



The Science of a Healthier Life®

LifeExtension.com

December 2025

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## REPORTS



### Counteract Five Hallmarks of Biological Aging

Adults taking a standardized plant extract for 12 weeks showed no increase in **epigenetic age**, while preserving **telomere length** and stabilizing **DNA methylation**.

### 36 MUSHROOMS HELP FIGHT COLDS/FLU

**Beta glucans** with **mushroom extracts** can *enhance immune functions*. In human trials, yeast beta glucans *reduced* upper respiratory symptoms by up to **58%** and severity of seasonal allergy symptoms by **52%**.

### 48 YOUR HEART AND VITAMIN K

In an observational study, adults aged 55 and up with the *highest* **vitamin K2** intake had substantially *lower* **cardiovascular mortality** risks. Vitamin K is known to *impede* **arterial calcification**.



### 60 SLOW DOWN TELOMERE SHORTENING

A 2025 **clinical trial** found that adults who supplemented with **vitamin D** for four years significantly *reduced* **telomere shortening**.

### 70 BROCCOLI AND THE AGING BRAIN

**Sulforaphane**, a compound found in **broccoli**, was shown in **clinical studies** to *improve* multiple aspects of **cognitive function**, including **processing speed** and **memory** in adults.

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In a **human study**, a **botanical extract** *improved* several **aging biomarkers**. The race is to buy us more time to be alive when **reversal** of degenerative aging becomes standard medical practice.



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### 13 IN THE NEWS

Coenzyme Q10 given within 24 hours of stroke may be neuro-protective; taurine improved

blood pressure and vascular function in diabetics; French maritime pine bark reduced cellulite in women; metabolic syndrome raises early-onset dementia risk.

### 67 SUPERFOODS: PUMPKIN

Pumpkin's multiple carotenoids promote eye health and immune function, while its seeds support glucose, urinary, and prostate health.



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# Our Race Against Time



WILLIAM FALOON



Each day about **6,000** Americans age 65 and older perish, most often due to complications from an **age-related** illness.<sup>1</sup>

The leading causes are diseases of the heart, cancer, stroke, and dementia.<sup>2</sup> Much of the remaining relate to diabetes,<sup>2,3</sup> immune senescence,<sup>4</sup> and frailty-falls-fractures (sarcopenia/osteoporosis).<sup>5,6</sup>

These conditions share modifiable risk factors.

Early detection and remediation of established underlying causes can slash risks of all these **degenerative** disorders.<sup>7</sup>

Until recent years, however, the **aging process** itself was a major obstacle impeding the **healthy longevity** that **Life Extension®** readers seek.

Fortunately, science is beginning to pierce through the fog.

The educated public is increasingly aware of mechanisms that affect **biological aging**. This includes the **shortening of telomeres** that safeguard cellular DNA.<sup>8</sup>

From *The American Journal of Clinical Nutrition*, May 21, 2025

## Vitamin D Supplement Reduced Telomere Shortening by 76%

Study subjects received **2,000 IU/day** of **vitamin D** or **placebo**.<sup>11</sup>

**Vitamin D** group had roughly **76% reduction in telomere attrition\*** compared to the average base pair loss over a 4-year period based on population studies.<sup>11-13</sup>

This **slowing of telomere shortening** could represent the equivalent of about **3 fewer years** of **biological aging** in leukocyte **telomere length** over the 4-year study period.

**"Telomere length attrition measures are still in the research phase and not yet fully clinically validated."** They remain a laboratory measure of biological aging that vitamin D favorably influences along with improved DNA methylation (epigenetic aging) scores.

*\* identified through Life Extension's internal review of scientific studies.*



Scarlet Beebalm

**Telomere attrition** has been linked to many degenerative diseases. The supplement market has responded with products claiming to preserve or even *lengthen telomeres*. These commercial formulas can cost hundreds of dollars per month and may not meet rigorous standards of scientific efficacy.

We've reported evidence over the years that low-cost supplements like **vitamin D** might delay **telomere shortening**.<sup>9,10</sup>

A pleasant surprise occurred this year with a **clinical trial** published in the prestigious *American Journal of Clinical Nutrition*.

This randomized controlled study showed that people taking just **2,000 IU/day** of supplemental vitamin D for four years, had a statistically significant, roughly **76% reduction in telomere attrition** compared to typical population averages identified through our internal review of scientific studies.<sup>11,12</sup>

While this data is promising, it merely shows a **delay** in shortening of telomeres.

## New Telomere Preservation Intervention

These kinds of data sets showing external control over **telomere shortening** prompted us to investigate a botanical extract from the **scarlet beebalm**.

Preclinical evidence suggests scarlet beebalm may favorably influence key aging biomarkers, such as **inflammation**.

Emerging clinical research indicates benefits for other **aging biomarkers**, including **DNA methylation** and **telomere length** preservation. These **human** findings show enhanced quality of life, particularly in the physical domain.<sup>14</sup>

The article on page 24 of this month's issue describes how **scarlet beebalm** extract may help counteract several hallmarks of aging.

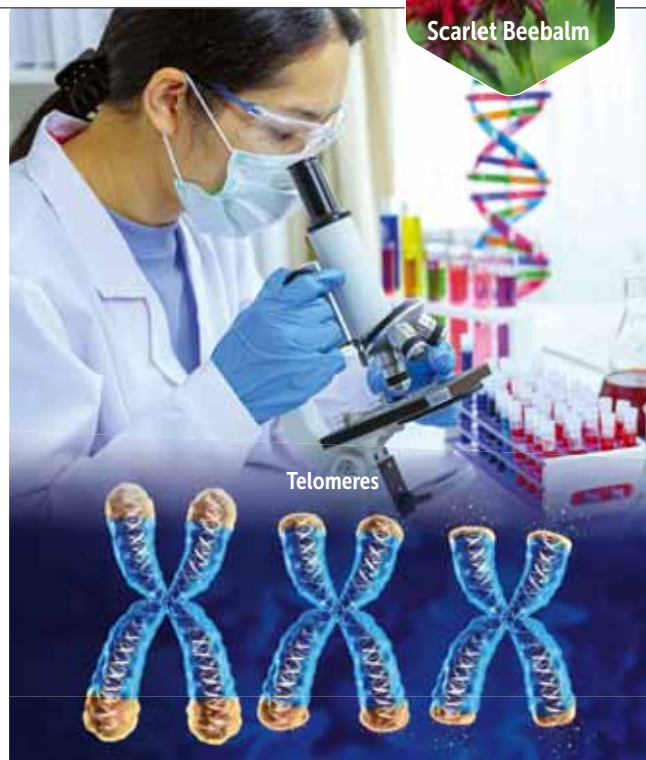
The goal is to buy us more time to be alive when systemic reversal of degenerative **aging** becomes standard medical practice.

As our readers **age**, including myself, we find ourselves in a **race against time** to take proactive actions now to extend our **healthy lifespans**.

For longer life,

A stylized, handwritten signature in black ink.

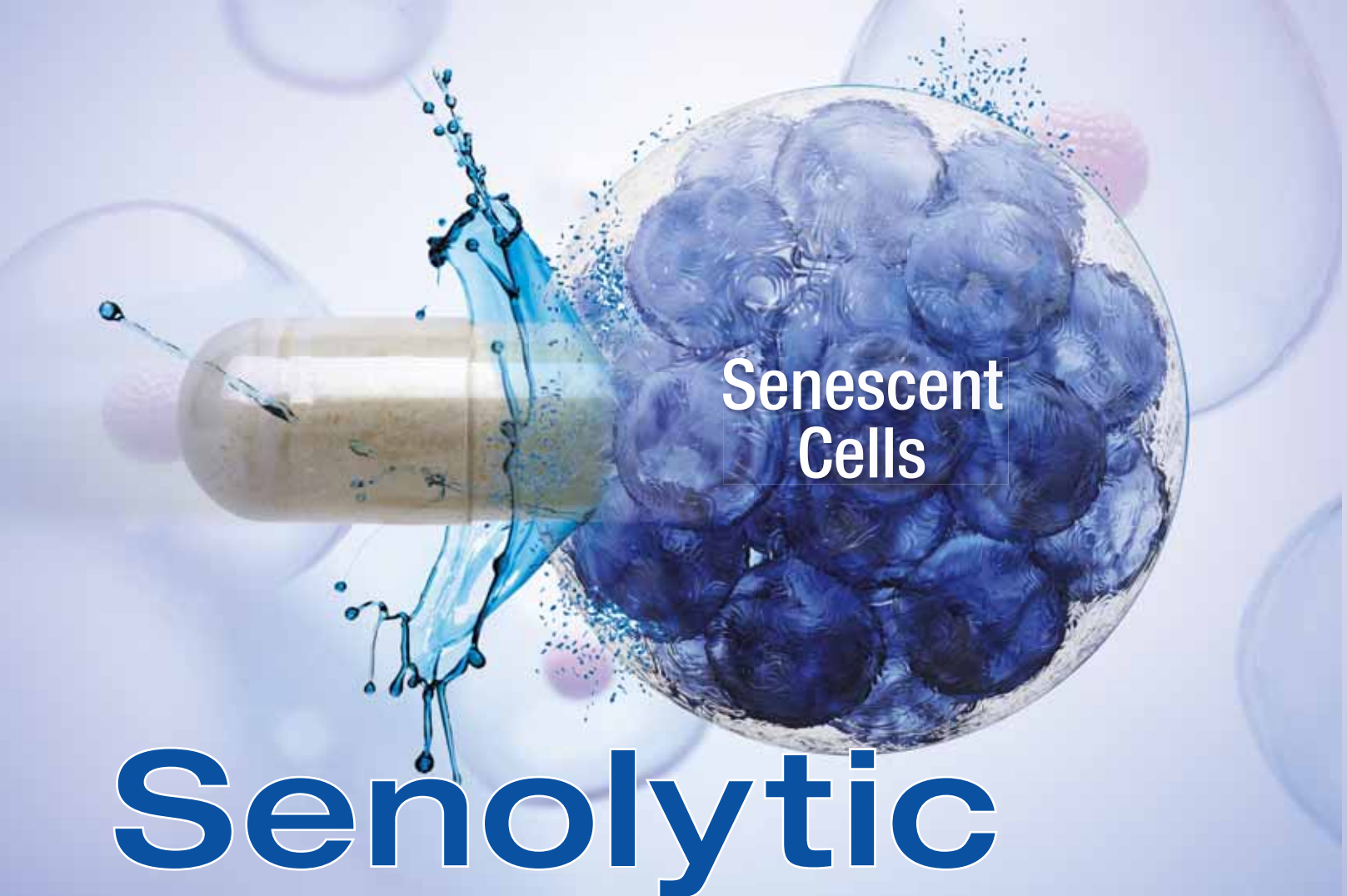
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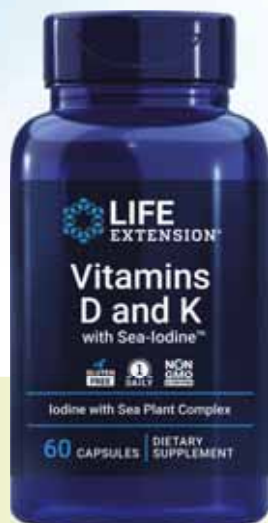


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# In the News



## CoQ10 Given Within 24 Hours After Ischemic Stroke May Improve Neuroprotection

Supplementation with coenzyme Q10 (CoQ10), when given within 24 hours after **stroke** onset, may improve certain biomarkers that relate to neuroprotection, according to a study published in *Neurological Research*.<sup>1</sup>

For this randomized, double-blind, placebo-controlled trial, 50 people hospitalized for acute ischemic stroke were given either **600 mg** per day of **CoQ10** or a **placebo**. Treatment started within **24 hours** of the stroke onset and lasted for 30 days.

In the CoQ10 group, there were significant reductions in malondialdehyde (a marker of oxidative stress) and in IL-6 (a marker of inflammation).

The CoQ10 group also had beneficial increases in **superoxide dismutase** (an enzyme that defends against oxidative stress), and **brain derived neurotrophic factor** (BDNF), which is an important protein involved in learning and memory.

**Editor's Note:** "CoQ10 may be considered a therapeutic option for enhancing neuroprotection and rehabilitation in stroke patients," the authors concluded.

Note that CoQ10 beneficially accumulates in a healthy body at a dose of **100 mg/day** of an absorbable form of CoQ10 when taken with a meal containing some fat. In individuals with underlying conditions, supplemental doses in the range of **200–400 mg/day**<sup>2</sup> have been used to raise CoQ10 blood levels to approximately **4.0–7.0 µg/mL**, a range considered supraphysiological (greater than normally found in the body), yet beneficial.<sup>3</sup> This explains why a much *higher* dose was used in the acute stroke study, as patients likely began with low CoQ10 levels.

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## Taurine Lowers Blood Pressure, Enhances Vascular Function in Type 2 Diabetics

A randomized, double-blind, placebo-controlled trial demonstrated that **taurine** reduced systolic blood pressure and improved endothelial function in individuals with type 2 diabetes.\*

The study involved 144 adults aged 18-75 with type 2 diabetes. Participants were randomly assigned to receive either **2.4 grams** of taurine or a **placebo** daily for 12 weeks.

At the end of the trial, those who received **taurine** experienced an average reduction of **7 mmHg** in systolic blood pressure, along with a significant decline in serum uric acid levels compared to baseline.

The **placebo** group had no significant improvements.

**Editor's Note:** Taurine was additionally found to increase plasma hydrogen sulfide, which helps relax the blood vessels, and inhibit platelet calcium influx.

\* *iScience*. 2025 May 21;28(6):112719.







## French Maritime Pine Bark Reduces Cellulite in Women

Cellulite is a condition characterized by denting and dimpling of the skin, that most often occurs in the legs, buttocks and abdomens of women.\*

In a randomized, double-blind, three-month study, 30 women with moderate cellulite were given **150 mg** French maritime **pine bark** extract per day. Another group of 30 women with moderate cellulite received a **placebo** daily for three months.

The Hexsel Cellulite Severity Score, thigh circumference, and other factors were evaluated at the beginning of the study and at 28, 56, and 84 days.

The authors reported a significant **improvement** in the treated group's clinical cellulite score after two and three months by **12%** and **13.6%** respectively. This was associated with clinical remediation shown by photographs, and a significant decrease in the upper thighs' circumference after three months.

**Editor's Note:** In addition, there were significant improvements in skin roughness and skin smoothness in the group that received French maritime pine bark. No significant improvements were observed in the placebo group.

\* *Phytomed Plus*. 2025 Aug;5(3)100821.

## Metabolic Syndrome Increases Early-Onset Dementia Risk

The risk of early onset **dementia** (diagnosed before age 66), is increased in people who have **metabolic syndrome**, according to a study in *Neurology*.\*

Metabolic syndrome is a cluster of conditions—including high blood pressure, high blood sugar, belly fat, and high lipid levels—that increase the risk of heart disease, stroke, and diabetes.

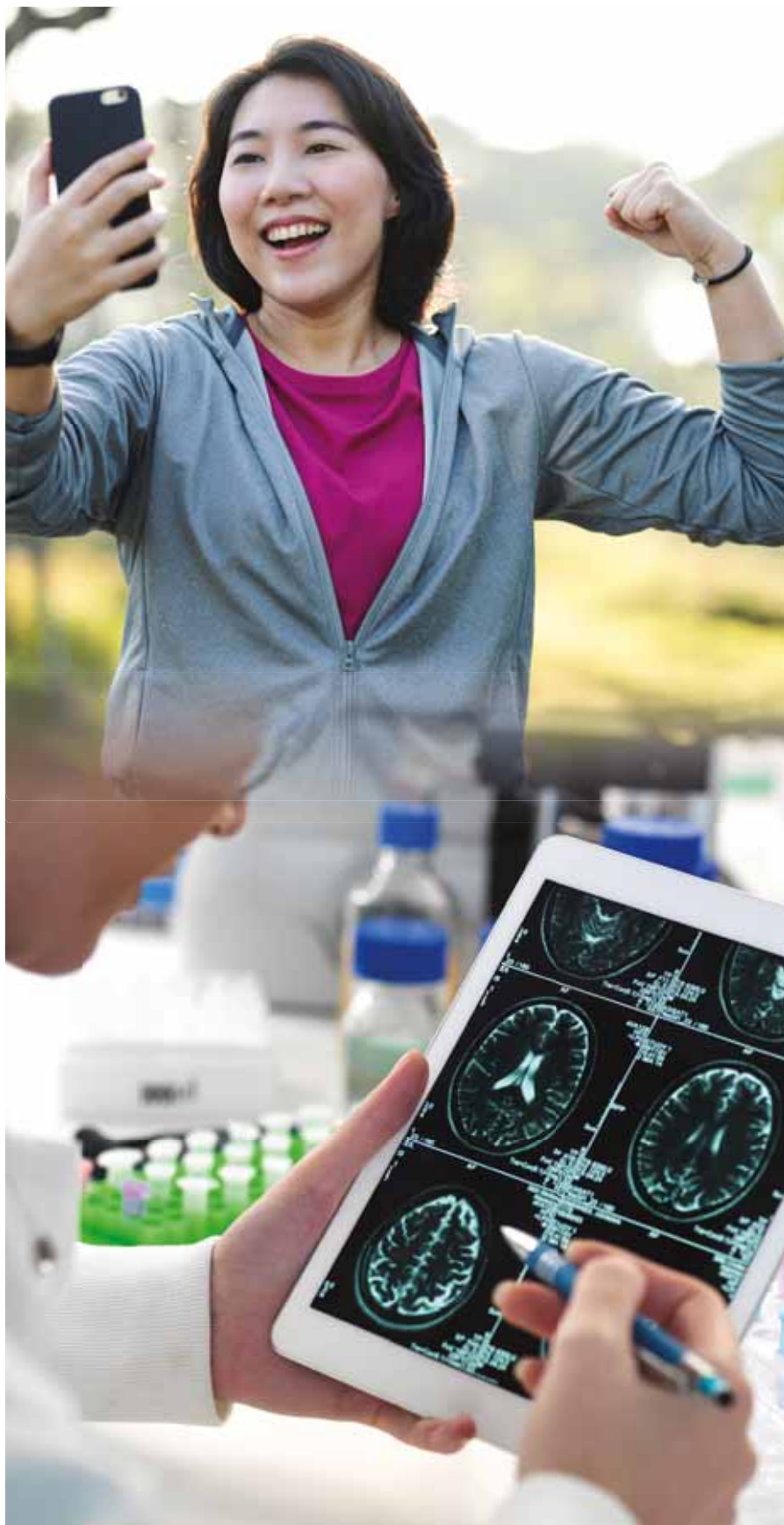
Previous research has also tied metabolic syndrome to an increased risk of *late-onset dementia*.

To determine its impact on young-onset dementia researchers studied 1,979,509 people from 40-60 years old who underwent health check-ups in 2009 and were followed for an average of 7.75 years.

Results showed that metabolic syndrome was associated with **24% higher risk** of young-onset dementia and **21% increased risk** of **vascular dementia**.

**Editor's note:** While these findings indicate association as opposed to cause and effect, the researchers concluded, "These findings suggest that interventions targeting metabolic syndrome may help mitigate young-onset dementia risk."

\* *Neurology*. 2025 May 27;104(10):e213599.





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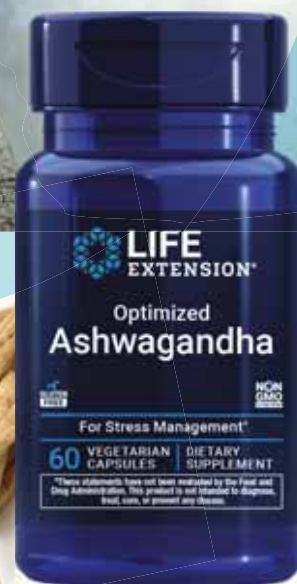


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\*Instant credit will be given every year upon signup and will be applied to the cost of products in cart. If the credit exceeds your product total or if you choose to use only a portion, the remaining amount will be saved in your LE Rewards account for future purchases. The rewards never expire.





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**Caution:** Temporary flushing, itching, rash, or gastric disturbances may occur.

\* Br J Pharmacol. 2004 Mar;141(5):825-30.

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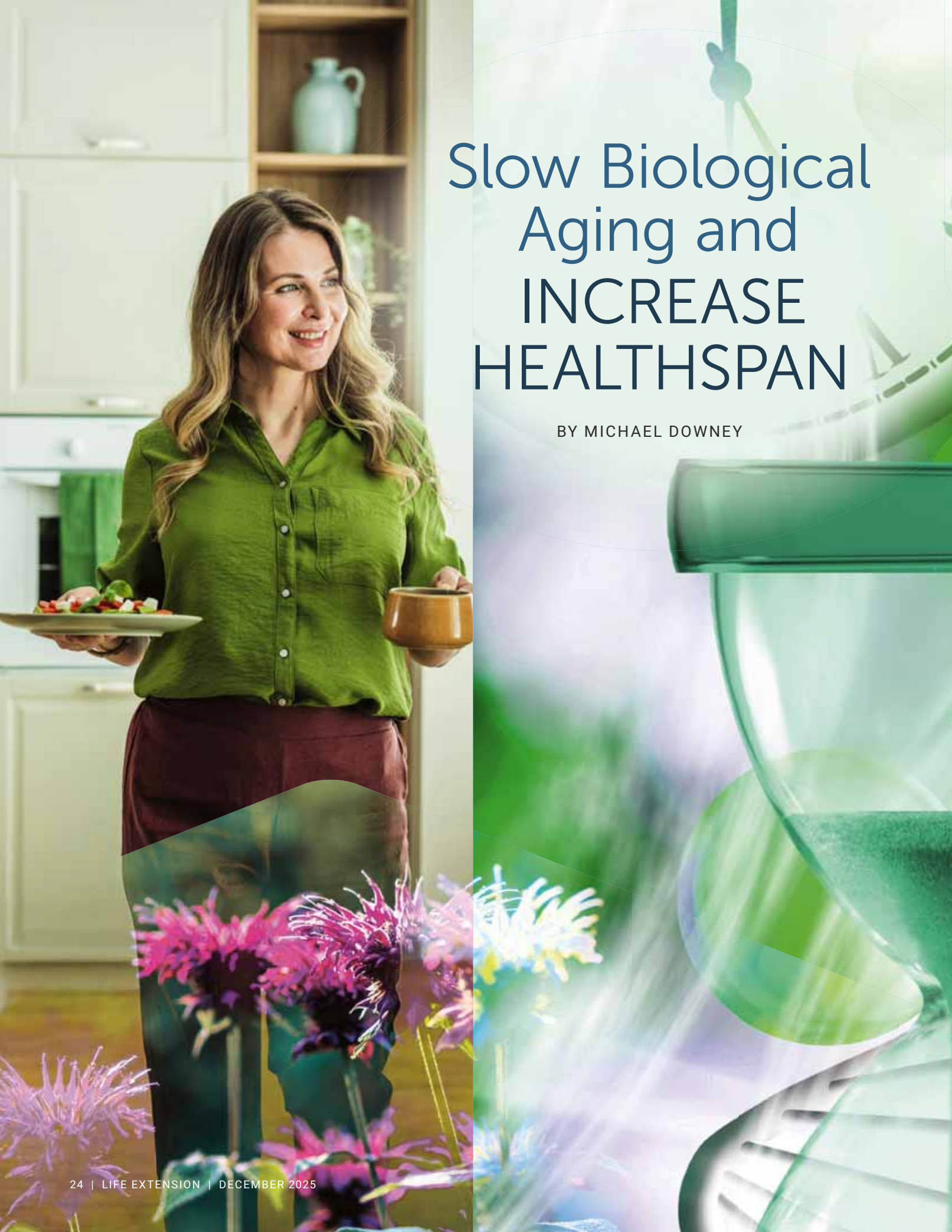
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# Slow Biological Aging and INCREASE HEALTHSPAN

BY MICHAEL DOWNEY



Scientists have identified **12 hallmarks of aging** that contribute to degenerative processes and the risk of age-related disorders.<sup>1-3</sup>

A **plant extract** has been found that targets *five* of the recognized contributors to aging.

In preclinical work, the extract was shown to reduce:<sup>4</sup>

- Telomere shortening,
- Oxidative damage,
- Genomic instability,
- Cellular senescence, and
- Chronic inflammation.

In a clinical study published in **2025**, adults taking this extract for 12 weeks had no significant increase in **epigenetic age**, a major determinant of **biological age**.

The **epigenetic age** of placebo recipients, on the other hand, increased **1.7 years**.<sup>4</sup> (You don't want an **older** epigenetic age.)

Compared to placebo, the extract led to improvements in leukocyte **telomere length** and stabilization of **DNA methylation** age.

These results indicate the potential for this extract to slow multiple contributors of biological age and increase **healthspan**, the number of years lived in good health.



## Biological Vs. Chronological Aging

Many **biological processes** are associated with **degenerative aging**.<sup>5</sup>

Scientists have identified **12** of these biological processes that are called “**hallmarks of aging**.”<sup>1,3</sup>

Over the years, adverse changes in these processes determine our **biological age**.<sup>5,6</sup>

This is different from our **chronological age**, the number of years we have lived.

Compared to others of the same *chronological age*, those with accelerated **biological aging** may seem more frail, are more likely to develop age-related diseases, and have reduced **healthspan**.<sup>5,6</sup>

Researchers have searched for ways to **slow** the rate of changes within one or more of these hallmarks of aging, hoping to decrease biological aging and **increase healthspan**.

After testing other candidates, they identified a plant called **scarlet beebalm**, with abilities to target **five** of the hallmarks of aging.

## Beebalm

**Scarlet beebalm** is an herb native to North America. It has long been used safely by Native Americans to treat respiratory infections and dental disorders.<sup>7</sup>



This herb is abundant with beneficial **flavonoids**, including **didymin**.<sup>8</sup> In preclinical studies didymin is known to boost the function of **mitochondria** (the energy-generating “powerhouses” of cells)<sup>7,9</sup> and of **endothelial cells** lining the insides of blood vessels.<sup>7,10</sup>

An extract of **scarlet beebalm**, standardized to **4% didymin**, has been demonstrated to slow mechanisms of aging.<sup>4</sup>

In lab studies, this extract:

- **Reduced Oxidative Stress.** The extract reduced markers of oxidative damage in stressed cells,<sup>11</sup> and lowered levels of **protein carbonylation**, a type of damage that occurs in proteins exposed to oxidative stress.<sup>4</sup>
- **Slowed Telomere Shortening.** Telomeres are like “protective caps” that help shield DNA and keep genetic material stable.<sup>12,13</sup> Telomere length and, more importantly, the rate of telomere attrition are strong predictors of species lifespan.<sup>14</sup> Telomere shortening is associated with chronic disease, aging, and higher risk of mortality.<sup>12,15</sup> Cells treated with **scarlet beebalm** extract had a significant **reduction** in the rate of telomere shortening compared to untreated cells.<sup>4</sup>
- **Protected Against DNA Damage.** In cells exposed to harmful substances or conditions that damage DNA, the extract reduced markers of DNA damage, showing improved **DNA repair** and genomic stability.<sup>4</sup>
- **Decreased Cellular Senescence.** Dysfunctional senescent cells damage tissues and drive aging.<sup>16</sup> Scarlet beebalm extract decreased a common aging marker in aged human cells, indicating reduced cellular senescence.<sup>4</sup>
- **Reduced Inflammation and Improved Endothelial Function.** The extract reduced pro-inflammatory markers in endothelial cells, and decreased **permeability** (leakage) in microvascular endothelial cells. *Excess permeability* can increase risk for tissue damage and disease.<sup>4</sup>

Together, these results indicate **anti-aging** effects and potential cardiovascular benefits.

## Healthier Aging

*C. elegans* are a type of roundworm that live only two or three weeks, making them ideal to study **aging**.<sup>17,18</sup>

In a study, worms were divided into three groups. One group received no treatment, another was given sulfamethoxazole, a compound known to extend health and lifespan in *C. elegans*, and the third group was treated with the **scarlet beebalm** extract.

Over seven days, the beebalm extract-treated worms showed:<sup>19</sup>

- **Increased time spent moving,**
- **Improved speed,** and
- **Greater distances moved.**

In other words, the extract enhanced **physical activity** and **vitality** over a significant period of the worms' lifetimes.<sup>19</sup>

## Clinical Trial

In a **human** study published in **2025**, 81 participants aged 45-65 took either **100 mg** of **scarlet beebalm** extract or a **placebo** daily for **12 weeks**.<sup>4</sup>

Two markers of **biological aging** showed favorable outcomes in those who took the **beebalm** extract:

- **DNA methylation age,** and
- **Telomere length.**

## DNA Methylation Age

DNA methylation is a critical **epigenetic** process and considered as a predictor of healthspan. Scientists measure DNA methylation age by analyzing chemical tags (called *methyl groups*) attached to DNA. It is often used to help determine **biological age**.<sup>20</sup>

In this study the **placebo** group's DNA methylation age **increased by 1.7 years** in 12 weeks. The **scarlet beebalm** group, on the other hand, showed no significant increase.<sup>4</sup>

This **stabilization** of **DNA methylation** aging shows support for cellular function and longer healthspan.



What You  
Need  
To Know

## Counter Aging Processes with Scarlet Beebalm

- An extract of the **scarlet beebalm** plant addresses **five** of the known mechanisms or hallmarks of aging, based on cell-based studies.
- In a recent human trial, those who took scarlet beebalm extract showed no significant **epigenetic aging** during the study, while a placebo group aged epigenetically by **1.7 years**.
- This extract also significantly lengthened **telomeres** (the protective caps on chromosomes) compared to a placebo, and improved quality of life.
- By targeting multiple drivers of aging, this plant extract may **slow biological aging** and lead to longer **healthspan**, years of healthy life.





## 12 Hallmarks of Aging

Scientists have identified **12** aging hallmarks that increase risk of age-related disease and reduced healthspan.<sup>1,6,22</sup>

1. Oxidative damage,
2. Telomere shortening,
3. Genomic instability,
4. Cellular senescence,
5. Chronic inflammation,
6. Loss of proteostasis (protein balance),
7. Disabled autophagy (cellular “housekeeping”),
8. Deregulated nutrient-sensing,
9. Mitochondrial dysfunction,
10. Stem cell exhaustion,
11. Altered intercellular communication, and
12. Dysbiosis (imbalance of gut microbes).



Researchers have identified a plant called **scarlet beebalm** with abilities to target **five** hallmarks of aging in preclinical studies, with clinical findings validating two of these effects.<sup>4</sup>

### Telomere Length

**Telomere shortening** is a biomarker of cellular aging and is associated with age-related disease and mortality.<sup>21</sup>

The **beebalm**-supplemented group showed an **increase in leukocyte** (a type of immune cell) **telomere length** compared to the **placebo** group, which experienced a decline during the study period.

This suggests that **beebalm** beneficially **lengthened telomeres** rather than merely preventing their loss.<sup>4</sup>

Slowing DNA methylation aging and reducing telomere shortening may contribute to a longer **healthspan**.

In addition, according to a **quality-of-life** questionnaire, those who took the **beebalm extract** engaged in more frequent and vigorous **physical activity**, suggesting they felt healthier as they aged.

### Summary

An extract of **scarlet beebalm** has been shown to reduce **five** drivers of biological aging, including epigenetic alterations and telomere shortening.

In a clinical study, those who took this extract for 12 weeks had no significant increase in **epigenetic age**, while a placebo group’s epigenetic age increased by **1.7 years**.

**Leukocyte telomere length** *increased* among treated participants compared to the placebo, indicating potential for longer healthspan. ■

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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## Human Mortality and Telomeres

A 2003 study published in *The Lancet* examined **telomere length** in a group of individuals aged **60** or older.

Those with *shorter* telomeres had an associated **3.18-fold higher** mortality rate from **heart** disease and an **8.54-fold higher** mortality rate from **infectious** disease.<sup>23</sup>





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for years. Love it."

**Gail**  
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REVIEW



## Olive Polyphenols + Fish Oil + Sesame



**2,400 mg  
EPA/DHA  
in four softgels**  
Plus Standardized  
Olive Extract and  
Sesame Lignans

### SUPER SALE PRICE

Item #01982\*

120 softgels

1 bottle **\$26.33**

4 bottles \$24.75 each



**2,520 mg  
EPA/DHA  
in four softgels**  
with Standardized  
Olive Extract,  
Sesame Lignans, Krill  
and Astaxanthin

### SUPER SALE PRICE

Item #01988

120 softgels

1 bottle **\$35.78**

4 bottles \$32.40 each



# = SUPER OMEGA-3

**Fish oil** is a popular supplement people use to boost **omega-3** levels in the **heart, brain, eyes**, and other tissues.

**Super Omega-3** provides healthy components of the **Mediterranean diet** including highly purified **fish oil**, **sesame lignans**, and standardized **olive extract**.

For full product description and to order **Super Omega-3**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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

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#1

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Compare  
Two-Per-Day Multivitamin  
to the Leading Brand



"Covers all  
the bases."

Brian  
VERIFIED  
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REVIEW



### Two-Per-Day Multivitamin Capsules

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Item #02314 • 120 capsules (two-month supply)

**1 bottle \$17.21 • 4 bottles \$15.30 each**

### Two-Per-Day Multivitamin Tablets

**SUPER SALE PRICE**

Item #02315 • 120 tablets (two-month supply)

**1 bottle \$16.54 • 4 bottles \$14.63 each**

For full product description and to order  
**TWO-PER-DAY MULTIVITAMIN**,  
call 1-800-544-4440 or  
visit [www.Life Extension.com](http://www.Life Extension.com)

Compared to Centrum®  
Silver Adult 50+  
Two-Per-Day Provides:

- 50 TIMES THE **VITAMIN B1**
- 25 TIMES THE **VITAMIN B6**
- 12 TIMES THE **VITAMIN B12**
- 10 TIMES THE **BIOTIN**
- 10 TIMES THE **SELENIUM**
- 7 TIMES THE **VITAMIN C**
- 2 TIMES THE **VITAMIN E**
- 2.5 TIMES THE **VITAMIN B3**
- 2 TIMES THE **VITAMIN D**
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Alpha lipoic acid, quercetin and plant extracts  
lacking in most commercial multivitamins.

The **Two-Per-Day**  
multinutrient  
formula is superior  
because it provides  
vastly **higher** potencies  
of **vitamins, minerals** and  
**plant extracts**.



**#1 Rated**  
Multivitamins –  
11 Time Winner!†

**CAUTION:** Individuals consuming more than 50 mcg (2000 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.

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**Curcumin** helps to promote a healthy inflammatory response.

**The duo  
that improves  
the picture**



**Pro-Resolving Mediators** help remove cellular debris and build new, healthy tissue.

**This complementary combo promotes a healthy inflammatory response.**

## Curcumin Elite™

**SUPER SALE PRICE**

Item #02407 • 60 500 mg vegetarian capsules

1 bottle **\$22.28** | 4 bottles \$20.48 each



## Pro-Resolving Mediators

**SUPER SALE PRICE**

Item #02223 • 30 softgels

1 bottle **\$18.90** | 4 bottles \$17.10 each

For full product description and to order **Curcumin Elite™** and **Pro-Resolving Mediators**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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"It is my goal  
to never run out  
of this. Ever!"

**Rusty**

VERIFIED CUSTOMER  
REVIEW

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## THE SMART MAGNESIUM



**Item #01603**  
90 vegetarian capsules\*

### Supports Overall Cognitive Ability

**Neuro-Mag<sup>®</sup> Magnesium L-Threonate**  
helps maintain working  
(short-term) memory, encourages  
healthy processing speed, and  
supports overall cognitive function.<sup>1,2</sup>



**Item #02032**  
93.35 grams of powder\*

For full product description and to order **Neuro-Mag<sup>®</sup> Magnesium L-Threonate** or  
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\* For Super Sale pricing available to readers of this magazine, call 1-800-544-4440 or visit [LifeExtension.com/NEUROMAG](http://LifeExtension.com/NEUROMAG)

**References:** 1. *Nutrients*;14:5235.10.3390/nu14245235. 2. *J Alzheimers Dis.* 2016;49(4):971-90.

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Again. (And Again).

You will love the benefits of Life Extension® **Mega Green Tea Extract**.

Delivers **325 mg** of powerful epigallocatechingallate (EGCG) in one capsule.

Our extract is standardized to **98%** total **polyphenols** with **45%** beneficial **EGCG**.



## Decaffeinated Mega Green Tea Extract

### SUPER SALE PRICE

Item #00954 • 100 vegetarian capsules

1 bottle \$20.25 | 4 bottles \$16.20 each

### Also available

## Lightly Caffeinated Mega Green Tea Extract

### SUPER SALE PRICE

Item #00953 • 100 vegetarian capsules

1 bottle \$22.95 | 4 bottles \$18.90 each



For full product description and to order **Mega Green Tea Extract**, call **1-800-544-4440** or visit **www.LifeExtension.com**



# DEFEND Against Biological AGING



## SUPER SALE PRICE

Item #02548  
30 vegetarian capsules  
1 bottle **\$14.85**  
4 bottles **\$13.28 each**

## Scarlet Beebalm Extract

In a clinical study published in 2025, a standardized extract of the scarlet beebalm plant was shown to target two biomarkers related to biological aging:\*

1. Helps slow the pace of epigenetic aging
2. Helps maintain leukocyte telomere length

One vegetarian capsule daily of **Biological Aging Defense** provides **4 mg didymin** from standardized **scarlet beebalm**.

For full product description and to order Biological Aging Defense, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

\* Geroscience. 2025 Jun;47(3):4253-90.

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







# MUSHROOMS Help Fight Colds and Flu

BY MARSHA MCCULLOCH, MS, RD

**Beta glucans**, compounds found in mushroom cell walls,<sup>1</sup> can strengthen **immune defenses** against viruses and other harmful agents,<sup>3</sup> while guarding against overactive immune responses.<sup>4</sup>

Beta glucans reduced upper respiratory symptoms like **runny nose** and **sore throat** by as much as **58%** in **human** studies.<sup>5,6</sup>

In separate clinical trials, **mushrooms**<sup>7</sup> and isolated **beta glucans** substantially boosted **IgA (immunoglobulin A)**,<sup>8</sup> an antibody that defends against viral infections.

Combining mushroom extracts with beta glucans from yeast may optimize immune function to protect against **colds** and **flu**.





## Balancing Immune Function

An **underactive** immune system increases susceptibility to infections like colds and flu and certain diseases like cancer.<sup>9,10</sup>

An **overactive** immune system can contribute to recurrent or chronic immune-mediated diseases such as allergies and autoimmune disorders.<sup>11</sup>

**Beta glucans** are a type of fiber found in **mushrooms** and other **fungi** that can stimulate and help regulate the body's immune cell activity.<sup>3,12</sup>

Beta glucans activate cells involved in the two major types of immune responses:

- **Innate immunity**, the body's first, general line of defense against viruses and other pathogens,<sup>13,14</sup> and
- **Adaptive immunity**, a longer-term, targeted immune response against a specific pathogen.<sup>13,15</sup>

Some of their immune benefits come from how they interact with the **gut microbiome**, an immune system regulator.<sup>16-18</sup> Because beta glucans are indigestible fiber, they serve as **prebiotics** that nourish beneficial bacteria.<sup>19</sup>

Beta glucans also have **anti-inflammatory** effects.<sup>1</sup> Two top sources of beta glucans are the cell walls of baker's **yeast** and specific species of **mushrooms**.<sup>20,21</sup>

## Shiitake Primes Immune Cells

**Shiitake** is a mushroom source of **beta glucans**.<sup>20,22,23</sup>

Cell studies show that shiitake extract can inactivate some **viruses** and stop them from replicating.<sup>24,25</sup>

In a clinical trial of healthy adults, daily intake of dried shiitake mushrooms for four weeks:<sup>7</sup>

- Increased salivary **IgA**, which protects against upper respiratory infections, by **12%**,
- Reduced **C-reactive protein** (CRP), a marker of harmful chronic inflammation, by **30%**,<sup>7</sup> and
- Increased the number of specific innate immune cells by **60% to 100%** and boosted the **robustness** of their defense.<sup>7</sup>

Certain components of shiitake, particularly beta glucans, prime **innate immune cells** to be ready for harmful intruders.<sup>26</sup>

## Mushroom Synergy

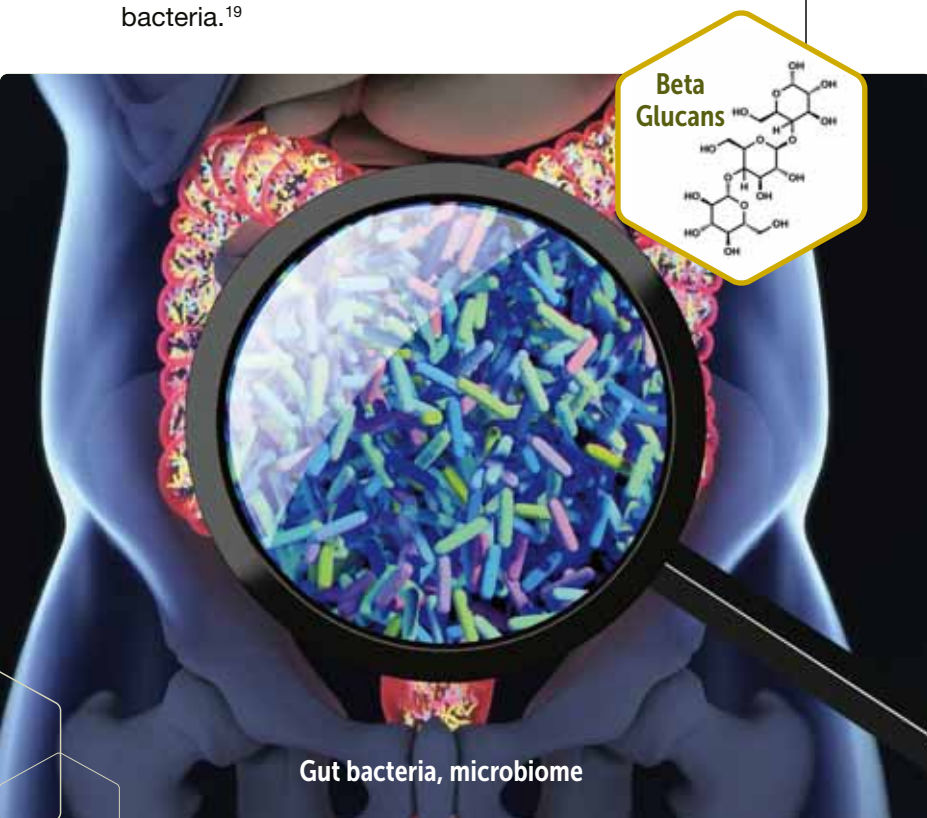
Two other types of mushrooms, **maitake**,<sup>27,28</sup> and **chaga**,<sup>29,30</sup> have also been shown to aid the immune system. They are both high in beta glucans and antioxidants.

In an analysis of medicinal mushroom extracts, **chaga** ranked highest in **anti-oxidant** activity, followed by **maitake**.<sup>31</sup>

Preclinical research has shown that compounds in **chaga** mushrooms have strong **antiviral** activity, including against **influenza**.<sup>30,32</sup>

Combining different types of mushrooms may **synergistically** enhance their immune system benefits.<sup>33</sup>

In an animal model, the combination of **maitake** and **shiitake** extracts more strongly activated innate immune defenses than either mushroom alone.<sup>28</sup>





What You  
Need  
To Know

### Beta Glucans Fight Infections

Mushrooms have many beneficial compounds, but beta glucans are believed to be the most central to viral defense. They are found in mushrooms and can also be isolated from yeast.

In an initial human study, researchers gave beta glucans to healthy adults daily for three months during peak **cold** and **flu season**.<sup>34</sup>

The treatment group developed significantly fewer fevers than the **placebo** group.

None of the treatment group **missed work** or school due to colds, while placebo recipients missed an average of **1.4** days.

The immune benefits of beta glucans have been further confirmed in many **clinical trials**.<sup>3,21</sup>

Its effects are especially remarkable in those more susceptible to **upper respiratory infections**, including older adults and people who are mentally or physically stressed.<sup>3,6,35-37</sup>

## Fungi Fight Immune Challenges

- **Shiitake, maitake, and chaga mushrooms** contain compounds called beta glucans, which support healthy immunity and help defend against viruses like colds and flu.
- In clinical trials, **beta glucans** from yeast reduced upper respiratory symptoms like runny nose and sore throat by as much as **58%** and reduced the severity of seasonal allergy symptoms by **52%**.
- A blend of shiitake, maitake, and chaga mushroom extracts with beta glucans from yeast can provide substantial immune system support and reduce the impact of **colds and flu**.





Chaga mushroom  
on birch trunk.

Maitake mushrooms  
on tree stump.

Shiitake mushrooms

#### In clinical trials:

- **Middle-aged to older adults** taking **250 mg** of yeast beta glucans daily during winter had fewer colds and flu and a shorter duration of symptoms than placebo recipients.<sup>37</sup>
- **Moderately stressed women** who took **250 mg** of beta glucans daily for three months had a **58% reduction** in **upper respiratory symptoms** compared to a placebo.<sup>6</sup>
- **Runners** who took **250 mg** of beta glucans daily for 28 days after running a marathon (a stressor which can suppress immunity) had a **37% reduction** in the number of days with cold or flu symptoms compared to placebo recipients.<sup>8</sup>
- **Moderately active adults** taking **250 mg** of yeast beta glucans for 10 days had a **32% increase** in immune-protective salivary **IgA** two hours after a strenuous exercise test, compared to a placebo.<sup>8</sup>

A systematic review and meta-analysis of 13 randomized controlled trials found that yeast beta glucans significantly lowered the risk of **upper respiratory tract infections** in healthy people.

Compared to placebo, beta-glucan supplementation reduced the likelihood of developing an **upper respiratory tract infection** by **34%**, decreased the number and duration of episodes by **31%**, and often improved symptom severity.<sup>21</sup>

#### Other Immune Effects

Infections aren't the only immune system threat. **Allergies** can also arise from a dysfunctional immune system.

In a clinical trial, adults with moderate **ragweed allergies** were given **250 mg** of **beta glucans** from yeast every day for a month during allergy season.<sup>5</sup>

Compared with a placebo, the treatment group had a **28%** reduction in the **number** of allergy symptoms and a **52%** reduction in symptom **severity**, including nasal and eye symptoms.<sup>5</sup>

**Combining** mushroom extracts and beta glucans may provide comprehensive immune support.

#### Summary

**Shiitake, maitake, and chaga mushrooms** contain **beta glucans**, compounds that support the immune system.

More than a dozen clinical trials have shown that beta glucans help bolster immune defenses against **upper respiratory infections** like colds and flu.

Beta glucans can also help calm overactive immune responses that lead to **allergy symptoms**.

A **combination** of mushroom extracts and beta glucans isolated from baker's yeast may optimize immune system function and help ward off upper respiratory infections. ■

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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# Aging can Wait

## Support for a Healthy Lifespan



In recent years, three nutrients have emerged as having healthy **lifespan-enhancing** potential:

### Taurine

Functions via a range of *anti-aging* mechanisms<sup>1-5</sup>

### Lithium

In epidemiological studies higher dietary intake of lithium (drinking water) is associated with lower risk of mortality.<sup>6-8</sup>

### Spermidine

In epidemiological studies, higher intake correlates with longer healthspan.<sup>9-11</sup> A one-year study showed that a diet enhanced with **spermidine** daily supports healthy memory scores.<sup>12</sup>

Consumers have used some of these **nutrients** for decades, albeit at lower dosages than what may be optimal for healthy aging.

New Healthy Aging Powder provides the following in one scoop:

- **Taurine** 5,000 mg
- **Lithium** 2,000 mcg
- **Spermidine** 3,000 mcg

(0.2% standardization from 1,500 mg Wheat germ extract)

These nutrients may promote **healthy aging** by supporting cardiovascular health, exercise performance, and cognitive function.

### SUPER SALE PRICE

Item #02527 • 7.41 oz.

1 jar \$24.30

4 jars \$22.95 each

The full dose is one scoop daily mixed with water or juice.



For full product description and to order **Healthy Aging Powder**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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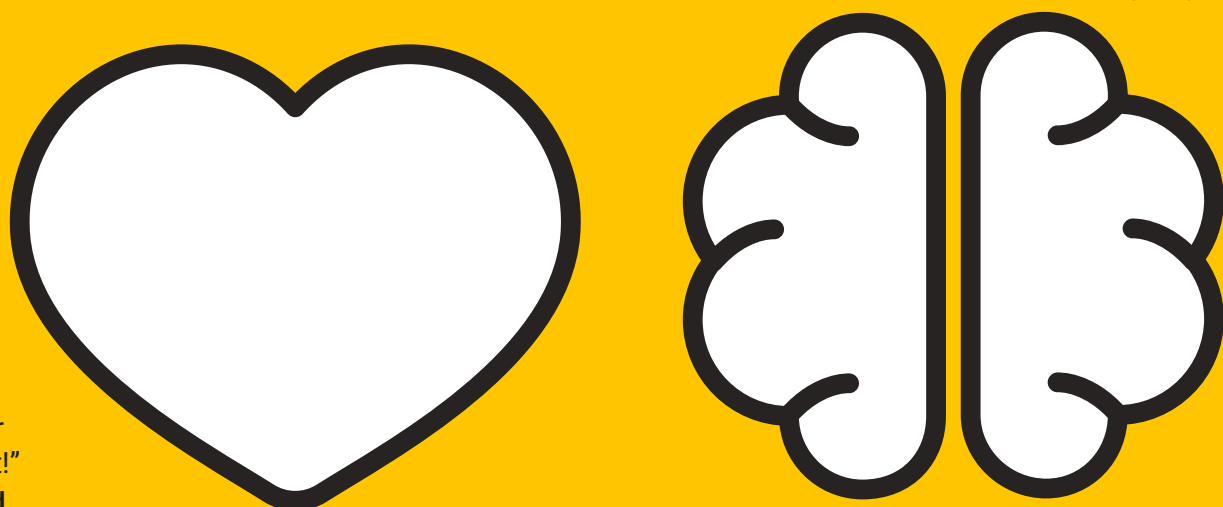
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Use of this product may be protected by one or more U.S. patents and other international patents.

**\*CAUTION:** If you are taking anticoagulant or antiplatelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

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# Bioavailability-Enhanced **Bio-Luteolin**<sup>TM</sup>

In a clinical study, **Bio-Luteolin** achieved **blood levels** nearly **14 times higher** compared to regular luteolin\*!<sup>1</sup>

For the first time, the plant flavonoid **luteolin** has been scientifically optimized and clinically shown to have increased bioavailability.

Bioavailability refers to the proportion of an orally administered compound that reaches the bloodstream intact and becomes available to produce effects in the body.<sup>2</sup>

Luteolin occurs naturally in foods such as celery, broccoli, peppers, and artichokes, but because it's metabolized in the intestines, it's not easily absorbed by the body.

The new **Bio-Luteolin** is combined with fenu-greek-derived galactomannans that has been clinically shown to greatly boost **bioavailability**.

For full product description  
and to order **Bio-Luteolin**,  
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## SUPER SALE PRICE

Item #02547  
30 vegetarian capsules  
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4 bottles \$12.60 each

\* Regular luteolin defined as 98% pure powder luteolin

1. Akay. Data on file. Bio-Luteolin pharmacokinetics study. 2025. 2. Molecules. 2023;28(24):8038.

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Liposomal-Hydrogel™

# C VITAMIN



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Mary

VERIFIED CUSTOMER REVIEW

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Buffered **ascorbate** encased in two **plant extracts** (liposomes plus hydrogel fenugreek) increases blood (plasma) exposure nearly **seven times** more compared to an equivalent dose of vitamin C as calcium ascorbate.<sup>1</sup>

It also maintains vitamin C levels throughout the day.<sup>2</sup>

Just **one** vegetarian tablet daily provides **around-the-clock** vitamin C support.

For full product description and to order **Vitamin C 24-Hour Liposomal Hydrogel™ Formula**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

**References** 1. Akay Internal Study. Liposomal vitamin C (calcium ascorbate) pharmacokinetics. Data on file. 2021.

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

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For full product description and to order **Mushroom Immune with Beta Glucans**, call **1-800-544-4440** or visit **[www.LifeExtension.com](http://www.LifeExtension.com)**

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BY NANCY PEARLSON

# VITAMIN K and Your HEART

**Vitamin K** has long been known to support bone health by helping to keep **calcium** in bones.<sup>1</sup>

It also helps keep calcium *out* of **blood vessels**, where it can lead to **calcified** plaque buildup that contributes to coronary heart disease.<sup>1,2</sup>

Observational studies show that a higher intake of vitamin K is associated with lower risk of **heart disease** and **atherosclerosis**.<sup>3-7</sup> In one observational study, those with the *highest* vitamin K intake had a **57% lower risk of cardiovascular mortality** over 10 years.<sup>8</sup>

In clinical studies, vitamin K intake reduced **vascular calcification**<sup>9,10</sup> and stiffness<sup>11-13</sup> and slowed or prevented the progression of **blood vessel** disease.<sup>10,12,14</sup>

Studies suggest that both forms of vitamin K (K1 and K2) play a role in health outcomes, influencing everything from **bone** health<sup>2</sup> to **cardiovascular** risk<sup>2,4</sup> and all-cause **mortality**.<sup>15</sup>



## What is Vitamin K?

Vitamin K occurs in two forms:<sup>16</sup>

- **Vitamin K1**, which is primarily found in green, leafy vegetables, and
- **Vitamin K2**, which is found in small amounts in some animal products (like egg yolks and chicken) and in higher amounts in **natto**, fermented soybeans.

While both forms are beneficial, vitamin **K2** has better **bioavailability** and maintains levels in the body for longer.<sup>17,18</sup>

Low levels of vitamin K are commonly seen in older individuals.<sup>19,20</sup> One study estimated that suboptimal levels are found in an astonishing **97%** of older adults.<sup>21</sup>

Vitamin K activates several **vitamin K-dependent proteins**, including ones required for normal clotting of blood after an injury.<sup>22</sup>

Other vitamin K-dependent proteins include **osteocalcin**, **matrix Gla protein**, and **Gas6**.<sup>23</sup> These proteins regulate calcification through different mechanisms, thereby reducing risk of harmful **calcification** in blood vessels<sup>2,24</sup> and in soft tissues.<sup>2,23,25</sup>



## Vitamin K and Cardiovascular Disease

The accumulation of calcium in the **arteries** and **heart valves** is a major driver of heart and blood vessel disease. This calcification causes the tissues to stiffen and contributes to atherosclerosis, which narrows the blood vessels and increases risk of **cardiovascular disease**, including stroke.<sup>26</sup>

If this happens in the coronary arteries, an ischemic **heart attack** can result. In the arteries supplying the brain, **stroke** risk increases.<sup>27</sup>

**Vitamin K2** improves bone health and protects against cardiovascular risks.

It activates the calcium-binding protein **osteocalcin** in bone to maintain bone strength<sup>28</sup> and **matrix Gla** protein in soft tissues to reduce calcium deposition in areas outside the skeleton, such as **arterial** walls.<sup>29,30</sup> **Matrix Gla** protein and **Gas6** are present in many tissues, including arterial walls, where their active form helps inhibit arterial calcification and may also stabilize existing plaques.<sup>2</sup>

Without enough **vitamin K** present, these proteins cannot be activated in their active form. The result is calcium loss in bones and an *increase* in calcium in arteries, accelerating **atherosclerosis** and increasing the risk of **cardiovascular disease**.<sup>28</sup>

In preclinical models, lack of **matrix Gla** protein activity in mice causes the animals to **die prematurely** due to *massive* arterial calcification and rupture of arteries.<sup>31,32</sup>

## What Human Studies Show

Human observational studies consistently find that low vitamin K intake is associated with increased risk of:

- Coronary heart disease,<sup>3,4,6</sup>
- Hospitalization for atherosclerotic cardiovascular disease,<sup>3,5,6</sup>
- Cardiovascular-related death,<sup>7,33,34</sup> and
- Death from any cause.<sup>15,34,35</sup>

In one study of almost **5,000** adults aged 55 and older followed for up to 10 years, those with the *high-est* intake of vitamin K2 had a **57%** lower risk of cardiovascular mortality and a **26%** lower risk of **death from any cause** compared to those with the lowest intake.<sup>8</sup>

In another study of over **7,200** subjects followed for a median of **4.8 years**, the risk of all-cause **mortality** was **45% lower** in those with the *highest* vitamin K intake compared to those who decreased or did not change their intake.<sup>35</sup>

Results from other observational studies are equally impressive:

- In a study of over **16,000** women followed for an average of **eight years**, each additional **10 mcg** of vitamin K2 intake daily was associated with a **9%** reduction in risk for coronary heart disease.<sup>36</sup>
- In a study of more than **36,000** participants followed for an average of **12 years**, those with the *highest* intake of **vitamin K2** had a **41% lower** risk of peripheral artery disease among individuals with high blood pressure and a **44% lower** risk among those with diabetes, compared to participants with the lowest intake.<sup>37</sup>
- In a study involving more than **53,000** participants followed for about **20 years**, higher intake of **vitamin K1** was associated with a **21%** lower risk and the highest intake of vitamin K2 with a **14%** reduced risk of hospitalization for atherosclerotic cardiovascular disease compared to those with the lowest vitamin K intake.<sup>3</sup>
- In a study of over **55,000** subjects followed for up to **21.5 years**, the highest intake of vitamin K1 was associated with a significantly lower risk of **aortic valve stenosis**, as compared to the lowest intake. Aortic valve stenosis is a potentially life-threatening condition that reduces blood flow from the heart to the rest of the body.<sup>38</sup>

Reducing or preventing **calcification** in the arteries can have dramatic benefits.

Dozens of **clinical studies** show that vitamin K intake reduces vascular calcification and the risk of cardiovascular disease.<sup>9,10,14</sup>

For example, in a recent study of post-menopausal women, taking **180 mcg** of vitamin **K2 (as MK-7)** daily for one year, decreased **vascular stiffness**, which is closely associated with the progression of **cardiovascular disease**.<sup>13</sup>



What You  
Need  
To Know

## Cardiovascular Benefits of Vitamin K

- **Vitamin K** is required for the activation of proteins that keep calcium in bones and prevent abnormal **calcification** in other tissues.
- In the heart and blood vessels, calcification is one of the major drivers of **atherosclerosis**, coronary heart disease, and heart valve disease.
- Large observational studies show an association between higher vitamin K intake and lower risk of heart and blood vessel disease, **cardiovascular-related death**, and death from any cause.
- In clinical trials, vitamin K intake reduced vascular calcification and risk of **cardiovascular disease**.



Chronic kidney **hemodialysis** patients are at an elevated risk of vascular calcification and cardiovascular disease. In a clinical study, **73%** of diabetic hemodialysis patients who took a placebo for 24 weeks had a worsening of **arterial disease**, compared to only **21%** of those who took **375 mcg** of vitamin **K2 (as MK-7)** daily.<sup>12</sup>

Many trials of vitamin K are ongoing, but evidence shows that it may help reduce risk of calcification and progression of **heart disease**.

## Summary

**Calcification** in blood vessels is a major component of **atherosclerosis**, which drives heart disease.

**Vitamin K** helps keep calcium in bones and *out* of arteries.

Observational studies show a correlation between higher vitamin K intake and lower risk of vascular calcification and stiffness, cardiovascular-related **mortality**, and death from any cause.

Clinical trials also show that vitamin K intake improves vascular health and reduces the risk of **cardiovascular disease**. ■

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

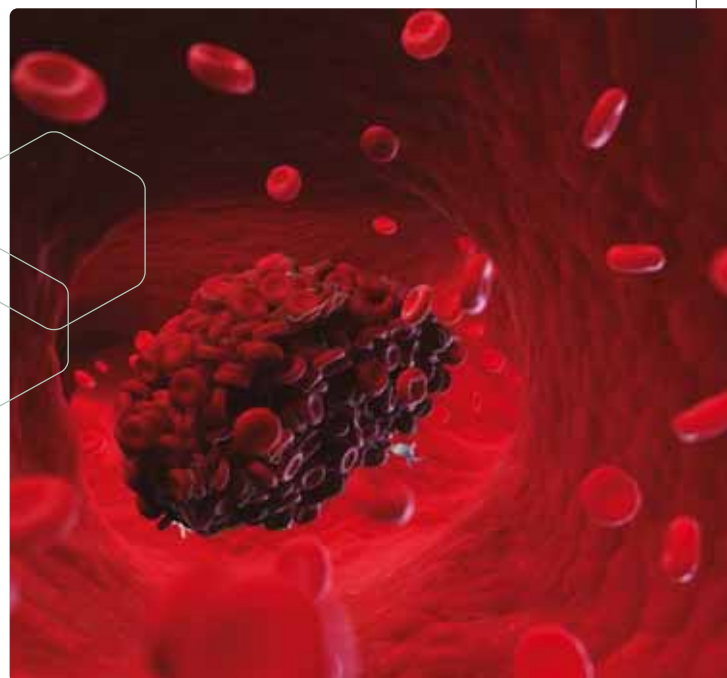
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## Can Taking Vitamin K Increase Clotting Risk?

Because vitamin K promotes healthy **clotting**, some people worry that taking it orally could increase the risk of abnormal blood clots.

This is not the case. Studies of long-term, high-dose vitamin K supplementation have shown that oral intake is safe and does not increase the risk of abnormal clot formation.<sup>39-42</sup> Only those on the drug warfarin (Coumadin®), because it works as a vitamin K antagonist, should be cautious about their vitamin K intake.<sup>43</sup>





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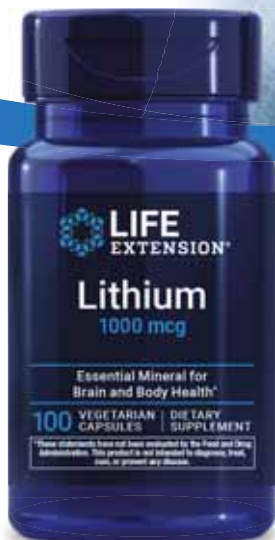
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**Steven**

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Each bottle lasts 100 days.



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

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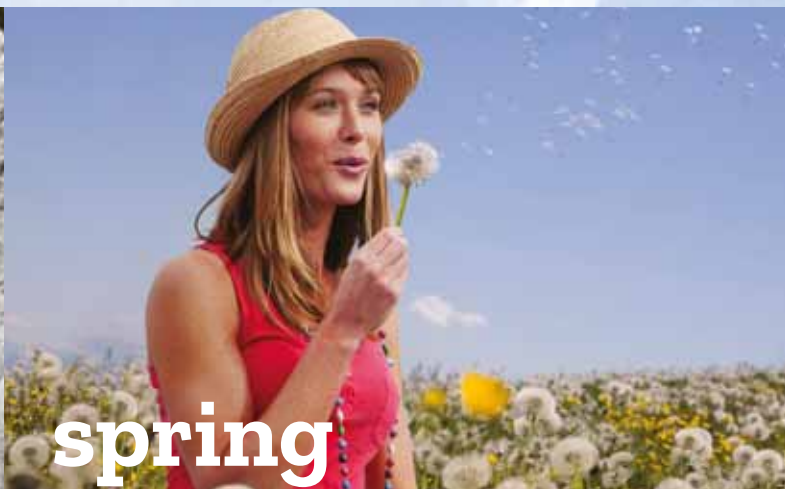
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Patricia

VERIFIED CUSTOMER REVIEW

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01603	<b>Neuro-Mag® Magnesium L-Threonate</b> • 90 vegetarian capsules Supports overall cognitive health.	Call or visit LifeExtension.com/Neuromag for your Sale Price			
02397	<b>Cognitex® Elite Pregnenolone</b> • 60 vegetarian tablets Comprehensive formula promotes brain health, supports attention, focus, mood & memory.	1 unit	\$44.25	\$39.83	10%
		4+ units	—	\$36.68 ea.	17%
02403	<b>Lithium</b> • 1000 mcg • 100 capsules Low-cost mineral that functions in several ways to support overall brain health.	1 unit	<del>\$12.00</del>	\$10.80	10%
		4+ units	—	\$9.45 ea.	21%
02544	<b>NEW Migra-Health™</b> • 60 vegetarian capsules Neurologist-developed everyday formula to help with frequency and to support overall well-being and head comfort for daily living.	1 unit	<del>\$33.00</del>	\$29.70	10%
		4+ units	—	\$28.80 ea.	13%
IMMUNE & INFLAMMATION HEALTH SUPPORT					
01813	<b>Zinc Caps</b> • 50 mg • 90 vegetarian capsules Support for the body's natural immune defenses.	1 unit	\$6.75	\$6.08	10%
		4+ units	—	\$5.40 ea.	20%
02501	<b>Vitamin C 24-Hour Liposomal Hydrogel™ Formula</b> 60 vegetarian tablets Absorbs much better than standard vitamin C, staying in your system up to 24 hours!	1 unit	<del>\$25.50</del>	\$22.95	10%
		4+ units	—	\$20.70 ea.	19%
02302	<b>Bio-Quercetin®</b> • 30 vegetarian capsules Promotes immune and cardiovascular health & supports a healthy inflammatory response.	1 unit	\$9.00	\$8.10	10%
		4+ units	—	\$7.20 ea.	20%
02407	<b>Curcumin Elite™ Turmeric Extract</b> • 500 mg • 60 veg. capsules Patented turmeric provides greater free curcuminoid bioavailability.	1 unit	\$24.75	\$22.28	10%
		4+ units	—	\$20.48 ea.	17%

AGE WELL			Price	Super Sale	Save
02548	<b>NEW Biological Aging Defense-Scarlet Beebalm</b> 30 vegetarian capsules Helps target 5 hallmarks of degenerative aging.	1 unit	<del>\$16.50</del>	<b>\$14.85</b>	<b>10%</b>
		4+ units	—	<b>\$13.28 ea.</b>	<b>20%</b>
01727	<b>Bone Restore Calcium Supplement with Vitamin K2</b> 120 capsules Nutrients to maintain bone density and strength including four types of calcium.	1 unit	<del>\$18.00</del>	<b>\$16.20</b>	<b>10%</b>
		4+ units	—	<b>\$14.85 ea.</b>	<b>18%</b>
01993	<b>MacuGuard® Ocular Support with Saffron &amp; Astaxanthin</b> 60 softgels • Just <u>one</u> softgel per day. Lutein, <i>trans</i> -zeaxanthin, <i>meso</i> -zeaxanthin, astaxanthin, and saffron help maintain structural integrity of the macula and retina.	1 unit	<del>\$32.25</del>	<b>\$29.03</b>	<b>10%</b>
		4+ units	—	<b>\$26.10 ea.</b>	<b>19%</b>
02301	<b>Senolytic Activator®</b> • 36 vegetarian capsules (3-month supply) Highly <i>absorbable</i> forms of fisetin, quercetin, plus apigenin and theaflavins designed to help manage senescent cells.	1 unit	<del>\$20.25</del>	<b>\$18.23</b>	<b>10%</b>
		4+ units	—	<b>\$16.88 ea.</b>	<b>17%</b>

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02029	<b>Ultra Prostate Formula</b> • 60 softgels Comprehensive support utilizing extracts from pygeum, nettle, flower pollen, and saw palmetto, plus boron, beta-sitosterol, and lycopene.	1 unit	<del>\$29.25</del>	<b>\$26.33</b>	<b>10%</b>
		4+ units	—	<b>\$24.30 ea.</b>	<b>17%</b>
		10+ units	—	<b>\$22.50 ea.</b>	<b>23%</b>
02204	<b>Menopause Relief</b> • 30 enteric-coated vegetarian tablets Soy-free and hormone-free formula to help relieve 11 different signs of menopause.	1 unit	<del>\$18.75</del>	<b>\$16.88</b>	<b>10%</b>
		4+ units	—	<b>\$15.08 ea.</b>	<b>20%</b>
02541	<b>NEW Hair Growth for Women</b> • 30 softgels Helps with faster hair growth, less shedding and healthier hair in an average of 2-4 months.	1 unit	<del>\$22.50</del>	<b>\$20.25</b>	<b>10%</b>
		4+ units	—	<b>\$18.45 ea.</b>	<b>18%</b>
02538	<b>NEW Hair Growth for Men</b> • 30 softgels Supports hair fullness and density, promotes hair health, and helps reduce shedding, results reported within an average of 3 to 4 months.	1 unit	<del>\$21.00</del>	<b>\$18.90</b>	<b>10%</b>
		4+ units	—	<b>\$17.10 ea.</b>	<b>19%</b>

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02543	<b>NEW Creatine Powder</b> • 300 grams Promote muscle strength, cellular energy, and support exercise performance and recovery.	1 unit	<del>\$18.00</del>	<b>\$16.20</b>	<b>10%</b>
		4+ units	—	<b>\$14.85 ea.</b>	<b>18%</b>
02545	<b>NEW Active Vitality &amp; Strength</b> • 30 vegetarian capsules Helps maintain vitality and physical independence by supporting muscle strength and functional fitness.	1 unit	<del>\$27.00</del>	<b>\$24.30</b>	<b>10%</b>
		4+ units	—	<b>\$21.60 ea.</b>	<b>20%</b>
02533	<b>NEW Food Sensitivity Relief with Diamine Oxidase (DAO)</b> 60 vegetarian delayed-release capsules Support the healthy breakdown of histamine-rich foods to help relieve occasional gastrointestinal discomfort.	1 unit	<del>\$28.50</del>	<b>\$25.65</b>	<b>10%</b>
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# VITAMIN D May Slow Aging by Protecting TELOMERES

BY JOSEPH MEYER

Low levels of **vitamin D** have been linked to most chronic diseases, from cancer to heart disease, as well as increased risk of **early death**.<sup>1-4</sup>

A major new study reveals one possible reason why.

Clinical trial results published in **2025** found that *four years* of daily **vitamin D** intake significantly **reduced the shortening of telomeres**, the protective caps on the ends of our chromosomes.<sup>5</sup>

Telomere shortening is considered one of the hallmarks of **cellular aging**.<sup>6</sup>

Compared to a placebo, adults who took **vitamin D3** daily for four years reduced telomere shortening to such an extent that it may have prevented the equivalent of about **three years** of biological aging as measured in leukocyte immune cells.<sup>5</sup>

By protecting **telomeres**, vitamin D intake may slow certain aging processes and reduce risk for diseases that plague older adults.



## Telomeres and Biological Age

**Chromosomes** are long strands of DNA wrapped around proteins. Found in most cells, chromosomes contain genes that provide life-preserving instructions for our cells.<sup>7</sup>

**Telomeres** cap the ends of **chromosomes**, protecting and preserving the structure and stability of this genetic material.<sup>6</sup>

In youth, telomeres are long and healthy. With age, they become progressively shorter. This loss of telomeres has been linked to age-related disease and **reduced longevity**.<sup>6,8</sup>

The rate of telomere shortening has been used as a marker of **biological aging** in research studies for years.<sup>6,8-10</sup> In **human** studies, shorter telomeres have been shown to predict a *higher* risk of early **death**.<sup>8</sup>

Protecting telomeres has become an important **anti-aging** target.



## The Importance of Vitamin D

Studies have found that individuals with low vitamin D levels are more prone to age-related diseases,<sup>11,12</sup> while those with *higher* levels are at a reduced risk for many common conditions of aging, including:

- Cardiovascular diseases,<sup>13</sup>
- Metabolic disease,<sup>14</sup>
- Cancer,<sup>15,16</sup>
- Dementia,<sup>17</sup>
- Osteoporosis,<sup>18</sup> and
- Infectious disease.<sup>19</sup>



Low **vitamin D** status is common, especially in older adults.<sup>20</sup>

While vitamin D works in many ways, cell studies have suggested that defending **telomere** health is one of its key roles.<sup>5,12,21-23</sup> A breakthrough study published in **2025** indicates that this effect applies to **humans** as well.

## Vitamin D Prevents Telomere Shortening

An earlier observational study found that those with **high** vitamin D levels had a **telomere age** approximately **five years younger** than those with low D levels.<sup>21</sup>

And in a small clinical trial of overweight adults, the activity of an *enzyme* called **telomerase**, which may extend telomeres, increased by **19%** in those who took **vitamin D** daily for 16 weeks. There was no change in **placebo** recipients.<sup>23</sup>

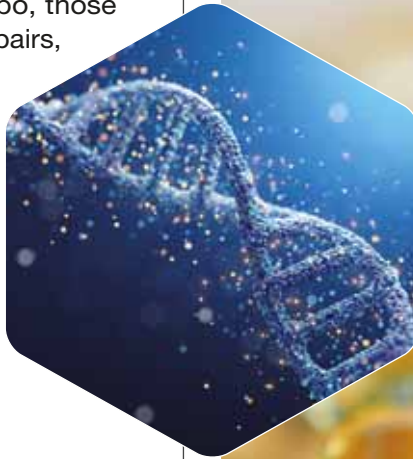
A 2025 study published in *The American Journal of Clinical Nutrition* used data from the randomized placebo-controlled **VITAL trial**. This study randomized adults over age 50 to receive either **2,000 IU** of **vitamin D3** per day or a **placebo**.<sup>5</sup>

Over four years, 1,054 subjects had repeated blood sampling to determine the length of their **telomeres** in white blood cells. As expected, telomeres tended to shorten with age. But the loss of telomeres was *much slower* in those taking vitamin D.<sup>5</sup>

Telomeres consist of repeating patterns of DNA base pairs. Studies estimate that **24 to 45** base pairs of **telomere length** are lost *per year* in adults.<sup>6,24</sup>

In this study, compared to the placebo, those receiving vitamin D lost **140 fewer** base pairs, on average, over four years. The authors of this paper stated that this is roughly equivalent to three years of less aging in the vitamin D group.<sup>5</sup>

This is the first time this result was observed in a large, placebo-controlled **clinical trial**.<sup>5</sup> But previous observational studies have also found that *higher* vitamin D levels are associated with longer telomere length.<sup>22</sup>



### Reducing Biological Aging

In the context of aging, vitamin D's role is not limited to telomere protection.<sup>12</sup>

**Epigenetic changes**—which determine how DNA is expressed or turned “on” or “off”—represent another marker of **biological age**.<sup>25</sup> Among individuals of the same chronological age, lower **vitamin D** levels are associated with *higher* (older) **epigenetic age**.<sup>12,26-28</sup>

Other studies show that vitamin D supplementation in deficient individuals slows this process, as measured by **DNA methylation** clocks.<sup>12,26,29,30</sup>

Vitamin D intake clearly provides protection against **telomere loss** and other measures of biological aging.

### Summary

Optimal **vitamin D** levels are critical for overall healthy aging.

A recent clinical study in older adults found that **vitamin D3** intake significantly reduced the rate of **telomere** shortening, helping to slow down biological aging as measured by telomere length, and protecting genetic material.

This data and other studies provide convincing evidence that vitamin D may help slow the aging process and reduce risk for age-related chronic disease. ■

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



What You  
Need  
To Know

## Vitamin D's Effect on Telomeres

- Low **vitamin D** levels are associated with an increased risk of early death and most age-related chronic diseases, including cancer, cardiovascular disease, and dementia.
- A study published in 2025 reveals that vitamin D3 intake prevented the contraction of **telomeres**, the protective end caps on our chromosomes. Telomere shortening occurs with age and predicts risk of disease and death.
- By protecting telomeres, a marker of biological age, vitamin D may **slow the aging process** and help reduce risk of disease.



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## Vitamin D Benefits Breast Cancer Patients

In a recent study, women receiving chemotherapy treatment for **breast cancer** were randomized to receive either **2,000 IU of vitamin D3** or a **placebo** daily.<sup>31</sup>

At baseline, both groups tended to have low vitamin D levels, as is often the case in cancer patients.

After six months, **24%** of subjects receiving **placebo** had a “complete pathological response” (meaning there were no longer signs of cancer). But in those receiving **vitamin D**, a robust **43%** of patients had a complete response.

That’s a remarkable difference. Overall, women whose **vitamin D** levels were over **20 ng/mL** were over **three times** more likely to successfully respond to treatment than those with low levels.



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\* Kumar JP. A randomized, double-blind, placebo-controlled study to evaluate the benefit of LI12542F6 supplementation in conjunction with an exercise program to enhance muscle strength in healthy aging subjects. Internal Study Report. 2023.

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In separate **clinical trials**, these standardized extracts show *reduced hair loss*—by up to **48%** in one study.<sup>1</sup>

Another study showed a **hair loss reduction** of up to **20%**.<sup>2</sup> Some users noticed results in as little as two months.

For full product description and to order **Hair Growth for Women**,  
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# Pumpkin

BY LAURIE MATHENA

With popular treats like pumpkin bread, pumpkin rolls, and pumpkin spice lattes, it's easy to think of pumpkin as a *dessert* rather than a health food.

In reality, pumpkin is a *superfruit* with an abundance of nutrients like vitamin C, vitamin E, potassium, fiber, and zinc that support overall health.<sup>1</sup>

Pumpkins contain four main carotenoids: beta-carotene, alpha-carotene, lutein, and zeaxanthin. Beta-carotene is the most abundant, especially in the peel and pulp, and gives pumpkins their orange color. The body converts it into vitamin A. Lutein and zeaxanthin are found mainly in pumpkin seed oil.<sup>2</sup>

Pumpkin carotenoids mainly support eye health and immune function, with added benefits from their antioxidant and anti-inflammatory properties.<sup>2</sup>

In addition to its flesh, pumpkin *seeds* provide a host of benefits of their own. They are one of the best sources of magnesium, providing about **190 mg** per ounce<sup>1</sup> (about half of the daily requirement).<sup>3</sup> They are also a good source of unsaturated fats and fiber. About **32 grams** of seeds provide about **10 grams** of protein and **15 grams** of fats;<sup>1</sup> they're an ideal healthy snack.

One noteworthy benefit of pumpkin seeds is their ability to help regulate blood sugar levels. In a study of 25 adults, eating **65 grams** of whole pumpkin seeds with a high-carbohydrate meal for three nonconsecutive days led to a **35%** reduction in after-meal blood sugar levels, compared to the control group.<sup>4</sup>

Studies have shown pumpkin's benefits for urinary health. For example, in people with overactive bladder, taking **10 grams** of pumpkin seed oil daily for 12 weeks significantly reduced symptoms on the Overactive Bladder Symptom Score.<sup>5</sup>

In another study of men with lower urinary tract symptoms and/or BPH, consuming **10 grams** per day of pumpkin seeds (about **two teaspoons**) for 12 months led to clinically relevant reductions in the International Prostate Symptom Scores, compared to placebo. Approximately **58%** of men consuming pumpkin seeds achieved a five-point drop in their score, which is considered a clinically meaningful improvement.<sup>6</sup>

Raising HDL cholesterol may be just as important as lowering LDL for reducing cardiovascular disease risk. In a pilot study of 35 postmenopausal women, pumpkin seed oil (2 g/day for 12 weeks) significantly increased HDL ("good") cholesterol, lowered diastolic blood pressure, and reduced menopausal symptoms such as hot flashes, headaches, and joint pain compared to placebo. No major side effects were reported. The authors suggested that pumpkin seed oil may offer cardiovascular and symptom relief benefits, but larger studies are needed to confirm these findings.<sup>7</sup>

Pumpkin is a versatile food that can be enjoyed all year round. It adds a flavor boost to oatmeal, smoothies, or yogurt, or can be used as a thickener in soups, pasta sauce, or stew.

In addition, pumpkin seeds (also called pepitas) can be roasted whole or hulled. Eat these nutty-flavored seeds as an on-the-go snack, add to granola, stir into yogurt, or sprinkle them on salads or stir fries.

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With Ultra Prostate Formula, you'll always have a great play.

**Ultra Prostate Formula** addresses multiple factors essential to lasting prostate health, so you can stay on top of your game.

Our best prostate supplement features ingredients like nettle root, pygeum and beta-sitosterol to promote healthy prostate function, healthy urine flow and more.



#### SUPER SALE PRICE

Item #02029

60 softgels

1 bottle **\$26.33**

4 bottles \$24.30 each



For full product description and to order Ultra Prostate Formula, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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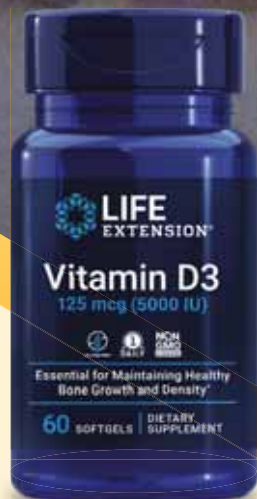
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"Works great!"

Eric

VERIFIED CUSTOMER  
REVIEW



# Let the Sunshine In

D3, the sunshine vitamin, is key to strong bones and immune health

**Vitamin D3** is the ultimate whole-body health supporter. A daily dose of D3 also helps maintain healthy cardiovascular function.

**SUPER SALE PRICE**

Item #01713 • 125 mcg (5000 IU) • 60 softgels

1 bottle **\$6.75** • 4 bottles \$5.85 each



**For full product description and to order Vitamin D3,  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

**Caution:** Individuals consuming more than 50 mcg (2000 IU)/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxy vitamin D measurement. Do not exceed 10000 IU per day unless recommended by your doctor. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

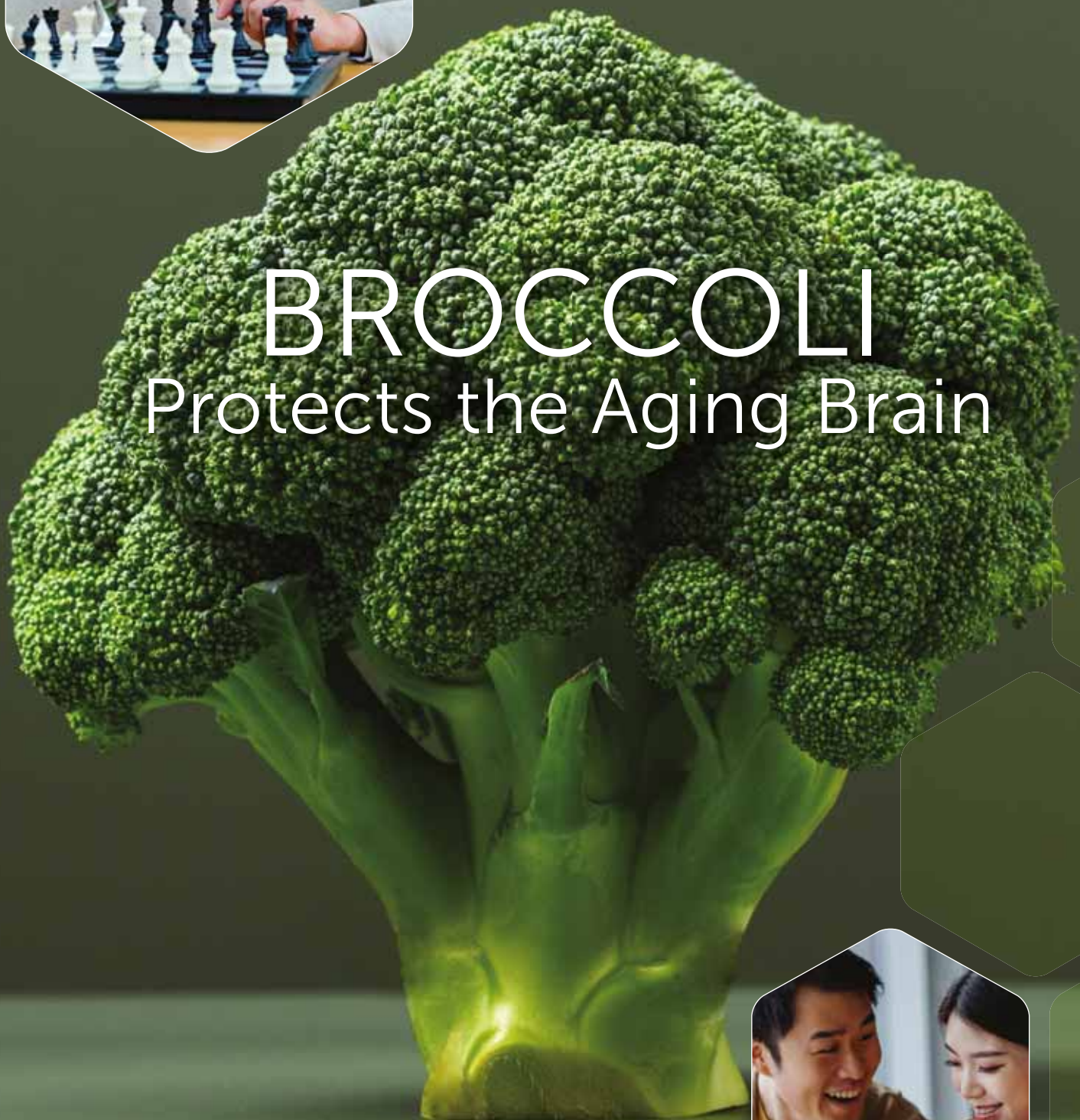
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# BROCCOLI

## Protects the Aging Brain



BY ROGER STANTON



Everyone knows that **broccoli** and other **cruciferous vegetables** are good for you.

One reason is a **cruciferous** nutrient called **sulforaphane** that has been shown to have potent **anti-cancer** activity.<sup>1,2</sup>

Researchers are now finding preclinical evidence indicating **sulforaphane** offers protection for our aging **brain** as well.<sup>3-7</sup>

In animal models it defends against various forms of degenerative brain damage, from **strokes** to **Alzheimer's**.<sup>8-12</sup>

In two studies of healthy older **humans**, it has been shown to improve **mood** and **cognitive function**.<sup>13,14</sup>



## Sulforaphane Defends Cells

Broccoli, cabbage, Brussels sprouts, and other **cruciferous vegetables** give off a pungent odor when they are cooking. That's because sulfur-containing compounds are being released, called glucosinolates, such as **glucoraphanin**.<sup>15</sup>

Glucoraphanin is a *precursor* to **sulforaphane**.

When we eat cruciferous vegetables, the precursor mixes with an *enzyme* in the plants called **myrosinase**, producing **sulforaphane**.<sup>16</sup>

Sulforaphane is recognized as an **anti-inflammatory** compound linked to a wide range of health benefits.<sup>3</sup>

Sulforaphane works by activating **Nrf2**, a protein that is involved in cellular detoxification and that switches on **protective genes**, enabling cells to defend against stress and harmful toxins.<sup>17,18</sup>



Preclinical and some clinical evidence has shown some of the other ways **sulforaphane** protects cells and tissues, including:

- **Improving mitochondrial health.** Studies show that it helps restore mitochondrial function in aging tissues, increases ATP output, and protects against oxidative damage. These benefits are linked to better muscle and heart performance, as well as some protection against age-related cognitive decline in animal models.<sup>12,19-21</sup>
- **Reducing inflammation.** Sulforaphane *inhibits* the activity of **NF-κB** (nuclear factor-kappa B), the master regulator of harmful chronic inflammation that drives age-related diseases, as well as cancer.<sup>22,23</sup>
- **Improving insulin sensitivity.** Human and animal studies show that sulforaphane improves cellular metabolism, insulin sensitivity, and blood sugar levels, suggesting its potential as an anti-diabetic nutrient that may help mitigate the effects of high blood sugar.<sup>24-28</sup>
- **Protecting against glycation.** In diabetics *and* healthy adults, glucose can attach to other molecules in the body. This process, called **glycation**, contributes to accelerated aging and risk for disease. Sulforaphane reduces damage from glycation, including in brain cells.<sup>29-31</sup>

## Protecting the Brain

All these actions have *direct* benefits for the brain.

Oxidative stress,<sup>32</sup> neuroinflammation,<sup>32</sup> mitochondrial dysfunction,<sup>33</sup> and glycation<sup>32</sup> all contribute to **neurodegenerative disease** and risk for cognitive impairment.

Metabolic dysfunction and insulin resistance in the brain are so closely connected to the development of **dementia** that some researchers refer to Alzheimer's as **type III diabetes**.<sup>34</sup>

In preclinical models, sulforaphane has been shown to help mitigate these risks.

Cell and animal models indicate that **sulforaphane** provides protection against brain injury and loss of cognitive function.



What You  
Need  
To Know

## How Broccoli Boosts Brain Power

- Scientists have long recognized the health benefits of **cruciferous vegetables** like broccoli, cabbage, Brussels sprouts, and kale.
- **Sulforaphane**, a sulfur-containing compound derived from these vegetables, has been shown to be responsible for many of these benefits, including anti-cancer activity.
- Scientists have found in preclinical studies that sulforaphane also supports **brain health** and reduces risk for disease in the brain.
- In animal models, sulforaphane has demonstrated benefits for various neurological conditions, including cognitive decline, **dementia**, and stroke.
- Human trials show that sulforaphane intake can improve **cognitive performance** and **mood**.

For example, in rodent models of **neurodegeneration**, including Alzheimer's and Parkinson's, sulforaphane reduces signs of pathology in the brain and **improves cognitive function**.<sup>4,9,35,36</sup>

Researchers have also found that in preclinical models, sulforaphane has been shown to defend against acute and chronic **ischemic brain damage** (impaired blood flow to the brain), including **strokes**.<sup>10,11,37-39</sup>

In models of acute stroke, and chronic vascular impairment in the brain, sulforaphane intake reduces damage done to the brain while protecting against cognitive impairment that normally results from these injuries.

In a piglet model of ischemic injury, for example, giving the animals sulforaphane resulted in an almost **doubling of neuron viability** in affected brain regions.<sup>39</sup>

In models of traumatic brain injury and surgical anesthesia, sulforaphane protects against **cognitive dysfunction**.<sup>8,40</sup>

### Human Studies

Human studies provide evidence of sulforaphane's effects on the brain and mental function.

In one trial, healthy, older adults took **sulforaphane** or a **placebo** daily for 12 weeks. While the placebo had no effect, taking sulforaphane led to significant improvements on tests of cognitive function, including overall **processing speed** and **memory**.<sup>13</sup>





## Maximize Sulforaphane Delivery

Broccoli contains **glucoraphanin** (a sulforaphane precursor) and an enzyme called **myrosinase**, which converts glucoraphanin into sulforaphane.

These two compounds are found in *different parts* of broccoli cells. When we eat the vegetable, they mix together to form **sulforaphane**.

Sulforaphane is unstable, making it difficult to take orally. Inspired by nature, scientists created a formula that includes the precursor **glucoraphanin** from broccoli seeds and a robust and stable form of the enzyme **myrosinase** from mustard seed powder.

When taken this way, the two compounds only **combine during digestion**, releasing **sulforaphane** in the gut. That allows it to be rapidly absorbed and circulated throughout the body.

In another trial of healthy, older adults, sulforaphane intake led to *improvement* in **cognitive function** and a *decrease* in **negative mood**.<sup>14</sup>

In two clinical studies in patients being treated for the serious psychotic disorder schizophrenia, the addition of **sulforaphane** resulted in some symptomatic improvement, and in one study improved inflammatory status as measured by **C-reactive protein** (CRP) and antioxidant status as measured by superoxide dismutase.<sup>41,42</sup>

In a six-week clinical trial of patients with a recent history of **heart** procedures experiencing mild to moderate **depression**, sulforaphane significantly reduced depressive symptoms, producing a greater drop in depression evaluation scores and higher clinical response rates (**30%** vs. **6.7%**) than placebo.

These results suggest potential benefit and safety in this specific population (heart surgery patients who suffer post-surgery depression) and warrant larger similar studies.<sup>43</sup>

There are currently several ongoing **clinical trials** of sulforaphane in the U.S. for conditions including Alzheimer's,<sup>44</sup> Parkinson's,<sup>45</sup> brain injury,<sup>46</sup> and more. But the compound's neuroprotective benefits are already promising.

## Summary

**Sulforaphane** is a potent cellular defender derived from cruciferous vegetables like **broccoli**.

It has shown beneficial activities in the **brain**, including in animal models of stroke, Alzheimer's, and other neurodegenerative diseases.

In human studies, sulforaphane intake improved **cognitive performance** in healthy adults. Clinical trials for various neurological and psychological conditions are currently in progress. ■

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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# Tears of Joy

"I'm happy with it!"

Mary

VERIFIED CUSTOMER  
REVIEW

**Tears are a good thing—  
until you don't have enough.**

Maqui berries (*Aristotelia chilensis*) produce compounds called **delphinidins** that encourage tear production—an up to **45%** increase after 30 days in one study. So where can you get a Maqui Extract with delphinidin?  
**Tear Support with MaquiBright®.**



#### SUPER SALE PRICE

Item #01918

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4 bottles \$10.80 each



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# Self-Defense with Lactoferrin

Lactoferrin is a protein found in milk that has multiple methods of supporting immune function and eye health.

Lactoferrin Caps support a healthy immune system, promote beneficial bacterial growth and support eye health.



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Contains milk.

**SUPER SALE PRICE**  
Item #01681 • 300 mg  
60 vegetarian capsules  
1 bottle **\$40.50**  
2 bottles \$36 each  
**Two-Month Supply**





# LIFE EXTENSION MIX™ POWDER



## SUPER-CHARGE YOUR SMOOTHIE

### SUPER SALE PRICE

Item #02356

Life Extension Mix™  
Powder • 12.70 oz

1 jar **\$54**

4 jars \$48.60 each

(Each jar lasts 30 days)

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**.

### 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.

For those seeking to ensure daily intake of healthy plant-based nutrients, 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 phytonutrients such as:

Broccoli concentrate	525 mg	Cherry Extract	85 mg
Green Tea Extract (decaffeinated)	325 mg	Grape Extract (seed & fruit)	50 mg
Bioflavonoids (citrus)	200 mg	Bilberry Extract	30 mg
Blueberry Extract	150 mg	Lutein	15 mg
Pomegranate Extract	85 mg	Olive Fruit Extract	12.5 mg

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# Complete LIFE EXTENSION MIX™ POWDER Formula

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



For full product description and to order Life Extension Mix™ Powder  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

**Other ingredients:** maltodextrin, natural orange flavor, stevia extract, silica, food starch-modified, luohanguo extract, sunflower lecithin, sunflower oil.

<sup>A</sup>RAE (retinol activity equivalents). <sup>D</sup>DFE (dietary folate equivalents). <sup>NE</sup> (niacin equivalents). Contains sesame.



1. CherryPURE<sup>®1</sup> is a registered trademark of Shoreline Fruit, LLC.

2. Delphinol<sup>®</sup> is a registered trademark of MNL.

3. L-OptiZinc<sup>®</sup> is a Lonza trademark, registered in USA.

4. SelenoExcell<sup>®</sup> is a registered trademark of Cypress Systems Inc.

5. Crominex<sup>®</sup> 3+, Capros<sup>®</sup> and PrimaVie<sup>®</sup> are registered trademarks of Natreon, Inc.

6. Leucoselect<sup>®</sup> is a registered trademark of Indena S.p.A.

7. BioVin<sup>®</sup> is a registered trademark of Cyvex Nutrition dba Bioriginal.

8. Lycored LycoBeads<sup>®</sup> is a registered trademark of Lycored; Orange, New Jersey.

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

10. MirtoSelect<sup>®</sup> is a registered trademark of Indena, S.p.A., Milan, Italy.

11. Sensoril<sup>®</sup> is a trademark of a Kerry Company.

**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. Consult with your doctor before using this product if you are taking anti-coagulant 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

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



# Baby *your* Skin

Healthy skin. Comfortable joints. Both rely on collagen. Our **Collagen Peptides for Skin & Joints** formula:

- Stimulates increased production of collagen in the body.
- Supports skin elasticity, hydration, smoothness and suppleness.
- Supports joint structure and comfort.



**SUPER SALE PRICE**  
**Item #02408**

343 grams of powder  
(0.75 lb or 12 oz)

1 jar **\$24.30**

4 jars **\$21.60** each

GLUTEN  
FREE

NON  
GMO  
LE CERTIFIED

**MIX ONE SCOOP WITH WATER  
OR BEVERAGE OF CHOICE**

For full product description or to order **Collagen Peptides for Skin & Joints**,  
call **1-800-544-4440** or visit **[www.LifeExtension.com](http://www.LifeExtension.com)**

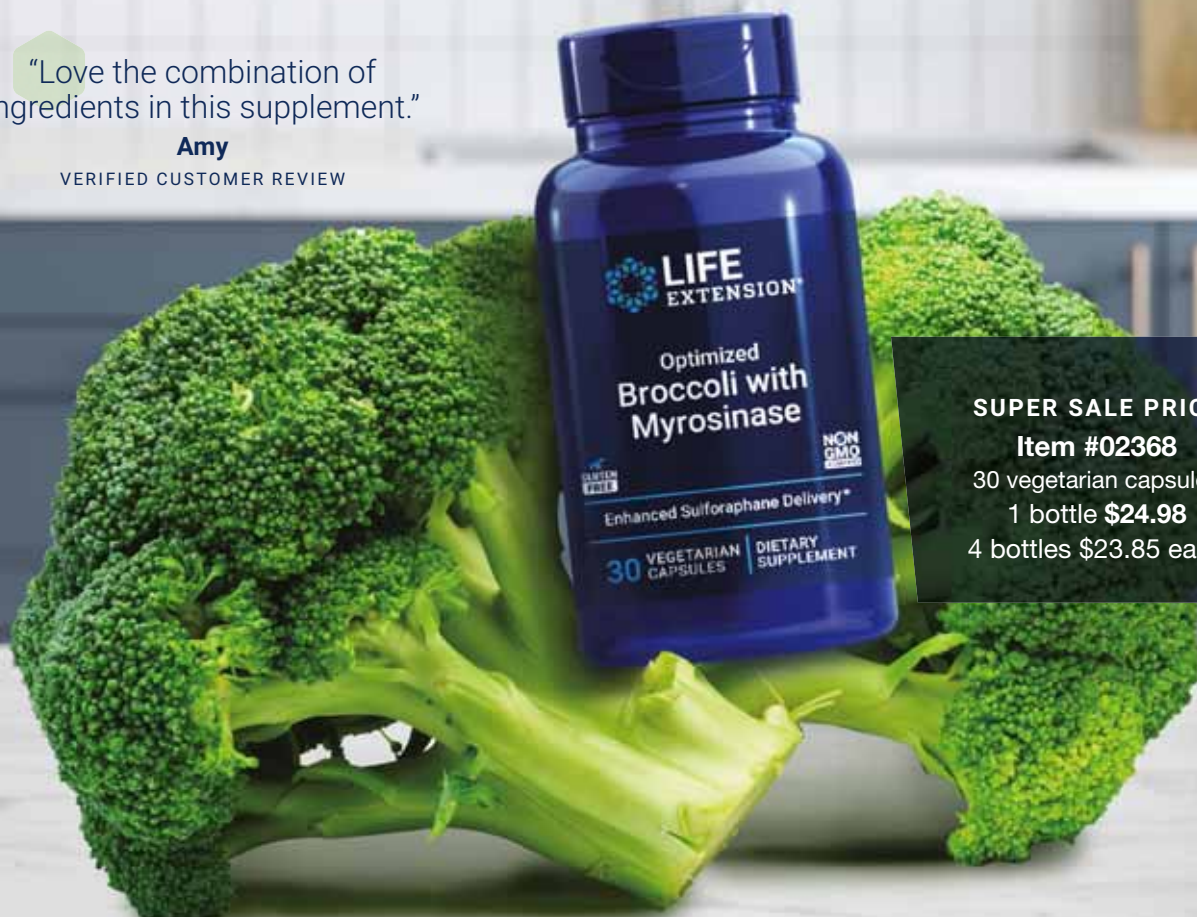
These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

# RELEASE...THE POWER OF BROCCOLI

"Love the combination of ingredients in this supplement."

Amy

VERIFIED CUSTOMER REVIEW



## SUPER SALE PRICE

Item #02368

30 vegetarian capsules

1 bottle \$24.98

4 bottles \$23.85 each



Many of broccoli's benefits come from **sulforaphane**—a compound that is *activated* when the plant is cut or chewed.<sup>1-3</sup>

Mature broccoli provides relatively little **sulforaphane precursor** compared to broccoli sprouts. Cooking further depletes the sulforaphane precursor.<sup>2,4</sup>

**Optimized Broccoli with Myrosinase** improves conversion of the precursor into **sulforaphane**, and its absorption into the bloodstream.<sup>2,5,6</sup>

Each capsule of this product contains:

- **Glucoraphanin**—a sulforaphane *precursor*—found in broccoli seed extract that is standardized to a high concentration of glucoraphanin.<sup>3,4</sup>
- **Myrosinase**, an enzyme found in mustard seed that converts **glucoraphanin** to **sulforaphane**.<sup>2-6</sup>
- **Vitamin C**, a cofactor for the myrosinase enzyme for more efficient *enzymatic conversion*.<sup>7</sup>

For full product description and to order **Optimized Broccoli with Myrosinase**, call **1-800-544-4440** or visit **www.LifeExtension.com**

### References

1. *Crit Rev Food Sci Nutr.* 2023 5 2:1-19.

2. *PLoS One.* 2015;10(11):e0140963.

3. *Phytother Res.* 2021 10;35(10):5440-5458.

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5. *Mol Nutr Food Res.* 2018 Sep;62(18):e1700980.

6. *Supplier Internal Data. Data on File.* 2023.

7. *Biochem J.* 1999 8 1;341 (Pt 3):725-32.

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



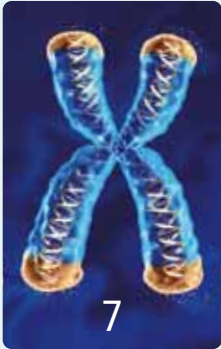


The Science of a Healthier Life®

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## IN THIS EDITION OF *LIFE EXTENSION* MAGAZINE®



### 7 OUR RACE AGAINST TIME

Our priority is to add more healthy **life years** as we look forward to the **reversal** of degenerative **aging** becoming standard medical practice.



### 24 COUNTERACT 5 HALLMARKS OF BIOLOGICAL AGING

Adults taking a standardized plant extract showed no increase in **epigenetic age**, while preserving **telomere length** and stabilizing **DNA methylation**.



### 36 MUSHROOMS HELP FIGHT COLDS/FLU

**Beta glucans** with **mushroom extracts** can *enhance* **immune functions**. In trials, yeast beta glucans *reduced* upper respiratory symptoms by up to **58%** and severity of seasonal allergy symptoms by **52%**.



### 48 YOUR HEART AND VITAMIN K

Adults aged 55 and up with the *highest* **vitamin K2** intake had substantially *lower* **cardiovascular mortality** risks. Vitamin K helps *impede* **arterial calcification**.



### 60 SLOW TELOMERE SHORTENING

In a **human** study, adults who supplemented with **vitamin D** for four years significantly *reduced* **telomere shortening**.



### 70 BROCCOLI AND THE AGING BRAIN

In clinical trials, **sulforaphane**, found in **broccoli**, *improved* multiple aspects of **cognitive function**, including **processing speed** and **memory**.

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