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January 2023

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# Deliver More **NUTRIENTS** to Your Cells



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SUPPLEMENTS

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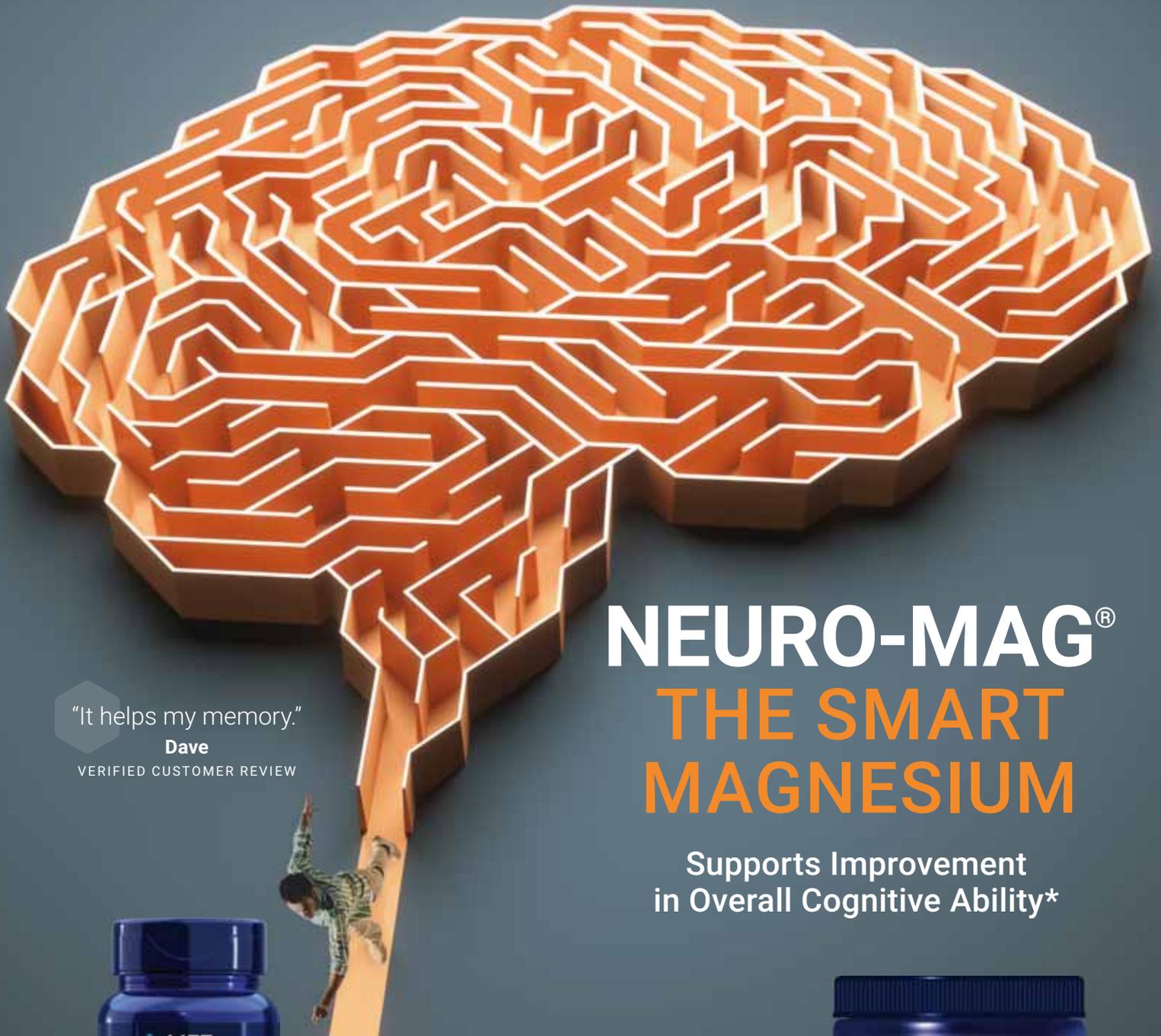
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\* *Gerontology*. 1996;42(3):170-80.

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WILLIAM FALOON

# Transport More Nutrients into Your Body

We receive questions from readers asking about the **bioavailability** of certain **nutrients**.

The purpose of these inquiries is to ascertain what can be done to enhance distribution of ingested **nutrients** into circulating **blood**.

Some confuse the term **absorption** with **bioavailability**.

I simplify the difference as follows:

**Absorption** is the movement of the **nutrient** across the first membrane layer of the gastrointestinal (GI) tract.

**Bioavailability** is how much of the intact nutrient remains in general circulation or reaches the target tissues *after* going through normal metabolism in the digestive tract, liver, and other areas.

For example, **resveratrol** is readily *absorbed* (about **70%**) but then undergoes extensive metabolism in various tissues, including the **liver**.<sup>1,2</sup>

Last month we described a bioavailable resveratrol that delivered up to **10-times more** resveratrol to circulating blood compared to *unformulated* resveratrol.<sup>3</sup>

**Curcumin** is one of the most extensively studied **plant extracts**. Over 4,000 published reports describe its potential benefits on the **National Library of Medicine** website ([www.pubmed.gov](http://www.pubmed.gov)).

The challenge is that **curcumin** undergoes many changes before and after reaching the **bloodstream**. These alterations reduce the **bioavailability** of the beneficial **curcuminoids**.<sup>4,5</sup>

The good news is that over the past four decades, improvements have been made that substantially increase curcuminoid bioavailability.<sup>6</sup>

Consumers are often unaware of the differences in **absorption** and **bioavailability** of the many brands available today.

This editorial succinctly describes the fascinating topic of nutrient **bioavailability**.





A little-understood factor that contributes to **human health** relates to nutrient **bioavailability**.

As scientists attempt to evaluate the longevity impact of **dietary supplements**, the need to better understand **bioavailability** becomes strikingly apparent.

This was easy with compounds like **coenzyme Q10 (CoQ10)** for which several enhanced **absorption** techniques were developed.<sup>7-10</sup> One form, called **ubiquinol**, demonstrated improved tissue **bioavailability** and provided **clinical data** to support beneficial dose-response effects in **heart failure** patients.<sup>11,12</sup>

Improving the **bioavailability** of **plant extracts** is more challenging than doing so for **CoQ10**. That is because factors in the digestive tract, liver, and other tissues break down and influence the structure of **plant** compounds after oral ingestion and absorption.

The potential role of **plant extracts** in reducing the incidence of degenerative illnesses is significant, requiring continued evaluation of their effects on healthy **longevity** and improving **bioavailability**.

### Search for **Bioavailable Fisetin and Quercetin**

Published data support beneficial effects of **quercetin** in **humans**, even though relatively little intact **quercetin** makes it into the bloodstream.<sup>13-15</sup>

Like many plant flavonoids, **dietary quercetin** suffers from poor oral bioavailability.

Consumers today want more consistent circulatory delivery of **plant compounds**.

Favorable lifespan data on **fisetin** may be more compelling than on quercetin.

But, a series of reactions in the digestive tract and liver rapidly metabolize **fisetin** before meaningful amounts of intact **fisetin** can enter the blood.<sup>16</sup>

### Solutions Using Plant-Derived Ingredients

Scientists have discovered that by combining **fisetin** with a compound isolated from the herb fenugreek, it is protected from being metabolized in the liver. It remains active and can be readily transported intact into the bloodstream.<sup>16</sup>

Researchers found that a formulated fisetin-fenugreek fiber combination increased fisetin bioavailability (**absorbed** and **circulating**) in humans up to 25 times compared to unformulated fisetin.<sup>16</sup>

For **quercetin**, encasing it in a **phosphatidylcholine** complex increased **bioavailability** by **50-times** more compared to standard quercetin.<sup>17</sup>

These bioavailability **enhancements** enable people to derive more consistent **blood levels** of **nutrients** that have demonstrated protective benefits.

## Overcoming Curcumin's Challenges

Curcumin functions via multiple mechanisms to reduce the risk for a range of age-related problems.<sup>18-20</sup>

The challenge is that intact curcumin compounds are poorly *absorbed* into the bloodstream.<sup>5</sup>

To garner maximum benefits, better forms of curcumin were needed to deliver more active “**free curcuminoids**” into circulating blood.

Several years ago, a curcumin formulation was developed that is better protected against changes in the **intestines** and the **liver** that limit systemic benefits.<sup>21</sup>

This curcumin-fenugreek formula was shown to deliver the **highest** amounts of free (active) curcuminoids into the **bloodstream** and the broadest tissue distribution including to the brain, liver, kidney, heart, and spleen.<sup>21</sup>

A randomized, double-blind, crossover trial of 50 healthy adults using this novel **curcumin formulation** revealed a **45.5-fold increase** in total plasma **free-curcuminoids** versus standardized turmeric powder.

A remarkable **70%** of these plasma **curcuminoids** remained in their active free form **five hours** after dosing.<sup>6</sup>

This goes a long way to satisfying those who appreciate the value of **plant compounds** in human health but seek reliable data on greater **bioavailability** and broader tissue distribution.

## Understanding Bioavailability

**Absorption** happens when nutrients pass through the cell membranes of the lining of the digestive tract into blood or lymph capillaries.

**Bioavailability** has several definitions, but a common theme relates to the amount of intact **nutrient** that reaches general circulation or the site of action.

The two biggest factors impacting **bioavailability** are how well the nutrient holds up during metabolism (e.g., sulfation, glucuronidation) in other layers of the intestinal tract and its first pass through the liver.<sup>22</sup>

The first pass effect or metabolism refers to how much metabolic breakdown of an oral agent occurs in the intestine or liver before it reaches systemic (blood) circulation.

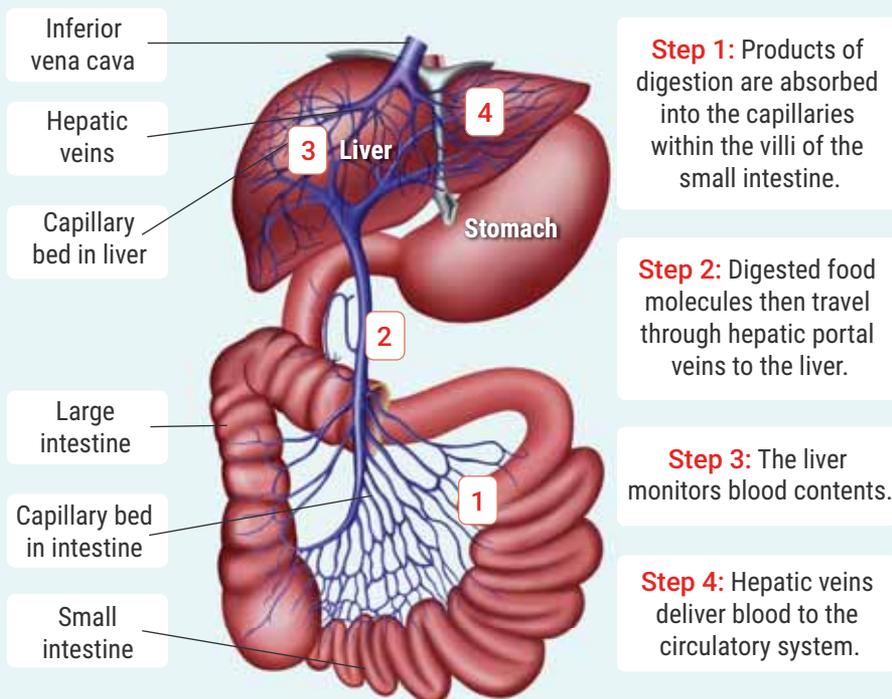
More of the nutrient will be **bioavailable** in circulating blood if it bypasses the first pass metabolism.

## Hepatic (Liver) Portal System

This graphic shows **blue veins** emanating from the intestines merging into the portal vein in the liver.

The hepatic (liver) portal system is a series of veins that carries ingested/absorbed nutrients from the digestive tract to the liver for metabolism.

Absorption from the intestinal tract and metabolism by the liver have major impacts on nutrient **bioavailability**.



## New Opportunities!

The data conveyed in this editorial have transformative implications as they relate to neutralizing multiple mechanisms contributing to age-related ailments.

As more bioavailable forms of **fisetin**, **quercetin**, **resveratrol**, and **curcumin** emerge, people today can garner health benefits that were previously limited to laboratory models.

Unlike exorbitantly priced prescription drugs, **bioavailable** plant-based formulations often cost less because they more efficiently achieve *greater* blood levels.

I want to thank our group of longevity enthusiasts for their continued support via their purchases of blood tests and supplements.

Proceeds enable us to help fund a range of **research projects** aimed at delaying and reversing **biological aging** in people.

For longer life,



William Faloon, Co-Founder  
Life Extension®

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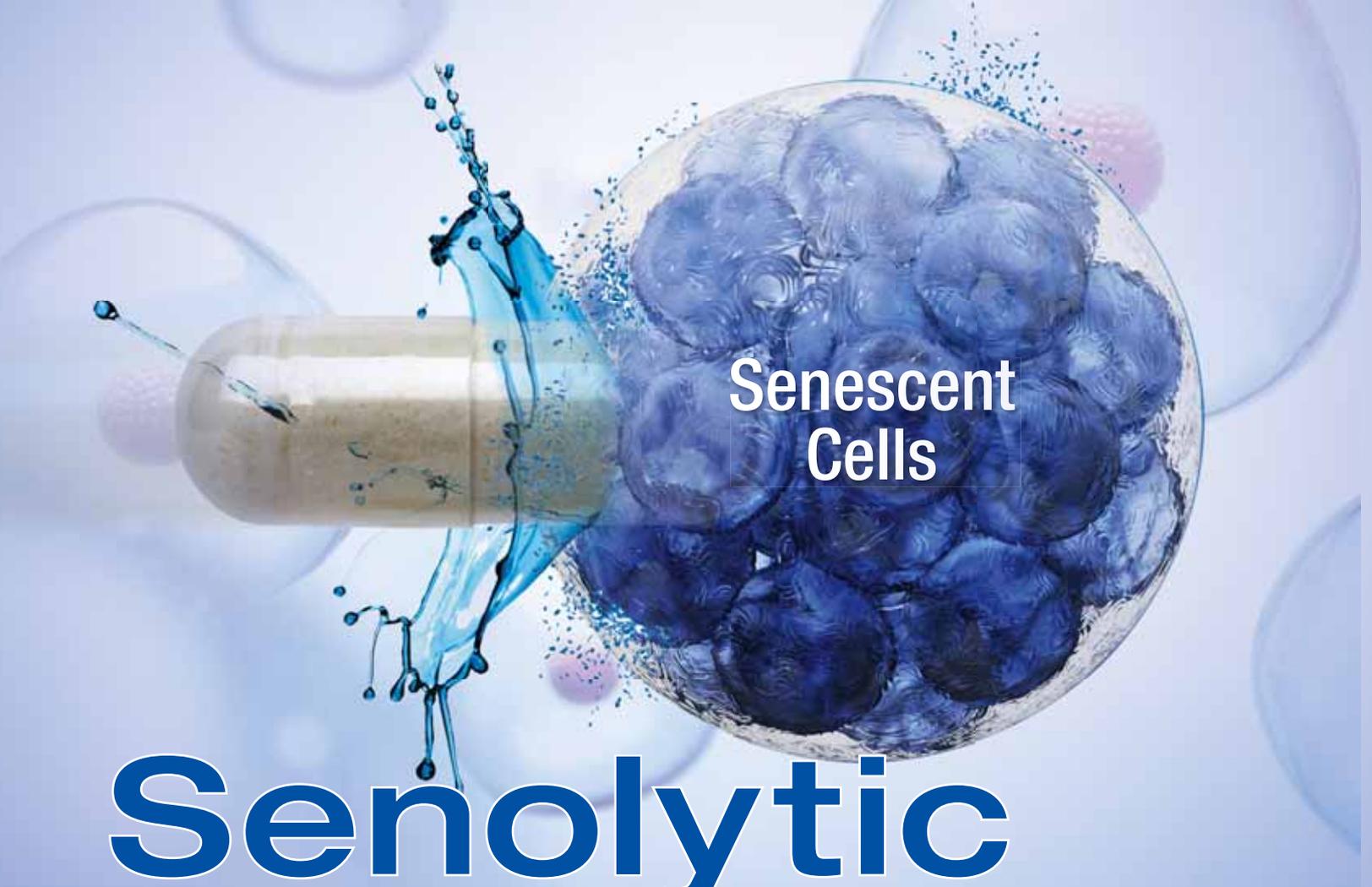
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# Senolytic

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VERIFIED  
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# In the News



## Vitamin D Supplementation May Help Critically Ill Patients

Findings from a meta-analysis review in *Critical Care* suggest that providing critically ill patients with **vitamin D** supplements may improve some outcomes, including **survival**.\*

Researchers identified 16 trials that evaluated the association between vitamin D supplementation and mortality among critically ill individuals. Twelve studies reported intensive care unit (ICU) length of stay, nine reported 28-day mortality, and nine reported length of mechanical ventilation.

Study participants received vitamin D either by mouth, feeding tube, intramuscular injection or intravenously.

Vitamin D supplementation was associated with a **22% lower** risk of overall mortality compared to a placebo or standard care.

Among studies that reported 28-day mortality, vitamin D supplementation was associated with a trend toward a **lower** risk.

Patients who received vitamin D spent an average of 3.13 days **less** in the ICU and five **fewer** days on a ventilator than those who received a placebo.

**Editor's Note:** In patients admitted to the ICU, significantly reduced serum vitamin D levels "...are frequent and independently associated with higher incidence and severity of sepsis," the authors stated.

\* *Crit Care*. 2022 Sep 6;26(1):268.

## Less Fatigue with CoQ10

The results of a meta-analysis of clinical trials published in *Frontiers in Pharmacology* confirm an **anti-fatigue** effect in individuals who supplemented with **coenzyme Q10 (CoQ10)**.\*

Researchers identified 13 randomized, controlled trials that compared fatigue scores among a total of 1,126 participants who received CoQ10 or a placebo.

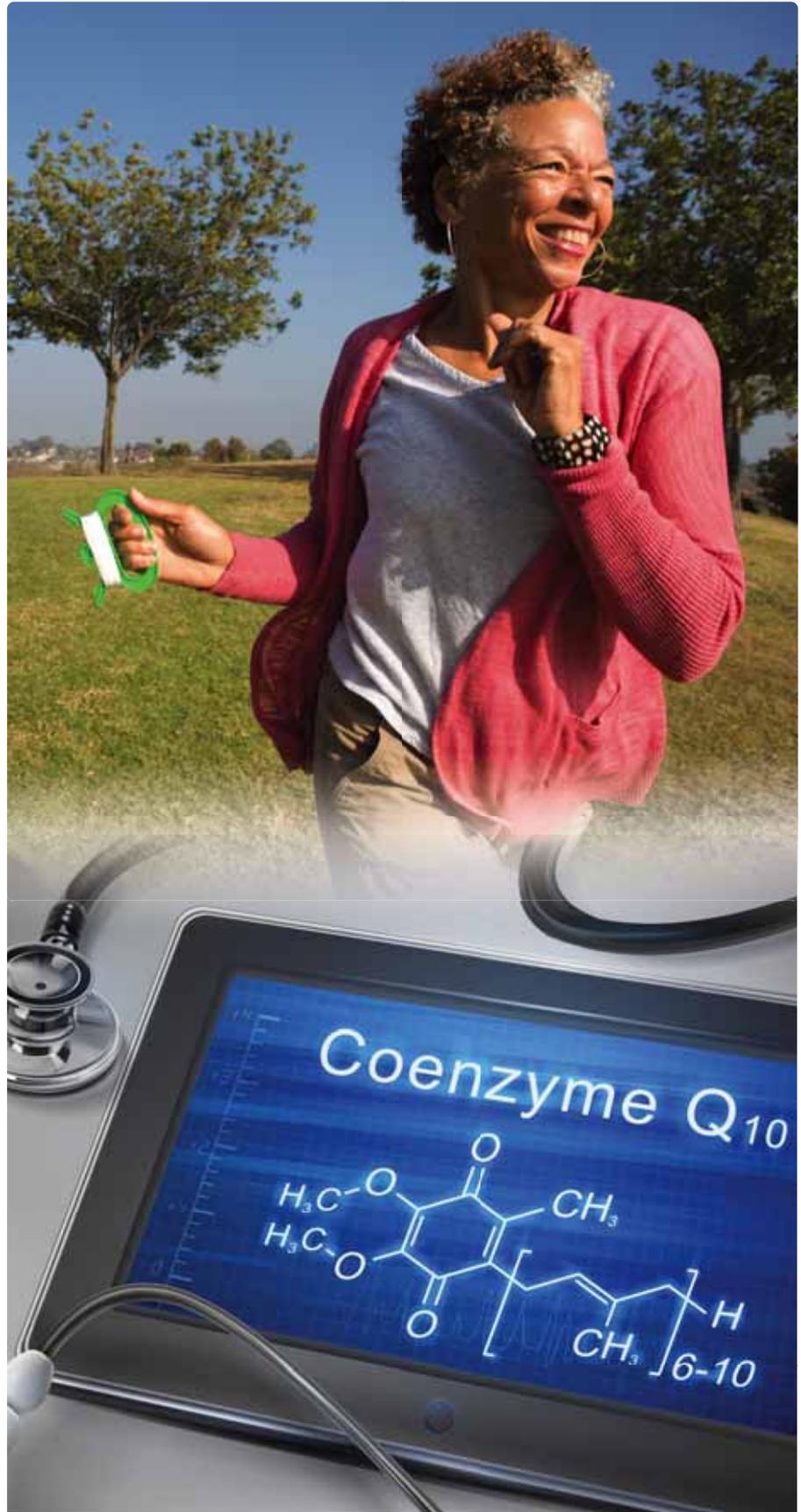
Analysis of the 13 trials showed a consistent, significant effect of CoQ10 in reducing fatigue.

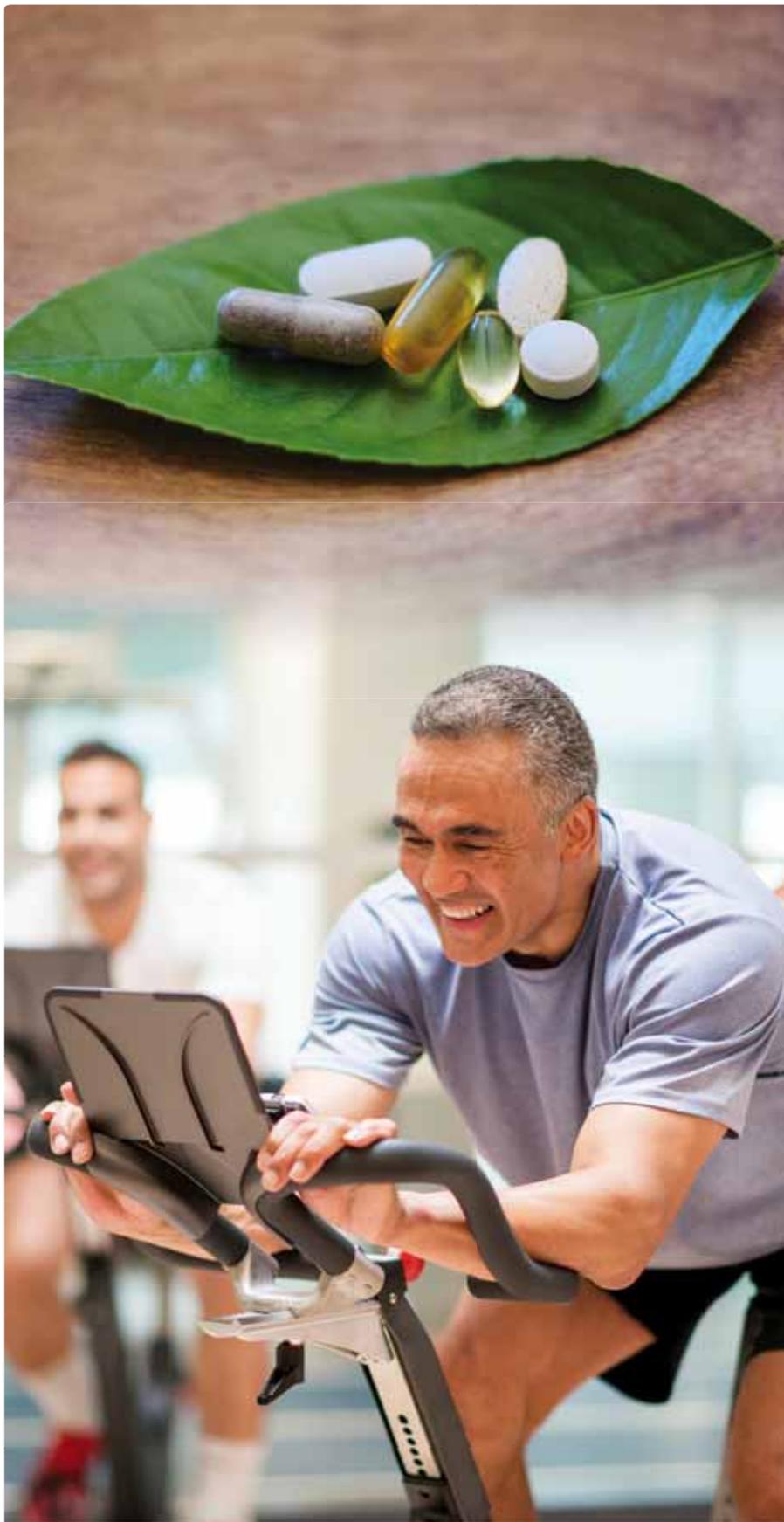
When trials that included healthy participants were analyzed separately from trials that included patients with fatigue-associated diseases, both supplemented populations showed decreases in **fatigue**, however the effects were more significant among the unhealthy participants, who had more severe CoQ10 depletion.

Higher CoQ10 doses and longer duration of supplementation were correlated with greater reduction in **fatigue**.

**Editor's Note:** While the body makes some CoQ10, the authors remarked that studies have provided evidence that supplementing with CoQ10 does not affect the body's synthesis of the coenzyme.

\* *Front Pharmacol.* 2022 Aug 24;13:883251.





## Adequate Nutrient Intake Can Help You Live Longer

A study that utilized data from the National Health and Nutrition Education Survey (NHANES) 1999-2010, found an association between adequate intake of specific nutrients and a lower risk of dying during a median follow-up of 9.3 years, the *Journal of Nutrition* reported.\*

Nutrient adequacy was calculated as the percentage of the RDA met by the participants according to age and gender.

Compared to participants whose **magnesium** intake was among the lowest one-third, those whose intake was among the top third had a **22%** lower adjusted risk of all-cause mortality, a **35%** lower risk of dying from cardiovascular disease and a **29%** lower risk of cancer death during follow-up.

Top consumers of **vitamin E**, **potassium**, and **fiber** had a **19%**, **18%** and **16%**, respectively, lower risk of premature **mortality**.

**Editor's Note:** "Americans are underconsuming essential nutrients while overconsuming several nutrients, including sodium, saturated fat, and added sugars," the authors asserted.

\* *J Nutr.* 2021 Oct 1;151(10):3214-3222.

## Protein Supplementation Benefits Lean Body Mass

A “systematic review of systematic reviews” published in *Sports Medicine* showed that the addition of protein supplementation to resistance training is associated with a greater increase in lean body mass (body mass minus fat mass) in comparison with resistance training alone.\*

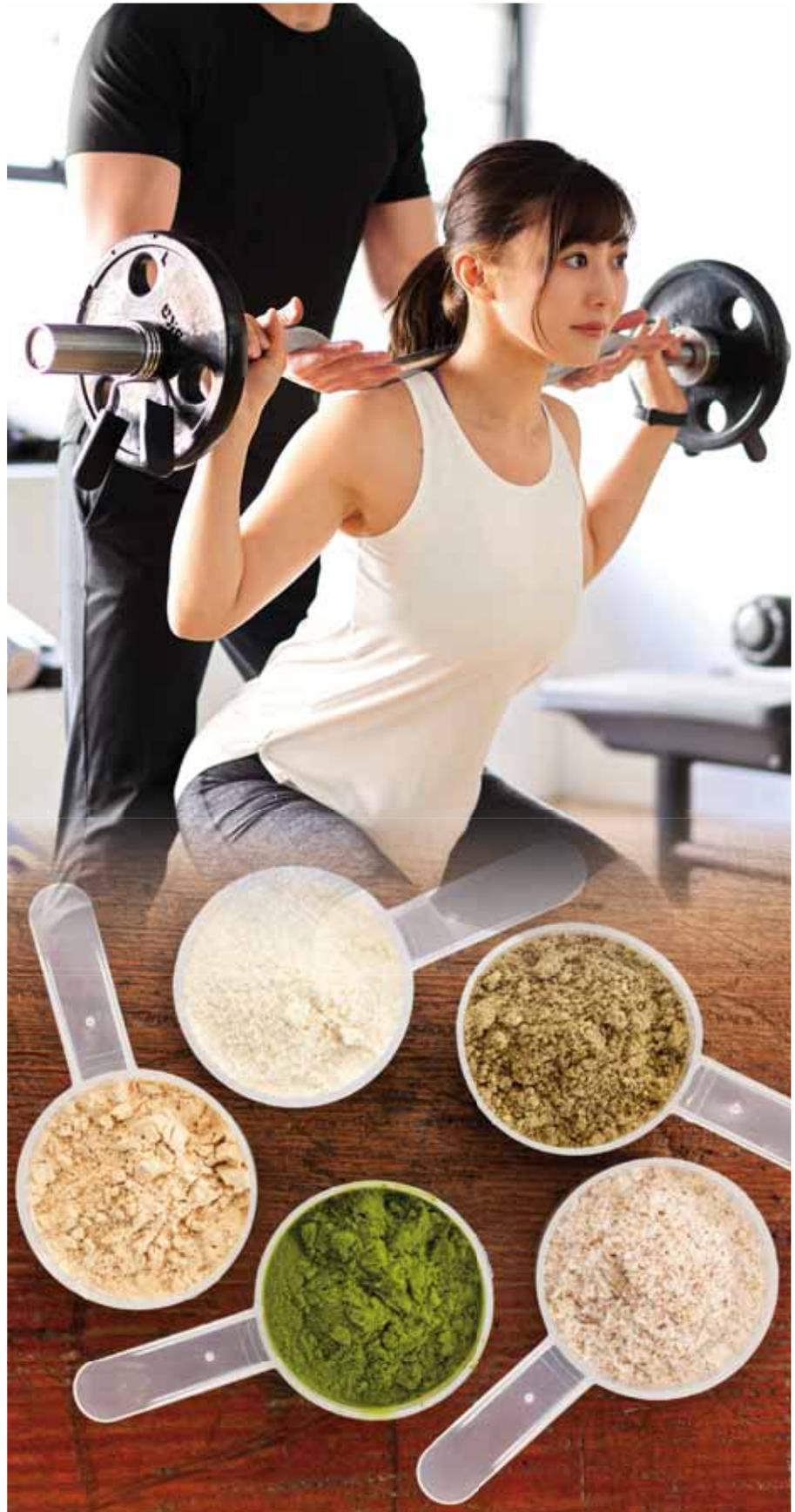
Researchers selected five systematic reviews with meta-analyses of randomized trials that compared the effects of resistance training alone to resistance training combined with protein and/or amino acid supplementation. The 46 studies included in the meta-analyses involved a total of 2,925 men and women over 50 years of age.

Supplemented groups received **12-40 grams** of protein or **3-10 grams** of amino acids while the control groups received a placebo or no supplementation.

Among the four meta-analyses that evaluated lean body mass, three found a significant increase in association with resistance training plus protein supplementation compared to resistance training without supplementation.

**Editor’s Note:** There was also a significant benefit for protein supplementation combined with training on muscle mass alone.

\* *Sports Med.* 2022 Oct;52(10):2511-2522.



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\*ACS Omega. 2022 Apr 19;7(15):12835-45.

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\* **CAUTION:** If you are taking a vitamin K antagonist (e.g. warfarin), consult your healthcare practitioner before taking this product.

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# Restore Youthful **TESTOSTERONE** LEVELS



BY MICHAEL DOWNEY

Men worry that low **testosterone** will decrease **muscle growth** and **libido**.

This is just the tip of iceberg.

Research indicates that low testosterone may affect mood and cause depression.<sup>1</sup>

It is *also* linked to an increased risk for **heart disease** and greater risk of **death from any cause**.<sup>2-7</sup>

Serum testosterone declines over time. Beginning as early as **age 30**, testosterone levels start falling about **1% per year**.<sup>8,9</sup>

Scientists have identified **plant-derived nutrients** that help safely boost production of this hormone.

In one clinical study, a blend of **pomegranate** and **cacao** extracts was shown to increase **free testosterone** as much as **48%** in aging men.<sup>10</sup>

In preclinical studies, the flavonoid **luteolin** was shown to support testosterone production and reduce its conversion into estrogen.<sup>11-14</sup>

## Declining Free Testosterone

The hormone **testosterone** is primarily produced in the **testicles** in men.<sup>15,16</sup> It is crucial for normal development of the male **reproductive system** and impacts the healthy function of organs and tissues **throughout the body**.

To perform its vital roles, **testosterone** must be in a “**free**” or **biologically active** form to attach to testosterone receptors on various body cells.

However, only about **2%** of all circulating testosterone is in this **free, unbound** form.<sup>17</sup> The rest circulates in the blood already **bound** to proteins.<sup>15,18</sup>

And, **free testosterone** declines with age.

**Overweight** men have a **higher** risk for low testosterone. That’s because being overweight or obese is associated with increased levels of the enzyme **aromatase**, which converts testosterone into **estrogen**.<sup>9,19</sup>

## Dangers of Low Testosterone

As testosterone levels decline with age, men experience well-known **low testosterone symptoms**. These include diminished sexual desire, erectile dysfunction, fatigue, reduced muscle mass and strength, and loss of youthful well-being.

But the effects go beyond these. **Testosterone deficiency** in men correlates with a greater risk of:<sup>6,7,18,20-24</sup>

- Cardiovascular disease,
- Osteoporosis,
- Chronic inflammation,
- Neurodegeneration, including cognitive decline and Alzheimer’s disease,
- Metabolic syndrome and type II diabetes,
- Depression, and
- All-cause mortality.

A misguided fear that testosterone may cause **prostate cancer** hampered clinical progress for decades. In reality, **low** testosterone is associated with **increased** prostate cancer incidence in most studies.<sup>25,26</sup>

Clearly, there is a critical need to boost **free testosterone** levels in most aging men.

## Promising Plant Extracts

Seeking a safe and **drug-free** way to elevate testosterone, scientists took note of a study presented at an endocrinology conference a decade ago.

In that study, healthy men and women who took **pomegranate juice** for just **two weeks** increased salivary **testosterone** levels by **23%-27%**. Mood and well-being measures also improved.<sup>27</sup>

After screening hundreds of plant extracts, scientists believed that both **pomegranate** and **cacao seed** extract, from the beans used to make cocoa and chocolate, might promote **higher** testosterone levels.

A study using testes cells from mice confirmed that both extracts could significantly raise **testosterone production**.<sup>28</sup>

In a rodent model, investigators found that a **pomegranate-cacao seed combination** boosted testosterone production by over **72%** in just six weeks.<sup>29</sup>

## Boosting Testosterone in Men

To evaluate **pomegranate** and **cacao** extracts in **humans**, scientists gave men ranging from **36 to 55 years old** either a combination of these extracts or a placebo.<sup>10</sup>

After eight weeks, **free testosterone** levels in men receiving **400 mg** of the **pomegranate-cacao** blend were elevated by over **48%** compared to baseline.<sup>10</sup>



In addition, in men taking the pomegranate-cacao blend:<sup>10</sup>

- Overall **well-being** improved,
- Measures of **stress** dropped by **26%**, and
- Hand grip **strength** increased by almost **25%** compared to baseline.

The **pomegranate-cacao** group also reduced their symptoms on the **Aging Males' Symptoms scale** by **19%**.<sup>10</sup> These symptoms include:<sup>30</sup>

- Joint pain and muscle aches,
- Excessive sweating,
- Sleep problems and exhaustion,
- Anxiety and irritability,
- Depression and feeling burned out, and
- Decrease in libido and other sexual problems.

A similar study was done on **younger** men, aged **21 to 35**.<sup>10</sup>

Even in these younger men, a blend of pomegranate and cacao extracts increased **free testosterone** by **25%**. Hand grip strength and the circumference of the upper arm increased as well.<sup>10</sup>

### How Luteolin Helps

**Luteolin** is a flavonoid found in certain fruits, herbs, and vegetables, including celery, broccoli, parsley, and thyme.

This compound may support higher **testosterone** production and levels in **two** ways. Cell and animal studies demonstrate that luteolin:

- **Increases** an enzyme called **StAR** (steroid-ogenic acute regulatory protein), which is *required* for testosterone production to occur,<sup>31</sup> and
- **Inhibits** the enzyme **aromatase**, which converts testosterone into estrogen.<sup>11,12</sup>

A combination of **luteolin** and **pomegranate-cacao** extracts may support the production and maintenance of healthy **free testosterone** levels in men as they age.



WHAT  
YOU  
NEED  
TO  
KNOW

## Boost Testosterone for Better Health

- **Testosterone** is crucial to healthy aging in men, but levels of this hormone begin to drop around age **30**.
- **Low testosterone** causes symptoms like fatigue, low libido, and reduced strength. It also *increases* the risk of cardiovascular disease and other disorders, and raises the risk of death from any cause.
- In clinical studies, a blend of **pomegranate** and **cacao seed extracts** increased bioactive **free testosterone** in men by as much as **48%** and improved measures of stress, hand grip strength, and more.
- Preclinical studies show that the flavonoid **luteolin** may support optimal testosterone levels and maintain healthy testosterone and estrogen balance.

## Summary

Beginning around age **30**, levels of the hormone **testosterone** in men begin to *decline*.

**Low testosterone** can result in symptoms like erectile dysfunction, fatigue, and reduced muscle mass, and poses a serious risk to overall health.

**Pomegranate** and **cacao seed** extracts *boost* testosterone production. In a clinical study, this combination increased **free testosterone** by **48%** and improved measures of stress-resilience and strength.<sup>10</sup>

Preclinical data found that the flavonoid **luteolin** also supports higher testosterone levels.

Together, these nutrients may help aging men support *higher* testosterone levels and quality of life. ●

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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## HOW TO CHECK YOUR TESTOSTERONE LEVEL

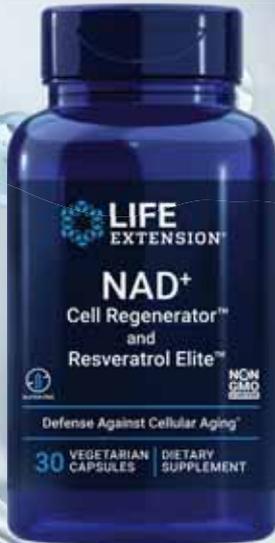
The best way to check your testosterone status is through simple **blood tests**.

In men, the optimal ranges for **free** and **total** testosterone in the blood are:

- Free testosterone: **15-25 pg/mL**
- Total testosterone: **600-900 ng/dL**

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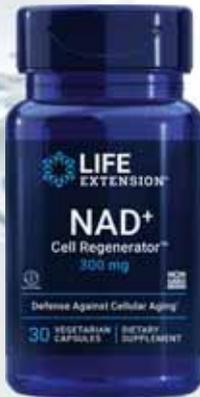
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**MJ**

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- Just one capsule a day.

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6. *J Agric Food Chem.* 2012 Aug 29;60(34):8411-8.

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

† This product is intended to support testosterone levels but does not contain testosterone. Tesnor® is a trademark of Laila Nutra and Gencor.



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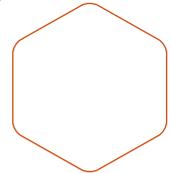
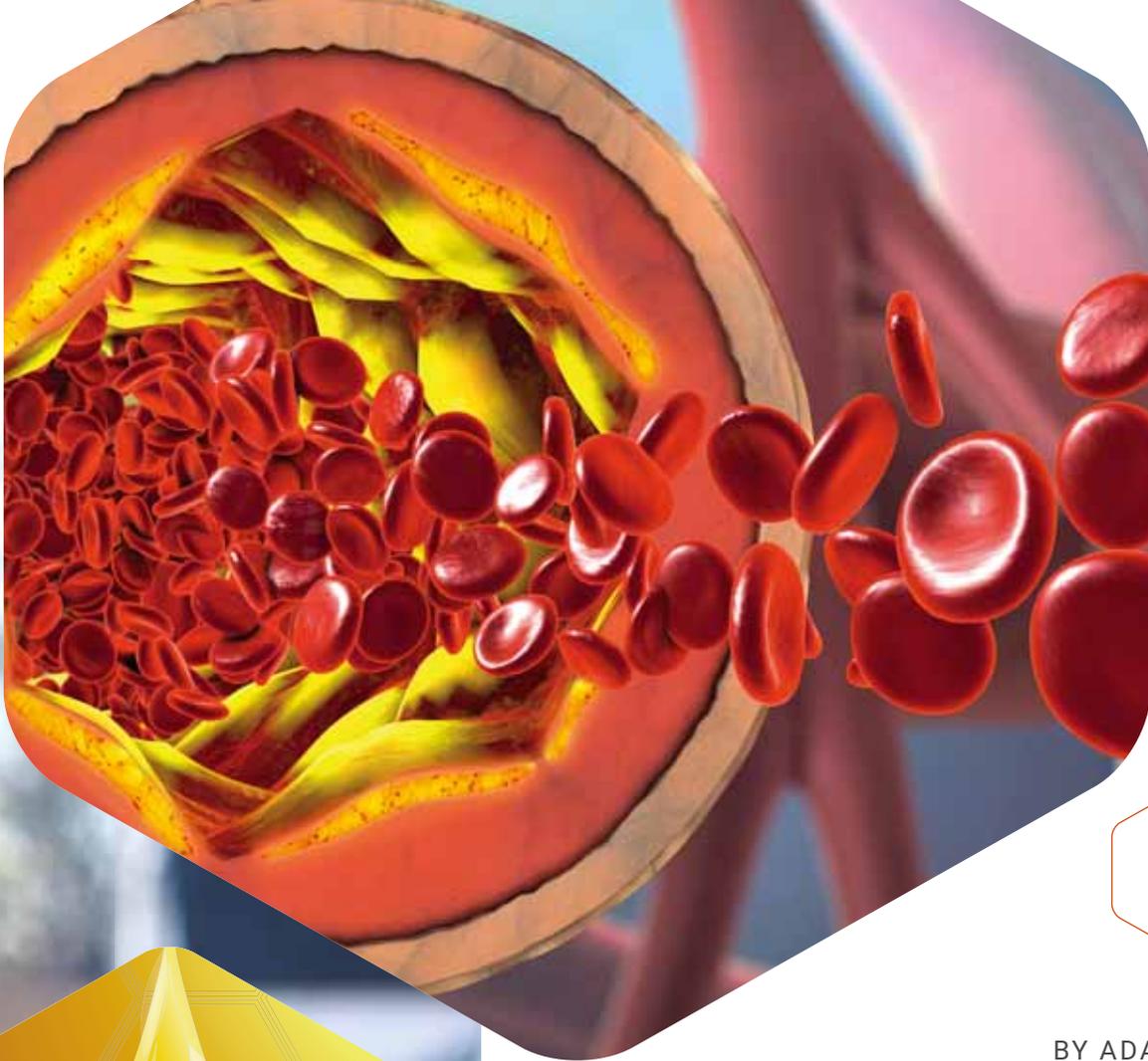
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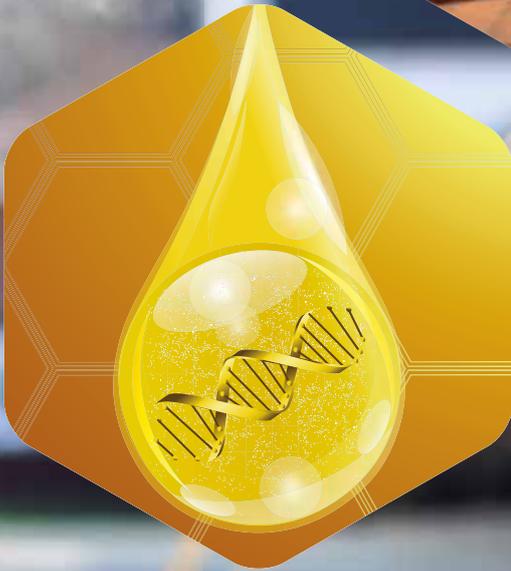
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# Role of CoQ10 in Aging





BY ADAM CRUZ



**Coenzyme Q10 (CoQ10)** is found in every **cell** in our body.

The *highest* amount is located in the **mitochondria**, the energy power houses of our cells.<sup>1</sup>

With age, **mitochondrial function** and **CoQ10** synthesis decline, contributing to a range of degenerative conditions.<sup>2,3</sup>

Research has shown that supplemental **CoQ10** improves **mitochondrial function** as well as organ performance.<sup>1,4-8</sup>

As a defense against the assaults of aging, **CoQ10** has been shown to suppress factors involved in nearly all chronic disorders.<sup>1,6,7</sup>

## Heart Function

CoQ10 is no newcomer to **heart health**.<sup>1,9,10</sup>

It has been prescribed in **Japan** to treat heart failure for **decades**. Research has shown it to be safe.<sup>11</sup>

One recent review paper presented preclinical and clinical evidence on the roles that CoQ10 plays in preventing and relieving heart disease, including:<sup>1</sup>

- Preventing the accumulation of oxidized LDL cholesterol in arteries,
- Decreasing stiffness of blood vessels, and
- Improving the function of the cells that line the inside of the blood vessels.

Clinical studies have shown that CoQ10 intake has clear benefits for the heart.



A clinical trial assessed the effects of CoQ10 supplementation against moderate-to-severe **heart failure**. Patients received either **CoQ10** or **placebo** over a two-year period.

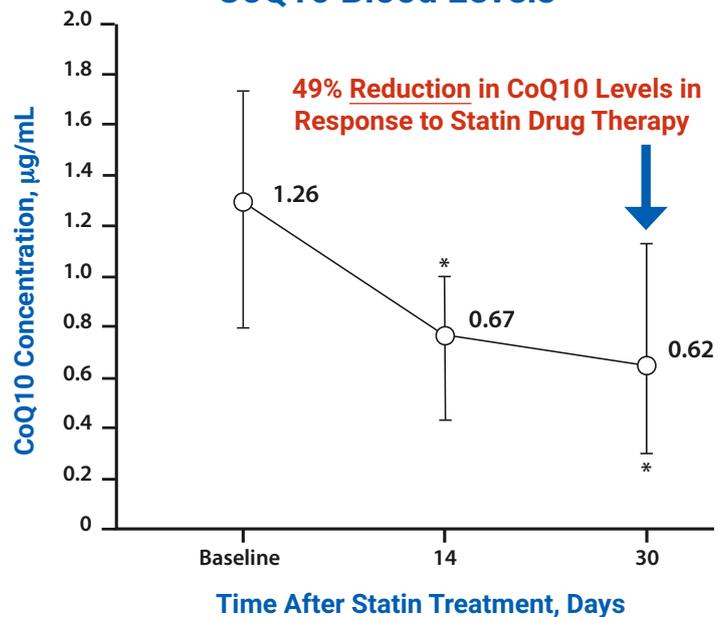
Those taking **100 mg** of **CoQ10** three times daily had a remarkable **43% reduction** in major cardiovascular events like heart attack, stroke, or death, compared to the **placebo** group.<sup>10</sup> Both groups were on standard drug therapy.

In another study, **heart attack** survivors were randomized to receive either **CoQ10** or a low-potency vitamin **placebo**.

The group receiving **120 mg** a day of **CoQ10** for one year had reduced rates of total cardiac events by **45%** and of nonfatal heart attacks by **46%** compared to the placebo group.<sup>12</sup>

**Statin drugs** prescribed to lower **LDL cholesterol** further reduce **coenzyme Q10 synthesis** in the body. Those using a statin are often advised to supplement with CoQ10.<sup>13,14</sup>

### Statin Treatment Decreases CoQ10 Blood Levels



Source: Arch Neurol. 2004;61(6):889-892.

This study of people with an average age of 70 shows CoQ10 blood levels at baseline of only **1.26 mcg/mL**. Optimal levels should be between **2-3 mcg/mL**. Statin drug use causes these already low CoQ10 blood levels to drop to **0.62 mcg/mL**. According to cardiologist Peter Langsjoen, MD, heart failure patients should strive for CoQ10 blood levels of around **4 mcg/mL** and higher.<sup>62</sup>

WHAT YOU NEED TO KNOW



### Brain Aging

**Mitochondrial dysfunction** is believed to play a role in the development of brain-aging diseases like Parkinson's and Alzheimer's.<sup>15,16</sup>

Studies show that **CoQ10** may help protect as follows:

- In patients with early **Parkinson's disease**, taking daily CoQ10 at a dosage of **1,200 mg/day** led to **44% less functional decline** than taking a placebo.<sup>17</sup>
- A study of patients with **Huntington's disease**, a progressive brain disorder, found that subjects given **300 mg** of CoQ10 twice daily for one year tended to have **less cognitive decline** than a placebo group.<sup>18</sup>
- In a mouse model of **Alzheimer's disease**, CoQ10 *decreased* the amount of beta-amyloid, a protein that accumulates in the brains of Alzheimer's patients, and *improved* the animals' cognitive and behavioral performance.<sup>19</sup>

### Inflammation

**Chronic inflammation** is a driver of many different age-related chronic disorders.<sup>20</sup>

Meta-analyses of randomized controlled clinical trials have concluded that CoQ10 supplementation can significantly **lower inflammatory** markers.<sup>21,22</sup>

Another meta-analysis of randomized controlled trials reported CoQ10 supplementation significantly **lowers** markers of **inflammation** in individuals with metabolic syndrome. The authors described the ability of CoQ10 to inhibit oxidative stress, while also improving blood **sugar control** and **liver function**.<sup>23</sup>

## CoQ10 Promotes Healthy Longevity

- **Coenzyme Q10 (CoQ10)** is essential for the production of energy by the mitochondria.
- CoQ10 deficiency has been found in many **age-related diseases** and processes, including brain aging and cardiovascular disease.
- One clinical trial showed that oral intake of CoQ10 *slowed* the age-related decline in **vitality, physical performance**, and health-related **quality of life**.
- CoQ10 intake can also help prevent **cardiovascular disease** by a variety of mechanisms.
- CoQ10 has been shown in one study to reduce the risk of major cardiovascular events including heart attack, stroke, and death in heart failure patients by **43%**.
- CoQ10 may help protect against neurodegenerative diseases like **Alzheimer's** and **Parkinson's diseases**.
- CoQ10 has many other benefits, such as reducing skin wrinkles, and improving lung function.



### Systemic Indicators of Reduced Aging

CoQ10 has demonstrated other benefits that include:

- **Reducing wrinkles.** A clinical trial showed that daily intake of CoQ10 (**50 or 150 mg**) significantly reduced skin **wrinkles** and improved skin **smoothness** compared with a placebo.<sup>4</sup>
- **Enhancing physical performance.** Men were assigned to take either CoQ10 (**100 mg**) or a placebo daily, then underwent fitness tests. **Mean power** was *increased* in those taking CoQ10 compared to a placebo.<sup>24</sup>
- **Improving lung function.** Patients with **chronic obstructive pulmonary disease (COPD)**, a lung disease, who took **90 mg** of CoQ10 daily for two months showed improvements in **heart rate** and a measure of how well oxygen moves from the lungs to the blood during exercise,<sup>8</sup> along with improvements in **hypoxemia** (low blood oxygen) at rest.
- In **asthma** patients, oral CoQ10 resulted in *improvement* in air flow.<sup>25</sup>

### Cellular Energy

Preclinical evidence has shown that **CoQ10** is particularly promising for addressing a key aging factor: **mitochondrial dysfunction**.<sup>1,3,5,26-28</sup>

The mitochondria are responsible for **energy production** in our cells.<sup>29</sup> Damage to these structures is a contributor to **aging**, playing a role in various age-related disorders and a shorter lifespan.<sup>3,5,27</sup>

Some of this damage is caused by **oxidative stress**. CoQ10 *reduces* oxidative stress in cells.<sup>1,26</sup>

*Deficiency* of CoQ10 is linked to *increased* oxidative stress and mitochondrial dysfunction,<sup>30</sup> while **oral CoQ10** intake has shown evidence of protecting against the progression of aging and development of age-related diseases.<sup>1,4,9,12,28</sup>

CoQ10 slows common **symptoms of aging**, including decreased vitality, physical performance, and quality of life.

In a clinical trial, elderly participants received either a **placebo** or a combination of **CoQ10** and **selenium**. Participants took **200 mg** of CoQ10 and **200 mcg** of selenium each day. Over **four years**, those taking the **CoQ10-selenium** showed improved health-related quality of life and more days out of the hospital.<sup>9</sup>

## Summary

The nutrient **CoQ10** has shown promise in preventing and slowing degenerative disorders, including cardiovascular events and **brain aging**.

It functions via multiple mechanisms to enhance **mitochondria energy** output while combating **chronic inflammation** and **oxidative stress**.

Together, these effects may help slow certain aging processes and reduce symptoms of aging. •

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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"I believe this product is another arrow in my quiver of products I use to be my best."

Raymond

VERIFIED CUSTOMER REVIEW

# Fisetin

## The Longevity Flavonoid

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

In preclinical studies, fisetin:

- Mimics effects of **calorie reduction**<sup>2</sup>
- Targets longevity pathways<sup>2-6</sup>
- Extends lifespan of mice by about **10%**<sup>7</sup>
- Removes **senescent** cells through **senolytic** action<sup>7</sup>
- Suppresses excess **mTOR** activation<sup>8</sup>

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

**Bio-Fisetin** solves this problem by enclosing **fisetin** with a compound from the fenugreek herb.

A **human** trial showed **bioavailability** of this **fisetin** compound increased up to **25 times** compared to fisetin by itself.<sup>9</sup>

Just one capsule daily of **Bio-Fisetin** helps manage **senescent cells** and may support overall longevity.

### SUPER SALE PRICE

Item #02414

30 vegetarian capsules

1 bottle **\$10.13**

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### References

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Found naturally in seafood and algae, as little as **50%** of **astaxanthin** is normally **absorbed** in the bloodstream.<sup>2,3</sup>

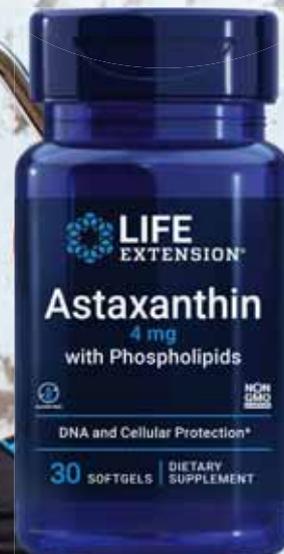
**Life Extension®** combines **4 mg** of **astaxanthin** with a blend of four different **phospholipids**, which has been shown to enhance carotenoid **absorption** by **several-fold**.<sup>4</sup>

#### References

1. *Nutrients*. 2020 Jun; 12(6): 1896.
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4. *Int J Pharm*. 2011 June 30; 412(1-2):99-105.

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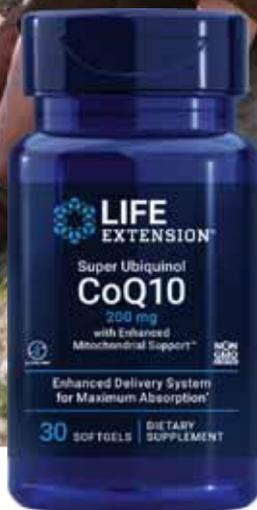
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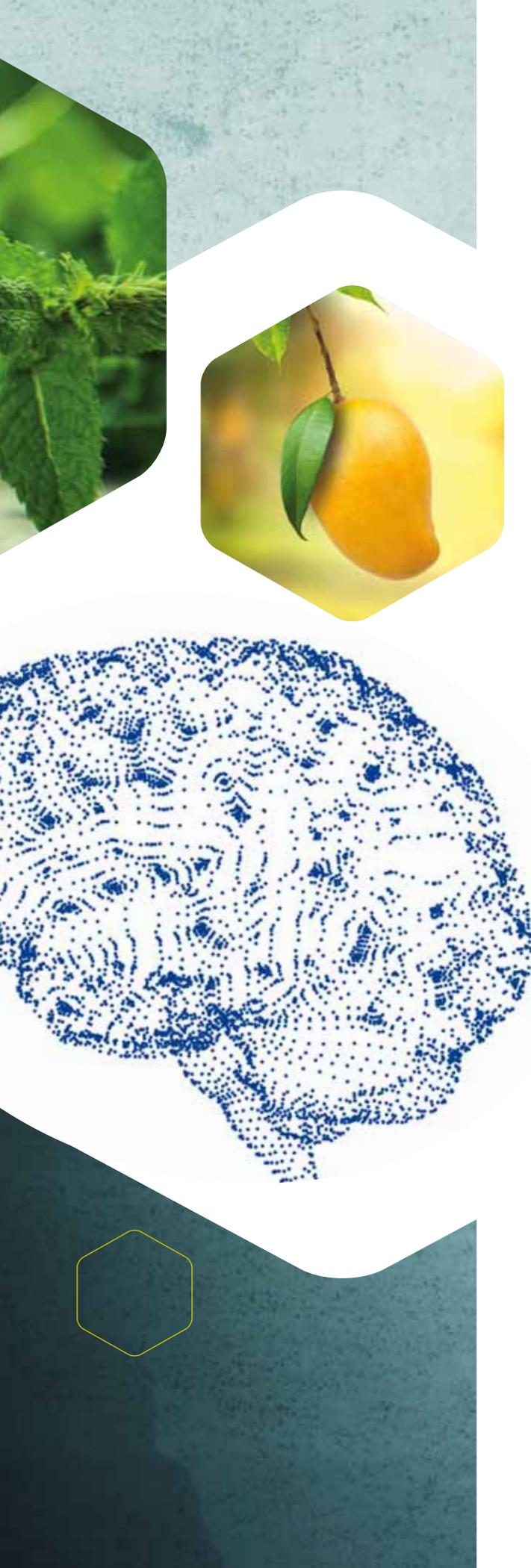
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# How to Banish **BRAIN FOG**



Losing your train of thought or finding it hard to pay attention is common as we get older.

If it starts to interfere with daily life, you may be experiencing what is known as **brain fog**.<sup>1</sup>

**Brain fog** refers to a general feeling of decreased **mental energy** and **focus**. It may be characterized by mental fatigue and clouding, forgetfulness, fuzzy thinking, confusion, and difficulty concentrating.

Scientists have identified two **plant-based** nutrients that can prevent or potentially reverse these alterations to bring back mental clarity, energy, and focus.

In clinical studies, **mango leaf extract**:<sup>2,3</sup>

- Improves reaction time,
- Reduces mental fatigue, and
- Boosts attention, performance accuracy, and working memory.

In other clinical studies, **peppermint oil** reduced the development of mental fatigue and improved aspects of memory and attention.<sup>4</sup>

**Mango leaf extract** and **peppermint oil** can provide a cognitive boost that may help replace **fog with focus**.

## What Causes Brain Fog?

The feeling of mental fatigue, foggy thinking, and difficulty concentrating is more than an annoyance. It can decrease **cognitive performance** and make it difficult to get work done.

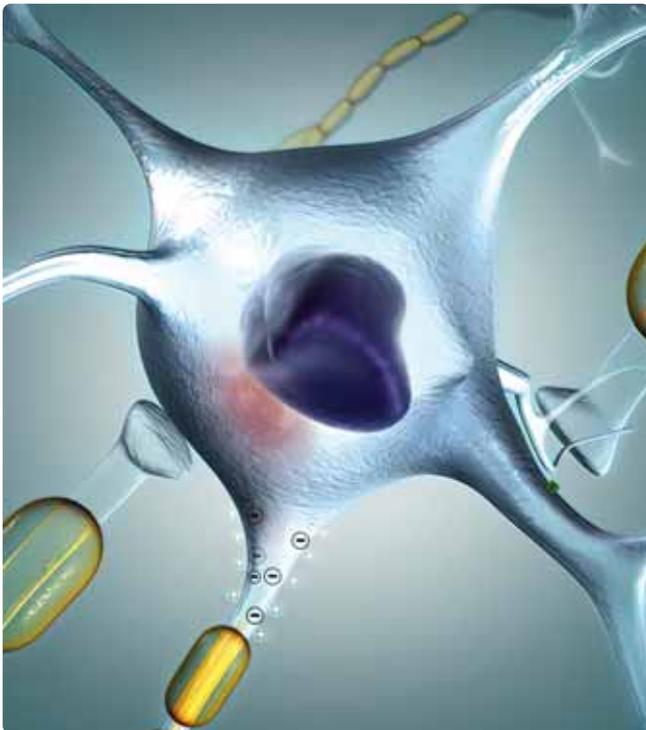
In order to pinpoint underlying changes in the brain that may cause feelings of mental fogginess, scientists studied medical conditions that produce some of the same *mental symptoms*.

Their research showed that complaints consistent with **brain fog** have been reported by people with:<sup>5-10</sup>

- **Inflammatory disorders** of various types,
- **Allergies** (including seasonal allergies),
- **Immune disorders**, which increase inflammation, and
- **Dietary sensitivities**.

These observations led researchers to propose that brain fog may result from:<sup>5-7</sup>

- **Inflammation**,
- **Histamine** (the chemical that causes allergic symptoms),
- **Neurotransmitter imbalance**, and
- Impairments in **neuronal activity**.



## Plant Extracts

Using this research, scientists identified **two** plant-derived nutrients that appear to have the potential to prevent or even *reverse* these underlying biological changes.

These two nutrients also had a track record of improving symptoms of brain fog:

- **Mango leaf extract** has been clinically shown to improve reaction time, reduce mental fatigue, and boost attention, performance accuracy, and working memory.<sup>2,3</sup>
- **Peppermint oil** has been clinically shown to significantly reduce the development of mental fatigue and improve aspects of attention and memory.<sup>4</sup>

## How Mango Leaf Protects the Brain

Long used in Asia and Africa to treat fatigue, **mango leaf** has more recently been shown to exert properties that are neuroprotective, anti-inflammatory, and anti-diabetic.<sup>2</sup>

These effects, which scientists suggested may help prevent brain fog, are believed to be largely attributable to the polyphenol compound **mangiferin**.

Mangiferin's capacity to **protect the brain** has been demonstrated in animal studies in which it:<sup>2,11,12</sup>

- Decreased neuroinflammation,
- Reduced oxidative stress, and
- Provided neurotransmitter support.

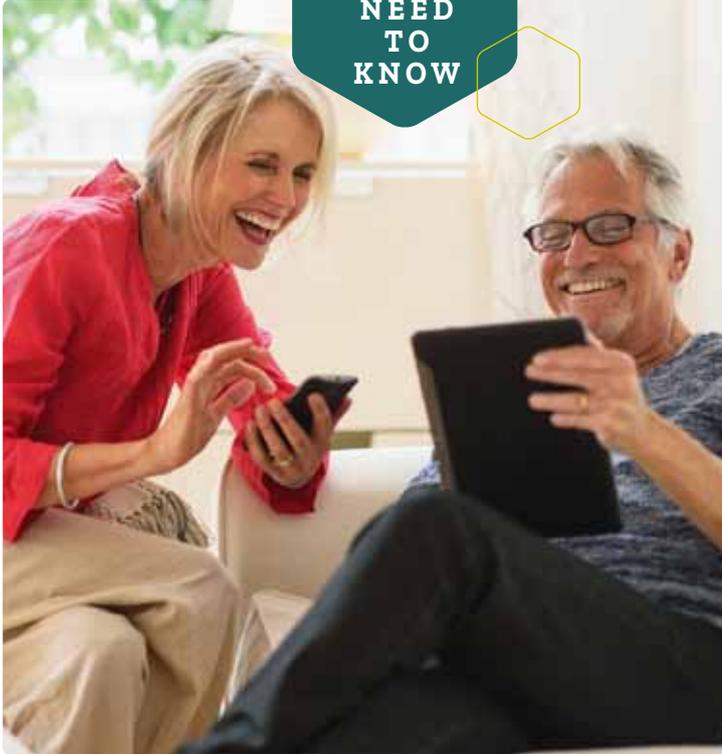
Other animal models found that **mangiferin** use prevented cognitive and memory impairment, key symptoms of **brain fog**.<sup>13</sup>

Mangiferin was also shown in rodent studies to exhibit **anti-allergic** properties,<sup>14,15</sup> suggesting potential benefits against brain fog associated with allergies.

## Mango Leaf in Human Studies

Scientists conducted controlled **human** trials to evaluate whether **mango leaf extract** could treat symptoms consistent with **brain fog**.

They divided healthy adults into four groups. One group took a **mango leaf extract** containing **60% mangiferin**, the second group took **caffeine**, the third group took the extract *plus* caffeine, and the fourth took a **placebo**.

WHAT  
YOU  
NEED  
TO  
KNOW

## Boost Brain Power and Undo Brain Fog

- **Brain fog** is a feeling of reduced mental energy, clarity, and focus.
- **Mango leaf extract** and **peppermint oil** were each shown in preclinical studies to address the likely underlying causes of brain fog.
- In clinical trials, **mango leaf extract** and **peppermint oil** each *reduced* mental fatigue while *improving* attention and working memory.
- Combined, these ingredients may maximize brain support and help erase symptoms of brain fog.

Compared to baseline, the **mango leaf extract** resulted in:<sup>2</sup>

- A remarkable **47% reduction** in **fatigue**, and
- An almost **5% improvement** in **reaction time**.

These improvements were significantly greater than those seen with caffeine alone *or* with a combination of caffeine and mango extract.

Tests of electrical activity in the brain showed that those taking **mango leaf extract** had increased activity in regions associated with complex cognitive processing, attention, and memory.<sup>2</sup>

In another clinical study, researchers gave healthy young adults either **300 mg** of the **mango leaf extract** or a placebo.

The extract *improved* areas of cognitive function, including aspects of:<sup>3</sup>

- **Attention**,
- **Performance accuracy**, and
- **Working memory**.

This evidence supports the use of **mango leaf extract** to enhance brain activity, reduce mental fatigue, and support mental focus and performance.

### Peppermint's Brain Benefits

**Peppermint** is an herb traditionally used for medicinal properties, including aiding digestion and promoting calm.

Plants rich in **monoterpenes** have been shown in placebo-controlled studies to have **cognitive benefits**.<sup>16,17</sup> Peppermint oil contains many of these compounds, including menthol and menthone.<sup>18</sup>

Some human studies have shown that peppermint teas:<sup>19</sup>

- Improved **memory**, and
- Boosted **mental alertness**.

In addition, mint species have demonstrated the ability to modulate various **neurotransmitters** in the brain, such as **acetylcholine** and **GABA**. These neurotransmitters play pivotal roles in mental alertness, cognition, and mood.<sup>4</sup>

## Clinical Trial of Peppermint Oil

In a controlled clinical trial, scientists gave healthy adults either **peppermint oil** containing **60% monoterpenes** or a placebo. Tests on aspects of memory, attention, and mood were administered.

The **peppermint oil** group significantly:<sup>4</sup>

- **Reduced** the development of **mental fatigue**,
- **Improved** aspects of **attention** and **working memory**.

The volunteers who received the **placebo** were severely fatigued within a few hours after the cognitive tests.<sup>4</sup>

Human studies overall demonstrate that **peppermint oil** and **mango leaf extract** can help restore mental clarity, focus, and energy.

A combination of these two ingredients may maximize their ability to clear away **brain fog**.

## Summary

Scientists have identified two **plant-based** ingredients that can improve various aspects of **brain fog**.

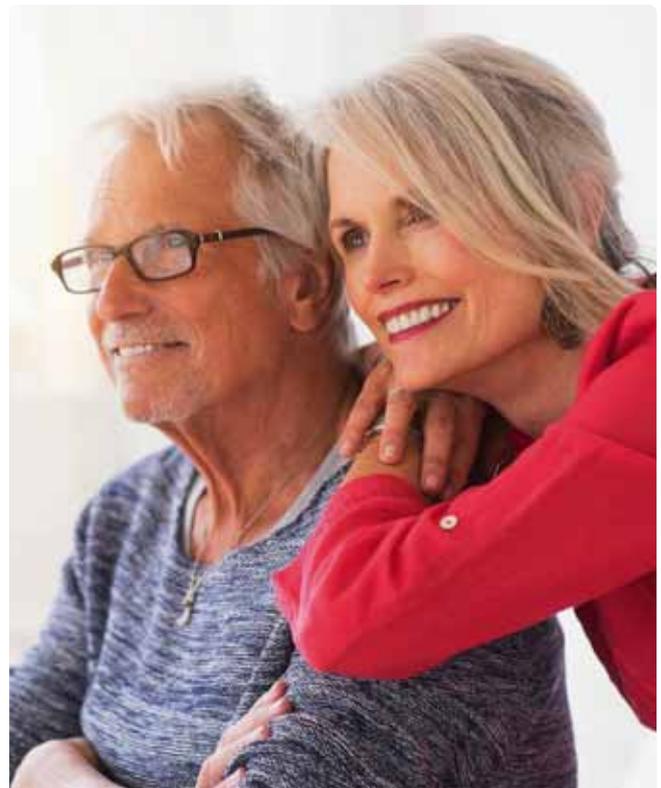
**Mango leaf extract** and **peppermint oil** have each been shown to reduce mental fatigue, and improve attention, memory, and cognitive performance. •

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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# CLEAR YOUR MIND

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**William**

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**Brain Fog Relief** restores mental clarity and focus with mango leaf extract and peppermint oil.

In clinical trials...

#### **MANGO LEAF EXTRACT:**<sup>1,2</sup>

- Sharpened thinking
- Reduced mental fatigue
- Improved focus and attention, and
- Improved working memory

#### **PEPPERMINT OIL:**<sup>3</sup>

- Reduced mental fatigue
- Improved attention and memory

One softgel provides **fast-acting** benefits within three hours.

#### **References**

1. *J Ethnopharmacol.* 2020 Oct 5;260:112996.
2. *Nutrients.* 2020 Jul 23;12(8).
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# Cataracts, Glaucoma, and Macular Degeneration

BY MARK STRATTON

As we age, conditions like **cataracts**, **glaucoma**, and **macular degeneration** threaten our vision.<sup>1</sup>

Scientists long ago discovered that **carotenoids** like **lutein** and **zeaxanthin** concentrate in the **macula** of the eye, where they help **filter out** damaging wavelengths of light.<sup>2-4</sup>

What few people know is these same **carotenoids** have *also* been shown to help protect the **eye lens** against **cataracts** and the **optic nerve** from **glaucoma** damage.<sup>5-8</sup>

Published studies continue to demonstrate whole-body benefits in those who ingest these plant-derived **carotenoids**.



## CAROTENOIDS AND SYSTEMIC HEALTH

**Carotenoids** are a group of pigments found in many fruits and vegetables. They have demonstrated benefits in tissues throughout the body, including the **brain**.<sup>7-9</sup>

Taken up and concentrated in brain tissues, carotenoids have been found to be neuroprotective and supportive of cognitive function.<sup>8</sup>

Individuals with higher levels or higher intake of carotenoids have consistently been found to have better **cognitive** performance.<sup>10-13</sup>

A systematic review and meta-analysis found consistently lower blood levels of **lutein** and **zeaxanthin** in people diagnosed with **Alzheimer's** compared to healthy adults of the same age.<sup>14</sup>

Randomized clinical trials have also found significant improvements in cognitive functioning in those receiving a **carotenoid** supplement compared to those receiving a **placebo**.<sup>15,16</sup>

Those with *high* dietary intake of lutein and zeaxanthin have *lower* risk for **eye disease** and **vision loss**.

Modern Western diets rarely provide enough carotenoids.<sup>17</sup> Average lutein intake is low for adults.<sup>18</sup>

**Oral intake** of lutein-zeaxanthin supplements has been shown to boost the content of carotenoid pigments in the eyes and may improve whole-body health.<sup>19,20</sup>

### Cataracts

**Cataracts** are a common degenerative disease that clouds the **lens** of the eye. The result is deteriorating vision and eventual blindness.

Cataracts are one of the most important leading causes of blindness in the world.<sup>6</sup> In modern societies, cataract surgery is rampant in people over age 65.

Studies show that people with the **highest** intake of lutein and zeaxanthin have the **lowest** rates of cataracts, age-related macular degeneration, and other age-related eye conditions.<sup>5,21,22</sup>

### Glaucoma

In those with **glaucoma**, higher intake of **lutein** protects the photoreceptors and nerve cells of the retina against cell death. The result is less progression of visual loss and **improved visual performance**.<sup>22</sup>

Studies have demonstrated that a larger dietary intake of carotenoids is associated with a lower risk of glaucoma.<sup>22</sup> In individuals already suffering from glaucoma, higher carotenoid levels in the retina consistently predict better visual performance.

Randomized controlled trials of carotenoid supplementation in patients with glaucoma demonstrate that they are effective at both boosting retinal levels of the nutrients and improving markers of visual function.<sup>23,24</sup>



Those with glaucoma should also follow conventional guidelines including taking steps to reduce intraocular pressure that slowly damages the optic nerve.

### Macular Degeneration

When blue light and ultraviolet light hit the retina, they can damage **photoreceptors**, the cells that detect light.<sup>2,25</sup> Without photoreceptors, vision is not possible.<sup>26</sup>

Exposure to **blue light** is tied to an increased risk of age-related **macular degeneration**, the leading cause of severe vision loss and **blindness** in people over 60.<sup>26</sup>

Oxidative stress and inflammation further drive the progression of macular degeneration.<sup>2</sup>

**Lutein** and **zeaxanthin** in the retina defend against macular degeneration in multiple ways. They filter out harmful wavelengths of light *and* are potent **anti-oxidants** and **anti-inflammatories**.<sup>2,4</sup>

One study conducted over more than **20 years** found that people with the **highest** intake of lutein and zeaxanthin have a remarkable **41% lower risk** of advanced **macular degeneration**.<sup>27</sup>

Taking lutein and zeaxanthin doesn't just *prevent* macular degeneration. It may also **reverse** some visual loss that has occurred.<sup>28</sup>

Clinical studies show that oral intake of these carotenoids may slow the progression of macular degeneration in those who already have early signs of disease,<sup>3,21,28-31</sup> and may also support **visual acuity** (the ability to see sharply at a given distance).<sup>28</sup>

Other studies show that taking **lutein** and **zeaxanthin** improves eye health, enhances visual function, reduces nighttime glare, and improves visual contrast.<sup>19,32-34</sup>

In one recent trial, older adults who had difficulty with **night vision** took a placebo or a blend of **zeaxanthin** and **lutein** daily for six months.<sup>35</sup> Those taking the carotenoids had significant improvements in nighttime visual functions.

### Digital Eye Strain

Threats to our eyes are all around us, from *ultraviolet rays* in sunlight to the blue light from our digital screens.

Gazing at smart phones, computers, tablets, LED televisions, and other digital screens increases exposure to **blue light**, which contributes to eye disease and vision loss.<sup>25,26,36</sup> The **LED lightbulbs** in most of our homes and workplaces also emit a high level of blue light.<sup>36</sup>

In addition to the long-term risk of **vision loss**, blue light is tied to **digital eye strain**, which causes symptoms like eye pain, dry eyes, headache, and blurred vision.<sup>37</sup>

The retina and macula are light-sensitive **eye tissues** that make vision possible. When the carotenoids lutein and zeaxanthin are orally ingested, they are taken up in these eye tissues where they help shield against harmful forms of light, including **ultraviolet** and **blue light**.<sup>2,38,39</sup>

The carotenoids **lutein** and **zeaxanthin** help shield the eyes from harmful blue light wavelengths, which can help protect against eye strain *and* vision loss.<sup>28</sup>

## Retinopathy

**Diabetic retinopathy** is another cause of poor eyesight in older adults. Carotenoids protect against this condition as well.

In patients with **diabetic retinopathy**, body levels of **lutein** and **zeaxanthin** are typically *lower* than in normal subjects. Oral intake of these carotenoids has been shown to improve **visual clarity** and **contrast** in those displaying symptoms of diabetic eye disease.<sup>40</sup>

Ensuring adequate intake of lutein and zeaxanthin is vital for eye health at any age.<sup>18</sup>

## Summary

In eye tissues, the carotenoids **lutein** and **zeaxanthin** help filter out harmful wavelengths of light that lead to vision loss.

These nutrients defend against most age-related **eye disorders** and the damage done by exposure to **blue light** from digital screens.

Studies long ago showed that *higher* intake of lutein and zeaxanthin boosts macular pigment density and *reduce* risk for **vision loss** from **macular degeneration**.

More recent data show these same carotenoids also help protect against **cataracts**, glaucoma-induced damage to the **optic nerve**, and **diabetic** eye disorders.

Evidence indicates that supplementing with carotenoids is supportive of optimal brain and cognitive function. ●

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



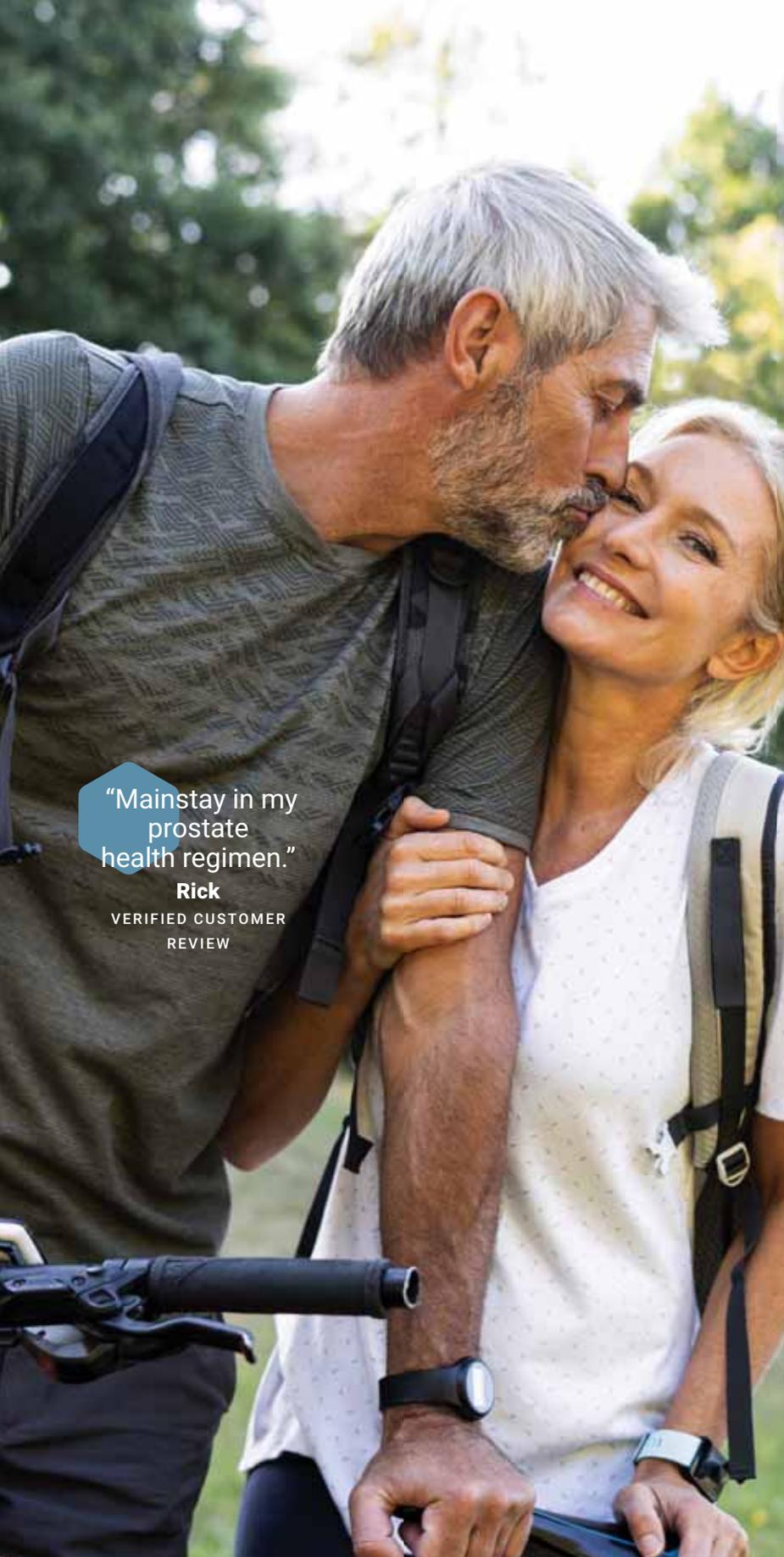
WHAT  
YOU  
NEED  
TO  
KNOW

## Shield Your Eyes with Carotenoids

- Age-related **loss of vision** is commonly caused by cataracts, age-related macular degeneration, glaucoma, and diabetes.
- Exposure to **blue light** from digital screens and LED lights can accelerate loss of vision and cause eye strain.
- The eye is capable of concentrating carotenoids, particularly **lutein** and **zeaxanthin**, in the retina and macula—its light-sensitive tissues—to shield against dangerous ultraviolet and blue light.
- Studies show that oral intake of lutein and zeaxanthin can reduce the risk and slow the progression of *all* these age-related eye conditions. These nutrients have the potential to prevent degenerative vision loss, improve visual parameters in those with age-related degenerative eye conditions, and to delay progression of these conditions and the worsening of vision associated with them.

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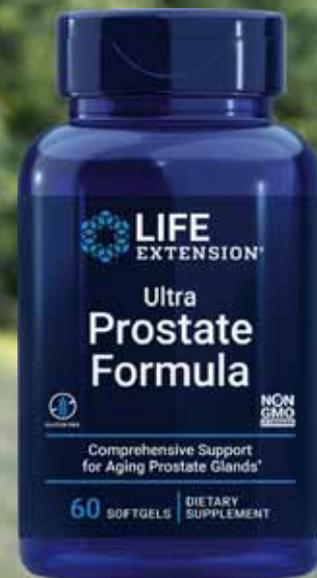
- Support healthy urination
- Promote healthy prostate function
- Support healthy prostate cell division

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**Rick**

VERIFIED CUSTOMER  
REVIEW



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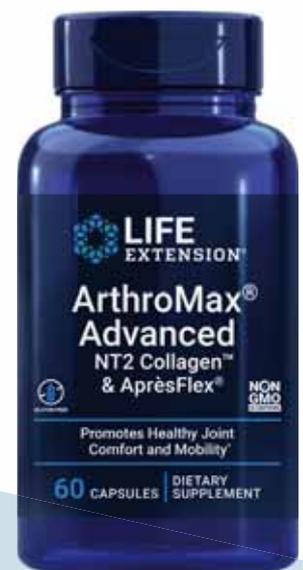
For full product description and to order **Ultra Prostate Formula**, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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# Multi-Action Support for AGING JOINTS!

Clinically validated ingredients help maintain cartilage and inhibit inflammatory factors to support joint health.



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<b>Glucosamine sulfate 2KCl</b> (derived from non-GMO corn)	<b>1,500 mg</b>
<b>AprèsFlex® Indian frankincense</b> ( <i>Boswellia serrata</i> ) extract (gum resin) [std. to 20% AKBA <sup>Δ</sup> ]	<b>100 mg</b>
<b>NT2 Collagen™</b> standardized cartilage	<b>40 mg</b>
Total Collagen	<b>10 mg</b>
<b>Boron</b> (calcium fructoborate as patented FruiteX-B® OsteoBoron®)	<b>1.5 mg</b>

NT2 Collagen™ is manufactured by Bioibérica. AprèsFlex® is a registered trademark of Laila Nutraceuticals exclusively licensed to PL Thomas - Laila NUTRA LLC. U.S. Patent No. 8,551,496 and other patents pending. FruiteX-B® and OsteoBoron® are registered trademarks of VDF FutureCeuticals, Inc. U.S. Patent No. 5,962,049.

<sup>Δ</sup> 3-O-acetyl-11-keto-B-boswellic acid.

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# Comprehensive EYE HEALTH Formula

## MacuGuard® Ocular Support provides:

- **Lutein, trans-zeaxanthin, and meso-zeaxanthin** help maintain structural integrity of the **macula** and **retina**.<sup>1-5</sup>
- **Cyanidin-3-glucoside** assists with night vision.<sup>6-8</sup>
- **Saffron** has been shown to help support **vision** as demonstrated by doctors' eye exams.<sup>1</sup>
- **Alpha-carotene** further helps support **macular density**.<sup>1</sup>



MacuGuard® Ocular Support with Saffron + Astaxanthin

**SUPER SALE PRICE**

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1 bottle **\$29.70** • 4 bottles \$27 each



MacuGuard® Ocular Support with Saffron

**SUPER SALE PRICE**

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MacuGuard® Ocular Support is available with or without astaxanthin.

For full product description and to order either of these **MacuGuard®** formulas, call **1-800-544-4440** or visit **www.LifeExtension.com**

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# Cry Out Loud

go ahead,  
shed a tear.



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

You might think tears are produced only when you're happy, sad, etc. But your body constantly makes them: tears lubricate and protect your eyes. Maqui berries (*Aristotelia chilensis*) produce compounds called **delphinidins** that encourage tear production—an up to **45%** increase in one study. So where can you get a delphinidin-rich maqui extract? **Tear Support with MaquiBright®**.

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30 vegetarian capsules

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# What Is Bromelain?

BY LAURIE MATHENA



For centuries, people have used **pineapple** for its medicinal qualities.<sup>1,2</sup>

The stem of the pineapple is rich in a compound called **bromelain**, an *enzyme* renowned for its ability to inhibit inflammation and support joint comfort.<sup>3</sup>

Research has shown that bromelain has other benefits, ranging from promoting wound healing and relieving symptoms of sinusitis, to fighting cancer.<sup>3</sup>

## Reducing Osteoarthritis Pain

In a study of patients with hip **osteoarthritis**, using a bromelain preparation for six weeks was shown to be as effective as the anti-inflammatory **drug** diclofenac in standard scales of pain, stiffness, and physical function.<sup>4</sup>

In another study, bromelain was found to be as good as diclofenac on a standard pain assessment scale, in patients with osteoarthritis of the knee joint. In some instances, it yielded better results than diclofenac in reducing pain at rest and improving restricted function.<sup>5</sup>

### Aids in Wound Healing

Due to its anti-inflammatory properties, bromelain can aid in the healing and treatment of minor injuries such as sprains, strains, and other trauma.

In an observational study of patients who had suffered blunt trauma involving muscles and bones, bromelain reduced the patients' swelling, pain at rest and in motion, and tenderness at the site of injury.<sup>6</sup>

### Cancer-Fighting Properties

Several studies suggest that bromelain may have a role as a novel anticancer therapy.

In animal models of bone, mammary gland, blood (leukemia), and lung cancer, treatment with bromelain increased survival rates, compared to untreated animals.<sup>7</sup> It also reduced the number of lung metastases, suggesting it might play an important role in fighting cancer growth.

Scientists have proposed that bromelain may work through several mechanisms, including boosting immune function, inhibiting tumor metastasis (spread to other locations), and decreasing tumor growth and invasive potential.<sup>8</sup>

### May Help Relieve Sinusitis Symptoms

Bromelain may offer some relief from sinusitis symptoms.<sup>9</sup> Rhinosinusitis, commonly known as sinusitis, is a potentially painful inflammation of the sinus cavities that can manifest with symptoms such as nasal congestion and discharge, postnasal drip, headache, cough, and sore throat.<sup>10</sup>

One older systematic review of herbal medicines reported on two randomized controlled trials which found that bromelain may be an effective adjunctive treatment in acute or chronic rhinosinusitis.<sup>11</sup>

In a clinical trial, researchers evaluated penetration of bromelain in the nasal mucosa of patients with chronic rhinosinusitis.

For the study, participants were evaluated after 30 days of bromelain administration. Bromelain was found to have better distribution in nasal mucosa than controls. The researchers concluded that this ability may allow the use of bromelain as an anti-inflammatory agent in nasal and sinus pathologies.<sup>12</sup>

### Resolves Skin Disorders

Bromelain has shown promise in treating a skin disorder called pityriasis lichenoides chronica, which is characterized by long-lasting skin lesions.

In a three-month trial of bromelain in eight pityriasis lichenoides chronica patients, all patients showed **complete clinical recovery** by the end of the trial with no adverse effects.



After 12 months of follow up, only two of these patients had relapsed, both of whom responded to another cycle of bromelain treatment.<sup>13</sup>

The immuno-modulatory function of bromelain also makes it a potential aid to eliminate burn debris and to accelerate wound healing.<sup>3</sup>

## Supplementing with Bromelain

The bromelain that has been studied and used in clinical studies comes from pineapple **stems**. Eating pineapple is not a source of bromelain with these benefits.<sup>14</sup>

This pineapple-stem bromelain is available to consumers in the form of a nutritional supplement.

Bromelain can also be used to enhance **food digestion**, since it is a digestive enzyme.

It can be combined with additional digestive enzymes, such as lipase and amylase, at mealtime. Some authorities believe bromelain's **non-digestive** therapeutic benefits are enhanced by taking it on an empty stomach, so that it doesn't expend its enzymatic properties on breaking down protein in foods.

Others use an enteric-coated bromelain tablet that bypasses digestive juices. This enables bromelain to be better absorbed into the bloodstream through the small intestine for potential systemic benefits. ●

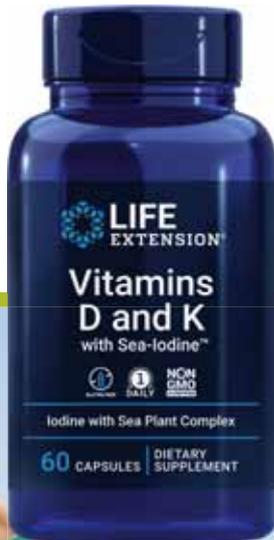
If you have any questions on the scientific content of this article, please call a **Life Extension** Wellness Specialist at 1-800-864-3027.



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**Vitamins D** and **K** as well as **Iodine** perform multiple functions for heart, bone and thyroid health.

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# HEALTHY JOINT FUNCTION

In clinical trials, **bromelain**, extracted from the stem of the **pineapple**, inhibits *inflammatory* factors to support **joint health**.<sup>1-3</sup>

Recent research suggests that bromelain may also play a role in maintaining cellular integrity along with improvements in well-being.<sup>4-6</sup>

**Specially-Coated Bromelain** is **enteric coated**, allowing it to provide systemic benefits at an affordable price.

**CAUTION:** If you are taking anticoagulant or antiplatelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product. Bromelain may increase the bioavailability of tetracycline antibiotics.

# Bromelain

**Enteric Coated for  
Effective Bioavailability**

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60 enteric-coated vegetarian tablets

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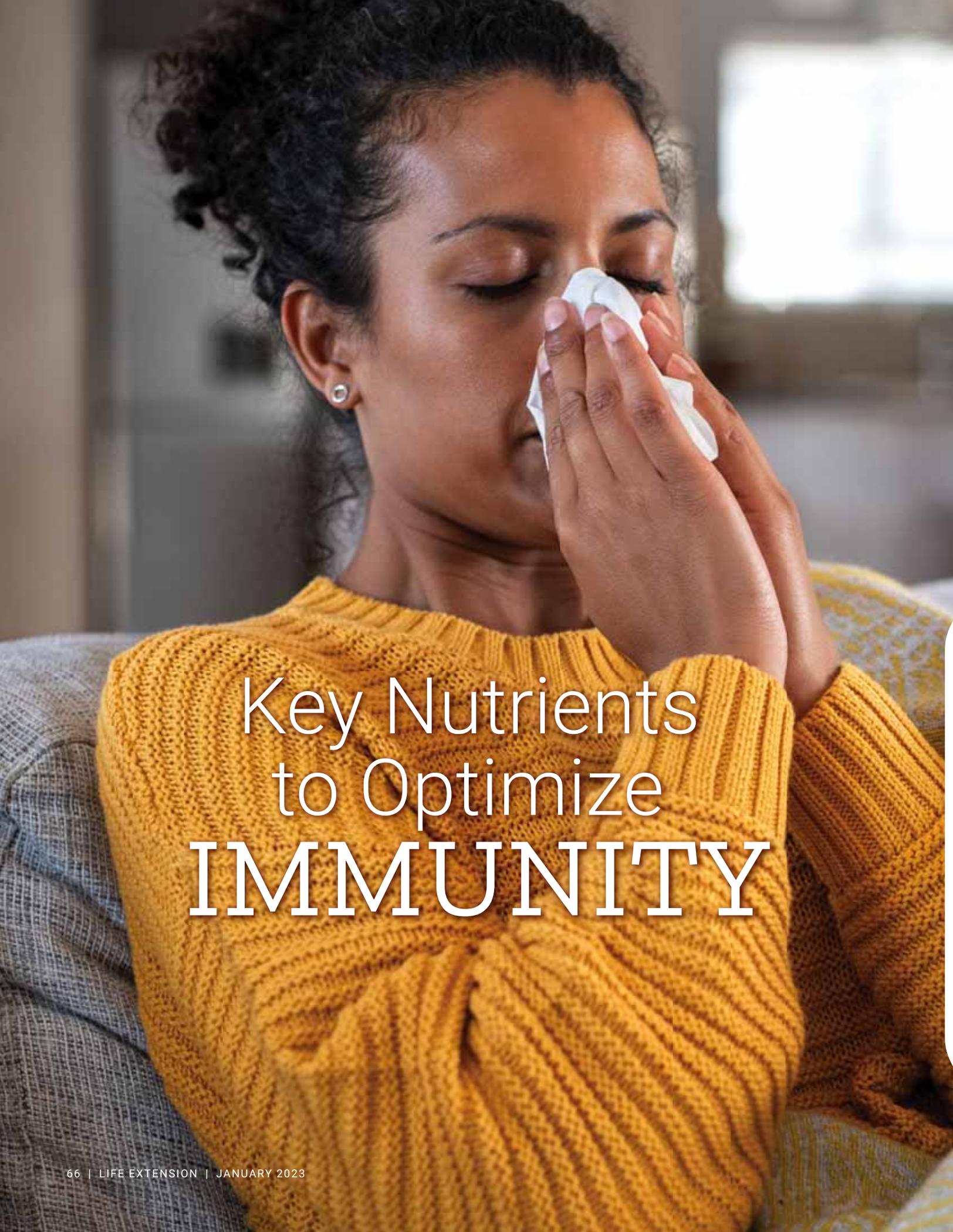
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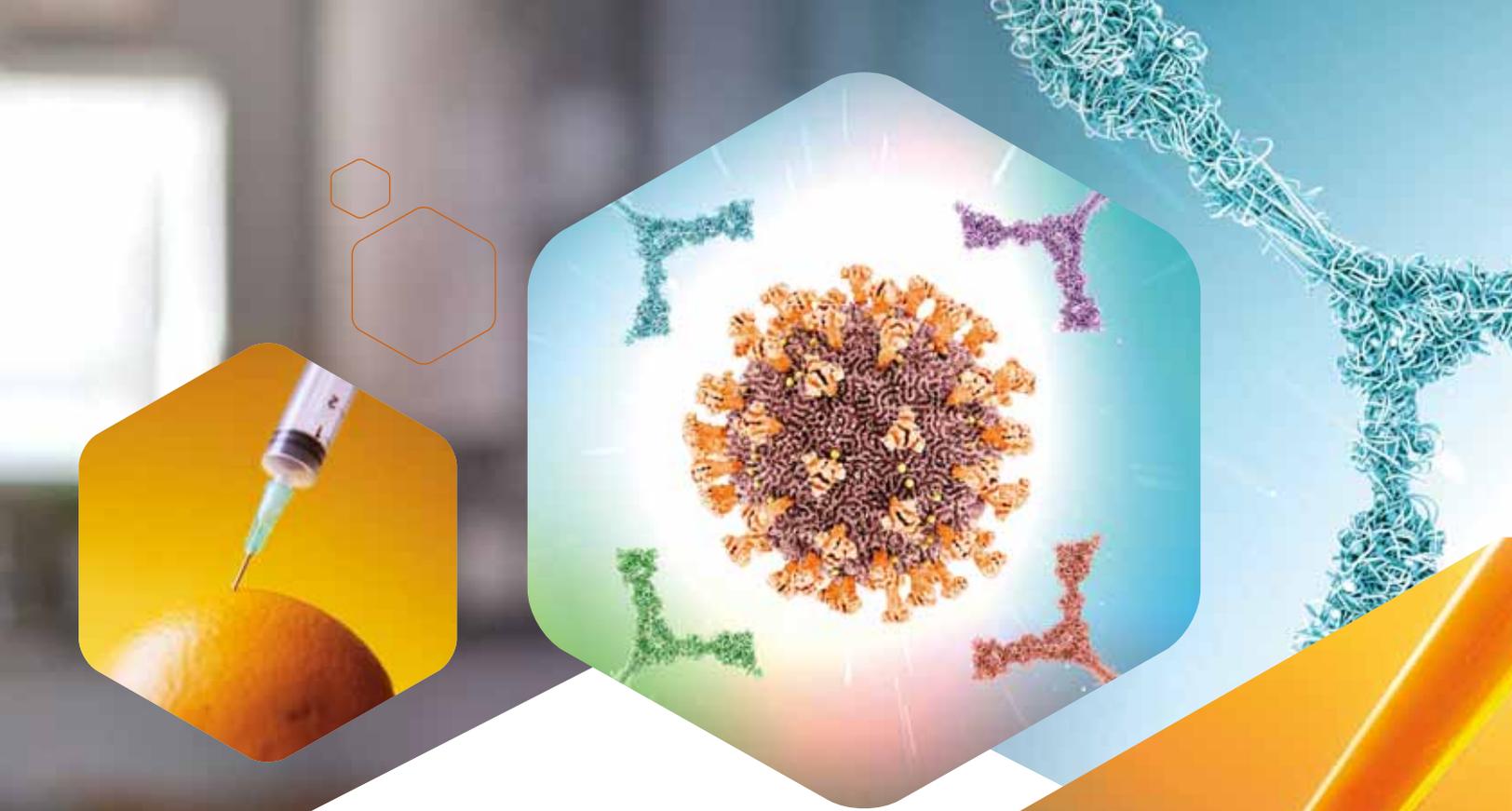
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Key Nutrients  
to Optimize  
**IMMUNITY**



BY MICHAEL DOWNEY

Aging weakens the **immune system**, increasing vulnerability to **infections**, including colds, flu, and upper respiratory viruses.<sup>1,2</sup>

Specific **nutrients** have been demonstrated to help optimize **immune functionality**.

Daily intake can help defend against infectious agents.



## Vitamin C

The association between **vitamin C** and immune health may result from its ability to stimulate the production and function of white blood cells.<sup>3,4</sup>

Scientists have found that **vitamin C**:

- Promotes development of T-cells and proliferation of natural killer cells in laboratory studies,<sup>5,6</sup>
- Increases **interferons**, signaling molecules the body uses to trigger immune responses,<sup>4</sup>
- Neutralizes excess **free radicals** caused by infections, limiting oxidative damage and illness severity, and<sup>7,8</sup>
- Helps produce **collagen**, a protein that can enable skin and the linings of respiratory/digestive tracts to maintain an anti-infection barrier.<sup>7</sup>

This evidence suggests that vitamin C may help modulate and resolve inflammation, fight infections, and promote tissue healing.

A human study showed that oral vitamin C reduces **cold duration** by an average of **9.4%**. It may also help prevent and reduce the severity of viral **respiratory tract infections**.<sup>9</sup>



## Quercetin

The plant flavonoid **quercetin** helps support a prompt immune response to common colds and other upper respiratory infections.<sup>10,11</sup>

It also provides defense against **viral** and **bacterial infections**:

- Middle-aged and older adults taking quercetin daily reduced sick days taken off for **colds** by **31%** and reduced symptom **severity** by **36%**,<sup>11</sup>
- In animal studies, quercetin decreased infection rate for *Helicobacter pylori*, the cause of many forms of **ulcers** and potentially, some **cancers** of the stomach,<sup>12,13</sup> and
- In salmonella-infected cells, quercetin inhibited infected cellular viability.<sup>14</sup> Salmonella bacteria cause roughly **26,500 hospitalizations** in the U.S. yearly and are especially dangerous in older adults.<sup>15</sup>

Humans can have difficulty absorbing quercetin.<sup>16</sup> So, scientists integrated it into a **phytosome**, a fatty substance serving as a carrier, making it up to **50 times more bioavailable** than standard quercetin.<sup>17</sup>

## Vitamin D

**Adequate vitamin D** may help lessen the severity of **infections**, or possibly even prevent them, by:<sup>18-21</sup>

- Interfering with viruses' ability to **replicate**,
- Helping repair cellular linings, including in **lung airways**,
- Boosting production of proteins that protect against **infection**, and
- Inhibiting immune system production of excess **pro-inflammatory** compounds in the lungs.

Meta-analyses of clinical trials show that vitamin D protects against **respiratory tract infections**.<sup>22,23</sup>

Taking **5,000-8,000 IU** of vitamin D daily and checking levels with annual blood tests can help maintain an optimal *25-hydroxyvitamin D* blood level of **50-80 ng/mL**.



WHAT  
YOU  
NEED  
TO  
KNOW

## Support Immune Functions

- A strong **immune system** helps prevent and fight viral and bacterial infections.
- Several nutrients can help keep the immune system working optimally.
- These nutrients support a range of mechanisms that help maintain more **youthful immunity**.

### Zinc

Zinc has benefits throughout the body, including immune support. **Deficiency** is common among the elderly.<sup>1,24,25</sup>

In a study, zinc supplementation in elderly individuals boosted an experimental test of stress resilience of **white blood cells**. The authors of this study suggest this relationship may be important for combating *immunosenescence*.<sup>26</sup>

Aging adults who replenish their zinc levels may help slow immune function decline.<sup>1</sup>

### Unique Probiotic Strain

**Secretory IgA** is an **antibody** that targets viruses and bacteria invading the mucosal membranes lining the nose and upper respiratory tract.

Healthy IgA activity can *prevent cold and flu* viruses from gaining a foothold.<sup>28</sup>

Scientists investigating **probiotics** identified a specific bacterial strain, ***Lactobacillus rhamnosus* CRL1505**, that significantly *increased* levels of **secretory IgA** in a preclinical model.<sup>27</sup>

***L. rhamnosus* CRL1505** has been shown in pre-clinical studies to help inhibit the pathogens that cause common colds, flu, bronchitis, and pneumonia.<sup>27,29</sup>

A trial of healthy male and female children found that, compared to placebo, consuming **100 million CFU** (colony-forming units) of ***L. rhamnosus* CRL1505** five days weekly for six months resulted in:<sup>30</sup>

- **61% fewer** cases of **tonsillitis** and **pharyngitis** (a throat infection),
- **55% fewer** cases of **cold or flu**,
- **49% fewer infections**,
- **46% fewer** cases of **fever**, and
- **33% less** need for **antibiotic** use.

These children were aged two to five, a group particularly susceptible to **respiratory infections**.<sup>30</sup>

### Yeast Fermentate

***S. cerevisiae* fermentate** is a special **yeast** culture extract that improves the immune response to environmental allergens and colds, as shown in controlled **human studies**.<sup>31-35</sup>

In one trial, volunteers took a placebo or **500 mg** of ***S. cerevisiae* fermentate** daily for five weeks at the start of allergy season. Placebo users saw no change in seasonal allergies. But **half** of the treated men reported a **complete absence of allergy symptoms**, which returned within two weeks after they stopped treatment.<sup>31</sup>

Another study found those receiving the extract had significantly fewer symptoms and a shorter duration of symptoms.<sup>35</sup>

A later study found that those receiving the yeast extract had significantly less incidence of colds or flu-like symptoms, and some reduction in duration of symptoms.<sup>34</sup>

Studies suggest that *S. cerevisiae* fermentate works by promoting two key immunity defenses: **natural killer cell** activity and **secretory IgA** production.<sup>31,32</sup>

## Summary

**Immune function** declines with age, increasing the risk of infection.

Taken daily, certain nutrients support healthier immune functionality.

These include **vitamin C**, **quercetin**, **vitamin D**, **zinc**, the probiotic ***Lactobacillus rhamnosus* CRL1505**, and ***S. cerevisiae* fermentate**. •

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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# Increase **AMPK** to Better Manage Body Weight

Most people today consume excess calories.

This results in **mTOR** constantly running at high gear, which is a factor in unwanted **fat storage**.

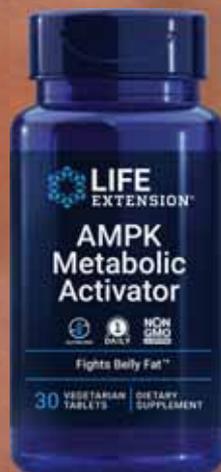
Studies show that increasing AMPK activity turns down excess **mTOR**.<sup>1</sup>

## Reduce Cell Fat Storage

Scientific studies show that increasing AMPK activity can encourage cells to store less fat and burn it as energy.<sup>2,3</sup>

**AMPK Metabolic Activator** was formulated based on data showing reduced belly fat in response to just one of its ingredients (*Gynostemma pentaphyllum*).<sup>3</sup>

This *Gynostemma pentaphyllum* + *hesperidin* formula is designed to support healthy **AMPK** cellular activation.



### SUPER SALE PRICE

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1 bottle **\$25.65** • 4 bottles \$21.60 each

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1. *Anticancer Agents Med Chem.* 2013 Sep;13(7):967-70.
2. *Nutr J.* 2016;15:6.
3. *Obesity (Silver Spring).* 2014;22(1):63-71.

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



This supplement should be taken in conjunction with a healthy diet and regular exercise program. Individual results are not guaranteed, and results may vary.

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- **Zinc 50 mg:** promotes normal development of NK cells.<sup>2</sup>
- **Probiotic *L rhamnosus* CRL1505 and *S. cerevisiae* fermentate:** promotes secretory IgA antibodies.<sup>3-5</sup>

Take one pack **daily** to help promote a healthy, balanced, year-round immune response.

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5. *Adv Ther*. 2009 Aug;26(8):795-804.



**SUPER SALE PRICE**

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This **5 mg** potency exceeds the **L-ergothioneine** contained in 2 cups of white button mushrooms, depending on growing conditions.<sup>4,5</sup>

#### References

1. *Cell Death Differ.* 2010 Jul;17(7):1134-40.
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4. *FEBS Lett.* 2018 Oct;592(20):3357-66.
5. *Food Chem.* 2017 Oct 15;233:429-33.



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# Swiss Chard

BY LAURIE MATHENA



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7. *J Natl Cancer Inst.* 2004 Nov 3;96(21):1577-84.
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This leafy green goes by many names—white beet, spinach beet, and Roman beet, to name a few.<sup>1</sup> But whatever you may call it, **Swiss chard** is a *nutrient-dense* superfood.

It is a good source of dietary fiber and contains nutrients like magnesium, calcium, and potassium.<sup>2</sup>

Swiss chard also contains vitamin K1, a nutrient important for heart and bone health.<sup>3</sup>

One study showed that boosting the consumption of leafy green vegetables rich in vitamin K improved markers of bone health, suggesting an improved function of osteoclasts, cells responsible for the formation of new bone.<sup>4</sup>

This could explain why several studies have shown that vitamin K can increase **bone mineral density** in people with osteoporosis while also reducing the rates of **fractures**.<sup>3</sup>

Higher intake of vitamin K-rich foods has been linked to a reduced risk of heart disease.<sup>5</sup>

In a review paper, the authors presented evidence that intake of leafy green vegetables is associated with cardiovascular health benefits.<sup>6</sup>

One study showed that each one-serving increment of leafy green vegetables like Swiss chard was linked to an **11%** reduction in **cardiovascular disease** risk.<sup>7</sup>

High-fiber foods like Swiss chard also have the added benefit of stabilizing blood sugar levels and modulating insulin resistance. This could explain why eating fiber-rich food is linked to a reduced risk of type II diabetes.<sup>8</sup>

Leafy greens like Swiss chard are packed with disease-fighting phytochemicals. You can include more Swiss chard in your diet by adding it to soups and stews, tossing it into a smoothie, sauteing it in olive oil, or adding it to a salad.

Due to its vitamin K content, be sure to talk to your healthcare provider about including it in your diet if you take the anti-coagulant drug **warfarin**. Sudden changes in vitamin K consumption can interfere with this medication.

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- 01700 Cardio Peak™
- 02121 Homocysteine Resist
- 02018 Optimized Carnitine
- 01949 Super-Absorbable CoQ10 Ubiquinone with *d*-Limonene • 50 mg, 60 softgels
- 01951 Super-Absorbable CoQ10 Ubiquinone with *d*-Limonene • 100 mg, 60 softgels
- 01929 Super Ubiquinol CoQ10
- 01427 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 30 softgels
- 01425 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 100 softgels
- 01437 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 30 softgels
- 01426 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 60 softgels
- 01431 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 200 mg, 30 softgels
- 01733 Super Ubiquinol CoQ10 with PQQ
- 01859 TMG Liquid Capsules
- 00349 TMG Powder

**HORMONE BALANCE**

- 00454 DHEA • 15 mg, 100 capsules
- 00335 DHEA • 25 mg, 100 capsules
- 00882 DHEA • 50 mg, 60 capsules
- 00607 DHEA • 25 mg, 100 vegetarian dissolve in mouth tablets
- 01689 DHEA • 100 mg, 60 veg capsules
- 02368 Optimized Broccoli and Cruciferous Blend
- 00302 Pregnenolone • 50 mg, 100 capsules
- 00700 Pregnenolone • 100 mg, 100 capsules
- 01468 Triple Action Cruciferous Vegetable Extract
- 01469 Triple Action Cruciferous Vegetable Extract and Resveratrol

**IMMUNE SUPPORT**

- 02411 5 Day Elderberry Immune
- 00681 AHCC®
- 02302 Bio-Quercetin
- 02410 Black Elderberry + Vitamin C
- 02433 Echinacea Elite
- 01961 Enhanced Zinc Lozenges
- 01704 Immune Modulator with Tinofend®
- 02425 Immune Packs with Vitamin C & D, Zinc and Probiotic
- 02005 Immune Senescence Protection Formula™

- 00316 Kyolic® Garlic Formula 102
- 00789 Kyolic® Reserve
- 01681 Lactoferrin (Apolactoferrin) Caps
- 02426 Mushroom Immune with Beta Glucans
- 01903 NK Cell Activator™
- 01394 Optimized Garlic
- 01309 Optimized Quercetin
- 01811 Peony Immune
- 00525 ProBoost Thymic Protein A
- 01708 Reishi Extract Mushroom Complex
- 01906 Standardized Cistanche
- 13685 Ten Mushroom Formula®
- 01097 Ultra Soy Extract
- 01561 Zinc Lozenges

**INFLAMMATION MANAGEMENT**

- 01639 5-LOX Inhibitor with AprèsFlex®
- 02324 Advanced Curcumin Elite™  
Turmeric Extract, Ginger & Turmerones
- 01709 Black Cumin Seed Oil
- 02310 Black Cumin Seed Oil and Curcumin Elite™
- 00202 Boswellia
- 02467 Curcumin Elite™ Turmeric Extract • 30 veg capsules
- 02407 Curcumin Elite™ Turmeric Extract • 60 veg capsules
- 01804 Cytokine Suppress® with EGCG
- 02223 Pro-Resolving Mediators
- 56886 Restore Activ Joint Muscle & Tissue
- 00318 Serrafazyme
- 01203 Specially-Coated Bromelain
- 00407 Super Bio-Curcumin® Turmeric Extract
- 01254 Zyflamend™ Whole Body

**JOINT SUPPORT**

- 02404 Arthro-Immune Joint Support
- 02238 ArthroMax® Advanced NT2 Collagen™ & AprèsFlex®
- 01617 ArthroMax® with Theaflavins & AprèsFlex®
- 02138 ArthroMax® Elite
- 00965 Fast-Acting Joint Formula
- 02430 Fast Acting Relief
- 00522 Glucosamine/Chondroitin Capsules
- 02420 Glucosamine Sulfate
- 02424 Joint Mobility
- 01600 Krill Healthy Joint Formula
- 01050 Krill Oil
- 00451 MSM (Methylsulfonylmethane)
- 02231 NT2 Collagen™

**KIDNEY & BLADDER SUPPORT**

- 00862 Cran-Max® Cranberry Whole Fruit Concentrate
- 01921 Uric Acid Control
- 01209 Water-Soluble Pumpkin Seed Extract

**LIVER HEALTH & DETOXIFICATION**

- 01922 Advanced Milk Thistle • 60 softgels
- 01925 Advanced Milk Thistle • 120 softgels
- 02240 Anti-Alcohol Complex
- 01651 Calcium D-Glucarate
- 01571 Chlorophyllin
- 01522 Milk Thistle • 60 veg capsules
- 02402 FLORASSIST® Liver Restore™
- 01541 Glutathione, Cysteine & C
- 01393 HepatoPro
- 01608 Liver Efficiency Formula
- 01534 N-Acetyl-L-Cysteine
- 00342 PectaSol-C® Modified Citrus Pectin Powder
- 01080 PectaSol-C® Modified Citrus Pectin Capsules
- 01884 Silymarin
- 02361 SOD Booster

**LONGEVITY & WELLNESS**

- 00457 Alpha-Lipoic Acid
- 01625 AppleWise
- 02414 Bio-Fisetin
- 01214 Blueberry Extract
- 01438 Blueberry Extract and Pomegranate
- 02270 DNA Protection Formula
- 02431 Essential Youth - L-Ergothioneine
- 02119 GEROPROTECT® Ageless Cell™
- 02415 GEROPROTECT® Autophagy Renew
- 02401 GEROPROTECT® Stem Cell
- 02211 Grapeseed Extract
- 00954 Mega Green Tea Extract (decaffeinated)
- 00953 Mega Green Tea Extract (lightly caffeinated)
- 01513 Optimized Fucoidan with Maritech® 926
- 02230 Optimized Resveratrol Elite™
- 01637 Pycnogenol® French Maritime Pine Bark Extract
- 02210 Resveratrol Elite™
- 00070 RNA (Ribonucleic Acid)
- 02301 Senolytic Activator®
- 01208 Super R-Lipoic Acid
- 01919 X-R Shield

**MEN'S HEALTH**

- 02209 Male Vascular Sexual Support
- 00455 Mega Lycopene Extract
- 02306 Men's Bladder Control
- 01789 PalmettoGuard® Saw Palmetto and Beta-Sitosterol
- 01790 PalmettoGuard® Saw Palmetto/Nettle Root Formula and Beta-Sitosterol
- 01837 Pomi-T®
- 01373 Prelox® Enhanced Sex for Men
- 01940 Super MiraForte with Standardized Lignans
- 02500 Testosterone Elite
- 01909 Triple Strength ProstaPollen™
- 02029 Ultra Prostate Formula

**MINERALS**

- 01661 Boron
- 02107 Extend-Release Magnesium
- 01677 Iron Protein Plus
- 02403 Lithium
- 01459 Magnesium Caps
- 01682 Magnesium (Citrate)
- 01328 OnlyTrace Minerals
- 01504 Optimized Chromium with Crominex® 3+
- 02309 Potassium with Extend-Release Magnesium
- 01740 Sea-Iodine™
- 01879 Se-Methyl L-Selenocysteine
- 01778 Super Selenium Complex
- 00213 Vanadyl Sulfate
- 01813 Zinc Caps

**MISCELLANEOUS**

- 00577 Potassium Iodide
- 00657 Solarshield® Sunglasses

**MOOD & STRESS MANAGEMENT**

- 02434 Calm-Mag
- 02312 Cortisol-Stress Balance
- 00987 Enhanced Stress Relief
- 01074 5 HTP
- 01683 L-Theanine
- 02175 SAmE (S-Adenosyl-Methionine)  
200 mg, 30 enteric coated vegetarian tablets
- 02176 SAmE (S-Adenosyl-Methionine)  
400 mg, 30 enteric coated vegetarian tablets
- 02174 SAmE (S-Adenosyl-Methionine)  
400 mg, 60 enteric coated vegetarian tablets
- 02429 Theanine XR™ Stress Relief

**MULTIVITAMINS**

- 02199 Children's Formula Life Extension Mix™
- 02354 Life Extension Mix™ Capsules
- 02364 Life Extension Mix™ Capsules without Copper
- 02356 Life Extension Mix™ Powder
- 02355 Life Extension Mix™ Tablets
- 02357 Life Extension Mix™ Tablets with Extra Niacin
- 02365 Life Extension Mix™ Tablets without Copper
- 02292 Once-Daily Health Booster • 30 softgels
- 02291 Once-Daily Health Booster • 60 softgels
- 02313 One-Per-Day Tablets
- 02428 Plant-Based Multivitamin
- 02317 Two-Per-Day Capsules • 60 capsules
- 02314 Two-Per-Day Capsules • 120 capsules
- 02316 Two-Per-Day Tablets • 60 tablets
- 02315 Two-Per-Day Tablets • 120 tablets

**NERVE & COMFORT SUPPORT**

- 02202 ComfortMAX™
- 02303 Discomfort Relief

**PERSONAL CARE**

- 01006 Biosil™ • 30 veg capsules
- 01007 Biosil™ • 1 fl oz
- 00321 Dr. Proctor's Advanced Hair Formula
- 00320 Dr. Proctor's Shampoo
- 02322 Hair, Skin & Nails Collagen Plus Formula
- 01278 Life Extension Toothpaste
- 00408 Venotone
- 00409 Xyliwhite Mouthwash
- 02304C Youthful Collagen
- 02252 Youthful Legs

**PET CARE**

- 01932 Cat Mix
- 01931 Dog Mix

**PROBIOTICS**

- 01622 Bifido GI Balance
- 01825 FLORASSIST® Balance
- 02421 FLORASSIST® Daily Bowel Regularity
- 02125 FLORASSIST® GI with Phage Technology
- 01821 FLORASSIST® Heart Health
- 02250 FLORASSIST® Mood Improve
- 02208 FLORASSIST® Immune & Nasal Defense
- 02120 FLORASSIST® Oral Hygiene
- 02203 FLORASSIST® Prebiotic
- 02505 FLORASSIST® Probiotic Women's Health
- 01920 FLORASSIST® Throat Health
- 52142 Jarro-Dophilus® for Women
- 00056 Jarro-Dophilus EPS® • 60 veg capsules
- 21201 Jarro-Dophilus EPS® • 120 veg capsules
- 01038 Theralac® Probiotics
- 01389 TruFlora® Probiotics

**SKIN CARE**

- 80157 Advanced Anti-Glycation Peptide Serum
- 80165 Advanced Growth Factor Serum
- 80170 Advanced Hyaluronic Acid Serum
- 80154 Advanced Lightening Cream
- 80155 Advanced Peptide Hand Therapy
- 80175 Advanced Probiotic-Fermented Eye Serum
- 80177 Advanced Retinol Serum
- 80152 Advanced Triple Peptide Serum
- 80140 Advanced Under Eye Serum with Stem Cells
- 80137 All-Purpose Soothing Relief Cream
- 80139 Amber Self MicroDermAbrasion
- 80118 Anti-Aging Mask
- 80151 Anti-Aging Rejuvenating Face Cream

- 80153 Anti-Aging Rejuvenating Scalp Serum
- 80179 Brightening Peptide Serum
- 80176 Collagen Boosting Peptide Cream
- 80156 Collagen Boosting Peptide Serum
- 02408 Collagen Peptides for Skin & Joints
- 80180 CoQ10 and Stem Cell Rejuvenation Cream
- 80169 Cucumber Hydra Peptide Eye Cream
- 02423 Daily Skin Defense
- 80141 DNA Support Cream
- 80163 Eye Lift Cream
- 80123 Face Rejuvenating Anti-Oxidant Cream
- 80109 Hyaluronic Facial Moisturizer
- 80110 Hyaluronic Oil-Free Facial Moisturizer
- 80138 Hydrating Anti-Oxidant Facial Mist
- 00661 Hydroderm
- 55495 Instensive Moisturizing Cream
- 80103 Lifting & Tightening Complex
- 80168 Melatonin Advanced Peptide Cream
- 80114 Mild Facial Cleanser
- 80172 Multi Stem Cell Hydration Cream
- 80159 Multi Stem Cell Skin Tightening Complex
- 80122 Neck Rejuvenating Anti-Oxidant Cream
- 80174 Purifying Facial Mask
- 80150 Renewing Eye Cream
- 80142 Resveratrol Anti-Oxidant Serum
- 01938 Shade Factor™
- 02129 Skin Care Collection Anti-Aging Serum
- 02130 Skin Care Collection Day Cream
- 02131 Skin Care Collection Night Cream
- 80166 Skin Firming Complex
- 02096 Skin Restoring Ceramides
- 80130 Skin Stem Cell Serum
- 80164 Skin Tone Equalizer
- 80143 Stem Cell Cream with Alpine Rose
- 80148 Tightening & Firming Neck Cream
- 80161 Triple-Action Vitamin C Cream
- 80162 Ultimate MicroDermabrasion
- 80173 Ultimate Peptide Serum
- 80178 Ultimate Telomere Cream
- 80160 Ultra Eyelash Booster
- 80101 Ultra Wrinkle Relaxer
- 80113 Under Eye Refining Serum
- 80104 Under Eye Rescue Cream
- 80171 Vitamin C Lip Rejuvenator
- 80129 Vitamin C Serum
- 80136 Vitamin D Lotion
- 80102 Vitamin K Cream

**SLEEP**

- 01512 Bioactive Milk Peptides
- 02300 Circadian Sleep
- 01551 Enhanced Sleep with Melatonin
- 01511 Enhanced Sleep without Melatonin
- 02234 Fast-Acting Liquid Melatonin
- 01669 Glycine
- 02308 Herbal Sleep PM
- 01722 L-Tryptophan
- 01668 Melatonin • 300 mcg, 100 veg capsules
- 01083 Melatonin • 500 mcg, 200 veg capsules
- 00329 Melatonin • 1 mg, 60 capsules
- 02503 Melatonin • 3 mg, 60 gummies
- 00330 Melatonin • 3 mg, 60 veg capsules
- 00331 Melatonin • 10 mg, 60 veg capsules
- 00332 Melatonin • 3 mg, 60 veg lozenges
- 02201 Melatonin IR/XR
- 01787 Melatonin 6 Hour Timed Release  
300 mcg, 100 veg tablets

- 01788 Melatonin 6 Hour Timed Release  
750 mcg, 60 veg tablets
- 01786 Melatonin 6 Hour Timed Release • 3 mg, 60 veg tablets
- 01721 Optimized Tryptophan Plus
- 01444 Quiet Sleep Melatonin • 3 mg, 60 veg capsules
- 01445 Quiet Sleep Melatonin • 5 mg, 60 veg capsules
- 02502 Rest & Renew

**VITAMINS**

- 01533 Ascorbyl Palmitate
- 00920 Benfotiamine with Thiamine
- 00664 Beta-Carotene
- 01945 BioActive Complete B-Complex
- 00102 Biotin
- 00084 Buffered Vitamin C Powder
- 02229 Fast-C® and Bio-Quercetin Phytosome
- 02075 Gamma E Mixed Tocopherol Enhanced with  
Sesame Lignans
- 02070 Gamma E Mixed Tocopherol & Tocotrienols
- 01913 High Potency Optimized Folate
- 01674 Inositol Caps
- 02244 Liquid Vitamin D3 • 50 mcg (2000 IU)
- 02232 Liquid Vitamin D3 (Mint) • 50 mcg (2000 IU)
- 01936 Low-Dose Vitamin K2
- 00065 MK-7
- 00373 No Flush Niacin
- 01939 Optimized Folate (L-Methylfolate)
- 01217 Pyridoxal 5'-Phosphate Caps
- 01400 Super Absorbable Tocotrienols
- 02334 Super K
- 01863 Super Vitamin E
- 02422 Vegan Vitamin D3
- 02028 Vitamin B5 (Pantothenic Acid)
- 01535 Vitamin B6
- 00361 Vitamin B12 Methylcobalamin
- 01536 Vitamin B12 Methylcobalamin • 1 mg, 60 veg lozenges
- 01537 Vitamin B12 Methylcobalamin • 5 mg, 60 veg lozenges
- 02228 Vitamin C and Bio-Quercetin Phytosome • 60 veg tablets
- 02227 Vitamin C and Bio-Quercetin Phytosome • 250 veg tablets
- 01753 Vitamin D3 • 25 mcg (1000 IU), 90 softgels
- 01751 Vitamin D3 • 25 mcg (1000 IU), 250 softgels
- 01713 Vitamin D3 • 125 mcg (5000 IU), 60 softgels
- 01718 Vitamin D3 • 175 mcg (7000 IU), 60 softgels
- 01758 Vitamin D3 with Sea-Iodine™
- 02040 Vitamins D and K with Sea-Iodine™

**WEIGHT MANAGEMENT & BODY COMPOSITION**

- 02479 7-Keto® DHEA Metabolite • 100 mg, 60 veg capsules
- 02207 AMPK Metabolic Activator
- 02504 Body Trim and Appetite Control
- 02478 DHEA Complete
- 01738 Garcinia HCA
- 02506 Mediterranean Weight Management
- 01432 Optimized Saffron
- 00818 Super CLA Blend with Sesame Lignans
- 02509 Waistline Control™

**WOMEN'S HEALTH**

- 01942 Breast Health Formula
- 01626 Enhanced Sex for Women 50+
- 01894 Estrogen for Women
- 01064 Femmenessence MacaPause®
- 02204 Menopause 731™
- 02319 Prenatal Advantage
- 01649 Super-Absorbable Soy Isoflavones
- 02507 Youthful Woman 40+ with B-Complex

"Great product,  
works well."

Lloyd  
VERIFIED CUSTOMER  
REVIEW

Share a Longer Life



Selenium promotes the body's production of **glutathione**, a potent cellular antioxidant. It also encourages healthy cell division, thyroid health, and immune function.

**Super Selenium Complex** combines three complementary forms of selenium with vitamin E for additional antioxidant protection.

**SUPER SALE PRICE**

Item #01778 • 100 vegetarian capsules

1 bottle **\$9.45** • 4 bottles \$8.10 each

Each bottle provides a supply that lasts more than three months.

For full product description and to order **Super Selenium Complex**, 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.

"Covers all the bases."

**Brian**  
VERIFIED  
CUSTOMER  
REVIEW



### Compared to Centrum® 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

8 times the VITAMIN C

3 times the VITAMIN E

2.5 times the VITAMIN B3

2 times the VITAMIN D

2 times the ZINC



More Nutrients *Higher Potencies*

# LIFE EXTENSION® TWO-PER-DAY MULTIVITAMIN

### Two-Per-Day Multivitamin Tablets

**SUPER SALE PRICE**

Item #02315 • 120 tablets (two-month supply)  
1 bottle \$16.54 • 4 bottles \$13.95 each

### Two-Per-Day Multivitamin Capsules

**SUPER SALE PRICE**

Item #02314 • 120 capsules (two-month supply)  
1 bottle \$17.21 • 4 bottles \$15.30 each

Each bottle provides a two-month supply.

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



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L-OptiZinc® is a Lonza trademark, registered in the USA.

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



The Science of a Healthier Life®

PO BOX 407198  
FORT LAUDERDALE, FLORIDA 33340-7198



## WHAT'S NEW THIS MONTH...



### 7 DELIVER MORE NUTRIENTS

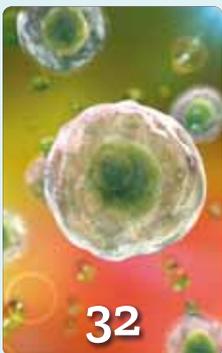
**Plant extracts** are now more **bioavailable**, enabling consumers to garner greater systemic effects.

### 22 RESTORE YOUTHFUL FREE TESTOSTERONE

A blend of **pomegranate** and **cacao extracts** *increases free testosterone* to help reverse its age-related decline.

### 32 ROLE OF COQ10 IN AGING

**CoQ10** improves **cellular energy** while reducing factors that contribute to degenerative aging.



### 42 BANISH BRAIN FOG

Two nutrients have been **clinically validated** to *reduce brain fog* and *increase* mental energy, focus, and attention.

### 50 CATARACTS AND GLAUCOMA

Research findings reveal how **lutein** and **zeaxanthin** help protect against **cataracts**, **optic nerve** damage, and other **vision disorders**.



### 59 WHAT IS BROMELAIN?

**Bromelain** has been shown to inhibit inflammation and support joint comfort. Systemic *absorption* enhances beneficial potential.

**SuperSale** IS ON!

VISIT US ONLINE AT [LIFEEXTENSION.COM](http://LIFEEXTENSION.COM)