



The Science of a Healthier Life®

JULY/AUGUST 2022

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Women OVER 40 Restore Youthful Energy

PLUS:

Sweet Dreams, Indeed!
A New Way to Enjoy
Melatonin





"I feel much more
mentally clear."

Judith

VERIFIED CUSTOMER REVIEW

NEURO-MAG[®]

THE SMART MAGNESIUM

SUPPORTS OVERALL
COGNITIVE ABILITY*



With age, **synapses** that connect
our brain cells decline.

Formulated by **MIT** scientists,
Neuro-Mag Magnesium L-Threonate has
been shown to promote **synaptic density** and
other structural components of the brain.



Item #01603

90 vegetarian capsules



Item #02032

93.35 grams of powder

These products are available at fine health food stores everywhere.

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

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.



Phages target bad intestinal bacteria, allowing beneficial strains to flourish.

FLORASSIST® GI provides a 7-strain blend of **probiotics** in a **dual encapsulation** formula to deliver beneficial bacteria and **phages** where you need them the most.



Dual-Encapsulation Delivery



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"I feel better about my immune system with it."

Mary

VERIFIED CUSTOMER REVIEW



Liposomal-Hydrogel

C

VITAMIN

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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 regular vitamin C.

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

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

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TARGETED SLIMMING FOR WAIST AND HIPS

In a clinical trial, a proprietary blend of ***Sphaeranthus indicus*** flower and **mangosteen** extracts combined with a standard diet and regular exercise for 8 weeks enabled average reductions in:*

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- **Waist** size by **4.7 inches**
- **Hip** size by **2.5 inches**

Waistline Control™ contains this patented blend of extracts.

The dose used in **human** studies is one capsule, twice daily before meals.

* J Med Food. 2013 Jun;16(6):529-37.

This supplement should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.



Item #02509

60 vegetarian capsules

This product is available
at fine health food stores
everywhere.



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Regain Your *Youthful Energy*

Energize every cell in your body with
carnosine, R-lipoic acid, benfotiamine,
taurine, PQQ, and more.



This product is available at
fine health food stores everywhere.

Item #01868

120 capsules



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.

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Feel better— faster!

Occasional discomfort getting you down? Reach for our Fast Acting Relief formula. This clinically studied combo quickly promotes comfort in muscle tissue, bones, joints, ligaments and beyond.



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In the News

Astaxanthin has Beneficial Effects on Glucose Metabolism

The journal *Nutrients* published the results of a randomized, placebo-controlled trial in which 53 participants with prediabetes took **12 mg** of astaxanthin once daily or a placebo for 12 weeks.*

This study used a two-hour oral glucose tolerance test as a way of measuring *after-meal* sugar spikes.

The researchers found that **glucose** blood levels significantly **decreased** in these study subjects compared to what they were before **astaxanthin** supplementation.

Various markers of glucose metabolism, such as A1c, Apo E, and malondialdehyde-modified low-density lipoprotein, were beneficially reduced. The Matsuda index (a parameter of insulin resistance) also improved after supplementation with **astaxanthin**.

Editor's Note: "Our results suggest that oral astaxanthin may have preventive effects against diabetes and atherosclerosis and may be a novel complementary treatment option for the prevention of diabetes in healthy volunteers, including subjects with prediabetes, without adverse effects," the authors concluded.

* *Nutrients*. 2021 Dec 07; 13(12), 4381.





Exercise Helps Protect Against Bone-Related Illnesses

A study published in *Nature Regenerative Medicine* reported that exercise could help protect against bone cancer and other bone-related illnesses.*

Using innovative technology to recreate the strain that bone cells experience during exercise, researchers found that a single exercise session caused bone cells to activate DNA repair, the cell cycle, and the P53 gene (a gene that suppresses tumors and fights cancer).

Exercise also started *ossification*, a process that helps build new bone and strengthen existing bone.

Editor's Note: "Individuals with chronic diseases like osteoporosis or cancer can benefit from exercise...since this limits the amount of bone loss and improves survival rates, respectively," the authors stated.

* *npj Regen Med*, 2021; 6, 32.

Long-Term Omega-3 Supplementation May Reduce Risk for Alzheimer's Disease

Use of omega-3 fatty acids over a longer term was associated with a reduced likelihood of developing late-onset Alzheimer's disease among individuals with a genetic variant associated with increased risk, an article in the *European Journal of Neurology* reported.*

Researchers analyzed data from 1,670 individuals who did not have dementia upon enrollment in the Alzheimer's Disease Neuroimaging Initiative cohort.

Forty-one percent of the participants in the study were carriers of the APOE4 variant of the APOE gene, which is the strongest genetic determinant of late-onset Alzheimer's disease. Participants were followed for up to 10 years, during which progression from normal cognition or mild cognitive impairment to Alzheimer's dementia was tracked.

Ten years or more duration of **omega-3** use was associated with preserved cognition, as well as a reduction in cerebral amyloid and Alzheimer's disease risk, among APOE4 carriers.

Editor's Note: The authors concluded that, "These findings also indicated that genetic risk factors of Alzheimer's disease could be modified, and their adverse effects can be attenuated and even neutralized by long-term omega-3 supplementation."

* *Eur J Neurol*. 2022 Feb;29(2):422-31.



Calorie Restriction Can Positively Affect Immune Health

Research reported in the journal *Science* explored the relationship of consuming fewer calories to human immune response and inflammation.*

The thymus gland produces immune cells known as T cells. However, the gland accumulates fat and produces fewer of these cells during aging, contributing to a decline in immune function.

Magnetic resonance imaging of the thymus glands of participants in a calorie restriction study revealed less thymus fat and a greater ability to generate T cells in healthy people who restricted calories by about **14%** for two years. Those who didn't restrict their calories experienced no change.

Although no alterations in gene expression were observed in the T cells of calorie-restricted individuals, changes were detected in fat tissue. Expression of the gene that encodes PLA2G7, a protein involved in a mechanism of inflammation, was inhibited by calorie restriction.

Editor's Note: "Moderately decreased food intake that does not cause malnutrition (caloric restriction) has beneficial effects on healthspan and lifespan in model organisms," the authors stated.

* *Science*. 2022 Feb 11;375(6581):671-677.





Curcumin Can Help People with Diabetic Kidney Disease

Diabetic kidney disease is a common microvascular complication of diabetes.

A study published in the journal *Evidence-Based Complementary and Alternative Medicine* reported an **improvement** in response to **curcumin** supplementation.*

People with kidney disease have a *higher* risk for cardiovascular morbidity and mortality, which are closely associated with risk factors such as hypertension and chronic inflammation.

A meta-analysis of five randomized, double-blind, placebo-controlled clinical trials, including 290 individuals with diabetic kidney disease, concluded that **curcumin** supplementation was associated with improved **creatinine** (a marker of kidney function), cholesterol, glucose and systolic blood pressure, compared to a **placebo**.

Editor's Note: "Up to **40%** of patients with type II diabetes develop DKD, and DKD is currently the leading cause of end-stage renal disease worldwide," the authors stated.

* *Evid Based Complement Alternat Med*. 2021 Dec 2;2021:6109406.

Supplementing with Zinc Linked to Lower Risk of Alzheimer's Disease

A study published in the *Journal of Neuroscience* found an association between **zinc** supplementation and a decreased risk of Alzheimer's disease as well as a reduction in the progression of cognitive decline in Alzheimer's disease patients.*

Researchers utilized data from the Alzheimer's Disease Neuroimaging Initiative database, which included 1,631 individuals who were cognitively normal or diagnosed with mild cognitive impairment or early Alzheimer's disease.

Subjects were evaluated upon enrollment, at six and 12 months, and yearly thereafter, during up to 10 years of follow-up.

Among those who reported supplementing with zinc, **6%** were diagnosed with Alzheimer's disease compared to **26%** of those who reported no zinc supplement use.

Editor's Note: "Here we provide epidemiological evidence suggesting that zinc supplementation was associated with reduced risk and slower cognitive decline in people with Alzheimer's disease and mild cognitive impairment," the authors stated.

* *J Neurosci*. 2021 Mar 31;41(13):3025-3038.



Better Bone Health with Collagen Peptides

The addition of collagen peptides, the building blocks of collagen, to a bone-supporting regimen of calcium and vitamin D was associated with greater improvements in measures of bone health compared to calcium and vitamin D alone, according to a study published in the *Journal of Clinical Densitometry*.*

The study included 51 postmenopausal women with osteopenia, a condition of lower-than-normal bone mineral density that is associated with an increased risk of developing osteoporosis. All participants received **500 mg** of calcium and **400 IU** of vitamin D3 daily for one year. Twenty-three women also received **5 grams** of collagen peptides.

After one year, women who received **collagen** peptides had a significant increase in bone mineral content and volumetric bone mineral density in trabecular (porous) bone tissue of the tibia, compared to values measured at the beginning of the study, and compared to participants who received calcium and vitamin D alone.

Editor's Note: Volumetric bone mineral density also improved in cortical (more solid) bone among collagen peptides-supplemented participants in comparison with those who did not receive collagen.

* *J Clin Densitom.* 2021 Nov 25;S1094-6950(21)00099-8.



Fisetin

The Longevity Flavonoid



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

In preclinical studies, fisetin:

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

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

Bio-Fisetin supports against this breakdown by enclosing **fisetin** with a compound from the fenugreek herb.

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

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

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8. *J Nutr Biochem.* 2013 Aug;24(8):1547-54.
9. Manufacturer's study (in press for future publication). 2020.



Item #02414

30 vegetarian capsules

This product is available at fine health food stores everywhere.



45 Times Greater Bioavailability CURCUMIN



Patented **turmeric** and **fenugreek** blend (500 mg) results in **45 times** greater bioavailability of free **curcuminoids**.

Item #02407

60 vegetarian capsules



Same 500 mg potency of patented **turmeric** and **fenugreek** blend with added benefits of **ginger** and other **turmeric** actives.

Item #02324

30 softgels

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BOOST YOUR FREE

TESTOSTERONE

Testosterone builds muscle, maintains sexual health, supports cardiac function, supports bone health, and nourishes brain cells.^{1,2}

Testosterone Elite helps maintain healthy testosterone levels:†

- A clinical trial showed that **pomegranate** and **cacao** elevated **free testosterone** levels **48%** in just eight weeks.³
- **Luteolin** increases a protein for testosterone synthesis and inhibits aromatase, an enzyme that breaks down testosterone.⁴⁻⁶
- Just one capsule a day.

"Interest in intimacy has been heightened since beginning this supplement."

Larry

VERIFIED CUSTOMER REVIEW

**PLANT-BASED
NUTRIENTS**

Item #02500

30 vegetarian capsules



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This product is available at fine health food stores everywhere.

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



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.

A close-up photograph of a person's lower body, specifically their right knee. The person is wearing a grey t-shirt and black shorts. Their right hand is pressed against their right knee, which is highlighted with a bright red, semi-transparent overlay to indicate pain or inflammation. The background is a bright, out-of-focus outdoor setting with greenery and a building.

REDUCE JOINT PAIN & IMPROVE MOBILITY



BY ADAM CRUZ, MMSC

Joint pain affects many adults, even those without arthritis, making daily activities like walking or bending difficult to perform.¹⁻⁴

This reduces quality of life.

Most people suffering from chronic joint pain turn to over-the-counter pain medications for relief. These drugs can have dangerous side effects, including an increased risk of **heart problems**.^{5,6}

Two plant extracts, **tamarind** and **turmeric**, have been shown to **safely and effectively** reduce joint pain and increase joint range of motion.

In a clinical trial of adults with non-arthritis **knee joint pain** following exercise, **400 mg** of a blend of these extracts helped sufferers walk an impressive **137 feet farther** in six minutes than those taking a **placebo**.⁷

Those taking **400 mg** of the extracts also had greater **flexibility**, were able to climb stairs faster, and reported a stunning **42.8% decrease** in scores on a joint-pain scale.⁷



TAMARIND



TURMERIC

What Drives Joint Pain?

Joint pain frequently stems from overuse or aging of the joints, which can lead to deteriorating cartilage, limited mobility, and inflammatory changes.⁸⁻¹³

Over time, this results in decreased **range of motion**, lower **quality of life**, and reduced **muscle strength** near the joints.^{14,15}

For many suffering from joint pain, conventional pain medication is the only relief available. However, chronic use of these medications can have lasting effects, including **heart damage** and **kidney failure**.^{5,6,16}

Researchers searching for safer alternatives found that two plants, **tamarind** and **turmeric**, contain compounds that **block inflammation**, leading to less joint pain and increased mobility.⁷

Turmeric's Anti-Inflammatory Effects

Turmeric has been used in traditional medicine for thousands of years.^{17,18}

Many of its health benefits come from use of turmeric's **rhizome** (underground stem), which is an abundant source of polyphenols called **curcuminoids**.⁷

The best-known curcuminoid is **curcumin**, which has powerful **anti-inflammatory** effects.^{19,20}



In animal and human studies, **curcumin** has demonstrated a number of benefits, including improvements in cardiovascular health, protection against neurodegenerative diseases, anti-cancer activity, arthritis relief, and more.²¹⁻²⁷

Tamarind Targets Pain

Tamarind is a plant that produces a fruit used in cooking around the world.

It has **anti-inflammatory** properties that have been shown to alleviate **pain** in the joints, and it has long been used in traditional medicine to treat pain and inflammation.^{28,29}

Tamarind is rich in another group of polyphenols called **procyanidins**, which have powerful antioxidant and anti-inflammatory effects.^{30,31}

To test their impact on joint-pain relief, scientists **combined** these two anti-inflammatory powerhouses.⁷

Testing in Humans

A team of researchers from the U.S., Netherlands, and India conducted a randomized, controlled clinical trial to test a blend of extracts of **tamarind seeds** and **turmeric rhizome**.⁷

Ninety **non-arthritic** men and women who experienced **knee joint pain** and **discomfort** after physical activity were divided into three groups.

One received a **placebo**, one received **250 mg** daily of the extract blend (in two **125 mg** doses), and one received **400 mg** daily (in two **200 mg** doses).

The study followed participants for 90 days and measured their progress in a few different ways:

- **Six-Minute Walk Test:** The distance a participant could walk in six minutes.
- **Stair-Climb Test:** The time it took a participant to walk up and down nine steps.
- **Visual Analog Scale:** A measurement of pain as described by each participant.
- **WOMAC (Western Ontario and McMaster Universities Arthritis Index) Scale:** A 24-question assessment of pain, stiffness, and physical limitations.
- **Range-of-Motion Knee Flexion:** The degree at which participants were able to bend their knee.



WHAT
YOU
NEED
TO
KNOW

Improved Walking Speed and Distance

In any clinical trial, the **primary endpoint** is the measurement that is assessed to determine if the treatment works.

In this study, the primary endpoint was the **Six-Minute Walk Test**.

After 90 days, on average:

- Those in the **placebo** group were able to walk **18 feet farther** than they could at the start of the study.
- Those taking **250 mg** of the extract blend daily could walk **96 feet farther** than at the start of the study.
- Those taking **400 mg** of the extracts could walk a whopping **137 feet farther** than when the study began.

The **walking speed**, on average, of those taking the extracts also improved over 90 days:

- Those taking a placebo walked just **0.04 mph** faster,
- The **250 mg** group walked **0.18 mph** faster, and
- The **400 mg** group increased their walking speed by **0.24 mph** (from **2.51 mph** to **2.75 mph**).

Plant Extracts Improve Joint Mobility

- Millions of adults suffer from **joint pain**, which can make daily activities difficult to perform.
- Most **pain medications** only mask the underlying condition and can lead to other health problems, including heart disease.
- **Tamarind** and **turmeric** have been used in traditional medicine for years and have proven **anti-inflammatory** effects.
- In a clinical study of adults with non-arthritic **knee joint pain** following exercise, a blend of these extracts dramatically improved **mobility**, helping sufferers walk *farther* and *faster*. Subjects also had increased range of motion in the knee joint, less stiffness, and reported a **46%** decrease in joint pain.

Decreased Pain and Stiffness

The **secondary endpoints** in a clinical trial are other measurements of the treatment's effectiveness.

In this study, the secondary endpoints were the **Stair-Climb Test**, the **Visual Analog Scale**, the **WOMAC Test**, and the **Knee Flexion**.

Both doses of the **turmeric-tamarind** combination improved *all* of these measures, with the **400 mg** dosage showing the most significant results.

After 90 days, those taking **400 mg** could walk up and down nine steps **2.4 seconds faster** on average, compared to a **0.3-second** improvement in the placebo group.

This shows a marked improvement in overall mobility and an increase in the joints' functionality.

In the subjective Visual Analog scale, those taking **400 mg** reported that their **pain** rating was decreased by **46%**, compared to just **10%** in the placebo group.

Results of the WOMAC scale were nearly as impressive, with the **400 mg** group reporting a **38%** reduction in pain, stiffness, and physical limitations, compared to **7%** in the placebo group.

Increased Flexibility

A **range-of-motion knee flexion** test measures the angle in degrees that the knee can be bent away from a straightened position.

After 90 days, those taking the placebo had their knee flexibility increased by an average **0.82%** improvement, compared to a **4.34%** improvement in knee flexion from baseline in the **turmeric-tamarind** group. This represented an improvement in knee flexibility more than **five times** that of the placebo group.

The secondary endpoints confirm the results seen in the walk test: This extract blend decreases **joint pain** and stiffness while improving **joint function** and range of motion.

Blocking Inflammation at the Source

There are two key enzymes involved with **inflammation**:

- **5-LOX**, which transforms arachidonic acid into pro-inflammatory compounds called **leukotrienes**, and
- **COX-2**, which transforms arachidonic acid into pro-inflammatory mediators such as **prostaglandin e2**.

Tamarind and **turmeric** inhibit *both* these enzymes that are involved in the production of inflammatory compounds.^{17,32-35}

The clinical study described earlier showed that a blend of tamarind and turmeric extracts significantly increased range of motion and reduced joint pain in people with non-arthritic knee joint pain following exercise.⁷





TAMARIND PLUS TURMERIC

Summary

Many aging adults experience **joint pain**, which leads to impaired mobility and reduced quality of life.

Researchers have found that extracts of **tamarind** and **turmeric** can improve range of motion and flexibility, and reduce discomfort while also addressing inflammation, without the potentially dangerous side effects of conventional pain medications.

In a study of 90 men and women with non-arthritis **knee joint pain** following exercise, a combination of these extracts led to improved **walking speed** and **distance**, enhanced **range of motion**, and decreased **pain and stiffness** after just three months. ●

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- Myrosinase to release **sulforaphane** in the small intestine



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30 enteric-coated
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GLUTEN FREE



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fine health food stores everywhere.

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.



Share a Longer Life



Item #01778

200 mcg • 100 vegetarian capsules

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

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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.

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**DUAL-ACTION
JOINT SUPPORT**

Get Moving!

Joint Mobility is a blend of
tamarind and turmeric extracts.



Joint Mobility

Item #02424 • 60 vegetarian capsules

Each capsule provides **200 mg** of
standardized **tamarind-turmeric** extract

A placebo-controlled **clinical trial*** shows these **plant extracts** help:

- *Promote* greater **walking ability** and **endurance** or **walking distance** and **speed**
- *Support* increased joint **flexibility**
- *Relieve* occasional joint **discomfort**
- *Inhibit* **inflammation** to support continued **joint health**

This product is available at fine health food stores everywhere.

*Int J Med Sci. 2019;16(6):845-53.



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A *NEW* Way to Enjoy **MELATONIN**

BY MICHAEL DOWNEY

Melatonin has helped many people sleep better.¹

But not all those who suffer **sleep issues** derive perceivable **benefits**.

A delicious *new* way to boost **individualized melatonin** levels is available in the form of a vegetarian, *sugar-free gummy*.

This article describes how melatonin functions to improve sleep and how you may better derive these benefits.



The Dangers of Inadequate Sleep

Getting **too little sleep** doesn't just leave people fatigued. **Inadequate sleep** is associated with increased risk of:^{2,3}

- Excess body weight and obesity,
- Type II diabetes,
- Sleep apnea,
- Hypertension,
- Mood disorders (depression, anxiety),
- Pain and disability,
- Stroke, and even
- Premature death.

In addition, people with sleep problems often have a **disrupted circadian rhythm**, the body's internal clock. Misalignment of this sleep/wake cycle disrupts and impairs many psychological and physiological functions, which may increase the risk of metabolic disorders.^{4,5}

It's critical to get sufficient sleep *and* keep your circadian rhythm in tune.

What is Melatonin?

Melatonin is a hormone that regulates circadian rhythm and promotes healthy sleep patterns.¹

Studies have found that the pineal gland's secretion of **melatonin** decreases with age, which can make it more difficult to get quality sleep.^{6,7}

Use of computers, cell phones, tablets, and other devices exposes users to **blue light**, which also decreases melatonin levels.⁸

Melatonin has been shown to **improve** the onset, duration, and quality of sleep.⁹⁻¹¹

Many Americans today take melatonin before bedtime.¹²

A Sugar-Free Option

Melatonin capsules, tablets, or drops have become part of the nightly regimen for many aging adults.

Scientists have now developed a convenient way to supplement with **melatonin**—a great-tasting, easy-to-chew, vegetarian-friendly **gummy**.

Some people like chewing on something tasty before bedtime, and melatonin **gummies** have become enormously popular.



There are some problems with commercial gummies, however.

Take a look at any gummy label in the store. Many of these gummy supplements contain **high** amounts of **sugar** as the first ingredient.

Sugar inflicts a myriad of deleterious effects, including impeding restorative sleep.¹³

The new gummies are different. Each tasty gummy provides **3 mg** of melatonin and is **100% sugar-free**.

So, you can chew on the number of gummies that provide a low-calorie way of satisfying hunger while individually **dosing** the amount of **melatonin** that works best for you.

Many will find it a delicious way to get ready for bed.

Melatonin Promotes Healthy Sleep in Five Ways

In **human** studies, scientists have demonstrated that **melatonin** improves **five** parameters of sleep.

Clinical studies suggest that taking oral melatonin:⁹⁻¹¹

- **Reduces sleep onset latency**, the time between lights out and falling asleep,
- **Increases sleep efficiency**, the percentage of time we spend asleep while in bed,
- **Increases total sleep time**, time spent asleep after sleep onset,
- **Reduces wakefulness after sleep onset**, time spent awake after sleep begins, and
- **Synchronizes** and maintains a healthy **circadian rhythm**, to promote healthy sleep patterns.

In one meta-analysis of **17** studies involving a total of 284 volunteers, researchers found that, on average, **melatonin** use significantly:⁹

- *Reduced* **sleep onset latency** by **4.0 minutes**,
- *Increased* **sleep efficiency** by **2.2%**, and
- *Increased* **total sleep time** by **12.8 minutes**.

Syncing Circadian Rhythm

Nearly *every* cell in our body has an internal “clock” which is governed by a “master clock” in the brain that responds to changes in light exposure and helps create and maintain our **circadian rhythm**.¹⁴

Among other functions, circadian rhythm regulates our **sleep-wake cycle**. The body **increases** melatonin levels as light levels fall in the evening and **lowers** melatonin levels as light levels rise around daybreak.¹⁴

If circadian rhythm becomes *disrupted*, as may happen with age, this cycle can become impaired.

A study from the prestigious journal *Lancet Psychiatry* revealed that disrupted circadian rhythms are associated not only with sleep disturbances, but also with an increased risk of **depression** and **bipolar disorder**.¹⁵

Endogenous **melatonin** plays a critical role in keeping this central clock in sync with the environment, maintaining our circadian rhythm and improving sleep.^{16,17}

Oral melatonin has also been used to help **synchronize** the circadian rhythm in **blind** individuals whose bodies have been unable to synchronize with the day-night cycle.¹⁸

Help for Insomnia Sufferers

Insomnia is defined as difficulty initiating or maintaining refreshing sleep. It can have a drastic effect on daily life and health.

Low melatonin levels have been linked to insomnia, particularly in the elderly. Clinical studies have reported **serum** melatonin levels to be significantly **lower** (and the time of peak melatonin values delayed) in elderly subjects with insomnia compared with age-matched normal controls.¹⁹

A meta-analysis of 14 randomized controlled trials, of which insomnia was the primary diagnosis in 12 studies, found that people with insomnia who took melatonin had reduced **sleep onset latency** (the time it takes to fall asleep).²⁰

Another review found that oral melatonin provided a significant improvement in both **sleep onset latency** and **total sleep time** in those suffering from insomnia.²¹



WHAT
YOU
NEED
TO
KNOW

Get a Better Night's Sleep

- An age-related decline in **melatonin** levels can interfere with falling and staying asleep.
- **Inadequate sleep** is associated with the risk of obesity, type II diabetes, stroke, premature death, and more.
- Taking oral melatonin at night helps people **fall asleep faster** and **stay asleep longer**.
- Melatonin can also improve quality of sleep for patients with **insomnia** and help relieve symptoms of **jet lag**.
- Melatonin is now available in a great-tasting vegetarian **gummy** that is *sugar-free*.



Relief for Jet Lag

The energy-sapping effects of **jet lag** are a symptom of disrupted **circadian rhythm**.²²

Your body doesn't recognize the change when you fly into new time zones. As a result, the body's rhythms are suddenly out of step with the day-night cycle at your destination.

Oral **melatonin** can help to get your circadian rhythm back on schedule.

One review found that oral melatonin, taken close to the target bedtime at the destination (10 pm to midnight), was **remarkably effective** in preventing or reducing jet lag.²³

Similarly, melatonin may help shift workers adjust their sleep timing after a shift rotation.²⁴

These and other benefits make melatonin a safe, effective way to relieve sleep problems and promote optimal sleep.

Summary

Difficulty falling asleep and staying asleep can be caused by an age-related decline in levels of **melatonin**.^{6,7}

Not getting enough **sleep** is associated with a higher risk of obesity, diabetes, cognitive decline, stroke, shortened telomeres, and premature death.^{2,3}

Taking oral melatonin at night has been shown to improve **five** different aspects of sleep, helping to support overall health.⁹⁻¹¹

Scientists have developed a vegetarian, **sugar-free gummy**—a delicious *new way* to boost nighttime melatonin levels. ●

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People tend to live longer in areas where lithium is abundant in the drinking water.*

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



LITHIUM

(1000 mcg of lithium per tiny capsule)
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Each bottle lasts 100 days.

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Enzymatically Active Vitamins

BioActive Complete B-Complex provides *enzymatically active forms* of meaningful potencies of each B vitamin.

This includes the *pyridoxal 5'-phosphate* form of vitamin B6 shown to protect lipids and proteins against **glycation** and the most biologically active *form* of **folate** called *5-methyltetrahydrofolate (5-MTHF)*, which is up to **7 times more** bioavailable than folic acid.*

Item #01945

60 vegetarian capsules

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

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

That *Boost*

IMMUNE FUNCTION

BY MICHAEL DOWNEY

Mushrooms have been used medicinally for *thousands* of years.¹

Modern science has pinpointed a primary reason:

They contain beneficial compounds called **beta glucans** that *boost immune function*.²⁻⁵

On their own, **beta glucans** deliver **antiviral** and **immunity-strengthening** properties.²⁻⁵

In **human** studies, taking **beta glucans** reduces the length and severity of **upper respiratory tract infections** such as the common **cold** and **flu**.⁶⁻¹¹

Combining **beta glucans** with medicinal mushrooms may supercharge a variety of **immune functions**.

What Are Beta Glucans?

Beta glucans are a group of polysaccharides found in the cell walls of **mushrooms**, seaweed, and whole grains.⁷

Beta glucans derived from yeast and fungi are known for their **immunomodulating** properties.⁷

They also help nourish the gut microbiota and augment the action of **immune cells**.^{3,12-15}

Key Immune-Supportive Mushrooms

There are hundreds of strains of mushrooms. **Three** that most effectively support the immune system are **shiitake**, **maitake**, and **chaga**.

SHIITAKE

Shiitake mushrooms have long been used in traditional Asian medicine.¹⁶ They *increase* the number of immune cells, including **T-cells**, which fight specific kinds of viruses, and **NK (natural killer) cells**, which kill a variety of virally infected cells and tumors.¹⁷

In cell studies **shiitake extract** was able to directly inactivate several types of **viruses** and block viral replication.¹⁸⁻²⁰

In an animal model of severe **bacterial lung infection**, shiitake mushrooms significantly *decreased* the number of bacteria in the lungs and improved the animals' condition.²¹

Shiitake also boosts secretion of **antibodies** that protect the digestive tract and reduces **C-reactive protein**, a marker of **inflammation**.¹⁷

MAITAKE

Commonly used in cuisine, **maitake** mushrooms were shown in preclinical studies to activate some of the *first* immune cells to fight an infection, including **NK cells** and **macrophages**.^{22,23}

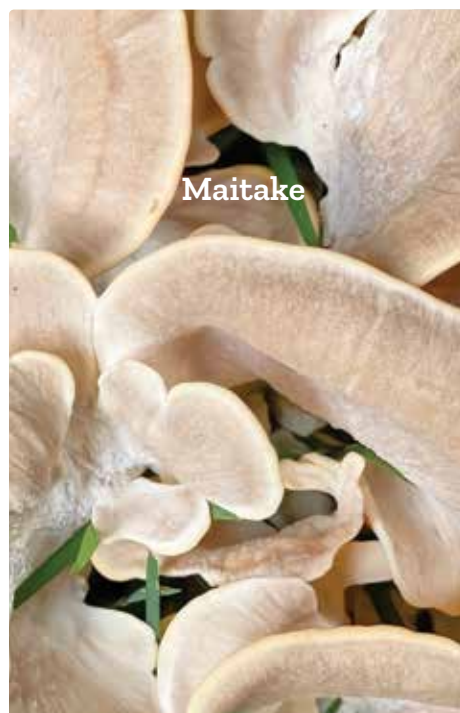
Extracts of maitake also induce the secretion of **interferons**, proteins that improve the body's ability to defend against infection.²³

CHAGA

Chaga mushrooms, which grow on alder, beech, birch, and various other hardwood trees, are powerful **immuno-modulators**.

When scientists treated mice with a drug that *inhibits* **immune system** activity, chaga extract returned levels of immune cells almost back to normal. It also kept down levels of **tumor necrosis factor**, a marker of inflammation.²⁴

In preclinical studies, chaga demonstrated **antiviral** activity against a wide range of viruses, including influenza, herpes, hepatitis C, HIV, and others.²⁵





Activating the Immune System

Mushrooms contain numerous health-promoting compounds. But perhaps the most powerful and bioactive immune supporters are **beta glucans**.

Beta glucans bind to receptors found on an assortment of cells important for **immunity**.^{3,26} This boosts the function of these cells, helping them defend against infection and other threats.

Immune responses can be divided into two types:²⁷

- **Innate immunity**, which forms the body's first line of defense, is accomplished by immune cells including macrophages, neutrophils, and NK cells.
- **Adaptive immunity** cells include lymphocytes, such as B-cells and T-cells. These are the specialists brought in later to fight off *specific* threats, like a particular bacteria or virus. Adaptive immunity helps the body develop **long-term immunity** to a pathogen.

Beta glucans activate and stimulate **both** systems.^{3,4,17,28,29}

Mushrooms and Beta Glucans Boost Immunity

- **Mushrooms** have long been used for medicinal properties. **Shiitake**, **maitake**, and **chaga** mushrooms help support the immune system, activating immune cells.
- **Beta glucans**, compounds found in the cell walls of mushrooms, contribute to these **immune** benefits.
- Oral intake of **beta glucans** can boost the immune system's ability to prevent and fend off **infections** (including the common cold and flu), and support a healthy gut microbiota, and it may reverse age-related weakening of the immune system.
- Blending **beta glucans** with **shiitake**, **maitake**, and **chaga** mushrooms may help optimize healthy immune function.



Results of Human Tests

To validate these benefits in **humans**, scientists conducted a number of different trials. Volunteers were randomized to receive either a **placebo** or **beta glucans**. Most of these studies used a **250 mg** dose of beta-glucans.⁶⁻¹¹

Beta glucans demonstrated infection-fighting effects, particularly in **upper respiratory tract infections** such as the common **cold** and **flu**.

Participants who received **beta glucans** had:⁶⁻¹¹

- Fewer symptomatic days,
- Less severe infection symptoms,
- Fewer workdays lost to illness,
- Increased numbers of immune cells in the blood,
- Higher levels of interferon secretion, and
- Increased secretion of **antibodies** in the saliva, a defense against digestive tract and respiratory tract infections.

Higher Mushroom Intake Associated with Reduced Mortality

In September 2021, scientists with the College of Medicine at **Pennsylvania State University** published results from a meta-analysis of prospective studies that included over 600,000 individuals, on the relationship between **mushroom intake** and **mortality**.³⁴

They found that *higher* mushroom consumption correlated with a *lower* risk of **death from any cause**.

This study had several major strengths, including the facts that it involved a very comprehensive meta-analysis and it employed a sample that was nationally representative of the American adult population.

An earlier study by the same team, with **15,546** participants followed for an average of nearly 20 years, from the Third National Health and Nutrition Examination Survey (NHANES III), found an even stronger correlation between mushroom intake and **lower all-cause mortality**.³⁵

In a different meta-analysis, researchers found that higher mushroom consumption was associated with a *lower* risk of **cancer**.³⁶

When site-specific cancer was studied, a significant association was observed with reduced **breast cancer** risk and greater mushroom consumption.³⁶

Beta glucans can improve immune responses to *other* challenges as well. One study looked at **ragweed allergy** sufferers who received either a placebo or **250 mg of beta glucans**.³⁰

After four weeks, those receiving **beta glucans** had significant *reductions* in total allergy symptoms and severity. Measures of mood, energy, vigor, sleep, and overall quality of life were all improved.³⁰

Reversing Immune Senescence

The elderly become more susceptible to infectious diseases and cancer due to a deterioration of immune function known as **immunosenescence**.³¹

In animal models of aging, intake of **beta glucans** can help *prevent* or even *reverse* this weakening of the immune system.^{28,32}

In one mouse study, **beta glucans** boosted the numbers of immune cells, *and* improved their function, which had a **rejuvenating effect** on immune system responses.³²

Stronger Gut Defenses

The **gut microbiota** is made up of the trillions of microorganisms in the digestive tract. Beneficial populations of these microorganisms are critical to fighting **infections** and maintaining optimal overall health.

Both **mushrooms** and isolated **beta glucans** encourage the growth of healthy microbiota.^{3,13-15}

The benefits don't stop there. When beneficial bacteria consume beta glucans, they produce **short-chain fatty acids** as a byproduct.^{13,15} Among other benefits, these fatty acids:³³

- Reduce harmful **inflammation**,
- Support a healthy gut lining,
- Defend against **cancer**, and
- Help regulate appetite and metabolism.

Combining **beta glucans** with immune-supporting **mushrooms** may help maximize the function of the immune system.

Summary

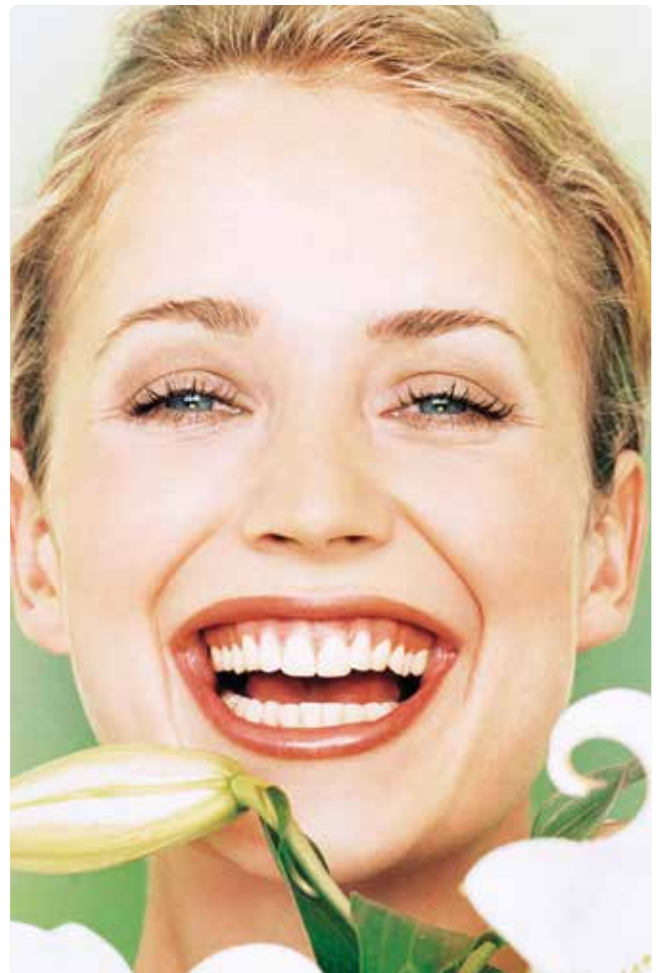
Mushrooms have wide-ranging medicinal properties, including powerful support for the function of the **immune system**.

Beta glucans are compounds found in the cell walls of mushrooms, and in yeast, seaweed, and some grains that are also known to help the immune system.

Beta-glucans have been shown to improve immune responses, helping to:

- Prevent and fight **infections** like the common cold and flu,
- Prevent or reverse immune senescence, and
- Support a healthy gut microbiota.

A carefully formulated blend of **beta glucans** from yeast as well as **shiitake**, **maitake**, and **chaga mushrooms** can help support healthy immune function. •



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Ever heard of **cell senescence**?

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Each bottle lasts **3 months** based on recommended once per week dosing.



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SUPPORT HEALTHY IMMUNE FUNCTION

Mushroom Immune

with **BETA GLUCANS**

Mushroom Immune provides a blend of:

- **Shiitake**
- **Maitake**
- **Chaga**
- Plus **250 mg** of **beta glucans**

Scientific studies show these four nutrients can:

- Promote **innate** immune cell function, the body's first line of defense
- Modulate **adaptive** immune cells, critical for long-term immune protection
- Encourage a healthy **gut microbiota**



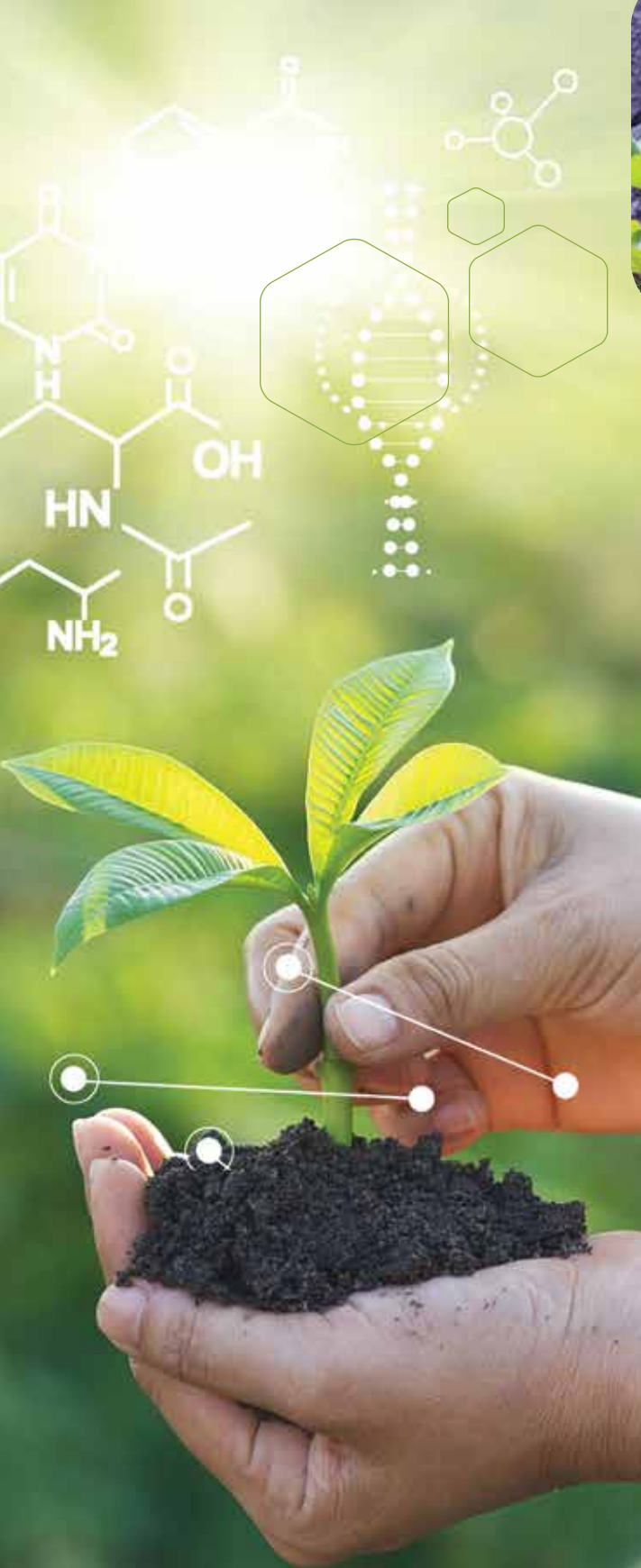
Item #02426

30 vegetarian capsules
(Suggested dose is one capsule daily)

This product is available at
fine health food stores everywhere.

A smiling woman with blonde hair tied back, wearing a bright yellow sweater, is holding a wooden crate filled with various green herbs. A single orange poppy flower is prominently placed in the foreground, partially obscuring the woman's face. The background is a soft-focus outdoor scene with green foliage and a bright, sunny atmosphere. The text 'How Women Over 40 Can Feel Better Fast' is overlaid in the top right corner in a green, sans-serif font.

How Women Over 40 Can Feel Better Fast



SIBERIAN RHUBARB

BY MICHAEL DOWNEY

It starts around age **40**. Some women feel a little “off,” while others experience significant changes in **mood, energy, and stress**.

This can signal the *first stages* of the hormonal rollercoaster that culminates in **menopause**.

Up to this point, women may experience any of **11 menopausal symptoms**, including hot flashes, mood swings, sleep problems, and vaginal dryness.¹

Many women want to avoid conventional hormone treatments.

Scientists have developed a **hormone-free** alternative that can reduce symptoms of hormonal imbalance and the related **symptoms of menopause**.

The unique ingredient, a patented **Siberian rhubarb extract**, has been shown to improve all **11 menopause** symptoms.

Human studies show that **Siberian rhubarb** extract can reduce overall symptom severity by **up to 83%**.²

This **Siberian rhubarb** can now be found in a formula with essential **B vitamins** also shown to improve energy, mood, and stress.

Common Symptoms of Menopause

Most women go through **menopause** at around age **51**.³

But *any time* after age **40**, a decline in levels of the hormones **estrogen** and **progesterone** can begin to affect women physically and psychologically.^{3,4}

Symptoms often include **mood** changes, low **energy** levels, and feelings of stress.³

Women may start experiencing these symptoms as early as in their mid-40s, a period known as **perimenopause**.⁵

During this time, regular menstrual cycling ceases and estrogen and progesterone levels sharply decrease.⁴

Experts have identified **11** common symptoms included in the **Menopause Rating Scale**. These symptoms, which may begin **years** before menopause, are:¹

1. Hot flashes and excessive sweating,
2. Heart discomfort,
3. Sleep problems,
4. Joint and muscle discomfort,
5. Depressive mood,
6. Irritability,
7. Anxiety,
8. Physical and mental exhaustion,
9. Sexual problems,
10. Bladder issues, and
11. Vaginal dryness.

For women who prefer to avoid hormone treatments, there's an alternative solution.

Scientists developed a **hormone-free** formula for women over 40 that combines a patented **Siberian rhubarb** root extract with eight essential **B vitamins**.

The **Siberian rhubarb** has been found to counteract **all menopause symptoms** while B vitamins additionally help improve energy and mood.



How Siberian Rhubarb Works

The root of the **Siberian rhubarb** plant is rich in compounds that bind to the same **receptors** in cells to which **estrogen** normally binds.⁶ By doing this, they trigger **beneficial estrogen-like** effects throughout the body, helping to relieve menopause symptoms.

There are different kinds of **estrogen receptors**, and the difference is critical:

- Activating the **ER-alpha** receptor can produce undesirable growth in some tissues, including initiating and promoting cancer.⁷ Activation of this receptor by conventional **hormone replacement therapy** is believed to be the cause of many of the ill effects of this treatment.⁸
- Activating the **ER-beta** receptor promotes beneficial effects on skin, brain, metabolism, blood vessels, and other tissues—and relieves menopausal symptoms.^{8,9} The proprietary patented extract of **Siberian rhubarb** has been shown in preclinical studies to selectively activate **ER-beta** but not **ER-alpha**.⁶

Siberian rhubarb extract has been recommended by doctors since the **1950s** for relieving **menopause symptoms**, and its use is further supported by numerous clinical studies in recent years.¹⁰

In Germany, **6.7 million doses** are sold *annually*. Scientists have reviewed safety data collected there over **two decades** and concluded that the extract is extremely **safe** for long-term use.¹⁰

Improving Common Symptoms

To test its benefits, researchers conducted a series of **human** studies.

In all of the following studies, taking **4 mg** of the patented Siberian rhubarb extract daily resulted in significant improvement in **every one** of the **11** common menopause symptoms.^{2,11-13}

- In a clinical trial of symptomatic perimenopausal women, taking **Siberian rhubarb** extract significantly reduced the number and severity of **hot flashes** within **just one month**. After three months, it led to a **54% reduction** in overall severity of symptoms on the **Menopause Rating Scale**.¹¹

WHAT
YOU
NEED
TO
KNOW

- After using the extract for **one year**, women who continued to take the product had a remarkable **83% reduction** in overall severity of symptoms. These improvements were *maintained* in the women who continued taking **Siberian rhubarb** for a second year.²
- In another study of perimenopausal women, taking **Siberian rhubarb** extract for just 12 weeks led to a reduction in daily hot flashes from a median of 12 to just two, an astonishing **83% decline**.¹³
- An observational study found that **56%** of symptomatic perimenopausal or postmenopausal women who took **Siberian rhubarb** for six months reported *major improvements*, with pronounced improvements in **hot flashes, sleep problems, and irritability**.¹²

Compelling Clinical Data

Clinical trials demonstrate consistent findings in response to daily use of **Siberian rhubarb extract**.

Some of the most dramatic benefits include:

- A decrease in the severity of **sleep problems** up to **69%**.^{2,13}
- An **up to 67%** reduction in **urogenital symptoms**,² which include bladder problems (such as incontinence or difficulty urinating), vaginal dryness, and sexual problems (including loss of sexual desire).¹⁴
- An average **58%** improvement in **physical and mental exhaustion** after just three months and an average **73%** improvement in feelings of exhaustion after a *year*.²
- A reduction in **heart discomfort** like **palpitations** by **as much as 60%** in three months.^{2,13}
- Improvements in **joint and muscle discomfort** by up to **50%**.^{2,13}
- A **66%** reduction in total anxiety scores, on a recognized scale, after three months.¹⁵



Relief for Menopause Symptoms and More

- **Perimenopause** and **menopause** are marked by 11 common symptoms, including hot flashes, irritability, bladder issues, and sexual problems.
- In addition, some **women over 40** begin noticing hormone-related symptoms like **mood** problems, low **energy**, and feelings of **stress**.
- Human studies show that taking **4 mg** of **Siberian rhubarb extract** provides relief from all **11** menopause symptoms and reduces overall symptom severity by up to **83%**.
- Research has also shown that **B vitamins** can improve **mood, energy, and stress** symptoms.
- Combining all essential **B vitamins** with **Siberian rhubarb** provides an alternative to conventional hormone therapy to address a broad range of symptoms experienced by women over 40.

Each B Vitamin Supports a Vital Function

In addition to improving symptoms relating to mood, energy, and stress, B vitamins support many vital body functions.¹⁷ Here are just a few:

- **B1** (thiamine) helps convert glucose, proteins, and lipids into energy, playing an essential role in metabolism.²⁴
- **B2** (riboflavin) also helps convert nutrients into energy and provides antioxidant activity.²⁵
- **B3** (niacin) plays a role in DNA repair, cellular signaling, and metabolism.²⁶
- **B5** (pantothenic acid) helps produce hormones and converts proteins, carbohydrates, and fatty acids to energy.²⁷
- **B6** (pyridoxine) helps metabolize amino acids and supports neurotransmitters and red blood cells' production.²⁸
- **B7** (biotin) regulates gene expression and is required for metabolism of fat and carbohydrates.²⁹ It is also important for healthy hair and skin.³⁰
- **B9** (folic acid or, for superior absorption, 5-MTHF³¹) is vital for cell growth, amino acid metabolism, production of red and white blood cells, healthy cell division, and proper fetal growth and development.³²⁻³⁵
- **B12** (cobalamin or methylcobalamin) is important for neurological function, development of red blood cells, production of DNA, and promoting healthy homocysteine levels.³⁶⁻³⁸



Benefits of B Vitamins

To provide additional benefits for women over 40, scientists combined this **Siberian rhubarb extract** with eight essential **B vitamins**:

- **B1** (thiamine),
- **B2** (riboflavin),
- **B3** (niacin),
- **B5** (pantothenic acid),
- **B6** (pyridoxine),
- **B7** (biotin),
- **B9** (folic acid), and
- **B12** (cobalamin).

These vitamins are needed to help the body carry out necessary daily functions, including protein, fat, and carbohydrate metabolism, DNA and RNA synthesis, red blood cell production, and neurotransmitter metabolism.^{16,17}

Summary

After age **40**, many women begin to suffer from perimenopausal symptoms of low energy, mood problems, and feelings of stress.

As women approach **menopause**, most also experience some of the 11 common menopausal symptoms, including hot flashes, irritability, and sexual problems.

Multiple human studies show that **4 mg** of **Siberian rhubarb root extract** provides safe, effective relief of all these common menopausal symptoms.

Scientists have developed a formula that includes **eight essential B vitamins** combined with **Siberian rhubarb extract** for women seeking **hormone-free** benefits after age 40. •

Boosting Energy and Mood

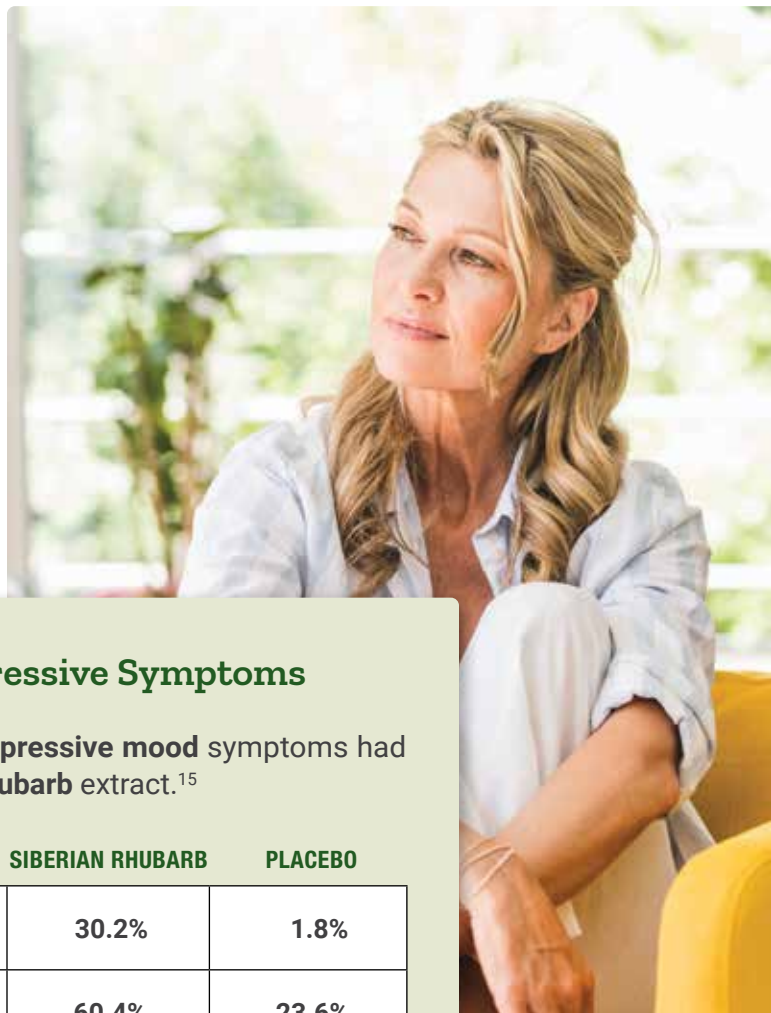
B vitamins work together and are essential for healthy **brain** function and **energy** metabolism.¹⁶

A review and meta-analysis of randomized controlled trials revealed that intake of different **B vitamins** was associated with **reduced stress** symptoms and may benefit **mood** in healthy and at-risk individuals.²¹

An observational study following 3,503 older adults for an average of more than seven years found that **higher intakes** of **vitamin B6** and **vitamin B12** were associated with a **lower likelihood** of **depression**.²²

And a placebo-controlled study of healthy older women found that taking **vitamin B1** daily led to a **69%** improvement in general **well-being** and a **78%** decrease in **fatigue** in just six weeks.²³

Combining **B vitamins** with **Siberian rhubarb** extract may provide **greater relief** for women over 40 suffering from symptoms like fatigue and anxiety.



Siberian Rhubarb Improves Depressive Symptoms

In a clinical study, perimenopausal women with **depressive mood** symptoms had the following improvements after taking **Siberian rhubarb** extract.¹⁵

	SIBERIAN RHUBARB	PLACEBO
Patients with remission of depression symptoms	30.2%	1.8%
Patients with improvement of symptoms	60.4%	23.6%
Patients with no change in symptoms	9.4%	69.1%

Not All Extracts are the Same

Only the clinically studied form of Siberian rhubarb extract has been shown to relieve 11 symptoms of menopause. These are extracts that have been standardized to more than **54% rhaponticin** and more than **27% desoxyrhaponticin**.

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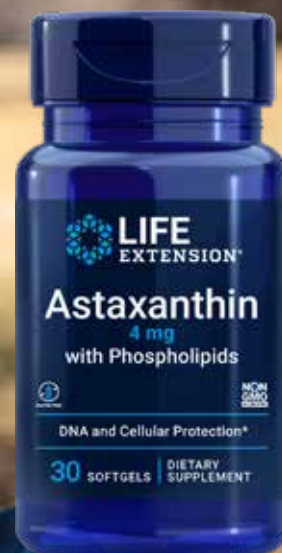
Found naturally in seafood and algae, as little as **50%** of **astaxanthin** is normally **absorbed** in the blood-stream.^{2,3}

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**.⁴

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4 mg • 30 softgels



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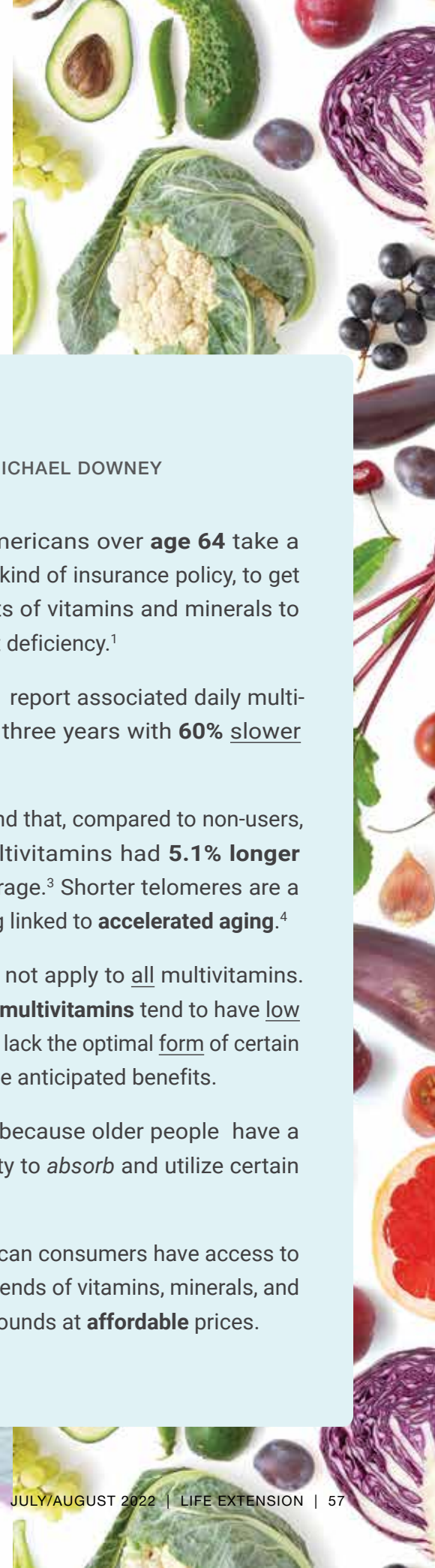
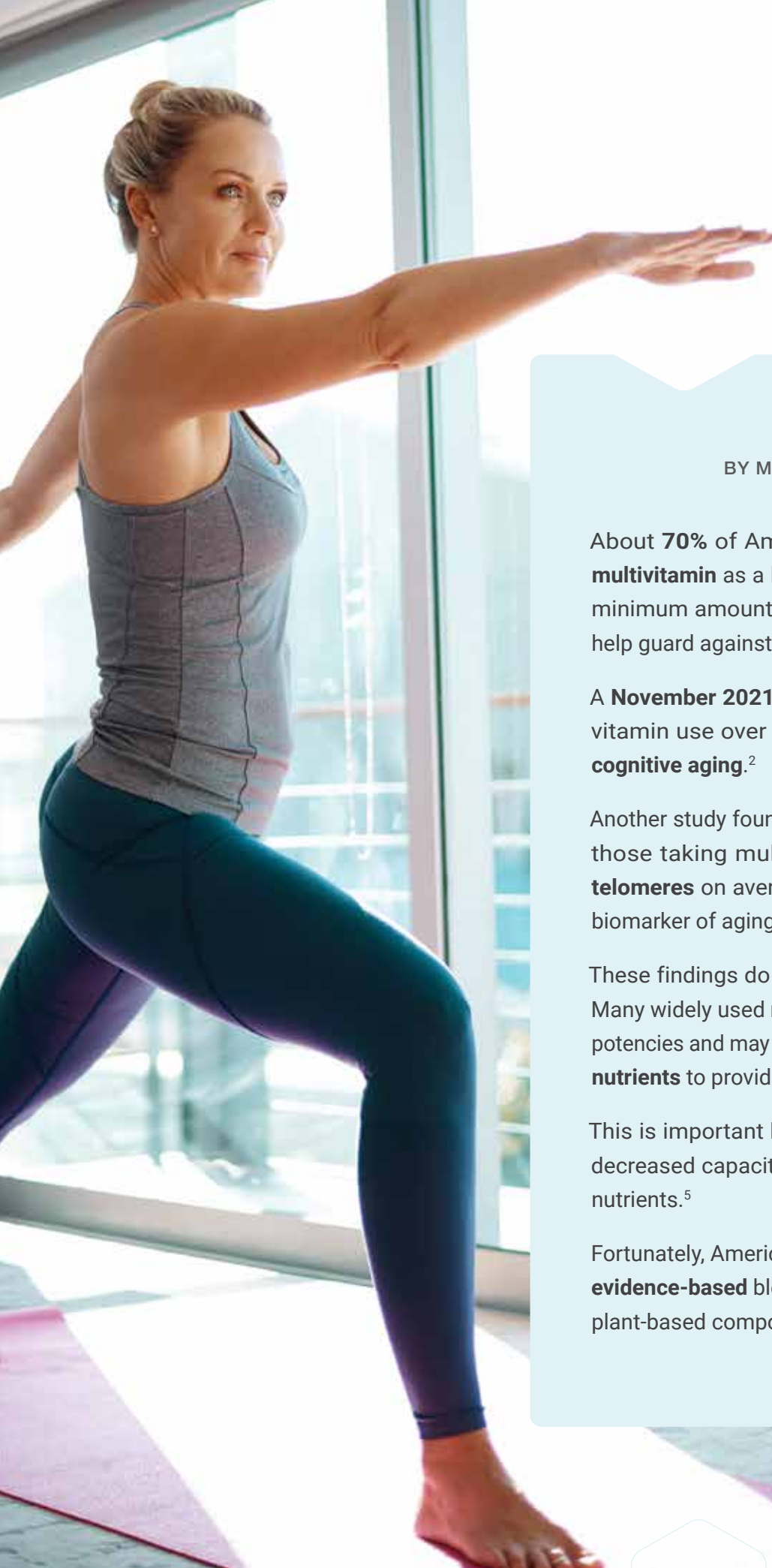
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What's In Your MULTIVITAMIN FORMULA?





BY MICHAEL DOWNEY

About **70%** of Americans over **age 64** take a **multivitamin** as a kind of insurance policy, to get minimum amounts of vitamins and minerals to help guard against deficiency.¹

A **November 2021** report associated daily multivitamin use over three years with **60% slower cognitive aging**.²

Another study found that, compared to non-users, those taking multivitamins had **5.1% longer telomeres** on average.³ Shorter telomeres are a biomarker of aging linked to **accelerated aging**.⁴

These findings do not apply to all multivitamins. Many widely used **multivitamins** tend to have low potencies and may lack the optimal form of certain **nutrients** to provide anticipated benefits.

This is important because older people have a decreased capacity to *absorb* and utilize certain nutrients.⁵

Fortunately, American consumers have access to **evidence-based** blends of vitamins, minerals, and plant-based compounds at **affordable** prices.



Dangers of Deficiencies

Vitamins and minerals are cofactors for **enzymes** throughout the body. These *enzymes* are *required* to **repair DNA**, prevent **oxidative damage**, maintain **cardiovascular** health, and perform many functions essential for a healthy and long life.^{6,7}

Up to **70%** of Americans are **deficient** in one or more vital nutrient. Inadequate intake of these essential nutrients may increase the risk of **age-related disease** and **premature aging**.⁶

For example, the continuous creation of cellular **DNA** and **RNA** requires certain **B vitamins** that function as critical coenzymes.⁸

Higher Dosages

Many multivitamins contain the minimal **dosage** necessary to prevent diseases like scurvy and osteomalacia.

Larger amounts of some nutrients are often needed to promote healthy longevity.

Inadequate dosages can be especially problematic for **older** adults who have more difficulty **absorbing** nutrients.⁵

An increasing number of Americans are switching to multinutrient formulas that provide vitamins, minerals, and plant extracts in *higher* dosages and more **bioavailable** forms.

The Best Forms of Nutrients

Folate is a B-vitamin vital cofactor for many enzymatic reactions, including those that detoxify **homocysteine**, a risk factor for vascular disease.^{9,10}

Before folate can perform, it must be converted to its active form, **L-methylfolate (5-MTHF)**.

Older individuals are challenged to convert dietary or supplemental **folate** into biologically active **5-MTHF**. This helps explain why homocysteine levels often surge upwards in the elderly.^{11,12}

A multivitamin should include folate in its **bioavailable** form, **5-MTHF**. This means it is *already* active and can be easily absorbed and used by tissues immediately.

A superior multivitamin should also include beneficial nutrients not generally found in widely available formulas, such as:

- The mineral **boron**,
- The antioxidant **alpha-lipoic acid**,
- **Plant extracts**, such as the carotenoid **lycopene**, and
- **Mixed tocopherols** (natural forms of vitamin E that each provide different benefits).

Key Nutrients

Here are just a *few* of the nutrients that adults should look for in a multivitamin.

ZINC

Zinc supplementation supports a healthy immune system, as well as healthy inflammatory and free-radical defenses.^{13,14}

VITAMIN C

This vitamin stimulates the production and function of **immune cells**.^{15,16} Vitamin C is also vital for the formation of **collagen**, the connective tissue found throughout healthy arterial walls, skin, bones, and teeth.^{15,17}

SELENIUM

This mineral supports healthy inflammatory and immune responses and promotes **cardiovascular, thyroid, and brain health**.¹⁸⁻²¹ In fact, the thyroid gland is the organ with the highest amount of selenium per gram of tissue.¹⁹ Selenium comes in different forms: high-selenium yeast, Se-methyl L-selenocysteine, and sodium selenite. Each has distinct beneficial properties.

VITAMIN D

Vitamin D promotes **immune** function, as well as healthy cell division, cognitive function, and **bone health**.²²⁻²⁴ Minimum dosages to achieve what some consider “sufficient” potency are **2,000 IU** daily taken with a meal that contains some fat. Many people today take an additional **1,000-5,000 IU** of **vitamin D3** daily to achieve optimal blood levels.

VITAMIN A

This vitamin promotes healthy **vision**, formation of thyroid hormones, healthy skin and mucous membranes, the growth of bone, teeth, and soft tissues, and immune functions. Vitamin A is best obtained from *two* separate sources: the fatty acid **retinyl acetate** and the pigment **beta-carotene**.^{25,26}

QUERCETIN

The flavonol quercetin inhibits the release of **pro-inflammatory** substances.^{27,28} It also promotes cellular health and function and may support the **cardio-vascular system** by preserving the health and function of cells lining the insides of blood vessels.²⁹

B VITAMINS

The **B vitamins** help break down nutrients the body's cells need to carry out their daily functions.³⁰ These vitamins work together, which is why a superior multivitamin should contain readily metabolized forms of riboflavin, vitamin B12, vitamin B6, folate, and others.

MOLYBDENUM

This mineral is required for several **enzyme** activities, including those that detoxify alcohol and metabolize sulfur.³¹ Most multivitamins don't contain sufficient potencies of molybdenum.

MIXED VITAMIN E TOCOPHEROLS

The four forms of **vitamin E tocopherols**—alpha, beta, delta, and gamma—work *together* to optimize health. For example, combining alpha and gamma tocopherols is better for reducing **chronic inflammation** and **oxidative stress** than taking either alone.³² *All* four should be taken daily. These tocopherols are only available in formulas that utilize natural vitamin E, which is more expensive than synthetic vitamin E used in many commercial formulas.

ALPHA-LIPOIC ACID

This natural compound helps regenerate the free-radical scavenging properties of **vitamin C** and **glutathione** so they can fight against damaging free radicals.³³⁻³⁵ Most multivitamins contain *no* alpha-lipoic acid.

A scientifically designed multinutrient formula includes vitamins, minerals and plant extracts in the dosages and forms meant to help optimize their benefits to **health** and **longevity**.



Better Multivitamins

- A good **multivitamin** should do more than help maintain basic life. It should support the body's critical enzymes, promote health, and reduce the risk of early aging and premature death.
- Widely available formulas provide insufficient dosages and fail to include optimal forms, or the full array of nutrients to optimize health. This is a particular risk to **older adults** who have a decreased capacity to absorb and use many nutrients.
- Multi-nutrient formulas available today provide meaningful potencies of a broad array of health promoting compounds.
- Taken daily, multinutrient formulas can play an important role in promoting overall good **health** and **longevity**.

Summary

American diets generally provide insufficient vitamins and minerals to support healthy **longevity**.

Most adults could benefit from a good **multivitamin**. Widely advertised commercial formulas omit critical nutrients, may provide insufficient dosages, and do not use optimal forms of some nutrients.

Readers of this publication have long gained access to a blend of vitamins, minerals, and plant extracts that delivers the broadest array of health-promoting nutrients in their optimal dosages and forms. •

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The Fragility of Vitamins

Fruits, vegetables, and other foods can be an excellent source of **vitamins**. But there's a catch: Vitamins easily break down in the presence of heat, air, or oxygen. This means they can be *inactivated* during cooking, storage, or exposure to the air.³⁶

That's one reason that **supplemental intake** of a full array of **vitamins** is so important for overall health.

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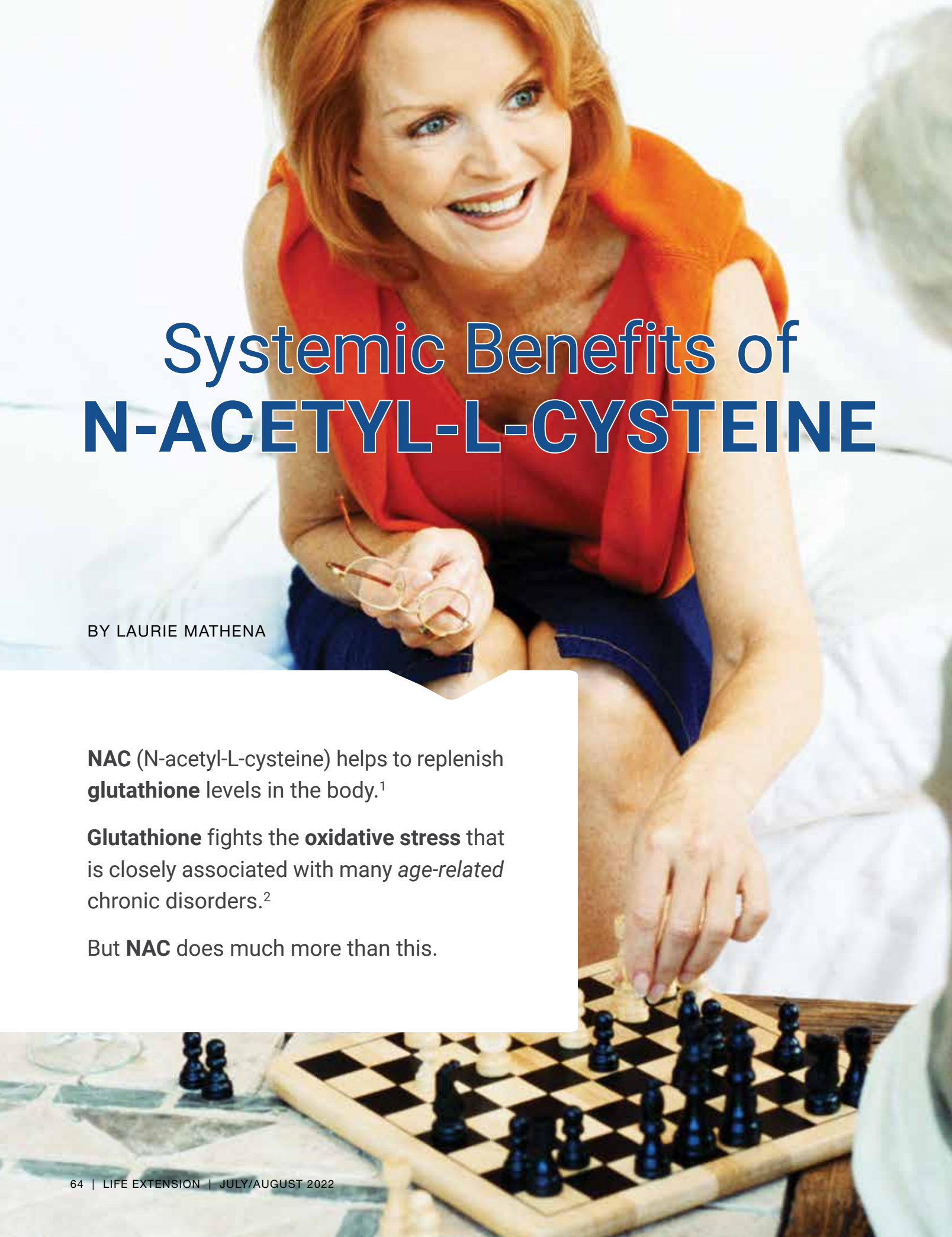
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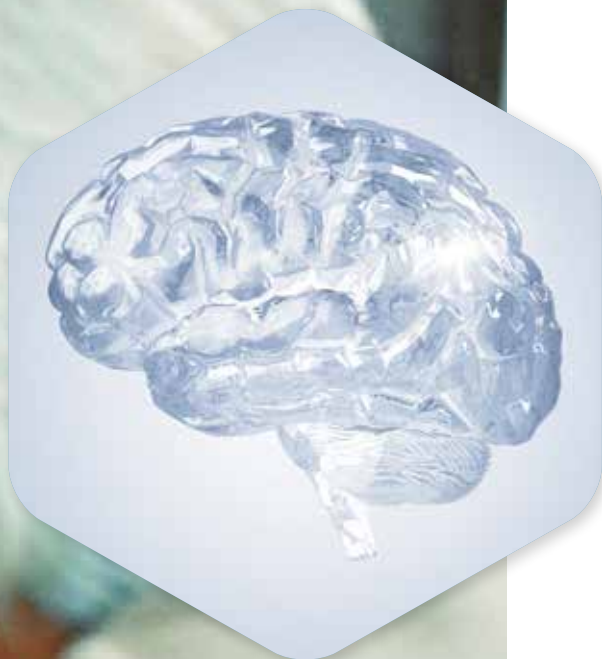
Systemic Benefits of N-ACETYL-L-CYSTEINE

BY LAURIE MATHENA

NAC (N-acetyl-L-cysteine) helps to replenish **glutathione** levels in the body.¹

Glutathione fights the **oxidative stress** that is closely associated with many *age-related* chronic disorders.²

But **NAC** does much more than this.



Applications for NAC

NAC is used in the medical setting as an antidote against **acetaminophen** poisoning.

Research interest has grown steadily over the years for its potential use in various pulmonary, cardiovascular, neurodegenerative, and liver disorders.¹

It protects against a broad array of **environmental toxins** and helps boost the body's **immune** system.¹

NAC supports healthy **respiratory tract** function and may be of value when combating bronchitis and chronic obstructive pulmonary disease.¹

The benefits of NAC extend to:¹

- Non-alcoholic steatohepatitis,
- Arterial hypertension of diabetic etiology,
- Chronic obstructive pulmonary disease (COPD),
- Chronic bronchitis,
- Male infertility,
- Cataract,
- Dry eye syndrome,
- Diabetic retinopathy, and
- Age-related macular degeneration.

NAC's Brain Benefits

Researchers summarized preclinical evidence showing NAC's ability to ameliorate symptoms and pathologies related to various psychiatric disorders.

They concluded that NAC is a strong candidate as an adjunctive approach for many psychiatric disorders.³

The progression of neuronal deterioration in certain areas of the brain may contribute to the development of **depressive** disorders.

In a rat model of depression, researchers found that NAC exerted antidepressant effects by helping protect neurons from injury. They concluded that NAC could be a potent therapeutic strategy for stress-related **depression**.⁴

Evidence continues to emerge for the benefits of this safe, inexpensive intervention.

Suggested Dosage

Most individuals gain benefits from using **600 mg to 1,800 mg/day** of N-acetyl-L-cysteine (NAC) in divided dosages. •

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A woman with long brown hair, wearing a yellow patterned top, is blowing bubbles. She holds a yellow soap box in her right hand and a green water bottle with a pink cap in her left hand. Numerous colorful bubbles are floating in the air around her face. The background is a soft-focus green field.

Fight Back Against Visible Signs of AGING



BY MICHAEL DOWNEY

Visible deterioration of **hair**, **skin**, and **nails** used to be unavoidable.¹⁻³

But there are ways to stop and even **reverse** this deterioration.

A factor involved with external degeneration is the loss of our **structural foundations**.⁴⁻⁷

The most well-known of these structural proteins are:

- **Keratin**, a component of hair, nails, and the outer layer of skin,
- **Collagen**, the principal source of the skin's strength, and
- **Elastin**, which allows tissues to resume their shape after stretching or contracting.

While thousands of dollars are often spent on external treatments, overlooked are **oral compounds** that have been shown to **replenish** these vital **structural proteins** in the hair, nails, and skin.

A Keratin Breakthrough

There's a longstanding problem with taking oral **keratin** supplements to replace declining keratin levels in the body. The heat and other factors normally needed to process keratin rob it of its biological activity, rendering it all but useless.

But scientists have developed a form of keratin that is **soluble** and **highly bioavailable**.

This **solubilized keratin** is delivered to cells in the **hair, skin, and nails**. There, it replenishes keratin levels depleted in the aging process.⁸⁻¹⁰

Laboratory studies show that **solubilized keratin** stimulates skin cells to proliferate at a rate up to **160%** greater than they otherwise would, helping cells increase their own **production** of diminished **structural proteins**.¹⁰

Clinical Keratin Studies

In a series of clinical trials, adult women were given either a daily **placebo** or **500 mg of solubilized keratin** with additional vitamins and minerals (biotin, zinc, copper, and vitamins B3, B5, and B6).

After 90 days, clear improvements were seen to hair, skin, and nails, as demonstrated by the following results:

In one study of women with damaged, fragile, and stressed **hair**, the number of hairs lost during washing was reduced by **30%**, hair strength increased by **12%**, and hair appeared **smoother** and shinier.¹¹

In another trial, those who took this **keratin** had a:¹²

- **47.1%** subjective improvement in **hair appearance**,
- **47%** reduction in the number of hairs that could be **removed** in a hair-pull test, and
- **9.2%** increase in hair follicles in the **growth** phase.

Those taking novel **keratin** also had the following significant improvement to their **nails**:¹²

- **87.5%** reduction in tendency to **break** (compared with **28.5%** among placebo subjects),
- **50%** increase in nail **hardness**,
- **37.5%** increase in nail **smoothness**, and
- **20.8%** improvement in natural **appearance**.

For women (ages 40-71) with obvious **skin aging**, the same **keratin** formulation reduced the appearance of **lines** and **wrinkles**, resulting in a:¹³

- **30.4%** increase in skin **moisture**,
- **16.8%** improvement in skin **elasticity**,
- **17.9%** improvement in skin **smoothness**, and
- Visible reduction in **wrinkle depth** among **58.3%** of participants.

Collagen's Vital Role

Collagen is a major component of **nails** and **skin**. It normally comprises **70%** of the weight of the **dermis**, the inner layer of the skin.¹⁴

Collagen provides the **structural** foundation for **elastin fibers**, a key requirement for supple, flexible skin.

Aging *decreases* the number of **collagen fibers** in the dermis and causes elastin fibers to fray and lose elasticity. This deterioration leads to **wrinkled** and **sagging** skin.¹⁵

Restoring depleted collagen is not as simple as ingesting more collagen. The collagen first needs to be partially broken down through a special process in order to be **bioavailable** (absorbable).

Researchers developed a blend of **bioactive collagen peptides** (short chains of amino acids), derived from **type I collagen**, which is the most abundant form of collagen in the human body.

These highly bioavailable **collagen peptides** provide the building blocks for collagen synthesis and stimulate **collagen** and **elastin** production in the skin.¹⁶

They also protect the skin by *reducing* the activity of **metalloproteinase 2**, a "protein-melting" enzyme that breaks down collagen and hastens skin aging.¹⁷

The effect is a dramatic reduction of **skin wrinkles**.

Scientists have also clinically demonstrated that these **collagen peptides** accelerate **nail** growth, reduce nail brittleness, and decrease frequency of nail breakage.¹⁸

Collagen's Clinical Benefits

Results from two placebo-controlled trials of female volunteers found that taking **2.5 grams of bioactive collagen peptides** once daily for eight weeks resulted in healthier, more supple **skin**.

WHAT
YOU
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TO
KNOW

Among the improvements were a:^{16,19}

- **20.1%** reduction in **wrinkle depth**,
- **65%** increase in the accumulation of **type I pro-collagen** (a precursor of collagen),
- **18%** increase in **elastin** fibers, and
- **7%** improvement in skin **elasticity** (which persisted four weeks after treatment stopped).

A third study found that taking **2.5 grams** of bioactive collagen **peptides** daily for six months reduced **cellulite** in women by **9%** and decreased thigh skin waviness by **11.1%**.²⁰

In a trial testing the effect on **nails**, healthy women who took **2.5 grams** of **bioactive collagen peptides** once daily for 24 weeks had a:¹⁸

- **12%** increase in nail **growth rate**,
- **42%** decrease in the frequency of **broken nails**, and
- **64%** reduction in **brittleness**.

Remarkably, four weeks *after treatment ended*, this reduction in brittleness extended to **88%** of participants. This likely resulted from the effect of the peptides on the nail matrix.¹⁸

A whopping **80%** of participants agreed that the **collagen peptides** improved their nails' **appearance** and expressed complete satisfaction with the results.¹⁸

Biotin For Better Nails

Two other nutrients can act as **catalysts** in helping to rebuild damaged structural tissues: **biotin** and **silicon**.

A water-soluble B vitamin, **biotin** has been shown in animal²¹ and human²²⁻²⁴ studies to improve the hardness and integrity of **nails**.

In one study, taking **2.5 mg** of oral **biotin** daily for an average of 5.5 months increased the **firmness** and **hardness** of aged, damaged nails in **91%** of subjects.²²

In a similar study on women with brittle, splitting nails, taking **2.5 mg** of biotin daily for at least **one month** improved nail integrity, brittleness, and splitting in **63%** of subjects.²⁴

A third study of women with brittle and splitting fingernails showed that **oral biotin** reduced nail splitting and increased **nail thickness** by **25%**.²³



Healthier Skin, Hair, and Nails

- Over time, the quality of our **hair**, **skin**, and **nails** deteriorates, leading to visible signs of aging.
- This occurs as a result of a decline in the quality and amount of the essential structural proteins **keratin**, **collagen**, and **elastin**.
- Taking highly bioavailable forms of **solubilized keratin** and **collagen peptides** can replenish these structural proteins.
- Results from clinical studies show that taking these compounds can reduce skin wrinkle depth by **20.1%** and improve the strength, growth, and appearance of hair and nails.
- Two other nutrients, **biotin** and **silicon**, have been documented to complement these rejuvenation effects.
- Research shows that these oral ingredients can reverse the visible signs of aging that occur in hair, skin, and nails.

Silicon

Silicon also helps keratin and collagen to rebuild the cellular architecture of **hair**, **skin**, and **nails**.²⁵⁻²⁸

Scientists have suggested that **hair** strands with higher **silicon** content fall out at a lower rate and display greater brightness, and studies show that silicon use may improve hair strength and strands' resistance to breakage.²⁸

It is also associated with the synthesis of **glycosaminoglycans**, molecules that help create the substance that fills the space between **collagen** and **elastin**.^{26,28}

Silicon is one of the most abundant minerals in the composition of **nails**.²⁹ Soft and brittle nails can be an indicator of silicon *deficiency*.²⁸

Taken together, **keratin**, **collagen peptides**, **biotin**, and **silicon** show great promise for rejuvenation of skin, hair, and nails, and reversal of visible signs of aging.

Summary

The loss of the amount and function of **structural proteins** as we age leads to thinning **hair**, sagging and wrinkled **skin**, and brittle, breakable **nails**.

Scientists have developed forms of **keratin** and **collagen** that are taken orally and help restore **structural proteins** from *within*, helping to maintain youthful structure and function with age.

Two additional nutrients, **biotin** and **silicon**, help restore the architecture that supports healthy hair, youthful-looking skin, and stronger nails.

These compounds can improve the strength, growth, and health of hair and nails, increase skin moisture and elasticity, and significantly reduce skin wrinkles. •

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COMBAT BELLY FAT WITH AMPK

Studies show that *increasing AMPK* activity encourages cells to stop storing fat and start *burning* it for energy. So we've created AMPK Metabolic Activator to help trigger AMPK, causing your body to burn unwanted fat—particularly around your abdomen.



"Oh, I love this! I noticed my pants are looser and I can fit in my skinny jeans."

Adela

VERIFIED CUSTOMER REVIEW

This product is available at fine health food stores everywhere.

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



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.

Restore Smoother, Youthful- Looking Skin from the Inside Out

Dryness and loss of firmness are outward signs of normal aging.

One reason is loss of **ceramides** that are required for skin to retain its **moisture** and youthful suppleness.

Skin Restoring Ceramides contains wheat-derived ceramide lipids in an **oral** capsule that **hydrate** the skin and smooth the appearance of fine lines and wrinkles.



ITEM #02096

30 liquid vegetarian capsules

This product is available at fine health food stores everywhere.



Contains wheat. Gluten free.

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*The quickest way to
betray your age is with a
tired appearance...*

"I like what I see when I
look in my mirror!"

Nancy

VERIFIED CUSTOMER REVIEW

Working from the inside out, **Hair, Skin & Nails Collagen Plus Formula** is an oral supplement with nutrients shown to benefit the hair, skin, and nails to keep them looking vibrant and healthy.

Rejuvenating nutrients include:

- **VERISOL® Bioactive Collagen Peptides®**—Stimulates the formation of new collagen and elastin to promote skin suppleness and elasticity¹
- **Cynatine® HNS Plus**—Provides solubilized keratin, zinc, B vitamins, biotin, and copper to boost production of keratin for strong hair, skin, and nails
- **Biotin**—Supports nail strength and integrity²
- **Silicon**—For the formation of collagen and keratin molecules³



Item #02322

120 tablets

Support Hair, Skin, and Nails from Within

This product is available at
fine health food stores everywhere.

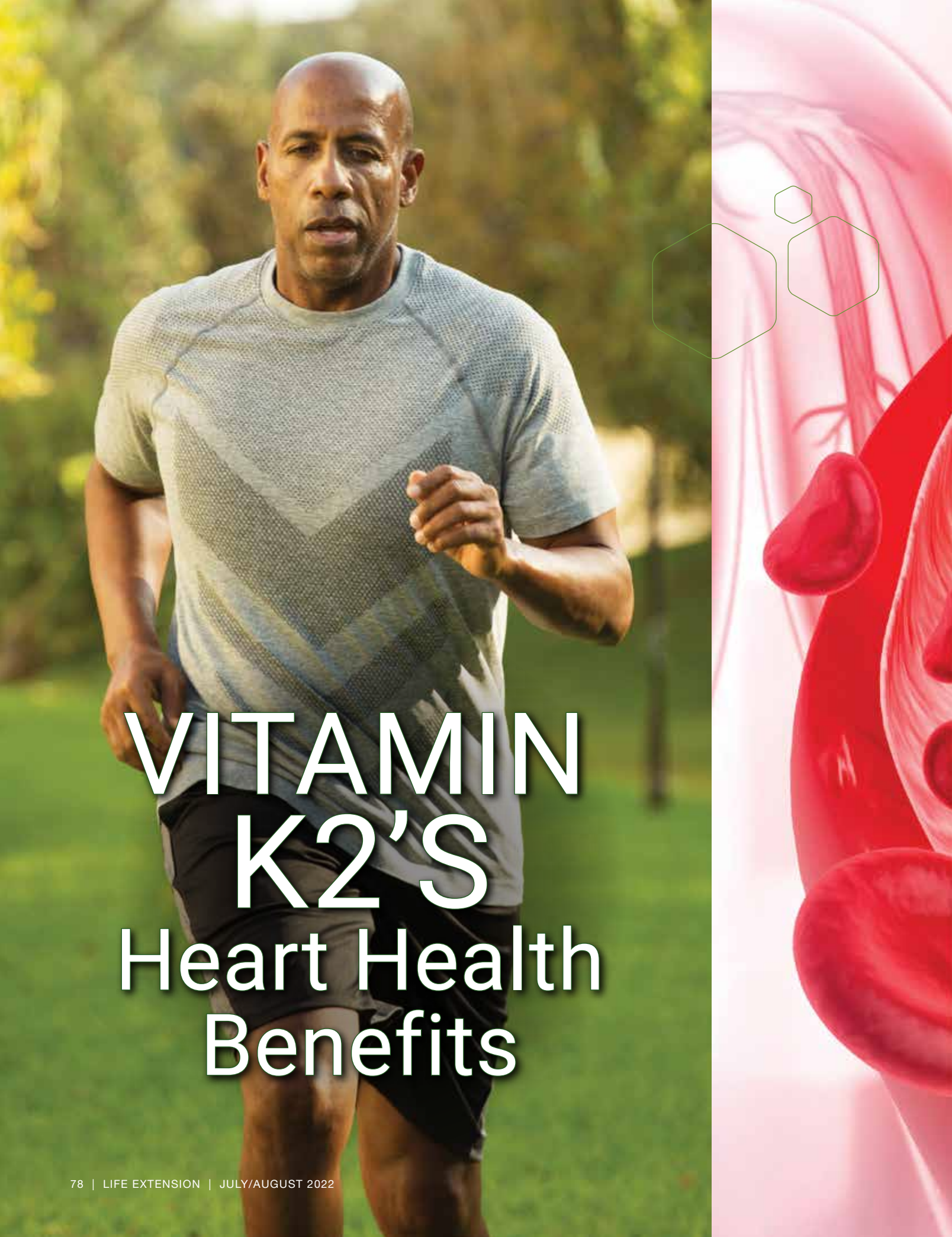
Cynatine® is a registered trademark of Roxlor, LLC. VERISOL® and Bioactive Collagen Peptides® are registered trademarks of GELITA AG.

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3. *Nutr Today.* 1993;28(4):13-8.



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A full-page background image featuring a man in a grey and blue patterned athletic shirt and black shorts running on a green lawn in a park. On the right side, there is a vertical pink overlay containing a stylized anatomical illustration of a heart and blood vessels, with several red blood cells depicted in the foreground. Three green hexagonal outlines are positioned near the top of this overlay.

VITAMIN K2'S Heart Health Benefits



BY ANTHONY PAYNE, N.M.D., PH.D., M.D. (HONORARY)

Vitamin K2 is best known for helping to build strong, healthy bones.

Some of the same skeletal benefits make it a powerful protector of the **cardiovascular system**.¹

Cardiovascular disease is the leading killer in the U.S.² **Vitamin K2** may help to:^{1,3}

- Reduce arterial stiffness,
- Slow the progression of arterial and valve calcification,
- Lower the incidence of diabetes, and
- Decrease cardiovascular mortality.

In one study, adults 55 and older were followed for up to **10 years**. Those with the *highest* intake of **vitamin K2**, compared to the *lowest*, had a **57%** lower risk of death from coronary heart disease—and a **26%** lower risk of death **from any cause**.⁴

About Vitamin K

There are two main types of **vitamin K**.⁵

Vitamin K1 is primarily found in green leafy vegetables. It has long been used to promote healthy **blood clotting** and prevent abnormal bleeding.⁵

Vitamin K2 is also known as **menaquinone**. It is essential for the health of bones and the cardiovascular system. Emerging evidence indicates it may play a vital role in **immune** function and in the health of the nervous system.¹

Vitamin K2 exists in several forms. Among these, **menaquinone-4 (MK-4)** and **menaquinone-7 (MK-7)** have been studied most extensively.^{6,7}

MK-4 is found mainly in dairy foods. **MK-7** is primarily found in fermented foods, such as kefir (fermented milk) and sauerkraut.^{5,8}

Preventing Atherosclerosis

In the U.S., over **650,000** people die from **heart disease** each year. That's roughly **one in every four deaths**.²

More than half of these deaths are from **coronary artery disease**, caused by a buildup of **plaque** (made of fats, calcium, and other substances) in the walls of arteries that restricts blood flow.²

This buildup is known as **atherosclerosis**. It can result in chest pain, **heart attacks**, and **strokes**.^{9,10}

Daily oral intake of **vitamin K2** may *prevent* atherosclerosis from progressing.

Last year, the **American Heart Association** released research showing that *higher* vitamin K intake was associated with significantly *lower* risk of **hospitalizations** resulting from atherosclerotic cardiovascular disease.¹¹



Combating Arterial Stiffness

One of the most significant ways **vitamin K2** protects against cardiovascular disease is by preventing **arterial stiffness**.

This physical stiffening of arteries contributes to cardiovascular disease.¹²

Vitamin K2 activates **matrix Gla**, a protein that helps prevent **calcium** from being incorporated into **arterial** tissue.¹

It also activates another protein that binds calcium to **bone**. This strengthens bone while at the same time helping to prevent **calcification** of our **arteries**.

Protecting Endothelial Function

All blood vessels are lined with a very thin layer of cells called the **endothelium**. This tissue helps regulate the flow of **calcium** and other substances into and out of the bloodstream.^{13,14}

A healthy endothelium is needed for optimal cardiovascular health.¹⁵

Endothelial dysfunction is a major contributor to aging, atherosclerosis, hypertension, and the complications of diabetes.¹⁵

It is characterized by an imbalance in the constriction and relaxation (dilation) of arteries, a decrease in nitric oxide bioavailability, and an increase in reactive oxygen species and pro-inflammatory factors.¹⁵

A hallmark of many types of cardiovascular disease is **endothelial dysfunction**.

When endothelial cells cannot function properly, plaque builds up and calcifies, and narrows the artery.¹⁶

Vitamin K provides cardiovascular protection thanks to its role in calcium homeostasis.

In a preclinical study, giving **vitamin K2** to mice prone to developing atherosclerosis increased nitric oxide production. This improved the ability of arteries to dilate.¹⁷

A **2021** review published in *Open Heart Journal* stated that:

*"Increased vitamin K2 intake may reduce arterial stiffness, slow progression of vascular and valvular calcification, lower the incidence of diabetes and coronary artery disease, and decrease cardiovascular mortality."*³

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Real-World Results

The heart-protective effects of **vitamin K2** have been demonstrated in multiple studies.

In observational studies, *higher* intakes of vitamin K2 were associated with *lower* rates of **arterial calcification** and **death** from coronary artery disease.¹⁸

In one study, women with the *highest* K2 intake were found to be at a **20% lower** risk for coronary artery **calcification** than women who had the lowest intake.¹⁹

Researchers analyzing more than 16,000 Dutch women who were followed for an average of 8.1 years found that *each 10 mcg/day increase* in vitamin K2 intake was associated with a **9% reduction** in coronary heart disease risk.²⁰

In another study, researchers followed more than 4,800 adults over age 55 for up to **10 years**.⁴

Overall, those with the *highest* K2 intake had a **57% lower** rate of death due to **coronary heart disease** and a **26% lower** rate of **death from any cause**.⁴

Safety of High-Dose Vitamin K2

Research suggests that **higher doses** of vitamin K2 intake are most likely to prevent the development or progression of cardiovascular disease.

In clinical studies involving daily K2 doses ranging from **10 mcg** to **135 mg**, there have been **no reports** of adverse side effects.²¹ (The vitamin K2 dose of **135 mg** is very high by historic standards, yet no toxicity was observed.)

Protecting the Heart with Vitamin K2

- Cardiovascular disease is the leading cause of death in the U.S. It is frequently driven by **atherosclerosis**, buildup of plaque in arteries.
- **Vitamin K2** can help prevent and reduce calcification in arteries. It also reduces endothelial dysfunction, further decreasing atherosclerosis risk.
- In observational studies, those with the *highest* intake of vitamin K2 have *lower* rates of heart disease and as much as a **57% lower** rate of death due to **coronary heart disease**.

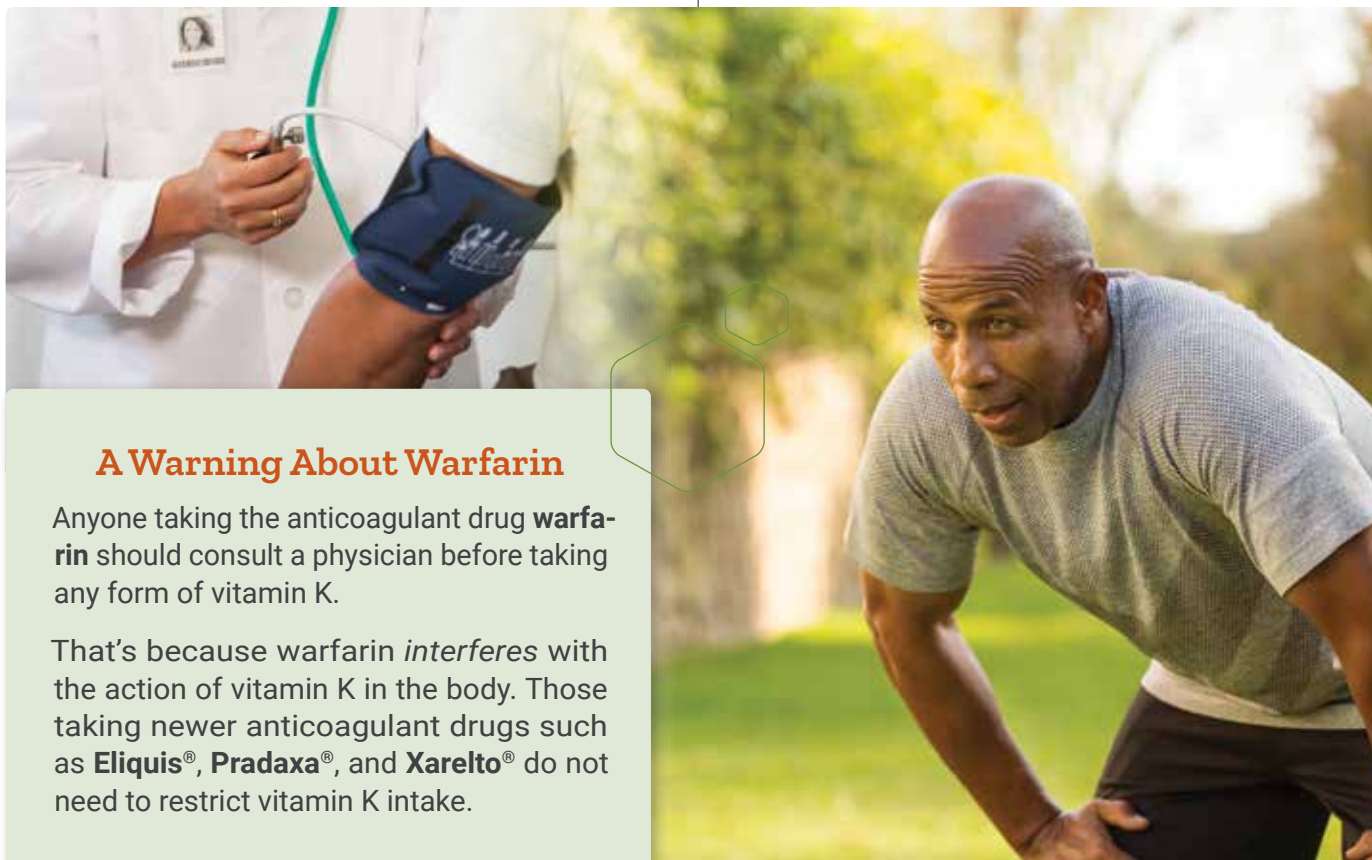
Japanese doctors routinely prescribe **45 mg** of vitamin K2 daily to women with **osteoporosis**.^{21,22}

These amounts may also help prevent the progression of atherosclerosis.

Summary

Vitamin K2 helps prevent arterial stiffening, buildup of plaque in artery walls, and endothelial dysfunction.

These and other actions reduce the development and progression of **atherosclerosis**, a major cause of heart disease. ●



A Warning About Warfarin

Anyone taking the anticoagulant drug **warfarin** should consult a physician before taking any form of vitamin K.

That's because warfarin *interferes* with the action of vitamin K in the body. Those taking newer anticoagulant drugs such as **Eliquis®**, **Pradaxa®**, and **Xarelto®** do not need to restrict vitamin K intake.

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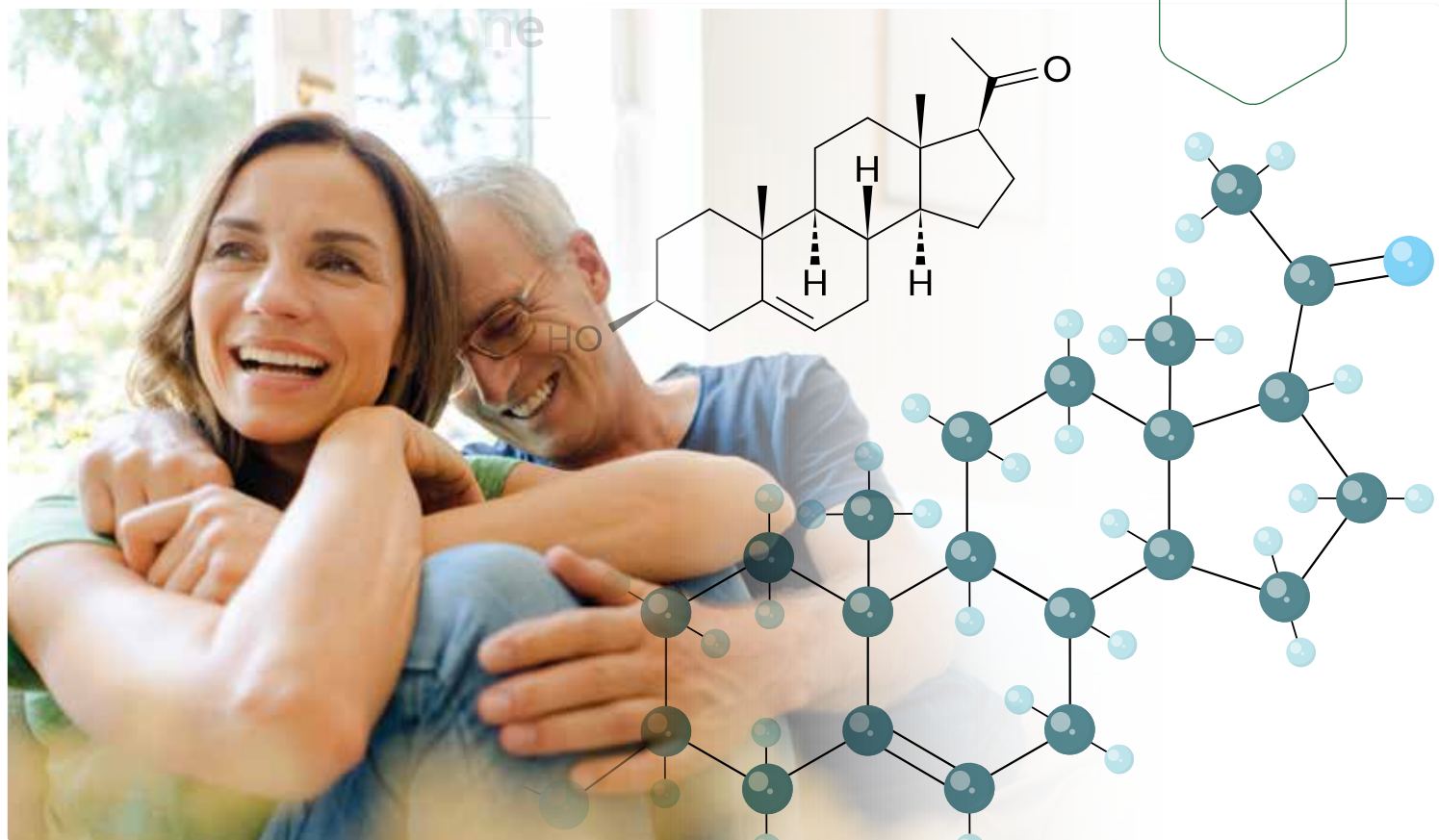
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What Is Pregnenolone?

BY LAURIE MATHENA



Pregnenolone is a hormone naturally produced in the body.

It has beneficial properties of its own and converts to other hormones such as **DHEA**, **progesterone**, **estrogen**, **testosterone**, and **cortisol**.

For this reason, it is sometimes called the mother of all hormones.

The body's production of pregnenolone declines with age as does that of DHEA, progesterone, estrogen, and testosterone.^{1,2}

Reduced Back Pain in Military Veterans

Previous studies have associated **pregnenolone** with improved memory, increased cognition, and elevated mood.³⁻⁵

A recent study highlighted another benefit: It significantly **reduced low-back pain** in Iraq- and Afghanistan-era U.S. military veterans.⁶

Compared to the **placebo** group, the **pregnenolone** group reported significant reductions in **low-back pain** at the end of the study.

They also reported **improvements** on scores for the

degree to which their **pain** interfered with work and activity.

Based on the results of this study, the researchers suggest that **pregnenolone** could represent a novel, safe, and potentially effective treatment for **chronic low-back pain** in this population.

Improved Depression Symptoms

Low **pregnenolone** levels have been linked to **depression**.

In **clinically depressed** patients not receiving medication, researchers observed *lower* cerebrospinal pregnenolone levels, compared to healthy volunteers.⁷

In a clinical study, patients with **bipolar depression** were randomized to receive **pregnenolone** or a **placebo** as an add-on medication. After 12 weeks, researchers observed *higher* remission rates in the pregnenolone group than in the placebo group. The authors concluded that:

*"The results suggest that pregnenolone may improve depressive symptoms in patients with bipolar disorder and can be safely administered."*⁸

Several **clinical trials** are now on the way.

At the **University of Texas Southwestern Medical Center** a clinical trial will evaluate the impact of **pregnenolone** on improvements in the severity of **depressive symptoms** in women.⁹

We look forward to reporting on human studies as their results are published.

Suggested Dosage

For those looking to support youthful hormone levels along with mental focus, memory, and more, optimal blood (serum) pregnenolone levels should be between **125-175 ng/dL**.

This can usually be achieved with daily pregnenolone doses ranging between **50 mg** and **100 mg**, preferably taken early in the day. •

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Studies show that pregnenolone helps maintain:¹⁻⁵

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“America’s Favorite Veterinarian”

Dr. Gary Richter Discusses Whole-Food Nutrition for Our Pets

GARY RICHTER, DVM



Eating a whole-food diet is critical for a human’s optimal health and longevity, but what you feed your **pets** is important for their health and well-being as well.

Dogs get cancer at approximately the same rate as humans. They also suffer from heart disease, arthritis, allergies, gastrointestinal problems, and many other health issues that are similar to those faced by humans.

Their diet could be the reason.

As veterinarian Gary Richter explains here, standard dry and canned foods are highly processed foods that produce inflammation and harmful advanced-glycation end products in pets the same way that processed food does in humans.

Pet owners who switch to more natural diets for their animals report that the pets experience benefits like more energy, a healthier hair coat, better digestion, and dramatic improvements in gastrointestinal issues and allergies.

In this eye-opening interview with *Life Extension*®, Dr. Richter explains why standard kibble and canned food are so harmful for your pet. He also details the best foods to feed your pets to support their overall health.

—LAURIE MATHENA

LE: We know that eating a healthy diet is critical for humans, but how critical is it for our pets to eat an optimal diet as well?

Dr. Richter: Readers of *Life Extension*® are no strangers to the concept of optimal nutrition being a cornerstone of good health and longevity.

Even to the uninitiated, it is common knowledge that fresh, whole foods are better for your health than highly processed foods.

Despite it being self-evident when it comes to our own health and longevity, it is likely many have not considered the concept of fresh, whole food for our pets.

Every animal on earth evolved eating a fresh, whole-food diet, and that is how all biological systems evolved to function optimally.

After all, there were no bags or cans of food millions of years ago when evolution was hard at work developing what has become today's animal kingdom.

All species function at their best when they consume the nutrients on which their bodies are designed to thrive.

While an optimal diet clearly varies from one species to the next (herbivores, carnivores, omnivores, etc.), the common through line is that fresh, whole foods are best for all animals.

LE: Does this mean that standard canned and dry kibble isn't good for our pets?

Dr. Richter: With the understanding that an optimal diet for any animal is going to be made from fresh, whole foods, let's consider most pet food today.

Walk into any large pet store and you are faced with shelves full of kibble and canned food.

The companies that make these foods would have you believe these are "optimal" nutrition for your dog or cat.

They put pictures of fresh food on the labels and aggressively advertise on TV, in print, and on the Internet to let you know the food in that bag or can will keep your pet healthy and happy for a lifetime.

On closer examination however, the veneers of these foods peel back surprisingly easily.

LE: How can you distinguish a beneficial product from a harmful one?

Dr. Richter: Start by reading the ingredient list. Many middle-to-lower tier foods use meat by-products and meat meal as protein sources.

While some ingredients that go into by-products or meal could be healthy for your pet, we have no way of knowing what is actually in there. Some of the possibilities include hooves, horn, beaks, feathers, and wool.

Similarly, many pet food companies use carbohydrates like grains, legumes, etc., as a cheaper source of calories than meat and as a filler and binder for dry foods.

Dogs, and especially cats, are not evolutionarily adapted to high-carbohydrate diets.

LE: Is this a problem with premium brands as well?

Dr. Richter: Even the "premium" brands of pet foods are highly problematic for dogs and cats.

Read the ingredients of top-tier dry and canned foods and you will find ingredients that look good. In fact, they *are* good ingredients—or at least they *were*.

When you open that bag or can of food for your pet, how much does what you see resemble the high-quality fresh ingredients you read listed on the label?

LE: How have such inferior products become the standard diet for our pets?

Dr. Richter: A good thing to remember is dry and canned pet food exists for only one reason—our convenience.

The ability to have food for our pets that requires no refrigeration and is shelf stable for years is undeniably attractive.

The trouble is, preventing fresh food from spoiling without refrigeration often requires things to be done to the food that aren't necessarily in the best interest of our pets.

The shelf stability we see in most processed pet foods is achieved through the use of very high heat and pressure during processing. This kills pathogens that could lead to spoilage but creates a host of concerns that could prove harmful to our pets.

LE: Why is something like high heat problematic?

Dr. Richter: High heat and pressure frequently lead to loss of vital nutrients.

Anyone who has experienced overcooked meat or vegetables will instantly understand what this does to food.

You don't need to be a clinical nutritionist to recognize that overcooked food is not as nutritious as fresh or lightly cooked food.

As problematic as what is *missing* from highly processed pet foods is what is *created* during the high-heat and high-pressure cooking process.

Advanced glycation end products (AGEs) and Maillard reaction products (MRPs) are both produced as a result of proteins and carbohydrates being exposed to heat and pressure.

These chemical compounds are well known to promote inflammation and have been linked to cancer.

AGEs and MRPs are one of the main reasons why it is so important for people to eat fresh whole foods. It is also why fried foods and charred meats are frowned upon by nutritionists and longevity experts.

These foods cause inflammation in our bodies, and inflammation is the root cause of many chronic diseases experienced by humans and animals alike.

Perhaps one of the most disturbing aspects of processed pet foods is the amount of these toxins our pets are consuming.

When researchers evaluated the presence of MRPs in dogs and cats that consumed kibble or canned diets, it was found that dogs and cats consume 122 and 38 times more MRPs per day, respectively, than the average adult human!

LE: Are there any guidelines or regulations for what can and cannot be included in commercial pet food?

Dr. Richter: While there are nutrition standards set forth by the American Association of Feed Control Officials (AAFCO), these are minimum standards that ensure animals will not suffer from illness due to nutrient deficiencies.

These standards are largely concerned with macronutrients like protein and fat, and vitamins like vitamin A, B, C, D, etc.

There is no accounting for where the nutrients come from, as well as many micronutrients.

AAFCO standards provide an excellent minimum standard for pet food, but there is a lot of daylight between “minimum” and “optimal” nutrition.

If you want your car to function perfectly, you need to put in the type of gas and oil with which it was designed to function optimally.

The same is true for any biological specimen. It can function with minimum standards, but if you want it to work as well as it can for as long as it can, we need to do much better.

LE: If kibble and canned diets for our pets are so problematic, are there alternatives?

Dr. Richter: Fortunately, yes. And they don't all require you to home cook food for your dog or cat.

There are many fresh, whole-food diets for dogs and cats available in pet stores and on the Internet.

They come in several formats, including fresh-frozen cooked, fresh-frozen raw, freeze-dried raw, and dehydrated foods.

LE: What does an ideal diet look like for our pets?

Dr. Richter: In a perfect world our pets would all be eating either raw or lightly cooked diets. These diets are about as close to our pet's evolution-ary diet as we can get.

These diets come in a variety of proteins and can be either purchased or made at home.

Clearly, buying food that merely needs to be thawed and fed is more convenient, but it also is more costly.

Making fresh food at home is an excellent, and more cost-effective option for people who don't mind spending a little time in the kitchen.

The goal with making food at home is to make as much food as you have space for in the freezer. Some people with multiple pets or large dogs purchase a chest freezer for the garage and store the pre-portioned food in there and thaw it as necessary.

The one critical thing to remember when making pet food at home is you must use a recipe balanced by a nutritionist. You cannot create a balanced diet by putting meat and vegetables in a bowl.

Books are available with balanced recipes and nutritionists are also available for consultations.

LE: You mentioned freeze-dried foods. Are these a good option for someone who doesn't want to make homemade food?

Dr. Richter: Freeze-dried and dehydrated foods are an excellent option for many pet owners.

Freeze-drying is a process by which moisture is removed from cold, fresh food under a vacuum, while dehydrating uses heat to remove the moisture.

Either way, the result is food that is shelf stable, weighs very little, and is much better for pets than more highly processed foods.

The amount of processing with freeze-drying and dehydrating does not lead to the degree of nutrient loss or the creation of AGEs and MREs we see in kibble and canned diets.

Feeding these foods is about as easy as it gets. Just add water.

LE: What about cost?

Dr. Richter: Freeze-dried and dehydrated foods are often a little less costly than frozen foods, and they have the added benefit of being shelf stable.

This is a great option for people lacking extra freezer space.

It's also great if you tend to travel with your pet. You won't need to worry about traveling with frozen food if you are using a freeze-dried or dehydrated option.

LE: What are the benefits of feeding our pets this type of food?

Dr. Richter: In my experience as a veterinarian, most people who convert their pet to a fresh, whole-food diet report having an overall healthier pet, with more energy, a healthier haircoat, and better digestion.

I have seen countless pets with chronic gastrointestinal issues and allergies dramatically improve on nothing more than converting to a fresh, whole-food diet.

LE: How difficult is it to switch your pet to a whole-food diet?

Dr. Richter: Switching to a fresh diet is easy.

The goal is to make a gradual transition. This allows your pet's digestive tract to make the adjustment from processed foods to fresh foods.

In addition, for picky eaters (I'm looking at you, cat owners), a very slow transition is often the key to getting pets to accept a new food.

Begin by adding a very small amount of new food to their old food. Each day, add a little more new food and take away a little more old food.

Depending on whether your pet has a sensitive GI tract or if it's a picky eater, take anywhere from one to three weeks in the transition.

There is no hurry. Take longer if you need to.

LE: Once you find a food that works for your pet, should you stick with that one food exclusively?

Dr. Richter: When it comes to fresh-food diets, there is no absolute right or wrong, although there are some good guidelines to follow.

Variety is a good thing to provide a spectrum of nutrients and to prevent dietary sensitivities caused by prolonged exposure to one protein over a very long period of time.

Some pets can easily switch from one protein to another with no problem, while others are a little more sensitive.

For our pet friends with sensitive tummies, consider a gradual transition to a new protein every three to four months.

Feeding more than one format of food is fine, as long as your pet does OK with it.

In other words, if you want to feed some fresh and some freeze-dried, that is fine. Some people do this so

their pet is accustomed to freeze-dried for when they go out of town with it.

Additionally, if it is financially challenging to feed your pet exclusively a fresh, whole-food diet, feed them as much as you can, and for the rest use high-quality canned food or kibble.

Just as with us humans, eating some fresh food and some processed food is better than eating exclusively processed foods.

LE: What about table scraps? Should you feed your pet food from your plate?

Dr. Richter: That depends on what you are eating.

Pets don't do well with spicy or highly seasoned foods so those should be avoided. Also, avoid foods high in fat as they can cause GI upset, and never give them foods containing onions, grapes, raisins, or macadamia nuts, as these can be toxic.

With that said, if you want to put a little something from your plate in your dog or cat's bowl, go ahead—sharing is caring.

Just make sure it's only a little because we want them to be mostly eating a fully balanced, fresh whole-food diet to meet all their nutritional needs.

LE: How difficult is it for a pet owner to make the switch?

Dr. Richter: Feeding your pet a fresh, whole-food diet is easier than it has ever been.

Whether you choose fresh frozen, homemade, freeze-dried, or dehydrated foods, you are taking the single biggest step anyone can take to ensure a long and healthy life for an animal.

The greatest thing about pet nutrition is that we are completely in control of what they eat.

It is much easier to feed a pet an optimal fresh, whole-food diet than it is for us humans. Their willpower doesn't come into play.

It's no secret how critical optimal nutrition is for human health and longevity. It is all the same for our pets. •

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

Dr. Gary Richter specializes in holistic veterinary care. From 2002-2021, he was the owner and medical director of Montclair Veterinary Hospital in Oakland, California. He launched Holistic Veterinary Care in 2009, also in Oakland.

His animal hospitals have received more than 30 local and national awards, including Best Veterinary Hospital, Best Veterinarian, and Best Alternative Medicine Provider. He was named one of the top 10 veterinarians in the US in 2012, America's Favorite Veterinarian in 2015, and he received the Holistic Practitioner of the Year Award in 2019.

Dr. Richter also wrote an Amazon Best-Selling book, *The Ultimate Pet Health Guide*. For more information, visit www.mypetthrives.com.



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Bok Choy

BY LAURIE MATHENA

Chinese cabbage—more commonly known as bok choy—is a cruciferous vegetable that’s been eaten in China for more than 1,500 years.

It continues to be a common ingredient in many Asian soups and stir-fries, but it deserves a spot at the table here in the US as well.

Bok choy has been ranked the **sixth** most nutrient-dense food (based on the Aggregate Nutrient Density Index).

Like other cruciferous vegetables, bok choy comes loaded with nutrients that can help reduce cancer risk, fight inflammation, reduce heart disease risk, and more.

People who eat more cruciferous vegetables like bok choy have a lower risk of numerous types of cancer, including lung, prostate, and colon cancer.¹

Bok choy contains selenium, an important mineral that helps detoxify cancer-causing compounds from the body. It’s also been shown to decrease the growth rate of tumors in rats.²

Bok choy’s “superfood status” comes from the variety of disease-fighting nutrients packed into its green leaves and crunchy white stalk.

For example, it contains the flavonoid quercetin, which helps reduce inflammation in the body.³

Like all other cruciferous vegetables, bok choy is rich in compounds called glucosinolates, which provide protection from serious diseases like cancer and myocardial infarction.⁴

Bok choy can be prepared in a variety of ways. Enjoy it shredded and tossed in a salad, chopped and added to soups, or sauteed with other vegetables. •



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