Whatever the causes of autoimmune mental illness, the research arena has exploded. Scientists have moved on from NMDA receptor autoantibodies to identify several others, each with their own collection of symptoms in the brain.

Bigger questions

Some researchers are asking a bigger question: Could subtler versions of this process underlie a portion of the psychiatric disorders that affect millions worldwide?

Teams at Columbia University, Oxford and Yale, among others, are exploring whether certain forms of schizophrenia, depression or obsessive-compulsive disorder actually stem from hidden autoimmune activity. Blood tests for immune markers, brain scans showing signs of inflammation and case reports of patients who improve after undergoing immunotherapy all point to an immune-psychiatric link that was once unthinkable.

For patients and families, the implications are profound. If even a fraction of mental illness has an autoimmune basis, it opens the door to entirely new treatments—ones that don't just manage symptoms but strike at the root cause.

“Here we have a really good example of an immunological mechanism, an antibody, potentially causing something as mysterious as psychosis and potentially being treated like something as humdrum as what you might get in your regular hospital for a disease like psoriasis or arthritis,” explains Cambridge’s Dr Coles.

This new frontier could also pull mental illness out of psychiatry’s long, stigma-shadowed past. Journalist Cahalan, whose own brain inflammation was once mistaken for psychosis, reflected on this divide after her recovery.

“When I was thought to be suffering from a psychiatric disorder,” she told a psychiatry magazine, “my care was less sympathetic than it was later, when doctors discovered it was my immune system attacking my brain.”

She asked a haunting question: Why is this?

“At the height of my disease, nothing distinguished me from a person with schizoaffective disorder or schizophrenia,” she said. “The only difference came later—when I was cured.” Her experience exposes a deep bias in how we treat mental illness: Compassion and urgency often come only when the cause can be seen under a microscope.

The science is still young, but if immune-based therapies can make even a small dent in something as intransigent as schizophrenia, the effects are sure to ripple out to other mental illnesses. Not every case of psychosis or depression may turn out to be immune-driven, but the possibility has the power not just to offer healing but to shift psychiatry’s view of mental illness.

Doctors can see not just a broken brain but a whole body in need of help. For the millions who have long been written off, it’s a reason for hope.

Ongoing research

Oxford University is among the institutions diving into autoimmune encephalitis research.

“We have described antibodies against the NMDA receptor, and other neuronal targets, in 10 percent of people with a first episode of psychosis,” says Belinda Lennox, head of the Department of Psychiatry at Oxford University (psych.ox.ac.uk). “We have described how people with psychosis and these antibodies get better when treated with immune treatment.”

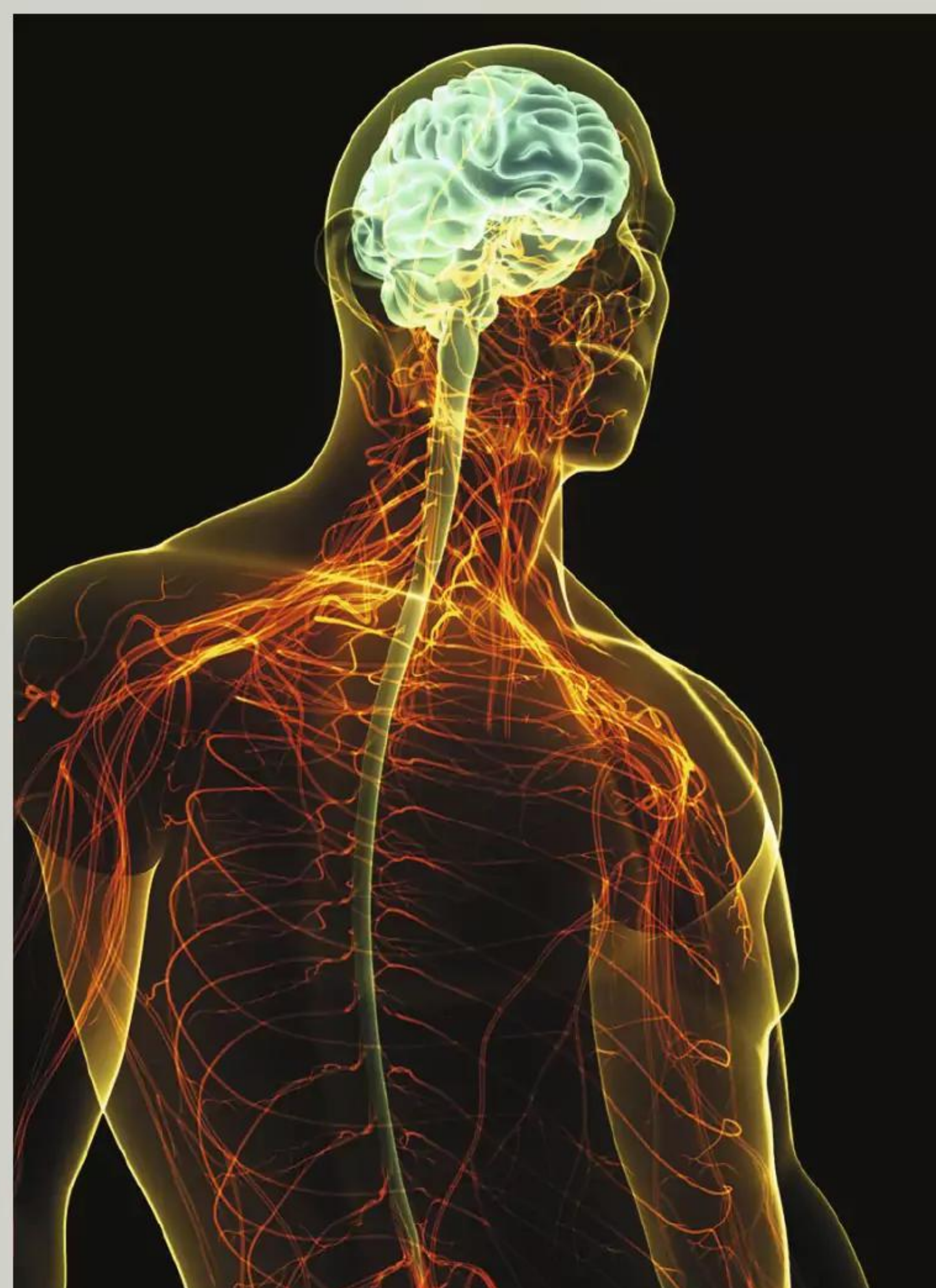
Her lab published the SINAPPS1 pilot study in 2018. The team, led by Alasdair Coles, recruited 10 patients with first-episode psychosis and high autoantibody levels to receive immunotherapy in the form of immunoglobulins, plasmapheresis and/or steroids.

“All patients with NMDAR antibodies showed a dramatic improvement, if not complete resolution of psychotic symptoms following treatment,” the paper reports, and there were no adverse events.¹ The team is now aiming to determine causality via the SINAPPS2 trial, which is recruiting adult patients (16–70 years old) with psychosis and high levels of autoantibodies.

A larger study, also at Oxford, is inviting all people with a first episode of psychosis or a relapse of psychosis in remission to come to one of 40 centers across England and Scotland and undergo blood testing for the autoantibodies. The PPI2 study is ongoing until 2027.

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Eating to heal

Is the autoimmune protocol diet the answer to your haywire hormones and chronic symptoms? Marcelle Pick thinks it could be and shares her healthy secrets to success

Lily's face filled with confusion when I said, "I've got just the diet for you to try." She hadn't come to see me about weight loss, but the word *diet* immediately made her assume I was telling her she needed to lose weight.

The truth was, she was quite thin—so she didn't understand what I was saying. She'd come to see me due to chronic pains and aches, low energy, exhaustion and uncomfortable GI symptoms she was experiencing because of an autoimmune condition.

I quickly reassured her that my use of the word had nothing to do with her weight. I was talking about her overall eating patterns and the foods she put into her body. Diets for weight loss are a totally different subject.

Lily had been living with her autoimmune disease for quite some time, and like so many women managing these conditions, she was frustrated and confused. Her doctors had told her there wasn't much they could do.

The disease could be managed with medication, they said, but there was

no cure. She'd just have to learn to live with the symptoms, modifying her daily activities to minimize the pain.

Luckily, Lily wasn't satisfied with their response. She came to see me because she wasn't willing to resign herself to an inactive lifestyle. She'd spent much of her life hiking, biking and enjoying the outdoors. How could she give all that up?

During our initial consultation, I asked Lily a lot of questions about her eating habits. As I listened, I could immediately see some adjustments she could make that might change everything. That's when I mentioned the diet I had in mind: the autoimmune protocol (AIP) diet. It has nothing to do with losing weight (though for some, that's a happy side effect) but everything to do with feeling your best.

Diet as therapy

Research has demonstrated following the AIP diet has a positive effect on the autoimmune diseases Hashimoto's thyroiditis (when the immune system attacks the thyroid gland, leading to an

underactive thyroid)¹ and inflammatory bowel disease (which includes Crohn's disease and ulcerative colitis).² Although more research is needed, I'm confident it can have a similar effect on many other autoimmune conditions.

The AIP diet can seem restrictive when you first start. But after a while, you'll get so good at using whole foods creatively, you'll realize how much flexibility you really have.

You might not even miss the old choices that you leave behind. And isn't a restricted diet better than taking medication forever or having to stop doing your favorite activities?

The AIP diet has some similarities to—and some key differences from—a Paleo or keto diet. Here's a brief look at each of them and at how the AIP diet affects the uncomfortable symptoms of autoimmune disease that likely result from hormonal imbalances.

The Paleo diet Paleo eating focuses on foods our hunter-and-gatherer ancestors in the Paleolithic era would have eaten. This diet is commonly suggested for autoimmune conditions, obesity and blood sugar imbalances or just for general good health.

On the Paleo diet plan, you can eat nuts and seeds, healthy fats and animal protein, fruits, vegetables and some natural sweeteners. What you have to avoid are dairy products, grains, anything processed (including refined sugars), beans and legumes.

The keto diet The ketogenic (keto) diet recommends high fat and low carbs. The addition of (healthy) fats sends your body into ketosis, which means it gets its energy by burning fat. This diet has been used since the 1920s, first to treat epilepsy, then to help with cardiovascular health, diabetes, some types of cancer, brain disorders and weight loss.

Because carbs (which convert to sugar) are limited, the keto diet can help balance blood sugar levels and prevent or correct insulin resistance.

When eating a keto diet, you can have all low-carb vegetables, animal proteins, avocado, coconut, nuts and seeds, and other healthy fats. You'll avoid all grains, alcohol, sugars and starchy vegetables such as carrots, sweet potatoes, beets and winter squash, and many fruits.

Research has demonstrated the AIP diet has a positive effect on Hashimoto's thyroiditis and IBD, and it can have a similar effect on other autoimmune conditions

The phases of the AIP diet

Phase 1: Elimination

This phase involves eliminating all possible trigger foods and drinks for a span of six weeks to six months. These include all grains, legumes, eggs, dairy, nuts and seeds, processed sugar, nightshades, seed-based spices (like coriander, mustard and nutmeg), coffee and alcohol.

Phase 2: Reintroduction/rechallenge

This phase, which can last for one to three months, involves gradually reintroducing the eliminated foods and again cutting out any that induce symptoms or flares. Choose a single food or food group to reintroduce (many people start with the foods they enjoy the most), eat a small amount of the food and observe for reactions. See my column in *WDDTY* June 2025 for some general guidance on how to do an elimination diet.

Phase 3: Maintenance

After the symptom-triggering foods have been discovered and eliminated, the individual diet that has evolved is followed for the long term.

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Some lower-carbohydrate fruits are allowed (blackberries, raspberries, cantaloupe and watermelon, to name a few) so you'll have to do some research if this is the route you choose.

The AIP diet The primary focus of the AIP diet is balancing gut dysbiosis and decreasing systemic inflammation. It focuses on eliminating food chemicals that researchers have found can affect these conditions so your body has a chance to recover.

While quite similar to Paleo-style eating, the AIP diet is even more restrictive, especially during the initial elimination phase. Once that's over, careful reintroduction of foods helps you find the things you can add back in and still feel great.

The AIP allows many vegetables, fruits, animal proteins and healthy fats. In the elimination stage, you must cut out grains, legumes, dairy, sugar, nuts and seeds, coffee, eggs, chocolate, nightshades and some seed-based spices. Comprehensive lists are available online to help you know exactly what you can (and can't) eat during the AIP elimination phase.

The right diet for you

We are all amazingly unique, which is why two women with the same condition may have completely opposite reactions to a food in their bodies. With autoimmune disease, symptoms vary depending on other factors, such as whether your hormones are in balance or you have unknown food sensitivities.

That's why you'll never hear me say that one diet, or way of eating, is best for everyone. I take the time to research many options so I can recommend the most sensible plan for each woman's individual circumstances.

So how do you choose the right plan for you? I always suggest working with a qualified professional who can look at all the factors and help guide you toward your best solution.

There are so many pieces to the puzzle, it may be tough to sort them out on your own. These are some things to consider before choosing a diet:

- Your current health status and symptoms
- Your ability to commit to a diet long enough to see its effects
- Time considerations (for shopping, prep work, and cooking)
- Affordability
- Its compatibility with your lifestyle
- Cultural expectations
- Your personal beliefs

Eating to heal hormonal imbalance

I firmly believe that food is the best medicine we have. AIP, Paleo and keto diets all have one thing in common: They focus on healthy whole foods rather than processed junk. Your body relies on a steady influx of minerals and nutrients to keep things functioning as they should. If something interferes, symptoms appear.

Your hormones are integral to good health. These hormones are the messengers between various systems

in the body. If the communication between these systems goes awry, internal chaos can be the result.

Every one of your major body functions is influenced by hormones, including reproduction, blood pressure, energy levels, metabolism, sleep, appetite, blood sugar balance and the aging

process. That's why when hormones are imbalanced, you're likely to notice.

Headaches, fatigue, digestive problems, sleep issues, depression and anxiety, weight gain—the list of symptoms caused by hormonal imbalances goes on and on. Hormones are also connected to inflammation. With autoimmune disease, inflammation is often behind the pain you feel.

The AIP diet focuses on the gut because a leaky gut can quickly throw hormonal balance off. With a healthy digestive system, your body will eliminate estrogen metabolites. But when things are out of balance, this may not happen, and you could end up with estrogen dominance (see my column in *WDDTY* November 2025).

Gut health also influences the conversion of the thyroid hormone T4 to the more usable form, T3. An unhealthy

AIP, Paleo and keto diets all have one thing in common: They focus on healthy whole foods rather than processed junk



9 tips for your new diet

It can be overwhelming to completely change the way you eat, especially if you've relied on convenience foods and vending machines for far too long. But it's worth it in the long run—especially if you have an autoimmune disease.

Learning to eat nutritious whole foods in place of processed junk just might be the key to getting back to your favorite activities instead of letting chronic pain and exhaustion run your life. Here are some tips to help you get started.

Clean out your kitchen Clear your refrigerator, freezer and pantry of anything that's not part of the plan you select. If you don't have processed foods available, it's much easier to grab a healthy, plan-approved snack.

Make time to prep Choose a specific day of the week when you have time to both shop for fresh ingredients and prep them. That way, they'll be ready to cook quickly when you need them. This one step can make the difference between whipping up a simple but delicious and nutritious stir-fry for dinner and ordering takeout.

Hydrate Water is so important for health. Thirst is often mistaken for hunger, so before grabbing a snack, drink a big glass of water. You can even use the need for hydration to stave off cravings for sweets—try infusing your water with some berries for a hint of natural sweetness.

Eat slowly and mindfully Take time to enjoy all the new flavors you may be experiencing. Start training your brain to recognize how delicious whole foods can be by savoring each bite.

Don't fall into a rut Though these diets seem quite restrictive, in truth the options are endless. If you stick to fruits and vegetables you already know or eat the same meals over and over again, you may

quickly grow tired of them. Branch out—try new recipes and vary the sides you serve with meals.

Have fun with spices This is a perfect time to test out some new spice blends to add flavor and excitement to your dishes.

Try new ways of cooking I love how easy an air fryer makes preparing meats and vegetables, and it's much quicker than roasting in the oven.

Plan ahead When eating out, study the menu options ahead of time if you can. This will help you stick to your plan instead of ordering on impulse.

Deal with your emotions It's amazing how often women tell me that starting a restricted eating plan leaves them wanting to eat constantly, even when they know they aren't hungry. Something about that feeling of being "deprived" leads to seeking out more and more food, and the choices available may seem less than satisfying.

If you find yourself in this situation, take a few minutes to tune into what's really going on. What feelings are coming up for you when you can't reach for your favorite comfort food?

Addressing these will help you be successful in your quest for better health. To learn more about this approach, see *WDDTY* October 2025.

GI tract can also affect both blood sugar and insulin levels, putting you at risk of insulin resistance. And inflammation in the gut can trigger your stress response, leading to high levels of cortisol, which in turn can influence the levels of your other hormones.

All this underlines the idea that what you eat can seriously affect your hormones. The good news is that when you understand that, you realize you have more control than you may have thought. You *don't* have to default to medications with side effects that are as bad as the symptoms you're trying to control.

With the AIP diet (or another intentional eating plan), you can discover the effects of certain foods on your body, which will help you make informed food choices.

Life-changing effects

Eliminating foods that might be disrupting your digestive system, throwing your hormone levels out of balance and causing systemic inflammation can make a huge difference in your life.

Lily tried the AIP diet and found that dairy and gluten needed to stay permanently out of her kitchen. She couldn't believe how much better she felt when she'd identified these two major culprits.

Her pain was so slight and her energy so high after making the changes that she had no problems at all on the hiking vacation she took with her family. She finally got her life back—and so can you.

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Marcelle Pick (marcellepick.com), ob-gyn nurse practitioner, is passionate about transforming the way women experience healthcare through an integrative approach. She cofounded the world-renowned Women to Women Clinic in 1983 with the vision not only to treat illness but also to support her patients in proactively making healthier choices to prevent disease. She has successfully treated thousands of individuals through her unique approach to wellness.

Wart wonders

Worried about warts? Homeopath David Needleman shares his tried-and-tested remedies for getting rid of them for good

They may be small and harmless, but warts are among the most stubborn and unsightly of skin complaints, and most of us will get them at some point in our lives.

Caused by the human papillomavirus (HPV), these rough lumps on the skin—sometimes itchy and painful—can appear anywhere on the body, but they most commonly affect the hands and feet. Warts on the soles of the feet are known as verrucae, or plantar warts, and these often have a black or dark-red dot in the center.

Warts are contagious. You can get them by having direct skin-to-skin contact with someone who has them, touching contaminated surfaces like shower floors or gym equipment, or sharing personal items like towels, nail clippers and razors.

Children and teenagers are more likely to get warts, as are those who have a weakened immune system. Your immune system plays a critical role in determining whether you develop a wart after being exposed to HPV.

Warts don't always have to be treated—they usually go away on their own after a few weeks or months. But sometimes it can take years, and many people want to get rid of them quickly, particularly if they're painful or bothersome.

Conventional treatment of warts involves cutting them out, applying chemicals or freezing them off with liquid nitrogen (cryotherapy). These methods can be painful and come with nasty side effects, though. The warts can also grow back.

Homeopathy offers a gentler, holistic approach. The usual treatment starts with a constitutional remedy (based on your unique characteristics and individual health profile).

This is combined with topical treatment and regular dosing of the most appropriate acute remedy for your particular symptoms (see my column in the May 2025 issue to learn about the differences between acute and constitutional remedies).

Thuja topical treatment

To use Thuja topically, apply the mother tincture (an alcoholic solution containing the undiluted original homeopathic substance) to the affected area with a paintbrush twice daily until the warts, verrucae or molluscum (see box, page 41) are gone.

Take care as the solution can stain clothing. You can also use a Thuja-containing cream.

Treatment may take weeks, but it's gentle and generally pain-free. For a two-pronged approach, use topical Thuja alongside the oral dose, or choose the right oral remedy for your particular symptoms.

Here are five of the most common and effective homeopathic remedies used to treat warts.

Thuja Occidentalis Also known as Arbor Vitae, this is the most frequently prescribed remedy for warts and verrucae as well as for molluscum contagiosum (see box, page 41). For best results, apply Thuja topically (see the box below) as well as taking it orally.

If your symptoms don't improve after a month, then you'll need to choose a more specific remedy or schedule an in-depth consultation with a homeopath.

Suggested dosage: 30C twice a day

Causticum This remedy is often used for warts on the hands, fingertips and nose as well as for verrucae. The warts are often large and jagged and may bleed easily. There can also be a sensation of heat or burning, especially on the face.

Suggested dosage: 30C twice a day

Nitric Acid Nitric Acid, or Acidum Nitricum, is commonly used for warts around the mouth and genital areas (although note that genital warts are a sexually transmitted infection, unlike common warts, and they should not be self-treated).

The warts tend to be large and jagged in appearance, bleed easily and may be accompanied by a burning sensation. This remedy is also very useful for blackheads on the face and forehead.

Suggested dosage: 30C twice a day

Anacardium Orientale This remedy made from the marking nut is useful for warts on the hands, especially the palms. It's also the remedy of choice for extremely itchy warts—the desire to scratch may be overwhelming (but try not to as this can spread the infection).

Suggested dosage: 30C twice a day, reducing to once a day when the itching subsides

Dulcamara Reach for Dulcamara if you have itchy warts that get worse in cold, wet weather. These warts tend to be large and smooth and mainly on the hands (with sweaty palms), but they can appear on the face too. They may also develop thick, dark, brown-yellow crusts that bleed if scratched.

Suggested dosage: 30C twice a day, reducing to once a day when the itching subsides

How to stop warts from spreading

- Don't brush, comb or shave areas with warts.
- Don't use the same nail file or nail clipper on the warts that you use on your healthy nails.
- Don't bite your nails if you have any warts nearby.
- Don't pick at warts—if you can't resist, cover them up with a plaster or duct tape (which can even help get rid of them; one study found it worked far better than freezing them¹).
- Keep any body parts with warts dry as warts favor a moist environment.
- Always wash your hands after touching warts.

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Water warts

Molluscum contagiosum, sometimes called "water warts," is a viral skin infection similar to warts, but it's caused by the *Molluscum contagiosum* virus (MCV). As with warts, molluscum contagiosum will usually resolve by itself, but it can leave red marks on the skin and may take up to three years to clear.

With homeopathic treatment, it takes just a few weeks, or occasionally months, to clear and leaves no red marks behind. The usual remedy for molluscum contagiosum is Thuja (see page 40), which can be taken orally and topically alongside a constitutional remedy.



David Needleman is one of the founding

directors of the Alliance of Registered Homeopaths. Qualified as both a pharmacist and a homeopath, he has worked in community pharmacies for most of his professional life and lectured on homeopathy in the US, the UK and Japan as well as treating clients in 24 countries.

In 1996, David set up the Homeopathic Helpline, a 15-hour-a-day, 365-day-a-year acute advice service manned by him and other qualified, experienced homeopaths. They have successfully helped 350,000 callers to date. You can reach the Homeopathic Helpline at +44 (0)9065 343404.

To have David answer a question in *WDDTY*, write to info@wddty.co.uk.

The ancient Mayans called it Quáuhyetl. Amazonian shamans call it *mapacho*. Westerners call it tobacco. By whatever name, *Nicotiana rustica* and its milder, more modern variety *Nicotiana tabacum* have played a major cultural role in

human life for thousands of years.

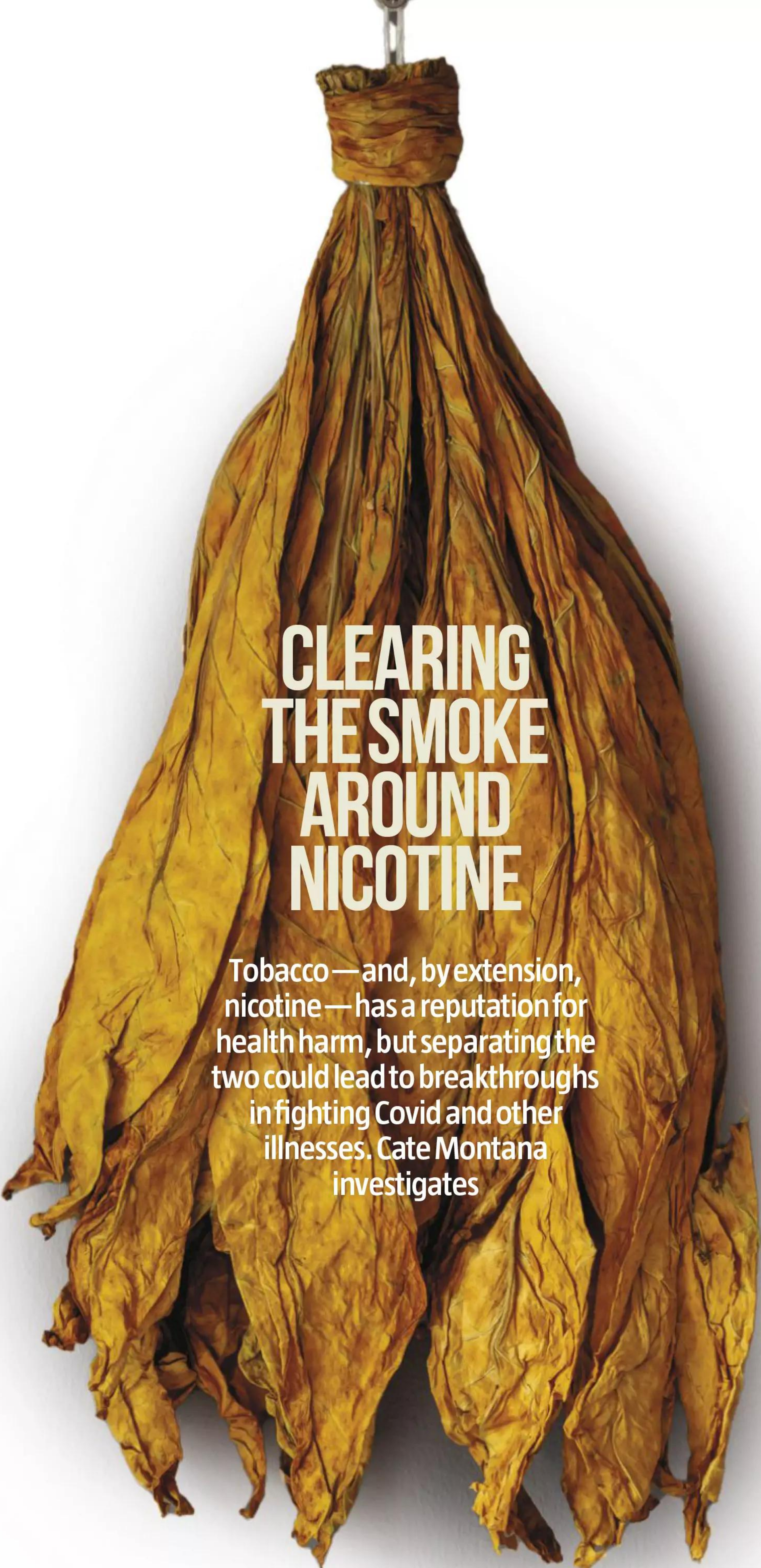
Long considered one of Earth's most sacred plants, tobacco and its smoke have been used as a spiritual purifying agent in medicinal ceremonies in the Amazon and elsewhere around the world. The smoke is blown over the sick bodies of patients come for physical healing, used to cleanse the bodies of spiritual seekers come for enlightenment and blown in the faces of warriors headed into battle.

Smoked, snorted, chewed, drunk and pounded into a paste for topical healing of wounds, skin lesions, ringworm and other skin infections, tobacco in its various forms has been known and enjoyed worldwide for hundreds of years. Soon after it was introduced to Europe in the late 16th century, tobacco became a well-known healing plant prepared by herbalists, sold to physicians in pharmacopeias and used to treat kings, queens, merchants, laborers and farmers alike.

Of course, the most famous—or infamous—component of tobacco is nicotine, a plant alkaloid found in the leaves of the tobacco plant. Alkaloids are naturally occurring organic pharmacologic compounds that contain nitrogen and have a wide variety of effects in the body, from stimulant (nicotine) to anti-asthma (ephedrine) to analgesic (morphine) to antimalarial (quinine).

Nicotine acts on the heart and circulatory system, increasing heart rate and vasoconstriction. As well, it acts on the bladder and gastrointestinal tract, increasing blood glucose levels and metabolic rates.

It triggers the production of dopamine, a neurotransmitter and hormone in the brain that stimulates pleasure and motivation, and adrenaline, a neurotransmitter and hormone that stimulates the flight-or-flight response in the body. Both stimulate the central nervous system and cardiovascular system, producing the common effect of wakeful alertness.



CLEARING THE SMOKE AROUND NICOTINE

Tobacco — and, by extension, nicotine — has a reputation for health harm, but separating the two could lead to breakthroughs in fighting Covid and other illnesses. Cate Montana investigates

The latest, most important discoveries regarding the pharmacologic usefulness of nicotine are its neuroprotective, neuro-enhancing and cognitive-enhancing impacts. Nicotine binds to receptors in the brain that are vital to attention, learning and information retention.

It activates these receptors by promoting the flow of sodium, potassium and calcium ions across neuronal cell membranes. This action helps them stay vibrant and healthy and actively produces protective proteins that shield brain cells when they're under stress or attack.

Nicotine also has an anti-inflammatory effect on the brain, activating the cholinergic anti-inflammatory pathway. By doing so, it effectively reduces the production of cytokines, small proteins important in cell signaling that are produced by several kinds of cells, including immune cells.

As a result of all these positive physiological effects, nicotine is now being clinically studied for therapeutic treatment of neurodegenerative diseases like Parkinson's and Alzheimer's, depression, inflammatory diseases such as inflammatory bowel disease and arthritis, and even certain aspects of autism and ADHD.

The demon nicotine

And yet few substances in common usage on this planet have ever been as demonized as nicotine. It's labeled and viewed as the one and only addictive substance in cigarettes, and most doctors, researchers, smokers and laypeople consider nicotine as addictive as heroin, possibly worse.

Warning labels are emblazoned across all tobacco product packaging: "Warning: This product contains nicotine. Nicotine is an addictive chemical." The US Food and Drug Administration (FDA) website declares, "Nicotine is why tobacco products are addictive."

Study after clinical study cites nicotine as the culprit behind smoking addiction, cancer,¹ chronic obstructive pulmonary disease (COPD),² ruptured aneurysm,³ asthma⁴ and other health problems. The thousands of studies and their results are seemingly incontrovertible.

Studies highlighting the dangerous effects of nicotine use *tobacco smoke, smoking, cigarettes, tobacco* and *nicotine* interchangeably when talking about the relationship between nicotine and cancer, heart disease, respiratory diseases, strokes, diabetes, addiction and more. They treat nicotine, tobacco, smoking and cigarette smoke as one and the same.

But nicotine, cigarettes and smoking are not the same thing. One study was even forced to admit it while still demonizing the compound: "Nicotine in tobacco brings illness and death to millions of people. Yet nicotine in its pure form has the potential to be a valuable pharmaceutical agent."⁵

Nicotine is a plant alkaloid—one thing. Compare that to the total ingredient list of commercial cigarettes, which, aside from the tobacco leaf itself, today includes at least 600 chemical additives, many of which have

“The latest, most important discoveries regarding the pharmacological usefulness of nicotine are its neuroprotective, neuro-enhancing and cognitive-enhancing impacts”

been proven carcinogenic.⁶ These are a few:

- Toluene, a petroleum byproduct used in gasoline and explosives
- Naphthalene, a poisonous compound used in mothballs
- Hydrogen cyanide, a poison once used to execute prison inmates
- Methanol, an ingredient in antifreeze
- Formaldehyde, a preservative in embalming fluids
- Cadmium, a heavy metal used in battery production
- Arsenic, a powerful poison
- Benzene, a toxin used to produce gasoline and explosives

Cigarette smoke is a toxic mixture of more than 7,000 chemicals, many of which are carcinogenic.⁷ Even “no additive” tobacco products can contain hazardous substances, like cadmium and lead from the soil where the tobacco plants are grown. Chemical fertilizers used on the plants contain ammonium sulfate, ammonium

nitrate, potassium chloride and other chemicals that remain in the tobacco leaf and are inhaled when it's smoked.

Similarly, chewing tobacco, vapes, gums and nicotine pouches, a relatively new product that's gaining popularity, have additives such as artificial flavors and humidifying agents as well as heavy metals and aldehydes.

And yet, if we can separate nicotine from these delivery methods, “there could be potential medicinal uses of nicotine if it was dosed carefully and appropriately and in a thoughtful way,” says Dr Paul Newhouse, director of the Center for Cognitive Medicine in the Department of Psychiatry at Vanderbilt University Medical Center.

“But even in clinical research we can't separate in our heads nicotine from smoking. And yet nicotine is a plant alkaloid, and we've used plant alkaloids for medicines for thousands of years.”

Is nicotine the real culprit?

Yes, one drop of pure lab-extracted nicotine is lethal if swallowed or even placed on the skin. And nicotine used to be the major ingredient in Black Flag insect control products and is still used in pesticides today.

But, given that nobody in their right mind is going to spray a can of pesticide into their mouth, perhaps nicotine isn't as dangerous as it's been made out to be for the last 70 years.

Well, maybe not directly. But it's still one of the most addictive substances on the planet . . . as addictive as heroin. Right? It's what forces people to keep smoking dangerous commercial cigarettes that kill them and those who breathe their secondhand smoke. Right?

Maybe not. Yes, nicotine stimulates the production of feel-good neurotransmitters in the brain, like dopamine, that can lead to wanting more.

But is nicotine the major addictive substance in cigarettes that it's made out to be? A little-known and well-buried Harvard study in 2016, which explored pyrazines, indicates it is not.

Pyrazines are a class of organic compounds of the “heterocyclic series” that form a ring structure containing four atoms of carbon and two of nitrogen. Because of their “chemosensory and pharmacological

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effects,” they were incorporated into the first “full-flavor, low-tar” commercial tobacco products developed in the late 1960s and have been used ever since.

Deliberately designed to act synergistically with nicotine, the study found, they’re highly effective for “increasing product appeal, easing smoking initiation, discouraging cessation and promoting relapse.”¹³

In other words, pyrazines are highly effective at creating rapid addiction, which is one reason they’re also used as additives in ultra-processed food products. And what other heterocyclic compound is highly addictive? Heroin—the alkaloid derivative of morphine that drives most of the illicit narcotics trade around the world today.

There are other indicators nicotine might not be the addiction-forming demon it’s been portrayed as. For starters, there are a variety of addictive factors around smoking—the repetitive nature of the act itself, visual stimulus, oral gratification, associations with social experiences and powerful substance associations, like alcohol. All these factors combine to make smoking a pleasurable addictive experience.

And then there are the studies showing that very-low-nicotine cigarettes do not have lower addictiveness than regular cigarettes.¹⁴ And what about transdermal patches? How many people are addicted to nicotine patches?

There aren’t any studies at all on the subject. And yet supposedly the nicotine in cigarettes and the nicotine in the patches are interchangeable.

When you smoke a cigarette, you inhale the equivalent of about 1 mg of nicotine. Nicotine patches deliver 5–25 mg daily. That means one nicotine patch can deliver the same amount of nicotine as an entire pack of cigarettes. But how many teens are out buying nicotine patches on the street to get high?

The recidivism rate for smokers using transdermal nicotine patches to replace nicotine is also revealing: It hovers around 80 percent. Even after six months of use, patches rarely help more than one in five smokers stop.¹⁵

Foods containing nicotine

Nicotine functions as an efficient defense in nature, serving as a natural bug repellent in plants. In highly concentrated doses, it’s an excellent pesticide.

Between that and nicotine’s unsavory public reputation, it’s not

surprising that a lot of culinary websites spend time reassuring cooks and gourmands alike that, no, eating eggplant parmesan will not get you hooked on nicotine and have you eating more than you should. Eating and drinking lots of the foods

below won’t have you running to the local pharmacy after

dinner to buy patches or gum, either.

After all, to equal the 2 mg dose you’d get from a piece of nicotine gum, you’d have to eat about 44 lb (20 kg) of eggplant (aubergine), which has the most of any known food source—and absorb it all. So, even if nicotine were confirmed addictive on its own, you can see why these small doses are unlikely to cause a problem.



Eggplant/aubergine
100 ng/g



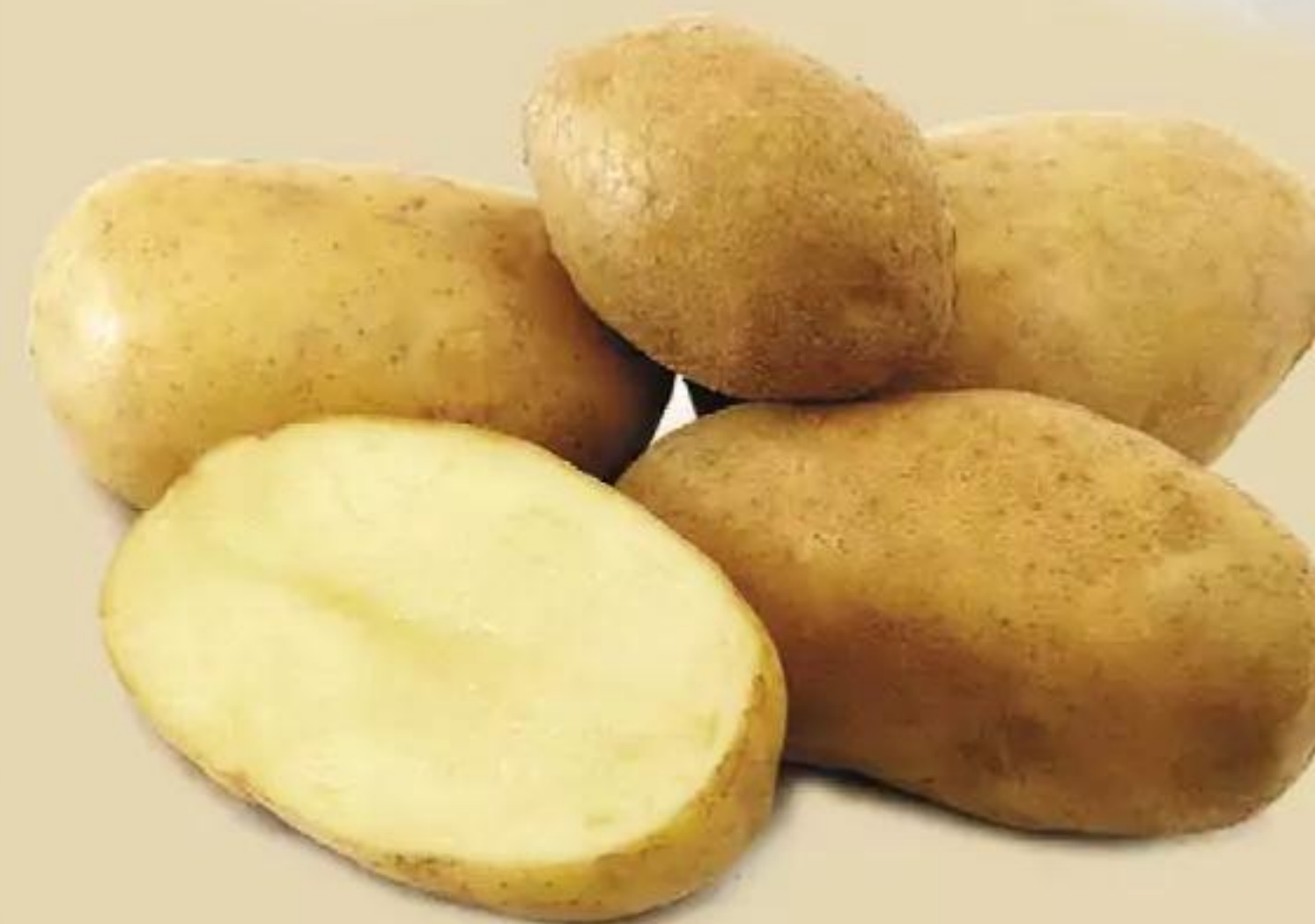
Green tomatoes
42.8 ng/g



Pureed ripe tomatoes
52 ng/g



Cauliflower
16.8 ng/g



Potatoes
7.1 ng/g

Red tomatoes
10.7 ng/g



Green bell peppers
7.7 ng/g



Cocoa
7 ng/g



Black and green tea
0.69 ng/g



Much of this is now being understood as the result of delivery mechanisms. “The effects of nicotine on the brain seem very dependent on the route and the rate of administration,” says Newhouse.

“Inhaling smoke is a rapid way to get nicotine to the brain, and it has immediate reinforcing effects that are very different from those of patches. So, patches are not a good substitute for the act of smoking.”

Last but not least, why would shamans and healers consider tobacco one of Earth’s most sacred plants, using it effectively for healing and ceremonial purposes for thousands of years, if it promoted disease and addiction?

And here’s the kicker: South American shamans, and medicine women and men in general, traditionally use wild *Nicotiana rustica*, which has nine times as much nicotine as the commercial *Nicotiana tabacum* used to make modern cigarettes.

How nicotine might help

Nicotine administration can improve cognitive impairment in Alzheimer’s disease by inhibiting a stress-responsive protein, which decreases brain cells’ self-destruction and improves their survival. It also enhances activity of the protein kinase B, stimulating cell signaling that controls learning and memory processes.

Nicotine may activate thyroid receptor signaling pathways as well, improving memory impairment that results from hypothyroidism. It even improves memory issues caused by sleep deprivation.¹⁰ In patches, it has been found

to reduce concentration issues and “core symptoms” in patients with ADHD.¹¹

“It’s clear that attention and to some extent memory and learning are affected by blocking nicotinic receptor functions,” says Newhouse. “In the early clinical studies that I conducted on nicotine way back in the 1980s and early ’90s, there were very clearly rapid beneficial effects from single doses in people who are functioning poorly for one reason or another. Psychomotor speed also seems to be affected.”

“Three patients experienced immediate and substantial cessation of long-haul Covid symptoms and complete remission in a matter of days”

Researchers have long noted the negative correlation between Parkinson’s disease and smoking, and with good reason. Nicotine delivered via transdermal patches has pharmacological and neuroprotective effects: It improves motor scores and reduces dopaminergic effects leading to impaired movement, cognition and executive function in Parkinson’s patients.¹²

One study even shows that Solanaceae plants are edible sources of nicotine that may protect against Parkinson’s disease. This flowering plant family, commonly known as the nightshades, includes tomatoes, eggplant, potatoes and peppers (see box, page 45).¹³

Though it’s an anti-inflammatory alkaloid, nicotine strangely has pro-

inflammatory mechanisms, too. Because it regulates immune cells, the vagus nerve and acetylcholinergic anti-inflammatory pathways, nicotine is being recognized as a possible adjunct treatment for ulcerative colitis, arthritis, sepsis, endotoxemia, rheumatoid arthritis and myocarditis.

Nicotine also effectively reduces inflammatory cytokine levels in the heart, liver and spleen after burn trauma.¹⁴

It’s known to exacerbate oral inflammation in diseases such as periodontitis and gingivitis. However, bacteria in the mouth may regulate this effect, and the dosage may also be a key factor.¹⁵ Interestingly, ancient people used powdered tobacco mixed with chalk or lime as a tooth whitener, and tobacco toothpaste is still sold in India today.¹⁶

Nicotine and Covid

Nicotine also inhibits cytokine storms in the lungs and has been shown to prevent or lessen the severity of Covid-19 infection.¹⁷ This answers some of the most puzzling phenomena of the pandemic, namely the unexpectedly low number of smokers who contracted the virus in the first place and the unexpectedly low number of smokers who were hospitalized with infection.¹⁸

It was the antithesis of the response researchers and the medical community feared at the outset of the pandemic—a shocking response that led to a flurry of clinical studies on how nicotine affects the SARS-CoV-2 spike protein. Researchers discovered that the virus’s spike protein targets the exact same nicotinic

Cate’s story

I never got vaccinated for Covid and managed to dodge it completely until March 2024. I went down like a ton of bricks and ran a fever of around 101°F (38.3°C) for four days. Not surprisingly, I tested positive.

Aches and pains and utter exhaustion followed for about another week, and then

it was over—except that the fatigue lingered. And lingered. And lingered.

By July I was desperate to get my energy back. So, I revisited information about nicotine from Dr Bryan Ardis, a researcher and retired chiropractor, certified acupuncturist and nutritionist from Texas (healingfortheages.com). I’d heard a podcast interview with him back in 2022 in which he made some

astonishing claims about Covid, snake venoms and nicotine.

On the show he had recommended using nicotine patches to both ward off Covid and deal with the symptoms of long Covid. He cited Italian research showing the protective effects of nicotine on receptor sites in the brain affected by SARS-CoV-2. However, at the time, I didn’t pay these findings much attention.

acetylcholine receptors in the body that nicotine binds to.¹²

They hypothesized that the nicotine molecule could displace the Covid virus from these receptors and conducted a small study to find out. It treated four non-smokers suffering symptoms of long Covid—weakness, memory lapses, pain, and shortness of breath—for 14 days with a 7 mg nicotine patch application.

One patient mistakenly used 15 mg patches and dropped out of the study after experiencing some nausea and dizziness. The remaining three patients experienced immediate and substantial cessation of long-haul Covid symptoms and complete remission in a matter of days.

The researchers summarized the study as follows: “Based on the results of this case study, this treatment option . . . seems far superior to the time-consuming, often underwhelming or disappointing, costly and complex rehabilitation measures currently available to these patients” (see box, right).²⁰

Dr Susan Levine, an allergist/immunologist in New York specializing in diseases affecting the immune system and noted for her work with patients suffering from chronic fatigue syndrome, says she has patients who have successfully used nicotine patches to mitigate long Covid.

“Nicotine patches have helped individuals, especially those working part or full time, to focus,” she explains. “Some patients who start this treatment feel better in the first few weeks. And it addresses the consequences of immune activation. However, it’s difficult to know without pursuing a clinical trial whether a particular intervention, like the nicotine patch or anything else, works over a long stretch of time.”

Using nicotine to prevent and fight Covid

Nicotine patches

Here is the protocol recommended by Dr Bryan Ardis and Dr Marco Lietzke, who conducted the four-person long Covid study (see main text, left).²⁰

Covid prevention Cut one 14 mg nicotine patch into six pieces and apply one piece to the rib cage daily. Start several days before traveling and continue for several days after return. Ardis travels extensively and has been using this protocol continuously with no ill effects for over three years.

Long Covid Apply one 7 mg nicotine patch daily to the rib cage for one week minimum and continue until all symptoms are alleviated.

Covid vaccine injury Follow long Covid protocol above for two weeks or until symptoms completely abate.

Recommended brand: Rugby

Nicotine gum

Ardis says nicotine gum will work as well as patches. Do not use any dosage higher than 2 mg.

Covid prevention Chew one 2 mg piece of nicotine gum for at least 10 minutes twice daily.

Long Covid Chew one 2 mg piece of gum for at least 10 minutes four times a day. Continue for two weeks or until your symptoms completely resolve.

Covid vaccine injury Follow the long Covid protocol above.

Recommended brands: Rugby, Lucy



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As an ex-smoker (two packs a day!), I was terrified of possible nicotine addiction. Frankly, the incessantly repeated messaging from doctors, the government and the media about the addictive qualities of nicotine made me seriously doubt Ardis’s claims that, as a single substance, nicotine is not addictive.

But by July 2024, I was both better informed and desperate.

I went to the local pharmacy and bought nicotine patches. But because I was still hesitant about nicotine and addiction even though I’d done some research, I did not follow Ardis’s recommendation of using one 7 mg patch daily for a week.

I bought 14 mg patches, cut them into six pieces each and applied a fresh 2.3 mg piece to my skin every day for 12 days. (This is the protocol he advises

for protecting against Covid variant exposure.)

On the morning of Day 10, I was driving into town to get groceries, and suddenly it was like a light switch got flipped and all my old energy came surging back. It was almost electrifying. I couldn’t believe how good I felt and how exhausted I’d felt in comparison for so long.

Since then, my energy levels have maintained. In addition,

I have taken Ardis’s advice and used 2 mg nicotine patches for a couple of weeks at a time when traveling to mitigate the risk of any exposure to Covid.

Not only have I not gotten sick again (even though I’ve been exposed a couple of times), I definitely have not formed an addiction to nicotine by wearing the patches. Nor have I experienced any negative side effects from them.

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Cordyceps

Cordyceps species

TRADITIONAL USES

Along with reishi, *Cordyceps* is one of the most important fungi to practitioners of traditional Chinese medicine (TCM). It's been used to treat infertility and erectile dysfunction, to increase stamina, to support kidney and lung health, and as an aphrodisiac.

There are many species, but the most well known are *Cordyceps sinensis* and *Cordyceps militaris*.

RESEARCH ON HUMAN HEALTH EFFECTS

In a meta-analysis (a study that combines results from many different studies)

of 31 high-quality trials of *Cordyceps*, researchers found the fungus has at least 190 possible biological mechanisms to improve kidney health, including reducing inflammation and boosting immune function.¹

CANCER

A meta-analysis of 12 randomized controlled trials (considered the gold standard for assessing how effective an intervention is) involving over 900 patients who received *Cordyceps* in addition to standard cancer treatments concluded that *C. sinensis* tends to improve tumor response rate, immune function and quality of life. It also seems to reduce the chances of adverse reactions to standard cancer treatments.²

KIDNEY FUNCTION

Improving kidney function is one of the key uses of *Cordyceps* in TCM. A meta-analysis of 17 studies with Jinshuibao, a powdered extract of *C. sinensis*, found the fungus benefits patients with chronic renal failure.³

Cordyceps may also be useful for diabetes-related kidney failure,⁴ which is often treated by reducing blood sugar levels but without support for the kidneys. One study tested a *Cordyceps*-derived medicine in people with diabetes before renal failure sets in. They found that supplementing the standard treatment with *Cordyceps* improved kidney function more than the standard treatment alone.⁵



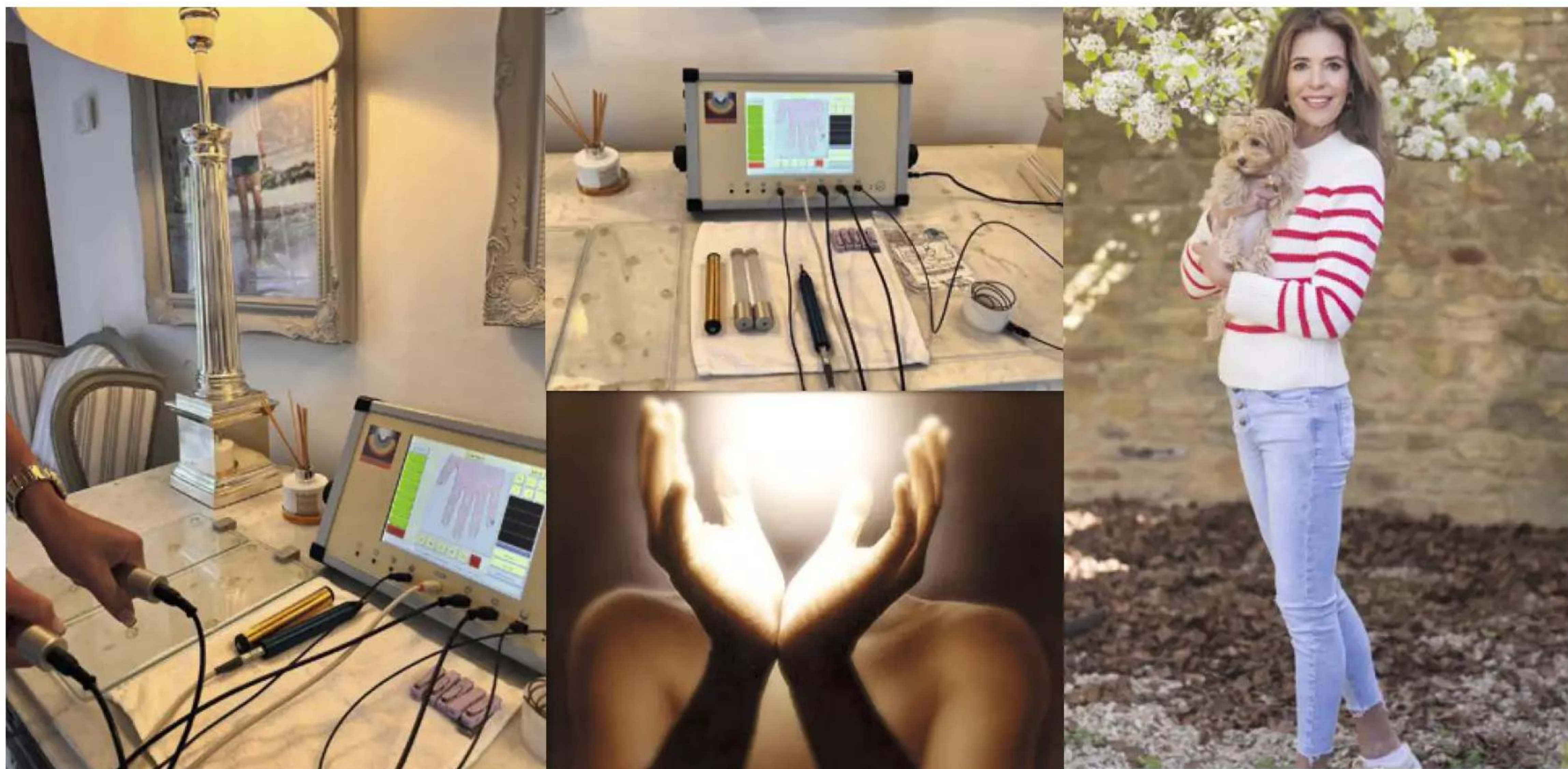
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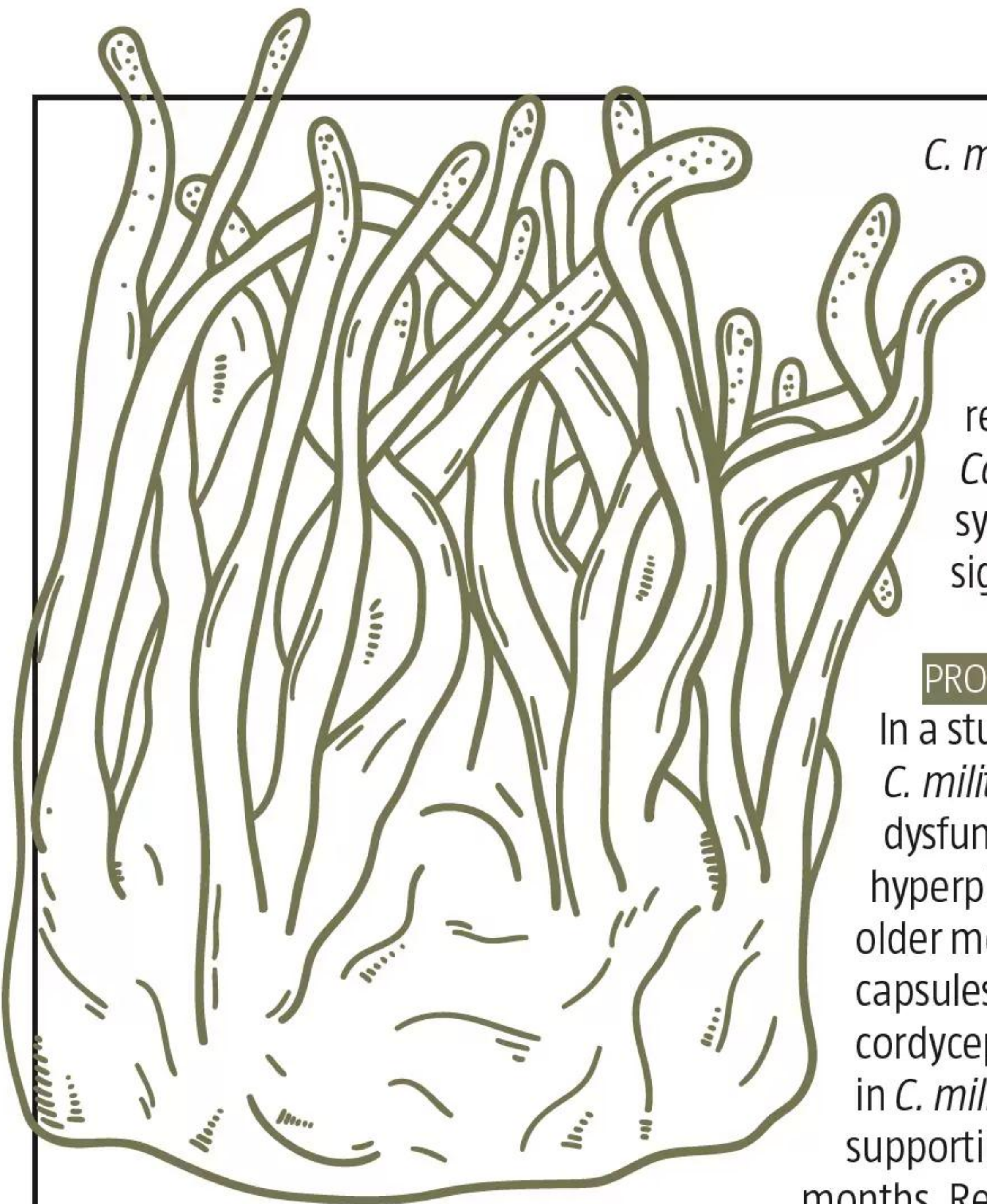


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C. militaris daily for two months can increase various biomarkers indicating a healthier immune system.¹⁴ Preliminary research has found that *Cordyceps* effectively treats symptoms of Covid-19 with no significant side effects.¹⁵

PROSTATE HEALTH

In a study investigating whether *C. militaris* could treat sexual dysfunction and benign prostatic hyperplasia (prostate enlargement), older men received two daily capsules containing 6 mg of cordycepin (a compound found in *C. militaris*) each along with supporting compounds for three months. Results showed increased urinary flow and decreased prostate size. Many of the men also reported improved sexual function.¹⁶

LUNG FUNCTION

Several studies have looked at the impact of *Cordyceps* on chronic obstructive pulmonary disease (COPD). It appears to improve lung function and reduce symptoms while increasing exercise endurance and quality of life.¹⁷ A placebo-controlled study of patients with tuberculosis (which affects about 14 million people globally) found significant improvement in symptoms in those who received *Cordyceps* in addition to chemotherapy.¹⁸

ATHLETIC PERFORMANCE AND ENERGY

A three-month study of 30 physically active people found that taking a 2 g *C. sinensis* supplement daily improved athletic performance.¹⁹

Another study looked at the effects of taking 1 g *Cordyceps* immediately before high-intensity exercise. Muscle biopsies before and after exercise showed significantly faster muscle repair in the group taking *Cordyceps*. This seemed to be because it sped up recruitment of stem cells to the muscles.²⁰

Cordyceps has also been shown to increase the efficiency of mitochondria, raising ATP production levels to improve energy levels.²¹

IMMUNE FUNCTION

A trial of 40 healthy adults showed that drinking a functional beverage from the mycelium (see box, page 54) of

Reishi

Ganoderma species

TRADITIONAL USES

In Chinese medicine, and throughout Asia, reishi has been used for at least 2,000 years. Also known as *lingzhi*, this medicinal powerhouse was mentioned in texts as far back as 100 BCE and has been documented as both an effective medicine for a number of ailments and as a tonic for strengthening the body.

RESEARCH ON HUMAN HEALTH EFFECTS

Laboratory and preclinical studies of reishi have found these mushrooms have anticancer, antibacterial, antiviral and anti-inflammatory activity. They also seem to benefit heart health and help manage diabetes. Although there are many species of reishi, the most widely studied has been *Ganoderma lucidum*.

CANCER

Most Western researchers agree that reishi is an effective adjunct therapy for cancer. It can slow tumor growth and improve quality of life, but there is not yet evidence for reishi as a standalone treatment to cure cancer.²²

One three-month trial of patients with advanced lung cancer found 600 mg reishi (polysaccharides extracted from *G. lucidum*) three times daily slowed lung cancer growth, improved quality of life and increased blood biomarkers of a more active and healthy immune system. It also reduced symptoms such as fever, coughing and insomnia.²³

A hot-water extract of *G. lucidum* has been found to suppress the growth of precancerous lesions of the large bowel after a year of treatment.²⁴

G. lucidum spore powder is commonly used in TCM. In one study, breast cancer patients given 1 g of spore powder extract three times a day for a month experienced drastic and statistically significant reductions in fatigue, anxiety and depression and increased physical well-being and quality of life.²⁵

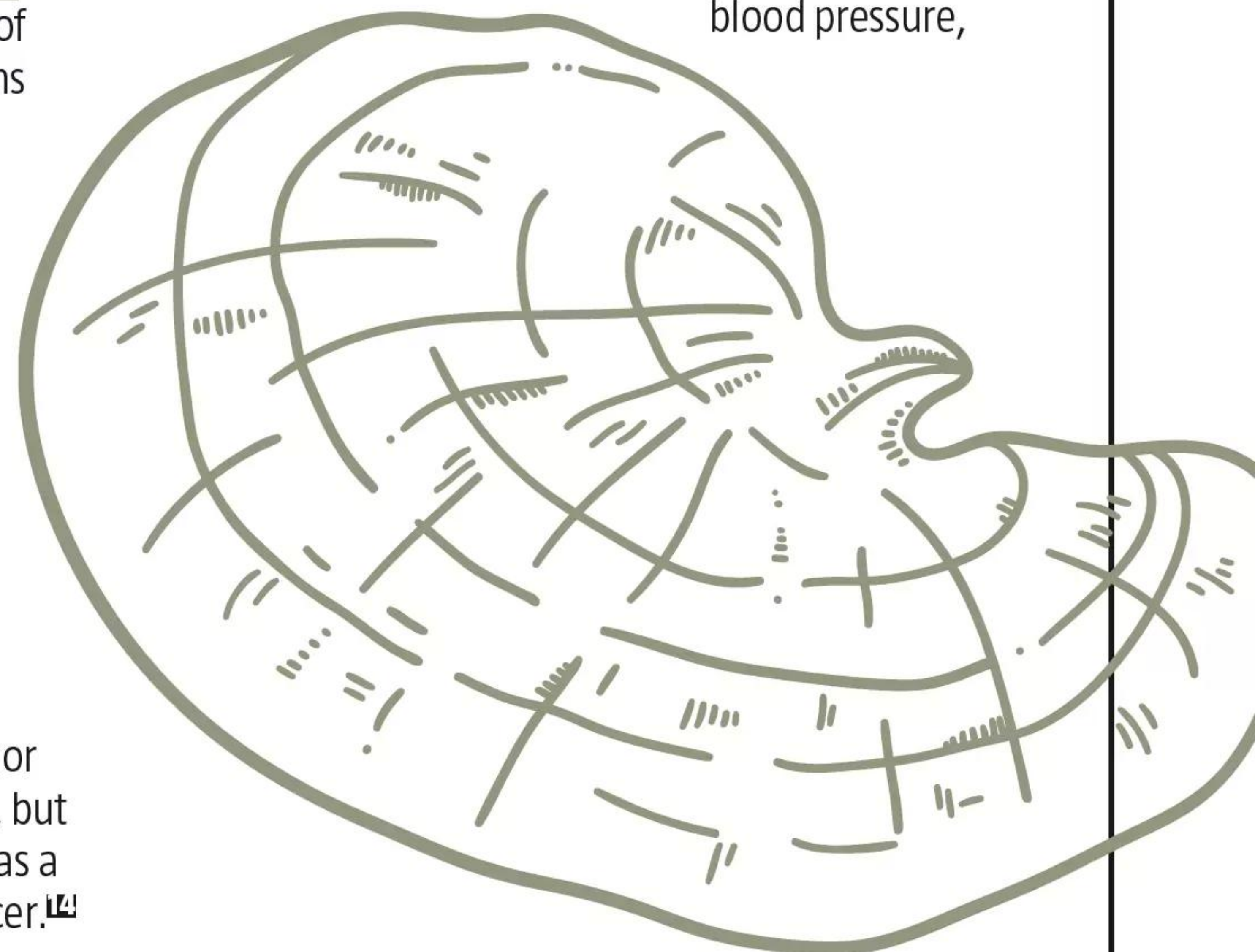
IMMUNITY

To reduce colds, a yogurt containing reishi-derived beta-glucans (a type of fiber that dissolves in water) was given daily to 167 preschool children in Colombia for three months. Blood samples and physical exams showed they had significantly healthier immune systems than children who did not receive the reishi yogurt.²⁶

Reishi-derived beta-glucans also appear to boost the immune system in healthy adults.²⁷

CARDIOVASCULAR EFFECTS

Reishi seems to be cardioprotective primarily because it affects blood levels of glucose and fat, blood pressure,



What lies beneath

What we think of as mushrooms are only small parts of any fungus. The part above the ground, that we pick and eat, is called the fruiting body. It is formed out of the underground (or within-tree) mycelium, a vast net made up of hyphae, which are thread-like tubes of protoplasm.

Mycelium can be thought of as fungal “roots,” and mycelial networks work their way through whatever substrate they are in, consuming anything edible and exuding metabolites.

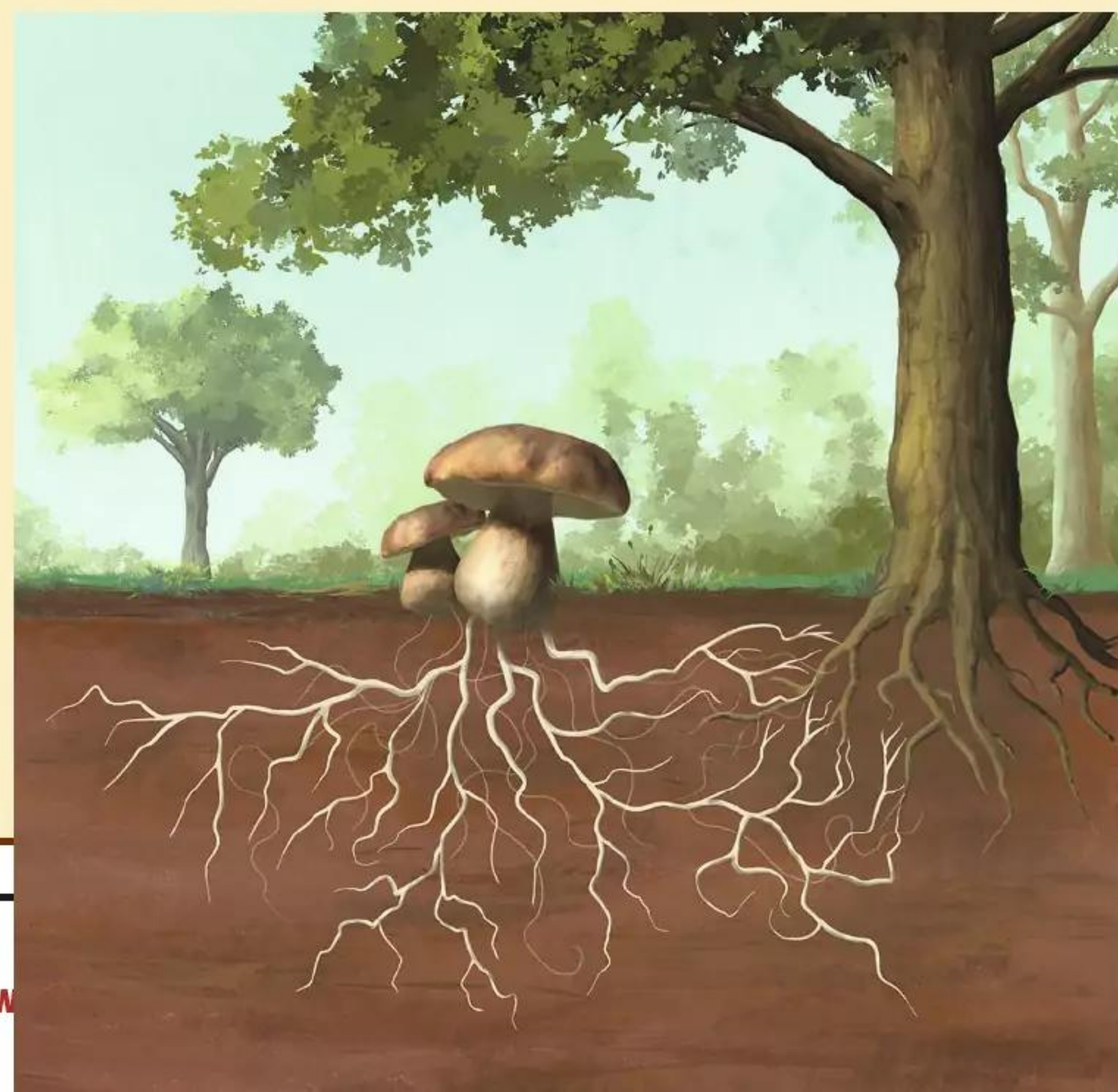
The fruiting body, which pops up periodically above the surface, essentially exists to produce spores. These spores are similar to seeds; they are distributed by wind, insects or animals to spread fungi to new areas.

The surge in popularity of medicinal mushrooms has resulted in the arrival of many brands and formulations of mushroom supplements in the marketplace, which have varying quality.

A lot of mushroom coffee products are made with myceliated rice (a mix of mushroom mycelium and the rice it was grown on) that has been ground and added to coffee. But for the majority of medicinal mushrooms, the fruiting body is the part that contains the most medicinal compounds. Some supplement labels list the ingredients as simply the name of the mushroom, e.g., “lion’s mane,” and others say something more specific, like “lion’s mane extract.” The “extract” likely contains compounds extracted from the mushroom rather than just dried and ground parts of the mushroom, which our bodies can’t absorb.

When looking for mushroom supplements, it’s best to thoroughly research the company and learn about which forms of the mushrooms they use and their extraction methods before you buy. Dual extraction, which uses both water and alcohol to pull the beneficial compounds out of medicinal mushrooms, is generally considered the best method to get the maximum health benefits from these fungi.

See **Healthy Shopping**, page 64, for where to buy mushroom supplements.



and liver function. And it’s been shown to reduce inflammation in the heart and blood vessels, protecting against cardiovascular disease.²⁰

A daily dose of 540 mg reishi-derived beta-glucans for people diagnosed with atrial fibrillation (irregular heartbeat) over 90 days resulted in significant improvements in systolic blood pressure, heart rate, anti-inflammatory markers, compounds that reduce tumors, energy and quality of life as well as reduced fatigue, pain and physical limitations.²¹

In patients with coronary heart disease, daily reishi extract reduced various heart-related symptoms and resulted in a higher likelihood of normal heart function, all while reducing blood pressure and cholesterol levels.²²

One study looked at reishi as a possible preventive medicine for heart disease by studying people who had mildly elevated blood pressure and cholesterol levels. The participants took 1.44 g reishi daily for three months.

Researchers saw improvements in levels of beneficial cholesterol but no significant change in blood pressure. They did, however, find improvements in blood plasma insulin levels, suggesting a possible antidiabetic effect.²³

DIABETES

Two tightly controlled studies have looked at the effects of reishi in people with type 2 diabetes. The first study found a significant benefit,²⁴ but the second found no effect.²⁵ The study that found an effect used Ganopoly, a patented commercial reishi extract, while the study that found no effect used “*Ganoderma lucidum* extract and spores.”

Also, the study that showed beneficial effects used a much higher dose (5.4 g/day) than the study that didn’t (3 g/day). The studies were conducted in different countries, which could have affected results as well.

ANTI-INFLAMMATORY EFFECTS

A handful of clinical trials have tested reishi’s effects on inflammation in different disease states. Results are mixed, but one promising example is fibromyalgia, which is characterized by chronic pain throughout the body without a clear cause. Secondary impacts include depression, anxiety and reduced quality of life.

A study of women with fibromyalgia who received 6 g of micro-milled reishi stems daily for six weeks showed a distinct trend toward greater happiness and life satisfaction and reduced body pain and depression compared to how they felt at the start of the study.²⁶

Maitake

Grifola frondosa

TRADITIONAL USES

In TCM, *Grifola frondosa*, or *hui shu hua*, is used to calm the mind and to tone the liver and kidneys. It is associated with the heart, large intestines and stomach channels as well as intestinal regulation.

In Japan, *G. frondosa* is used to support well-being and the immune system while being considered a broad health tonic. Herbalists in Japan traditionally used dried *G. frondosa* by slicing it and steeping it in hot water for a few minutes.

RESEARCH ON HUMAN HEALTH EFFECTS

A strong body of scientific evidence for the medicinal value of maitake



mushrooms has been gathered over the past 30 years. Most of this work, done in mice and rats, shows strong effects: Maitake is immunomodulatory, antitumor, antiviral, antidiabetic, antioxidant and antibacterial. Studies also show it regulates lipid levels and blood pressure.²⁴

CANCER

Clinical trials suggest maitake can stimulate the immune system to fend off cancers. However, its action on the immune system is complex and is not yet understood.

In women who had undergone surgery for breast cancer, researchers measured 146 immune system markers and found maitake extract affected 24 of them, and these effects varied with the dose. It enhanced some immune functions and suppressed others. The optimal dose depended on the immune function being targeted, but 5–7 mg per kg (2–3 mg per lb) of body weight per day gave the most benefits.²⁵

In cancer patients not taking any other anticancer drugs, maitake slowed the spread of cancer and reduced cancer markers in the body. At the same time, it boosted the activity of natural killer cells, white blood cells that destroy infected cells.²⁶

VIRUSES

Maitake's ability to stimulate the immune system may help fight flu infections. In one study, people took 7 g powdered maitake extract daily for three months. One month in, they also received a flu vaccine.

The researchers found maitake extract increased levels of antibodies and reduced cold symptoms compared to placebo. Those over age 60 saw the greatest effects.²⁷

DIABETES

A small, uncontrolled study of type 2 diabetes patients taking maitake extract three times a day for a month found they all showed a significant decline in fasting blood glucose.²⁸ Maitake has also been found to bring about ovulation in women with polycystic ovary syndrome (PCOS), a condition in which insulin resistance and reduced ovulation are key issues.²⁹

Chaga-Reishi Chai

The easiest way to consume medicinal mushrooms is to incorporate them into your diet a few times a week. Here's a simple tea recipe that incorporates reishi, Cordyceps and other functional mushrooms. Not only is it delicious and soothing for the body but it's a heavy-hitting medicinal as well.

Feel free to experiment with other combinations of ingredients to find what works best for you. Not all of these mushrooms must be used, but the first three shown in the ingredients list are highly recommended.

We use a 1 gallon slow cooker, but you can also use a stock pot with a capacity of 1 gallon or more. Making this chai is a long process, so we like to prepare a large batch, which we keep in the fridge to heat up whenever we want to enjoy it.

Ingredients

- ¾ cup sliced reishi**
- ¾ cup packed turkey tail**
- ⅓ cup chaga, ground or chopped into pea-sized pieces**
- ⅓ cup *Cordyceps***
- ¼ cup sliced amadou**
- ¼ cup sliced birch polypore**
- 4–6 cinnamon sticks**
- 2 Tbsp whole allspice**
- 5–10 cardamom pods**
- 2 Tbsp whole cloves**
- ½ orange**
- 3 Tbsp fresh or dried orange peel (to taste)**
- 1 tsp black peppercorns**
- 1½-inch piece fresh ginger root, sliced**
- 1 Tbsp fennel seeds**
- Milk and honey to taste**

Method

- 1 Put the medicinal mushrooms into the cooker and add water up to about an inch from the top.
- 2 Set the cooker on high. Once the water reaches a simmer, reduce the heat to low.

Optional extra: If you want to add black tea to the chai, you can add a mix of Assam, Darjeeling and Ceylon teas to a tea ball or strainer and pour the hot Chaga-Reishi Chai over it into a cup. Cover and let steep for 5–10 minutes. Remove the tea strainer, add the milk and honey, and enjoy.



- 3 Leave the mushrooms to cook for several hours or overnight. Then, depending on your preference, either remove them from the water extract in the cooker or leave them in.
- 4 Use a mortar and pestle to crush the whole spices. It's best not to pulverize them into a powder—partially crush them just until they're open, which is a better way to release the flavors. (The orange peel and sliced ginger do not need to be crushed.)
- 5 Add the spices to your mushroom extract. Cook on high for 30 minutes or until the chai becomes fragrant, then strain out the solids.
- 6 Enjoy the chai with honey and your milk of choice. It should last for at least 5–7 days in the refrigerator.

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Lion's mane

Hericum erinaceus

TRADITIONAL USES

Lion's mane has a long history of use in Asian cultures. In TCM, it's used to support the five internal organs—the liver, spleen, kidney, heart and lungs—and is also recommended for gastric ulcers and chronic gastritis.

Some Indigenous American nations used lion's mane to prevent bleeding, and the first scientific description of this fungus was from North America.

RESEARCH ON HUMAN HEALTH EFFECTS

Lion's mane has been shown to have numerous health benefits, including antioxidative, antidiabetic, anticancer, anti-inflammatory, antimicrobial, and possibly antidepressant and anti-anxiety effects.

DEPRESSION AND ANXIETY

A study of menopausal women who ate cookies enriched with powdered lion's mane extract for a month showed a significant reduction in symptoms of depression and anxiety.^{EEJ} Another study in overweight and obese people found taking lion's mane extract (1.5 g/day) for two months increased sleep quality and reduced anxiety and depression.^{EEJ}

COGNITIVE PERFORMANCE

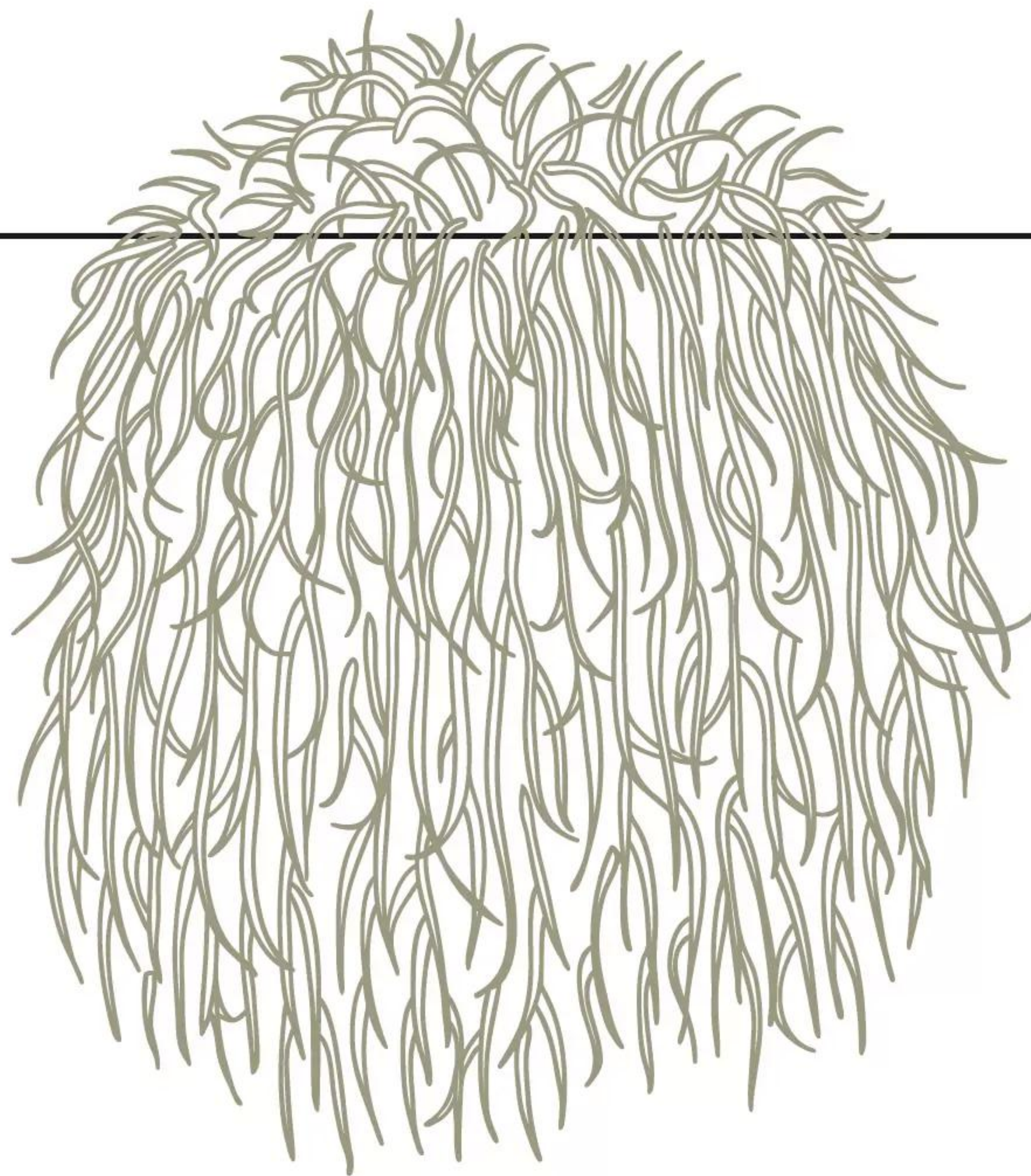
The effects of lion's mane on diseases of the aging nervous system, including Parkinson's, Alzheimer's and stroke, are the field of widest research. Preclinical research has found that neuroprotective compounds called hericenones and erinacines are present in lion's mane.

These compounds can easily pass through the blood-brain barrier and stimulate production of various proteins crucial to the growth and maintenance of neurons.

They include brain-derived neurotropic factor (abrineurin or BDNF) and nerve growth factor, which help to maintain brain health. BDNF is a key molecule that promotes brain plasticity and neuron growth.

Animal research shows that lion's mane increases neuronal growth in brain areas key for cognitive functioning. Research in humans has focused on its effects in those already experiencing cognitive decline and its effects on cognitive performance in healthy adults.

In a study of older adults with mild cognitive decline, those who took 1 g lion's mane powder tablets three times a day for four months saw



a significant increase in cognitive performance. A month after stopping the lion's mane, their cognitive scores had significantly declined, underscoring the importance of continued supplementation.^{EEJ}

In a trial of people with mild Alzheimer's disease, those given 5 mg of erinacine A (a compound derived from lion's mane) daily showed improvement in cognitive abilities, mental state and performance of tasks of daily living. The control group, on the other hand, continued to decline. Lion's mane may be important for neurocognitive benefits in people with Alzheimer's disease, the researchers said.^{EEJ}

Healthy people can get a brain boost from lion's mane too, it seems. Those taking erinacine A (3.44 mg/day), saw a significant improvement in cognitive function in one two-month study, as assessed by two nonverbal speed tests. What's more, their levels of the brain booster BDNF increased. The control group showed a decrease in BDNF.^{EEJ}

GUT MICROBIOTA AND IBS

In the study of healthy people above, those taking lion's mane also showed an increase in the diversity of their gut microbiota. It was linked to neuropeptide Y, a molecule that regulates BDNF production.

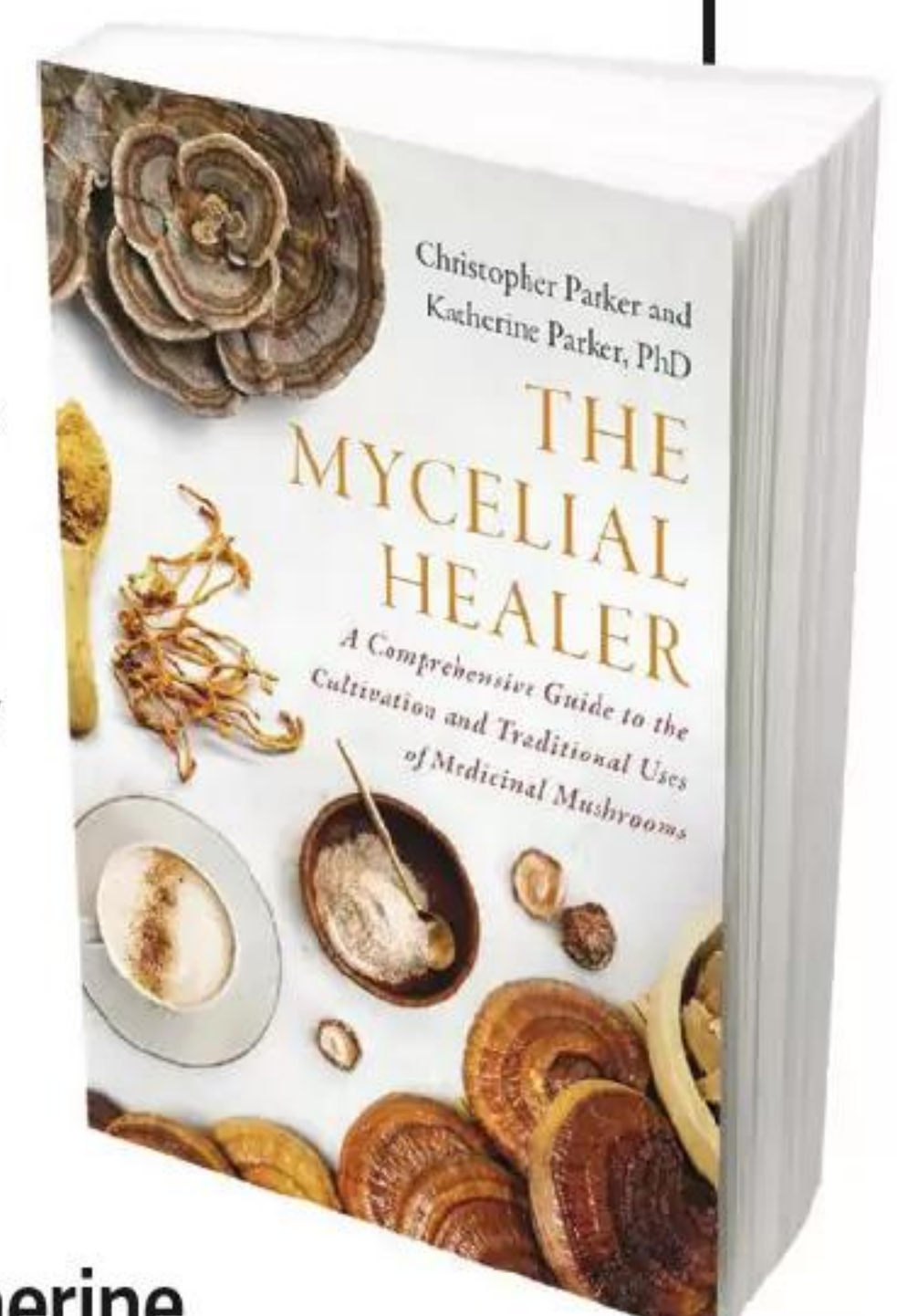
This research uncovered a complex system in which gut bacteria help to break down chitin (a type of insoluble fiber) in fungal cell walls and improve the body's ability to produce BDNF. These friendly gut bacteria seem to make the hericenones and erinacines from lion's mane more available for use.

Other research suggests lion's mane may have a positive impact on gut flora^{EEJ} and reduce inflammation in patients with irritable bowel syndrome (IBS).^{EEJ}

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A healthy little holiday

Stay well during the festive season and beyond with Dr Leigh Erin Connealy's science-backed tips

Everyone talks about stress and weight gain during the holiday season. We joke about being frazzled and overscheduled, and there's endless chatter about overindulging and loosening the notches on our belts.

However, the holidays shouldn't be a time to abandon healthy habits. In fact, neglecting our nutrition, sleep and exercise over the next few months can have lasting detrimental effects on our overall health and set the stage for cancer and other chronic diseases to take root. Let's take a closer look.

The importance of balance

I often emphasize the importance of maintaining a balanced inner terrain. The medical word for this equilibrium is *homeostasis*. The body's systems need to maintain a certain balance to survive and function properly.

This includes levels of acidity vs. alkalinity, blood pressure, blood sugar, electrolytes like sodium and potassium, energy input and output, various hormone levels, oxygen vs. other gases, proteins, and temperature. The body responds to changes internally and in the environment by constantly making

adjustments to all these variables so it can function optimally.

Why is keeping the body balanced so important? Acidic environments are breeding grounds for cancer and other diseases. High blood sugar and blood pressure can lead to chronic inflammation, a trigger for various diseases. And imbalances in any bodily system can negatively affect health.

More importantly, cancer cells thrive in a state of chaos. The best ways to stay healthy during the holidays—and year-round—are actionable steps that bring the body back into balance.

Cancer cells thrive in a state of chaos. The best ways to stay healthy during the holidays—and year-round—are actionable steps that bring the body back into balance

How to tame inflammation

The first area to address is putting out the flames of inflammation. Inflammation is tricky because it plays both healing and harmful roles.

Acute inflammation is a regular and necessary part of the healing process after injury. But ongoing, chronic inflammation causes systemic damage and turmoil in the body. Research has long suggested it's a hallmark of cancer.¹

An area of particular interest is colorectal cancer. In a study published earlier this year, researchers noted that chronic inflammation plays a key role in the start and growth of tumors. They stated that systemic inflammation is closely linked to a higher risk of colorectal cancer but is also behind a variety of other cancer types.²

Getting rid of chronic inflammation is a must if you want to ward off cancer and stay healthy. Here are some simple ways to reduce inflammation naturally.

Eat an anti-inflammatory diet

Incorporate plenty of the following nutritional staples:

- Leafy greens like kale, spinach and collards
- Cruciferous vegetables like broccoli, Brussels sprouts and cauliflower
- Low-sugar, high-fiber fruits like berries, apples and citrus fruits
- Fatty fish like salmon and mackerel
- Healthful nuts and seeds like chia seeds and almonds
- Tea, black or green
- Olive oil

But avoid processed foods full of toxic seed oils and saturated fats. Reduce your sugar intake by opting for alternatives like stevia, monkfruit or allulose. Avoid or severely limit alcohol, and steer clear of refined carbohydrates (white pasta, rice and bread).

For any nutrients you're not getting enough of through your diet, to tamp down inflammation generally and to address any health issues you're dealing with, you may need to supplement. Talk to your practitioner and/or see the box on page 63 for some helpful anti-inflammatory foods and supplements.

Get enough sleep

Though it can be tempting to stay out late at festive celebrations or get up early to get more items checked off your holiday



Why walk after you eat?

Walking after meals kick-starts many positive effects in the body:

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Helps clear your mind and improves cognitive function

Relieves stress and depression symptoms

Aids in weight management and weight loss

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to-do list, sleep is one area you shouldn't sacrifice if you want to stay healthy. Poor sleep increases your risk of nearly every chronic disease, from diabetes and heart disease to obesity and even cancer.

A recent study examined the sleep quality and cancer risk of over 10,000 people aged 50 and older who participated in the English Longitudinal Study on Aging. It followed the participants, who were cancer-free at the start, for eight years.

Disturbingly, it found that even moderately impaired sleep quality was linked to a 33 percent higher risk of cancer, and severely impaired sleep quality led to a 59 percent higher risk.¹³ The takeaway here is an important one: This is one cancer risk we have the power to control.

Our bodies need proper sleep to repair and recharge, modulate hormone levels and support the immune system. Do your best to get seven to nine hours of restful slumber each night, throughout the holiday season and beyond.

Stay active

Physical activity can help to stave off weight gain and disease. Carrying around extra weight increases the risk of cancer and other chronic diseases in several ways.

Fat cells influence a variety of hormone levels, trigger excessive inflammation and prompt abnormal cellular responses throughout the body. Studies have found that being overweight or obese raises your risk of more than 10 types of cancer.¹⁴

There are several ways to stay active and maintain a healthy weight during the holidays.

Walk after meals Research shows that taking a walk after meals—even as brief as five to ten minutes—offers numerous health benefits (see box, page 59).¹⁵

Plan time with a partner Schedule your exercise sessions like essential appointments on a calendar or in your phone. Having a partner will keep you accountable and motivated, and taking the time to incorporate your exercise sessions into your daily routine makes you more likely to stick with them.

Think outside the box Instead of going for a walk or attending a class at the gym, put on some music and dance

Healthy holiday eating tips

Celebrations abound during this time of year, so if you want to keep healthy eating on track, going into these gatherings with a plan is vital. Liliana Partida, clinical nutritionist at the Center for New Medicine and the Cancer Center for Healing, has several tips for healthy ways to navigate these soirees.

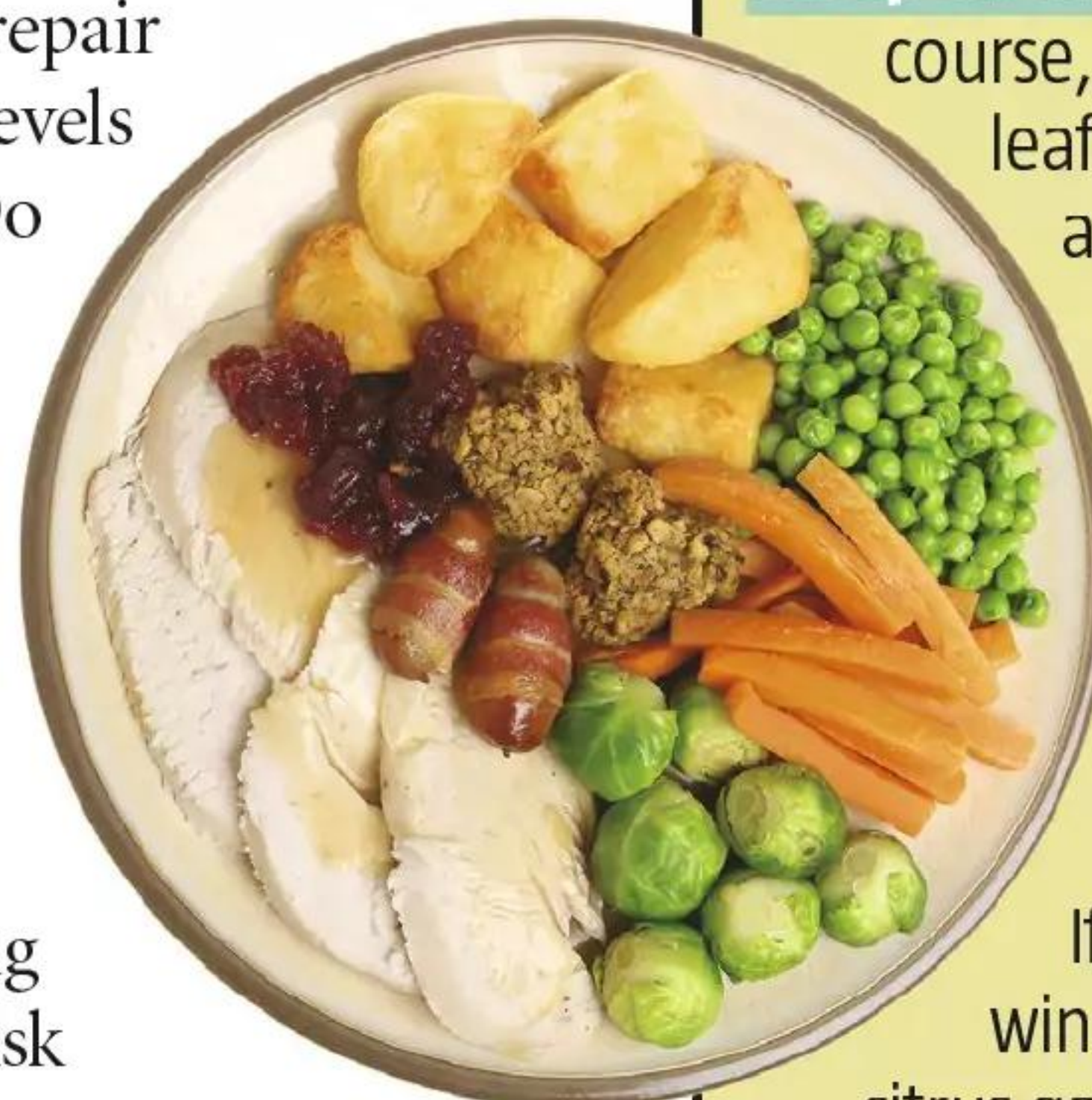


Make a good start Pour yourself a drink when you first arrive. Water, sparkling water, coffee and tea are all excellent options. If appetizers are being served, look for the healthiest option, such as the crudité with hummus or low-sugar fruits, and pile those on your plate.

Don't hang around the food

Instead of standing right next to the food table or in the kitchen, where temptation lurks, move around the room and focus on socializing instead of mindless snacking.

Fill up on the good stuff When it's time for the main course, fill your plate with protein, veggies and leafy greens. For indulgent dishes, take only a small spoonful so you can still enjoy the flavors without overdoing it. The same goes for desserts; instead of a whole slice of pecan pie, take a bite or two to satisfy your sweet tooth, and then step away from the dessert table.



Choose drinks wisely Ensure your beverage choices aren't sabotaging your waistline or blood sugar levels. If you're drinking alcohol, limit yourself to one drink (red wine is the healthiest option) and stick to sparkling water with a citrus garnish for the rest of the party.



for a few minutes, do a few chores or get groovy while gardening. It's easy to let exercise fall by the wayside if you're bored. Switching things up can keep exercise exciting and keep you motivated to move.

Get a fitness tracker These are an excellent way to challenge yourself, not just during the holiday season, but throughout the year (see page 64 for low-EMF options). Set a goal to walk 10,000 steps a day. Make your goal public and ask friends and family members to join you.

You could incentivize the challenge by having each member of the group contribute a nominal amount of money. The "winner" gets the pool at the end. Have fun with it, and set rules and guidelines that work for your group.

Manage stress

Stress activates inflammatory pathways in the body, so it's important to keep your stress levels under control.

Here's a handful of practical ideas for destressing during the festive season.

Embrace JOMO You've probably heard of FOMO, fear of missing out. If you're feeling stressed and overloaded this season, shift your focus to JOMO: the joy of missing out.

Sometimes it just feels good to say no to the seemingly endless parties, functions and non-essential tasks. Focus on the events, gatherings and social activities you want to attend or are required to participate in, and politely decline other invitations.

Don't skimp on self-care Yes, this time of year is about giving and being selfless, but you can't pour from an empty cup. Take time for yourself each day, whether it's doing a crossword puzzle, reading a few chapters of a good book, spending 20 minutes out in the fresh air or taking a detoxifying nightly hot bath. Just do something that feels good to you.

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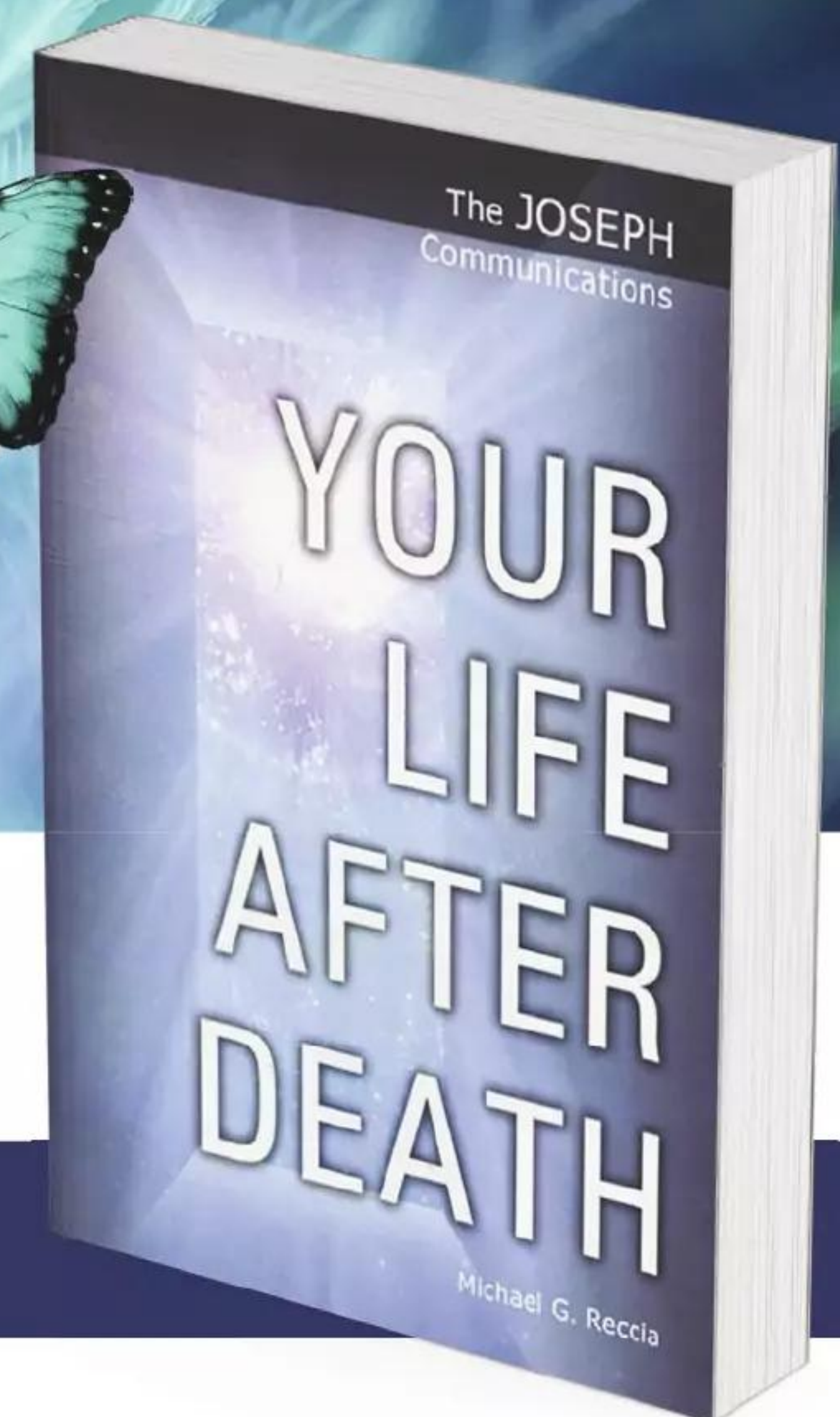
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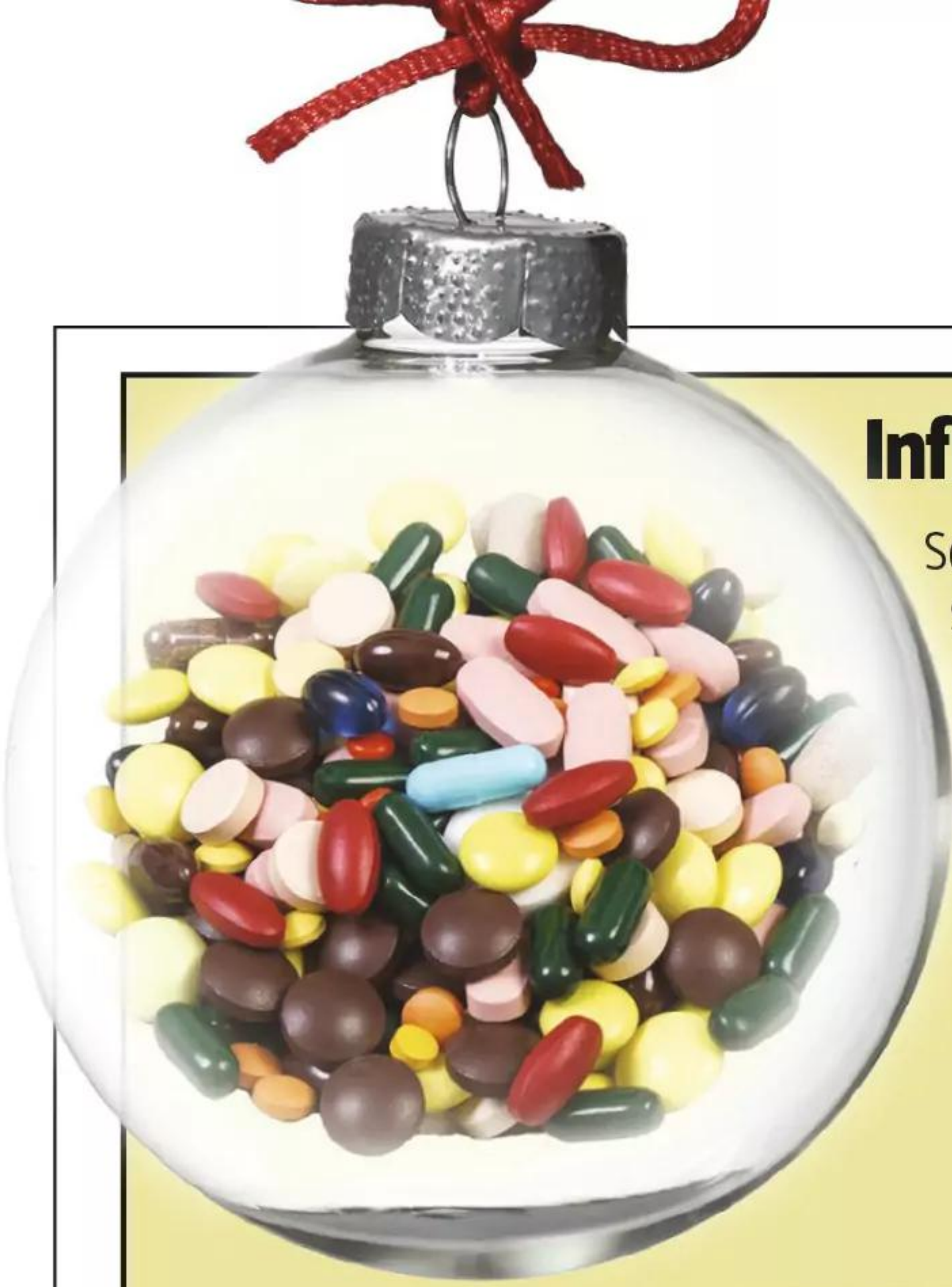
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Inflammation fighters

Several vitamins, minerals and herbal supplements have been shown to possess anti-inflammatory properties. You can add many of them to your diet or begin taking them during the holiday season to help combat the effects of any indulgence and get a healthy start to the new year.

Turmeric is the spice that gives curry its bright yellow color. Have it with black pepper to improve absorption of curcumin, its most well-known anti-inflammatory compound.

Suggested dosage: 500–1,500 mg daily

Ginger is a powerful anti-inflammatory that's easy to add to food and drinks in either fresh or ground forms.

Suggested dosage: 250–1,000 mg daily

Garlic tames immune system overreactions and is a great ingredient in dishes such as sauteed vegetables, soups and sauces. If you don't like the taste, try it in capsule form.

Suggested dosage: 500–1,000 mg daily

Green tea has much less caffeine than black but is packed with polyphenols that fight inflammation.

Suggested dosage: 250–750 mg daily as green tea extract

Ashwagandha is perhaps the most well-known supplement in Ayurvedic medicine. It helps the body manage stress and maintain homeostasis.

Suggested dosage: 300–600 mg daily

Boswellia serrata is also called Indian frankincense. Its anti-inflammatory properties make it a common remedy for arthritis, ulcerative colitis, and sores and wounds.

Suggested dosage: 250–750 mg daily

Vitamin C is one of the body's top antioxidants, fighting everything from the common cold to arterial damage. Top food sources are broccoli, peppers and citrus fruits.

Suggested dosage: 500–2,000 mg daily

Vitamin E is another antioxidant that supports the immune system and keeps the eyes, blood, brain and skin healthy. Nuts and seeds, avocados and leafy greens are some good food sources.

Suggested dosage: Consult your doctor; dosages depend on your needs, and interactions are possible

Zinc has antiviral, anti-inflammatory and antioxidant effects and is plentiful in meat, seafood and dairy.

Suggested dosage: 15–50 mg daily

Magnesium is a crucial mineral, including for fighting inflammation, and many people are deficient. Nuts and seeds, legumes, and leafy greens provide some magnesium but often not enough. See *WDDTY* November 2025 for good supplement options.

Suggested dosage: 400–1,000 mg daily

Omega-3 fatty acids are easy to get from fatty fish such as sardines and mackerel. Algae-based supplements are an option for those who don't like fish oil.

Suggested dosage: 1–2 g EPA and DHA daily

Resveratrol is an anti-inflammatory compound in nuts, cocoa, berries and grapes (and thus in red wine).

Suggested dosage: 100–200 mg daily

Quercetin is a flavonoid, a type of anti-inflammatory pigment, in a variety of fruits and vegetables, including onions, apples, tea and berries.

Suggested dosage: 300–1,000 mg daily

Bromelain is an enzyme whose top source is pineapple. In addition to fighting inflammation, it helps to digest protein and slows blood clotting.

Suggested dosage: 500–1,000 mg daily

Work closely with an integrative practitioner who's well versed in using supplements for healing to determine the correct doses and best options tailored to your needs.

Here are a few more de-stressing activities you can practice regularly:

- Journaling
- Watching a funny show or movie
- Meditating
- Listening to music
- Practicing deep breathing
- Baking
- Getting a massage

Share the load Don't be afraid to ask friends, family members or co-workers to help shoulder some of the load. Whether it's shopping for gifts, prepping for a party or collaborating on a project, it takes a village. And people are often honored to be asked to step in and help a friend or family member in need.

A healthy new year

As we bid farewell to 2025 and welcome a new year, my hope for you and yours is vibrant health, lasting prosperity and wonderful wishes for the year ahead. Enjoy the holiday season surrounded by those who make this miracle of life worth living. And remember, good health is within your reach.

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- 3 Sleep, 2020; 44(3): zsa192
- 4 Cancers (Basel), 2023; 15(2): 485
- 5 Christina Mutchler, "9 Benefits of Walking After Eating," July 30, 2025, verywellhealth.com

Leigh Erin Connealy, MD, is the medical director of the Cancer Center for Healing and the Center for New Medicine in Irvine, California. Dr Connealy's multidisciplinary treatment protocols, team of healthcare professionals, and holistic approach to health and healing have made the Centers the largest integrative/functional medicine clinic in North America, visited by more than 90,000 patients worldwide.

Author of *The Cancer Revolution* and *Be Perfectly Healthy* and a sought-after speaker who has appeared on numerous TV and radio shows, webinars and podcasts, Dr Connealy has been named one of the Top Functional & Integrative Doctors in the US.



HEALTHY SHOPPING

Joanna Evans helps you find low-EMF fitness trackers, anti-inflammatory supplements and high-quality mushroom supplement brands

Low-EMF fitness trackers

Wearable fitness trackers (recommended in “A Healthy Little Holiday,” page 58) can motivate you to move more and live healthier, whether you’re simply counting daily steps or tracking more advanced metrics like heart rate, sleep, blood oxygen levels and calories burned. A study of nearly 164,000 people of varying ages and health found that fitness trackers encouraged people to walk an extra 40 minutes each day, resulting in about two pounds (1 kg) of weight loss per person over roughly five months.¹

But a downside of these devices is the radiation they can emit. Wearing a fitness tracker—especially if you wear one day and night—can significantly add to your exposure to electromagnetic fields (EMFs), which has been linked to a wide range of health problems, from cancer to infertility (see *WDDTY* July/August 2024 and June 2025).

Although radiation from fitness trackers will likely be much lower than that from a typical smartphone, EMF exposure is cumulative, so it’s wise to minimize it where possible.

The good news is that low-EMF fitness trackers do exist. Here are a few tips on what to look for and some top picks to try.

Products to try

Here’s a small selection of simple, affordable fitness trackers with no Bluetooth or Wi-Fi, all available via Amazon in the US and UK. If you need a more advanced model, consider the Oura Ring or Garmin Vivosmart 5, which allow you to disable Bluetooth.

What to look for

If your priority is minimal EMF exposure, follow these tips:

Skip Bluetooth and Wi-Fi Avoid devices that constantly sync with your phone.

Keep it simple Basic models that track steps, distance and sleep offline are your best bet.

Check for airplane mode If you do want more advanced features and connectivity, ensure any wireless features can be fully disabled when you’re not using them.

Charge with cables Choose wired over wireless charging for less EMF.

Cloupoem

No Bluetooth Fitness Tracker \$33.99/£25.81

EMF information and protection site Tech Wellness (techwellness.com) recommends this fitness tracker watch, which is designed without Bluetooth and doesn’t need to connect to a mobile phone or app. It tracks steps, calories burned, distance and sleep time, and you can set reminders to stretch and drink water. It’s IP68 waterproof, has a full touchscreen display and is available in three colors.

GRV

Fitness Tracker Non-Bluetooth \$25.99/£18.36

One of the top low-EMF fitness trackers recommended by EMF Academy (emfacademy.com), an EMF education and exposure-reduction resource, this basic watch is IP68 waterproof, comes

in six colors and records steps, distance, sleep and calories burned. It’s easy to use with a touch button at the bottom of the screen, and the sleek design is comfortable to wear.

Omron

Walking Style IV Step Counter \$51.35/£32.89

If you’re looking for a no-frills way to simply count steps, consider a basic, Bluetooth-free pedometer like this one from trusted brand Omron. It measures steps, aerobic steps, distance and calories burned and is easy to use with minimal setup time.

It’s lightweight, fits inside your pocket and comes with a clip and strap. Since it doesn’t have to be strapped to your wrist, this one may be more accurate for measuring steps during activity that doesn’t involve consistently swinging the arms (such as household chores).

REFERENCE

1 Lancet Digit Health, 2022; 4(8): e615–e626

Anti-inflammatory supplements

In her Healing Cancer column this month (see page 58), Dr Leigh Erin Connealy recommends natural ways to reduce chronic inflammation—increasingly recognized as a silent driver behind many modern health problems. One option she suggests is to take anti-inflammatory herbs and supplements like turmeric, Indian frankincense (*Boswellia serrata*), ginger, resveratrol, bromelain, quercetin and zinc.

If you find it difficult to take lots of individual supplements daily, though, an all-in-one combination formula may be best for you. Here's a selection of high-quality supplements that combine a range of science-supported anti-inflammatory ingredients in a single capsule designed to be taken two to three times a day.

When searching for one for yourself, some of the main things to look for are independent testing, a "clean" formula free of fillers and artificial additives, and a dosage that's right for your needs. Also seek out standardized herbal extracts, which suggest higher potency, consistency and reliability.

Vital Nutrients

BCQ[®], \$34.90/£33.62
(60 capsules)

US: vitalnutrients.co
UK: uk.iherb.com

This practitioner-approved blend combines standardized extracts of *Boswellia serrata* and turmeric (curcumin)—600 mg each per three-capsule serving—with 300 mg of quercetin and 300 mg of bromelain to support a healthy inflammatory response. Like all Vital Nutrients supplements, BCQ is rigorously tested by independent labs to ensure potency and purity.

Inessa

Biosothe, \$54.99/£38.99
(60 capsules)

US: usa.inessawellness.com
UK: inessawellness.com

Third-party tested and Vegan Society approved, this comprehensive formula delivers 10 science-backed soothing ingredients in a delayed-released capsule to ensure they reach the gut in an optimal state. Each two-capsule serving gives you 328 mg of liposomal turmeric extract, 195 mg of bromelain, 60 mg of ginger extract, 2,000 IU of vitamin D, 15 mg of zinc picolinate and 100 mg each of quercetin, *Boswellia*

extract, alpha lipoic acid, resveratrol and butyric acid. And there are no fillers or unnecessary additives.

Designs for Health

Inflamatone[™], \$75.49/£60.26
(120 capsules)

US: designsforhealth.com
UK: designsforhealth.uk

Designed to be used under practitioner guidance, Inflamatone features standardized extracts of turmeric, *Boswellia*, ginger (200 mg each per two-capsule serving) and rosemary (50 mg) along with InflammENZ[™], a proprietary protein-processing enzyme blend. It also includes the polyphenols quercetin, rutin and resveratrol, and all ingredients are tested for potency, purity and identity at independent labs.

Other good options

Thorne Phytoprofen[®]

US: thorne.com
UK: healf.com

Together Health Joint Aid

UK: togetherhealth.co.uk

Lifsource Vitamins Boswellia with Turmeric

US: lifsourcevitamins.com

Medicinal mushrooms

"The Fungi Pharmacy" (page 50) reveals the extraordinary healing power of medicinal mushrooms like *Cordyceps*, reishi, maitake and lion's mane. If you're looking to try them, you can often buy fresh medicinal mushrooms from your local food store, health store or farmers' market, or try specialist mushroom farms and online retailers. Good examples are Miller's Mushrooms (millerstmushrooms.com) in the US and Merit Mushrooms in the UK (meritmushrooms.co.uk).

But if you want maximum medicinal benefits, a dual-extracted (using both water and alcohol to extract the beneficial compounds) fruiting body supplement is likely your best option. Capsules, powders and tinctures are available, so you can choose which suits your needs and preferences (see Healthy Shopping in the January/February 2025 issue for what to look for in a powdered supplement and mushroom supplements in general).

Here are a few high-quality brands to consider:

US

Mushroom Revival
mushroomrevival.com

Real Mushrooms
realmushrooms.com

Half Hill Farm
store.halfhillfarm.com

UK

Isle of Wight Mushrooms
iwmushrooms.co.uk

Adaptogenic Apothecary
adaptogenicapothecary.com

Fourfive
fourfive.com



Welcome to our new pressure group

Sense about medicine

Bryan Hubbard

What can we know? It's a question to vex any first-year philosophy student until, defeated, she retires to the nearest pub where, after a few pints, the question is quickly overtaken by "Who cares?"

Science is one of the best tools we have to understand the world, but, paradoxically, and in its purest incarnation, it is a ceaseless quest without end or conclusion. Our understanding is temporary and incomplete. The realization makes nonsense of the Covid era's oft-repeated mantra: "Follow the science."

Its corollary is certainty or dogma, as exemplified by medicine—the least of all the sciences, if it's a science at all. Medicine is infested by endpoints and conclusions, which makes it more akin to a craft or trade.

Its assumptions are rarely questioned or challenged but are dogmatically exercised by sleep-deprived doctors policed by regulators who punish those stepping outside the gridlines of accepted practice.

These thoughts never troubled Lord Taverne, who died recently at the grand old age of 97. So certain was Dick, as he appropriately liked to be called, that he founded the lobby group Sense About Science. Its solemn duty was to "put right" any journalist who dared to criticize or question science.

He named the guilty in his book *The March of Unreason: Science, Democracy and the New Fundamentalism* (Oxford University Press, 2007). MMR skeptics were irrational hysterics, and those who practiced alternative and complementary medicine were indulging in "voodoo medicine." As his colleagues noted, Dick saw issues purely in black-and-white terms.

In honor of Dick, we propose creating a new group, Sense About Medicine, which will lambast any journalist who *doesn't* question prevailing medical views, whether they're

about Covid, MMR, vaccines in general, antidepressants, cancer therapies, nutrition or other topics.

To help our hapless journalists get started, here are some insights, all of which were discovered in 2025 alone, that overturn long-held medical shibboleths:

- The heart can heal itself after heart failure. Scientists have been astonished to witness the heart's own recuperative powers. "Heart muscle cells can actually regenerate," they have announced.
- Most health problems, such as heart disease and diabetes, disappear in people who reach age 90.
- Measles is a disease of malnutrition—and especially inadequate levels of vitamin A—that vaccination can't prevent.
- Longevity has little to do with "good genes." Genetics has a mere 2 percent influence on lifespan.
- Active surveillance—regular monitoring of prostate cancer's progress—is the best option for most older men. Just 0.1 percent of men who opted for it died of the cancer within 10 years.
- St John's wort really does ease mild depression and can be just as effective as antidepressant drugs.



SENSE
about **MEDICINE**

We propose creating a new group, Sense About Medicine, which will lambast any journalist who *doesn't* question prevailing medical views

- Babies given antibiotics in the first year of life are much more likely to develop type 1 diabetes, in which the body can't break down sugars in the blood.
 - Ticagrelor (Brilinta in the US and Brilique in Europe) has been the drug of choice for acute coronary syndrome—but it's a dangerous drug, and its side effects were hidden by falsified studies.
 - The RSV (respiratory syncytial virus) vaccine, routinely offered to the over-75s, can cause Guillain-Barré syndrome, a nerve disorder that can sometimes be fatal.
 - The Covid-19 vaccines saved only around 2.5 million lives, far fewer than official estimates of 20 million lives. And it also led to an alarming rise in fatal cancers and heart problems among the vaccinated.
 - Blood pressure cuffs get it wrong around 30 percent of the time—especially when it comes to assessing hypertension (high blood pressure).
 - One of the world's most common painkillers could be causing ADHD and autism. Tylenol (acetaminophen, marketed as paracetamol outside the US), can cause neurological damage in unborn children and infants.
 - Beta blockers, routinely given to heart patients, can cause a fatal heart attack or heart failure.
 - Everyday drugs could be having an impact on your health by interfering with the gut microbiome even decades after you stop taking them.
 - Antidepressants can trigger life-threatening side effects in just eight weeks.
 - Cancer surgery destroys the body's immune response—and makes a recurrence more likely. It traditionally removes lymph nodes that are essential for the immune system to develop killer T cells.
- Not a bad start. We're sure Dick would have been proud.

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