

# THE EPOCH TIMES

# MIND & BODY

MADE TO MOVE

## ‘The Most Important Medicine’ for COVID-19

Exercise triggers cellular processes that are critical to immune function and recovery from cellular damage caused by COVID-19

◀ Regular exercise can enhance your defenses against COVID-19 by strengthening your immune system, cardiovascular health, and respiratory function.

By Allison DeMajistre

“Exercise is the most important medicine for COVID-19,” according to a recent review published in *Current Sports Medicine Reports*.

More than 6.4 million deaths globally have been attributed to COVID-19 as of September 2022. Vaccinations, boosters, handwashing, social distancing, and masking have proven ineffective for many, with fully vaccinated individuals becoming infected and experiencing anywhere from mild symptoms to adverse outcomes, including extended hospital stays and even death.

As new mutations continue to arrive, some researchers believe that it’s time to focus on using exercise as a first-line strategy in preventing and treating COVID-19 and long COVID. According to a recent *American Journal of Preventative Medicine* study, “public health leaders should add physical activity to pandemic control strategies.”

### Clinical Evidence

According to the review in *Current Sports Medicine Reports*, by consistently meeting exercise guidelines, people can reduce hospitalization for COVID-19 by up to 42 percent, ICU admission by up to 38 percent, and death by up to 83 percent across major demographic subgroups and those with and without chronic conditions.

There are now more than 25 studies and a meta-analysis reporting that those who were consistently inactive had more detrimental effects from COVID-19 than those who were regularly physically active.

A 2022 review published in the *Journal of Sport and Health Science* found that severe COVID-19

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### THYMUS

This gland produces T cells critical to immune function



The thymus gland becomes less active as we age and is replaced by fat, with T cells stored in lymph nodes. But research finds exercise releases different myokines that specifically target the thymus gland to increase T-cell output.

11 to 22  
PERCENT

75 minutes of high-intensity weekly exercise, gained the most significant benefit, with an 11 to 22 percent lower risk of contracting the infection.

## Astounding Feats of the Brain in Your Gut

Called the ‘second brain,’ the enteric nervous system influences much of our overall health

By Amy Denney

More than  
**90**  
PERCENT  
of the body’s  
serotonin

**50**  
PERCENT  
of its dopamine  
are found in the gut.

The enteric nervous system is known as the body’s “second brain,” a vital communication center housed in spider web-like circuits within two layers of the gut lining. It helps to manage functions central to digestion, immunity, and mood.

It’s called the second brain because it’s made up of a collection of hundreds of millions of neurons and acts independently but in cooperation with the other branches of the autonomic nervous system. It coordinates several

complex functions by using 30 different neurotransmitters. More than 90 percent of the body’s serotonin and about 50 percent of its dopamine are found in the gut.

At one level, the enteric nervous system (ENS) acts like a vehicle’s ignition system, providing a perfectly timed spark of energy for a chain reaction that powers the muscles to move food through the human digestive tract. It also maintains homeostasis, or balance, when our body experiences invaders—such as toxins, viruses, and parasites.

Continued on **Page 6**



◀ Our enteric nervous system coordinates the complex chemistry that turns food into the countless vitamins, minerals, and compounds the body

STEFANAMER/GETTY IMAGES





A lack of data has left billions of people taking a vaccine with unknown effects.

Circulation of the spike protein in the blood may explain some serious adverse events, such as myocarditis and rare neurological issues.

to the elderly and those with comorbidities.

**Inflammation and Miscarriage Rates Noted in EMA Report**  
In repeat dose toxicity studies among rats given one dose per week for three weeks, joint and lymph node inflammation as well as changes in the bone marrow were observed.

In reproductive toxicity tests, the report states: "There was an increase (~2x) of pre-implantation loss (9.77%, compared to control 4.09%) although this was within historical control data range (5.1%-11.5%)."

In other words, although the miscarriage rate was twice as high in the vaccinated than in control animals, the rate was within the expected range based on previous studies. The same data can be found on page 55 of the Australian report.

Interestingly, the BNT162b1 candidate—one of Pfizer's two vaccine candidates which coded for the receptor binding domain only, not the full-length spike—had a much lower pre-implantation loss rate (4.8 percent) than the vaccine eventually brought to market. The second model (BNT162b2) was chosen for global use because it had fewer side effects.

**Some Types of Vision Loss Correlate with Vaccination**  
A new study in Nature confirms a "strong correlation between vaccination with an mRNA vaccine and retinal vascular occlusion."

The retina is part of the eye that receives light and converts it into nerve signals which are translated into vision in the brain. The retina is covered with tiny blood vessels, and when these become occluded (blocked) due to poor cardiovascular health or diabetes, vision is lost.

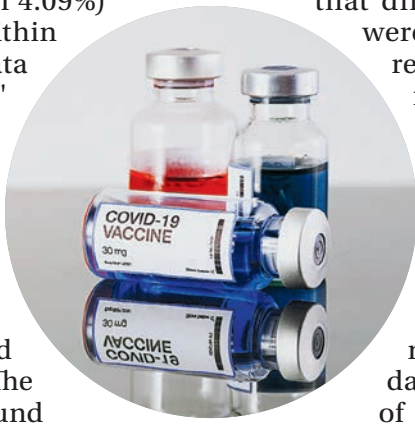
The blockage in the vessels can be caused by swelling, spasms, poor blood flow into the vessels, and thromboembolism (clotting). Infection with SARS-CoV-2 is also linked to retinal occlusion.

Given the mounting evidence of vaccination causing occlusion, this study used medical records for approximately 6 million people to explore the long-term association between vaccination and occlusion. The authors matched 745,041 vaccinated and 3,874,458 unvaccinated people, resulting in a final comparison group of more than 500,000 individuals in each group.

Researchers found 415 cases among vaccinated people 18 to 64 years of age and 1108 cases among the vaccinated age 65 years or older. This represented a greater than threefold higher risk of retinal occlusion following vaccination within 12 weeks and a greater than twofold risk up to two years later compared to the unvaccinated.

The authors of the study surmise that differences in batches were found. Additional reports were requested from the manufacturer. Where is the public communication regarding updates on these issues? Why did the FDA not apply stricter mRNA "genetic therapy" standards to the regulation of mRNA vaccines? In other words, why were vaccines given a special pass when they were using the same technology platform?

Required studies could have been performed even within the compressed timeframe. Furthermore, given the massive earnings these products have garnered from global distribution, why are the post-marketing studies not accelerated? As a final example of this lagging regulatory framework, the FDA-requested post-marketing surveillance does not require submission of reports on the incidence and natural course of vaccine myocarditis until September 2024.



A close review of the studies used to approve COVID-19 mRNA vaccines reveals significant omissions.

Allison Krug is an epidemiologist and program manager with experience leading population health programs. She's the lead author of the first stratified risk-benefit analysis of mRNA vaccination among adolescents and founder and CEO of Artemis Biomedical Communications, LLC.

The CDC gave false reassurances about the duration of biological activity and distribution based on scant data on animals and no human data on biodistribution.

Xiaoxu Sean Lin is an assistant professor in the Biomedical Science Department at Feitian College in Middletown, New York. He is a veteran who served as a U.S. Army microbiologist and also a member of Committee on the Present Danger: China.

Yuhong Dong, M.D., Ph.D., is a senior medical columnist for The Epoch Times. She is a former senior medical scientific expert and pharmacovigilance leader at Novartis Headquarters in Switzerland with preclinical research experience in virology, immunology, oncology, neurology, and ophthalmology, and also has clinical experience in infectious disease and internal medicine.



NEXT WEEK Research finds inherent issues with the mRNA vaccines.

# Promise or Peril

## COVID-19 mRNA Vaccine Issues Series

### PART 2 HEALTH IMPLICATIONS OF POOR COVID-19 MRNA TESTING

Miscarriage, vision loss, immunotoxicity linked to these vaccines continue, as do questions of how they were approved

In this series, we explore how the introduction of mRNA technology lacked an adequate regulatory framework, setting the stage for serious adverse events and other concerns related to inadequate safety testing of lipid nanoparticles, spike protein, and residual DNA and lipid-related impurities as well as truncated/modified mRNA species.

By Allison Krug, Ram Duriseti, Xiaoxu Sean Lin & Yuhong Dong

**False Reassurances From CDC**  
As discussed in Part 1, the U.S. Food and Drug Administration (FDA) did not require Pfizer and Moderna to do biodistribution testing on the active mRNA encoding spike protein used in the vaccines. The FDA essentially approved the bioengineered shell that carried the vaccine; in other words, the contents were not tested.

Reports provided by Pfizer to the FDA, European Medicines Agency (EMA), as well as the Australian, and Japanese health authorities in January 2021 include identical animal data showing how the new lipid nanoparticle (LNP) shell travels throughout the body. The reports also show how a substitute ("fake") mRNA (encoding for luciferase) was used to visualize where the mRNA travels.

Although the compound luciferase has a sinister name, it is a harmless enzyme found in fireflies and elsewhere in nature, and it is bioluminescent—meaning, it glows in the dark. Thus, luciferase is useful for seeing

were biological compounds go once introduced in animal tissues.

These reports show widespread dispersal of the LNP shell. The CDC gave false reassurances about the duration of biological activity and distribution based on scant data on animals and no human data on biodistribution. People relied on these statements as truth. Thus the agency disseminated vague and misleading reassurances despite the fact that data was available at the time that contradicted these claims.

To understand the health implications of the new mRNA vaccine technology, we must first examine where luciferase, the spike protein, and the LNPs travel in the body and how long they persist.

**What Happens to the 'Glow-In-the-Dark' Luciferase?**  
The European Medicines Agency (EMA) is the European Union's FDA equivalent. The EMA report gives us more detail about animal studies showing where the luciferase and LNP shell travel, as well as the concentrations of these compounds in tissues immediately after vaccination.

**What Happens to the Spike Protein?**  
Once the vaccine LNP shell enters our cells and releases the mRNA, spike protein is produced and displayed on the surface of our cells. The mRNA code contains instructions to make the full-length spike protein, containing two subunits (S1 and S2). The im-

Why did the FDA not apply stricter mRNA 'genetic therapy' standards to the regulation of mRNA vaccines?

ELEVATED LUCIFERASE ACTIVITY IN THE FIRST

72 HOURS

correlates with adverse symptoms people may experience after vaccination.

mune system sees these cells displaying the spike protein and responds as if the virus had infected the cell.

When these cells are destroyed by the immune system, antibodies are made that bind to the spike protein. However, the spike protein, including its S1 subunit, can be released into the blood during this messy process of cell digestion by the immune system.

Circulation of the spike protein in the blood may explain some serious adverse events, such as myocarditis and other adverse events, including rare neurological issues which result from COVID-19 infection as well as BNT162b2 and mRNA-1273 vaccination.

For example, a study published in Circulation points out that "markedly elevated levels of full-length spike protein (33.9±22.4 pg/mL), unbound by antibodies, were detected in the plasma of individuals with post-vaccine myocarditis, whereas no free spike was detected in asymptomatic vaccinated control subjects (unpaired t-test; P<0.0001)." In other words, free-roaming spike protein may provide a clue about why some young people develop myocarditis following vaccination.

This study suggested that the difference was not caused by neutralizing antibodies in the myocarditis group, but was likely due to overactive innate immunity.

Innate immunity is what helps the body fight off infection, even the first time it sees a new virus or bacteria. These innate "first responders" (inflammatory cytokines) need no train-

ing to identify foreign invaders. An overactive innate response is associated with allergies and may also be what triggers myocarditis.

Conversely, some authors have hypothesized that suppression of the natural innate immune response could explain some adverse events from the COVID-19 mRNA vaccine.

Because the active mRNA and the spike protein it encodes were not adequately tested in animals or live tissue culture on these immune over-reactivity issues, there was no way to predict these safety risks in humans. The FDA essentially allowed a product to be licensed without sufficient preclinical toxicity testing.

**How Toxic Is the Lipid Nanoparticle Shell?**

As the EMA reiterates, "No traditional pharmacokinetic or biodistribution studies have been performed with the vaccine candidate BNT162b2."

The biodistribution studies are important because the lipid nanoparticles used to create the LNP shell are a novel product. They are new compounds, different from existing data on PEGylated compounds used in a wide variety of injected medications.

The EMA report further states that the half-life of the lipid ALC-0315 is quite long. The EMA report clarifies that we might expect half of the ALC-0315 to be removed from the human body in about 20 to 30 days, and 95 percent to be removed in four to five months.

A separate deliberation summary from the Japanese government's Pharmaceutical Safety and Environmental Health Bureau (February 2021) reviewed all of the data prior to making a determination regarding authorization. The report showed effects on the liver which were "considered to be of little toxicological significance."

However, the report also notes that "long-term repeated-dose toxicity of Comirnaty has not been evaluated" and therefore, the dosing regimen should be limited, and the use of lipids in the vaccine should not be

considered a precedent.

In other words, although PEGylated compounds have been used in medicine for years, there is limited information on their use as part of an LNP carrying a vaccine, thus no existing data to support repeated doses, such as boosters, beyond the original primary series.

The EMA concurred: "This [BNT162b2] vaccine contains two new components (cationic lipid ALC-0315 and PEGylated liquid ALC-0159) in the LNP, for which there is limited experience."

Given the length of time the ALC-0315 lipid stayed in the body and the toxicity of the PEG-lipid ALC-0159, the EMA acknowledged that while there are no immediate and obvious concerns for human use, there is also very limited data and the "current evidence is not definitive."

"Regarding PEG-related toxicity which is known to depend on the dose, dose frequency, duration of treatment, and molecular weight of the PEG protein, immunogenicity is not expected to be an issue due to the low molecular weight of this PEG (<2KDa). The scientific data available at this stage do not raise noticeable concerns regarding immunogenicity or immunotoxicity of the PEG, but current evidence is not definitive."

The EMA notes that serious adverse events were twice as common in the vaccine group (21 percent) as in the placebo group (13 percent). The frequency was low overall (<1 percent) but the following system/organ/class adverse events were the most frequently reported: "General disorders and administration site conditions" (11.9 percent versus 2.9 percent), "musculoskeletal reactions" (5.5 percent versus 2.1 percent), and "nervous system disorders" (4.2 percent versus 2.1 percent).

Because the long-term effects of the active ingredient (mRNA encoding spike protein) were not tested in these animal studies, these findings likely speak to the immunotoxicity of the LNP shell itself. Nevertheless, the EMA concluded that the benefits overall were positive enough to go forward given the protection afforded





# The Ultimate Guide to KICKING SUGAR

## PART 6 IS MAPLE SYRUP A SUPER FOOD?

This sweet and nutritious liquid contains over hundreds of compounds, vitamins, and minerals with a range of medicinal effects

In this series, we explore the good and bad sugars and sweeteners, including popular natural ones, uncover the unexpected outcomes of cutting out sugar, and discover the ultimate way to do so.



Previous Parts:  
TheEpochtimes  
/KickingSugar

By Flora Zhao

Maple syrup is undeniably sweet and tasty. Perhaps you're like Ross from "Friends," often finding yourself indulging in a box of maple candies to the point of intoxication. (If not, don't start: This is a bad idea.) When consumed in moderation, maple syrup is indeed healthier than standard refined sugar.

Some might even consider maple syrup a superfood.

"If you're stranded on a deserted island and could bring only one food, maple syrup is the food for you," Navindra Seeram,

professor and chair of the department of biomedical and pharmaceutical sciences at the University of Rhode Island College of Pharmacy, said during an interview with The Epoch Times.

### How Is Maple Syrup Made?

Maple syrup is a natural sweetener extracted from the sap of maple trees, collected and concentrated without the addition of any chemicals. The method for collecting maple sap and making syrup was introduced to early North American settlers by Native Americans. It takes about 40 liters of tree sap to make 1 liter of maple syrup.

Sap collecting to make maple syrup typically starts in late winter or early spring, usually from February to March, and lasts only a few weeks. Maple trees accumulate starch during growth, which is converted into sugar during the spring thaw. This sugar then mixes with water absorbed by the tree's roots to form maple sap. As the pressure changes due to rising temperatures and the ground thawing, maple producers bore holes into the tree, and taps are installed, allowing the sap to flow from the trunk.

Maple syrup can vary significantly from region to region and tree to tree. Fascinatingly, maple syrup's characteristics continuously evolve throughout the entire harvesting season. At the beginning of the season, the syrup is relatively clear with a slight sweetness. As the season progresses, the syrup becomes darker and develops a range of distinct flavors, including vanilla, hazelnut, floral, and coffee, and can even be spicy.

Canada is responsible for about 75 per-

cent of the world's maple syrup production, and its syrup is classified into two primary grades: Canada Grade A and Canada Processing Grade. Then, Canada Grade A is further graded into four color classes:

- **GOLDEN:** delicate flavor
- **AMBER:** rich flavor
- **DARK:** robust flavor
- **VERY DARK:** strong flavor

Canada Processing Grade maple syrup doesn't have color classes and is commonly used for large-scale commercial applications.

### Composition of Maple Syrup:

#### Effect on Blood Sugar Levels

Based on data from the U.S. Department of Agriculture (USDA), sugars comprise about 60 percent of maple syrup, while water accounts for 32 percent.

Maple syrup contains three types of sugars: sucrose, glucose, and fructose. Sucrose is a disaccharide composed of one glucose molecule and one fructose molecule, accounting for 98.3 percent of all sugars in maple syrup, followed by glucose (1.1 percent) and fructose (0.6 percent).

While sucrose makes up most of the sugar in maple syrup, the glycemic index (GI) of maple syrup is lower than that of sucrose, with maple syrup having a GI value of 54 and sucrose having an average GI value of 66. This means that consuming an equal amount of maple syrup compared to sucrose would result in a relatively smaller increase in blood sugar levels.

"Maple syrup is a much better option than refined sugar. It's actually sweeter, which is beneficial because you can get away with using less of it," Amy Gonzalez, a registered U.S. dietitian, told The Epoch Times. In other words, a smaller amount of maple syrup is required to achieve the same level of sweetness compared to refined sugar.

She explained that we can reduce the amount by a quarter when using maple syrup as a substitute for regular sugar in cooking. For example, if a recipe requires 1 cup of white sugar, 3/4 cup of maple syrup would suffice.

### Maple Syrup's Health Benefits

Mr. Seeram said maple syrup contains numerous substances that warrant further research and development. Its phenolic compounds exhibit a range of beneficial activities, including anti-mutagenic, anti-radical, antioxidant, anti-inflammatory, anti-diabetic, and even anti-cancer properties.

#### 1. Anti-Diabetic

Blood sugar levels rise when food is broken down and absorbed by enzymes. Inhibiting these enzymes is considered an important strategy for treating Type 2 diabetes.

Maple syrup extract is rich in phenolic compounds, including ethyl acetate and butanol, which can inhibit the enzymes responsible for breaking down starch into sugars. These compounds can also hinder the enzymes that aid in the absorption of sugars in the small intestine, slowing the rapid digestion of carbohydrates and suppressing post-meal blood sugar.

Maple syrup contains abscisic acid, which has been found to have potential anti-diabetic properties.

Absciscic acid (ABA) found in maple syrup is believed to have potential anti-diabetic properties. This plant hormone shares structural similarities with a class of anti-diabetic drugs known as thiazolidinediones, and animal studies have demonstrated the protective effects of ABA against Type 2 diabetes.

A study conducted at Laval University in Canada revealed that compared to brown rice syrup, corn syrup, and pure dextrose, consuming maple syrup resulted in more minor fluctuations in blood sugar and better responses in insulin secretion and other related indicators.

#### 2. Anti-Inflammatory and Antioxidant

Stress, physical injuries, viral infections, exposure to chemical substances, and other factors can trigger the release of toxic substances from cells, including free radicals. Oxidative stress caused by excessive free radicals has been linked to aging and various degenerative diseases, including cancer, heart disease, multiple sclerosis, Parkinson's disease, autoimmune diseases, and dementia.

Research has confirmed that phenolic compounds in maple sap and syrup exhibit antioxidant activity and can scavenge free radicals. A study published in the Journal of Medicinal Food indicated that while pure maple syrup's ability to clear free radicals is lower than that of blueberry juice, it's comparable to orange and strawberry juices. Additionally, darker varieties have more pronounced antioxidant activity due to their higher phenolic content.

#### 3. Anti-Cancer and Anti-Mutagenic

Maple syrup contains various phenolic compounds, including kaempferol, luteolin, quercetin, myricetin, and catechin, which exhibit potent anti-tumor and anti-mutagenic properties.

It can inhibit the growth of various cancer cells, including prostate, lung, breast, and colorectal. It's worth noting that in experiments, maple syrup specifically targets rapidly growing cancer cells while leaving normal cells unaffected.

Maple syrup extract also protects cells and can counteract the mutagenic effects caused by toxic chemicals.

#### 4. Unique Phenolic Compound: Quebecol

Quebecol is a unique chemical compound discovered in maple syrup in recent years, believed to possess anti-inflammatory properties. Interestingly, it isn't naturally present in maple sap and is found only in small quantities in maple syrup. "The chemical is produced during the transformation of the sap in maple syrup, which requires lots of heating and boiling and evaporation," Normand Voyer, a professor at Laval University's department of chemistry, told The Epoch Times. He and his colleagues have developed a method for synthesizing quebecol, and scientists worldwide are now studying the substance.

"The source of inspiration was nature," Mr. Voyer said, noting that nature also serves as inspiration for many other drugs

on the market. "Nature serves us in providing beautiful chemical structures and natural substances that are unique."

In lab studies, quebecol has shown significant potential in treating inflammatory diseases. For instance, it has been proven to positively affect conditions such as periodontitis and psoriasis.

#### How to Choose Maple Syrup

Before using maple syrup as a substitute for refined sugar in your diet, it's crucial to read the product labels and instructions carefully.

Some maple syrup products may actually be high-fructose corn syrup with added maple flavor, with a GI value of up to 68, much higher than that of pure maple syrup. Long-term high artificial sugar intake can lead to metabolic disorders such as insulin resistance, abdominal fat accumulation, and high blood lipids.

Look at the ingredient labels and select those that are 100 percent real maple syrup.

Additionally, when selecting maple syrup, choose darker-colored varieties, as they contain more phenolic compounds.

Despite its benefits, it's important not to eat too much maple syrup.

"First and foremost, it is indeed a sweetener. You should not use a large amount of any sweetener," Mr. Seeram said.

"Do I believe that it is a functional sweetener or smarter sweetener [than] unrefined sugar? The answer is yes," but, he added, "you should drizzle, not guzzle."

According to the 2020–2025 Dietary Guidelines for Americans, developed by the USDA, limiting the intake of free sugars to less than 10 percent of total daily calories is recommended. For someone with a daily calorie intake of 2,000 calories, the upper limit of free sugar intake would be 200 calories. Sixty milliliters (about 1/4 cup or 4 tablespoons) of maple syrup provides 270 calories.

The British government takes it a step further in its recommendations, suggesting that the energy from free sugars should be limited to below 5 percent. This means that for adults, the total daily intake of free sugars shouldn't exceed 30 grams, equivalent to less than 40 milliliters of maple syrup (1 tablespoon has 15 milliliters).

## THE NUTRITIONAL VALUE OF MAPLE SYRUP

In contrast to refined sugar, primarily composed of sucrose, maple syrup contains a diverse range of more than 250 substances. These compounds either occur naturally in the maple tree or are formed during processing.

"It also contains a cocktail of other substances," Mr. Seeram said.

Maple syrup contains oligosaccharides, organic acids, amino acids,

vitamins, and various minerals. It's also rich in phenolic compounds, which exhibit a range of biological activities.

There are more than 67 grams of carbohydrates in 100 grams of maple syrup. It also contains 225 milligrams of potassium; 109 milligrams of calcium; magnesium, manganese, zinc, and iron; and trace amounts of thiamin, riboflavin, and niacin.

### NEXT WEEK

Coconut sugar boasts numerous health benefits.

### FOOD AS MEDICINE

## What to Love About Passion Fruit

This exotic fruit offers a delicious mix of nutrients with well-studied therapeutic effects

By Sandra Cesca

True to its name, passion fruit, its flowers, and its vines, have inspired researchers around the world to delve into the special properties of this delicious fruit.

The Passiflora genus is estimated to have more than 500 species, most of which produce fruits that are consumed and used in medicine and industrial processing.

Purple and yellow Passiflora edulis are the most commonly cultivated varieties, but passion fruits also come in red and green. Passion fruits are an excellent source of fiber, vitamins, and minerals. Their unique tangy flavor is like a combination of guava, mango, pineapple, and melon. The oval fruit contains a soft pulp with many seeds inside a hard rind.

### Benefits

Passiflora incarnata has long been used in folk medicine. The roots were used in an infusion to treat boils, to draw out inflammation from wounds, to treat ear aches and liver problems, and as a sedative for nervous conditions. TCM prescribes a soup from Passiflora

the pulp to treat ailments such as cough, hoarseness, constipation, arthralgia, dysentery, and insomnia.

The peel contains high levels of polyphenols, fiber, and trace elements. It has been used in wine and tea, cooking, and medicine. The edible seeds are high in protein and linoleic and oleic oils.

More than 110 phytochemical constituents have been identified from the different plant parts of Passiflora, among which flavonoids have the highest concentration. These phytochemicals have antioxidant, anti-hypertensive, antitumor, and antidiabetic effects.

### Heart

Passion fruit is loaded with heart-healthy potassium and is also low in sodium, both of which help to decrease blood pressure. When eaten with the seeds, passion fruit contains a lot of fiber, which can help remove excess cholesterol from inside blood vessels.

### Brain

Scientists know that antioxidants help protect the nervous system from damage and improve blood flow, specifically to the brain. They can encourage clear thinking and help prevent or reduce symptoms of depression.

The rich antioxidants of passion fruit help reduce cellular stress and inflammation. One study of the polyphenol piceatannol from Passiflora seed extract found that the extract may be able to help prevent and treat Alzheimer's.

The vitamin C in passion fruit helps prevent brain cells from becoming damaged, and its magnesium reduces anxiety and stress.

### Anti-Cancer

Studies have examined the anti-cancer properties of Passiflora. One 2020 study in Brazil of mice with cancerous tumors

concluded that Passiflora leaf extract has cytotoxic and antitumor properties.

### Sleep

Passiflora incarnata has sedative and relaxing effects, as demonstrated in a study on mice. The leaves of Passiflora edulis are rich in flavonoids and alkaloids that are beneficial for sleep problems and used as a treatment for anxiety and insomnia in the United States and Europe.

### Digestion

Passiflora is a good source of fiber, potassium, and iron, which can improve the digestive system and help with regulating bowel movements.

The polyphenols in passion fruit can benefit intestinal health, as reported in a study evaluating three Colombian passion fruit pulps for their polyphenol activity in preventing chronic intestinal inflammation.

### Eyes

Passiflora's rich antioxidant content and the vitamins and minerals it contains, especially vitamin A, benefit the eyes. Sight loss conditions such as retinitis pigmentosa and macular degeneration might be helped by eating this fruit.

### Skin and Hair

The vitamins A, B6, and B2 and potassium in Passiflora are essential for skin care, including preventing and repairing skin cells from aging. These nutrients also help grow strong, healthy hair by improving circulation to the scalp.

### Bones

The calcium and phosphorus in Passiflora are known to help repair and strengthen damaged bone cells, thus helping prevent osteoporosis.

### Anti-Diabetes

Passiflora's low glycemic index and high fiber content help maintain insulin levels in diabetics and improve insulin sensitivity. Some research suggests that the polyphenol piceatannol found in passion fruit seeds may be associated with protection against insulin resistance.

### Tips for Eating

Eat the pulp, seeds and all, or add to cakes, pies, tarts, fruit toppings, or other desserts. Remove the seeds by pressing the pulp through a strainer or cheesecloth. Use the juice or freeze for later. Add the liquid to water and sugar to make a drink, combine it with orange or pineapple juice, add it to yogurt with other fruit, boil it into a syrup, or make it into a jelly or jam.

Sandra Cesca is a freelance writer and photographer focusing on holistic health, wellness, organic foods, healthy lifestyle choices, and whole-person medical care. Her background includes allopathic medicine, naturopathy, homeopathy, organic and biodynamic farming, and yoga practices.



Over 110 phytochemicals have been found in various parts of Passiflora, with flavonoids being the most abundant.

ABOUT 75%

of the world's maple syrup comes from Canada.





MADE TO MOVE

# ‘The Most Important Medicine’ for COVID-19

Continued from Page 1

risk reduction in physically active groups can be attributed to exercise-induced immunoprotective effects, including reduced chronic inflammation. Researchers wrote, “Scientific consensus groups, including those who submitted the Physical Activity Guidelines for Americans, have not yet given this area of research the respect that is due.”

The Current Sports Medicine Reports study found that regular physical activity with at least 150 minutes of moderate-intensity weekly exercise, or 75 minutes of high-intensity weekly exercise, gained the most significant benefit, with an 11 to 22 percent lower risk of contracting the infection.

Stuart Hoover, a naturopathic practitioner, told The Epoch Times, “Most of our population is inactive and obese, and in that situation, the body’s immune system is not up to par.”

## Effect of Exercise on Organ Systems

It’s important first to understand the effect of exercise at the cellular level, starting with exerkinines and their effect

▲ A 2022 study in the Journal of Sport and Health Science found exercise reduces severe COVID-19 risk by boosting immune defenses and lowering chronic inflammation.

Research finds consistently meeting exercise guidelines can reduce COVID-19 hospitalization by up to 42 percent, and death by up to 83 percent.

on all body systems. Exerkinines are signaling molecules released from skeletal muscle, brown adipose tissue, white adipose tissue, neurons, the heart, and the liver in response to exercise. They come in many forms, such as hormones, proteins, metabolites, and nucleic acids. These exerkinines play a potential role in improving cardiovascular, metabolic, immune, and neurological health.

Even in the absence of COVID-19, exerkinines have the potential to treat cardiovascular disease, Type 2 diabetes, and obesity. However, through molecular signals and pathways, exercise releases exerkinines that can lessen the effects of COVID-19 and long COVID on organ systems.

## Cardiovascular System

COVID-19 causes several paths of dysfunction in the cardiovascular system, including increased incidence of blood clots and high blood pressure. Additionally, COVID-19 causes inflammation in coronary arteries, which can speed up plaque formation and cause blockages in the heart. In long COVID, inflammation leads to increased problems with

blood vessels that result in deep vein thrombosis, pulmonary embolism, and bleeding events.

Exercise has an anti-inflammatory effect, which may help alleviate systemic heart tissue inflammation from COVID-19.

“We know that COVID is a disease that affects the circulatory system, and people who exercise have healthier circulatory systems, so they are better prepared to weather a COVID storm,” Andrew Noymer, an epidemiologist and associate professor of population health and disease prevention at the University of California-Irvine, told The Epoch Times.

Multiple exerkinines are released during exercise, promoting blood vessel growth, production, and function while repairing cardiac tissue, improving blood pressure, and preventing chronic diseases such as diabetes and cardiovascular disease.

## Respiratory System

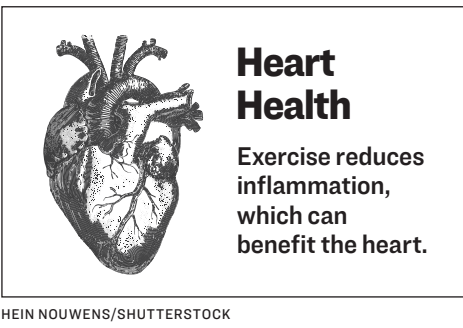
The virus that causes COVID-19 enters the body through the respiratory tract. Once infected, the virus replicates and spreads throughout the upper and lower respiratory tract.

Defending against COVID-19 requires healthy immune and respiratory systems. Increasing aerobic capacity can immediately affect the immune system through three mechanisms:

- It increases the amount and function of immune cells, including T lymphocytes, neutrophils, macrophages, and monocytes.
- It increases immunoglobulin IgA, which, alongside immune cells, can fight lung infections.
- It regulates inflammatory proteins with a short-term increase to fight lung infections and a long-term decrease to inhibit a reduction in lung function.

“The more we can move blood, the more we circulate robust immune cells. They’re hitting more areas of the body and finding more bacteria and viruses to attack,” Mr. Hoover said.

Exercise can even produce antioxidative effects by releasing myokines, proteins that can protect against oxidative stress-related disease and benefit the respiratory system when battling COVID-19.



HEIN NOUWENS/SHUTTERSTOCK

less conditions, imbalances, medications, injuries, and infections. Symptoms of problems include constipation, gas, diarrhea, abdominal pain, abdominal distension, bloating, nausea, burping, acid reflux, and difficulty swallowing.

The neurons of the ENS wind through the tissues of the digestive tract like a web. Protecting this web is critical because it remains a controversial hypothesis about whether it can regenerate, Mr. Sharkey said.

Aging will cause enteric neurons to die off. This may explain in part why the elderly tend to suffer from motility issues such as constipation. But there are measures that we can take to improve our overall health that also appear to protect the ENS, particularly by taking advantage of its relationship with other parts of the nervous system.

For instance, dysbiosis—or an unhealthy balance of microbes in the gut—can also lead to impairment and changes that influence gut function and motility.

## ‘Rest and Digest’

The ENS cooperates closely with the other two branches of the autonomic nervous system—the sympathetic and parasympathetic nervous systems. This relationship allows the best use of resources depending on what we’re asking the body to do at any given moment.

While the work of the autonomic nervous system is automatic, it responds to whatever we do or communicate to it. For example, the ENS goes to work when we eat. Likewise, if we perceive something as threatening, we set the sympathetic nervous system into action.

The sympathetic nervous system manages our fight-or-flight reaction. It floods the body with certain hormones and gives us an increased heart rate to deliver oxygen to large muscles. It also asks the enteric nerves to inhibit digestion, which may otherwise slow us down. Some food takes a lot of energy to break down, and we also don’t really want to stop and relieve ourselves when we’re running away from a bear.



Stuart Hoover, naturopathic practitioner

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ence a delayed protective immune response during the initial infection, which causes an increase in viral load. As the virus load gets higher, T cells compensate by sending out cytokines that signal other immune cells to assist in fighting the virus. Unfortunately, this can result in a cytokine storm, an intense inflammatory response that can lead to immune cells attacking healthy areas of the body.

Exercise increases and mobilizes immune cells into the bloodstream and may directly stimulate the immune system. Exercise also releases different myokines that specifically target the thymus gland to increase T-cell output, ultimately protecting T cells from the effects of COVID-19.

## Mechanisms for Repair of COVID-19 Organ Damage

A hallmark of debilitating and deadly cases of COVID-19 has been multi-organ damage, including of the heart, lungs, liver, kidneys, pancreas, and spleen. Exercise releases stem cells to repair damaged heart and skeletal muscle tissue. Exercise also stimulates bone marrow to generate immune cells and release cells that help grow and heal blood vessels.

Another vital mechanism to heal damaged organs is autophagy, the cellular recycling process. COVID-19 infection damages mitochondria, a cell’s powerhouse and the body’s primary source of energy production. With every exercise session, the damaged cells of all body systems go through autophagy, cleaning up nonfunctioning, damaged mitochondria and other cells to optimize energy production and maintain skeletal muscle health.

## Additional Recommendations

“I don’t know any doctor who would say exercise will hurt you,” Mr. Hoover said. “People with adrenal issues or prone to cardiovascular events need to approach exercise more slowly, but we all have to start somewhere.”

He suggests increasing intensity as the body adjusts.

Research continues to show the cellular and molecular pathways and mechanisms that exercise affects and the effects of exerkinines on all body systems. Such findings reinforce the assertion that physical activity can help mitigate COVID-19 infection and address currently “untreatable” symptoms of long COVID.

Mr. Noymer cautions: “It’s important for your readers to keep in mind that exercise will not prevent COVID infection entirely. Age is the most significant factor in severe COVID, and Father Time comes for us all, regardless of how much we exercise.”

Allison DeMajistre, BSN, RN, CCRN is a freelance medical writer for The Epoch Times. She is a registered nurse who previously worked in critical care. She specializes in cardiology-related topics.

# Astounding Feats of the Brain in Your Gut

Continued from Page 1

When ENS circuits get disrupted, gastrointestinal (GI) symptoms—such as constipation, diarrhea, and pain—can follow. Sometimes, those symptoms are actually good news, however, as they mean that the ENS is at work expelling pathogens.

But when these symptoms become chronic (long-term), it can mystify patients and doctors. That mystery is attracting researchers to explore treatments that spur the ENS into proper action, which could help with diseases ranging from Crohn’s disease, colitis, and irritable bowel syndrome, to neurological ailments such as multiple sclerosis and Alzheimer’s disease. It’s also being looked at for psychological conditions such as depression, anxiety, and schizophrenia.

## An Incredible System

The ENS is sometimes considered an independent system but may also be classified within the peripheral nervous system, which is the nervous system beyond the brain and spinal cord.

Officially, the ENS is part of the autonomic nervous system, along with the sympathetic and parasympathetic nervous systems.

The ENS’s key job is to push food through digestion, which includes sensing and

evaluating what’s in the food.

“It can’t see what it’s going to get, so it has to be ready for anything. One day, you might eat steak and the next, just vegetables. It has a huge capacity to adapt,” Keith Sharkey, professor of physiology and pharmacology at the University of Calgary, told The Epoch Times.

“To make it more complicated, what you eat might not be free of germs. The gut is an outside organ, because we consume food from the outside, but it’s within our body and has to protect our body from toxins, contaminants, parasites, and unwanted bacteria. It does it very effectively most of the time.”

ENS cells can directly and indirectly sense and respond to cues from gut microbes and immune cells, which helps them to know when problems are developing.

When they do, they primarily lead to motility issues, meaning that they’re linked to peristalsis, the sequence of contractions that move food through the digestive tract. Unhealthy motility is food moving too fast, too slow, or moving backward.

The ENS manages the stomach, large intestine, small intestine, and more. It decides what gets stored and what gets excreted. It has to respond to what the body needs at any given moment and has a big influence on the rest of the body, in-

cluding the brain. If you eat too close to bedtime, for example, the ENS tells your brain that the body is going to have a bunch of energy soon so it shouldn’t secrete melatonin and induce sleep.

## For Health and Disease

Clinically speaking, the gut is a logical place to start for healing most any ailment, Dr. Scott Doughty, an integrative family practitioner with U.P. Holistic Medicine, told The Epoch Times.

That’s because the molecular body, including the energy sparking it to life, is made from the sun on our skin, the air that we breathe, and—most substantially—the food that we eat. If what we eat or drink is problematic, or we’re di-

gesting it poorly, nearly any problem can follow.

Often, the key to restoring health starts with something as simple as taking a critical look at stress, which impairs digestion, or eating and drinking habits that aren’t serving us well.

“The gut is probably the most amenable to some basic changes that can improve the way a person functions,” Dr. Doughty said. Best of all, many of those changes don’t require a drug, he said.

## Mechanism of Action

Peristalsis, that synchronized movement of contractions that moves food down your throat and through the 26-foot-long digestive tract, can be affected by count-



▲ The ENS gets its “second brain” nickname from its hundreds of millions of neurons.

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▲ It’s important to de-stress so that your body can rest and digest.

thetic nervous system, and the key to this system is the vagus nerve. This long, winding nerve connects the brain to the heart, lungs, gut, and more. The vagus nerve is the key component of the parasympathetic nervous system.

Stimulating the vagus nerve can be as easy as calming your heart and mind. And if you do so, there are countless helpful consequences.

“If you stimulate the vagus nerve, it can produce an anti-inflammatory response in the body,” Mr. Sharkey said, giving one example of potential benefits.

One study in the Journal of Internal Medicine describes lipid mediator biosynthesis—a byproduct of vagal nerve stimulation—as having the same effect as nonsteroidal anti-inflammatory drugs, which reduce inflammation and decrease pain and fever.

In extreme cases, the vagus nerve can be stimulated using a device similar to a pacemaker that sends regular, mild pulses of electrical energy to the brain

from the vagus nerve.

However, this is medically recommended only for seizures and treatment-resistant depression. Fortunately, there’s evidence that mindfulness activities, especially breathing techniques, can also stimulate the vagus nerve.

“This is why some people think yoga is beneficial. And there’s no question that yoga is beneficial,” Mr. Sharkey said. “There’s a huge number of studies that have demonstrated that.”

The vagus nerve can also be influenced indirectly through cognitive behavioral therapy, which works to change the way we think in order to calm symptoms of anxiety, panic, and fear.

## From the Gut Up

What happens in the gut can make its way to the brain. While processed sugar can stimulate brain activity in a way that’s similar to addictive drugs, more wholesome foods can calm the brain and relax our mood. A diet consisting of whole, unprocessed foods with a healthy balance of protein, fat, and fiber is associated with stable blood sugar and mood improvements.

“Your gut dictates how you feel, and if you don’t realize that, you’re either asleep at the wheel or you aren’t getting drastic messaging that reminds you it’s a fact in basic biology,” Dr. Doughty said.

“Every day we’re accessing the enteric nervous system, and we’re doing so in rather indirect ways, but one of the more direct ways we can address it is with digestion and how it interacts with the rest of the system.”

In short, eat wholesome foods, keep calm, and carry on.





# What You Need to Know ABOUT SURGERY

## PART 3 HOW TO IMPROVE YOUR ODDS IN SURGERY

Informed consent improves the experience for patients, families, and doctors while addressing the burdens of surgery

By Amy Denney

Surgeons are tasked with making sure that the patients rolled into their operating rooms are good candidates for the surgery about to be performed.

By its nature, surgery is unpredictable, but certain lifestyle behaviors have been linked to improved outcomes. To determine who might best respond to surgery, some surgeons use assessment models that help predict risk. Many also share tips with patients on how to improve health ahead of time. Hospitals, organizations, naturopaths, and functional doctors often offer help preparing for surgery with many results-based programs on the rise.

But the key to any effort to lower adverse effects in surgery is patients who are invested in the benefits of being in tip-top shape for surgery.

If you were going to do a 5K, you would train for it. It also makes sense that our patients should train for surgery.

Dr. Michael Englesbe, transplant surgeon

perhaps even allowing them to delay or cancel surgeries.

The University of Michigan Medicine is among the hospitals that have a preoperative preparation program. In an Association of American Medical Colleges statement, Dr. Michael Englesbe said the program empowers patients to take ownership of their surgical outcomes. He's a transplant surgeon at the University of Michigan Medicine.

"The best analogy is that a two-hour operation is about as hard on your body as running a 5-kilometer race as fast as you can go," he said. "If you were going to do a 5K, you would train for it. It also makes sense that our patients should train for surgery."

**Why Preparing for Surgery Matters**  
PLOS One recently published a review and meta-analysis of 76 trials and found behavioral interventions prior to surgery reduced the length of stay by 1.5 days. The most impressive results were from smoking cessation. Other interventions examined in the review included alcohol use, physical activity, and dietary intake.

"That improvements in smoking outcomes were sustained at 12-months post-surgery suggests that the surgical encounter holds promise as a teachable moment for longer-term behavioral change," the meta-analysis reads.

In the review, there was no difference found in pre-surgical body mass index (BMI), but only four studies that targeted weight loss were included. For many surgeries, a BMI greater than 40—which is considered morbidly obese—is associated with serious complications before and after surgery compared to someone with average weight.

In fact, for hip and knee replacement surgeries, weight loss is often part of pre-surgical requirements. And it sometimes leads to patients canceling or delaying surgery.

According to Dr. Peter Hanson, an orthopedic surgeon affiliated with Sharp

Grossmont Hospital, losing 20 percent of weight could reduce joint pain and stop the progression of arthritis. Joint replacement surgery is necessary only when deterioration has become severe.

Weight is a risk factor for surgical complications, just as diabetes and high blood pressure are, and weight loss is a solution for all three risks, as a Sharp HealthCare statement pointed out. Infection and heart attack are two top surgery risks associated with being overweight.

"Every minute you're not in the operating room with your knee or your hip open, you're less likely to get infected," Dr. Hanson said. "If I must do a total hip or knee replacement and it takes me 45 extra minutes because of a person's weight, that's 45 additional minutes that they're exposed to blood loss and more apt to get infected."

"There is no doubt that people who come to surgery with a positive attitude do better," surgeon Dr. Patrick Larreategui said in a Premier Health article.

### Taking Charge of Your Own Health

If it all seems a bit overwhelming, or if a pre-surgical program isn't available, a naturopath can help by offering holistic

support throughout the surgical experience, Rosia Parrish told The Epoch Times. Naturopaths can guide patients to optimize their health through nutrition, supplements, botanical medicine, and lifestyle adjustments. They can also address anxiety and immune function and help patients lower inflammation.

"Collaborating with a naturopath can help you address both the surgical aspect and your overall well-being, promoting a comprehensive and balanced approach to your health journey," Ms. Parrish said. Being a prepared patient makes the entire experience safer and smoother. However, integrative family physician Dr. Scott Doughty of U.P. Holistic Medicine told The Epoch Times that the "people who are the least prepared are probably the least capable of getting prepared."

He said most of his patients are able to prepare more effectively for surgery because they're already practicing the basics of a healthy lifestyle and good nutrition.

Those patients who are already healthy are the best candidates for surgery and make pre-surgical communication and preparation easier for themselves and the surgeon, according to Dr. Hanson.

By its nature, surgery is unpredictable, but certain lifestyle behaviors have been linked to improved outcomes.

"The discussion with someone who is overweight may be handled differently, as we ease into the topic of weight loss," he said. "I spell it out that they must take the weight off. Although many of my patients are unable to exercise because of their medical condition and the additional weight, I tell them it is not always about exercise, but also diet control."



THE EPOCH TIMES Week 40, 2023

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## HOW TO PREPARE

**Weight loss can improve surgical outcomes in part because both diet and exercise—staples of weight loss efforts—have benefits that can improve health regardless of whether patients need to lose weight.**

**Some additional tips for how to prepare for surgery compiled from the American College of Surgeons (ACS), Cleveland Clinic, Premier Health, and Washington University include:**

- **BOOST YOUR NUTRITION:** Eat nutrient-dense, nonprocessed foods for at least two weeks prior to your surgery. Whole foods are those without a nutritional label. Avoid refined carbohydrates and added sugar. A diet that's anti-inflammatory, low in saturated fats, and rich in vegetables and fruit is ideal. Also, eliminate alcohol and caffeine prior to your surgery, and hydrate your body.

- **KICK BAD HABITS:** In addition to smoking and drinking alcohol, reconsider all mood-altering substances that affect sleep and cause anxiety. These could potentially interfere with anesthesia and cause poor results. According to the ACS, smokers have a 40 percent higher likelihood of complications.

- **REVIEW YOUR MEDICATIONS:** Prescription medications, as well as vitamins, herbs, and supplements, can potentially interfere with surgery. Certain medications increase bleeding risks, and herbal medications such as echinacea, garlic, ginkgo, ginseng, kava, saw palmetto, St. John's wort, and valerian are known to increase risks. On the other hand, some medications and supplements are beneficial before surgery. This varies from patient to patient and is a vital part of pre-operative clearance. Although it's the provider's responsibility, you can protect yourself from oversight by being proactive.

- **SEE YOUR PRIMARY CARE PHYSICIAN:** Having another expert review your medications, supplements, diet, and lifestyle can set you up for a more successful surgery. Some surgeons may require this, and it can also help prevent mistakes in the same fashion that getting a second opinion can.

- **EXERCISE REGULARLY:** Movement matters because one of the first postoperative demands is to be able to walk on your own. All patients can train prior to surgery—even if they don't regularly exercise—by increasing daily steps. This will improve cognition, gait, and balance. That translates to a reduction in surgery-related morbidity and mortality, decreases the length of hospital stay and rehabilitation, and reduces hospital readmissions, according to the ACS. Even chair-based exercises have been found to support strength and balance in older adults.

- **COMMUNICATE DIRECTIVES:** Talk in advance about the necessity of the surgery, financial burdens, pain and pain management, and other issues that affect decisions during and after surgery. Being educated and able to express feelings about the experience can help alleviate pre-surgical anxiety.

- **BE EVALUATED FOR DELIRIUM:** Recognizing and treating delirium before surgery helps avoid poor outcomes such as functional decline, longer hospitalization, and institutionalization, as well as greater costs and mortality. The ACS says delirium can be caused by alcohol abuse, poor cognitive or physical functioning, and age. Certain lab tests can help identify risks and identify if interventions would help.

- **DO YOUR OWN RISK ASSESSMENT:** The National Surgical Quality Improvement Program that provides risk assessments for surgeons can also be accessed by laypeople online with a simple questionnaire.

- **SUPPORT YOUR EMOTIONAL AND MENTAL HEALTH:** Washington University recommends keeping a gratitude journal, which has proven to help reduce stress and improve health by lowering blood pressure, improving immune function, decreasing pain, and improving sleep.

## EXERCISES FOR THOSE WITH LOW MOBILITY

**These chair exercises from Edward-Elmhurst Health will help you burn calories and build muscle even if you have trouble walking. Repeat each one until your body tires, keeping your core tight and your spine tall throughout.**

- **CHAIR STANDS:** From a seated position, stand with weight in the heels, squeezing glutes. To lower to the chair, maintain a tight core, bend the knees, and shift the hips back.

- **HEEL RAISES:** Raise the heels off the floor while squeezing the calves. Pause for a few seconds and lower the heels back down.

- **LEG EXTENSION:** Extend one leg while maintaining a flexed-foot position, pause while squeezing the quads, and then lower that leg back to the starting position. Switch sides.

- **LEG LIFTS:** Bend one leg at a 90-degree angle, maintaining the angle while lifting the leg to almost hip height. Pause, then lower the leg back down to the starting position. Switch sides.

- **ARM CIRCLES:** Extend the arms out directly from the shoulders, creating a "T" position with a slight bend in the elbows. Circle arms backward until tired. Rest. Circle the arms forward until tired.

- **SHOULDER PRESS:** Place the arms at a 90-degree angle with the palms facing forward. Note: The elbows should be even with the shoulders. Move arms above your head, bring the arms together, separate them, and bring them back to a 90-degree angle. Add weight with light dumbbells or cans of soup.

- **BICEP CURLS:** Keep your arms at your sides with the palms facing away from you, the shoulders down, and the elbows in. Refrain from moving your upper arms, and keep your wrists straight. Raise your forearms toward your chest, then lower your forearms back to the starting position. Add weight if desired.

- **CHEST FLYS:** Hold your arms at your sides with the palms facing away from your body. With the shoulders down and a slight bend in the elbows, move the arms in front of you and bring the palms closer together. Squeeze the armpit area, then lower the arms back to the starting position. Add weight if desired.

- **SEATED TWISTS:** With the hands on the waist, twist your torso to the left (allow your head to turn to the left), to the center (allow your head to return to the center), and to the right (allow your head to turn to the right).

## NUTRIENT DEFICIENCY

## Consequences of Our Common Iron Deficiency

Iron deficiency is leaving many with compromised immunity and increased risk of Parkinson's disease

By Vance Voetberg

Iron deficiency affects about 30 percent of the global population, making it one of the most common nutritional deficiencies in the world. It's also one of the most harmful.

Consequences vary from impaired brain development in children and increased dementia risks in adults to a crippled immune system across all age groups.

Although children and pregnant women regularly get tested for anemia—a condition of not having enough red blood cells—doctors don't usually screen adults for iron deficiency. And the condition can initially be so mild that it goes unnoticed for months or even years.

### CONSEQUENCES OF IRON DEFICIENCY

Iron deficiency leads to anemia because iron is needed to make hemoglobin, a protein that gives red blood cells their color and transports oxygen throughout the body. But that's far from iron's only function.

#### 1. Neurogenerative Diseases

Energy production requires iron.

Inside almost every cell, mitochondria generate energy for all activity, from weightlifting to forming thoughts. This cellular energy is called adenosine triphosphate, or ATP.

Iron is a raw material of ATP; lack of it impairs ATP production, which can manifest in the form of neurodegenerative diseases.

#### Parkinson's Disease

Low iron levels can lead to reduced energy production in neurons. This energy deficit can contribute to the dysfunction and eventual death of dopamine-producing neurons, potentially exacerbating the progression of Parkinson's disease.

One study found that low iron levels were associated with disease severity in Parkinson's patients, while another showed an association between early-life anemia and the later development of Parkinson's disease.

#### Dementia

"Iron is essential for proper brain development and function," Dr. Matt Angove, a licensed naturopathic physician, told The Epoch Times.

Anemia is a risk factor for dementia, according to a 2020 study of more than 26,000 participants. The research suggests that iron supplementation reduces dementia risk in iron-deficient anemia patients. A 2023 study reaffirmed that iron deficiency is associated with greater all-cause dementia risk in women.

"These findings are unsurprising, knowing that iron plays critical roles in neurotransmitter synthesis and maintenance of myelin," Dr. Angove said.

Layers of protein and fat called myelin sheaths protect brain and spinal cord nerves. Demyelination, damage or reduction of those sheaths, causes multiple sclerosis. A Journal of Clinical Investigation study found iron can repair demyelinating lesions.

#### 2. Chronic Fatigue

A 2020 study in the European Journal of Clinical Nutrition found associations between fatigue and iron deficiency in 224 hospitalized patients between the ages of 65 and 95. The study also reported that 11 percent of community dwellers and more than 50 percent of nursing home residents and inpatients were iron deficient.

Because oxygen relies on iron for transport, iron-deficiency anemia causes fatigue and poor muscle function. Even iron deficiency without anemia can cause extreme fatigue, highlighting iron's vital roles.

#### 3. Compromised Immune System

As iron is critical for the circulatory and nervous systems, research shows that it also helps maintain a robust immune system.

Iron supports innate and adaptive immune responses against foreign invaders. For example, low iron is associated with worse COVID-19 outcomes.

People with COVID-19 were found to have less iron in their blood and more substances such as ferritin, a protein that stores iron, than healthy people. Even two months after getting COVID-19, these patients still showed low iron and high ferritin levels.

"Ferritin is an acute phase reactant. High

ferritin is a sign of inflammation," Dr. Angove said.

During an infection, the body "pulls iron out of circulation and hides it in ferritin so viruses can't utilize it."

### WHO'S MOST AT RISK OF IRON DEFICIENCY?

Although anyone may develop iron deficiency without sufficient dietary iron, three groups are disproportionately affected: children, women, and older adults.

#### Children

In children, rapid growth causes deficiency, which impairs cognitive, motor, socioemotional, and neurophysiological development short- and long-term, according to research. It also has the potential to cause permanent damage to brain development.

#### Women

Menstruating women are also at high risk since they lose iron monthly because of bleeding. A study of 236 menstruating women found that 27 percent were anemic and that 60 percent were severely iron deficient.

Iron deficiency is common in active women, according to Dr. Angove. He described the case of a 17-year-old volleyball player whose arm went numb mid-game. Physicians suspected autoimmune, but her ferritin was just two ng/mL, far below the optimum of 40 to 300 ng/mL.

"We started her on iron, and a week later, she was playing in the state volleyball tournament," Dr. Angove said.

Her complete blood count was normal, so doctors didn't suspect deficiency issues. "She could have easily been down the road of specialist after specialist and ended up getting told she has a mental illness if we didn't check her ferritin and get her iron levels up," Dr. Angove said. "A patient's need is often so simplistic that it confounds brilliant physicians."

Pregnant women are also at a much higher risk of iron deficiency because of increased blood volume, fetal development needs, placenta formation, and maternal tissue growth.

### HOW TO SPOT SILENT IRON DEFICIENCY

From irritability to headaches, signs of the condition can be wide-ranging, according to Dr. Angove.

Hence, they're often overlooked. The most common sign is fatigue, but others include:

- Pale skin
- Weakness
- Shortness of breath
- Headache
- Dizziness
- Cold hands and feet
- Brittle nails
- Pica (craving nonfood items)
- Restless legs syndrome
- Irritability
- Poor concentration

When checking for iron deficiency, Dr. Angove recommends including tests for ferritin, serum iron, total iron binding capacity, iron saturation, and complete blood count.

### HOW TO OPTIMIZE IRON LEVELS

There are two dietary iron types: heme iron, in animal products such as meat, seafood, and poultry, and nonheme iron, in plant foods such as beans, greens, and fortified grains.

"While we absorb the heme iron found in animal products more efficiently, we can increase our absorption of nonheme iron by pairing it with a source of vitamin C, such as citrus fruits, strawberries, kiwi, or bell peppers," registered dietitian Laura Kauffman told The Epoch Times.

Iron supplementation is often recommended for deficiency (ferritin under 25 ng/mL) and during pregnancy but can cause gastrointestinal issues such as abdominal pain and constipation. To avoid them, Dr. Angove recommends hydrolyzed whole protein chelate iron supplements.

Eating more foods rich in iron is also an option.

NEXT WEEK

How you can be prepared for the stress of surgery.



FOOD AS MEDICINE

# Exploring the Anti-Cancer Properties of Green Tea

Decades of research have revealed how green tea achieves its anticancer effects

By Alexandra Roach

Green tea's anti-inflammatory and anticancer effects are well-studied and could offer some peace of mind to anyone afraid of developing cancer or facing the trials of cancer treatment.

Decades of research have looked at green tea's cancer-fighting prowess, including a study published in 2022 in the International Journal of Molecular Sciences that demonstrated that the catechins (phytochemicals) found in the leaves of green tea can prevent a variety of cancers.

Green tea is also a promising angiogenesis inhibitor. This means its active components can prevent the development of new blood vessels from a pre-existing vasculature. Cancer triggers the creation of these new blood vessels in order to feed the tumor.

A study in Biomedicine and Pharmacotherapy goes even further stating, "Green tea and its polyphenolic substances (like catechins) show che-

mo-preventive and chemotherapeutic features in various types of cancer and experimental models for human cancers." Chemo-preventatives are substances that prevent cancer while chemotherapeutics are substances that treat cancer.

These findings aren't new. Studies published as early as 2003 and 2006, both in the International Journal for Cancer, report the same results—the consumption of green tea potentially inhibits the formation of new blood vessels (angiogenesis) and therefore reduces the risk of developing certain forms of cancer.

The effectiveness of green tea polyphenols (GTP) and its constituent epigallocatechin gallate (EGCG) in tumor regression was also shown by research published in Cancer Letters in 2007. In this animal study, mice were inoculated with human breast cancer MDA-MB-231

cells. Scientists considered the treatment with GTP and EGCG as "effective in delaying the tumor incidence as well as reducing the tumor burden."

## Active Components in Green Tea

Catechins are the responsible active healing agents in *Camellia sinensis*, green tea's scientific name. They neutralize reactive oxygen and nitrogen species. Their derivatives include epicatechin, epigallocatechin, epigallocatechin gallate (EGCG), and EGCG, the latter being the most potent anti-inflammatory and anticancer agent of all

catechins.

A study published in Biochemical Pharmacology researched EGCG and verified its apparent abilities as a powerful antioxidant, preventing oxidative damage in healthy cells. The compound isn't only anti-

giogenic but also has the ability to change the cell's response to chemotherapy. Therefore, EGCG is called an anti-tumor agent.

The scientists add that "EGCG has great potential in cancer prevention because of its safety, low cost, and bioavailability," which stands in stark contrast to other cancer drugs, preventative in nature, or as a treatment. Tamoxifen and Raloxifene, for instance, are two commonly prescribed medications for the prevention of breast cancer. The average cost of a 30-day supply is about \$90 without insurance. For insured patients who receive a prescription for EGCG from their doctor, the out-of-pocket cost might be as low as zero dollars. EGCG can increase the bioavailability of Tamoxifen and enhance the cytotoxicity of Raloxifene so talk to your doctor about drinking green tea if you are on these drugs.

## Quality Matters

The origin and type of green tea leaves matter. Unfermented green tea is the best source of tea's healthy

5 CUPS PER DAY

A pooled analysis of prospective studies found that the consumption of at least five cups of green tea per day is associated with lower risks of death from all causes.



Green tea's effect is influenced by its quality, quantity, and concentration.

AFRICA STUDIO/SHUTTERSTOCK

INTENTIONAL LIVING

# The Lost Pleasures of Focus

Focus delivers some of the most enduring and satisfying pleasures of life

By Mike Donghia

These days, so many people think of focus as just another life hack to increase their productivity. And sure, focused people do get more done, but I think this mindset sells focus short by treating it merely as a means to an end.

In fact, focus is one of the surest paths to a richer, more enjoyable life. Focus is good because it directly brings us many of the things we most desire—a sense of peace, the cultivation of curiosity, and the beauty of clarity—among other gifts.

The flaw in our thinking is the industrial mindset that we've carried over from the world of business and economics. We measure a day in terms of the amount we get accomplished or the degree of self-improvement attained, instead of the beauty, grace, or art of living it.

The end result is an impoverished view of human thriving, one that relies on the constant treadmill of more productivity in order to keep feelings of dissatisfaction at bay.

But in this hectic modern world, it's still possible to live a calm and focused life. Imagine how your life would be different if you looked to focus not as a tool for getting more done, but as a way to unlock new pleasures amid the ordinary rhythms of your day.

## The Magnificence of Gentle Pleasures

Before we look more closely at those particular gifts, I'd like to mention an important quality of the pleasures of focus: These pleasures cannot compete in intensity or immediacy with the pleasures of quick dopamine hits that you may get from scrolling social media, eating a donut, or playing a video game.

The pleasures of focus, like so many of life's great pleasures, are gentle and quiet, but in their magnificent whole, they are far more satisfying than you'll find anywhere else. They aren't "addictive" in the way that more acute pleasures are, which leave you desperate for more and more. The pleasures of focus leave you feeling satisfied with life and optimistic, instead of groggy,

disappointed, and scatter-brained. That's been my experience, anyway. The only way to know is to commit to this way of being yourself, even if you must first pass through a stage of readjusting your senses to the new, and perhaps more natural, sensations of a focused life.

## The Daily Gifts of a Focused Life

Let's look more closely at the gentle pleasures of focus, and consider your own circumstances in comparison. Focus gives you moment-to-moment clarity.

How good it feels to know you are doing exactly what you intend to be doing. Focus allows you to choose once and then to stick with a task until its completion or the time you decide to stop. Without the constant weighing of options, your mind is unburdened from deciding and is released into a happy state of clarity.

Focus encourages a new set of values.

It teaches you to appreciate the activity in front of you at this moment

compounds, a 2020 study published in the International Journal of Molecular Sciences found. When buying tea for medicinal reasons, differences in quality affect the amount of catechins and their antioxidant activity.

A peer-reviewed Polish study published in 2018 had the goal of evaluating these markers, as well as the metal content (K, Na, Ca, Mg, Fe, Mn, Cu, Zn, Cr, Pb, Cd, and Ni) in the leaves. The observation included tea types cultivated in Japan, Sri Lanka, South Korea, India, China, and Japan with the following results:

- The highest amounts of catechins were observed in green tea samples from Korea and Japan. Teas from Nepal, India, and China were found to have the lowest concentration of these molecules.
  - EGCG as the primary catechin was only found in one tea sample, which originated from China. Other samples were dominated by the metabolite EGC.
  - Green teas from Sri Lanka showed the highest value of antioxidants. Whereas the highest EGCG concentration was found in a Japanese Sencha.
  - Testing called principal component analysis revealed positive correlations between the EGCG content and the elements of copper (Cu) and calcium (Ca). Among others, both calcium and copper are considered essential minerals for human health. The latter was found in its highest concentration in original and blended green teas from China.
  - Polyphenols, which are naturally occurring in plant foods and are beneficial for heart health, were traced back to samples of Korean Jeoncha tea. Japanese Matcha displayed the highest amount of chromium.
  - Some teas were also heavily contaminated by toxic heavy metals. In general, this was the case in tea samples that originated in China and India. However, the paper emphasizes that "these values were far below appropriate norms for green teas."
- The study concludes: "Taking all obtained data into account, Jeoncha may be considered to have the best quality from all investigated green teas within the present study, followed by Japanese green tea samples."
- Some sources state that EGCG is most active, abundant, and condensed in matcha, which is considered the highest quality tea due to its unique chemical composition, prized flavor, and health-promoting properties, such as a high content of antioxidant and anti-inflammatory substances.

## Types of Cancer Affected

According to the aforementioned study in the International Journal of

Molecular Sciences, green tea catechins are widely described to be efficient in the prevention of lung cancer, breast cancer (reduced percentage mammographic density), esophageal cancer, stomach cancer, liver cancer, and prostate cancer.

In addition to quality, the quantity and concentration of green tea are also important for its efficacy. Published in Cancer Causes & Control, a Japanese study suggests that drinking seven or more cups of green tea per day decreases the odds ratio of stomach cancer to 0.69 compared for those who drank seven cups a day compared to a baseline rate of 1 for those who rarely drank it. Occasional tea drinkers had a .62 odds ratio of colon cancer compared to a baseline of 1 for rare drinkers to 1. The study suggested occasional drinkers had a higher risk of rectum cancer, but other research found no impact.

To reduce the chance of gastric cancer by about 60 percent, individuals need to consume more than 250 g of green tea per month, a Chinese study reveals. This might also have protective effects on liver cancer, the study found.

Another Chinese study claims that drinking green tea seemed to have decreased the risk for the development of gastric cancer by 81 percent, liver cancer by 78 percent, and esophageal cancer by 39 percent among alcohol drinkers. Researchers even found a potential decrease in the risks of developing the three kinds of cancers among cigarette smokers, respectively by 16 percent, 43 percent, and 31 percent.

Specialists in the field have long reported on the chemo-preventative aspects of green tea. A review in Current Drug Targets from 2012 mentions "a large number of experimental studies using a variety of animal models," as well as "many epidemiological studies" that had been recorded.

Green tea catechins work without causing major side effects. They prevent the development and progres-



Drinking over 250 grams of green tea per month can lower the risk of gastric cancer by around 60 percent, studies suggest. SATOSHI K/GETTY IMAGES

sion of precancerous lesions, trials published in Molecular Nutrition & Food Research have shown.

## Favorite Beverage in East Asia

Green tea's biological effects, such as anti-mutation, anti-oxidation, and anti-tumor, certainly boost the popularity of East Asia's favorite beverage. Even consumers in North Africa, the United States, and Europe enjoy the tea more and more for its antioxidant and anti-cancer qualities.

A pooled analysis of prospective studies from the Asia Cohort Consortium, published in 2022 in the International Journal of Epidemiology, found that the consumption of at least five cups of green tea per day is associated with lower risks of death from all causes. Unfortunately, the findings remain controversial.

## More Research Needed

Summaries of many studies note the positive effects of green tea. However, most mention that a generalization of the outcomes isn't possible at this point, as much of the research has been conducted in East Asia, where the population is accustomed to the high consumption of green tea. Differences in diet and lifestyle also confound findings when compared to Americans. Researchers emphasize clearly that green tea can't replace standard chemotherapy. Nonetheless, its beneficial effects may support the standard anti-cancer approach.

The author encourages readers to continue to visit and to be treated by their health care professionals, including physicians. The author is not acting in the capacity of a doctor, licensed dietician-nutritionist, or other licensed or registered medical professional.

Alexandra Roach is a board-certified holistic health practitioner, herbalist, and movement teacher who has also worked as a journalist, TV news anchor, and author. She has earned citations from U.S. Army commanders for her work with military personnel and writes with a broad perspective on health.



Studies found green tea samples from Korea and Japan had the greatest concentrations of catechins. DOCTOREGG/GETTY IMAGES

and not to let your mind wonder what else you might be doing instead. It cultivates patience and depth, as you stick with a task long enough to learn its nuances and overcome its initial shallow difficulties.

Focus brings peace and calm to your spirit.

It isn't hard work that leaves us weary and stressed at the end of the day; it's the constant switching of contexts and jumping from one activity to another all day long. Focus is the antidote to this frenzied pace of life—a way to quiet the noise and distill your energies into a single task at a time.

Focus deepens curiosity and interest. People in a rush seldom have time to enjoy their work. Their happiness comes from finishing the job or daydreaming of the fruits of their labor. But, in my own experience, the slower pace of a focused life gives me enough mental whitespace for genuine interest to grow in my work. Focus is the mindset of a craftsman at work, while efficiency is the mindset of the machine.

Focus allows you to take in the

beauty of the ordinary.

A distracted mind, a hurried spirit, and anxious toil—they all steal from us the gift of noticing. But focus, by turning down the volume of distraction, amplifies our ability to see the quiet beauties of everyday life. Unlike the loud thrills of life, these pleasures get sweeter with time and familiarity.

Focus results in greater satisfaction. At the end of a day, it feels good to look back and see progress in the areas you care about. It feels good to have a quiet mind, rather than one overwhelmed, scattered, and stretched thin. In all of these ways and more, focus channels your efforts on fewer items and delivers satisfaction when looking upon the day's work.

Mike (and his wife, Mollie) blog at *This Evergreen Home* where they share their experience with living simply, intentionally, and relationally in this modern world. You can follow along by subscribing to their twice-weekly newsletter.



The joys of concentration leave you with a sense of contentment and a positive outlook.

URBAZON/GETTY IMAGES





# THINK TWICE

## Don't let these mistaken beliefs hold you back

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▲ While decades of research consistently suggests that thimerosal can be harmful, the CDC says this mercury-based vaccine preservative is generally safe.

# ‘Potent Neurotoxin’ Still Used in Some Flu Vaccines

Mercury-based thimerosal remains in flu shots despite links to autism and other conditions

By Megan Redshaw

More than two decades ago, a little-known mercury-based product, thimerosal, was approved by the Food and Drug Administration to be used as a vaccine preservative. Since then, many parents and scientific studies have questioned whether it's responsible for the current epidemic of neurological and developmental disorders, such as learning disabilities and autism.

In July 1999, U.S. health agencies and the American Academy of Pediatrics reduced or eliminated thimerosal from vaccines as a "precautionary measure."

Yet up to 25 micrograms of thimerosal remain in several versions of the influenza vaccines recommended this flu season—including those administered to pregnant women, infants, and children—and it's still present in some multi-dose vial vaccines, despite hundreds of studies showing that thimerosal is harmful.

"The [Centers for Disease Control and Prevention (CDC)] created the illusion that they were removing thimerosal from vaccines between 2001 and 2003 through the voluntary phase-out of its use as a preservative in the HepB, HiB, and DTaP vaccines. However, it was reintroduced into the prenatal/infant/child vaccination schedule via the flu

**In its various forms mercury is highly toxic, and exposure can harm the brain, heart, kidneys, lungs, and immune system.**

shot at the same time," Brian Hooker, chief scientific officer at Children's Health Defense, who holds a doctorate in biochemical engineering, told The Epoch Times in an email.

"In 2004, the CDC indicated that the mercury-containing flu shot could be given during any trimester of pregnancy, meaning that the developing embryo/fetus could be exposed to 25 micrograms of mercury."

**What Is Thimerosal?**  
Thimerosal is an organic mercury compound used since the 1930s as a vaccine preservative. It's approximately 50 percent mercury by weight and produces

*Continued on Page 14*

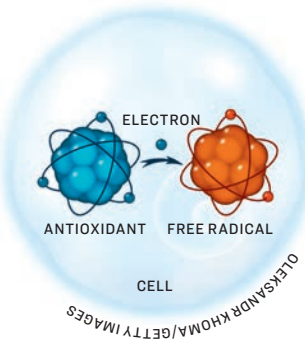
CELLS AND MOLECULES

By Marina Zhang

## The Scapegoating of Oxidation

This elemental cellular process is blamed for many diseases, but it also fights many others

Antioxidants neutralize free radicals by providing them a needed electron.



**The Primary Source of ROS**  
Let's talk a little about chemistry. Oxidation occurs when oxidants—also called reactive oxygen species (ROS)—steal electrons from other molecules. Oxidation occurs everywhere and every day; it's the browning of sliced apples left out, the rusting of iron pipes, and also the daily activity of your mitochondria. Mitochondria, the powerhouse of our cells, are also the body's primary producers of ROS. When mitochondria are producing energy, these oxidants are

formed as byproducts. Your body naturally and constantly balances against this process. Cells make antioxidants to address the amount of oxidants being produced. "There's a nice balance; the cells have figured that piece out," chiropractor and functional medicine practitioner Dr. Eric Balcavage told The Epoch Times. You only need to be worried when the balance is out of whack. Excessive oxidation, or oxidative stress, can damage cells and tissues. Oxidants may steal electrons from DNA and organelles, making them unstable. The latter then destabilize themselves by stealing electrons from other places, triggering a cascade of damage throughout the cell. Injuries, infections, and chronic diseases are often linked with periods of oxidative stress, and some studies sug-

gest that oxidative stress is the cause of the damage. **ROS Could Be Necessary and Protective** However, the common notion of oxidative stress might be a misunderstanding. The cell's tendency to go into oxidative stress is actually "not a bad thing when done at the right time and place," said Dr. Robert Naviaux, a professor of medicine specializing in mitochondrial disease and genetics at the University of California-San Diego. ROS production is a necessary and highly coordinated reaction to infection and toxins. Cells have a whole host of genes associated with ROS, Dr. Naviaux told The Epoch Times. During infections from pathogens, ROS are released as a signal

*Continued on Page 16*

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THE EPOCH TIMES

# EpochFun

Migraine headache and motion sickness both involve brainstem activation.



# ‘Potent Neurotoxin’ Still Used in Some Flu Vaccines

**[Mercury is] a potent neurotoxin and will destroy neurons on contact.**

Brian Hooker, chief scientific officer, Children’s Health Defense

Continued from Page 13

ethylmercury as a metabolite. This metabolite then changes to inorganic mercury in the body and accumulates primarily in the brain and kidneys.

According to the Environmental Protection Agency (EPA), mercury is a naturally occurring chemical element found in rock in the earth’s crust. In its various forms, mercury is highly toxic, and exposure to it can harm the brain, heart, kidneys, lungs, and immune system. Yet thimerosal present in vaccines is considered safe, according to U.S. health agencies.

When it comes to different forms of mercury, organic mercury is more toxic than inorganic mercury—which is mercury combined with other elements.

**Thimerosal Toxicity**

Mercury and mercuric compounds such as methylmercury, ethylmercury, and thimerosal have long been considered nephro- and neurotoxins.

“[Mercury is] a potent neurotoxin and will destroy neurons (via demyelination) on contact,” Mr. Hooker said.

Methylmercury—exposure to which occurs mainly through the consumption

of fish or inhalation of mercury vapors—is regarded as one of the most toxic nonradioactive substances known to man. Although methylmercury has received more attention, studies have shown that the effects of ethylmercury toxicity are comparable to methylmercury toxicity. Methylmercury and ethylmercury are the most prevalent forms of exposure for fetuses, newborns, young children, and pregnant and breastfeeding mothers.

Before thimerosal was removed from most vaccines, more than 30 U.S.-licensed vaccines contained thimerosal

## 5 Tips to Avoid Travel Migraines


If you’re taking a trip, remember these common migraine triggers and how to avoid them

By Kayla Laine


For migraine sufferers, the excitement of travel often comes at a painful price. The change in habits, schedules, climate, and even foods can swiftly trigger those pounding, nausea-inducing headaches.

But with informed preparation, venturing to new places without a migraine attack is possible. Avoiding the most common travel-related migraine triggers can lower headache risk and allow you to travel with more confidence.

Kayla Laine is a writer and producer with an education in neuroscience and career experience in documentary television, news, and health.



Pack healthy snacks to avoid migraine food triggers.



Migraine headache and motion sickness both involve brainstem activation.

**Motion Sensitivity**

Travel inevitably involves being a passenger in some sort of moving carrier, which can trigger migraines. Long drives or flights may cause some to avoid trips entirely. Nausea, headaches, and dizziness from motion sickness are also migraine symptoms.

Migraine headache and motion sickness both involve brainstem activation, and some research suggests that the two may even share the very same neural circuit, which is clusters of interconnected neurons that carry out specific functions when activated.

For motion-sensitive individuals, disturbances in these brainstem pathways brought about by moving images passing by the window of a car, boat, train, bus, or plane can increase migraine risk.

**Motion**

It’s easier to prevent symptoms than treat them once nausea or dizziness hits. Once pain signals from the head reach the brainstem, they can’t be reversed—the rest of the trip will be unpleasant.

So if you must use transportation that aggravates symptoms, schedule breaks during long trips. Pull over to a safe spot and take a moment to breathe, adjust your eyes, and move around to improve circulation.

As a passenger, pack an eye mask to limit visual disturbance and overload.

**Sensory Sensitivities**

Migraines often involve heightened sensitivity to sensory stimuli, which can worsen while traveling.

These sensitivities include phobias to light, sound, or touch; cognitive and mood changes; and allodynia, defined as any pain evoked by a stimulus that doesn’t normally provoke pain.

People prone to migraines usually have a lower sensory threshold, so they may react negatively to shifts in the environment such as air pressure, temperature extremes, fluorescent lighting, noise, crowds, and other exposures.

**Sensory**

Since migraines involve reduced sensory thresholds, it’s important to know your personal triggers and tolerance levels while traveling. Closely monitor and minimize exposures.

- Wear sunglasses or a wide-brimmed hat to reduce photophobia.
- Use noise-canceling headphones or earplugs to muffle loud sounds.
- Plan your days with printed maps to avoid crowds, long screen time, and temperature extremes.

Stay well hydrated to reduce migraine risk.

as a preservative. It has been estimated that children may have received 200 micrograms of ethylmercury from vaccines during their first six months of life—a value that far exceeded the EPA’s recommendations.

Although the CDC states that the “body eliminates thimerosal easily,” that it “does not stay in the body for a long time,” and the medicinal use of products containing thimerosal has a record of being “very safe,” this contradicts more than 75 years of research from independent scientists who have consistently found thimerosal to be harmful.

“Mercury is the second-most-toxic naturally occurring element on the planet. It is preposterous to include it as an additive in any vaccine,” Mr. Hooker said.

Once administered, thimerosal—a thiosalicylate salt of ethylmercury—quickly dissociates from thiosalicylic acid and binds to blood and other tissues, according to a paper published by the Immunization Safety Review Committee established by the U.S. Institute of Medicine.

The toxic effects of organic forms of mercury can remain in tissues, especially in the brain, for many years because of the retention of released inorganic mercury—which occurs at a greater rate for ethylmercury than for methylmercury, according to neuropharmacologist and thimerosal expert Richard Deth.

He says that the belief that thimerosal is safe based on lack of entry into the brain is “patently false.”

A study by Thomas Burbacher et al. in which thimerosal was administered intramuscularly to infant monkeys at weekly intervals as a vaccine at a level comparable to what human infants receive during vaccination. Researchers assessed mercury levels in the blood and brain and compared the levels with orally administered methylmercury. Although researchers found thimerosal-derived ethylmercury was cleared more readily from blood and was present in lower amounts as compared with methylmercury in the brain, they observed significant entry into the brain and found that a greater proportion remained in the brain long term as compared with methylmercury.

“Accordingly, at equal doses, thimerosal carries a higher risk of producing neurological impairments than methylmercury [does],” Mr. Deth said, referring to the Burbacher study findings.

**Before thimerosal was removed from most vaccines, more than 30 U.S.-licensed vaccines contained thimerosal as a preservative.**

**Link to Neurodevelopmental Disorders**

Decades ago, U.S. health agencies acknowledged that it was biologically plausible that thimerosal exposure through childhood vaccinations could cause neurodevelopmental disorders and harm the kidneys. Still, there had been no published, controlled epidemiological studies on thimerosal-containing vaccines and neurological disorders.

The CDC states on its website that “data from many studies show no evidence of harm caused by the low doses of thimerosal in vaccines,” yet hundreds of studies—including CDC studies—show the opposite. In one study, CDC epidemiologists analyzed data from the Vaccine Safety Datalink and found a 7.6 times increased risk of autism from exposure to thimerosal during infancy.

According to a 2014 paper published in BioMed Research International, the CDC’s stance that thimerosal is safe and doesn’t cause or contribute to autism is based on six studies coauthored or sponsored by the CDC in the late 1990s.

“Conceivably, if serious neurological disorders are found to be related to thimerosal in vaccines, such findings could possibly be viewed as damaging to the vaccine program,” researchers wrote.

Parents of 5,600 families of children diagnosed with autism had previously filed claims with the National Vaccine Injury Compensation Program alleging that their children developed autism after receiving thimerosal-containing vaccines. The Omnibus Autism Proceedings, held from 2007 to 2008, examined these claims.

Studies examining the effects of thimerosal on infants and children show that thimerosal may cause death, acrodynia, poisoning, allergic reaction, malformations, autoimmune problems, Well’s syndrome, developmental delay, and neurodevelopmental disorders, including autism.

A 2004 comparative study using CDC data to evaluate the effects of the MMR vaccine and mercury from thimerosal-containing childhood vaccines on the prevalence of autism found a “statistically significant odds ratio” for the development of autism following increasing doses of mercury from thimerosal-containing vaccines. Researchers said their results aligned with other studies showing a “biological plausibility and epidemiological evidence” of a direct relationship between increasing doses of mercury from thimerosal-containing vaccines

and neurodevelopmental disorders.

A study published in Pediatric Rehabilitation using CDC data from the Vaccine Adverse Event Reporting System (VAERS) and the U.S. Department of Education evaluated whether mercury from thimerosal in childhood vaccines contributed to neurodevelopmental disorders. Results showed an increase in neurodevelopmental disorders from both data sets “closely linearly correlated with increasing doses of mercury from thimerosal-containing childhood vaccines.”

A 2003 study published in the International Journal of Toxicology compared children who had received diphtheria-tetanus-acellular pertussis (DTaP) thimerosal-containing vaccine to a group of children who had received a thimerosal-free version of the vaccine administered from 1997 through 2000 and assessed adverse events reported to VAERS. Results showed children who had received the thimerosal version of the vaccine experienced “significantly increased odds ratios” for autism, mental retardation, speech disorder, personality disorders, and thinking abnormalities.


These results coincided with previously published epidemiological evidence showing an association between thimerosal-containing childhood vaccines and neurodevelopmental disorders and a two- to six-fold statistically significant increase in reporting rate of neurodevelopmental disorders to VAERS following thimerosal-containing DTaP vaccines, according to the study.

A 2006 ecological study found significant reductions in the proportion of neurodevelopmental disorders reported to VAERS as thimerosal was removed from childhood vaccines in the United States from mid-1999 onward.

Aside from research on thimerosal’s potential link to neurodevelopmental disorders, U.S. health agencies haven’t adequately studied how thimerosal interacts with other heavy metals in vaccines, such as aluminum—a neurotoxin associated with its own adverse effects—nor has the agency studied the cumulative effects of administering multiple vaccine doses containing these ingredients to children.

The CDC didn’t respond to a request for comment.

*Megan Redshaw is an attorney and investigative journalist with a background in political science. She is also a traditional naturopath with additional certifications in nutrition and exercise science.*

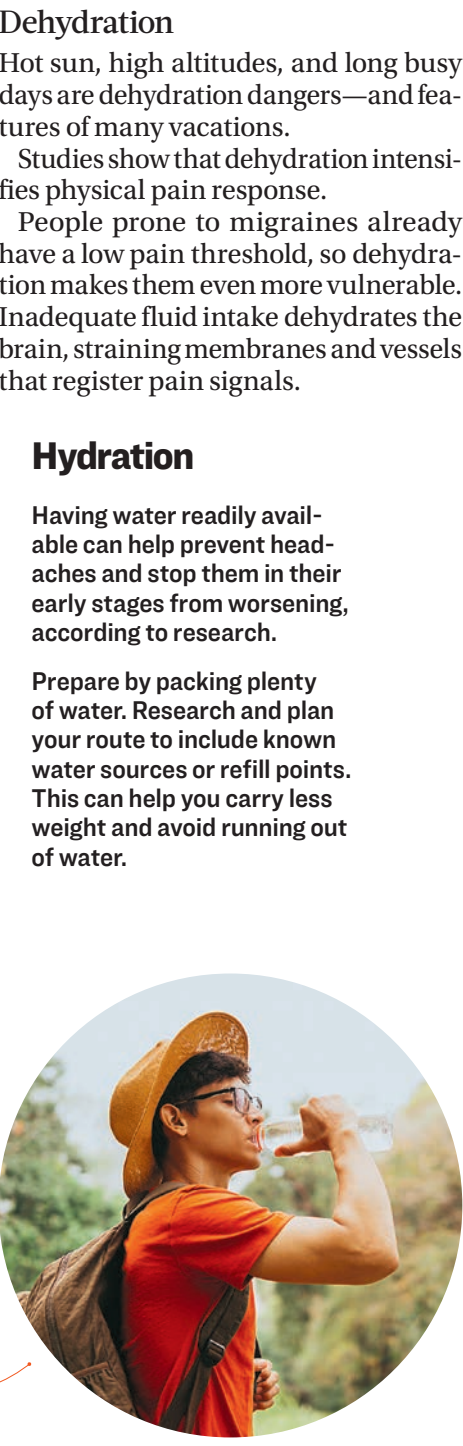


Up to

# 25

MICROGRAMS

of thimerosal remain in several versions of the influenza vaccines recommended this flu season.

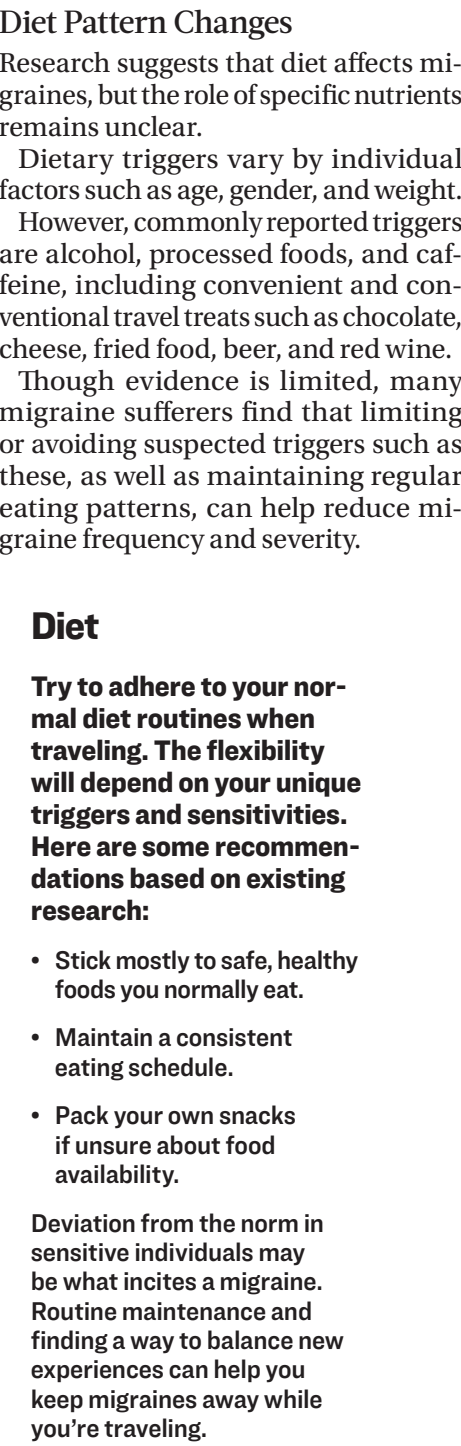


Dehydration

Hot sun, high altitudes, and long busy days are dehydration dangers—and features of many vacations.

Studies show that dehydration intensifies physical pain response.

People prone to migraines already have a low pain threshold, so dehydration makes them even more vulnerable. Inadequate fluid intake dehydrates the brain, straining membranes and vessels that register pain signals.



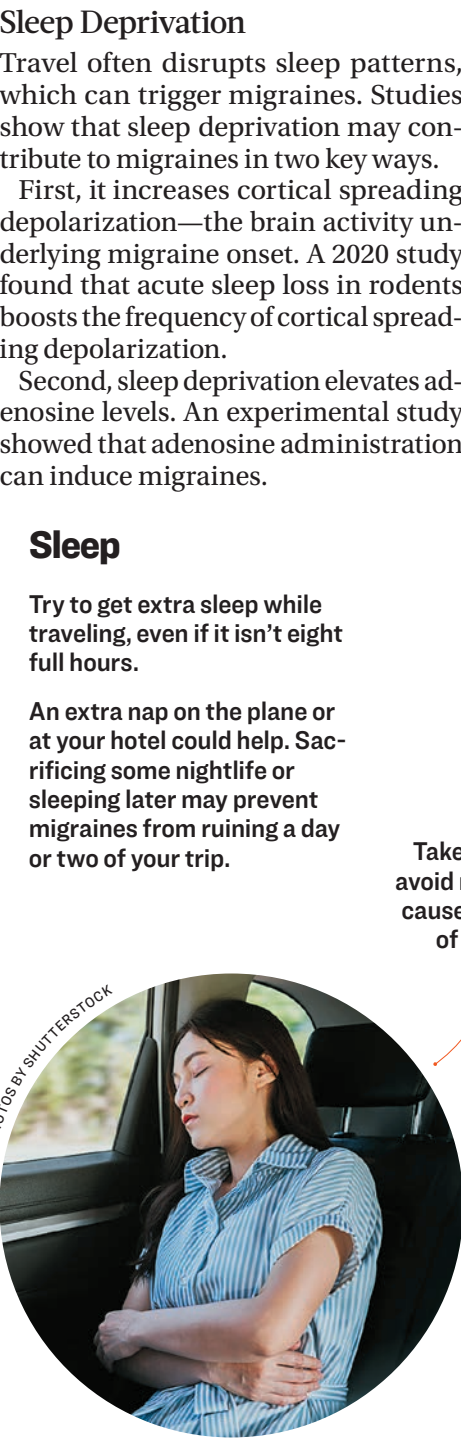
Diet Pattern Changes

Research suggests that diet affects migraines, but the role of specific nutrients remains unclear.

Dietary triggers vary by individual factors such as age, gender, and weight.

However, commonly reported triggers are alcohol, processed foods, and caffeine, including convenient and conventional travel treats such as chocolate, cheese, fried food, beer, and red wine.

Though evidence is limited, many migraine sufferers find that limiting or avoiding suspected triggers such as these, as well as maintaining regular eating patterns, can help reduce migraine frequency and severity.

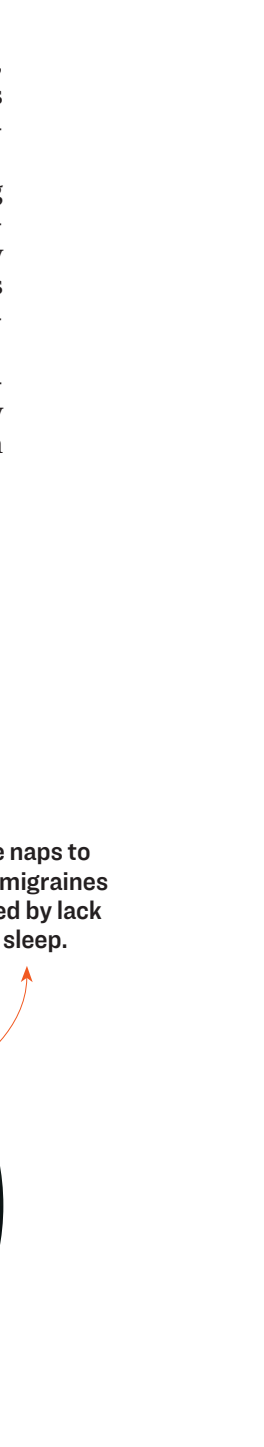


Sleep Deprivation

Travel often disrupts sleep patterns, which can trigger migraines. Studies show that sleep deprivation may contribute to migraines in two key ways.

First, it increases cortical spreading depolarization—the brain activity underlying migraine onset. A 2020 study found that acute sleep loss in rodents boosts the frequency of cortical spreading depolarization.

Second, sleep deprivation elevates adenosine levels. An experimental study showed that adenosine administration can induce migraines.




Sleep

Try to get extra sleep while traveling, even if it isn’t eight full hours.

An extra nap on the plane or at your hotel could help. Sacrificing some nightlife or sleeping later may prevent migraines from ruining a day or two of your trip.


Take naps to avoid migraines caused by lack of sleep.



Hydration

Having water readily available can help prevent headaches and stop them in their early stages from worsening, according to research.

Prepare by packing plenty of water. Research and plan your route to include known water sources or refill points. This can help you carry less weight and avoid running out of water.



Diet

**Try to adhere to your normal diet routines when traveling. The flexibility will depend on your unique triggers and sensitivities. Here are some recommendations based on existing research:**

- Stick mostly to safe, healthy foods you normally eat.
- Maintain a consistent eating schedule.
- Pack your own snacks if unsure about food availability.

Deviation from the norm in sensitive individuals may be what incites a migraine. Routine maintenance and finding a way to balance new experiences can help you keep migraines away while you’re traveling.



# Inaccuracies Plague Death Certificates, Experts Say

Death certificate inaccuracies may skew health policies, concealing true health crises

By Sheramy Tsai

**93%**  
93 percent of Vermont's death certificates displayed errors in their ICD-10 coding—a diagnostic foundation from 1949 that underpins national mortality statistics.

In 2020, a family mourning the loss of their elderly matriarch to Alzheimer's was stunned to find "COVID-19" listed as a concurrent cause on her death certificate. The woman had never been tested for the virus, and no family members had contracted it. Her passing showed no signs of COVID-19; she breathed easily until the end.

The case isn't an isolated one. Researchers have found that death certificates across the country are rife with unsettling discrepancies, casting doubts on the reliability of our health records and health care priorities.

## Public Health Consequences of Erroneous Death Certifications

Death certificates arm epidemiologists with vital insight into disease patterns. Beyond pinpointing causes of death, they influence key policy decisions, steer research funds, and mold community initiatives.

"Inaccurate cause of death reporting compromises our mortality data, which is foundational to policy-making and resource distribution," Robert Anderson, chief of the Mortality Statistics Branch at the National Center for Health Statistics, told The Epoch Times. "The risk is that policies and resource allocation may be misguided."

The ripple effects of such inaccuracies stretch wide. For instance, there are signs that cardiovascular disease is over-represented in mortality data while pressing issues such as medical errors, adverse vaccine outcomes, and maternal deaths might be underestimated.

## Unearthing Death Certificate Discrepancies

The Electronic Death Registration System (EDRS) moved death reporting beyond paper's limitations, offering real-time reporting opportunities. Yet even when most U.S. states embrace the EDRS, ensuring accuracy of cause-of-death documentation remains an uphill battle.

Evidence of this challenge emerged in a 2017 collaborative study by the CDC, the Vermont Department of Health, and the Vital Statistics Cooperative Program. They scrutinized Vermont's EDRS

and found glaring issues; more than half of the 601 death certificates examined bore significant flaws. A staggering 51 percent masked the true causes of death with major inaccuracies. Alarming, 93 percent displayed errors in their ICD-10 coding—a diagnostic foundation from 1949 that underpins national mortality statistics.

And a University of Wisconsin study found that 85 percent of death certificates contained errors. The authors wrote, "The majority of the errors detected on review of death certificates at our institution were not due to novel findings at autopsy, but rather omissions of known conditions or illogical sequencing of known events leading to death."

## Unequipped Doctors

Physicians face two critical challenges in recording accurate death certifications: inexperience and a conspicuous lack of training.

When confronted with their first patient deaths, young physicians frequently turn to senior colleagues for guidance. However, these seasoned doctors, often absent at the time of the patient's passing, are sometimes ill-equipped themselves, lacking formal certification training.

"Most physicians receive no training on how to properly certify the cause of death," Mr. Anderson said.

A survey across multiple institutions revealed that 76 percent of nearly 600 resident physicians lacked formal training in death certification. When presented with a case involving urosepsis, a grave urinary tract infection, 77 percent faltered, and almost half mistakenly attributed the death to a cardiovascular event.

This lack of training is intensified by deteriorating doctor-patient dynamics. Frequently, the doctor tasked with drafting the death certificate has little connection with the deceased, leaning heavily on potentially incomplete medical records. This can cloud the doctor's understanding of the patient's health trajectory. In cases such as home hospice deaths, the certifying physician may never have spoken with the patient.

**The listed cause of death can often overshadow a multitude of underlying conditions that indirectly led to that final moment.**

Very few doctors are trained in how to complete a death certificate and sometimes the doctor completing the certificate isn't very familiar with the patient's medical history.

## The Challenge of Determining Cause of Death

Recording a person's cause of death isn't a matter of merely checking some boxes. It's a detailed process steered by the World Health Organization's guidelines. A physician, medical examiner, or coroner must meticulously examine the deceased's medical history.

Pinpointing the precise cause of death without resorting to vague terms such as "cardiac arrest" is difficult.

Once these certificates pass verification, they become public records, highlighting the immediate cause of death rather than the deceased's entire medical history.

Herein lies an inherent challenge: interpretation. Doctors can have different views on why a given patient died, especially if the patient has multiple chronic conditions and, for instance, an acute infection. The CDC states, "Causes of death on the death certificate represent a medical opinion that might vary among individual physicians."

The linchpin of these certificates is the underlying cause recorded on Part I's conclusive line. This pivotal diagnosis is then translated into an alphanumeric code that syncs with WHO's International Statistical Classification of Disease (ICD-10). This ensures a consistent global reading of mortality data.

The underlying cause of death identifies either the disease that set off a series of health complications or the specific incident, such as an accident or violent act, that led directly to death. It can also record root factors such as prior heart attacks or coronary artery diseases that contributed to the final outcome.

For public health strategies, it's important to understand not only the finality

**Most physicians receive no training on how to properly certify the cause of death.**

Robert Anderson, chief, mortality statistics branch, National Center for Health Statistics

of death but also its inception. Pinpointing root causes, such as identifying that Type 2 diabetes mellitus was behind end-stage renal disease, sharpens the focus for targeted prevention and disease mortality tracking. Unfortunately, this is often difficult to capture.

## Unraveling Death's Underlying Narratives

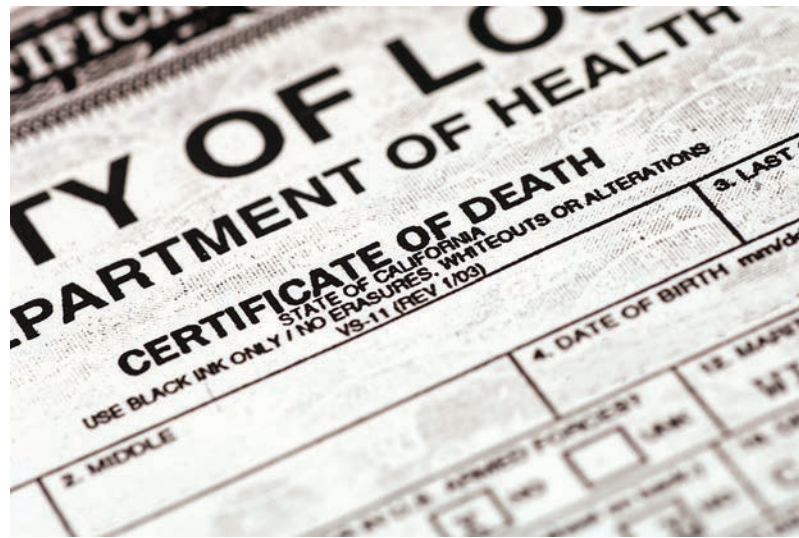
Death certificates, though a final record of a person's journey, often oversimplify complex medical histories. The listed cause of death can often overshadow a multitude of underlying conditions that indirectly led to that final moment.

Take, for instance, a person with Type 2 diabetes mellitus. Although heart disease, a common consequence of diabetes, might be penned as the direct cause of death, diabetes' critical role often remains obscured. This selective portrayal doesn't just misrepresent diabetes fatalities; it skews broader health trends.

Research consistently indicates that cardiovascular disease is overrepresented as a primary cause of death, potentially masking emerging health threats and intervention opportunities. Connecticut Chief Medical Examiner Dr. James R. Gill said: "Cardiopulmonary arrest is essentially a synonym for death. Every death, no matter the cause, results in a cardiopulmonary arrest."

The CDC notes that although heart disease often fills uncertain causes because of its prevalence, its representation across states, at 20 to 30 percent, suggests the issue may not be as widespread as perceived. In today's health landscape, new concerns are emerging. For example, deaths potentially linked to vaccination side effects remain a quandary, with the traditional death certificate lacking the nuance to capture these specifics.

Another significant gap is the lack of categories for medical errors. For instance, if a drug error in a hospital hastens the death of a cancer patient, "cancer" usually dominates the certificate's cause-of-death section. A 2016 study by Johns Hopkins highlights this omission. Dr. Martin Makary, from Johns Hopkins, said, "The medical coding system was crafted more for billing purposes than gathering crucial national health data." The COVID-19 pandemic added its own



Significant flaws were found in over 50 percent of 601 death certificates analyzed in the Vermont study.

set of complexities into this already intricate system. The CDC states that when a precise COVID-19 diagnosis is elusive, death certificates may bear the "probable" or "presumed" tag. But this, in some cases, risks unintentional inflation of COVID-19 death stats.

Addressing these concerns, the CDC remarked to The Epoch Times: "We do not believe that COVID-19 statistics are inflated. If anything, we probably continue to underestimate to some extent as some certifiers will not report causes of death without confirmation, despite the guidance."

## Toward a Precise Future: Mending the Gaps

Fixing problems in the death certification process requires new approaches and basic skills.

Key industry figures, including Mr. Anderson, emphasize a pressing need: comprehensive, up-to-date training for health care professionals. "We have developed materials for such training," Mr. Anderson said. "The challenge lies in effectively disseminating these materials and ensuring physicians actively participate."

Those could include "The Physician's Handbook on Medical Certification of Death," which was revised in 2023 for the first time in 20 years. This essential guide tells medical professions how to navigate the U.S. vital registration system and how complete death certificates properly.

Training isn't the sole remedy, however. New tools such as advanced electronic medical records and real-time AI insights to refine accuracy may help. Mr. Anderson said that groundbreaking endeavors linking medical records with electronic death registration could offer certifiers a fluid transition to relevant medical data during the certification process.

Despite advancements, the human element is still important. For families who've lost loved ones, the labyrinth of health care isn't just a system but a deeply personal journey. Precision matched with a heartfelt touch is profoundly important in every facet of health care documentation.

**76%**

76 percent of nearly 600 resident physicians surveyed lacked formal training in death certification



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This elemental cellular process is blamed for many diseases, but it also fights many others

Continued from Page 13

and weapon.

Pathogens such as bacteria, fungi, viruses, and parasites steal or divert the cell's electrons and fuel for their own use. Mitochondria respond by reducing energy production and increasing oxidative stress to deter invaders.

Immune cells release ROS to eliminate forthcoming pathogens and break down pathogens and infected cells. T cells, which form the final line of defense, use hydrogen peroxide—also an oxidant—to punch holes in infected cells and bacteria.

But constantly being in a state of oxidative stress isn't healthy for the body, either, and neither is the long-term discomfort it causes.

On the other hand, people who can't generate ROS can have disastrous health outcomes.

The most damaging pro-inflammatory disorder currently known is chronic granulomatous disease, according to Dr. Naviaux. Children with this disease are genetically unable to make superoxide, a class of ROS.

"The body's reaction to this [deficiency] is an intensified inflammation that is so bad that [patients] can have severe, erosive sinus infections [that

can erode cartilage in their nose," he said.

## Oxidation to Cope With Disease

Oxidative stress may also be a sign of the body trying to adapt to chronic disease the best way that it can.

One example is the increase in oxidation to adjust to nutritional excess, otherwise known as overeating—the driver of Type 2 diabetes.

Research has shown that in people with Type 2 diabetes, the body becomes less inclined to use oxygen to break down glucose, thus producing less energy. The oxygen in the cells is converted to oxidants and exported from the cell for disuse.

Since aerobic respiration, which uses oxygen to create energy, occurs under normal health conditions, many researchers consider a decline in such respiration to be a sign of mitochondrial dysfunction.

However, an alternative explanation is that this shift is deliberate and may be the body's best way to handle nutrition and energy excess, according to Dr. Naviaux.

Nevertheless, this metabolic shift can become a chronic problem because, over time, the body reduces its demand for oxygen. This leads to fewer blood

vessels and tissues becoming chronically deprived of oxygen, which can manifest as peripheral vascular disease, ischemia, loss of organ function, and heart failure.

Other adaptations have been observed in patients with chronic obstructive pulmonary disease (COPD).

"People with COPD are very uncomfortable doing exercise because they can't breathe very well. So what ends up happening is these individuals end up being very inactive and sedentary," professor Martin Picard, who specializes in mitochondrial research at Columbia University, told The Epoch Times.

He noticed that in COPD patients, mitochondrial volume is reduced, and oxidation is increased due to reduced demand for energy. However, the energy produced from individual mitochondria isn't much different from that of a healthy person.

## Oxidative Stress Is What Makes Exercise Beneficial

Oxidation is necessary in other ways, too.

Oxidation is what builds muscle endurance and energy efficiency after exercise. Taking antioxidants to combat oxidative stress may actually offset the benefits of exercise.

This was demonstrated in a 2009

German study by medical researcher Michael Ristow, who is renowned in the field of mitochondria and longevity. Forty men were recruited to go on a four-week training regimen. Half were also prescribed antioxidant supplements, including vitamins C and E, while the other half weren't given anything.

At the end of the study period, researchers found that the men who exercised but didn't take antioxidant supplements had improved biomarkers in insulin sensitivity and mitochondrial biogenesis. A reduced effect was seen in the men who took antioxidants.

The authors proposed that ROS during low and moderate exercise were beneficial stressors to the mitochondria, allowing them to adapt to the stress. Antioxidants, on the other hand, neutralize beneficial stress.

## Antioxidants: Good or Bad?

While antioxidants may be beneficial for short-term treatment, such as using vitamin C to manage an acute infection or using glutathione to treat liver toxicity due to an acetaminophen overdose, their long-term benefits have yet to be established.

Dr. Naviaux has observed that there's an assumption in medicine that interventions that work in acute disease will also work for chronic diseases. How-

ever, he said such diseases require very different treatments.

"This is the difference between what I called the 'First Book of Medicine' for the treatment of acute illness and injuries and the 'Second Book of Medicine' for the treatment of complex chronic diseases," he said.

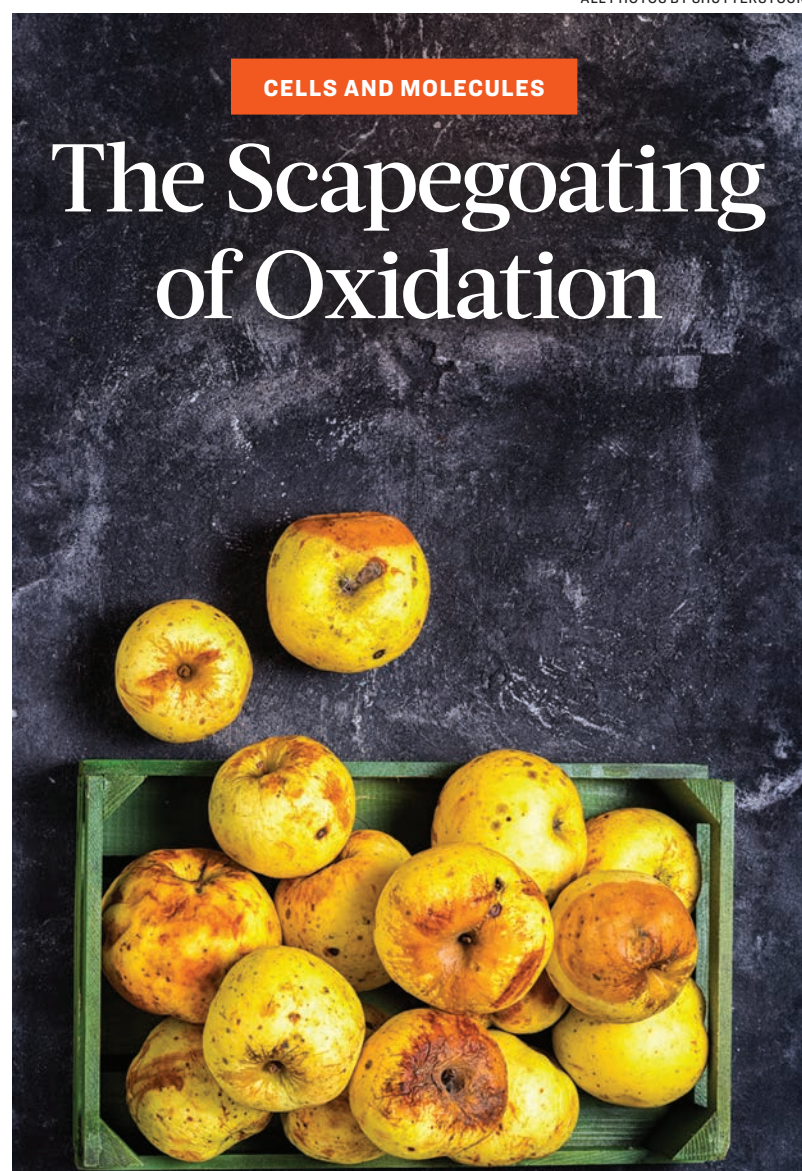
**Immune cells release reactive oxygen species to eliminate forthcoming pathogens and to break down pathogens and infected cells.**

Some antioxidants are very complex molecules, and, depending on their interactions in the body, they can behave both as antioxidants and pro-oxidants.

Sulfuraphane is a phytonutrient from cruciferous vegetables such as broccoli that increases the cell's antioxidant reserve by first depleting antioxidants in the cell. Curcumin, for example, can both donate electrons (antioxidizing) or steal electrons (pro-oxidizing) due to having phenol groups in its structure.

When a molecule gains electrons, another must lose them.

"It is more about the dynamic interaction and not any short-term 'snapshot' that determines the long-term benefit," Dr. Naviaux said.



Oxidation is a common molecular process behind the browning of fruit. Inside the body, it creates benefits and problems.





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# Watercress: The ‘Most Nutritious’ Vegetable

This cruciferous vegetable combats cancer, lowers chronic disease risk, strengthens bones, and improves gut health

By Mercura Wang

With its peppery flavor, vibrant green color, and therapeutic effects, watercress has long been cherished as far more than just another salad green. This unassuming vegetable contains an astonishing concentration of vital nutrients for which it has been praised since ancient times, including as a cure for scurvy among sailors at sea.

Modern science is now revealing the secrets behind this superfood—and how it can help fight disease, strengthen the body, and add years to your life.

### Why Is Watercress Considered the Most Nutritious?

Watercress is packed with nutrients with a perfect nutrient density score of 100, meaning that it provides maximum nutrients for minimal calories. The score ranks watercress first among 41 common fruits and vegetables, outperforming even nutrient-dense greens such as spinach, kale, and broccoli. In other words, ounce for ounce, watercress delivers more essential vitamins and minerals than any other plant food.

In just 100 grams (about 3.5 ounces) of watercress, you get 95 grams of water, 2.3 grams of protein, 1.3 grams of carbohydrate, and 0.5 grams of dietary fiber. But it also contains a wealth of vitamins and antioxidants.

Watercress is high in vitamin C, with 100 grams (about three cups) containing 43 milligrams of vitamin C, about half the daily recommended dietary allowance for adults.

The leafy green contains even more vitamin A than mango, which is known for being high in this nutrient. Specifically, 100 grams of watercress provides 160 micrograms of vitamin A, meeting 18 percent of the daily value.

With 330 milligrams of potassium per 100 grams, watercress exceeds lettuce as a source of this essential mineral. This amount provides about 10 percent of the recommended daily potassium intake for adult men.

Watercress is exceptionally rich in vitamin K. A 100-gram serving contains 250 micrograms, more than twice the recommended daily intake for adults. This vitamin is key for blood clotting and bone health.

### Why You Should Eat More Watercress

Adding watercress to your meals can provide numerous health benefits.

Watercress has a list of noteworthy benefits, Emma Laing, director of dietetics at the University of Georgia and a national

spokesperson for the Academy of Nutrition and Dietetics, told The Epoch Times.

The antioxidants and anti-inflammatory compounds in leafy greens such as watercress have been shown to improve cardiovascular, gut, brain, eye, and bone health, according to Ms. Laing.

They may also help to prevent certain cancers, diabetes, and immune disorders, she said.



▲ Watercress has antioxidants and anti-inflammatory compounds that protect the heart, gut, brain, eyes, and bones.

### 1. Lowers Risk of Chronic Diseases, Including Cancer

Watercress contains a wealth of antioxidants that work to counteract free radicals in cells, shielding against or lessening the harm caused by oxidation by curbing inflammation in the body. All of this can lower the risk of certain chronic diseases, including heart disease and many types of cancer.

Specifically, research has found that cruciferous veggies such as watercress may decrease the risk of cardiovascular mortality. They can also potentially be used for heart protection.

Studies show that watercress extracts can lower cancer risk by reducing DNA damage and inhibiting tumor initiation, growth, and metastasis.

The antioxidant sulforaphane—abundant in watercress—can halt cancer cell growth and prompt cell death. It may confer protection by blocking carcinogen activation and regulating cell cycles.

Glucosinolates, sulfur-based compounds that give watercress its distinct aroma and zesty taste, are also associated with lowering the chance of cancer, according to Ms. Laing.

### 2. Manages the ‘3 Highs’

High blood pressure, high cholesterol, and high blood sugar are nicknamed the “three highs” because they often coexist with central obesity, together forming what’s known as metabolic syndrome.

• **BLOOD SUGAR LEVEL:** Researchers found that watercress extracts can improve blood sugar and lipid levels in diabetic rats, suggesting potential benefits for managing hyperglycemia (high blood sugar) and dyslipidemia (unhealthy fats) in humans. The fiber in watercress may also help to control blood sugar, as fiber can’t be broken down as with other carbs, preventing spikes.

• **CHOLESTEROL:** The same study on diabetic rats suggested that watercress extracts could significantly lower total and low-density lipoprotein (LDL) “bad” cholesterol after four weeks, as

The presence of dietary nitrates (in watercress) can enhance cardiovascular health by improving blood pressure and arterial stiffness.

Krutika Nanavati, registered nutritionist and dietitian

In just  
**100**  
GRAMS  
(about 3.5 ounces)  
of watercress,  
you get

**95**  
GRAMS  
of water, 2.3 grams  
of protein, 1.3 grams  
of carbohydrate,  
and 0.5 grams of  
dietary fiber. But  
it also contains a  
wealth of vitamins  
and antioxidants.

compared with control subjects. This reduction in lipids could decrease coronary disease risk. Another study in rats found that just 10 days of watercress extract supplementation reduced total and “bad” LDL cholesterol levels by 34.2 percent and 52.9 percent, respectively.

• **BLOOD PRESSURE:** Watercress has been used in traditional medicine to treat hypertension (high blood pressure). The potassium, magnesium, and calcium contained in watercress may lower blood pressure in patients with hypertension. In addition, “the presence of dietary nitrates (in watercress) can enhance cardiovascular health by improving blood pressure and arterial stiffness,” according to Krutika Nanavati, a New Zealand-based registered nutritionist and dietitian. Watercress also contains isoflavones that can lower high blood pressure by relaxing and widening blood vessels.

### 3. Strengthens Bones

Watercress’s abundant vitamin K, calcium, and isoflavones may help to maintain bone health.

Vitamin K helps in producing osteocalcin, a protein that strengthens bones. Studies link higher vitamin K intake to fewer hip fractures and improved bone density.

Calcium is also crucial for building strong bones. Isoflavones may stimulate osteoblasts (bone-building cells) and inhibit osteoclasts (bone-breaking cells), a meta-analysis of more than 700 studies found. Some studies have found increased bone mineral density with isoflavone intake.

### 4. Improves Gut Health and Enhances the Immune System

Watercress contains cruciferous vegetable derivative phenylethyl isothiocyanate, a potent antioxidant with anti-inflammatory, antibacterial, and anti-cancer effects. It may improve gut health by disrupting cell membranes and enzymes and causing cell death in harmful gut bacteria.

The dietary fiber in watercress can also increase bacterial diversity and maintain a healthy gut microbiome, which benefits the immune system.

With its abundance of immune-boosting vitamins A and C and antioxidants, eating watercress can support overall immune function.

### 5. Nourishes Skin and Hair

The many vitamins and antioxidants in watercress may promote healthy skin and hair.

“Its abundant vitamin A helps create healthy skin cells, decreasing problems like acne, dry skin, and early aging,” Ms. Nanavati said.

“Additionally, watercress’s iron, zinc, and biotin can aid hair health by strengthening hair follicles and encouraging hair growth.”

### 6. Hydrates the Body

With a 95 percent water content, watercress provides hydration almost like drinking water. As a natural diuretic, it can also help the body to flush out excess fluid and salt, reducing bloating, lowering blood pressure, and improving conditions such as hypertension.

### Potential Adverse Effects of Watercress

A sudden surge in vitamin K intake can lead to blood clotting, and a sudden drop in its consumption may pose a risk of bleeding. Therefore, people on blood-thinning medication such as warfarin should exercise caution when consuming watercress. Ideally, they should maintain a consistent daily intake of this vegetable.

Watercress contains high levels of nitrates that bacteria can convert to nitrites. Research links high or moderate nitrite intake to an increased stomach cancer risk, while nitrates may decrease risk.

### How to Best Eat Watercress

The peppery, slightly bitter taste of watercress makes it a versatile ingredient.

“Adding it to milder-tasting foods, such as eggs, cheese, rice, pasta, or stir-fry, pureed in a soup, or blending it into a pesto or a smoothie will improve its palatability,” Ms. Laing said.

You can also use watercress as a garnish for meats or fish, according to Ms. Nanavati.

When incorporating watercress into your diet, enjoy it in moderation as part of an overall balanced diet, she said.

# L-theanine to Boost Your Mood, Reduce Anxiety, and Help You Sleep

L-theanine increases alpha brain waves, reduces anxiety, combats cancer, and more

By Emma Suttie

Many of us already know the therapeutic effects of a good cup of tea, and science is starting to discover the reasons for those effects.

Tea leaves contain an amino acid called L-theanine, which imbues tea with its unique, umami flavor. L-theanine is a bioactive compound that also boasts an impressive list of health benefits, including antioxidant, anti-inflammatory, neuroprotective, and anticancer effects. It can also protect the heart, liver, and kidneys, regulate the metabolism, and support the immune system, according to a research review published in Frontiers in Nutrition.

Tea (*Camellia sinensis*) originated in China and is one of the most popular beverages in the world. The way that tea leaves are processed, such as through fermentation and baking, can change the color, smell, taste, and compounds of the tea.

Tea is usually divided into six categories depending on the level of fermentation that tea leaves go through—yellow, green, white, black, oolong, and dark tea.

There is also matcha tea—usually younger leaves that are ground up and consumed in their entirety—but we’ll be focusing on it in another article.

Each type has its own unique flavor, aroma, and health benefits. Even though the amount varies, all teas made from the *Camellia sinensis* plant contain L-theanine. It’s most abundant in green tea.

Caffeine and L-theanine have a synergistic relationship, and in combination, they have a unique effect on the brain, with research showing that they can improve mood and cognition.

L-theanine is also known as theanine, 5-N-Ethyl-Glutamine, and gamma-glutamyl-thylamide.



▲ Compounds in tea offer positive benefits, such as reducing depression, increasing creativity, and reducing anxiety.

### Reduces Anxiety and Stress

We could all probably use a natural way to help us manage anxiety and stress. Although these are natural responses to certain situations, when they are prolonged, or experienced at intense levels, they take a toll on us—physically and psychologically. After a long day, one of the best things you can do is curl up and enjoy your favorite cup of tea to gain the calming effects of L-theanine.

According to the latest federal data, 32.3 percent of adults reported symptoms of anxiety or depression in 2023, and that number is even higher—49.9 percent—in those aged 18 to 24.

A systematic review found that L-theanine in green tea helped to manage stress and anxiety levels in people exposed to stress-ful conditions. The findings suggest that supplementation with 200–400 milligrams (mg) of L-theanine daily assists in the reduction of stress and anxiety.

A randomized controlled trial published in Nutrients examined the effects of four weeks of L-theanine supplementation on stress-related symptoms and cognitive function in healthy adults. Researchers concluded that L-theanine may promote mental health in people with stress and other cognitive impairments.

In another randomized controlled trial on fifth-year university students about to enter their pharmacy practice, researchers wanted to determine whether theanine had an effect on the students’ levels of stress.

The students were split into two groups—both were to receive 200 mg of theanine or a placebo twice a day. The interventions (either theanine or placebo) were taken a week before the students entered their pharmacy practice and con-

Because we can’t always control the factors in our lives that affect how well or how much we sleep, having some natural remedies on hand is a good idea.

### Helps You Sleep

As a culture, we suffer from a chronic lack of adequate sleep, and as any insomniac (or new parent) can tell you, not getting enough good quality sleep negatively affects every aspect of life—from energy levels to the ability to think clearly. Chronic sleep deprivation is also associated with an elevated risk of chronic diseases such as depression, heart disease, diabetes, and obesity.

Because we can’t always control the factors in our lives that affect how well or how much we sleep, having some natural remedies on hand is a good idea to help us catch some of those elusive z’s.

While most medications used to induce sleep are sedatives—often associated with addiction and other side effects—L-theanine is unique as it isn’t a sedative and promotes good quality sleep through a process called anxiolysis, or the reduction of anxiety. L-theanine also promotes relaxation without drowsiness.

In a randomized controlled trial, ob-



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▲ Tea originated in China but is now grown in countries around the world.

tinued for 10 days into the practice period. The students’ anxiety was assessed using an anxiety test (the State Trait Anxiety Inventory) and a saliva test that measured sympathetic nervous system activity. The researchers found that subjective stress was significantly lower in the theanine group than in the placebo group.

### Increased Alpha Brain Waves

Human electroencephalograph studies show that L-theanine has a direct effect on the brain and that it significantly increases alpha brain waves, which is an indication that it relaxes the brain without causing drowsiness. However, one study notes that this effect is achieved only at doses higher than can be acquired from a cup of black tea (approximately 20 mg).

Alpha brain waves are one of five types of brain waves; the other four are delta, theta, beta, and gamma waves. Each type of brain wave is associated with different frequencies and occurs when people are in different states. Alpha brain waves occur when we are relaxed and usually arise when people are engaged in activities such as daydreaming, meditating, or practicing mindfulness. Research has shown that alpha waves have a number of positive benefits, such as reducing depression, increasing creativity, and reducing anxiety.

Another study, titled “200 mg of Zen: L-Theanine Boosts Alpha Waves, Promotes Alert Relaxation,” states that research with human volunteers has shown that L-theanine creates a sense of relaxation 30 to 40 minutes after consumption because it stimulates the production of alpha brain waves directly, creating a state of deep relaxation and mental alertness that is often achieved through meditation.

### Dosage and Toxicity

L-theanine is usually taken in doses of 100–200 mg a day. It’s often taken with caffeine but doesn’t have to be reaped its healing benefits. Its calming effects can usually be felt within an hour of taking it.

L-theanine also has very low toxicity. In fact, a rodent study using L-theanine failed to find any toxic effects using 4,000 mg of L-theanine per kilogram of body weight when used daily for 13 weeks.

Other animal studies have shown similar results with no detected toxicity even when using L-theanine at very high doses. L-theanine also seems to be safe to use in humans, with no known toxicity or adverse effects reported.

### L-theanine and Cancer

L-theanine has also been shown to be beneficial against cancer. Research has shown that L-theanine is able to increase the antitumor activity of some drugs used in chemotherapy.

In one study using mice, theanine was used to enhance the activity of the chemotherapeutic drug doxorubicin on ovarian cancer that had metastasized to the liver. The study found that theanine increased not only the antitumor activity on primary tumors but also the metastasis-suppressive effectiveness of the drug doxorubicin.

In another mouse study, theanine was found to increase the antitumor activities of the chemotherapy drug idarubicin while simultaneously decreasing its toxicity.

### Final Thoughts

Finding ways to help us stay grounded, manage stress, remain focused, and get more good quality sleep is a welcome addition to our hectic and complex modern-day lifestyles. With challenges such as depression and anxiety on the rise, medications may not always be necessary—relief might be achieved by curling up with a good cup of tea.

After a long day, one of the best things you can do is enjoy your tea and gain the rejuvenating effects of L-theanine.





JUICE FLAIR/SHUTTERSTOCK

WISE HABITS

# Learning to Surf the Uncertainty of Life

Chaotic moments offer some excitement and fun if we can take them lightly and find the flow

By Leo Babauta

When your circumstances change rapidly and an overwhelming number of things are coming at you, it can be tough to navigate.

Anyone doing anything significant will have a lot going on—emails and messages, lots of tasks, meetings, calls, and major changes every day. Uncertainty abounds.

How do we navigate these tumultuous waters?

The visual metaphor that works for me is surfing. I’m going to talk about how to surf uncertainty.

### Surf Uncertainty

What we really want is a simple, easy, straightforward path: no uncertainty, no tough decisions, nothing overwhelming.

But life is full of uncertainty—and abundance. That’s what makes it so beautiful!

So I like to imagine life as an ocean, full of unpredictable waves. If I were a surfer (I’m not), I wouldn’t curse the overwhelming number of waves, I would be thrilled. Waves are what I’m here for.

And I wouldn’t moan about how unpredictable the waves are—that’s what makes it fun!

To play out the metaphor, facing the uncertainty of waves, I would:

- Relish a new wave coming my way.
- Jump on the surfboard as the wave approaches, reading the wave as best I can.
- Have a direction I would like to go but navigate the wave as it breaks, learning to ride the wave I’m given.
- Try again if I’m knocked off.

This applies to my life, of course. Each day is a new wave, and the opportunity is to get excited by it, jump on, and ride it in the direction it flows as best we can.

My attitude is one of ease and acceptance of uncertainty and change, with determination toward a direction that I’ve chosen. I trust in myself to be able to navigate change.

What would that be like for you if you approached every day with this relaxed but determined attitude toward uncertainty?

### How to Learn to Surf Uncertainty

This kind of uncertainty surfing takes practice. It’s not as simple as saying, “OK, just surf and be relaxed and flow!” That might have some immediate effect, but long-term results will require practice.

The most important place to practice is at our edge—where things aren’t so easy but also not so challenging that it feels impossible. Where is your edge right now?

Each day is a new wave, and the opportunity is to get excited by it, jump on, and ride it in the direction it flows as best we can.

Maybe it’s chaotic mornings, maybe it’s taking on a challenging project, maybe it’s around difficult conversations.

Then when you find this edge, notice that you’re feeling uncomfortable. How are you relating to that uncertainty and the resistance and fear that come up in uncertainty? Do you wish you didn’t feel it? Do you want to flee from it to distraction or react to it in an unhelpful way? How does it feel? Bringing curiosity like this gives you awareness and the opportunity to work with it.

Now when you notice the uncertainty, see if you can take a “surf with ease and flow” approach. How can you flow in the direction you would like? Try to be a bit determined to have fun with it.

Play with this approach. See what you can create. Bring some lightness to it.

Then as you practice, notice that chaos and unexpected changes aren’t necessarily anything to stress about but simply something to flow with.

How can you still go in the direction you want as you flow?

Leo Babauta is the author of six books and the writer of Zen Habits, a blog with over 2 million subscribers. Visit [ZenHabits.net](http://ZenHabits.net)

The risks and uncertainties we face are our greatest opportunities for adventure and growth.



# THINK TWICE

## Don’t let these mistaken beliefs hold you back

MYTH

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We are in a worldwide war of ideas and worldviews. Only truth will save the nation, and each of us is responsible for keeping the truth alive.

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