



The Science of a Healthier Life®

LifeExtension.com

February 2024

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Sharp Decline of Dementia Prevalence



WILLIAM FALOON

Contrary to common beliefs, the prevalence of **dementia** in older Americans continues to steeply decrease.

As we reported long ago, those who engage in healthy lifestyles may delay **brain aging** by **11 years** while reducing Alzheimer's and vascular **dementia** risks.¹

The latest data on this topic were published in the *Proceedings of the National Academy of Sciences*.

Using a new model of **cognitive** status, scientists found a statistically significant **30.1%** decline in age-adjusted **dementia prevalence** in Americans over **age 65** from years **2000-2016**.²

A significant part of this **dementia reduction** is attributed to *higher education* levels.² Previous studies found higher education^{3,4} along with better diet,⁵ lifestyle,⁶ and management of hypertension⁷ correlating with reduced dementia prevalence.

Overlooked in some media reports is that more *highly* educated people tend to follow **healthier lifestyles** and take steps to reduce **cardiovascular** risks that also accelerate brain aging.

Educated persons may also ingest **nutrients** that correlate with improved **brain health**.

This editorial describes some of the better-documented methods of preserving **neurological function** with age.



While Overall Rates of Dementia are Soaring, There is a Huge Decline in Dementia Prevalence

FOUR PUBLISHED STUDIES REVEAL:

23% per decade decline in **dementia** prevalence (1977-2008)¹³

24% decline in expected British **dementia** cases (1991-2011)¹⁴

49% decline in **dementia** prevalence in Americans (1982-1999)²⁰

26% decline in **dementia** prevalence in Americans (2000-2012)¹¹

**DEMENTIA
DECLINE**



The term **dementia** refers to a decline in cognitive abilities that leads to loss of **independent function**.

An estimated **4-5 million** older adults in the United States suffer severe neurological impairment.⁸ This total number is expected to **triple** in coming decades.⁹

Not all population groups equally suffer loss of cognitive abilities with age.

Dementia risk plummets in response to healthier dietary/lifestyle choices and better control of **hypertension, diabetes, and lipids**.¹⁰⁻¹²

In the famous **Framingham Heart Study**, the incidence of dementia among older Americans declined by about **20% per decade** between **1977** and **2008**.¹³

A British study found a **24% decline** in the expected number of cases of **dementia** between **1991** and **2011** among older adults.¹⁴

More recent data confirm how **humans** can further slash **dementia risk**.

For instance, an international expert commission reported in **The Lancet** that more than **40%** of global **dementia** cases may be **preventable** by correcting unhealthy factors that impact individual risk.^{15,16}

Peer-reviewed published studies of **humans** and animals reveal methods that may further protect against **neurodegeneration**.^{6,11,17-19}

Control Your Rate of Brain Aging

Maturing people can exert a degree of **control** over their **rate of brain aging**.

When it comes to preventing **dementia**, however, there is no single approach.

Everyone should strive for **blood pressure** in the lowest tolerable ranges. I target my blood pressure under **115/75 mmHg**. Others require somewhat higher **blood pressure** to push blood through their aged/damaged circulatory systems.

Reducing **chronic inflammation** is essential for protecting aging brains. Most of you accomplish this via healthy behavior practices.

In a major finding we previously reported on, a group of elderly Americans underwent **cognitive tests** and **MRI scans** to assess **brain function**, and **blood tests** to assess **nutrient status**.²¹

The results identified five categories of **plasma nutrients** associated with enhanced **cognitive performance**.²¹

These **plasma nutrients** include **carotenoids** (like **lycopene**), **vitamin D**, and homocysteine-lowering vitamins (**folate** and **B12**).



MRI imaging revealed enhanced **brain network** connectivity in those with *higher* plasma **carotenoid** status and healthy balances of **omega-3** and **omega-6** fatty acids.²¹

This study found that *higher* levels of **nutrient combinations** measured in **blood plasma** were associated with enhanced cognitive performance and improved brain network efficiency as follows:

- A proper balance of certain **omega-3** and **omega-6** fatty acids was associated with *higher function* of two domains of **memory**.
- Higher **lycopene** levels were correlated with better scores in three separate domains of **memory**.
- Higher **omega-3** levels (EPA, DHA, and DPA) were strongly linked to better **executive function** and higher overall **intelligence**.
- **Carotenoids** including **trans-lutein** were positively associated with two measures of intelligence.
- Homocysteine-reducing **B-vitamins** (vitamin B2, folate, B12) and **vitamin D** were associated with better **executive function**.
- Functional **MRI** analysis revealed that three **nutrient biomarker patterns** significantly influenced the relationship between functional **brain connectivity** networks and measures of **intelligence** and **cognitive function**.

Readers of **Life Extension Magazine**[®] have supplemented with the above **nutrients** for many decades.

Restoring Brain Cell “Connectivity”

Our brain contains about 100 million cells called **neurons**.

In order for neurons to **communicate** they must connect to one another.

A **synapse** is the connection that allows information to pass from one neuron to the next.

Synapses are essential to **neuronal function**. Not only are synapses crucial to short-term **memory** in the young, but their **structural integrity** is vital for aging individuals seeking to stave off **cognitive impairments**.²²

When Synapses Degrade

Alzheimer’s dementia is characterized by the pathological accumulation of **non-functioning** plaque in neurons and loss of normal **neurotransmitter** flow between neurons.

Before neurons encounter severe damage, scientists have found a marked decline in **synaptic density**.

This loss of synaptic density causes a decline in **neuronal connectivity** that correlates to the impairments observed in Alzheimer’s.^{23,24}

A consistent finding in the brains of Alzheimer’s victims is a significant loss of **synaptic** contacts. This led a group of researchers to conclude:

“...synapse loss is an early event in the disease process and suggests that mild cognitive impairment may be a transitional stage between early Alzheimer’s disease and no cognitive impairment... with synaptic loss a structural correlate involved in cognitive decline.”²⁵



Magnesium and Synaptic Density

In a series of animal studies, a highly **absorbable** form of **magnesium** was shown to increase magnesium **brain** concentrations.²⁶

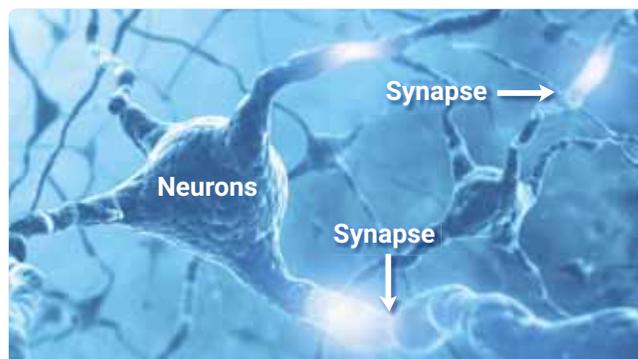
In response to this magnesium elevation there were significant increases in **synaptic density** and corresponding improvements in synaptic **functioning** and neuronal **signaling**.²⁶

These favorable changes in synaptic **structure/function** translated into enhanced measures of **cognitive function**.

Short-Term Memory Restoration

An animal study found that 24 days of supplementation with **magnesium L-threonate** produced an *increase* in cerebrospinal **magnesium** sufficient to boost short- and long-term memory scores. Other forms of magnesium did not significantly elevate brain magnesium compared to the control group.²⁶

Another study on memory-impaired aged rats showed that **magnesium L-threonate** could **reverse** the kind of cognitive dysfunction that occurs in normal aging humans. **Magnesium L-threonate** was added to the rat’s drinking water for one month. This enabled a significant improvement of **short-term** memory.²⁶



Long-Term Memory Research

Young and old animals underwent maze training with a delay interval. Animals supplemented with **magnesium L-threonate** learned to find the hidden platform in the maze **faster** than non-supplemented animals.

The **degree** of **learning** ability enhancement in the **aged** animals was **greater** than in **young** animals. This makes sense since **aged** animals suffer more loss of **synaptic density** that **magnesium L-threonate** has been shown to restore.²⁶

To test long-term spatial memory, a second trial test was performed 24 hours later. The unsupplemented “control” group forgot how to perform in the maze, whereas young and aged animals supplemented with **magnesium L-threonate** retained their ability to navigate the maze. This might be equivalent to an older human being able to find their car in a crowded parking lot.

The researchers concluded, “**Magnesium L-threonate significantly enhanced hippocampus-dependent spatial learning and memory in both young and aged rats.**”²⁶

Correlation Between Synaptic Density and Memory

Scientists next sought to verify that the mechanism behind **improvements** in **memory** and cognitive performance was due to increased density of the **synapses**.

Studies were done to precisely measure the various **synaptic structural** components in the **brain**.

Rats supplemented with **magnesium L-threonate** showed across-the-board **improvements** in **synaptic** protein expression, function, and structure, along with long-term potentiation of **synaptic** strength.²⁶

Reversal of Synaptic Decline

Several studies indicate that **synaptic connections** decline in the portion of the brain essential for memory. The degree of **synaptic loss** correlates with impairment of memory functions.^{27,28}

To evaluate the impact in old animals, one group received **magnesium L-threonate** while an unsupplemented group served as controls.

After one month, necropsy findings showed **synaptic density** was **67% higher** in the group **supplemented** with magnesium L-threonate. This study showed that even in old animals, **magnesium L-threonate** increased the **density** of synaptic components essential for youthful neurotransmitter release.²⁶

Human Findings

To further assess the effects of **magnesium L-threonate**, MIT researchers designed a **clinical trial** of older people with early **cognitive impairment**.

The study subjects had some impairment in their ability to plan, adapt, focus, and make decisions (executive functions).

These **human** study subjects supplemented with **magnesium L-threonate** or a **placebo** daily for 12 weeks.

At the beginning of the study, the participants averaged **57.8** years of age. Their **brain age** based on cognitive function, however, was **68.3** years old. By the end of the trial, those receiving **magnesium L-threonate** decreased their **brain age** a remarkable **nine years**.²⁹

Another **human** trial showed promising preliminary results in patients diagnosed with mild to moderate **dementia**. Even at this more advanced stage of cognitive decline, **magnesium L-threonate** led to improvements in **cognition** and **executive function**.³⁰

An open-label pilot study found that nearly half of adults with moderate **ADHD** (attention deficit hyperactivity disorder) who received **magnesium L-threonate** for up to 12 weeks displayed clinical **improvements**.³¹



Modern Recognition of Magnesium

Magnesium supplementation rates are surging **higher** in the United States and are projected to almost double from years 2021 to 2028.³²

This is happening as more consumers learn of its **whole-body** benefits and the **National Institutes of Health** statement that “**magnesium is a nutrient that the body needs to stay healthy.**”³³

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William Faloon, Co-Founder
Life Extension[®]



Ways to Reduce Risk of Dementia



Lifestyle Habits

- Exercise Regularly
- Eat A Healthy Diet
- Get Adequate Sleep
- Do Not Smoke



Health Care

- Treat Any Heart Disease
- Control Blood Pressure
- Control Blood Sugar
- Correct Hearing Loss



Mental and Social Well-Being Activities

- Stay Curious and Interested
- Actively Learn New Things
- Stay Socially Engaged
- Participate in Group Activities

DIET and LIFESTYLE CHOICES CAN THWART BRAIN AGING

One of the most consistent findings in the published medical literature is the profound role of **diet** and **lifestyle** on **dementia** risk.

A study published in **2023** found that people who follow a **Mediterranean diet** reduce **dementia** risk by **23%**...even in those genetically predisposed (APOe4 positive) to early-stage Alzheimer's.⁵

The "**MIND**" diet was created to identify the constituents of the **Mediterranean** and **DASH** diets that possess the greatest **neuroprotective** properties.

Ten **brain-healthy** food groups in the MIND diet are:³⁴

- **Green leafy vegetables**
- **Nuts**
- **Beans**
- **Fish**
- **Olive oil**
- **Other vegetables**
- **Berries**
- **Whole grains**
- **Poultry**
- **Wine (moderate drinking)**

Consuming the above 10 healthy food groups conferred significant protection against Alzheimer's³⁴ and mild cognitive impairment.^{5,34,35}

The top five **dangerous** food groups are:³⁴

- **Red meats**
- **Cheese**
- **Fried/fast food**
- **Butter and stick margarine**
- **Pastries and sweets**

By reducing one's intake of the **five** brain-damaging foods, significant protection against Alzheimer's and mild cognitive impairment was conferred.³⁴

This does not mean one can never consume any of the five bad food groups. Individuals can still follow a MIND diet if they reduce consumption of the following **brain-damaging** foods:

- Pastries and sweets to under **five** servings per week,
- Red meat to under **four** servings per week,
- Cheese to under **one** serving per week,
- Butter or margarine to under **one** tablespoon per day, and
- Fried/fast foods to under **one** serving per week.

On a personal note, I don't find the above restrictions confining, and I don't think many readers of this magazine will either.

Researchers found that greater adherence to the **MIND** diet resulted in a markedly slower rate of **cognitive decline**. Strict adherence to the **MIND diet** reduced Alzheimer's incidence by **53%**.³⁴

Even study subjects with "middle-of-the-road" compliance with the **MIND diet**, such as ingesting some of the constituents of a brain-healthy diet like **berries**, had their dementia risk reduced by **35%**.³⁴

These large risk reductions in response to **healthier eating** patterns represent **game changers** as it relates to reducing the numbers of Americans who would otherwise suffer agonizing dementia-related deaths. By adhering to healthy dietary patterns, your brain might be the equivalent of **7.5 years** younger in biological age.³⁴

The problem is that relatively few people can stick solely to healthy dietary patterns. The encouraging news is that it may not matter because just ingesting some of the constituents of the **MIND** diet was shown to confer considerable protection against **neurodegenerative disease**.³⁶

The graphic at the top of this page highlights the multiple ways that aging humans can reduce their **dementia risk**.

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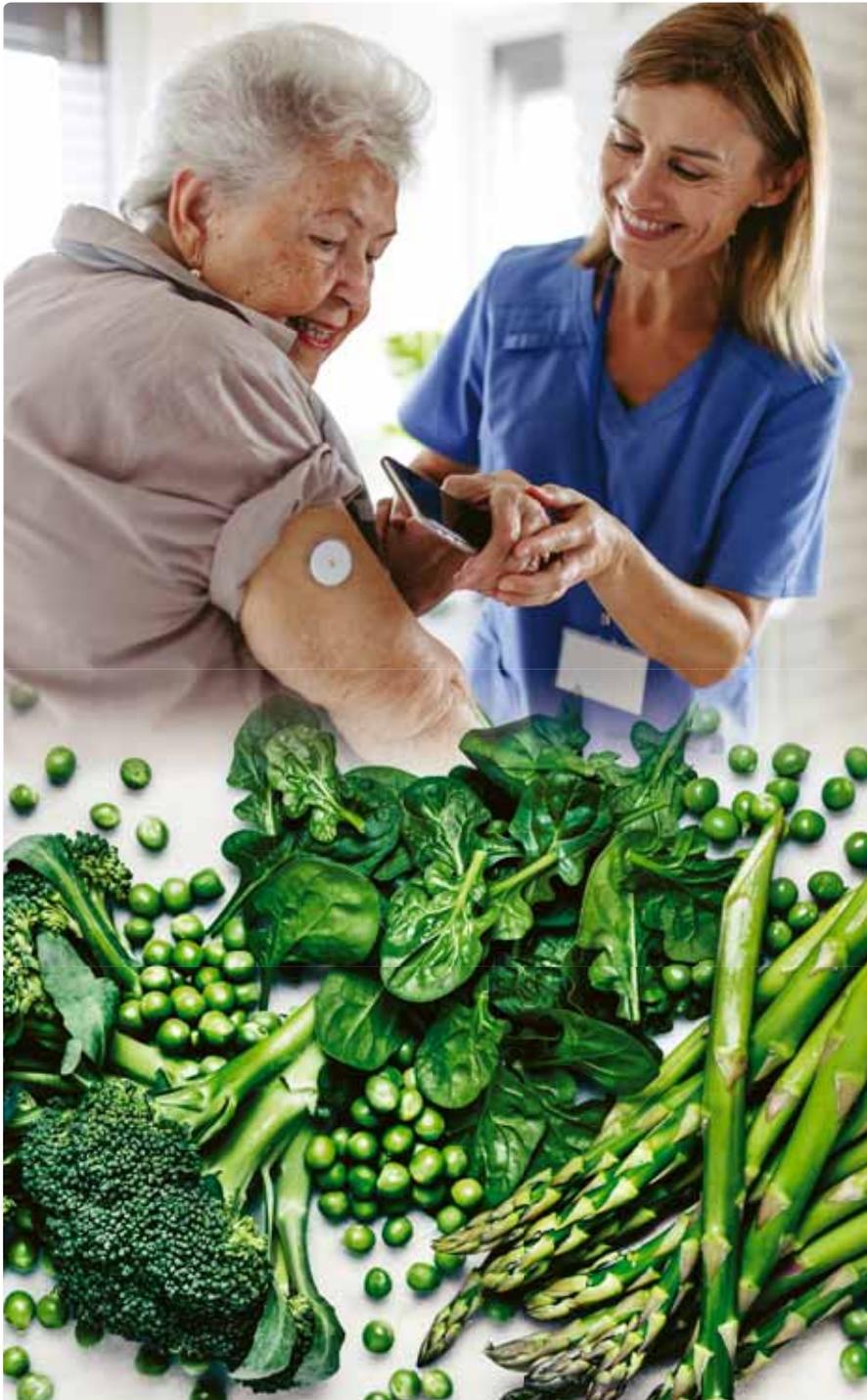
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In the News



More Vitamin K Intake Linked to Reduced Risk of Diabetes

Individuals with a high intake of vitamin K were found to have lower blood glucose and less insulin resistance, as well as a reduced risk of developing type II diabetes, according to a systematic review and meta-analysis.*

Meta-analysis of five observational studies examined the association between reported daily vitamin K intake and the development of type II diabetes among 105,798 participants. The researchers found a **21% lower** risk of developing diabetes among those whose vitamin K intake was *highest* compared with those whose intake was lowest.

Meta-analysis of seven controlled trials compared the effects of treatment with vitamin K1 or K2 to a placebo or multivitamin formula that did not contain vitamin K. The decline in glucose from levels measured at the beginning of the trials was significantly greater at the end of the trials among diabetics who received **vitamin K** in comparison with those who did not receive it.

Editor's Note: A significant reduction was also found in insulin resistance among participants who received vitamin K2 compared with the control group.

* *Food Funct.* 2023 Oct 2;14(19):8951-8963.

Thiamine (Vitamin B1) May Improve Heart Attack Survival Rate

Heart attack patients admitted to an intensive care unit frequently suffer from thiamine insufficiency. Those given thiamine (vitamin B1) had a lower risk of dying in the hospital, as well as a lower mortality risk after 30 and 90 days, a retrospective, observational study showed.*

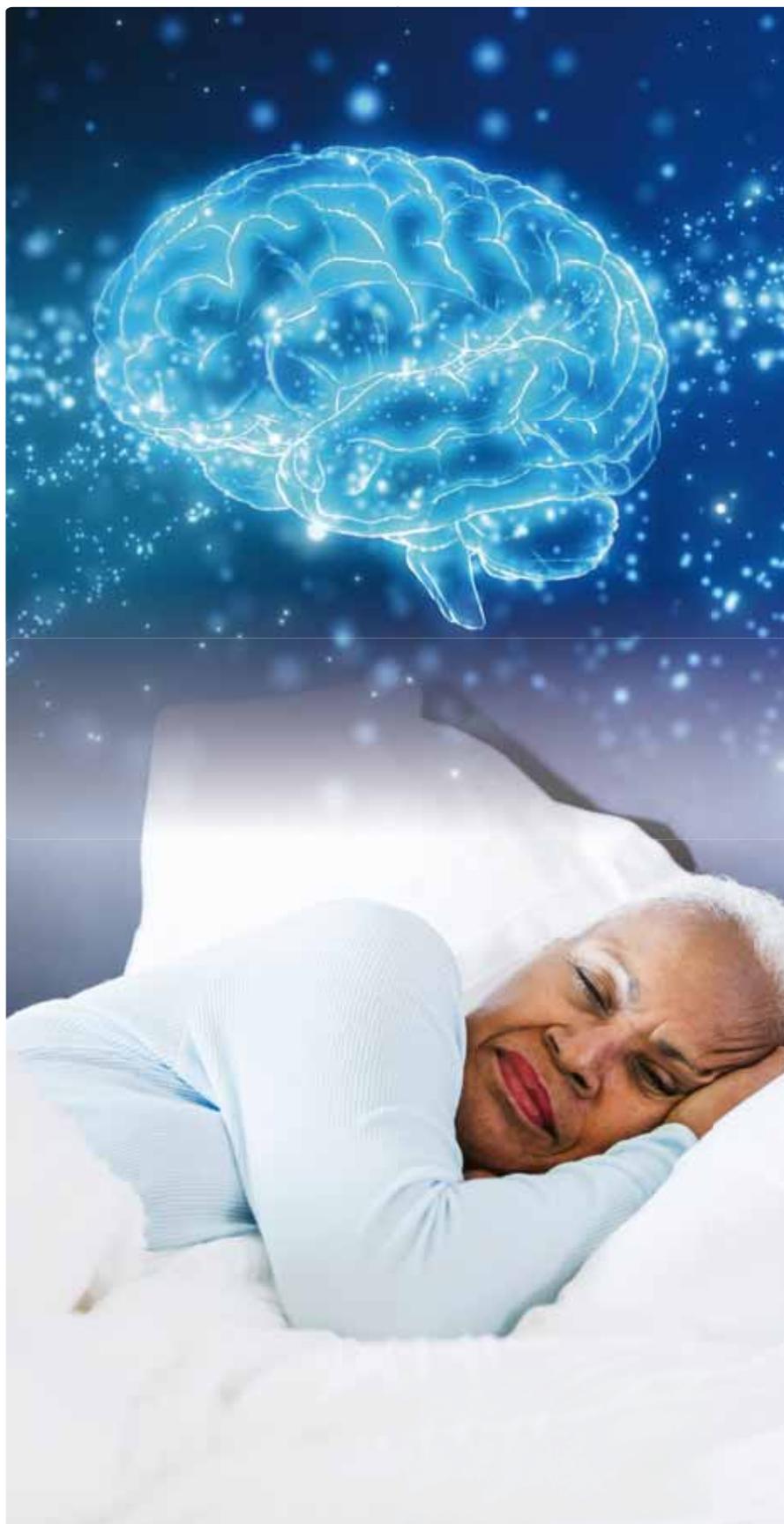
The study included 1,782 men and women who were admitted to an intensive care unit for a heart attack for at least 48 hours. One hundred seventy patients were given thiamine, while the other 1,612 were not.

Patients who were given thiamine had a **39.5%** lower adjusted risk of in-hospital mortality than those who did not receive the vitamin. The thiamine group also had a 30-day adjusted mortality risk that was **38.2%** lower and a 90-day mortality risk that was **37.4%** lower than those who did not receive the vitamin.

Editor's Note: "Thiamine deficiency may aggravate endothelial dysfunction and chronic vascular inflammation, resulting in the loss of arterial vascular resistance that eventually develops into CVD [cardiovascular disease]. Therefore, thiamine supplementation may provide an unexpected benefit to the prognosis and outcome in patients with CVD," the authors stated.

* *Front Nutr.* 2023 Aug 29;10:1227974.





Less Slow-Wave Sleep Increases Risk of Dementia

Lack of slow-wave sleep over time can increase the risk of dementia, according to a study published in *JAMA Neurology*.*

Slow-wave sleep is a phase of deep, restorative sleep in which the body facilitates removal of potentially harmful substances from the brain, such as beta amyloid plaque.

This study included 346 people averaging 69 years old who had participated in the Framingham Heart Study and had completed two overnight sleep studies. The researchers tracked the risk of developing dementia for up to 17 years after the two sleep studies.

First, the researchers found that aging itself was associated with a decline in slow-wave sleep, which accelerated from age 60 to age 80.

Then, they determined that for each percentage decrease in slow-wave sleep per year, there was a **27%** increased risk of all-cause dementia, and a **32%** increased risk of Alzheimer's dementia.

Editor's note: The researchers found that individuals who experienced declines in slow-wave sleep were more likely to have heart disease, to take medications that impact sleep, and to carry the APOE4 gene that increases Alzheimer's risk.

* *JAMA Neurol.* 2023; 10.1001/jamaneurol.2023. 3889.

Higher DHA Levels Associated with Lower Risk of Age-Related Hearing Loss

Higher plasma levels of the omega-3 fatty acid DHA (docosahexaenoic acid) have been linked to a lower risk of hearing loss in middle-aged and older adults, according to research presented at NUTRITION 2023, the annual meeting of the American Society for Nutrition.*

Researchers evaluated data from participants in the UK Biobank, which included men and women between the ages of 40 and 69 from 2007 to 2010. Information was available from 115,303 participants concerning whether they had difficulty hearing, from 113,134 respondents concerning if they had difficulty following a conversation if there is background noise, and from 71,368 regarding hearing-aid use.

Individuals whose plasma DHA was among the top **20%** of individuals in the study had an **8% to 20%** lower risk of reporting hearing issues than those whose DHA was among the lowest **20%**.

People in the top **20%** of blood DHA levels were **16%** less likely to answer 'yes' to the question 'do you have difficulty hearing?' compared with those in the lowest **20%** of DHA levels.

Editor's Note: Plasma DHA was assessed as the percentage of total plasma fatty acids.

* <https://nutrition.org/upping-your-intake-of-omega-3s-may-help-protect-your-hearing/>



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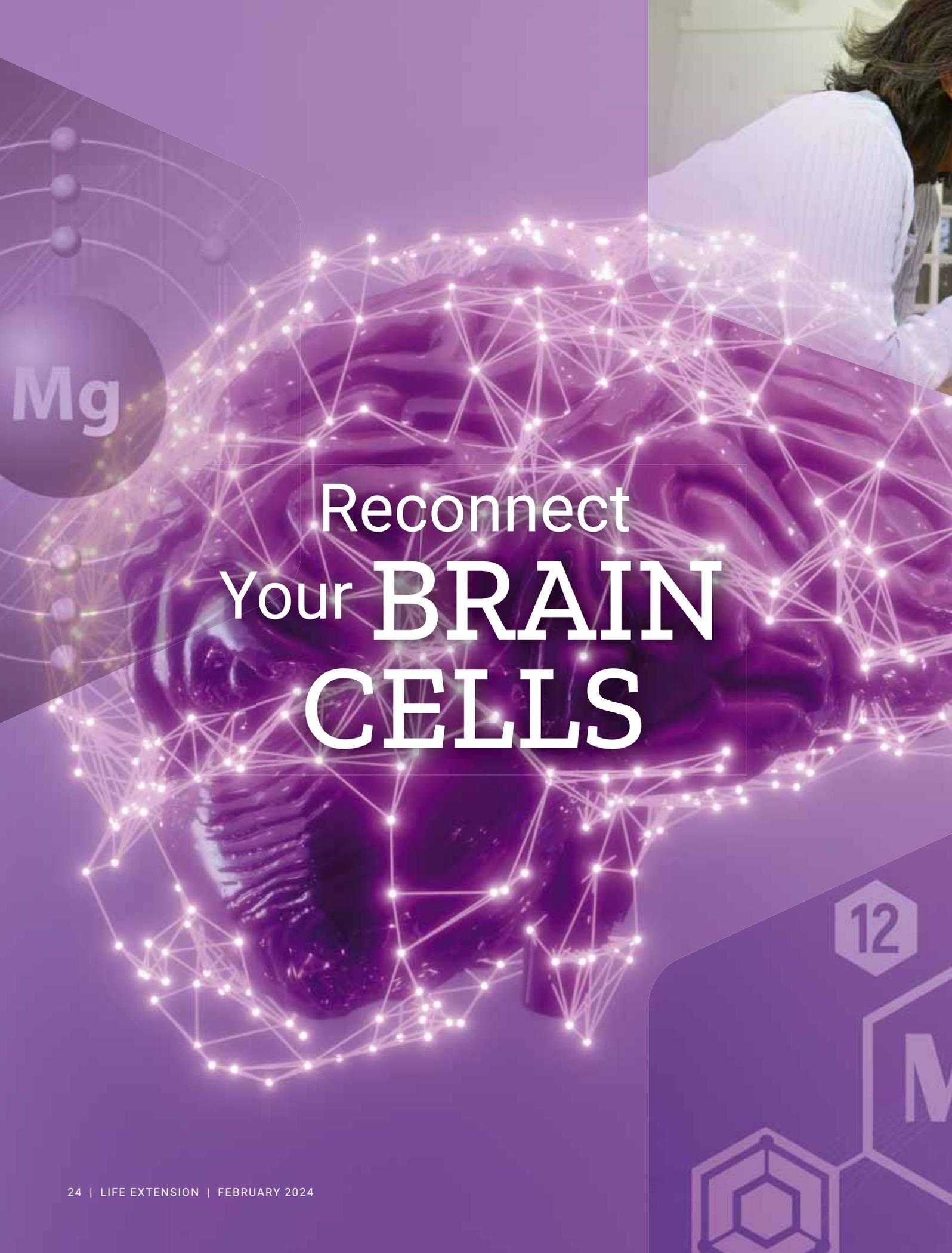
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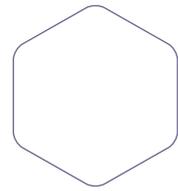


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Mg

Reconnect
Your **BRAIN**
CELLS



BY MICHAEL DOWNEY

As our brains age, we lose connections between brain cells called **synapses**.¹

Loss of synapses is associated with **brain shrinkage**, which is a structural predictor of **cognitive decline**.¹⁻³

Preclinical studies show that by increasing brain **magnesium** concentrations, **synaptic density** (number) and **plasticity** (ability to adapt to stimuli) are enhanced.⁴⁻⁷

Regular magnesium intake, however, does not increase **brain** levels much because many forms of this mineral fail to efficiently cross the **blood-brain barrier**.^{6,8-10}

MIT researchers developed a novel form called **magnesium L-threonate** that changes all that. It is easily absorbed and *does* cross the blood-brain barrier.^{8,11,12}

Taken orally, **magnesium L-threonate** has the ability to significantly boost brain magnesium levels. This enables it to improve **synaptic density and plasticity**, and thus help **reverse** these aspects of **brain aging**.^{8,10,13,14}

The effects are striking. In a **human** study, volunteers who took **magnesium L-threonate** had a *reversal* in measures of **brain age** of more than **nine years**.¹³



Magnesium's Brain Impact

The mineral **magnesium** works throughout the body as a cofactor required for normal functioning of hundreds of *enzymes*.^{15,16}

Magnesium's role in the **brain** is especially critical. It protects **synapses**, the communication connection points between brain cells.¹⁰

In order to learn, or access memory, the brain's synapses require **plasticity**, the ability to adapt and change in response to stimuli.¹⁷

Decreased synaptic plasticity is a major contributor to **cognitive decline** in older adults.¹

Animal studies show that increasing **brain** levels of **magnesium**:^{7,8,10-12,18}

- Increases the total number of **synapses**,
- Improves **synaptic plasticity**,
- Stimulates the growth of new **brain cells**, and
- Improves **learning** and **memory**.

Reaching the Brain

The majority of the U.S population are not getting enough magnesium in their diet.¹⁹ And very little magnesium from supplements enters the brain.^{8,20}

A clinical study found that increasing **blood** magnesium levels by approximately **160%** changed magnesium levels in **cerebrospinal** fluid by only **15%**.²¹

As a result, taking standard oral magnesium provides **bodily** benefits but may not significantly improve **brain function**.⁸

There *is* a way around this problem. Researchers developed a specific form of magnesium that elevates levels of magnesium in the **brain**.^{8,10} It is called **magnesium L-threonate (MgT)**.

In a rodent study, **MgT** raised cerebrospinal fluid levels of magnesium by approximately **15%** and successfully increased synaptic density, an effect also observed in a separate cell culture study.⁷

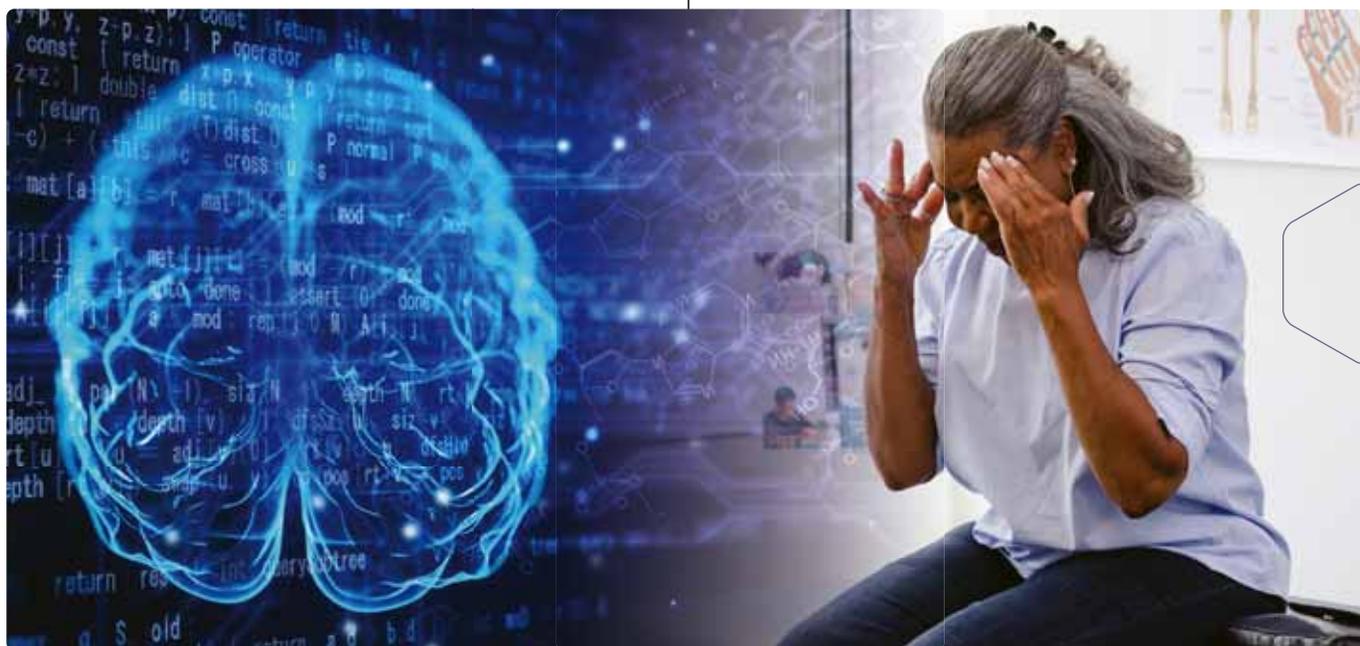
Improving Memory

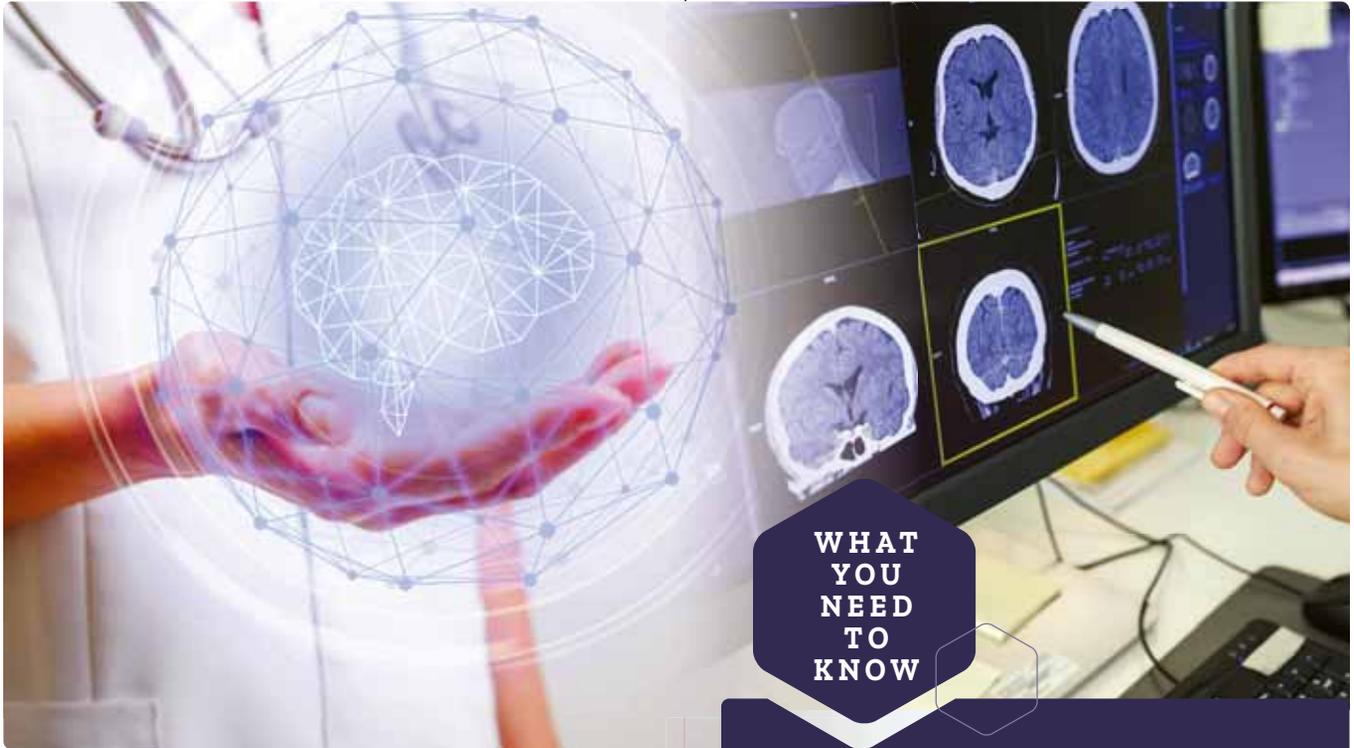
In this study, the effect on rodents' **cognitive** ability was dramatic.

Aged rats given **magnesium L-threonate** had enhanced **learning** ability, with improvements in short-term *and* long-term **memory**.⁸

Magnesium L-threonate was also tested in two studies utilizing a mouse model of **Alzheimer's**. In both studies, it **prevented** the **loss of synapses** associated with the disease and maintained or **improved memory**.^{10,12}

Another mouse study showed that **magnesium L-threonate** stimulated growth of **new brain cells** in brain areas central to memory and learning. Growth of these cells typically slows or stops in older animals, but magnesium L-threonate *restricted* this decline.¹⁸





WHAT
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NEED
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Human Trial

To test the cognitive benefits of magnesium L-threonate in **humans**, scientists conducted a randomized, placebo-controlled trial.¹³

Volunteers aged 50-70 years old were given either a placebo or **1,500-2,000 mg of magnesium L-threonate** (depending on body weight) daily for 12 weeks. The participants all had some impairment in executive functioning, the ability to plan, adapt, focus, and make decisions.

Compared to placebo subjects, those receiving **magnesium L-threonate** showed **improved cognitive abilities** after six weeks.

A further **20%** improvement from baseline was observed after 12 weeks¹³ including significantly increased performance speed for **executive function** and **cognitive processing**.

The treatment group's composite scores for all tests combined increased significantly compared to their **baseline** scores and compared to the **placebo** group's scores at weeks six and twelve.¹³

All subjects were assigned a "**brain age**" by comparing their cognition test scores with normal scores for people the same age. At the start of the trial, the participants' *chronological ages* averaged **57.8 years**. Their *brain ages* averaged a much older **68.3 years**.¹³

Magnesium L-Threonate Takes Years Off Your Brain Age

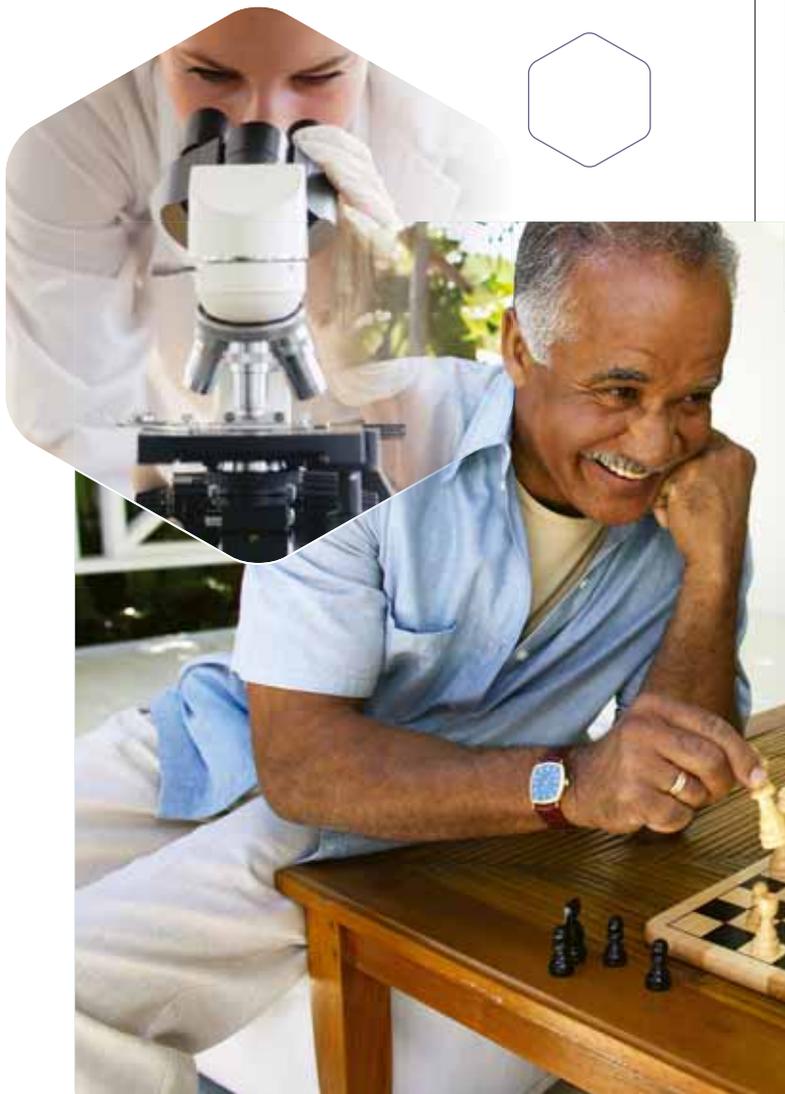
- **Magnesium** helps prevent brain aging and the loss of synapses seen with cognitive decline.
- In animal studies, **magnesium L-threonate** crossed the blood-brain barrier and boosted *brain* magnesium levels to a vastly greater degree than other forms.
- In animal models and human trials, magnesium L-threonate improved cognitive function. In one human study, it *reversed* cognitive measures of **brain age** by a remarkable **nine years**.

After six weeks, those who took **magnesium L-threonate** had improved their *brain age* by an astounding **nine years** and by the end of the study the number was further improved to **9.4 years**.¹³

Overall, taking **magnesium L-threonate**:¹³

- Improved memory and executive function,
- Improved cognitive abilities and speed,
- Reduced fluctuations in cognitive function (cognitive function being worse on some days than others is an early warning sign of mild cognitive impairment), and
- Reversed measures of brain age.

These improvements are consistent with the greater **synaptic density** and **plasticity** shown in preclinical studies of magnesium L-threonate.^{5,10,12,14,18,22}



In another **clinical study**, scientists tested **magnesium L-threonate** in patients with mild to moderate **dementia**. Even at this more advanced stage of cognitive decline, magnesium L-threonate led to improvements in **cognition** and **executive function**.²³

Whether taken in a capsule, powder, or gummy form, **magnesium L-threonate** shows potential to **delay or reverse some measured aspects of brain aging**.

Potential ADHD Benefits

Based on **magnesium L-threonate's** brain benefits, researchers wondered whether it could also improve **neuropsychiatric** conditions.

In a pilot study, they gave magnesium L-threonate to 15 adults with moderate **ADHD (attention deficit hyperactivity disorder)** for up to 12 weeks.²⁴

Almost **half** the participants displayed clinical improvements.²⁴

Summary

Magnesium supports youthful brain function, and it is needed for functioning of **brain synapses**, vital for complex tasks such as learning and memory.

Unlike other forms **magnesium L-threonate** increases brain magnesium levels by a significant amount.

This enables it to boost **synaptic density** and **plasticity**.

A clinical study found that magnesium L-threonate reversed measures of **brain age** in people by **nine years**. •

If you have any questions on the scientific content of this article, please call a **Life Extension Wellness Specialist** at 1-866-864-3027.

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- Maintain healthy connective cartilage tissue
- Promote comfortable joint function

Take advantage of the benefits of **Mobile-Ease™ Chinese skullcap, catch tree and white mulberry** TODAY!

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SUPER SALE PRICE

Item #02138

30 vegetarian tablets

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4 bottles \$18 each



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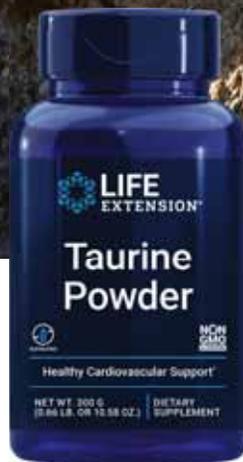
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90 vegetarian capsules

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SUPER SALE PRICE

Item #00133 • 300 grams

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CAUTION: If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

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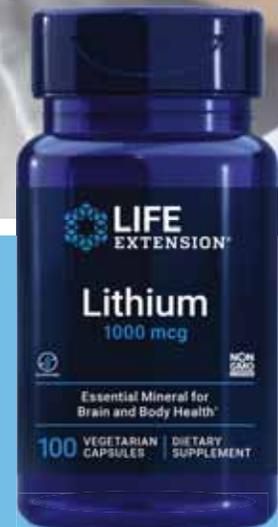
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Steven
VERIFIED CUSTOMER
REVIEW

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*European Journal of Nutrition. 2011;50(5):387-389.

(1,000 mcg of lithium per tiny cap)

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100 vegetarian capsules

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Each bottle lasts 100 days.

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4 jars \$23.40 each

For full product description and to order **Life Extension[®] Neuro-Mag[®] Magnesium L-Threonate**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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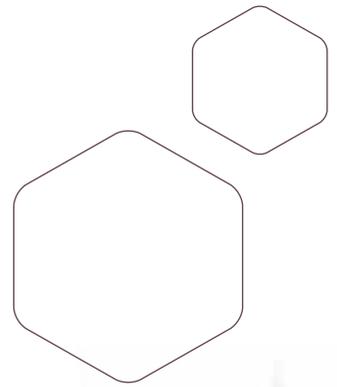
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Fight Back Against COLDS and FLU



ELDERBERRY

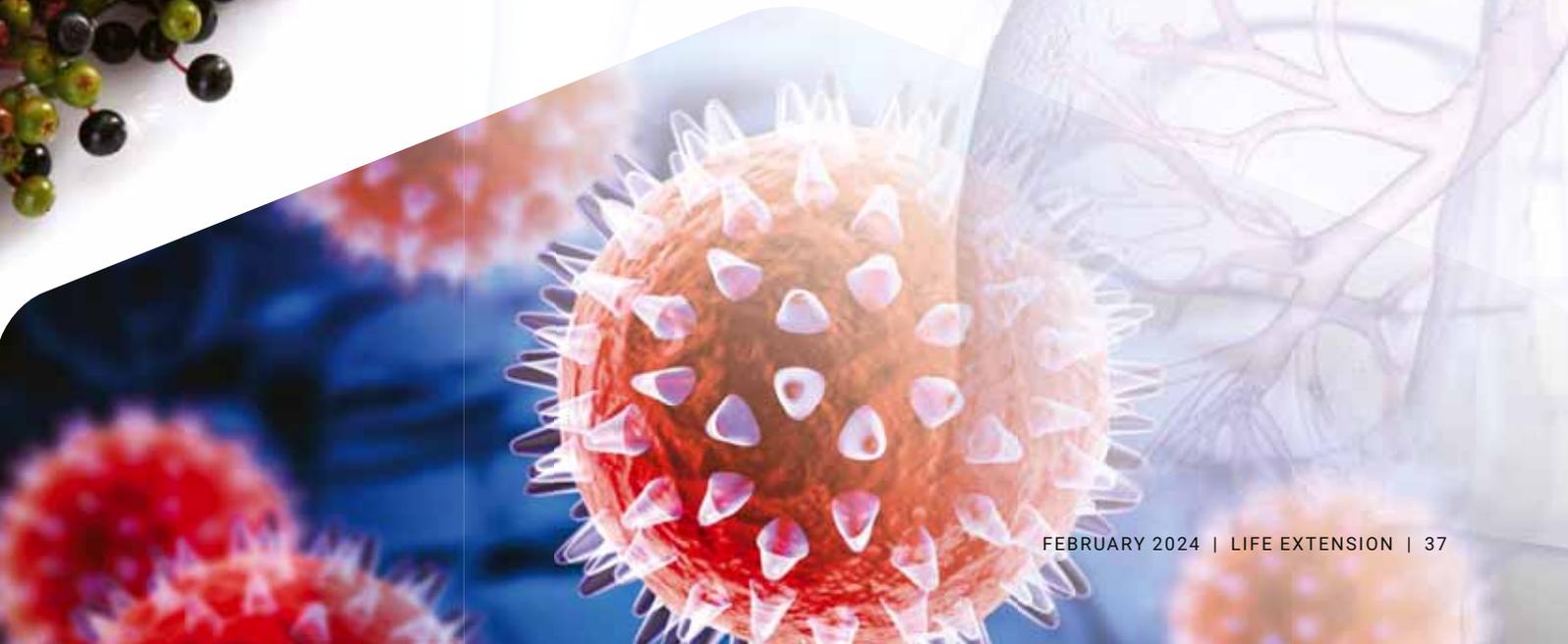


BY SARAH A. LOBISCO, ND, IFMCP

Black elderberry has been shown in **clinical studies** to lessen the **duration** and **severity** of colds and flu.¹⁻⁷

In one study, people suffering from upper respiratory symptoms who used **elderberry extract** had symptoms resolve **four days earlier** than those taking a placebo.⁸

Another **clinical trial** found that those in the **elderberry** group had **57** cold episode days compared to **117** days in the **placebo** group.



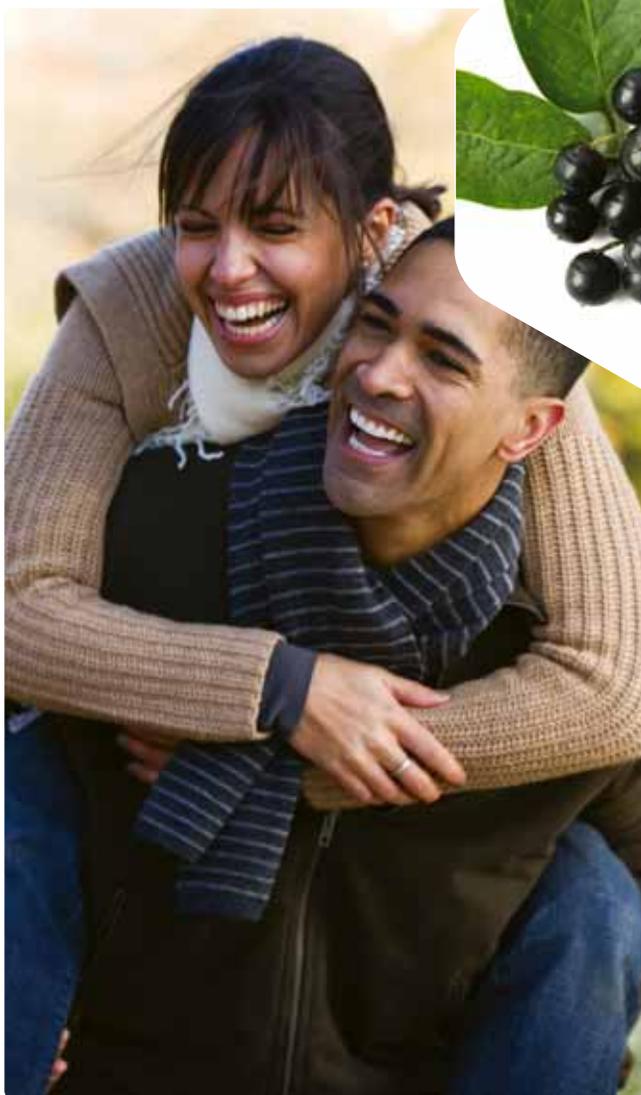
Risks of Cold and Flu

Most adults have **two to three** colds a year. Symptoms typically last **seven to 10 days** but can linger for up to **two weeks**.^{9,10}

Every year, as much as **20%** of the U.S. population will contract the flu.^{11,12} Hundreds of thousands of Americans are hospitalized and up to **52,000** flu-related deaths occur.¹³

Antiviral medications (like Xofluza[®]) may speed recovery from the flu, when taken within 48 hours after flu symptoms begin,^{2,14} but they are not prescribed for colds.⁹ Flu viruses are constantly changing making them more resistant to the antiviral drugs.¹⁵

That's where **black elderberry** comes in. An extract of this fruit has been shown to safely reduce the severity and speed the resolution of upper respiratory tract infections.¹⁻⁷



Vital Immune Support

Black elderberries have historically been used for respiratory problems.^{2,4} Their extracts are used to stimulate immune function and reduce the impact of colds and flu.^{2-5,16}

Elderberries contain plant pigments called flavonoids, including **anthocyanins**. Anthocyanins have immunomodulating, antioxidant, antiviral, and anti-inflammatory effects.^{2,17} Standardized extracts of elderberries help preserve these active compounds, which are highly **bioavailable** (absorbable).¹⁷

Antiviral Effects

Extracts of **elderberry** and its flavonoids have demonstrated direct **antiviral** activity in cell cultures for both **influenza A**^{1,18} and **B**, the two main types that infect people.^{4,8}

In one lab study, **elderberry extract** was shown to inhibit **H1N1** (subtype of human influenza A). This study showed this virulent “swine flu” H1N1 virus was prevented from entering host cells in a dose dependent manner.

The highest elderberry doses were capable of blocking almost **100%** of cells from infection. This compared favorably to the anti-influenza activities of the common antivirals oseltamivir (Tamiflu[®]) and amantadine.¹⁸

Another cell study suggests antiviral mechanism of elderberry by blocking the function of **viral glycoproteins** (proteins on the surfaces of viruses that aid infection) from attaching to host cells. Isolated **anthocyanins** also blocked viral infectivity.¹

In a dual, cell and animal trial, elderberry juice concentrate containing a high flavonoid content was shown to **enhance immunity** and display **antiviral activity**. In the cell study, the elderberry interfered with early stages of viral replication, viral attachment, and penetration into host cells.¹⁹

When the elderberry juice was given to rodents infected with human flu, it led to an increase in **antibodies** that specifically attacked and eliminated the virus.¹⁹

It also stimulated the production of **secretory IgA**, an antibody that provides mucosal support against **viral** and **bacterial** infections. By contrast, mice taking a placebo or antiviral oseltamivir (Tamiflu[®]) showed a **suppression** of antibodies.¹⁹

Elderberry Helps the Body Battle Colds and Flu

- The average adult has **two to three colds** per year. Up to **20%** of Americans contract the flu annually. The elderly and immune-compromised are at risk for severe complications.
- **Elderberries** contain anthocyanins, compounds that have immunomodulating, antiviral, antibacterial, and anti-inflammatory properties.
- **Black elderberry extract** has been shown to fight viruses and bolster immune defenses.
- In clinical trials, elderberry extract safely decreased the duration and severity of colds and flu, resolving upper respiratory symptoms up to **four days earlier** than a placebo.

Treating Colds and Flu (Human Trials)

Human studies have validated the ability of **elderberry** to speed recovery and decrease the intensity of symptoms in **colds** and **influenza**.

One placebo-controlled clinical trial with **312** subjects assessed the impact of elderberry on **cold** duration, severity, and incidents during overseas air travel. Those in the treatment group took **600 mg** of **black elderberry extract** for several days before travel and **900 mg** daily during their trip.⁵

Overall, those in the **elderberry** group had a total of **57** cold episode days compared to **117** days in the **placebo** group. The elderberry group also experienced **less than half** the symptom severity of the placebo group.

This means individuals who took elderberry had less severe cold symptoms *and* recovered about **two days** faster.

WHAT
YOU
NEED
TO
KNOW



In another study of people suffering from **flu-like symptoms**, those who used elderberry daily for five days had their symptoms resolve **four days earlier** than those taking a placebo.⁸

Systematic reviews provide further evidence for **elderberry** as a remedy for colds and influenza:

- One meta-analysis found that standardized forms of elderberry were effective at reducing **severity** and **duration** of both cold and flu, regardless of vaccination status.²
- A review of elderberry and elderflower (which comes from the same plant) found that they increased **antibodies** to influenza and decreased the intensity and duration of symptoms.⁶
- In a 2021 review, elderberry was found to support the **immune system** without overstimulating it. One trial found that an elderberry-containing product lowered risk of influenza complications and adverse events when compared to oseltamivir.⁴
- A meta-analysis of clinical trials showed that when black elderberry was taken within 48 hours of the onset of an acute respiratory infection, common symptoms such as **fever**, **headache**, and **congestion** were reduced by an average of **50%** in as little as two days.³

Many studies report that doses of **600-900 mg** daily were most effective during acute viral infections, while lower doses are sufficient for preventative support.^{4-6,18,19}

Summary

When winter respiratory illnesses hit, flavonoid-rich **elderberry** can help people feel better faster while bolstering their immune response.

Clinical studies show that elderberry extract can decrease the severity and duration of **colds** and **flu**, especially when taken at the first sign of symptoms. •

If you have any questions on the scientific content of this article, please call a **Life Extension Wellness Specialist** at 1-866-864-3027.

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LIFE EXTENSION® MIX™ POWDER



SUPER-CHARGE YOUR SMOOTHIE

Back in **1983**, our supporters asked us to formulate a comprehensive **nutrient powder** they could conveniently drink by itself or add to a smoothie.

We complied and our overall sales quadrupled the month we introduced **Life Extension® Mix™ Powder**.

GNC asked us to ship a case (12 bottles) of **Life Extension® Mix™ Powder** to every one of their stores.

Back then, we could barely keep up with client demand. We had to turn down **GNC** and other companies who wanted to offer their customers **Life Extension® Mix™ Powder**

51 INGREDIENTS IN ONE POWDER BLEND

What generated so much enthusiasm was the ability of **Life Extension® Mix™ Powder** to deliver a wide range of **higher**-potency **nutrients** at a far lower price than taking them individually.

It also reduced the need for people to swallow so many pills.

Life Extension® Mix™ Powder contains the **vitamins** and **minerals** found in multi-nutrient tablets, but at higher concentrations and more effective forms when warranted.

Plant extracts include **lutein, lycopene, luteolin, apigenin, silymarin, quercetin** and other botanicals people want to ingest as part of a healthy diet.

COMPREHENSIVE, CONVENIENT, COST EFFECTIVE

Three scoops of **Life Extension® Mix™ Powder** deliver meaningful potencies of **vitamins, minerals, and plant extracts** that would otherwise require swallowing dozens of tablets and capsules.

A one-month supply costs \$54 during the annual **Super Sale**. This price is reduced to **\$48.60** when four bottles are purchased...a fraction of the cost of taking these standardized **nutrients** separately.

For those seeking to ensure daily intake of healthy **fruits** and **vegetables**, along with the higher potencies + better forms of vitamins and minerals, **Life Extension® Mix™ Powder** delivers all this in a **comprehensive, convenient, and cost-effective** manner.

Life Extension® Mix™ Powder can be combined with smoothies, fruit-vegetable juices, or consumed by itself in water. View the entire **Life Extension® Mix™ Powder** formula on the next page.

Beyond the vitamins and minerals, the daily dose of **Life Extension® Mix™ Powder** provides a wide spectrum of **plant extracts** and **amino acids** such as:

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Bioflavonoids (citrus)	200 mg	Bilberry Extract	30 mg
Blueberry Extract	150 mg	Olive Fruit Extract	12.5 mg



Complete LIFE EXTENSION® MIX™ POWDER Formula

Vitamin C (as calcium ascorbate, ascorbic acid, ascorbyl palmitate, magnesium ascorbate, niacinamide ascorbate, acerola extract)	970 mg
Vitamin D3 (as cholecalciferol) (2,000 IU) 50 mcg	2,000 IU
Vitamin A (as beta-carotene, acetate) 1,500 mcg	5,000 IU
Thiamine (vitamin B1) (as thiamine HCl)	125 mg
Riboflavin (vitamin B2) (as riboflavin, riboflavin 5'-phosphate)	50 mg
Niacin (as 61% niacinamide, 38% niacin, 1% niacinamide ascorbate)	190 mg*
Vitamin B6 [as pyridoxal 5'-phosphate (100 mg), pyridoxine HCl (5 mg)]	105 mg
Folate (as L-5-methyltetrahydrofolate calcium salt)	680 mcg°
Vitamin B12 (as methylcobalamin)	600 mcg
Biotin	3000 mcg
Pantothenic acid (as D-calcium pantothenate with 5 mg pantothenic acid)	600 mg
Vitamin E (as D-alpha tocopheryl succinate, D-alpha tocopherol)	67 mg
Magnesium (as magnesium oxide, citrate, arginate, glycinate, taurinate, ascorbate)	420 mg
Selenium [as sodium selenite, SelenoExcell® ⁴ high selenium yeast, Se-methyl L-selenocysteine]	200 mcg
Zinc (as zinc citrate, L-OptiZinc® ³ zinc mono-L-methionine sulfate)	35 mg
Calcium (as Ca ascorbate, D-calcium pantothenate, dicalcium phosphate)	140 mg
Iodine (as potassium iodide)	150 mcg
Copper [as copper bisglycinate chelate]	1 mg
Manganese (as manganese citrate, gluconate)	1 mg
Chromium [as Crominex® ⁵ 3+ chromium stabilized with Capros® amla extract (fruit), PrimaVie® Shilajit]	500 mcg
Molybdenum (as molybdenum amino acid chelate)	125 mcg
Potassium (as potassium citrate)	35 mg
N-acetyl-L-cysteine (NAC)	600 mg
Taurine	200 mg
Broccoli concentrate blend [broccoli powder, extract (sprout, floret, seed) (providing glucosinolates, sulforaphane)]	525 mg
Green tea extract (leaf-decaffeinated) [std. to 45% epigallocatechin gallate (EGCG)]	325 mg
Acerola extract 4:1 (berry)	300 mg
Inositol	250 mg
Bitter orange citrus bioflavonoids (peel, fruit) [std. to 50% hesperidin]	200 mg
Fruit/berry proprietary blend [European elder, blackberry, blueberry, sweet cherry, cranberry, plum, persimmon (<i>Diospyros kaki</i>) powders]	200 mg
Wild blueberry anthocyanin extract (fruit)	150 mg
Sensoril®¹¹ Ashwagandha extract (root, leaf) [std. to 32% oligosaccharides, 10% glycoside conjugates]	125 mg
Silymarin [from milk thistle extract (seed)]	100 mg
Trimethylglycine (TMG) (as betaine anhydrous)	100 mg
CherryPure®¹ sour cherry (tart cherry) proanthocyanidin powder (skin)	85 mg
POMELLA®⁹ pomegranate extract (fruit) [std. to 30% punicalagins]	85 mg
Natural mixed tocopherols (providing gamma, delta, alpha, beta tocopherols)	60 mg
MirtoSelect®¹¹ bilberry extract (fruit)	30 mg
BioVin®⁷ grape proanthocyanidin extract (whole grape)	25 mg
Leucoselect®⁶ grape seed proanthocyanidin extract	25 mg
Bio-Quercetin Proprietary Blend providing 35% quercetin (5 mg) [from Japanese sophora concentrate (flower bud)], 30% galactomannans (4 mg) [from fenugreek (seed)] 14 mg	15 mg
Bromelain [from pineapple (stem)] (2400 gelatin digestive units/gram)	15 mg
Lutein [from marigold extract (<i>Tagetes erecta</i>) (flower)] (providing 465 mcg <i>trans</i> -zeaxanthin)	15 mg
Olive extract (fruit) (providing polyphenols, hydroxytyrosol, tyrosol, oleuropein)	12.5 mg
Sesame seed lignan extract	10 mg
Luteolin [from Japanese sophora (flower bud)]	8 mg
Apigenin	5 mg
Boron (as boron amino acid chelate)	3 mg
Lycopene [from LycoBeads® ⁸ natural tomato extract (fruit)]	3 mg
Delphinidins [from Delphinol® ² maqui berry (<i>Aristotelia chilensis</i>) extract (fruit)]	2 mg
Cyanidin-3-glucoside (C3G) [from black currant extract (fruit)]	1.25 mg

Caution: Temporary flushing, itching, rash, or gastric disturbances may occur. Liver function testing is recommended when niacin is taken in excess of 500 mg daily. Those with gout or liver diseases should avoid taking high doses of niacin. Consult with your doctor before using this product if you are taking anticoagulant medications. Individuals consuming more than 50 mcg (2,000 IU)/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxy vitamin D measurement. Vitamin D supplementation is not recommended for individuals with high blood calcium levels. Individuals with in-born errors of copper metabolism (e.g. Wilson's disease) should avoid daily, chronic use of this product



For full product description and to order Life Extension® Mix™ Powder call 1-800-544-4440 or visit www.LifeExtension.com

Other ingredients: maltodextrin, natural orange flavor, stevia extract, silica, food starch-modified, luo han guo extract, sunflower lecithin, sunflower oil.

*RAE (retinol activity equivalents). °DFE (dietary folate equivalents). •NE (niacin equivalents). Contains sesame.

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2. Delphinol® is a registered trademark of MNL.

3. L-OptiZinc® is a Lanza trademark, registered in USA.

4. SelenoExcell® is a registered trademark of Cypress Systems Inc.

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9. POMELLA® Extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Sciences, Inc.

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11. Sensoril® is protected under US Patent No. 7,318,938 and is a registered trademark of Natreon, Inc.

SUPER SALE PRICE
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Life Extension® Mix™ Powder, 12.70 oz

1 bottle \$54

4 bottles \$48.60 each
(Each bottle lasts 30 days)

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If you experience general fatigue, it may be due to the decline of NAD⁺, an important coenzyme found in every cell.

NAD⁺ facilitates the production of ATP, which your body uses for fuel.

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NAD⁺ Cell Regenerator™

300 mg of nicotinamide riboside per capsule.

Item #02344 • 30 veg. caps.



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NAD⁺ Cell Regenerator™ has met ConsumerLab.com standards for ingredient and product quality for Nicotinamide Riboside in independent testing. More information at www.consumerlab.com.



For full product description and to order **NAD⁺ Cell Regenerator™** or **NAD⁺ Cell Regenerator™ and Resveratrol Elite™**, call 1-800-544-4440 or visit www.LifeExtension.com

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Immune Support

Standardized **elderberry** extract helps support immune function.

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"Love this product, especially being a combo!"

Rhonda

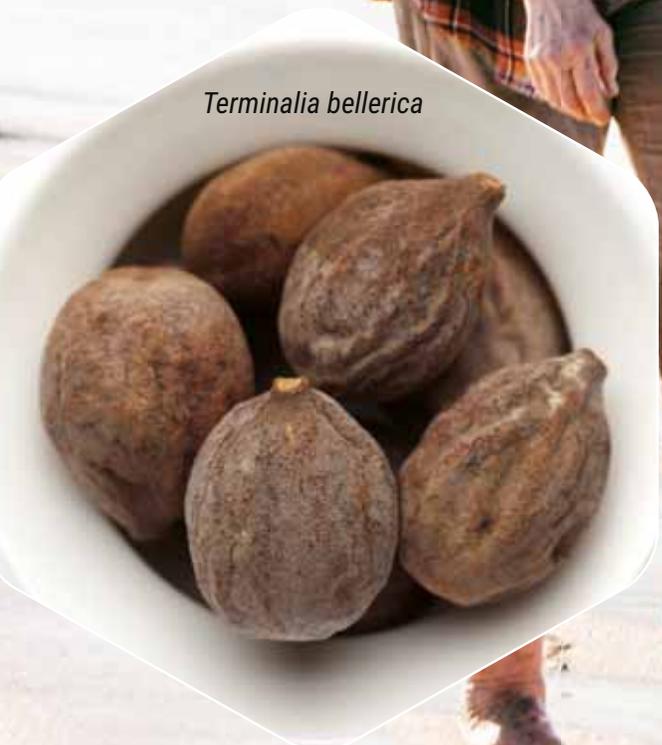
VERIFIED CUSTOMER REVIEW



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Terminalia bellerica





Fruit Extract Protects **KIDNEYS** in People with High **URIC ACID**

BY MARK FULTON

Uric acid is a waste product that is normally produced by the body in small amounts.

When uric acid blood levels get too *high*, this is associated with problems including **gout, kidney stones**, and certain types of kidney disorders.¹

Data from 2007–2016 show that roughly **20%** of U.S. adults had elevated uric acid levels, and about **4%** were diagnosed with **gout**.²

Up to two-thirds of people with **high** uric acid levels don't show any symptoms.³

Medications to lower uric acid levels come with potential **side effects**.³

Scientists have discovered that an extract of the fruit of the *Terminalia bellerica* tree can safely reduce elevated uric acid levels in **humans**.⁴

In a study of patients with **chronic kidney disease** and elevated uric acid, a dosage regimen of *Terminalia bellerica* extract reduced uric acid by nearly **20%** and improved markers of **kidney** health.⁵

In the same study, elevated **creatinine** levels, a marker of impaired kidney function, decreased by over **11.5%**.⁵

In a clinical study, *Terminalia bellerica* offered kidney protection for individuals with high **uric acid** levels.

Causes of Elevated Uric Acid

Uric acid is a normal product of metabolism.

In a healthy body, the small amount of uric acid that is produced is easily filtered by the kidneys and removed from the body in urine.

High levels of uric acid, called **hyperuricemia**, can lead to a painful arthritic condition known as **gout**.

Risk factors for gout include, high blood pressure and obesity, as well as excess intake of alcohol and certain foods (including organ meats, bacon, turkey, and sardines).³

Individuals with impaired **kidney function** are not able to properly filter waste products from the blood, and this results in buildup of those **waste products**. This includes uric acid. Even in people without kidney disease, kidney function wanes with age, so less uric acid is eliminated.⁶

Dangers of Hyperuricemia

Only about **4%** of the population suffers from **gout**, but at least **21%** of adults have high uric acid levels.²

Even *asymptomatic* hyperuricemia has been found to be significantly associated with risk of health-related issues including hypertension, chronic kidney disease, cardiovascular disease, and insulin resistance syndrome.⁷

Uric acid tends to **crystalize** when its concentration is too great. The formation of solid crystals in the joints between bones causes inflammation and pain, known as **gout**.

Crystals can also form in the urine, causing painful **kidney stones**.³

Reduce Uric Acid

High uric acid levels can lead to many other significant problems.

Long-term elevated uric acid can damage the linings of blood vessels and accelerate the development of **cardiovascular disease**.^{5,8,9}

It is also associated with metabolic diseases, including **metabolic syndrome** and **type II diabetes**.^{5,8,9}

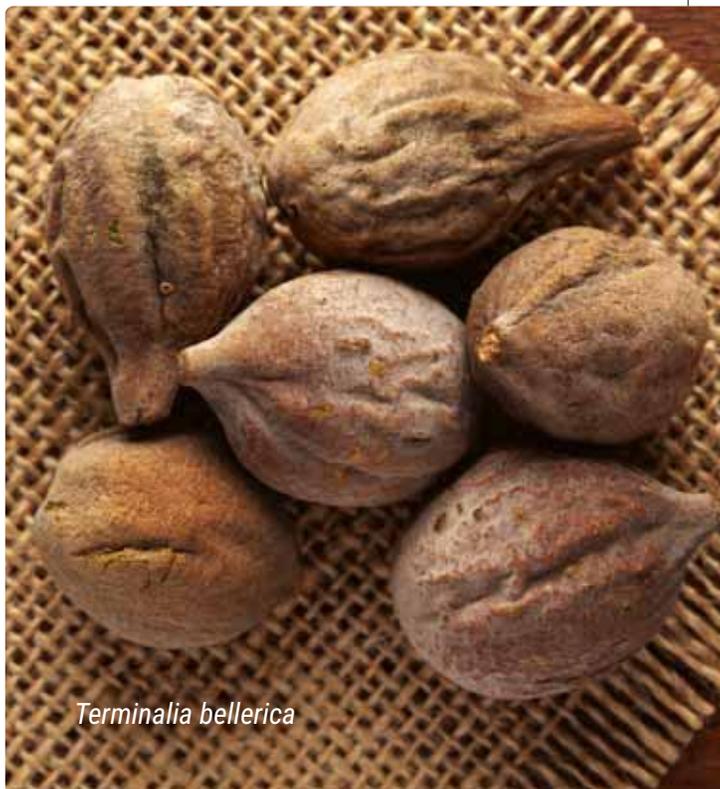
A few medications help reduce uric acid, most notably **allopurinol** and **febuxostat**. However, they can lead to various side effects, including **cardiovascular** and **liver** abnormalities and even **renal failure**. Incredibly, some gout medicines can precipitate gout symptoms.¹⁰

Scientists investigating ways to safely reduce uric acid levels focused on *Terminalia bellerica*, a tree native to Southeast Asia. Its fruit has been used for centuries in Indian Ayurvedic medicine to promote overall health.



Reduce Uric Acid for Kidney Health

- **Uric acid** is a metabolic waste product. High blood levels of uric acid are common in adults and can cause painful **gout** and **kidney stones**.
- An extract of the fruit of the *Terminalia bellerica* tree safely and effectively reduced high uric acid levels in human studies.
- A clinical trial in patients with **chronic kidney disease** and elevated uric acid levels found that one dosage of *Terminalia bellerica* extract improved markers of kidney function, reducing **creatinine** levels by over **11.5%** and improving the kidneys' blood-filtering activity.



Terminalia bellerica

Research suggested that bioactive compounds in the *Terminalia bellerica* fruit provide anti-inflammatory effects.¹¹ This tannin-rich extract is believed to inhibit xanthine oxidase, an *enzyme* involved in the synthesis of **uric acid**.⁴

In a pilot study on patients without chronic kidney disease but with **hyperuricemia**,⁴ groups receiving *Terminalia bellerica* **extract** had a significant reduction in serum uric acid levels starting at four weeks. Levels continued to drop for 16 weeks, then stabilized at a lower level.

On average, those receiving **500 mg** of *Terminalia bellerica* extract **twice a day** had a **28.4%** uric acid reduction.

This reduced uric acid blood levels *below* **6 mg/dL**, which is the therapeutic target doctors aim for in treating patients with **gout**.¹²

Terminalia bellerica may help prevent many different kinds of health problems caused by elevated uric acid.

Clinical Trial Shows Additional Benefits

After early studies showed *Terminalia bellerica*'s ability to lower uric acid, scientists decided to evaluate whether it could help patients who had both **chronic kidney disease** and elevated **uric acid**.⁵

In a trial of patients with **chronic kidney disease** and **elevated uric acid**, participants were randomized to receive:

- the gout/uric acid medication febuxostat **40 mg**, once daily, or
- **two different** dosages of *Terminalia bellerica* extract.

After 24 weeks, reduced uric acid and **creatinine** levels were seen in all the groups along with beneficial *increases* in renal filtration rate.

The fruit extract *lowered* uric acid levels starting at just four weeks in all participants.

The *higher* dosage of **1,000 mg** twice a day *lowered* uric acid by almost **20%** by the end of the 24-week treatment period.⁵

People with chronic kidney disease have compromised kidney function—meaning their kidneys have difficulty keeping up with regular housekeeping and clearing out waste. Reducing **uric acid** *production* may have lowered the kidney workload in trial participants.

This may explain in part why in this trial, *Terminalia bellerica* extract improved measures of kidney function.

In those taking **1,000 mg twice a day** of *Terminalia bellerica*, **creatinine** levels decreased by over **11.5%** by the end of the study. Creatinine is a widely used marker of kidney function.

Terminalia bellerica also significantly lowered **CRP** (C-reactive protein), a marker of systemic inflammation, and led to improvements in **endothelial function**, a sign of blood vessel health.¹³

The **estimated glomerular filtration rate (eGFR)**, a measure of the blood-filtering capacity of the kidneys, **increased**, indicating a boost in kidney function.

These data sets indicate potential benefits for those with kidney disease and high uric acid levels.

Summary

Elevated levels of **uric acid** in the blood are common in adults and tend to worsen with age.

This can lead to **gout** and **kidney stones**. Uric acid elevations are also associated with **chronic kidney disease** and other long-term health problems.



Studies show that extracts of the fruit of the *Terminalia bellerica* tree can be effective at reducing uric acid levels in humans.

In patients with **kidney disease** and elevated **uric acid**, *Terminalia bellerica* was able to **improve** multiple markers of **kidney function**. •

If you have any questions on the scientific content of this article, please call a **Life Extension Wellness Specialist** at 1-866-864-3027.

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Zinc promotes critical immune functions
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This formula provides **50 mg** of zinc in a
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Caution: Supplemental zinc can inhibit the absorption and availability of copper. If more than 50 mg of supplemental zinc is to be taken daily for more than four weeks, 2 mg of supplemental copper should also be taken to prevent copper deficiency.

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02314	Two-Per-Day Multivitamin • 120 capsules High-potency bioactive vitamins, minerals, and plant extracts. (2-month supply)	1 bottle	\$19.13	\$17.21	10%
		4 bottles	—	\$15.30 ea.	20%
00335	DHEA • 25 mg • 100 capsules Promotes optimal hormone balance & overall health.	1 bottle	\$12.00	\$10.80	10%
		4 bottles	—	\$9.90 ea.	18%
00888	Optimized Ashwagandha • 60 vegetarian capsules Enhances mental concentration and tranquility.	1 bottle	\$7.50	\$6.75	10%
		4 bottles	—	\$6.08 ea.	19%
01988	Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill & Astaxanthin • 120 softgels Heart & brain health, inflammation health support, advanced formula.	1 bottle	\$38.25	\$34.43	10%
		4 bottles	—	\$30.60 ea.	20%
01993	MacuGuard® Ocular Support with Saffron & Astaxanthin 60 softgels Vision, macular & retinal health, eye fatigue, advanced formula.	1 bottle	\$32.25	\$29.03	10%
		4 bottles	—	\$26.10 ea.	19%
01813	Zinc Caps • 50 mg • 90 vegetarian capsules Support for the body's immune defenses.	1 bottle	\$6.75	\$6.08	10%
		4 bottles	—	\$5.40 ea.	20%
01534	N-Acetyl-L-Cysteine (NAC) • 600 mg • 60 capsules The do-it-all antioxidant for liver, immune and respiratory health.	1 bottle	\$12.00	\$10.80	10%
		4 bottles	—	\$9.68 ea.	19%
02419	B12 Elite • 60 vegetarian lozenges Two active forms for brain health & dopamine production, lozenge.	1 bottle	\$8.25	\$7.43	10%
		4 bottles	—	\$6.75 ea.	18%

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Item #	Product		Price	Super Sale	Save
01603	Neuro-Mag® Magnesium L-Threonate • 90 vegetarian capsules Helps support memory and cognitive health.	1 bottle	\$30.75	\$27.68	10%
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01778	Super Selenium Complex • 200 mcg • 100 vegetarian capsules Three forms of selenium promote the body's production of glutathione.	1 bottle	\$10.50	\$9.45	10%
		4 bottles	—	\$8.10 ea.	23%
		10 bottles	—	\$7.43 ea.	29%
02407	Curcumin Elite™ Turmeric Extract • 60 vegetarian capsules Patented turmeric extract provides 45x greater free curcuminoid bioavailability.*	1 bottle	\$24.00	\$21.60	10%
		4 bottles	—	\$19.80 ea.	18%
02301	Senolytic Activator® • 36 vegetarian capsules (3-month supply) Helps manage senescent cell burden. (Take 3 capsules <u>once</u> a week)	1 bottle	\$19.50	\$17.55	10%
		4 bottles	—	\$16.20 ea.	17%
01426	Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ 100 mg • 60 softgels • Superior ubiquinol form of CoQ10 plus shilajit shown to enhance mitochondrial energy production.	1 bottle	\$47.25	\$42.53	10%
		4 bottles	—	\$36.00 ea.	24%
		6 bottles	—	\$33.30 ea.	30%
01727	Bone Restore Calcium Supplement with Vitamin K2 • 120 capsules Skeletal-strengthening nutrients in one highly absorbable formula.	1 bottle	\$18.00	\$16.20	10%
		4 bottles	—	\$14.85 ea.	18%
01921	Uric Acid Control • 60 vegetarian capsules Helps keep uric acid levels within a healthy range.	1 bottle	\$18.00	\$16.20	10%
		4 bottles	—	\$14.85 ea.	18%
02368	Optimized Broccoli with Myrosinase • 30 vegetarian capsules Promotes cell & hormone health with bioavailable sulforaphane .	1 bottle	\$28.50	\$25.65	10%
		4 bottles	—	\$23.85 ea.	16%
02414	Bio-Fisetin™ • 30 vegetarian capsules A highly <i>absorbable</i> form of the plant flavonoid fisetin supports cell health in multiple ways.	1 bottle	\$11.25	\$10.13	10%
		4 bottles	—	\$9.00 ea.	20%
02004	Arterial Protect • 30 vegetarian capsules Gotu kola & pine bark extract help stabilize plaque in the arteries.	1 bottle	\$33.00	\$29.70	10%
		4 bottles	—	\$26.10 ea.	21%
02500	Testosterone Elite • 30 vegetarian capsules Promotes healthy testosterone production.†	1 bottle	\$42.00	\$37.80	10%
		4 bottles	—	\$33.75 ea.	20%
02125	FLORASSIST® GI with Phage Technology • 30 liquid vegetarian capsules • Dual-encapsulation probiotic for optimal delivery to help balance bacteria in the intestines.	1 bottle	\$24.75	\$22.28	10%
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02348	NAD+ Cell Regenerator™ and Resveratrol Elite™ 30 vegetarian capsules • NIAGEN® nicotinamide riboside, bioavailable resveratrol, and more to support healthy cellular metabolism.				

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†This product is intended to promote testosterone levels but does not contain testosterone.

Melatonin IR/XR (item #02201): For occasional sleeplessness.

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Nancy

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Caution: Individuals with inborn errors of copper metabolism (e.g. Wilson's disease) should avoid daily, chronic use of this product.



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SUPER SALE PRICE

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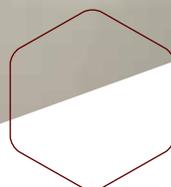


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Reduce the **RISK** of **SITTING** Too Long



BY HEATHER L. MAKAR

Trends show that Americans now spend **over half** their waking hours **seated**.¹⁻³ The prevalence of physical inactivity is over **25%**.⁴

This sedentary lifestyle (prolonged sitting) can pose serious health risks.

Extended sitting results in poor blood circulation, which can lead to **blood clots**, especially in the deep veins of the legs. This condition is known as **deep vein thrombosis (DVT)**.^{5,6}

These clots develop in the legs but can break loose and travel to the lungs. This condition is estimated to cause up to **100,000 deaths** in the U.S. annually.⁷

Researchers have identified two **plant-based** compounds that can help promote healthy blood flow and reduce the risk of **deep vein thrombosis**.

A combination of **nattokinase** and **French maritime pine bark extract** has been shown in a **clinical trial** to lower the risk of developing clots, when used in combination with an exercise program, in people on long (seven- to eight-hour) **airplane** flights.⁸



The Risks of Prolonged Sitting

Sitting for extended periods can increase risk of **deep vein thrombosis (DVT)**.⁹ Even those who exercise regularly may be at risk if they have other risk factors, including spending excessive time **seated**.¹⁰

That's because sitting **immobilizes the calf muscles**, preventing them from contracting to transport deoxygenated blood back up to the heart.^{11,12}

This can reduce **blood flow** by up to **two-thirds** in the legs, leading to blood pooling in vessels.¹³ This stagnant blood can then **form a clot** in the veins deep in the body.¹⁴

Symptoms may include swelling, pain, or warmth in the affected leg.

Air travel is a major risk factor for deep vein thrombosis. The risk of DVT persists for over **two weeks** after extended flights.¹⁵

Other risk factors for deep vein thrombosis include advanced age, pregnancy, bed rest after an injury or surgery, diabetes, hormonal imbalances, dehydration, obesity, and smoking.^{9,14,16}

Those **over 75** are at dramatically increased risk compared to those **under 40** because of impaired clotting mechanisms.¹⁷

Scientists have identified two ingredients that can support healthier blood flow and inhibit venous blood clots: the *enzyme nattokinase* and an *extract of French maritime pine bark*.¹⁸⁻²⁰

Nattokinase Fights Clotting

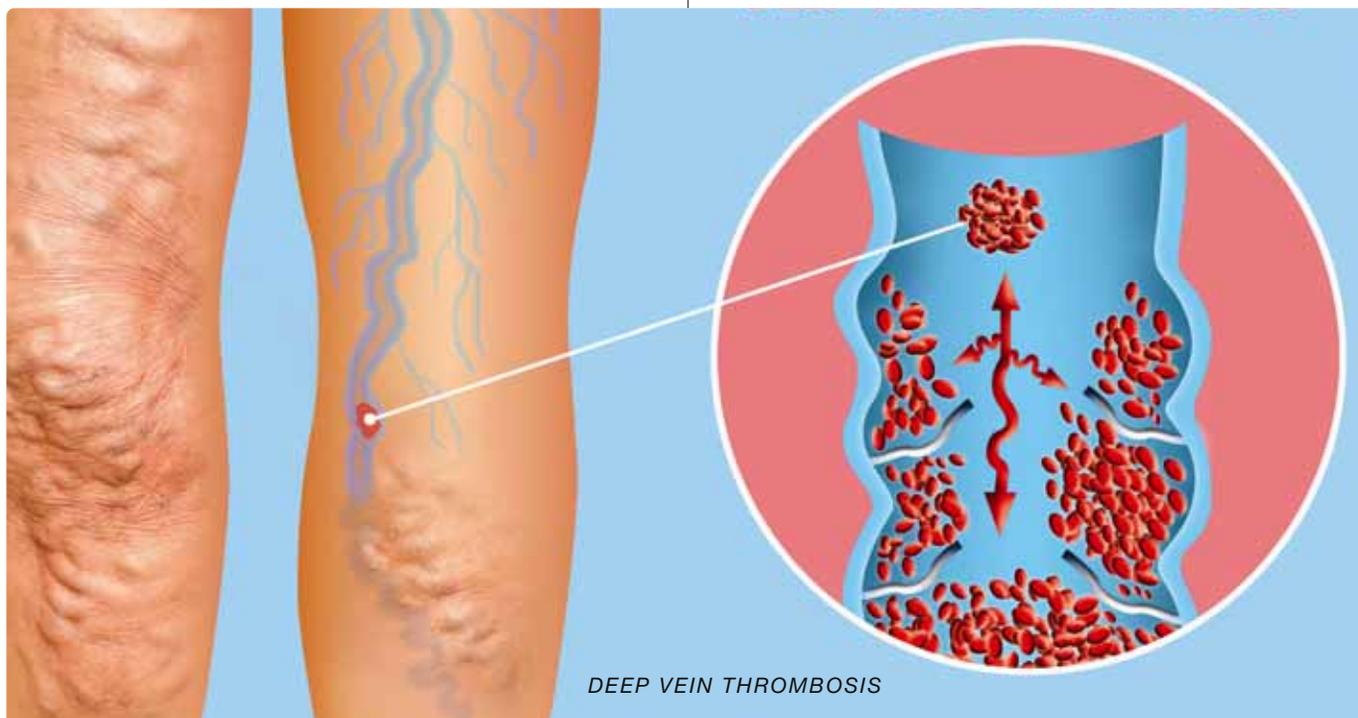
Natto, a traditional Japanese food contains an *enzyme* called **nattokinase**.¹⁹ Researchers found, two decades ago, that nattokinase is a more powerful **anti-clotting agent** than 173 other foods tested.²¹

Nattokinase helps fight dangerous clots by:^{18,19,22-26}

- Dissolving **fibrin**, the protein that binds clots together,
- Reducing activation of **pro-clotting factors**,
- Lowering the amount of **fibrinogen**, a protein that is converted into fibrin,
- Suppressing **platelet accumulation** to decrease clot formation, and
- Decreasing **high blood pressure**.

In a **placebo-controlled** study, these anti-clotting properties were detected in the blood samples of participants within **two to five hours** of taking a single dose of **2,000 fibrinolytic units of nattokinase**.²³

In another study of 153 adults who sought treatment for **deep vein thrombosis** or related vascular issues, all subjects were given either a daily dose of **2,000 fibrinolytic units of nattokinase** after vascular surgery or a month-long course of an anticoagulant drug.



WHAT
YOU
NEED
TO
KNOW

Help Prevent Deep Vein Thrombosis

- Sitting for long periods can lead to **deep vein thrombosis**, which may cause a fatal pulmonary embolism.
- The enzyme **nattokinase** helps prevent this dangerous clotting.
- An extract of **French maritime pine bark** also prevents deep vein thrombosis and reduces leg swelling.
- In a clinical study, a combination of these ingredients prevented deep vein thrombosis and reduced ankle swelling in high-risk passengers on **long flights**.

Nattokinase reduced deep vein thrombosis difficulties beyond the previous drug or surgery, leading to **complete remission** of remaining vascular symptoms. It worked without side effects such as internal bleeding, a common effect of anticoagulant drugs.^{18,27,28}

Maritime Pine Bark Protects Veins

French maritime pine bark extract contains compounds called **procyanidins**.²⁹

Procyanidins offer anti-inflammatory and platelet-modulating benefits that help contribute to **vascular protection**.^{8,29-31}

The extract also stimulates the synthesis of **nitric oxide** in the inner lining of blood vessels.²⁹ Nitric oxide is found in the **endothelium** (lining) of blood vessels that promotes **vascular elasticity**.³²

In a preclinical screening of **13** polyphenol-rich plant extracts, *only* French maritime pine bark *improved nitric oxide* availability in both healthy and dysfunctional endothelial cells of **veins**.³³

Those at risk of deep vein thrombosis often suffer from lower leg swelling, or **edema**.

Leg veins contain **one-way valves** which prevent blood from backflowing. These valves can become damaged, causing blood and fluids to remain in the lower legs, leading to swelling.³⁴

Medical professionals frequently advise the use of **compression socks** or stockings to relieve this swelling. However, patients report multiple challenges with consistently using compression stockings, including difficulty putting them on, discomfort wearing them (especially in hot weather), and appearance.³⁵

Research conducted over a 12-month period showed that French maritime pine bark extract was roughly as effective as **compression stockings** in reducing leg edema, and that the combination of the two was superior.³⁶

Reducing Future DVT Risk

Roughly **one-third** of those who suffer from **deep vein thrombosis** are likely to have *another* episode within a decade, especially within the first year.¹⁶

In addition, **up to 50%** of those with DVT suffer from **post-thrombotic syndrome** as long-term sequelae. Symptoms include chronic leg discomfort, persistent swelling, skin discoloration, and heaviness of the affected limb.³⁷

In a study of 815 participants, each subject was tested twice a year for **six years** following their initial thrombosis. All subjects adhered to a **standard treatment** involving compression stockings, weight management, and regular exercise.

Some subjects also took either aspirin, prescription anticoagulants, or **200 mg** of French maritime **pine bark extract**.³⁸

The rate of a **deep vein thrombosis recurrence** or **post-thrombotic syndrome** was:

- **14.9%** in those receiving only standard treatment,
- **12.9%** in those taking aspirin,
- Between **6.7%** and **10.7%** in those taking anticoagulants, and
- Just **3.6%** in those taking French maritime pine bark.

French maritime pine bark extract was by far the most effective way to prevent future clotting problems.

Powerful Combination

Combining **nattokinase** with **French maritime pine bark extract** offers significant protection against deep vein thrombosis.⁸

In a study of 204 **high-risk** passengers traveling long distances by air, half took **nattokinase** and **French maritime pine bark extract** two hours before their flight, with a second dose six hours later. The rest received placebos.⁸

While **5.4%** of the placebo group suffered flight-induced deep vein thrombosis, there were **no cases** in those taking the nattokinase-pine bark combination.⁸

Furthermore, the **placebo** group had a **12% increase** in lower **leg edema** (swelling) score, compared to a **15% reduction** in the treatment group.⁸

Together, these two ingredients relieved swelling and helped prevent thrombosis.⁸

Summary

Sitting too much greatly increases one's risk of a dangerous clotting condition, **deep vein thrombosis**.

Research has shown that the enzyme **nattokinase** and an extract of **French maritime pine bark** can reduce the risk of clotting and of deep vein thrombosis.

These compounds protect vein health by inhibiting blood clots and promoting healthy blood flow. •

If you have any questions on the scientific content of this article, please call a **Life Extension** Wellness Specialist at 1-866-864-3027.



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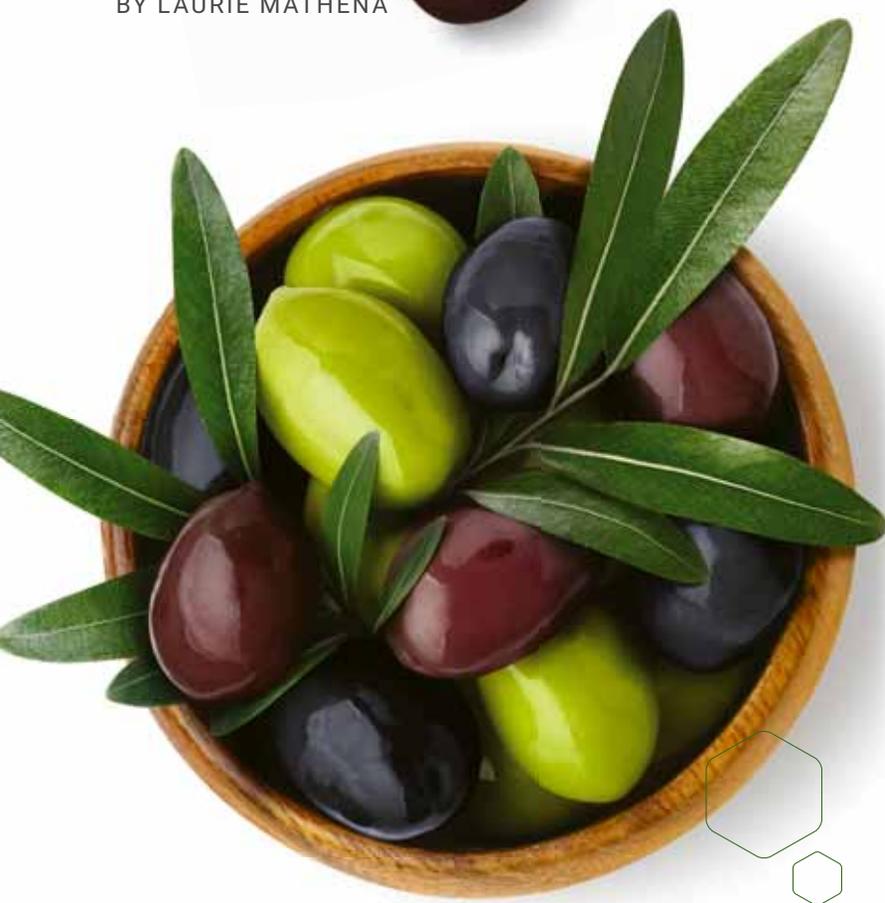


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Olives

BY LAURIE MATHENA



Olive branches are known as a symbol of peace, but the **olive fruit** could serve as a symbol of **health** and **longevity**.

Olives contain components that have been shown to contribute to brain,¹ heart, and vascular health, cancer risk reduction, weight loss, increased longevity, and more.¹⁻³

Olives contain the second-highest healthy fat content of any fruit. One cup of green olives contains about **21 grams** of total fat,⁴ the majority of which is **monounsaturated fat**.

Studies show that consuming a diet high in monounsaturated fatty acids has beneficial effects on cardiovascular risk factors (particularly when substituted for saturated fat). These include:

- reduced LDL cholesterol,⁵
- decreased blood pressure,⁵
- decreased HbA1c,^{6,7} and
- improved insulin sensitivity.^{5,7}

As a result, *higher* dietary intake of **monounsaturated fatty acids** is associated with a lower risk of cardiovascular disease mortality and total mortality.^{3,8}

Eating olives increases blood levels of **glutathione**,⁷ an antioxidant whose functions include repairing DNA, supporting immune function, and transporting mercury out of the brain.⁹

As an added benefit, olives are a **fermented food** that boosts the health of the microbiome and digestive system. Fermented foods provide antioxidant, antimicrobial, antifungal, anti-inflammatory, anti-diabetic, and anti-atherosclerotic activities.¹⁰

To include more olives in your diet, simply add them to salads, place atop pizza, chop them into chicken salad, or eat them with your favorite cheese and dried fruit. •

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REVIEW

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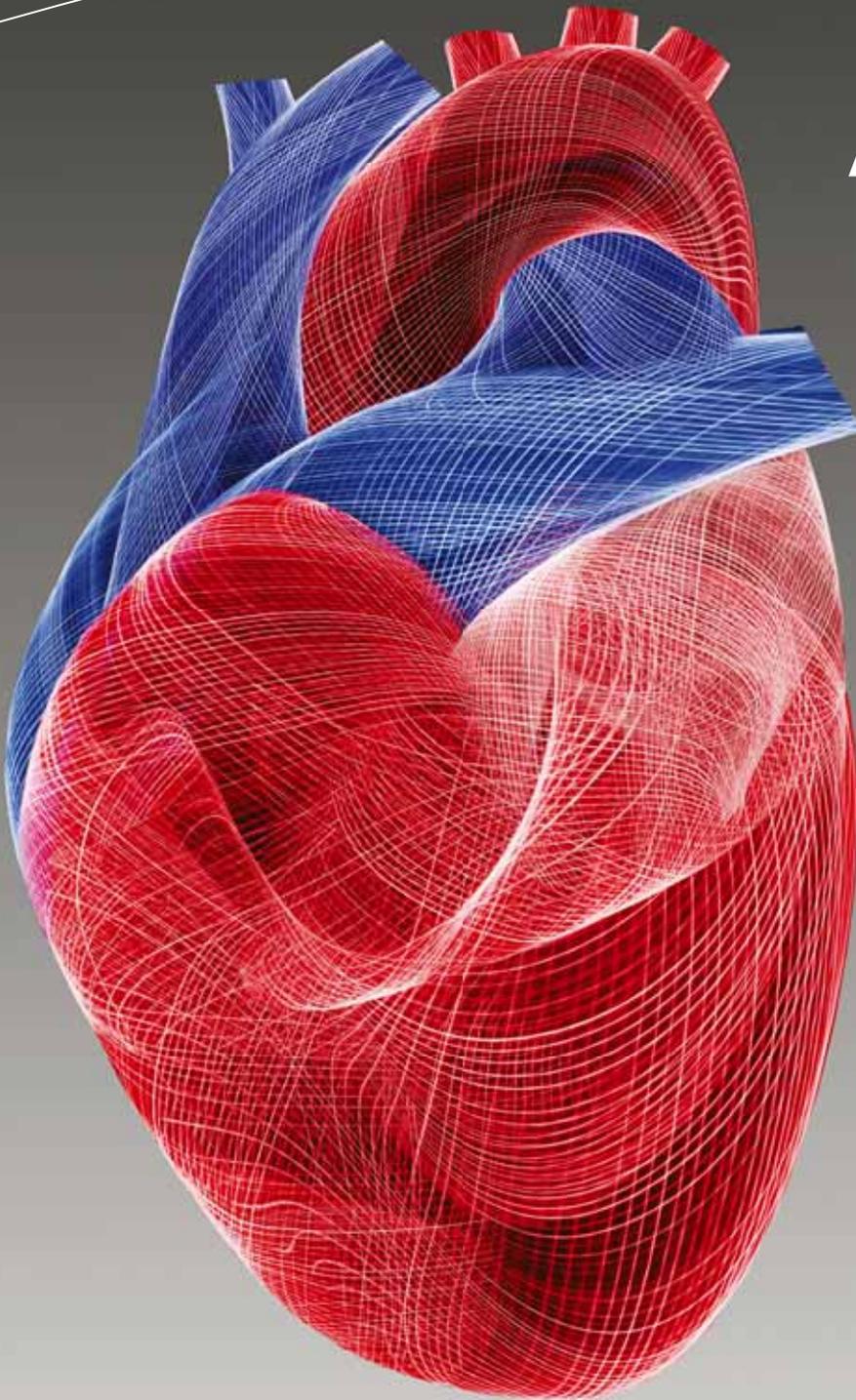
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Raymond

VERIFIED CUSTOMER REVIEW

Fisetin

The Longevity Flavonoid

Fisetin, a flavonoid found in strawberries and apples, is currently being studied for its effectiveness as a **senolytic** in humans.¹

In preclinical studies, fisetin:

- Mimics effects of **calorie reduction**²
- Targets longevity pathways²⁻⁶
- Extends lifespan of mice by about **10%**⁷
- Removes **senescent** cells through **senolytic** action⁷
- Suppresses excess **mTOR** activation⁸

Fisetin is poorly *absorbed* due to its breakdown in the small intestines.

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Vitamin C and Gum Disease

BY LAURIE MATHENA



Periodontitis is a gum infection that damages the soft tissue around teeth, leading to **tooth loss**.

It has been connected to an increased risk of cardiovascular and respiratory diseases, arthritis, premature births, and other serious conditions.^{1,2}

Diabetics are at a high risk for periodontitis.²

Nearly half of adults over age 30 have some form of periodontal disease, while in those over age 65 the prevalence rises to over **70%**.³

Vitamin C is an essential nutrient for the health of gum and periodontal tissues.

Recent studies on the link between vitamin C and the risk and severity of gum disease have found the following:

- **Vitamin C deficiency is a risk factor for periodontitis.**⁴ In an observational study of patients with periodontitis, vitamin C levels were *significantly lower* in those with **Stage IV** periodontitis (the most severe stage, with the potential for loss of all teeth) as compared to the people with early stages of disease. This led researchers to conclude that vitamin C *deficiency* could increase risk of periodontitis.

- **Higher vitamin C intake is associated with less plaque.**⁵

Another observational study revealed that patients with periodontitis did not meet the recommended intake levels of vitamin C. However, the *higher* the intake of vitamin C, the *lower* the **plaque index value** (an assessment of the levels and rate of plaque formation on tooth surfaces). These results reinforce evidence that vitamin C could help protect against the onset of periodontal disease.

- **Poor dietary intake of vitamin C and other nutrients increases risk of periodontal disease.**⁶

A systematic review of research databases found that lower intake of vitamin C (as well as vitamin E, beta-carotene, and calcium) was associated with increased risk of periodontal disease in older adults.

- **Smoking could increase periodontitis by reducing vitamin C levels.**⁷ Smokers have a higher prevalence and severity of periodontal disease than nonsmokers. Smokers also require almost two-fold higher intake of vitamin C than nonsmokers to reach adequate vitamin C concentration.⁸ One study investigated the association between smoking and vitamin C levels and its impact on periodontal condition in older adults. The researchers found that subjects with the *highest* prevalence of periodontal issues had the lowest vitamin C levels; this may be influenced by smoking status.⁷

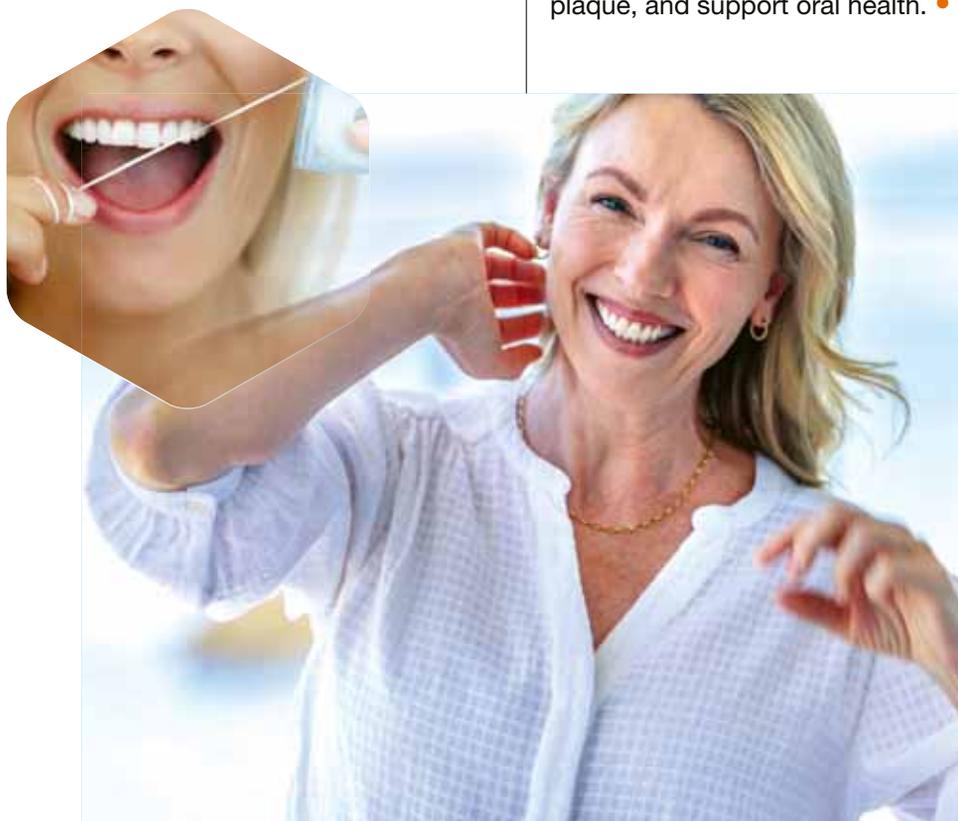
The above evidence suggests that **vitamin C** intake when used in conjunction with daily oral health—proper brushing and flossing—and regular periodontal checkups may help combat gum disease, reduce plaque, and support oral health. •



If you have any questions on the scientific content of this article, please call a **Life Extension** Wellness Specialist at 1-866-864-3027.

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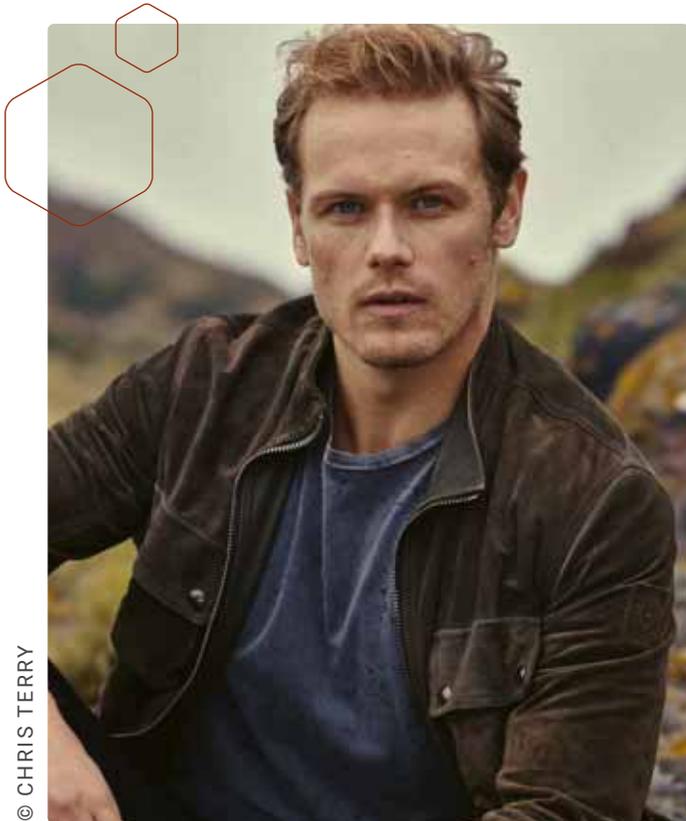
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Outlander Star **Sam Heughan**: Global Ambassador for Wellness

BY LAURIE MATHENA



© CHRIS TERRY

There are two things actor Sam Heughan takes very seriously: His acting and his health.

Heughan rose to fame in 2014 with his breakout role in the hit show, *Outlander*.

In this historical drama set in the 18th century, 43-year-old Heughan plays Scottish military man Jamie Fraser, a chiseled Highlander whose athletic physique is as much a part of his character as his thick Gaelic accent.

Throughout his years as a struggling actor, Heughan learned the value of using his physical attributes to bring a character to life, but he didn't always use healthy means to do so.

In his autobiography, *Waypoints*, Heughan discusses how the pressures of conforming to physical expectations led to poor health choices and a low-level eating disorder.

He also shares his journey toward attaining a healthy, balanced lifestyle—and how he is helping thousands of people around the world do the same.

Journey to a Healthy Lifestyle

Sam Heughan's dream was to become an actor. He pursued roles on the big screen and small screen, and he took nearly any part that came along—whether it was in a television commercial or on stage.

But despite more than a decade looking for his big break, Heughan often found himself scraping for money as a bartender or server, sleeping on friends' sofas or sharing apartments to save on rent, and sometimes, literally without a penny to his name.

During that time, he learned to use his six-foot-two frame to his advantage. He realized that if he looked the part during an audition, he'd be more likely to land the role.

This led him down a dark path, where he sometimes survived on salad and pickles to keep his calorie count low, or intentionally dehydrated himself to make his muscles look more defined.

"In hindsight, when I consider that time in my life, I recognize that I was living for a while with a low-level eating disorder," said Heughan in his memoir, *Waypoints*. "The requirement for an actor to look a certain way has driven me too far at times. I love training, but in my early years that led to a bad relationship with food."

Heughan didn't develop a healthy relationship with food until he became determined to become more muscular.

“It forced me to start researching health and fitness, and that’s when I recognized that the body needs a healthy, balanced diet to survive and grow. It was a vital lesson, and even now I sometimes have to remind myself that there can be no compromise.”

He continues to exercise on a daily basis, and his workouts are tailored to his current role.

For example, when he is shooting *Outlander*, he focuses on functional strength training that balances strength and cardio.

His role as a villain in a superhero movie called *Bloodshot* required that he put on more muscle, so he ate more calories, lifted heavier weights, and cut back on cardio.

Regardless of how he tailors his workouts, his relationship with food is now healthier and more balanced. He says he has tried many kinds of diets, but in the end, he focuses on clean eating. This includes whole, natural foods, whole grains, fruit and vegetables, and no junk food.

He enjoys juicing, and his favorite blend includes carrot, mint, ginger, and lemon.

Heughan also adds targeted supplements to his routine, including vitamin C, vitamin D, glutathione, krill oil, and omegas.

“It’s mainly to do with immunity boosting and generally giving me energy because the days are long and tiring both physically and mentally,” said Heughan.

My Peak Challenge

For Heughan, there’s more to life than acting.

“If I did nothing else with my life, I’d still feel like something was missing,” said Heughan in *Waypoints*.

“I’m always looking for the next great challenge on the horizon. This has given rise to several projects far from film and television, including one dear to my heart that allows me to give something back.”

Heughan is referring to My Peak Challenge, a nonprofit organization he co-founded along with his personal trainer, John Valbonesi. The organization is unique because it challenges people to set goals for themselves while raising funds for charity.

It began with Heughan’s own personal goal of running two marathons in a one-month period. He broke the challenge down into manageable steps, and he raised over \$37,000 for cancer charities in the process.

“We all need a focus in life,” said Heughan. “And by introducing targets we can begin to take steps towards achieving goals that might at first appear unreachable.”

My Peak Challenge is now a global movement with a simple premise: Help yourself while helping others.

As part of the program, people start by setting a goal for themselves with the idea that challenge promotes personal growth. The challenge can be physical (like running a 5K) or not physical (like learning a new language).

The membership fee provides access to 12 months of fitness, yoga, and nutritional plans, along with training from professionals and coaches.

More significantly, 50% of the net membership fee goes directly to various charities. To date, the My Peak Challenge community has raised nearly \$7 million for its charity partners.

Funds raised through My Peak Challenge recently funded a clinical

trial at the University of Oxford that is testing a new way to treat acute myeloid leukemia, an aggressive form of blood cancer.

Other causes have included fighting global hunger, supporting end-of-life care, and addressing environmental problems.

In 2022 alone, “Peakers” (as the members are called) raised enough money to plant 607,000 trees and cumulatively walked two billion steps.

The mission of My Peak Challenge echoes Heughan’s own personal health philosophy: “Challenge yourself, and nothing is unattainable.”

Waypoints

In 2021, Heughan accomplished yet another lofty goal: hiking a 96-mile trail through the Scottish Highlands called the West Highland Way.

The culmination of the hike included ascending Ben Nevis, the highest mountain in the British Isles.

Heughan details this challenging trek—and the lessons he learned along the way—in his charming memoir, *Waypoints*. Along with sharing details of this journey, he provides an intimate guide through the waypoints of his own personal life.

In reflecting on his hike along the West Highland Way, Heughan said, “For me, this journey has removed the noise and demands of everyday life to remind me that we’re all just passing from one waypoint to the next. What matters is that we can look back at each stage knowing we made the most of it.” •

If you have any questions on the scientific content of this article, please call a **Life Extension** Wellness Specialist at 1-866-864-3027.

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1. Akay Internal Study. Liposomal hydrogel vitamin C pharmacokinetics. Data on file. 2021.

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200 mg, 30 enteric coated vegetarian tablets
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- 02365 Life Extension Mix™ Tablets without Copper
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- 01511 Enhanced Sleep without Melatonin
- 02234 Fast-Acting Liquid Melatonin
- 01669 Glycine
- 02308 Herbal Sleep PM
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- 01668 Melatonin • 300 mcg, 100 veg capsules
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- 00329 Melatonin • 1 mg, 60 capsules
- 02503 Melatonin • 3 mg, 60 gummies
- 00330 Melatonin • 3 mg, 60 veg capsules
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300 mcg, 100 veg tablets
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- 02511 Thermo Weight Control
- 02509 Waistline Control™

WOMEN'S HEALTH

- 01942 Breast Health Formula
- 01626 Enhanced Sex for Women 50+
- 01894 Estrogen for Women
- 02204 Menopause 731™
- 02319 Prenatal Advantage
- 01649 Soy Isoflavones
- 02513 Women's Bladder Support

Good Health BEGINS IN THE MOUTH

Life Extension® Toothpaste contains ingredients that promote healthy teeth and gums.

- **COENZYME Q10** for protection against harmful molecules
- **GREEN TEA** that is rich in protective catechins
- **HYDROGEN PEROXIDE** to thoroughly clean teeth and gums
- **ALOE VERA** promotes gum health^{1,2}
- **XYLITOL** a natural sweetener that supports oral health³
- **FOLIC ACID** for healthier and more resilient gums⁴
- **LACTOFERRIN** to support healthy oral hygiene⁵
- **SQUALANE** derived from olives and rich in vitamin E
- **FLOURIDE-FREE**



SUPER SALE PRICE

Item #01278 • 4 oz. tube

1 tube \$8.10 • 4 tubes \$7.20 each

References

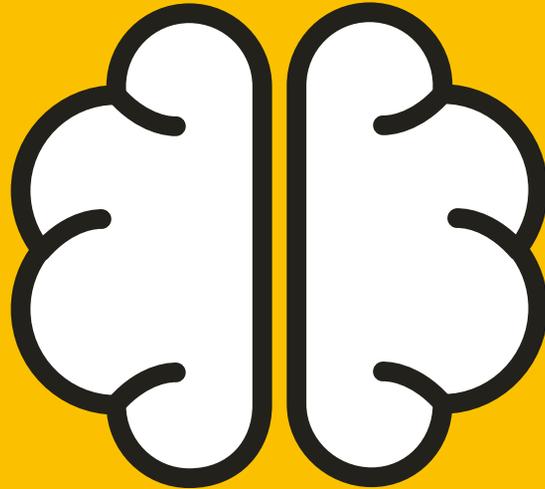
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For full product description and to order
Life Extension® Toothpaste, call

1-800-544-4440 or visit www.LifeExtension.com

Re-Energize Heart and Brain Cells

Three Choices of Superior Ubiquinol CoQ10 Mitochondrial Delivery Systems



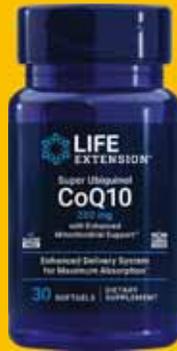
100 mg CoQ10

SUPER SALE PRICE

Item #01426 • 100 mg, 60 softgels

1 bottle **\$42.53**

4 bottles \$36 each



200 mg CoQ10

SUPER SALE PRICE

Item #01431 • 200 mg, 30 softgels

1 bottle **\$40.50**

4 bottles \$34.65 each



100 mg CoQ10 + 10 mg PQQ

SUPER SALE PRICE

Item #01733 • 100 mg, 30 softgels

1 bottle **\$34.43**

4 bottles \$27.90 each



#1 Rated CoQ10 Products - 5 Time Winner!*

For full product description and to order **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™**, or **Super Ubiquinol CoQ10 with PQQ**, call 1-800-544-4440 or visit www.LifeExtension.com

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These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.



IN THIS EDITION OF *LIFE EXTENSION* MAGAZINE®



7 SHARP DECLINE OF DEMENTIA PREVALENCE

New data show a **30% decline** in **dementia** prevalence. Well-documented methods can enable aging **humans** to preserve **neurological function**.

24 RECONNECT AGING BRAIN CELLS

MIT researchers developed a form of **magnesium** that was shown to reverse measures of **brain aging** and improve **synaptic density**.



36 FIGHT BACK AGAINST COLDS AND FLU

In clinical trials, **elderberry** extract significantly *resolved* cold/flu symptoms up to **four days** sooner compared to **placebo**.

46 PROTECT KIDNEY FUNCTION

Excess **uric acid** contributes to gout, kidney stones, and kidney disease. A **human** study showed a **plant extract** *lowered uric acid* blood levels by **28.4%** and improved measures of **kidney** health.



56 UNDO DAMAGE OF SITTING TOO MUCH

Americans spend half their time sitting, a major risk for **deep vein thrombosis** and blood clots. **Clinical data** show that two plant extracts can *reduce* **leg swelling** and prevent **venous clots**.

69 VITAMIN C AND GUM DISEASE

Gum disease is linked to stroke, diabetes, and more. New research demonstrates **vitamin C's** ability to *decrease* the risk and severity of **gum disease**.