

MIND & BODY

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NATURE IS MEDICINE

How to Use

Sunlight to Prevent Cancer

While excessive sun exposure is linked to skin cancer, too little may be a factor in higher rates of several cancers

Research is finding that the protective effects of less-intense solar UV radiation outweigh its potential mutagenic effect.

FLORA ZHAO

As spring takes hold and the sun beckons us outside, warnings about the dangers of sun exposure are sure to follow.

Over the past few decades, people have become increasingly aware of the risks associated with excessive exposure to ultraviolet (UV) radiation from sunlight, including skin cancer, photoaging, and cataracts.

However, appropriate sun exposure provides benefits that are crucial for human health. Growing evidence suggests not only that sun exposure helps prevent and treat a variety of diseases but also that insufficient exposure to sunlight may increase the risk of cancer.

Sun Exposure Increases Skin Cancer Risk But May Prevent Other Types of Cancer

Many people associate sun exposure with skin cancer, but research has found that insufficient exposure to UV radiation may

also be linked to other types of cancer.

Before delving into this topic, we first need to understand the relationship between sunlight, UV radiation, and vitamin D.

Energy from the sun reaches the Earth in the form of visible light, infrared radiation, ultraviolet radiation, radio waves, X-rays, and gamma rays. Ultraviolet radiation is further divided into three types: UVA, UVB, and UVC, of which only UVA and UVB reach the Earth's surface. UVC is absorbed by the atmosphere.

UVB in sunlight is absorbed by cholesterol in the skin and converted to vitamin D3. Vitamin D3 is then metabolized in the liver to 25-hydroxyvitamin D (also known as calcidiol) and in the kidneys to its biologically active form (calcitriol).

The only way to determine a person's vitamin D level is to measure the concentration of 25-hydroxyvitamin D in the blood. This 25-hydroxyvitamin D has a half-life of approximately two weeks and is the major circulating form of vitamin D.

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EXPOSING 22 PERCENT OF THE SKIN FOR 10 TO 15 MINUTES TO THE SUN DURING SPRING AND SUMMER CAN SYNTHESIZE 1,000 IU OF VITAMIN D.

COVID-19 VACCINES

UNEXPLORED ADVERSE EVENTS OF COVID-19 VACCINES Part III

Tinnitus: A Potentially Incurable COVID-19 Vaccine Adverse Event

While tinnitus can be intractable, doctors say there are ways to manage it and reduce discomfort

MARINA ZHANG

"I can't be stuck with this forever. I'm gonna lose my mind," Mary thought, distressed.

Despite her thoughts, the dull ringing in her ears persisted like an alarm clock that couldn't be silenced, mowing down her concentration.

Mary's tinnitus started an hour after she received her first Pfizer COVID-19 dose in the summer of 2021.

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In this series, "Unexplored Adverse Events: A COVID-19 Vaccine," we evaluate some of the lesser-known yet common adverse events that are appearing in the research literature as well as in doctors' clinics and, more importantly, how to deal with them and reduce the risks.

While potentially fatal blood clots and heart inflammation have been acknowledged as rare side effects of the COVID-19 vaccines, there might be a more expansive field of potential adverse events across multiple body systems, suggest safety signals from the Vaccine Adverse Event Reporting System (VAERS), research reports, doctors' observations, and the experiences of the vaccinated.

MICROBIOME CULTIVATING OUR GUT MICROBIOME TO STIFLE DISEASE Part III

Why Scientists Are Obsessing Over the Bugs in Stool

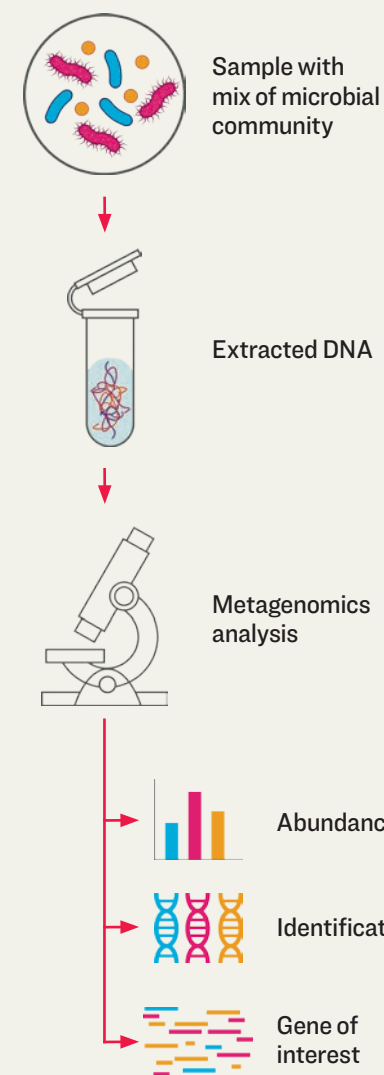
Having a measurement for the human gut microbiome could streamline and advance science

AMY DENNEY

In this series, we'll share how the latest developments on this medical frontier are transforming our approaches to illness and offering new strategies to heal and prevent disease.

Previously: The roles that microbes play in the body have been linked to processes that appear protective against disease. When disease happens, the link is dysbiosis, or an improper balance of microorganisms, but the science is too new for many specific conclusions.

Metagenomics: Studying the DNA of a Community of Microorganisms



What specific bugs—bacteria, viruses, and fungi—in what precise amounts might you find in normal healthy human stool? It's an odd question, but important because it's one of the few clues we have as to what is happening inside the gut microbiome. This microbial community plays several essential roles, from helping to create hormones to supplying the key components of our immune system. Unfortunately, it's also notoriously difficult to study. One of the few glimpses we can get into its inner workings is by what comes out of us.

By the end of the year, researchers hope to use insights from stool to categorize the gut microbiome.

This new fecal standard will be compiled using stool samples from healthy donors representing omnivore and vegan diets—5,000 of each—that are pooled and homogenized. Afterward, they will undergo a newly developed process to make them shelf-stable.

Since the microbiome is so essential to our health, it's important to have some benchmark to measure against. For instance, if we didn't have an idea what healthy blood pressure is, we wouldn't know when someone was at risk of severe disease from high blood pressure.

The new standard hopes to solve an inconsistency in science that now uses a dozen or more diverse "controls" for studies, says Scott Jackson, leader of the complex microbial systems group at the National Institute of Standards and Technology (NIST).

Ideally, this will translate into better diagnostic tools, lab tests, probiotics, and other gut-related products that are already flooding the consumer marketplace with no regulation or oversight. Currently, the U.S. Food and Drug Administration doesn't approve tests or supplements, although many are available.

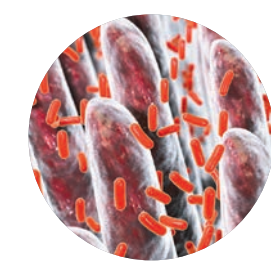
Part of the challenge facing scientists is that the perfect microbiome may no longer exist, because of the ubiquitous presence of various chemicals, processed foods, and the microbial effects of many drugs, cleaners, and herbicides.

There's no guarantee the scientific and medical communities will universally adopt it.



A person's microbiome is constantly shifting due to factors including stress, food, and drugs.

Metagenomics is one area of study focused on the sequencing and function of microbial DNA.



Some scientists believe stool testing cannot accurately reflect what is happening inside the gut microbiome.

The hope is this will be the first meaningful baseline in this emerging field of science that's complex beyond comprehension. Even those performing microbiome studies can't say what the benchmark for health really is.

"What is good? I don't know. We don't know. We can give you a field guide, cataloging organisms as we see them. What that means is relatively unanswered," Dr. Neil Stollman, chairman of gastroenterology at Alta Bates Summit Medical Center, said in a presentation at a recent Malibu Microbiome Meeting.

Jackson told doctors at the Malibu Microbiome Meeting that the standard will be a "well-characterized human feces for the scientific community to reference against."

Snapshot of Evolving Health

While most human microbiomes somewhat resemble one another, they are also incredibly diverse, with each person having a different number and balance of various microbes. Our internal ecosystem can also lose commensals (the good bacteria), suffer loss of diversity, and experience out-growths, though the precise reasons aren't well understood, Stollman said.

A more diverse microbiome is generally associated with better health outcomes. One study found that after several weeks of switching to a diet with more fermented foods, diversity improved. This reflects the plasticity in microbiome composition, which can be affected by everything from foods, to stress, to drugs.

For the most part, though, our microbiome is thought to be stable after going through rapid changes in our early microbiome development. That is, as long as the rest of our life is generally stable. One inter-

esting study found that the gut ecosystem of American immigrants transformed to resemble a more Westernized microbiome after nine months of relocating here.

Other research has shown bacterial levels can also shift in response to exercise, sleep, and stress management strategies such as meditation.

The Good and Bad of Technology

Evolving technology allows scientists to observe the microbiome in detail like never before. It's an intricate science that requires not only mapping out an incredible diversity of microbes, but then trying to figure out how each one works and what effects it may have. Metagenomics is one area of study focused on the sequencing and function of microbial DNA. Newer shotgun sequencing methods are becoming faster and offer more power to identify less abundant types of microbe.

There are dozens of DNA extraction kits, sequencing methods, and requisite software applications researchers rely on for this work. Any subtle deviation, such as equipment differences, can affect results, Jackson said.

The very act of studying such small and reactive organisms can affect how they behave. It's a bit like a giant as tall as the sky trying to figure out how people live by tearing the roofs off their homes. It isn't hard to imagine that the observations of such a giant could be affected by only looking in the biggest houses, or in the largest cities.

As NIST rolls out its new microbiome measurement, Jackson is quick to point out that researchers need to be sensitive to bias, which can creep into many stages of study.

"There's bias in every step of this mea-

surement process from how you collect and store your sample to how you analyze and interpret your results and everything in between," he said. "At the end of the day ... you have to ask yourself, how truly representative is this of my sample?"

Even the precise numbers of microbes in the gut is subject to debate after a group of scientists finally decide to fact-check the oft-quoted 100 trillion microbes statistic. The team at the Weizmann Institute of Science determined it may be about 39 trillion bacterial cells living among about 30 trillion human cells.

A Science Full of Unknowns

Stollman says it may turn out that stool testing is an inferior way to learn about the gut microbiome.

"It's not a given that the bugs you poop out are the same bugs that are working hard for you in the lining of your colon," he said.

While stool collection is the easiest way to assess the gut microbiome, studies suggest bugs from the rectum, large intestine, and small intestine all have variability. The ecology may even be different from one area of the colon to another.

Yet, there are companies that claim their stool analyses can offer information for precision health.

Dr. Ari Grinspan, associate professor of

Bacterial levels in the gut can shift after meditation, exercise, and sleep.

By the end of the year, researchers hope to use insights from stool to categorize the gut microbiome.



DANIEL DELA HIZUETTY IMAGES

Developing a Microbiome Model

In the quest to figure out what microbes are found in a "normal" stool sample, researchers will collect, screen, and test thousands of stool samples with methods the National Institute of Standards and Technology has worked to perfect, including:

- **Flow cytometry**, which measures different cell types by counting and sorting them. This kind of science can detect, identify, and categorize bacterial diseases.
- **Metagenomic analysis**, which gives a taxonomic profile on abundances of bacterial strains.
- **Metabolomic analysis**, which measures the chemical reactions in organisms, cells, and tissues. In bacteria, this includes the metabolites produced that relate to bodily functions.

Scientists are still unsure about the precise numbers of microbes in the human gut.



medicine and director of the fecal microbiota transplant program at Mount Sinai Hospital, told The Epoch Times that while there may be some value to such tests, the results often prematurely raise treatment expectations.

"When patients come into your office and they spent a lot of money on these test results and they come in and they say, 'The answer's in here somewhere, doc. What do I need to do, what probiotic blend, what do I need to eat to make me better?'" he said. "There's just no clinical basis to do anything useful there."

Tests might also unnecessarily raise fears. For instance, many people—especially those who work in health care settings—have low levels of *Clostridioides difficile* (c. diff) in their microbiome. Though it's associated with a very dangerous infection that causes mortality in about 10 percent of the elderly who get it, c. diff may also be an asymptomatic colonizer.

In other words, Stollman said simply having low levels of c. diff isn't worrisome in a healthy microbiome. Those who get sick often do so in a hospital environment—where it's nearly impossible to disinfect for this heavy bug—chiefly when they are on antibiotics for another infection. The driving factor of a dangerous c. diff, and many other infections isn't so much the bacteria as it is a dysbiotic microbiome.

Next week: *The rebalancing act of gut flora through fecal microbiota transplantation is proving that dysbiosis can be reversed. Researchers share incredible results of early treatments with this biologic.*

TOXINS AMERICA THE FLUORIDATED Part III

Fluoride: A Miracle Cure for Cavities, a Poison, or Both

The history of water fluoridation is marked by contending studies finding benefits, risks, and possible therapeutic uses

CHRISTY PRAIS

Public water fluoridation was implemented in the United States in 1954 and was recommended by the World Health Organization (WHO) as the main delivery method of fluoride to improve oral health.

Fluoride is unique in that it's the only preventive chemical that most in the United States don't have a choice about taking because it's added to approximately 75 percent of the public water supply.

Although the Indiana Department of

Health argues that the courts have ruled that "fluoride is a nutrient ... not a medication" and that "mandating fluoridation is a valid use of police power," it also notes that nobody is forced to drink fluoridated water and one could employ reverse-osmosis or distillation.

Before 1945, health authorities had sought only to remove fluoride from water, according to "The Fluoride Deception," a book by investigative journalist Christopher Bryson.

So how did fluoride go from being a toxic chemical that molted teeth, causing a range of health issues, to being the magic bullet

In this series, we explore the contentious findings surrounding fluoridation of the U.S. public water supply and answer the question of whether water fluoridation poses a risk and what we should do about it. Previously: Fluoridation of the U.S. public water supply has been a polarizing topic both academically and politically since its start in the 1940s. Debate over its benefits and health risks has raged on as the science has continued to unfold. While some studies indicate water fluoridation can reduce cavities, others link it to side effects, including cognitive issues in children.

The world's first fluoride toothpaste was released in 1956, just as fluoridated water entered widespread use.



said to cure tooth decay? Here are some key milestones and notable figures.

The Cavity Epidemic

Tooth decay and cavities don't seem like a big deal today—although they remain the most prevalent preventable chronic disease in both children and adults. In the mid-1900s, however, tooth decay was a major health issue.

In her paper published in the American Journal of Public Health in 2015, historian Catherine Carstairs noted that during the mid-1900s, if not treated, cavities led to tooth



loss, mastication problems, malnutrition, and infectious complications. Carstairs also noted that a contributing factor may have been the significant shortage of dentists in the United States at that time.

In the early 1950s, two public health researchers said that on average, young men between the ages of 20 and 35 years had already lost an average of 4.2 teeth, and 90 percent of them required bridges or full or partial dentures, Carstairs wrote.

Leaders such as Wisconsin's state dental director, Frances Bull, "argued that cavities

Major health organizations, like the World Health Organization, support water fluoridation to improve oral health.

Like many vitamins, minerals, and various compounds, the same substance can have different effects.

could be decreased by practicing good oral hygiene, restricting sugar consumption, and improving diet." He also didn't believe that the public was likely to do these things.

"Fluoride, in his view, offered the first real preventive for dental caries," Carstairs wrote.

The war also brought the extent of dental disease in the United States into sharp focus. A 2016 American Water Works Association article notes that in 1938, the military had a rule that you had to have six teeth touch to get into the service.

"When the war came, they dropped that rule because they needed more people. Forty percent of new inductees into the service had to have immediate treatment for dental pain," the article reads.

Colorado Brown Stain

Per the National Institute of Dental and Craniofacial Research (NIDCR), the research into fluoride in the United States began in 1901, when dental graduate Frederick McKay opened his practice in Colorado Springs, Colorado, and discovered that many of the local

children had severe brown permanent stains that sometimes covered the whole tooth.

The condition was referred to as Colorado Brown Stain and was later given the medical title of dental fluorosis. McKay recruited the help of his colleague Dr. G.V. Black, and, determined to find a cure, they set out to find the root cause of the disorder.

In the 1920s, the same brown stains were found in Oakley, Idaho. McKay went to investigate and was able to link them to a water source from a newly constructed communal water pipeline, although he didn't yet know exactly why the water was causing the tooth deformities. The town leaders shut down the pipeline and used a different water source, and within years, a new generation of children was no longer sprouting brown-stained teeth.

A breakthrough came when McKay traveled to the industrial town of Bauxite, Arkansas, to investigate reports of a brown stain epidemic among children in the town.

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MIRACULOUS BODY CULTIVATING OUR GUT MICROBIOME TO STIFLE DISEASE Part III

Unforeseen Outcomes Following Tonsillectomy: Studies

Surgeries that remove these gatekeepers of our immune system are linked to higher rates of some cancers and other diseases



In this series, “The Miraculous Immune System,” we’ll explore the true power of our immunity, the organs that work tirelessly to protect us. We’ll also provide practical ways to protect these vital gifts from the divine.

Previously: Tonsillectomy, or surgical removal of the tonsils, is one of the most common surgical procedures in the United States. Although the benefits of reduced throat infections are evident within one year after tonsillectomy, they don’t persist beyond a year.

YUHONG DONG

Tonsillectomies have long been considered to be relatively minor surgeries, yet recent evidence of associated risks and long-term consequences warrant second thoughts about rushing into surgery.

As the guardians against pathogens, the tonsils are a front line of defense and the first major mucosa-associated immune barrier that foreign microorganisms have to confront to enter the digestive tract.

Throat and Tonsil Cancer

Throat cancer and tonsil cancer can occur when there’s an abnormal growth of cells in the middle part of the throat, the oropharynx. More than 90 percent of these cancers are squamous cell carcinomas, which means they start in the thin, flat cells that line the throat.

The number of cases of oropharyngeal carcinoma is increasing at an alarming rate around the world, especially in developed countries, and is affecting younger people and more men. This increase is mostly due to human papillomavirus (HPV), which spreads through sexual contact and is the main cause of oropharyngeal carcinoma.

There are two types of oropharynx cancer: HPV-associated and non-HPV-associated. HPV-associated cancer is caused by a type of virus that spreads through oral sex. This type of cancer is becoming more common, especially in younger people and men. Non-HPV-associated throat cancer is mostly caused by smoking and heavy drinking.

Tonsil cancer is the most common form of

oropharyngeal cancer, and even those who’ve had a tonsillectomy still have a chance to develop cancer in the tissue that’s left behind.

A study in Denmark published in Cancer Prevention Research involving 90,755 people with a history of tonsillectomy found that although the procedure reduced the risk of tonsil carcinoma in patients under 60, it was associated with a higher risk of oropharyngeal carcinoma, tonsil, and base of tongue cancers in patients over 60 within a year of the operation.

Chronic inflammatory mediators exert multifaceted effects on the development of cancer. On one hand, in the short term, removing the inflammatory tonsil tissues results in less cancer inflammation and favors carcinogenesis, malignant transformation, tumor growth, invasion, and spread. On the other hand, inflammation can stimulate immune effector mechanisms that might limit tumor growth.

The absence of tonsil tissue may correspond to a loss of the local immune response, and in effect, may create a locally immunosuppressed environment. In the long term, this may result in a higher risk of cancers in close proximity.

Irritable Bowel Syndrome

About 7 to 16 percent of the population in the United States is affected by irritable bowel syndrome (IBS). The disorder has subtypes that are categorized by diarrhea, constipation, or both. IBS can cause stomach and bowel problems such as diarrhea, constipation, bloating, gas, and stomach pain. Aging, stress, and smoking are common risk factors, and IBS is more common among females.

In a 2020 PLoS One study, researchers in Taiwan examined the risk of developing IBS after tonsillectomy by analyzing data from 1,300 tonsillectomy patients and 2,600 matched controls.

The study found that tonsillectomy was associated with a higher risk of developing IBS. The incidence of IBS in tonsillectomy patients increased by 80 percent and was even higher for tonsillectomy patients over 50 years old.

A reduction in secretory IgA levels after tonsillectomy can last for more than 20 years. Dysbiosis of the intestinal microbiome and a decrease in bacterial diversity is associated with the pathogenesis of IBS.

Tonsils help differentiate between commensal and pathogenic bacteria in the ali-

mentary tract and prevent unnecessary immune responses, and tonsillectomy in older patients may show a higher correlation with IBS development than in younger patients.

Similarly, a meta-analysis of 23 observational studies involving 19,569 patients found an increased risk in the development of Crohn’s disease but no association between tonsillectomy and ulcerative colitis.

Tongue Cancer

Researchers at the University of North Carolina–Chapel Hill School of Medicine found that tonsillectomy of people younger than 13 was associated with a nearly two-fold increased risk of tongue cancer and a large decrease in the risk of tonsil cancer. The same trend still exists when considering other risk factors such as sexual history, smoking status, and age.

The study results were based on an analysis of 1,378 controls, 108 base tongue cancer cases, and 198 tonsil cancer cases.

One possible explanation is that patients with a history of tonsillectomy have lingual tonsillar hypertrophy, because the enlargement of the lingual tonsils has been observed in up to one-third of pedi-

Tonsillectomy is linked with an increased risk of cancer, respiratory disease, and heart attack.



Esophageal Cancer

Esophageal cancer is a dangerous type of cancer that more than 80 percent of people

atric patients undergoing adenotonsillectomy.

The overgrowth of the lingual tonsil tissues may result in an increased lymphoid tissue, which can also promote tongue cancer.

Acute Myocardial Infarction

A national large-scale study from Sweden found that people who had their tonsils or appendix removed before the age of 20 had a higher risk of acute myocardial infarction, also known as a heart attack.

The study followed more than 80,000 people for an average of 23.5 years, including 54,449 who had appendectomies and 27,284 who had tonsillectomies.

The risk of heart attack was increased by 44 percent and 33 percent, respectively, for those who had a tonsillectomy or an appendectomy before age 20. However, the risk wasn’t increased if the procedure was performed after the age of 20. Males and females had similar risk, and it was highest among those who underwent both procedures.

This may be because atherosclerosis, the underlying cause of heart attacks, is linked to inflammation. The removal of other lymphoid organs, such as the spleen, has been shown to accelerate atherosclerosis. Scientists believe that removing the tonsils or appendix may also affect the body’s protective immunity of blood vessels and decrease the immune system’s ability to fight off external pathogens, thereby increasing the risk of atherosclerosis.

It’s also possible that having these procedures done in childhood increases the risk of autoimmune disorders, such as rheumatoid arthritis, which could also contribute to a higher risk of a heart attack.

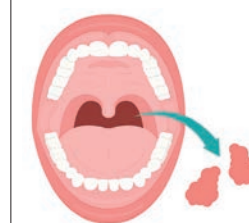
Removing tonsils might also induce changes in the normal maturation process of immune function in early life, which may alter subsequent cardiovascular risk.



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Some studies have found an increased risk of developing irritable bowel syndrome after a tonsillectomy.

Tonsillectomy is a common procedure for treating recurrent tonsillitis and other conditions, but it isn’t always necessary or best for everyone.



Tonsillectomy has been linked to a doubled risk of tongue cancer but lowered the risk of tonsil cancer.

7 to 16 PERCENT PERCENT of Americans are affected by irritable bowel syndrome.

cancer can increase when the tonsils are gone.

Breast Cancer

A population-based case-control study of women living in western New York from 1986 to 1991 found that a history of tonsillectomy was associated with an increased breast cancer risk among premenopausal but not postmenopausal women.

This long-term risk after a tonsillectomy may be correlated with the immune surveillance role of the tonsils.

Risks Versus Benefits of Tonsillectomy

Tonsillectomy is a common procedure for treating recurrent tonsillitis and other conditions, but it isn’t always necessary or best for everyone. As with any medical procedure, there are risks and benefits to consider, and it’s important to discuss these with a health care professional to determine the best course of action. Physicians, patients, and families may want to take these findings into consideration when considering a tonsillectomy.

Tonsillectomy is often considered a minor procedure in children, but it comes with risks of complications, such as respiratory problems, nausea, vomiting, pain, and even death. Tonsillectomy has shown short-term benefits such as reduced throat infections and better sleep outcomes.

Long-term risks associated with tonsillectomy include increased risk of infections, respiratory disease, cancers, acute myocardial infarction, and intestinal diseases, some of which are life-threatening. These unexpected long-term effects of tonsillectomy are reminders of the natural healing power and immunity of the human body.

Although there may be a motivation to remove tonsils to quickly resolve symptoms, it may not be easy to repair the body’s divinely endowed natural immunity and could lead to more severe consequences.



Next week:

The lymphatic system is our “immune network manager” designed to keep internal and external toxins away from our body. However, its true healing power extends beyond that. There are five simple ways to strengthen it.

TOXINS AMERICA THE FLUORIDATED Part III

Fluoride: A Miracle Cure for Cavities, a Poison, or Both

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He noted that towns only five miles away had no tooth deformity issues.

Bauxite was owned by the Aluminum Company of America (ALCOA), and because of this, McKay’s findings there made their way to ALCOA’s chief chemist, H. V. Churchill.

At the time, there were claims that aluminum cookware was poisonous, so Churchill was motivated to ensure that the ALCOA wasn’t responsible. Churchill had more sophisticated technology than McKay and, in the course of his research, was able to detect high levels of fluoride in the Bauxite water supply. This discovery led to the testing of water samples from other areas afflicted with brown stains and, within months, it was confirmed that high levels of water-borne fluoride caused the discoloration of tooth enamel.

This finding sparked extensive research by McKay and Black over the following years.

According to the Centers for Disease Control and Prevention’s (CDC) timeline of

community water fluoridation, McKay and Black’s initial papers in 1916 uncovered a contradiction at the core of their investigation: “Contrary to what might be expected [mottling] does not seem to increase the susceptibility of the teeth to decay.”



Fluoride is a good topical treatment for teeth, the ingesting it to prevent tooth decay comes with potential risks.

1.5 MILLION AMERICANS were drinking fluoridated tap water by the end of the 1950s.

The Investigation Continues

Now that researchers had connected fluoride in drinking water to an effect on teeth, they wanted to learn more.

In 1925, the results of the study conducted by the Department of Chemical Hygiene, the School of Hygiene and Public Health, and Johns Hopkins University, Baltimore revealed some unexpected findings.

Researchers wanted to know if a deficiency of fluorine in food might lead to tooth decay and how adding fluoride to a rat’s diet affected the quality of its teeth. The study included 226 parts per million of the fluorine element in the form of sodium fluoride in the rat’s diet.

They found that ingestion of fluorine in amounts little above those that have been reported to occur in natural foods significantly disturbed the structure of the rat’s teeth.

The study also found that the skulls of the rats under the fluorine treatment didn’t seem to be as good in quality compared to normal cortical bone.

The study concluded that “a clear demonstration that over ingestion of an element which is regularly found in both food and tissues in small amounts may exert a detrimental effect when the amount ingested is increased to but little more than certain samples of foods are known to contain.”

Dr. H. Trendley Dean was another notable character in the story of fluoride. He was head of the dental hygiene unit at the National Institute of Health and conducted many of the fluoride studies starting in the

1930s in the United States that eventually led to the addition of the chemical fluoride additive into the public water supply.

Per the NIDR, “one of his primary research concerns was determining how high fluoride levels could be in drinking water before fluorosis occurred.”

In the late 1930s, Dean discovered that fluoride levels of up to 1 part per million in drinking water didn’t cause dental fluorosis in most people and only mild enamel fluorosis in a small percentage of people.

This revelation, combined with McKay’s previous observation that children with dental fluorosis may not have increased susceptibility for dental decay, sparked the very first 15-year experiment done on a group of children in the United States and the subsequent formation of the NIDR, where Dean claimed his new title as director.

In 1945, the first real-world experiment commenced in Grand Rapids, Michigan, making it the first city in the world to fluoridate its drinking water. Two additional cities, Newburgh, New York, and Evanston, Illinois, also joined the trials in the months ahead.

In Grand Rapids, almost 30,000 schoolchildren were monitored for their rate of tooth decay. After 11 years of observations, researchers announced that dental caries dropped by more than 60 percent in children born after fluoride was added to the water supply. The two additional cities showed a caries reduction of 50 percent to 70 percent among children.

This initial trial was supposed to last 15 years, but just two years after it began, the city of Madison, Wisconsin began adding synthetic fluoride to its public water in 1948 at the direction of the Common Council.

In June 1950, before any of the trials were ever completed, the American Dental Association, Association of State and Territorial Dental Directors, and U.S. Public Health Service all issued statements endorsing community water fluoridation, and the surgeon general declared that any community wishing to fluoridate its water supply should be “strongly encouraged” to proceed, as noted in the CDC timeline.

By the end of the 1950s, approximately 1.5 million Americans were drinking fluoridated tap water, and Crest, the world’s first fluoride toothpaste, was released nationally just six years later in 1956, years before the real-world population study was complete.

Across the Pond

At about the same time that fluoride research was ramping up in the United States, Danish physician Kaj Roholm was researching the cause of widespread illness among workers at Oresund Chemical Works in Copenhagen, Denmark. In “The Fluoride Deception,” Bryson detailed this history and how a heavy cloud of cryolite dust filled the factory air there. Cryolite contains more than 50 percent fluoride.

The afflictions of the workers included a crippling skeletal issue called poker back,

Raw Calcium Fluoride

Fluoride is naturally occurring and present in most groundwater. The fluoride added to public water is created through industrial processes.



in fluoridated bath water, and, as a result, their thyroid function was greatly depressed.

While these kinds of targeted therapeutic uses of fluoride may have important medical benefits, the widespread use of water fluoridation hasn’t become any less controversial over the years. Few European countries now fluoridate their water, and the United States is among the few heavily fluoridated countries in the world.

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Next week:

A report in the 1955 New England Journal of Medicine shows a 400 percent increase in thyroid cancer in San Francisco during the period that the city has had fluoridated drinking water,” writes Gladys Caldwell and Dr. Philip Zanfagna in their 1974 book “Fluoridation and Truth Decay.” The CDC maintains that doses appropriate for caries reduction aren’t shown to negatively impact thyroid function.

COVID-19 VACCINES UNEXPLORED ADVERSE EVENTS OF COVID-19 VACCINES Part III

Tinnitus: A Potentially Incurable COVID-19 Vaccine Adverse Event



In "Unexplored Adverse Events: A COVID-19 Vaccine Series," we'll evaluate some of the lesser-known yet common adverse events that are appearing in the research literature as well as in doctors' clinics, and, more importantly, how to deal with them and reduce the risks.

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She immediately contacted the pharmacy where she was vaccinated, and they told her that tinnitus wasn't a side effect of the COVID-19 vaccine.

Yet a search on Google showed that many people were discussing this condition in forums. Some were severely crippled by the condition. A close physician relative told Mary to go on steroid therapy immediately to reverse tinnitus, but her symptoms didn't improve.

"I complained about it so much in the beginning," Mary, who declined to disclose her last name, told The Epoch Times over the phone, "especially in the first couple of weeks.

"I cried. I broke down."

Apart from the grim reality that her tinnitus would likely be permanent, another worry Mary had was whether she should get her second primary dose so that she would be fully vaccinated. She was worried that the additional dose would make it worse, and she also feared that she would be forced into it.

Despite her distress, Mary found that she couldn't openly discuss her concerns with her health providers, friends, and family.

"I felt comfortable saying that I had tinnitus, but I was afraid to tell people that it started an hour after the vaccine. ... I didn't want people to think that I'm an anti-vaxxer," she said.

"But it's my own experience, and the fact that I was afraid to say that is really sad."

Do COVID-19 Vaccines Cause Tinnitus?

Tinnitus is the presence of ringing sounds in the absence of sound. Recent research suggests that tinnitus is mostly neurological, although how and why it occurs is still a mystery.

Factors such as old age, exposure to loud sounds, nutrition deficiencies, autoimmune diseases, infections, and ear diseases are all commonly related to it.

Symptoms related to tinnitus include hearing loss, as well as hyperacusis where sounds in the environment may seem excessively loud or unbearable.

Mary Kelley, a nurse, developed hearing loss and then tinnitus after the second and third

TINNITUS =

the presence of ringing sounds in the absence of sound.



Those suffering with tinnitus due to the vaccine have an extra strain as vaccine injuries are seen as a rare occurrence and little research is being done to treat the cause.

FINDING A CURE

Treatment for tinnitus is different for every patient and is dependent on one's symptoms and their severity.



MADENBALNOVAC/GETTY IMAGES

doses of the COVID-19 vaccine. She was part of the first wave of vaccinations among health care workers and had taken her second primary dose by January 2021.

Within the next several months, Kelley had trouble hearing people at various times. She recalled how her coworkers and family joked, "Mary, you are deaf!"

When boosters were mandated, Kelley took the third dose in February 2022, and within hours, tinnitus that sounded like fire alarms manifested in her right ear.

Kelley said she was able to block the tinnitus from her thoughts, saying that hearing loss has a greater effect on her work than the tinnitus. But some people find the noise to be very debilitating as they lose concentration and sleep.

COVID-19 mRNA vaccines have been linked to tinnitus, although it's still undetermined whether the association is causal or coincidental. The Epoch Times' exclusive reporting revealed that the U.S. Centers for

Disease Control and Prevention (CDC) has already detected tinnitus as a safety signal among hundreds of safety signals following mRNA vaccination.

A study published in the journal *Laryngoscope* analyzed nearly 2.6 million individuals through electronic health record data and found that for people who were never diagnosed with tinnitus previously, 0.038 percent of them would develop tinnitus following administration of a single COVID-19 mRNA vaccine dose. Compared to the first dose of the COVID-19 vaccines, other vaccines for influenza and DTaP, as well as the pneumococcal vaccine, had a higher risk of tinnitus.

Infections with COVID-19 have also been linked to tinnitus, with one study finding that more than 20 percent of individuals develop tinnitus.

Tinnitus researcher and University of Arizona associate professor of neuroscience and physiology Shaowen Bao told ABC15 that post-vaccine tinnitus may be related to inflammation due to the immune response triggered by the mRNA vaccines. Nevertheless, other mechanisms may also be involved.

The vaccines trigger autoimmune reactions by forcing healthy cells to produce viral proteins, prompting the immune system to attack these cells.

Tinnitus has been linked to autoimmune diseases that damage the nerves, including Alzheimer's and Parkinson's, as well as

diseases that don't affect the nerves, such as lupus and Crohn's disease.

Similarly, the spike proteins in the COVID-19 vaccines are prone to causing microclotting. Microclots can make the blood more viscous, slowing down blood flow, thereby reducing oxygen exchange in the blood and leading to stress on the nerves and cells in the ears.

More than 17,000 cases of tinnitus have been reported on the Vaccine Adverse Event Reporting System (VAERS) in relation to COVID-19 vaccines, making up more than 80 percent of all tinnitus reports in the entire VAERS system.

However, the real numbers may be even higher, not only because reports to the VAERS system are significantly underreported but also because tinnitus tends to be underreported in the general population.

Postvaccine tinnitus "most definitely has been underreported," Jackie Clark, audiologist and professor at the University of Texas, told The Epoch Times. Outside of vaccinations, "there are a lot of people that just say, 'Oh, I thought that that was just normal.'"

Some people are less observant of the changes in their bodies and wouldn't even take notice of their tinnitus.

Clark noted that among her audiology students and patients at the Callier Center for Communication Disorders, she has seen fewer cases of tinnitus in people experiencing symptoms postvaccination compared to post-COVID infection.

Tinnitus has been the bane of medicine forever between otolaryngologists and neurologists.

Dr. Robert Lowry, neurologist

No Promised Recovery for Tinnitus

Clark warns that there's no known cure for tinnitus and that many people are best served by finding a way to comfortably live with it.

Since tinnitus becomes the most prominent in a quiet setting, some people have found that if they play soft music or introduce light noises into their environment, their mind moves off tinnitus. Wearing hearing aids can help those with both hearing loss and tinnitus by increasing sounds in the background to cancel out the tinnitus.

These tips have helped some people whose tinnitus isn't that severe.

"Tinnitus has been the bane of medicine forever between otolaryngologists and neurologists," neurologist Dr. Robert Lowry, an expert in brain concussions, told The Epoch Times. "Nobody ever knows what to do with it."

Nevertheless, some studies suggest that the intervention of therapies that correct underlying health problems may also resolve tinnitus.

Some studies found that correcting B-group vitamin deficiencies reduced tinnitus severity for some people. Oxytocin nasal sprays, which allow immediate nerve stimulation, have been shown to help with tinnitus. This therapy



Infections with COVID-19 have also been linked to tinnitus, with one study finding that more than 20 percent of individuals develop tinnitus.

isn't suitable for pregnant women.

Neurologist Dr. Diane Counce said another treatment she's currently looking into is non-invasive brain stimulation, which has also been shown to improve tinnitus. However, this therapy is very expensive, and since it isn't approved by the U.S. Food and Drug Administration for treating tinnitus, insurance may not cover it.

Similarly, surgery and antidepressants have also shown limited benefits.

Treatments Target Underlying Mechanisms

Given that postvaccine tinnitus may be due to various causes, Counce looks at the symptoms that accompany tinnitus to determine the root cause of the condition.

For example, tinnitus associated with shortness of breath and exercise intolerance may be an indication that the person's oxygen levels are low due to microclotting. Therefore, blood thinners such as aspirin, with nattokinase and serrapeptase supplements, would be recommended for that patient's treatment.

For patients who have signs of autoim-

munity such as nerve damage, an intravenous infusion of antibodies may be the prescribed treatment.

Board-certified internist Dr. Syed Haider said he generally starts his patients on ivermectin. He recounted that he originally had a patient whose tinnitus was so severe that he contemplated suicide. However, after Haider put him on ivermectin, his tinnitus disappeared.

Haider also created his own supplement protocol that he recommends for both long-haul and postvaccine patients, which includes various natural herb extracts, vitamins, minerals, and other supplements. Each of these helps correct various health problems, including tinnitus.

Haider said some patients respond to the first supplement they try, while others try several supplements to find the one that works best for them. Some only respond when the therapeutic is given in a high dose.

Ganglion blocks, which are usually injections that block pain, have also resulted in a complete reversal of tinnitus in some patients, Haider said. This may be because the therapy blocks off the sympathetic nervous system and therefore enables the body to rest and recover.

Nevertheless, Clark cautioned against treatment therapies that "promise" a definite cure, noting that treatments that guarantee the highest chances of success have been behavioral modification therapies that involve a person simply getting used to tinnitus.

Tinnitus has been linked to autoimmune diseases that damage the nerves, including Alzheimer's and Parkinson's, as well as diseases that don't affect the nerves, such as lupus and Crohn's disease.

Vaccinated People 'Suffering Alone'

Mary has since joined an online tinnitus support group for those who are vaccine-injured.

Finding people who have been suffering for the same reason has allowed Mary to accept her vaccine injury and move forward with her life.

After reading stories shared by other people who are far more debilitated by tinnitus, Mary said she's very thankful that her tinnitus has been bearable.

She's also in another support group for both long-haul and vaccine-injured people.

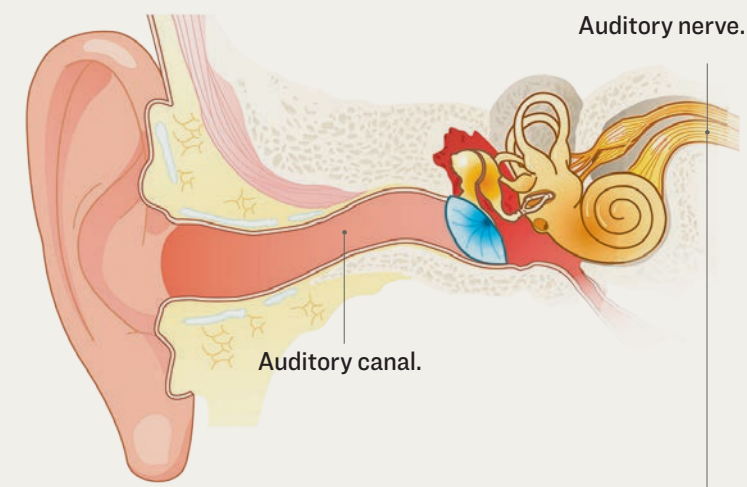
Mary expressed that while long-COVID patients are also suffering from their condition and the lack of research, their experiences are validated and acknowledged, while adverse events due to the vaccines may be dismissed as being rare.

"The people suffering with vaccine injury, they're suffering alone in a lot of cases," Mary said. "Even if a vaccine adverse event is really rare, that doesn't mean that we need to dismiss it. It still warrants acknowledgment, validation, research, support, and help."

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VACCINE EFFECTS ON THE AUDITORY NERVE

The spike proteins in the COVID-19 vaccines are prone to causing microclotting. Microclots can make the blood more viscous, slowing down blood flow, thereby reducing oxygen exchange in the blood and leading to stress in the nerves and cells in the ears.



17,000 More than 17,000 cases of tinnitus have been reported on the Vaccine Adverse Event Reporting System (VAERS) in relation to COVID-19 vaccines, making up more than 80 percent of all tinnitus reports in the entire VAERS system.

Tinnitus can be caused by abnormal nerve activity in the auditory cortex of the brain.



Next week: Three days postvaccine, former Pussycat Dolls member Jessica Sutta woke up to "the most excruciating muscle spasms" that were unlike anything she had ever experienced, she recalled.

HERBAL MEDICINE

The 'First Choice' Alternative to Ivermectin: Expert

The bioactive compounds in this plant have demonstrated significant and important therapeutic effects

MARINA ZHANG

Because it shares properties with ivermectin, another Nobel Prize winner—sweet wormwood—is considered by some experts to be ivermectin's natural equivalent.

Another Nobel Winner

Sweet wormwood, also known as *Artemisia annua*, is a green herb native to Southeast Asia that has feathery leaves and yellow flowers.

Sweet wormwood has been used for millennia in traditional Chinese medicine to treat malaria, fevers, viral and bacterial infections, and inflammation. The active ingredient in sweet wormwood is artemisinin, first isolated from the plant in 1972.

In recent decades, the World Health Organization has recommended artemisinin as a first-line treatment for malaria.

In 2015, artemisinin was awarded half of the Nobel Prize in Physiology or Medicine for its success as a frontline treatment for malaria.

The other half of the award was given to ivermectin for its success in treating roundworm infections. Ivermectin is derived from a bacterium through a manmade process. During the COVID-19 pandemic, it became one of the most controversial drugs. Despite its reported benefits from many doctors, its usage has been largely discouraged.

Sweet wormwood is "a plant version that's already growing that has strong antiviral, anti-parasitic, anti-inflammatory properties," naturopath Dr. Jana Schmidt told The Epoch Times.

She also said it would be her "first choice" as an alternative to ivermectin.

'Acts Like a Bomb' Against COVID-19 Virus

What's unique about artemisinin and its derivatives is that it has a hydrogen peroxide bridge in its chemical structure.

Hydrogen peroxide is highly reactive, and studies suggest that it reacts with iron in what's known as the Fenton reaction.

Viruses and parasites require iron to proliferate.

Some viruses and parasites infect only cells that store iron and sequester iron in infected regions.

A virus's or parasite's tendency to increase iron storage during an infection makes artemisinin a good treatment candidate.

Professor Jose Luis Abreu from The State University of Nuevo León, whose expertise is in business and plant science, reasoned that artemisinin "acts like a bomb." The concentrated iron storage attracts artemisinin activity, causing a greater increase in free radical production, leading to the powerful destruction of infected cells, parasites, and viruses.

Because cancer cells also store iron for proliferation, artemisinin has also been investigated for its anti-cancer properties.

Despite the potency of isolate artemisinin compounds, Abreu explained that consuming the entire plant rather than an isolate form would provide more benefits. Sweet wormwood also has potent amounts of phytochemicals, polyphenols, essential oils, and many other chemicals that assist with artemisinin's function and can produce a stronger synergistic effect.

Schmidt said sweet wormwood has many anti-SARS-CoV-2 properties similar to those of ivermectin.

Both are also low in toxicity, safe, and relatively cheap for consumption.

Shared Properties

Sweet wormwood can be likened to a second ivermectin because of the many properties and effects that the two substances have in common, such as the following disease-fighting traits.

Antiviral

- Act as antivirals against ACE-2, CD147, and TMPRSS2 receptors, preventing viruses from entering the cells through these receptors
- Prevent the virus from infecting cells by binding to its spike proteins, as discovered in a computer simulation study published in the *Journal of Biomolecular Structure and Dynamics*
- Prevent viral replication and assembly by binding to RdRp, Mpro, and Clpro
- Transport zinc into infected cells, preventing viral replication
- Produce free radicals that can kill infected cells and viruses

Anti-Inflammatory

- Reduce inflammation by lowering levels of inflammatory cytokines such as IL-6 and TNF-alpha, according to a study published in *Rheumatology (Oxford)*
- Inhibit cytokine storms, according to the *Rheumatology (Oxford)* study
- Prevent the formation of thick scar tissues in the lungs

Other

- Alleviate neuropathic pain

- Prevent cancer formation

Differences

Despite their similarities, studies show that sweet wormwood and ivermectin don't act in the same location of the COVID-19 virus. However, they can complement each other.

Ivermectin binds with the strongest affinity to COVID-19 spike protein, preventing the virus from entering human cells, as shown in a study that compared ivermectin with other drugs, including remdesivir and hydroxychloroquine.

On the other hand, artemisinin and its derivatives have a low binding score to spike protein, as shown in the *Journal of Biomolecular Structure and Dynamics* study.

Ivermectin also has other antiviral properties that sweet wormwood doesn't have, including its ability to maintain mitochondrial health under hypoxic conditions.

The Madagascar Protocol

Abreu published a combination treatment protocol that includes ivermectin, sweet wormwood, and zinc. He named his protocol the Madagascar protocol, based on his observation that Madagascar, which has a higher consumption of both sweet wormwood and ivermectin, was significantly less affected by COVID-19 than the rest of the Western world.

Abreu said in an interview with Dr. Jennifer Hibberd that his Madagascar protocol was a combination of drugs and supplements because "there is no magic bullet."

The essential oils in sweet wormwood are both antibacterial and antifungal.

Due to its hydrogen peroxide bridge in its chemical structure, sweet wormwood acts like a bomb against viruses such as COVID-19.

Including as many drugs that work together without interference and competition in the protocol will give an individual a greater chance of reaping the most benefits.

Abreu pointed out that artemisinin has a property that he "has not seen" in any other plant or chemical: its potential to increase oxygen levels in the body.

The reaction between the hydrogen peroxide bridge and iron can lead to the production of oxygen.

"When we get COVID, the oxygen goes down, causing hypoxia," Abreu said.

That's when artemisinin can help.

How to Take Sweet Wormwood

Artemisinin can be consumed in isolation through supplements, but consuming the

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NATURE IS MEDICINE



Regular exposure to sunlight can regulate circadian rhythm and influence the secretion of various hormones in the human body.

How to Use

Sunlight to Prevent Cancer

Continued from Page 1

This link between sun exposure and vitamin D production appears to be at the heart of sunlight's anti-cancer effect.

In 2022, a study published in the journal *Nutrients* found that, based on ecological (community- and population-based) studies of cancer related to solar radiation, sun exposure may decrease the incidence and mortality risks of approximately 23 types of cancer. According to an article in *Environmental Health Perspectives*, compared with those who live in regions with longer sunlight exposure, people living at high latitudes with less sunlight exposure have an increased mortality risk from Hodgkin's lymphoma and colon, breast, ovarian, prostate, and pancreatic cancers, among other kinds.

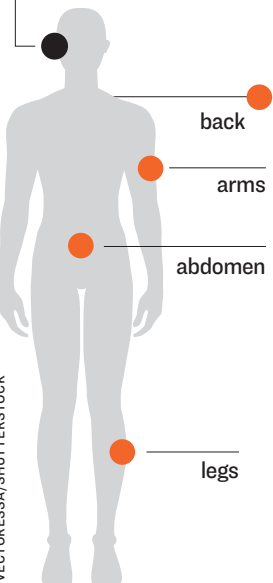
According to the *Nutrients* study, meta-analyses of multiple observational studies have shown that there's a significant association between higher levels of 25-hydroxyvitamin D in the blood and a lower incidence of cancer.

U.S. researchers conducted a meta-analysis of two randomized clinical trials and one prospective cohort and found that among 5,038 women, the group with the highest 25-hydroxyvitamin D concentration (greater than or equal to 60 nanograms/milliliter) had an 82 percent lower incidence of breast cancer than the group with the lowest concentration (less than 20 ng/ml). The same group had an 80 percent lower risk of developing breast cancer than those with the lowest concentration of 25-hydroxyvitamin D, after adjusting for age, body mass index, smoking status, and calcium supplement intake.

Another meta-analysis found that breast cancer patients with the highest concentration of 25-hydroxyvitamin D had a death rate of approximately half that of those with the lowest concentration. In a clinical trial, more than 2,300 women aged 55 and above residing in Nebraska consumed 2,000 IU of vitamin D3 (two to four times the daily suggestion) and 1,500 milligrams of calcium daily. The results show that in the subsequent two to four years, people who achieved a 25-hydroxyvitamin D blood

IDEAL PARTS TO EXPOSE WHEN SUNBATHING

Protect the face, which is the most exposed and susceptible to sunburn.



HOW TO PROPERLY EXPOSE SKIN UNDER THE SUN

Generally, it's recommended to expose the arms, legs, and other body parts to the sun for 10 to 15 minutes a few times per week.

Furthermore, exposure to sunlight for about 35 minutes between 9 a.m. and 5 p.m. every day, without deliberately sunbathing at noon, can result in ideal serum vitamin D levels (less than 50 nmol/l).

concentration of 55 ng/ml had a 35 percent lower risk of developing cancer than those with a concentration of 30 ng/ml.

A meta-analysis of five studies found that individuals with a serum 25-hydroxyvitamin D concentration less than or equal to 12 ng/ml had a 50 percent higher risk of colorectal cancer than those with a concentration of 33 ng/ml or greater.

How Does Sun Exposure Prevent Cancer?

"We believe that vitamin D plays multiple roles in helping to reduce the risk of many deadly cancers," Michael F. Holick, a professor of pharmacology, physiology, and biophysics at the Boston University Chobanian & Avedisian School of Medicine, told *The Epoch Times*.

Studies such as the one that appeared in *Nutrients* have demonstrated that the active form of vitamin D3 has a wide range of anti-cancer effects, including inhibiting cancer cell growth, inducing cancer cell maturation and apoptosis, reducing angiogenesis, and decreasing cancer cell metastasis.

"The active form of vitamin D can prevent cells from becoming cancer cells, and if they do, it can also hinder their ability to receive nutrients and ultimately lead to their death by shutting down angiogenesis," Holick said.

Active vitamin D3 is a hormone that can regulate the immune system by acting on various immune cells, according to a 2022 study review in *Nutrients*.

Low levels of vitamin D are often associated with low-grade inflammation, as reflected by elevated C-reactive protein levels, which is a significant risk factor for cancer. Meta-analyses such as the 2022 *Nutrients* review have shown that the level of C-reactive protein is associated with several types of cancer. Cell experiments have demonstrated that active vitamin D3 can inhibit the production of pro-inflammatory cytokines, which may help reduce chronic inflammation.

Small Amounts of UV Radiation Are Beneficial in Fighting Cancer

In addition to the vitamin D generated by UV radiation, the radiation itself can be beneficial. According to a review in *Progress in Biophysics and Molecular Biology*, the protective effects of less-intense solar UV radiation on the human body outweigh the radiation's potential mutagenic effect.

Animal studies have shown that vitamin D supplementation and exposure to UV radiation can lead to a reduction in the area of colon tumors in mice.

Sunlight Exposure Regulates Circadian Rhythm and Generates Other Active Substances

Regular exposure to sunlight can regulate circadian rhythm and influence the secretion of various hormones in the human body.

Some studies suggest that melatonin can inhibit tumor growth and that daytime light exposure enhances the inhibitory effect of nighttime melatonin on the growth of prostate, liver, and breast cancer. The precursor of melatonin, serotonin, is affected by exposure to daylight. It's usually produced during the day and converted to melatonin only in darkness. Exposure to sunlight in the morning promotes the secretion of serotonin, which in turn accelerates the production of melatonin at night, according to the *Environmental Health Perspectives* article.

The increased risk of cancer among night shift workers may be due to their disrupted circadian rhythm, which affects the production of melatonin.

Exposure to sunlight not only produces vitamin D3 in the skin but also generates other photoproducts of previtamin D3, which have additional unique biologic activities.

"It generates a whole host of other things," Holick said.

A systematic review in *Dermatoendocrinology* specifically indicated that inadequate sun exposure carries many other risks, including increased all-cause mortality, hypertension, cardiovascular disease, metabolic syndrome, Type 2 diabetes, obesity, and Alzheimer's disease. It can also lead to multiple sclerosis, Type 1 diabetes, psoriasis, rheumatoid arthritis, nonalcoholic fatty liver disease, macular degeneration, statin intolerance, and myopia.

How to Get Sun Exposure Safely and Efficiently

The medical community has always advocated for moderate sun exposure.

According to the *Progress in Biophysics and Molecular Biology* review, under normal circumstances, about 90 percent of the body's essential vitamin D is obtained through sun exposure. However, people are now spending much less time in the sun, especially after the COVID-19 pandemic.

According to the National Institutes of Health, a person's level of 25-hydroxyvitamin D in plasma shouldn't be lower than 20 ng/ml. Research has found that 32 percent

of people in the United States have vitamin D insufficiency, according to the *Dermatoendocrinology* review. If the Endocrine Society's standard for vitamin D sufficiency (30 ng/ml) were used, the proportion of people with vitamin D deficiency would be even higher.

It's estimated that for every 100 IU of vitamin D ingested, the blood level of 25-hydroxyvitamin D increases by only 1 ng/ml (2.5 nmol/l). For most adults, periodic and brief sun exposure can provide sufficient vitamin D, which is more effective than taking 1,000 IU of vitamin D3 daily. Moreover, getting vitamin D through sun exposure prevents the potential toxicity of excessive vitamin D supplementation.

Holick said the 25-hydroxyvitamin D level should reach 75 nmol/l (30 ng/ml), and the ideal range is between 40 and 60 ng/ml, "just like the Maasai herders." The Maasai are traditionally nomadic people who live in East Africa.

Sun exposure may decrease the incidence and mortality risks of approximately 23 types of cancer.

Generally, it's recommended to expose the arms, legs, and other body parts to the sun for 10 to 15 minutes a few times per week. However, this isn't an absolute rule, as factors such as season, latitude, weather, time of day, skin pigmentation, clothing, age, sunscreen use, and whether the light is passing through glass can all influence the production of vitamin D3 in the skin.

For example, during winter, sunlight enters the atmosphere at a more oblique angle, and more UVB photons are absorbed by the ozone layer. In areas north of 37 degrees latitude in the Northern Hemisphere from November to February, the decrease in the number of UVB photons reaching the Earth's surface can range from 80 to 100 percent.

In the morning or evening, the angle of sunlight is so oblique that even in summer, the rate at which vitamin D3 is produced in the skin of individuals living in these regions is very slow.

People with lighter skin may only need a short amount of time in the sun to get enough vitamin D, while those with darker skin may require more time to achieve the same effect. For most light-skinned people, according to the *Environmental Health Perspectives* article, sunbathing in swimwear for half an hour in the summer sun can initiate the release of 50,000 IU (1.25 mg) of vitamin D into the circulatory system within the following 24 hours; the same sun exposure yields 20,000 to 30,000 IU vitamin D for tanned-skin individuals and 8,000 to 10,000 IU vitamin D in dark-skinned individuals.

According to research from the University of Geneva, exposing 22 percent of the skin for 10 to 15 minutes to the sun during spring and summer can synthesize 1,000 IU of vitamin D. However, it's more challenging to obtain sufficient vitamin D from sun exposure alone during autumn and winter because people usually expose only 8 to 10 percent of their skin, which may require 6.5 hours of sun exposure to obtain the same amount of vitamin D.

A study of 2,360 U.S. adults published in *Frontiers* in 2022 shows that exposure to sunlight for about 35 minutes between 9 a.m. and 5 p.m. every day, without deliberately sunbathing at noon, can result in ideal serum vitamin D levels (less than 50 nmol/l).

A software that Holick helped develop, "D Minder," instantly calculates how much sun exposure is needed in a given area to obtain sufficient vitamin D.

Holick also recommended protecting the face, which is the most susceptible to sunburn, while sunbathing; exposing the arms, legs, abdomen, and back to the sun for a reasonable and shorter duration without using sunblock can generate a significant amount of vitamin D.



Frequent sun exposure boosts the body's production of melatonin at night, which helps us achieve deeper, more restful sleep.

MADE TO MOVE

Bad Sitting Habits Lead to Upper Crossed Syndrome

Here are 3 simple stretches you can use to correct it

KEVIN SHELLEY

The big problem with bad posture is that it often feels so good.

Postural considerations often relate to formed habits, and even though bad posture can have negative consequences in other areas of the body—and on bodily function as a whole—bad postural habits often feel comfortable and familiar. At first, bad posture is just bad posture, but over time, certain muscles can grow tight and strong while others grow stretched and weak, upsetting the body's natural postural balance.

One of the most commonly encountered modern-day postural problems is upper crossed syndrome. First described by Dr. Vladimir Janda, upper crossed syndrome refers to a specific pattern of weakness evidenced in the upper body that is caused by prolonged and repetitive bad posture.

Causes of Upper Crossed Syndrome

Upper crossed syndrome is strongly related to head position, according to Betsy Hughes, a physical therapist in Orlando, Florida, with more than 44 years of experience.

The head is relatively heavy—between eight and 12 pounds—and the body is designed to support it directly over the spine when in an upright position.

Modern-day electronics, especially computers and phones, encourage a head-forward posture that the body was not designed to support for extended periods. "Where the head goes, the shoulders will follow. It's a one-two punch of bad postural habits," Hughes told *The Epoch Times*.

Taken as a whole, the body's processes rely on balance to work the most effectively. The muscles on the chest and shoulders must be coordinated, and so must the muscles on the front and back of the neck.

Unfortunately, as the head and shoulders move forward and down while sitting with bad posture, imbalances can build. The chest muscles shorten and tighten while the upper back muscles stretch and weaken.

With our heads and shoulders forward, there is a tendency to look downward, and the natural compensation is to rotate the head upward so it's level. This causes the muscles on the front of the neck to get weak and stretched while the muscles on the back of the neck become shortened and strong.

In the end, we are left with one plane of weak, stretched muscles and another plane of strong, shortened muscles. Overall, it's a recipe for disaster.

Upper crossed syndrome can cause a range of symptoms including neck pain; headaches; sore shoulder blades; restricted range of motion in the neck and shoulders; pain, numbness, or tingling in the arms; and pain in the upper back.

Thankfully, there are things you can do to help correct these issues.



Gazing at poorly placed electronic devices can encourage a forward-head posture.

Tips on Posture

1. Adjust Your Computer Screen

"Many people tend to bring their heads toward their computer screens," Hughes states. "It's better to bring computer screens higher and closer while maintaining your posture. Computer screens that are at neck or face level tend to encourage a more upright posture."

2. Change Cellphone Habits

When using a cellphone, resist the urge to hold the phone low and move your head down toward it.

Instead, bring the phone up to head height. Resting your upper arms against your body helps avoid shoulder fatigue.

3. Be Mindful of Your Posture

Purposeful work toward better posture is critical.

"Correcting bad posture is like climbing out of a hole that gets deeper over time," she said. The longer you wait, the harder it gets. It's much better to start earlier if you can.

Consider having someone take pictures of you from different angles. Pictures don't lie, and they will allow an honest assessment of your posture.

3 Simple Exercises

Exercise is highly effective for normalizing posture. Strengthening exercises can help restore weak muscles to their former levels and help them resume their specific roles in maintaining posture.

1. Elastic Band Stretches

Step 1: Hold an elastic exercise band with your arms fully extended in front of you and your hands at chest height approximately 12 inches apart.

Step 2: Slowly pull your hands apart until your arms are out to your sides and the band makes contact with your chest, then ease your hands back forward until they are back where they started.

This strengthens the muscles on your upper back and has the bonus benefit of stretching the pectoral muscles. Take approximately two seconds to move in each direction and perform 12 repetitions per set for three sets. You can make the exercise more challenging by using stronger bands or by increasing the number of repetitions.

At first, bad posture is just bad posture, but over time, certain muscles can grow tight and strong while others grow stretched and weak, upsetting the body's natural postural balance.

SYMPTOMS OF UPPER CROSSED SYNDROME

- Neck pain
- Headaches
- Sore shoulder blades
- Restricted range of motion in the neck and shoulders
- Pain, numbness, or tingling in the arms
- Pain in the upper back

2. Chin Tucks

Step 1: Lie on your back.

Step 2: Bring your head up and try to touch your chin to your chest without moving your shoulders, then slowly lower your head back down.

Take about two seconds to move your head up and another two to move it back down. This is a great exercise to strengthen the muscles on the front of the neck. Perform 12 repetitions per set for three sets.

3. Superman Exercise

This exercise will place you in a position that looks like Superman when he is flying. **Step 1:** Lie face-down on the floor with your legs together and your arms straight out ahead, together, with your elbows straight. **Step 2:** Lift your head as high as you can off of the floor while also lifting your arms, keeping them straight.

This exercise strengthens your upper back muscles and also extends your spine. Try holding yourself up for three seconds before lowering back down slowly. Take two seconds to move in either direction, and perform three sets of 12 repetitions. This can be a challenging exercise to perform at first, but is very effective in restoring good posture.

Get Professional Help

In the greater picture, every one of us is different, and getting a handle on posture can be quite challenging. If you are struggling while trying to go it alone, secure the services of a chiropractor, physical therapist, or personal trainer who has specialized training in postural restoration. All of these professionals can provide individualized treatment plans that you can use at home.

The human body is an amazing, flexible set of structures that allows for a great deal of movement and functional capability. Bad posture can result in debilitating symptoms that can keep you from living life fully. Being proactive can help you regain good posture, prevent future problems, and maximize your quality of life and functional independence.

Kevin Shelley is a licensed occupational therapist with over 30 years of experience in major health care settings. He is a health columnist for *The Epoch Times*.

3 SIMPLE STRETCHES

Stretches are a great resource in countering upper crossed syndrome. Counterposes benefit you by decreasing muscle tightness and reducing their contribution to bad posture. These stretches are easy to do and highly effective.

You'll need to hold each stretch for approximately two minutes and ease into it. Practice subtle movements, keeping careful tabs on what your body is telling you.

Never yank, pull, or force movements. Stretches should be done at least three times a day, and it's best to schedule specific times for stretching.

1. PECTORAL STRETCH

- **Step 1:** Touch the back of your head while sitting or standing.
- **Step 2:** While keeping your hand in place, bring your elbow back as far as you can.

You can do one arm at a time or both arms at once.

This stretch focuses on the pectoralis muscles and decreases their tendency to pull the shoulders forward, which is a major contributor to upper crossed syndrome.



2. NECK STRETCH

- **Step 1:** Sit or stand as straight as you can while keeping your head level.
- **Step 2:** Slowly bring your chin toward your chest.

Pulling your head back and dropping your chin can help stretch the suboccipital, upper trapezius, and levator scapulae muscles on the back of your neck and upper shoulders and bring them into balance with the muscles on the front.



3. UPPER TRAPEZIUS STRETCH

- **Step 1:** Bring one hand behind your back with a bent elbow.
- **Step 2:** Reach over the top of your head with your other hand and carefully pull your head toward the side, away from the arm behind your back.

This stretch helps to decrease the tightness of the large trapezius muscles and increases the flexibility of the neck and upper back.



FOOD AS MEDICINE

The Savory Superpowers of Mushrooms

Mushrooms can be medicinal, edible, or poisonous—and difficult to identify in the wild.



Enoki mushroom can help with weight loss as it's low in calories and rich in dietary fiber.



Research suggests eating more than two servings of mushrooms a week can lower your risk of developing mild cognitive impairment by 43 percent.



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Mushrooms may prevent cognitive impairment and reduce dementia risk

ANNE LEE & HU NAIWEN

Mushrooms can help prevent cognitive impairment, according to a number of studies, and traditional Chinese doctor Hu Naiwen of Taiwan's Shanghai Tong Te Tang shared his insight on how to choose and prepare the fungi to get the most benefits, in a recent video on his YouTube channel Hu Naiwen's Lectures.

One key focus of research on mushrooms is their potential effects on dementia, a disease that can have a severe impact on a person's cognitive and behavioral response, reducing his or her ability to lead a normal life.

The most common type of dementia is Alzheimer's disease. In March, the Alzheimer's Association of the United States released data indicating that there are about 6.7 million Americans aged 65 and above suffering from Alzheimer's, and that without many breakthroughs in prevention, mitigation, or treatment, this number could reach 13.8 million by 2060.

Since the outbreak of COVID-19, several studies have focused on the impact of infection and vaccination on the brain and nervous system.

Mushrooms are rich in glutamic acid, so adding a little mushroom to stir-fry or stew can elevate the taste profile and give it complexity.

A 2022 study of 6,245,282 Americans aged 65 or older showed that between people who were diagnosed with COVID-19 and people who weren't, the number of people subsequently diagnosed with Alzheimer's disease within 360 days was significantly higher in those who had been infected with COVID-19. Women and people 85 and older had higher risk.

One study published in the journal *Nature Medicine* in September 2022, based on a comprehensive analysis of U.S. federal health data, found that compared with the uninfected, COVID-infected people had more neurological symptoms within the first year after infection. These include stroke, cognitive and memory impairment, migraines, and seizures.

Another study published in *Nature Medicine* in 2021 found that compared with a control group, people vaccinated against COVID-19 had an increased

risk of developing neurologic complications, which also showed a greater risk of complications after testing positive for SARS-CoV-2.

Mushrooms Can Prevent Brain Degeneration

Hu pointed out that mushrooms could have a role in preventing dementia because they are rich in ergothioneine, which is a natural compound with strong antioxidant and anti-inflammatory effects, which protect nerve cells from damage. This is likely to be an important element in preventing dementia.

Hu mentioned that a 2019 study conducted on a six-year follow-up survey on 663 elderly people over the age of 60 published in the *Journal of Alzheimer's Disease* found that compared with participants who consumed less than one serving (150 grams or 5.3 ounces) of mushrooms a week, participants who consumed more than two servings of mushrooms a week had a 43 percent lower risk of developing mild cognitive impairment, and this association was independent of age, gender, education, cigarette smoking, alcohol consumption, hypertension, diabetes, heart disease, stroke, physical activities, and social activities.

Hu said that fresh shiitake mushrooms shouldn't be soaked in water during cleaning to avoid the loss of aroma and taste. Instead, pat the shiitake mushrooms lightly to remove the sediment inside the gills and then quickly rinse the dirty parts with running water or wipe off the surface dirt with a paper towel dipped in clean water.

Classification of Mushrooms and Their Respective Functions

Hu said that mushrooms are generally divided into two broad types: fresh and sun-dried. Because of their exposure to the sun, the latter usually contain more vitamin D, which can help the body absorb and balance calcium.

Hu also listed three categories of mushroom based on application: medicinal, poisonous, and edible. Some mushrooms with medicinal effects are *Cordyceps sinensis*, *Poria cocos*, *Ganoderma lucidum*, and *Antrrodia cinnamomea*.

Poisonous mushrooms include many varieties found in the wild that are traditionally known to damage physiological functions or even cause death.

Some common edible mushrooms are oyster mushroom (*Pleurotus ostreatus*), beech mushroom (*Hypsizygus tessulatus*), enoki mushroom (*Fiammulina velutipes*), golden oyster mushroom (*Pleurotus citrinopileatus*), shiitake mushroom (*Lentinula edodes*), and straw mushroom (*Volvariella volvacea*).

Oyster mushrooms are petite in appearance and have a relatively short shelf life. They should be consumed quickly, while they are still fresh. They have a smooth taste and are ideal for

stir-frying with shredded pork. The beech mushroom is great for soup or cold salad, but it isn't recommended for barbecue as it will affect the overall taste of the dish.

Enoki mushroom is one worth special mention. It's low in calories and rich in dietary fiber, making it a favorite of those watching what they eat. The chitin (an amino polysaccharide common in nature) contained in enoki mushrooms can increase the number of probiotics in the intestinal tract, alleviating constipation. However, Hu suggests that people with poor gastrointestinal function avoid eating too much enoki mushroom because of its high fiber content.

Selection and Preservation of Shiitake Mushrooms
Hu shared two tips for choosing fresh shiitake mushrooms:

1. The gills should be distinct and radial, arranged neatly and not stacked together.
2. Fresh mushrooms are tall and elastic, with a dry surface and clean color without softening, water seepage, or discoloration.

Hu said that when fresh shiitake mushrooms are stored, they must be wrapped in dry kitchen paper and put inside a fresh-keeping bag. Refrigerate without sealing.

It's best to cook soaked shiitake mushrooms as soon as possible to avoid discoloration and mold. Moldy shiitake mushrooms should never be eaten.

Hu said that when fresh shiitake mushrooms are stored, they must be wrapped in dry kitchen paper and put inside a fresh-keeping bag. Refrigerate without sealing.

Who Should Avoid Eating Shiitake Mushrooms?

Hu emphasized that certain types of people should avoid eating shiitake mushrooms.

1. Mushrooms contain a lot of purine, which can easily induce or aggravate gout, so patients with gout or chronic kidney disease should not eat too many shiitake mushrooms.
2. Shiitake mushrooms can be inflammatory, so people with inflammation should avoid them so as not to worsen their symptoms.
3. Pregnant women shouldn't eat shiitake mushrooms to avoid fetal skin allergies.



Mushrooms contain ergothioneine, a compound that protects nerve cells from damage.



Sun-dried mushrooms tend to be higher in vitamin D due to their exposure to the sun.

MUSHROOMS HAVE 'UMAMI,' THE MYSTERIOUS 5TH TASTE PROFILE

It has long been believed that there are just four basic taste profiles: sweet, salty, sour, and bitter. In 1907, Japanese chemist Kikunae Ikeda successfully extracted L-sodium glutamate from kelp soup and found that it was the substance that could produce umami, or savoriness, a fifth taste profile. Mushrooms are rich in glutamic acid, so adding a little mushroom to stir-fry or stew can elevate the taste profile and give it complexity.



'1 SOUP, 1 POT' RECIPES



MUSHROOM COMBO HEALTH POT: PREVENT BRAIN DEGENERATION

INGREDIENTS:

Handful of fresh shiitake mushrooms
Handful of beech mushrooms
Bit of enoki mushrooms
1/4 cabbage
1/4 pumpkin (sliced)
5 red dates
Small handful of wolfberries
1,000 milliliters (2.1 pints) of water

Preparation: Combine ingredients in a hot pot and cook. Serve hot. Hu said that this meal is low in calories, high in fiber, and provides satiety, which not only maintains health and prevents dementia, but also helps with weight maintenance.

Adjust cabbage and pumpkin amounts to suit taste.



MUSHROOM CHICKEN SOUP: NOURISHING AND BEAUTIFYING

INGREDIENTS:

8 dried shiitake (or flower) mushrooms
Half a chicken cut into pieces
1 piece of old ginger cut into 10 slices
6 red dates
1,500 milliliters (3.17 pints) of water
300 milliliters (0.6 pints) of water (for the shiitake mushroom)
Salt to taste

Preparation: Wash shiitake mushrooms and soak them in 300 milliliters of water at room temperature until they soften. Cut them into 1-millimeter-thick slices for later use. Boil the 1,500 milliliters of water and put the chicken pieces into the pot. Skim off the oily foam. Then add shiitake mushroom slices, ginger, red dates, water, and salt. Bring back to a boil, then switch to low heat and simmer.

Hu emphasized that the longer the cooking time, the better, as almost all the nutrients will be released into the soup.



NEW TREATMENTS

Tech-Driven Therapy Shows Promise for Social Anxiety

Innovative new treatment as effective as a psychiatric drug for social anxiety disorder, finds study

LIA ONELY

A new technology-driven treatment was found to be as effective as psychiatric medication for treating social anxiety disorder, according to a recent clinical study.

The study compared gaze-contingent music reward therapy (GC-MRT) with a selective serotonin reuptake inhibitor (SSRI) drug treatment in reducing social anxiety disorder symptoms. GC-MRT is based on eye-tracking technology that allows for treatment of social anxiety disorder (SAD) through changing attentional biases in patients.

The paper was published in the *American Journal of Psychiatry*.

The study randomly allocated 105 adults with SAD into three groups. One group was treated with escitalopram (which is sold as Ciprolex and Lexapro). This is an SSRI drug used as first-line treatment; a second group was treated with GC-MRT; and the third was a control group (which included patients who were told they would receive GC-MRT sessions following a 12-week waiting period).

All the participants underwent a complete clinical assessment before and after the treatments, and they were asked to report

on their symptoms and their severity.

Mean changes in clinician-rated and self-reported social anxiety symptoms from baseline to mid- and post-treatment assessments were compared between the groups. The researchers also examined changes in attentional dwell time on threat.

Depression was assessed at the pre- and post-treatment assessments also, "given the high comorbidity between social anxiety disorder and depression" according to the study. Based on previous studies, the researchers expected to see improvement in depressive symptoms only in the SSRI group.

After 10 sessions that lasted for 20 minutes over a 12-week period, about 50 percent of the participants in the GC-MRT treatment group showed significant improvement in their symptoms—similar to the results found in patients who received Ciprolex.

Individuals in the GC-MRT and SSRI treatment cohorts showed lower SAD scores at the mid- and post-treatment assessments than the control group. There was no difference in the efficacy of the treatments.

The GC-MRT group also showed a reduction in the amount of time they dwelled on threats.

SAD

Social anxiety disorder is characterized by the constant fear of social or performance situations in which the individual is exposed to unfamiliar people or to the possibility to be scrutinized by others, according to the NIH website. About 12 percent of U.S. adults experience this disorder at some point in their lives.

Yair Bar Haim, who led the study, is the director of the Adler Center for Child Development and Psychopathology and of the Center for Traumatic Stress and Resilience at Tel Aviv University.

He told *The Epoch Times* that the most common example of SAD is standing in front of an audience, but it doesn't have to be a large crowd. These individuals might experience anxiety even when eating with company, and they may experience all the classic anxiety symptoms such as sweating, palpitations, and shortness of breath.

Quite often, people with this disorder avoid social situations—at a heavy interpersonal, professional, and economic price.

"It is a serious disorder that usually does not go away without treatment," Bar Haim said.

One of the main things known about people who suffer from anxiety disorders in general and SAD in particular is that they have an attentional preference to threatening stimuli in their environment, he said.

For example, in an audience, most of the people will have neutral or positive faces, but there might be one or two who look a little more negative. People with SAD tend to direct their attention to those negative faces, and they find it difficult to disconnect from there.

"GC-MRT reduces this tendency through feedback," the study states.

Bar Haim said that the treatment normalizes this bias, thus alleviating symptoms.

Participants were shown a display of faces in a matrix on a computer screen. This difference was not observed for the GC-MRT cohort. These results, similar to findings in other reports, "may suggest an advantage of SSRI treatment over GC-MRT in patients with comorbid depression," the researchers wrote in the paper.

The study also included MRI scans before and after both treatments, Bar Haim said. The scans showed that there are areas in the brain that react in a similar way to the drug and to the GC-MRT. Yet one specific area responded uniquely to the GC-MRT, which is an area in the anterior cingulate cortex that is responsible for directing and regulating attention.

The additional findings will be published in a following paper currently under review, Bar Haim said.

The authors noted that the main limitations were that the current study didn't include a follow-up on the treatment outcomes, as SSRI treatment continuation is recommended for at least a year.

In addition, both treatments "were limited in their overall clinical effectiveness," the researchers wrote. Mean clinician-rated total severity scores remained above the suggested clinical cutoff at the post-treatment assessment. Less than 50 percent of the participants showed reliable change.

Currently, a large-scale study replicating the research is being done at Columbia University in New York, led by Franklin Schneider, associate professor of Clinical Psychiatry at the College of Physicians and Surgeons of Columbia University and assistant director of the Anxiety Disorders

at the New York State Psychiatric Institute. Intermediate results have shown the treatment to be effective.

The current study found that SSRI treatment was associated with lower depression than in the control group. This difference was not observed for the GC-MRT cohort. These results, similar to findings in other reports, "may suggest an advantage of SSRI treatment over GC-MRT in patients with comorbid depression," the researchers wrote in the paper.

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12% of the U.S. population experiences social anxiety disorder at some point in their lives.

Public speaking is one of the most common triggers for social anxiety.



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Currently, several research teams around the world, including Bar Haim's team, are testing the effectiveness of GC-MRT for treating other psychiatric disorders.

Bar Haim said that there is a strong interest in examining the effectiveness of the new tool to treat depression. His team also conducted research examining this question, which hasn't yielded very good results so far. Yet several groups of scientists are also examining it, and Bar Haim's team intends to research this topic again "with new insights."

Bar Haim's team is also in the midst of a study evaluating the effectiveness of GC-MRT for treating post-traumatic stress disorder, addictions, and eating disorders.

Currently, the new treatment is available only in a research setting. When the researchers enrolled patients for the study, they faced "about 10 times more demand" than they could handle, Bar Haim said.

It will take some time to allow the treatment to be available to the general public, but Bar Haim said that he assumes that it will be available to some degree in the near future.

The researchers said they hope to open a dedicated clinic to allow this treatment with the required technical equipment at Tel Aviv University within a year to allow treatment for those who are interested in receiving it.

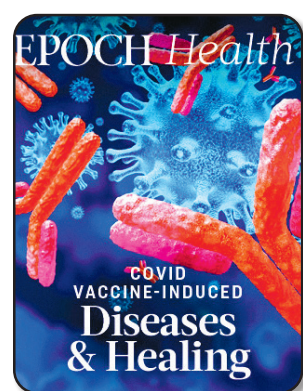
In the meantime, the scientists share their experience, the software, and the needed means with other institutes in the United States, Canada, and Europe to assist them in implementing the new treatment for their patients.

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The Color of Eye Health

Lutein, a pigment found in fruits and vegetables, protects eye health and enhances cognitive ability

BEWARM/SHUTTERSTOCK

CHLOE ZHANG

The pigments that give color to fruits and vegetables are complex compounds with notable effects on human health. Among these pigments, lutein is of particular significance to the eyes because it's an important component of the macula within the retina.

For the elderly, supplementing lutein not only helps prevent cataracts and macular degeneration but also improves cognitive ability and mobility.

Lutein is found in egg yolks, orange-yellow fruits, and most notably in green leafy vegetables such as kale and spinach. Plants can synthesize lutein, but the human body can only obtain it through eating foods containing lutein.

Lutein intake is therefore dependent on what we eat and will vary greatly according to the dietary habits in any given region. According to a research review published in *Nutrients* in 2018, research shows that Americans consume an average of 1.7 milligrams of lutein per day, while in Korea, it's about three milligrams. In contrast, in Fiji, where people eat a lot of fruits and vegetables, it peaks at about 25 milligrams per day.

Lutein can effectively absorb blue light and can therefore protect the eyes and skin from oxidative damage caused by sunlight. For those who are stuck on the computer for several hours per day, lutein might be the secret weapon to shield themselves from blue light radiation.

Lutein is also a powerful antioxidant that can help the body fight free radicals, prevent chronic diseases, and promote the normal functioning of the immune system. Free radicals are the bad boys of human molecular biology. They can play an important role in immune function, but there are almost always too many of them running rampant in the body, creating all kinds of problems from accelerated aging to an increased risk of cancer and other diseases.

Lutein is a type of law enforcer, helping to neutralize free radicals and reduce their damage.

Continued on Page 14



1.7
MILLIGRAMS
OF LUTEIN

is consumed by
Americans each day.

► Prolonged hours spent looking at a computer can damage the eyes. Eating more leafy greens can help minimize the harmful effects of long-term blue light exposure.

JUPITERIMAGES/GETTY IMAGES

Are Fibrinolytics Key to Preventing Clogged Arteries?

These enzymes may offer an important way to combat cardiovascular disease and treat those facing severe COVID-19

JOSEPH MERCOLA

Fibrinolytic agents, sometimes referred to as thrombolytic agents, are capable of dissolving blood clots that may block your veins or arteries. In general, cleaner arteries are a benefit to your cardiovascular health, which is one reason why fibrinolytic enzymes such as lumbrokinase, nattokinase, and serrapeptase should be on your radar.

In your body, enzymes regulate the rate of numerous biological reactions, speeding them up so necessary functions such as digestion, muscle contractions, and other

Fibrinolytic enzymes inhibit platelet aggregation and the formation of blood clots similarly to aspirin.

aspects of cellular metabolism can occur.

Lumbrokinase, serrapeptase, and nattokinase are proteolytic enzymes that act as natural anticoagulants by breaking down fibrin that forms blood clots. Fibrin, a clotting material that restricts blood flow, is found both in your bloodstream and connective tissue such as your muscles. Fibrin accumulation is also responsible for scar tissue.

It's important to understand that when using these enzymes for fibrinolytic therapy, they need to be taken on an empty stomach, at least one hour before or two hours after meals containing protein. Otherwise, these enzymes will be wasted in the digestion of the protein in your food and won't serve their fibrinolytic purpose.

Continued on Page 16

An important fibrinolytic enzyme is produced by mori silkworms to let them escape from their cocoons.



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How Vaping Ruins Teeth and Causes Bad Breath

Research into the oral microbiome and e-cigarettes is starting to reveal the consequences of vaping

AMY DENNEY

The minty flavors of vape juice might temporarily cover up bad breath, but the root cause of halitosis is a bacterial imbalance, which is made worse by the habit of smoking electronic cigarettes. As long as vaping continues, helpful oral bacteria are killed off, weakening the body's defenses against bacteria that cause tooth decay and bad breath. In fact, there's a systemic cascade of disease associated with the destruction of certain tiny organisms that live in the mouth. Decaying teeth and offensive breath are signs of bigger problems, and even top-notch oral hygiene habits can't overcome damage created by dysbiosis, an imbalance of bacteria.

"Somewhere along the line, somebody convinced them that vaping is safer than smoking. But safer is not safe," Dr. Elle Campbell, a family integrative physician, told The Epoch Times. "There are really negative side effects to vaping." She may not be a dentist, but Campbell and other doctors who make up the American Academy for Oral & Systemic Health are educating themselves about the connection between oral health and disease for their patients' sake. And they're sounding the alarm about vaping, which became popularized after Chinese pharmacist Hon Lik patented the first e-cigarette, in 2003.

Although Lik's intentions were benign—his dad was a heavy smoker and died of lung cancer, motivating him to develop a less harmful alternative—long-term research was lacking. On top of that, two decades of evolving science include revelations on the vital role of the microbiome in oral and overall health.

The e-cigarette industry exploded on the premise of being "safer," which has never been proven. The proliferation of a wide variety of products has gone largely unmonitored, creating unknown complications for users and layers of complexity for scientists who are trying to contextualize harm.

E-cigarettes fit in the palm of the hand, sometimes so small that they're easily hidden, and use a battery to heat up a liquid

solution (vape juice) in order to produce an aerosol. They can be activated by a button or by inhaling. Nicotine, tetrahydrocannabinol (THC), and cannabinoid (CBD) oils can all be used in vapes. These solutions can contain any number of carcinogens and toxicants.

Despite many unknowns, there are plenty of facts, including studies about the impact on the microbiome—the colony of microorganisms including bacteria that live in and on the body—that tell a compelling story.

Some e-cigarette liquids contain high sucrose levels, toxins related to sugar, and aldehydes.

How Vaping Kills Microbes

Vaping assaults the oral microbiome with chemicals, additives, and sweeteners that stick to the teeth. It can damage enamel and kill off the healthy bacteria that stem the tide of plaque.

Mouths are full of flora that keep the environment



balanced by killing off pathogenic invaders. It's a system that works relatively well unless it's thrown off by toxins such as chemicals, medications, and sugary processed foods that are associated with low levels of healthy bacteria.

"We have to have bacteria in our mouth. They're the good guys," Campbell said. "They keep our gums and our tissues strong and healthy. If there was no bacteria in our mouth, we'd lose all our teeth."

Too much bad bacteria also cause bad breath. That same imbalance associated with halitosis causes periodontal disease and mouth and digestive cancers, according to a 2020 study published in the Journal of Clinical Medicine. Periodontal or gum disease damages the soft tissues of the mouth and can lead to tooth loss.

Smoking cigarettes already increases one's chances of gum disease fourfold, and research has established that periodontitis is associated with a pathogen-rich oral biome. But as one 2020 study published in Science Advances pointed out, it can take more than a decade for visual signs of periodontal disease to manifest.

The article states that there's reason to believe oral microbiome changes happen earlier in vaping than in smoking and that there are other mechanisms that vary from smoking, warranting more extensive studies.

"E-cigarettes have the potential to shift the host-microbiome equilibrium, posing a significant risk for future disease," the article reads.

Among the estimated 5.66 million adults who currently vape, 23 percent didn't smoke previously, and most were younger than 35, according to the Journal of the American Medical Association (JAMA).

A study published in early 2022 in Molecular Oral Microbiology shows a six-month shift in the oral microbiome of 101 e-cigarette patients. Their bacterial composition more closely resembled that of smokers, including high numbers of periodontal-disease-associated pathogens and proinflammatory cytokines all indicative of microbiome dysbiosis and advanced disease. A study that came out in November 2022 in the Journal of the American Dental Association validated the relationship between vaping and tooth decay.

How it happens isn't clear, but it could be linked to several factors that are unique to vaping, including the temperature of the aerosols that penetrate the protective biofilm on the teeth. Vaping also has a more alkaline pH and heated metals that sometimes turn up in the aerosol and propylene glycol, which is generally considered safe in food but is known to damage enamel and lower saliva levels.

E-juice typically contains four ingredients: nicotine, water, flavoring, and propylene glycol or vegetable glycerin (or



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Vaping destroys beneficial oral bacteria, creating an imbalance of good and bad bacteria, which increases the likelihood of halitosis.

WESTEND61/GETTY IMAGES

5.66

MILLION
U.S. adults vape.

Many people choose vaping and e-cigs as an alternative to smoking.



Teenagers and young adults, who tend to eat more sugar-laden diets, are particularly at risk from a collision of unhealthy habits impacting the microbiome.

exposure, exercising without overdoing it, and addressing stress can all help balance the microbiome.

More Evidence to Warn Children of Vaping

Teenagers and young adults, who tend to eat more sugar-laden diets, are particularly at risk from a collision of unhealthy habits affecting the microbiome. A total of 1 in 4 students vapes, according to 2019 data from JAMA. They're also the target of a lot of misleading messaging.

"It's not their fault," Danenberg said. "When the industry tells us this is a great alternative to cigarette smoking and it tastes good and it's harmless, you know, why not? The sad thing is the research is just starting now."

Many e-cigarette liquids were found to contain aldehydes, toxins related to sugar, and high sucrose levels, according to a 2018 study in Nicotine and Tobacco Research.

"Because sugar added to tobacco alters the smoke in cigarettes by modifying sensory impact of nicotine and other tobacco alkaloids, it is possible that sugar in e-cigarettes may make the product more appealing," researchers wrote. "Furthermore, most product labels did not list sugars or provide warnings about aldehydes on the labels."

Campbell said young people should tell health care providers about their lifestyle choices and risk factors and ask for oral cancer screenings. She advocates for parents to have their children use oral hygiene products, gum, and mints containing xylitol. Although it isn't a substitute for quitting vaping, good oral care, or a healthy lifestyle, there's evidence that xylitol can help protect against cavities.

Overcoming addiction isn't easy, and nicotine is highly addictive because of how fast it enters the bloodstream and the euphoria users get when dopamine levels rise. Only about 6 percent of smokers are able to quit each year, according to the U.S. National Institutes of Health.

"There's lots of reasons people might want to pick nicotine," Campbell said. "But there's other stuff in that vaped chemical. They're exposing their body to a toxic burden that they may not have appreciated."

Vaping is clouded with mixed messages, not unlike cigarette marketing from 80 years ago. An advertising campaign in 1946 featured the slogan, "More doctors smoke Camels than any other cigarette." Danenberg is concerned that there may be even greater harm associated with vaping than cigarette smoking.

"Eventually science caught up with them and figured that smoking was unhealthy. Look how many years it took for that to happen," he said. "It's going to take a long time to get the research that's published and being actually investigated today to the clinicians like dentists and physicians to let them know to get their patients information."



Toothpaste, gums, and mints containing xylitol may help prevent dental problems.

WHAT PEOPLE ARE SAYING

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— DARRYL AGEE

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The Color of Eye Health

Continued from Page 13

Beneficial Effects of Lutein

Various studies have found that lutein has several beneficial effects.

1. Protects Eyesight

Lutein belongs to the carotenoid family. Although there are about 700 different carotenoids in nature, only some 20 carotenoids—including alpha-carotene, beta-carotene, gamma-carotene, lutein, and zeaxanthin—can be absorbed by the human body and enter the bloodstream. Of these, only two from dietary sources, lutein and zeaxanthin, can ultimately reach as far as the retina. According to a paper in Clinics in Derma-

tology, these two carotenoids are found in the eye tissue where they accumulate in the center of the retina and make up the macular pigment.

So what's a macular pigment? It exists mainly in the macula area of the human eye, which can absorb and neutralize the high-energy blue light and ultraviolet rays in the electromagnetic spectrum, thereby protecting the retina from light damage.

Many studies have proved the importance of lutein and its isomers in vision. A study of more than 40,000 participants found that increasing dietary intake of lutein and zeaxanthin significantly reduced the risk of developing cataracts in older adults and reduced the chance of blindness.

An over-20-year study in the United States found that eating more carotenoid-rich fruits and vegetables may reduce the incidence of advanced age-related macular degeneration.

For patients with age-related macular degeneration, taking lutein supplements for 36 months can improve the symptoms, according to the U.S. National Library of Medicine.

2. Prevents Dementia

In recent years, a growing number of

studies have found that lutein intake is also associated with other positive health markers, including improved cognitive function. Those studies found that lutein concentrations in the brains of older adults with normal cognitive function were significantly higher than that in the brains of those with cognitive impairment.

Lutein can effectively absorb blue light and can therefore protect the eyes and skin from oxidative damage caused by sunlight.

For young people, supplementing with lutein can also help improve cognitive function. A randomized, double-blind controlled trial found that healthy young adults who took lutein and zeaxanthin supplements for one year had significantly improved test results of their cognitive ability, including spatial memory and reasoning ability, compared with the placebo control group.

3. Prevents Cancer and Cardiovascular Disease

Lutein can also reduce the risk of chronic diseases, such as cardiovascular disease, cancer, and others because it helps reduce oxidative and inflammatory re-

sponses in vascular endothelial cells.

4. Improves Mobility

Lutein supplementation may also improve physical activity. Studies found that rats supplemented with lutein ran a greater distance than rats that weren't supplemented. For sedentary older human adults, there was also a statistically positive linear relationship between increases in plasma lutein concentrations and increases in physical activity.

5. Protects the Skin

Lutein has also been found to benefit skin health. Taking lutein-containing nutritional supplements can improve skin elasticity and moisture levels; reduce dry, wrinkled skin; and reduce skin damage caused by UV rays, thereby reducing the risk of skin cancer. The basis for these health benefits is lutein's antioxidant properties that remove free radicals.

How to Take Lutein

Lutein is commonly found in vegetables and fruits, especially green leafy vegetables and plant foods that are yellow or orange in color, such as carrots, squash, corn, and citrus. Egg yolks are also a great source of lutein and zeaxanthin.

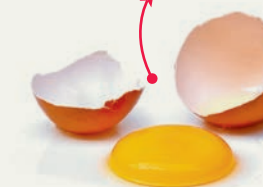
3 Risks of Excessive Intake

When it comes to lutein, more isn't always better. The recommended daily intake of lutein varies from person to person. Studies have found that a daily intake

Lutein and Zeaxanthin

Content in common raw foods (per 100 grams or 3.5 ounces)

Spinach: 12.2 milligrams	Kale: 6.26 milligrams	Egg yolks are another good source of lutein and zeaxanthin.
Sweet potato leaves: 14.72 milligrams	Peas: 2.48 milligrams	
Turnip greens: 12.83 milligrams	Lettuce: 2.31 milligrams	
Cress: 12.50 milligrams	Squash: 2.13 milligrams	
Chicory: 10.30 milligrams	Egg yolk: 1.09 milligrams	



Although lutein is found in many vegetables and fruits, ways of cooking and food pairings can also affect its absorption rate. For example, an oil dish can increase the bioavailability of lutein because it's a fat-soluble nutrient. Therefore, it's recommended to cook lutein-rich foods in the company of foods rich in healthy fats, such as olive oil, avocado, nuts, seeds, and the like.

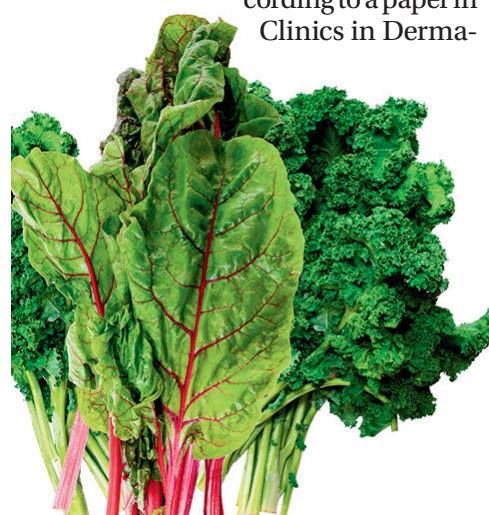
of six milligrams of lutein can prevent age-related macular degeneration, and a daily intake below 20 milligrams is generally safe, but excessive intake may cause some negative effects on the body. An overly large intake of lutein may lead to:

1. Skin pigmentation
2. Darkening of skin tone or lip color
3. Affected absorption and metabolism of some drugs

When using lutein supplements, one should follow the manufacturer's directions and avoid excessive intake.

For pregnant women, infants, and people with specific diseases, among others, it's best to consult a specialist physician or nutritionist to determine the appropriate amount.

The health benefits of lutein are manifold, from eye health to cardiovascular health and may even include fighting cancer. However, some studies have been inconclusive, and more clinical and large-scale randomized, controlled trials are needed to confirm these preliminary results. The available evidence so far suggests that foods containing lutein are an important ingredient of a healthy diet.



Green leafy vegetables are among the richest sources of lutein.

WISE HABITS

A Meaningful Life Beyond Getting Stuff Done

In our productivity culture, many of us define ourselves by what we accomplish, but there is much more to life than our task list

LEO BABAUTA

Many of us are intensely focused on “getting stuff done.” We’re consumed with productivity systems and tools, anxious about being behind on all the things we have to do, and fixated on tasks—to the exclusion of all else.

But here’s the thing: If you ever get really good at getting stuff done, you’ll realize that it’s an empty, meaningless game. I can testify to that. I’m very good at getting things done—I can absolutely crush my task list for months on end. And at the end of all of that, I still don’t feel all that much more satisfied.

There’s some satisfaction in getting a bunch of things done, but that’s not what really drives us. What often drives us is fear—fear of what will happen if we fall too far behind or drop all the balls that we have in the air. We seek a sense of self-worth through accomplishment. We worry about what it will mean about ourselves if we can’t achieve what we’ve set out to do.

That fear isn’t resolved by getting things done—no matter how much you do. It’s like the experience of a drug addict. It doesn’t matter how much drugs he does, any satisfaction is fleeting. He always needs more. Productivity addicts are likewise never fulfilled. They’re pursuing an idea about themselves that doesn’t really exist, that their self-worth or significance in this world is defined by the tasks and projects they complete.

What would happen if we decided to give up that game? What if we set aside the fears that drive us and the belief that we can finish the things we’ve set out to do? What if



Setting aside our to-dos in exchange for being present in nature is one way to embrace the sacredness of life.

What often drives us is fear—fear of what will happen if we fall too far behind or drop all the balls we have in the air.

we abandoned the idea that we’ll feel good enough if we get enough things done?

What’s beyond all of that? I don’t know the definitive answer, but here’s what I’ve found so far:

The moment is perfect. Getting stuff done isn’t required in order to achieve peace, freedom, happiness, fun, joy, curiosity, connection, love, or anything else I truly desire. I can sit right here and be present with the wonder of the present moment.

There’s stuff I want to create! Even though the moment is enough, I still want to make a podcast, for example. That’s my motivation for getting my butt in gear. Not to get stuff done or keep my head above water, but to create something that I’m committed to contributing to this world.



ALL PHOTOS BY SHUTTERSTOCK

Society puts much emphasis on the idea that accomplishment is measured by how much we get done.

I can play any game I want to play. That game could be checking things off my task list endlessly, but that’s not very fun after a while. Instead, I can make up other games. What about connecting with people and discovering their life’s purpose together? Or bringing love to whatever is getting in the way of that? Or maybe I could discover a new way to enjoy the moment, regardless of what it produces.

My heart wants to express itself in many ways. It’s expressing itself with this article right now, but it might want to express itself through a podcast, through a call with a coaching client, or by going outside and enjoying movement in nature. This is so much more satisfying than the game of getting stuff done.

There is sacredness in each day. I find sacredness in the work that I’m doing and in when I’m not doing anything. I find it in conversations with people and in communion with nature. I find it in my heart’s expression of love and in the fears I face.

Those are a few observations that I’ve found in the space beyond getting stuff done. In that space, I’m not a summary of my accomplishments, and the value of my life isn’t defined by what I do. I also know that I have worth by the simple fact of my existence.

Leo Babauta is the author of six books and the writer of Zen Habits, a blog with over 2 million subscribers. Visit ZenHabits.net

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