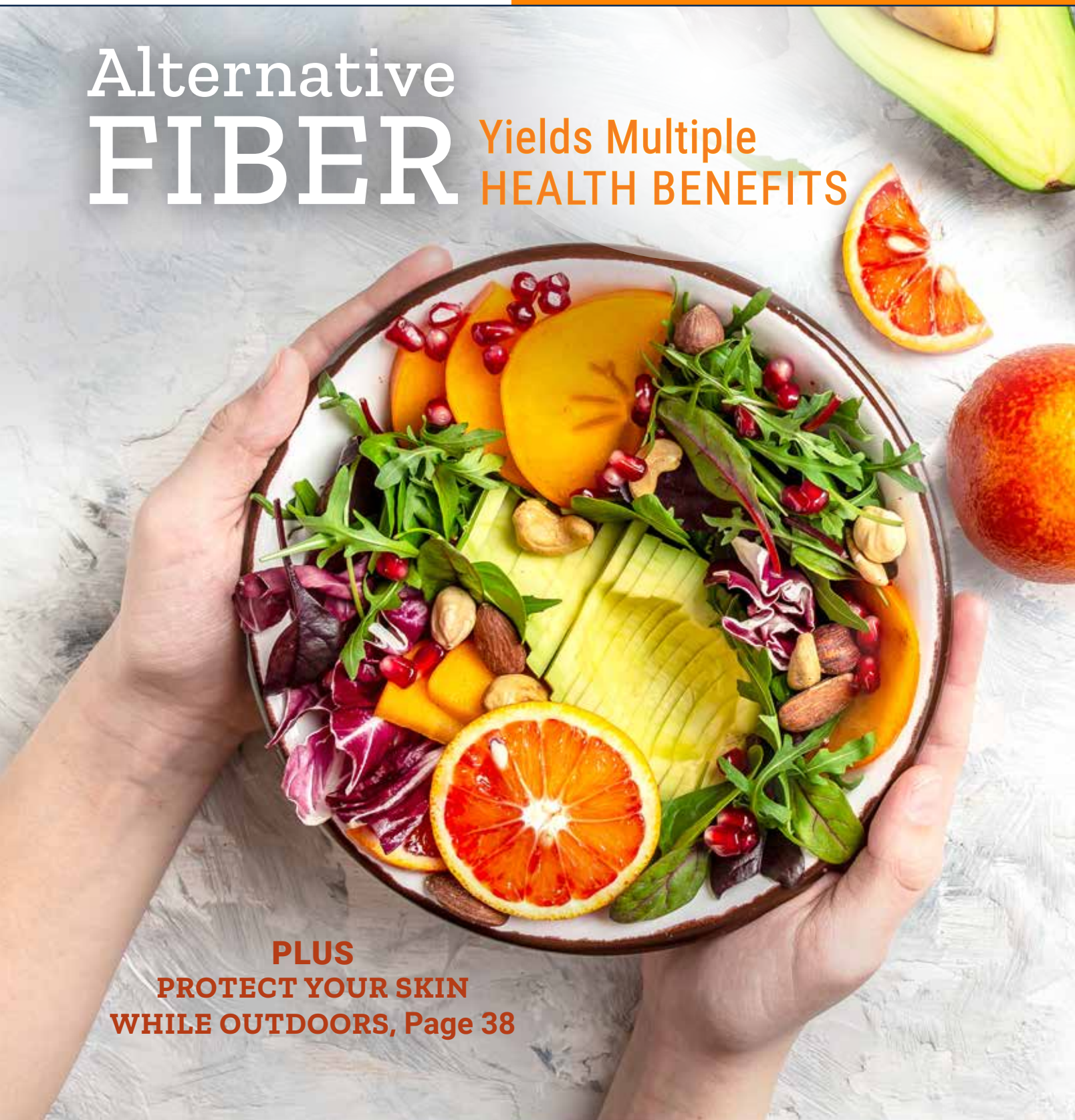
LIFE EXTENSION®
The Science of a Healthier Life®
July/August 2023

FEATURE ARTICLES

Alternative FIBER Yields Multiple HEALTH BENEFITS



PLUS
PROTECT YOUR SKIN WHILE OUTDOORS, Page 38

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

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Vitamin E (D-alpha tocopheryl succinate, D-alpha tocopherol)	**67 mg**
Vitamin E (gamma, delta, alpha, beta tocopherols)	**20 mg**
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Vitamin B3 (niacinamide, niacinamide ascorbate)	**50 mg**
Vitamin B5 (D-calcium pantothenate)	**50 mg**
Vitamin B6 (pyridoxine HCl, pyridoxal 5'-phosphate)	**75 mg**
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*Than unformulated resveratrol

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1. *Med Res Rev.* 2019;39(5):1851-1891.
2. *ACS Omega.* 2022 Apr 19;7(15):12835-45.

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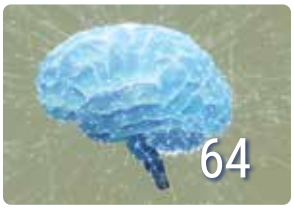
REPORTS

Easy Way to Boost FIBER INTAKE

Fiber from the **konjac plant** has been shown to provide the same benefits as other soluble **fibers**, but at a **lower** dose to reduce feelings of digestive discomfort.

DEPARTMENTS



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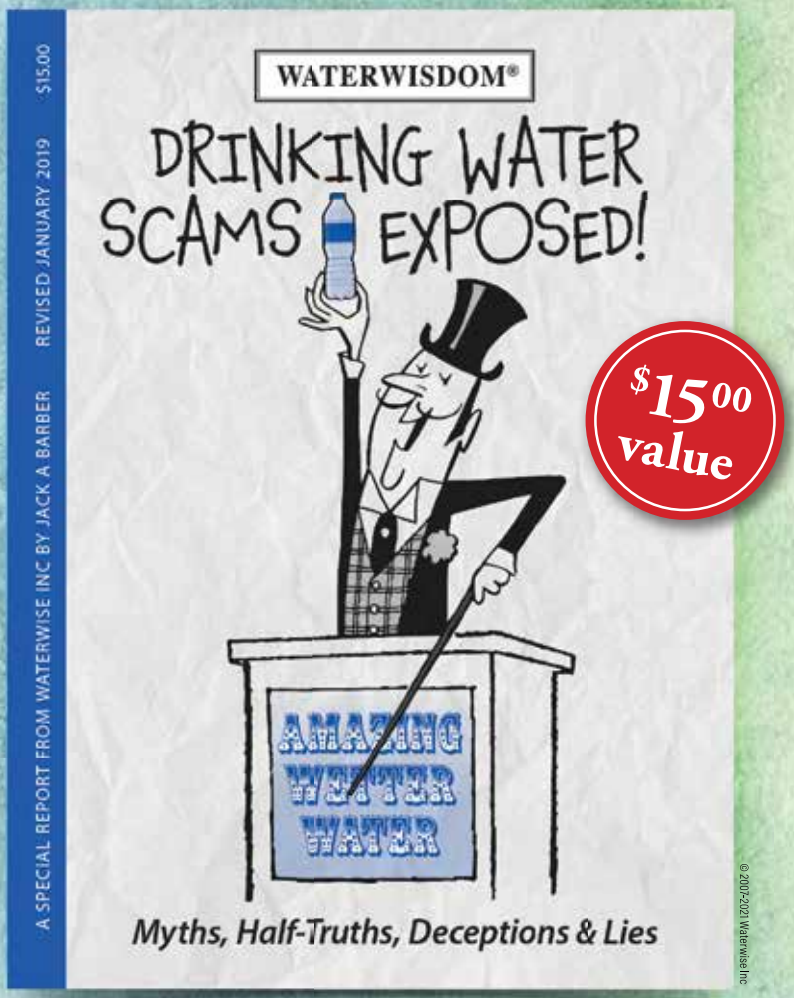

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Sandra C. Kaufmann, MD, is a fellowship-trained and board-certified pediatric anesthesiologist as well as the Chief of Anesthesia at the Joe DiMaggio Children's Hospital in Hollywood, Florida. She is the founder of The Kaufmann Anti-Aging Institute and the author of the book The Kaufmann Protocol: Why we Age and How to Stop it (2018). Her expertise is in the practical application of anti-aging research.

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John Boik, PhD, is the author of two books on cancer therapy, *Cancer and Natural Medicine* (1996) and *Natural Compounds in Cancer Therapy* (2001). He earned his doctorate at the University of Texas Graduate School of Biomedical Sciences with research at the MD Anderson Cancer Center, focusing on screening models to identify promising new anti-cancer drugs. He conducted his postdoctoral training at Stanford University's Department of Statistics.

Aubrey de Grey, PhD, is a biomedical gerontologist and Editor-in-Chief of *Rejuvenation Research*, the world's highest-impact, peer-reviewed journal focused on intervention in aging. He received his BA and PhD from the University of Cambridge in 1985 and 2000 respectively. Dr. de Grey is a Fellow of both the Gerontological Society of America and the American Aging Association and sits on the editorial and scientific advisory boards of numerous journals and organizations.

Deborah F. Harding, MD, is founder of the Harding Anti-Aging Center. She is double board-certified in internal medicine and sleep disorder medicine. She also earned the Cenegenics certification in age management medicine. She is a faculty member of the University of Central Florida Medical School.

Steven B. Harris, MD, has participated in groundbreaking hypothermia, cryothermia, and ischemia research. His research interests include antioxidant and dietary-restriction effects in animals and humans.

Peter H. Langsjoen, MD, FACC, is a cardiologist specializing in congestive heart failure, primary and statin-induced diastolic dysfunction, and other heart diseases. A leading authority on coenzyme Q10, Dr. Langsjoen has been involved with its clinical application since 1983. He is a founding member of the executive committee of the International Coenzyme Q10 Association, a fellow of the American College of Cardiology, and a member of numerous other medical associations.

Dipnarine Maharaj MD, MB, ChB, FRCP (Glasgow), FRCP (Edinburgh), FRCPath., FACP, is the Medical Director of the Maharaj Institute of Immune Regenerative Medicine, and is regarded as one of the world's foremost experts on adult stem cells. He received his medical degree in 1978 from the University of Glasgow Medical School, Scotland. He completed his internship and residency in Internal Medicine and Hematology at the University's Royal Infirmary.

L. Ray Matthews, MD, FACS, is a professor of surgery and director of Surgical Critical Care at Morehouse School of Medicine in Atlanta, GA, and a trauma and critical care surgeon at Grady Memorial Hospital. He has published widely and is known as one of the top vitamin D experts. Dr. Matthews has spoken before the U.S. Food and Drug Administration several times, presenting a recent update about clinical research on vitamin D.

Ralph W. Moss, PhD, is the author of books such as *Antioxidants Against Cancer*, *Cancer Therapy*, *Questioning Chemotherapy*, and *The Cancer Industry*, as well as the award-winning PBS documentary *The Cancer War*. Dr. Moss has independently evaluated the claims of various cancer treatments and currently directs The Moss Reports, an updated library of detailed reports on more than 200 varieties of cancer diagnoses.

Michael D. Ozner, MD, FACC, FAHA, is a board-certified cardiologist who specializes in cardiovascular disease prevention. He serves as medical director for the Cardiovascular Prevention Institute of South Florida and is a noted national speaker on heart disease prevention. Dr. Ozner is also author of *The Great American Heart Hoax*,*The Complete Mediterranean Diet* and *Heart Attack Proof*. For more information visit www.drozner.com.

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Xiaoxi Wei, PhD, is a chemist, expert in supramolecular assembly and development of synthetic transmembrane nanopores with distinguished selectivity via biomimetic nanoscience. She has expertise in ion channel function and characterization. She founded X-Therma Inc., a company developing a radical new highway towards non-toxic, hyper-effective antifreeze agents to fight unwanted ice formation in regenerative medicine and reduce mechanical icing.

In the News

Nutrients Most Likely to Benefit Cardiovascular Health

A systematic review and meta-analysis identified three supplements—coenzyme Q10, the B vitamin folic acid, and omega-3 fatty acids—as showing the greatest potential to lower cardiovascular disease risk, according to an article in the *Journal of the American College of Cardiology*.*

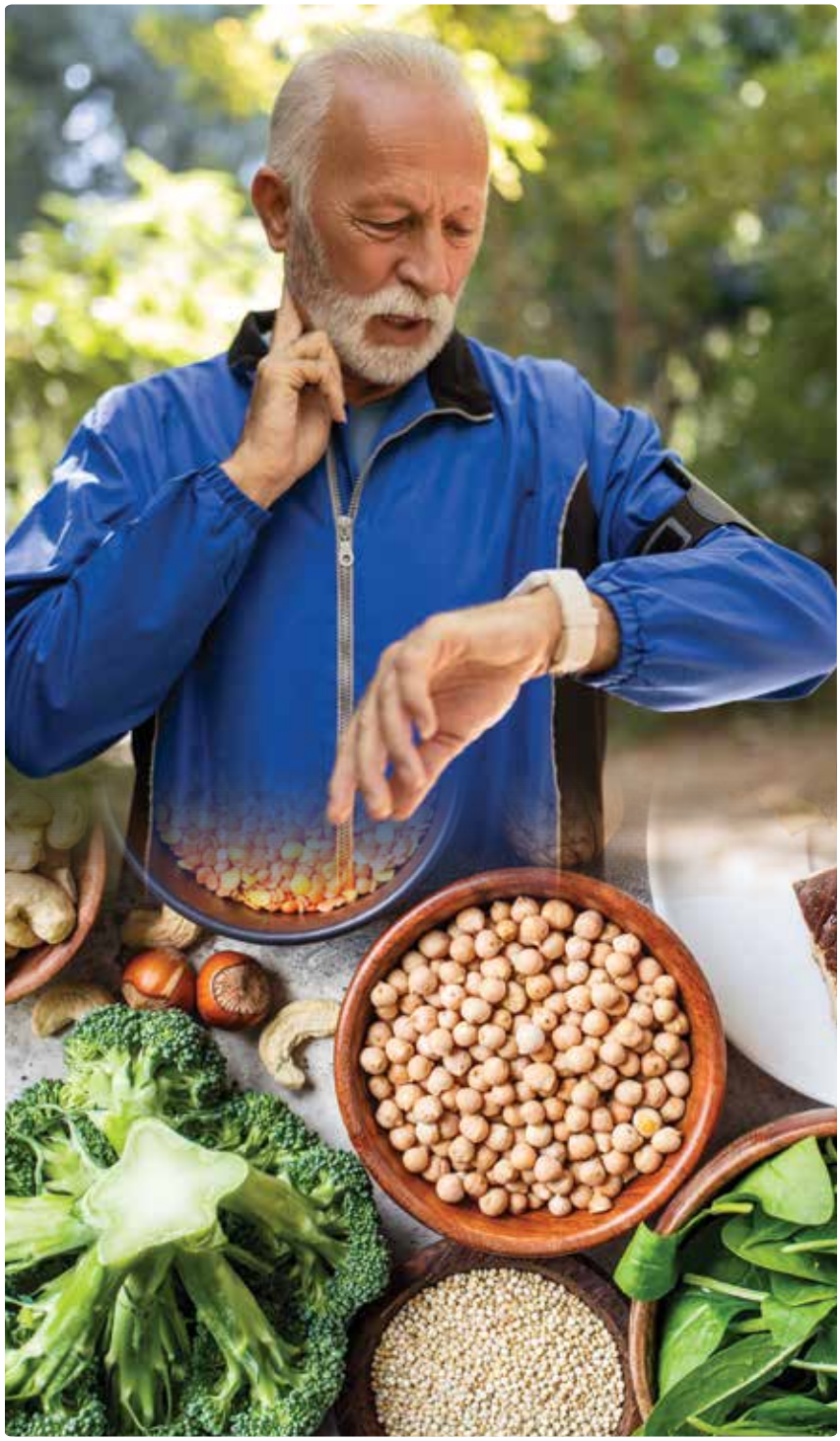
Researchers reviewed 884 clinical trials that evaluated the association between 27 supplements and cardiovascular risk.

Among all the supplements' outcomes examined, **CoQ10** was associated with a reduction in mortality from all causes during the studies' follow-up periods, **folic acid** was linked to a lower risk of stroke, and **omega-3** fatty acids were associated with a decreased risk of heart attack, coronary heart disease events and cardiovascular disease mortality.

Other nutrients were also associated with a reduction in cardiovascular disease risk, though not as great as the top three supplements noted.

Editor's Note: Supplementation of some but not all micronutrients may benefit cardiometabolic health outcomes in diverse populations.

* *J Am Coll Cardiol*. 2022 Dec 13; 80(24):2269-2285.



Higher Intake of Omega-3s Lowers Diabetics' Mortality Risk

People with diabetes who had a *higher* intake of the omega-3 fatty acids EPA and DHA had a lower risk of all-cause mortality compared to diabetics whose intake was lower, a study published in *Acta Diabetologica* revealed.*

The clinical study included 4,854 diabetic participants in the National Health and Nutrition Examination Survey 1999–2014. Mortality data were obtained through 2015.

During follow-up, 1,102 deaths occurred. People whose intake of EPA plus DHA was among the highest **20%** of participants, at more than **122 mg** per day, had a **25%** lower risk of mortality from any cause compared to those whose intake of the fatty acids was among the lowest **20%**, at **9.5 mg** or less.

When the risks of all-cause mortality associated with EPA and DHA were analyzed separately, greater DHA intake emerged as significantly associated with lower mortality risk.

Editor's Note: "…Adequate intake of omega-3 fatty acids may prevent premature death among the population with diabetes," the authors concluded.

* *Acta Diabetol.* 2023 Mar;60(3):353-362.

Curcumin Shows Benefits for People with Metabolic Dysfunction-Associated Fatty Liver Disease

Curcumin supplementation has beneficial effects in people with metabolic dysfunction-associated fatty liver disease (MAFLD), an updated meta-analysis shows.*

Researchers studied 16 randomized controlled clinical trials and six systemic reviews and meta-analyses that compared the effects of curcumin extracts or turmeric to a placebo or standard treatment in patients with MAFLD, a common cause of chronic liver disease that can progress to nonalcoholic steatohepatitis and cirrhosis.

Curcumin supplementation was associated with significant improvement in the liver enzymes AST and ALT, that are elevated in liver diseases. This association was stronger for bioavailability enhanced forms.

There was also resolution and improvement of hepatic steatosis observed in the group that received curcumin as compared to placebo.

Editor's Note: Significant improvement in liver fat and lower fasting blood glucose, body mass index, and total cholesterol were associated with curcumin supplementation in studies that assessed these factors.

* *Sci Rep.* 2023 Apr 10;13(1):5824.

Higher Brain Levels of Vitamin D Linked to Better Cognitive Function

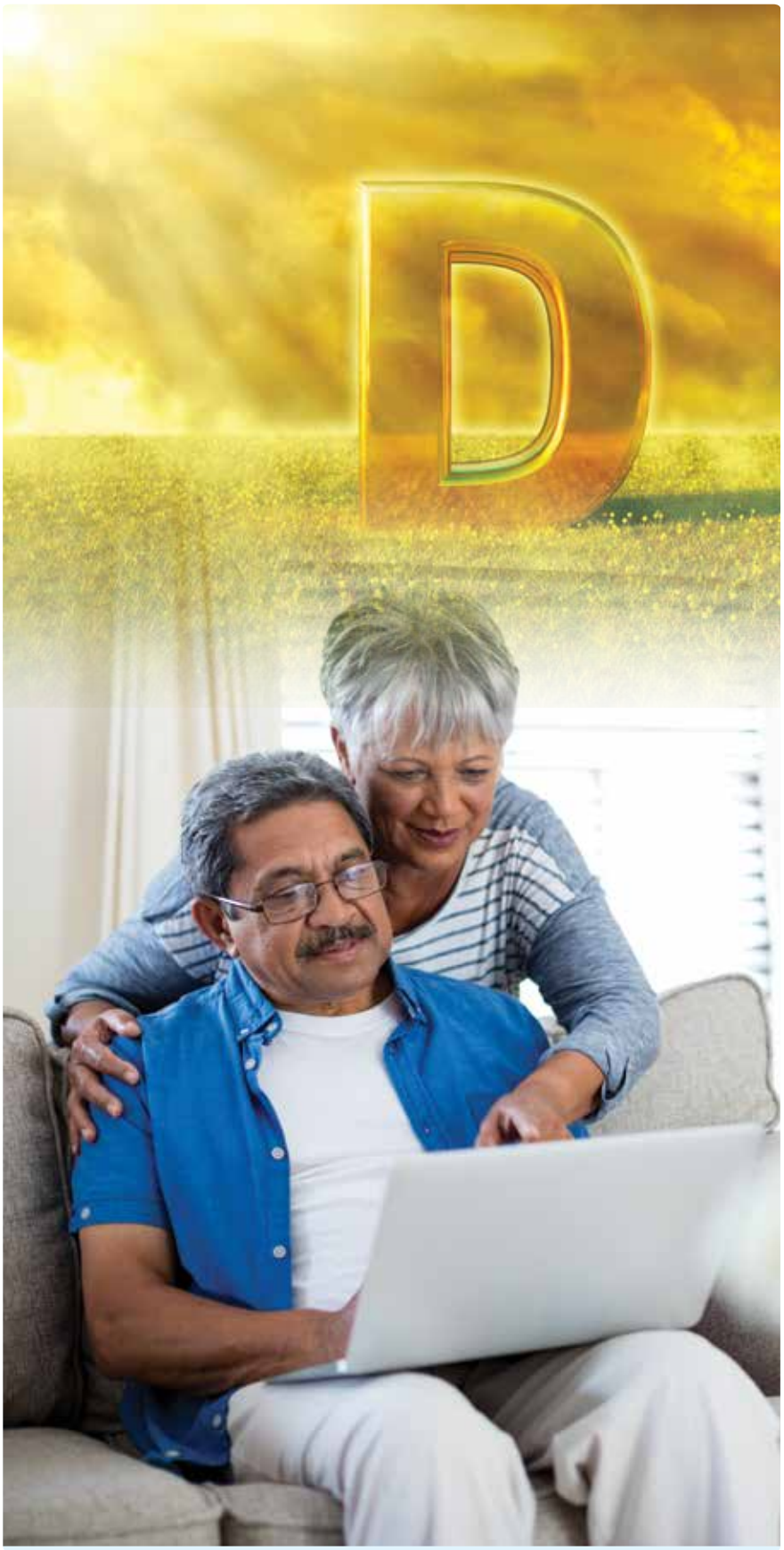
Research findings published in *Alzheimer's & Dementia* showed that higher brain concentrations of vitamin D were associated with better cognition.*

The cognitive function of 209 participants in the Rush Memory and Aging Project was assessed during the clinical study, and the individuals' brain tissue was examined after their death.

Researchers found a **25%–30%** lower risk of mild cognitive impairment or dementia at the last visit before death among participants who had *higher* levels of 25-hydroxyvitamin D3 levels in the four regions of the brain studied.

Editor's Note: No association was found between vitamin D levels and indicators of brain pathology, including amyloid beta plaque or evidence of strokes.

* *Alzheimer's Dement*. 2022 Dec 7.



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Carol

VERIFIED CUSTOMER REVIEW

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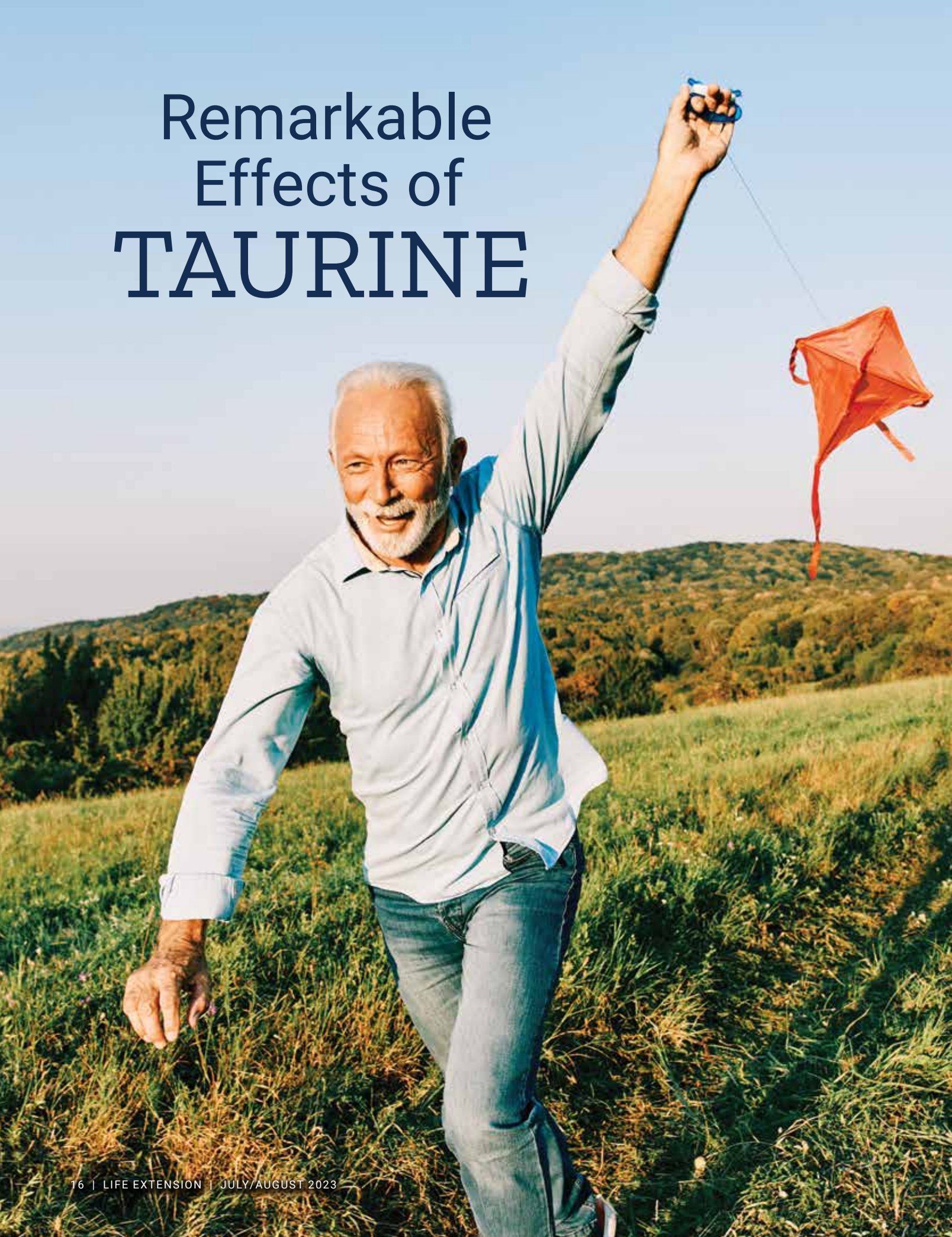
These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Remarkable Effects of TAURINE



BY JACKSON WILLIAMS

A low-cost **amino acid** facilitates a diverse range of biological functions.[1-5]

Taurine has been shown to improve markers of health implicated in rapid-onset aging,[3,6-9] along with disorders such as **heart disease**,[1-5,10,11] **sarcopenia**[4] and **dementia**.[12]

Normal aging results in a decline of internal taurine production that can be overcome by increased oral intake.

What is Taurine?

Taurine is an **amino acid** found in nearly *all* tissues.[1,2] Unlike most amino acids in the body, it is not a building block for proteins. Instead, it serves other important functions.

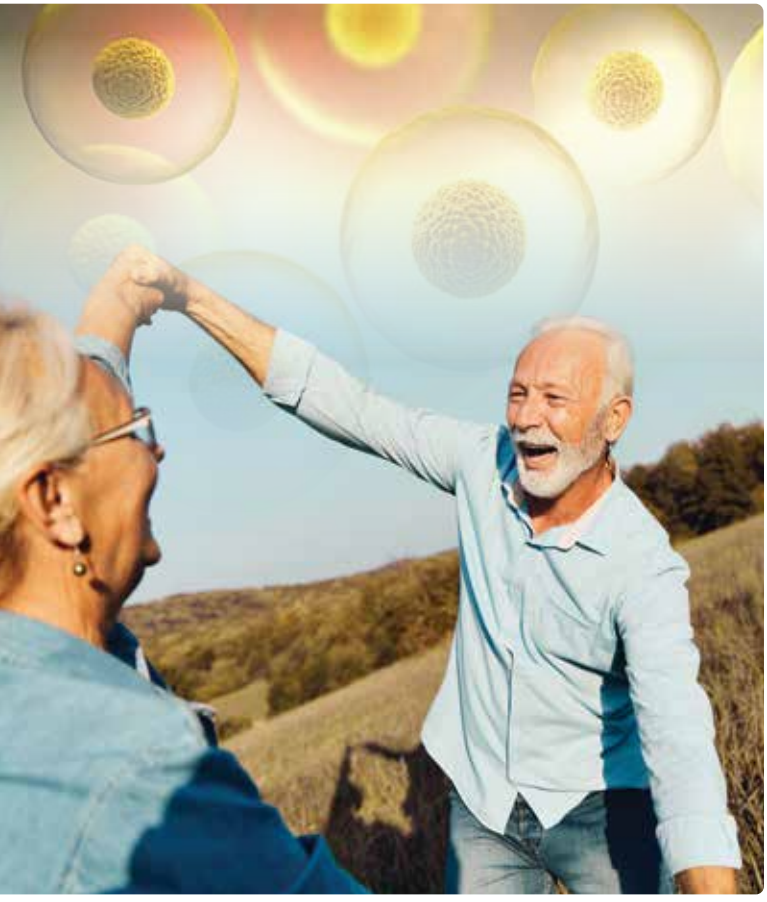
One finding that makes taurine particularly intriguing is that the human body produces **transporter proteins** specifically targeted to this nutrient. These transporters allow most cells in the body to take up and concentrate taurine within them.[1,2]

That's because cells ***need taurine***.

Evidence suggests that increasing taurine supply may have potential benefits for cardiovascular disorders, high cholesterol,[1,2,5] Alzheimer's, liver conditions,[2] and ***extending*** **lifespan**.[5]

Taurine is produced in small amounts by the body, but production drops with age.[2]

By adulthood, production of taurine is inadequate to maintain optimal health. The best way to maintain *higher* taurine levels is through diet or supplementation.[2] Dietary sources include seafood like scallops, mussels, and clams. Dark meat turkey and chicken are also a good source of taurine.[13]



However, most successful clinical studies with taurine have used daily doses of **1,500 mg** to **3,000 mg**.[3,9,11] It is challenging to obtain this amount of taurine from **dietary** sources.

A Key to Healthy Aging

Evidence from animal and human studies suggests that at every stage of life, adequate levels of **taurine** are essential.

- In a rodent study, **depletion** of taurine resulted in accelerated aging processes, affecting the heart, muscle, liver, skin, brain, and more.[14,15] Overall **lifespan** in taurine-depleted rodents was significantly *shortened*.
- In early developmental stages of the human embryo, **taurine deficiency** can lead to abnormalities of heart, brain and retina.[2,16]
- Taurine is present in the human **brain** and plays a role in neurotransmission. Perinatal taurine depletion alters learning, memory and neural control of blood pressure in adult life.[17]
- In a population study spanning 25 countries and more than ***14,000 people***, scientists found that residents of Okinawa in Japan had the *highest* intake of **taurine** along with the *lowest* rate of **heart disease** and the *longest* average **lifespan**.[10]
- Another study looked at Japanese immigrants living in Brazil, where they eat low amounts of taurine-rich seafood. This population had an average **17-year shorter lifespan** than those still living in Japan, where they consume *more* dietary **taurine**.[18]
- Low taurine intake has been associated with a higher risk of **dementia**. One observational study determined that older ***healthy*** adults had about **18%** greater intake of **taurine** in the past than those diagnosed with dementia.[12] The group with the *highest* intake of taurine had the *highest* **cognitive scores**.
- In another study, on elderly women, **1,500 mg** of taurine daily helped reduce inflammation, protect the health of the blood-brain barrier, and improve cognitive test scores over 14 weeks.[9]

Oral taurine intake has been studied in humans, including in many clinical trials. At doses ranging from about **1500 mg** to **3000 mg** daily, taurine has been found to:

- Reduce inflammation,[9]
- Improve scores on a test of cognitive impairment,[12]
- Improve cholesterol and triglyceride levels, [1,3,7,19]
- Lower blood pressure,[1,11,20]
- Improve insulin sensitivity,[7]
- Lower fasting blood glucose,[3,7] and
- Improve control of diabetes and diabetic complications.[3,7,19,21,22]

These benefits suggest taurine consumption could play a powerful role in the promotion of healthy aging.

Liver Health

Taurine may support optimal liver health. One of the most common liver issues in the U.S. is nonalcoholic fatty liver disease (**NAFLD**), in which excess fat buildup occurs in the liver. Over time it can lead to liver cirrhosis and failure, as well as to liver cancer.[23]

In preclinical studies, it has been shown to prevent liver damage by preventing fat buildup in the liver and promoting energy expenditure.[24] Animal and lab studies show that taurine defends liver cells against free radicals and toxins, helping to reduce the severity of oxidative stress-induced liver injury.[24,25]

Taurine bolsters **antioxidant** defenses in numerous ways. It boosts the production of key antioxidant *enzymes* in the body.[2,8] One of the most important is **superoxide dismutase** (**SOD**), which helps neutralize the superoxide free radical.[26]

In a clinical trial, women aged 55–70 years were randomized to receive either **1500 mg** of **taurine** or a placebo for 16 weeks. After week 16 oxidative stress markers were evaluated from plasma samples. Taurine supplementation increased **SOD** levels.[8]

In a clinical trial of patients with chronic liver disease, **2 grams** per day of oral supplementation with taurine resulted in a clinically significant reduction in the frequency, duration, and intensity of muscle cramps.[27]

WHAT YOU NEED TO KNOW

Taurine's Role in A Healthier Life

- **Taurine** is an amino acid that is vital to overall health.
- Deficiencies of taurine are associated with multiple diseases in different stages of life.
- In a human population study, *higher* intake of taurine correlates with **longer life** and *lower* rates of heart disease.
- In clinical studies, taurine has been shown to support brain function and improve cognitive scores.
- Oral intake of taurine has been shown in **human trials** to reduce inflammation, lower cholesterol and blood pressure, aid in control of diabetes, and more.
- Preclinical studies show that taurine is needed for the optimal functioning of **mitochondria**.
- There is preclinical evidence that taurine is supportive of liver health.

Optimal Mitochondrial Function

Practically all the energy that cells need to grow and thrive comes from the **mitochondria**, the cellular "powerhouses."

Mitochondrial function diminishes with age.[28] Studies show that taurine is needed for the optimal functioning of **mitochondria**.[1,2,6,29,30]

In animal models, *blocking* taurine uptake in cells resulted in **mitochondrial dysfunction**.[2] Taurine prevents oxidative damage by inhibiting enzymes and stabilizing mitochondrial membranes.[24]

Summary

Cells throughout the body require the amino acid **taurine** to function optimally.

Taurine intake may help prevent age-related disorders such as heart failure, dementia, and diabetes, and was associated with *longer life* in a large human population study. •

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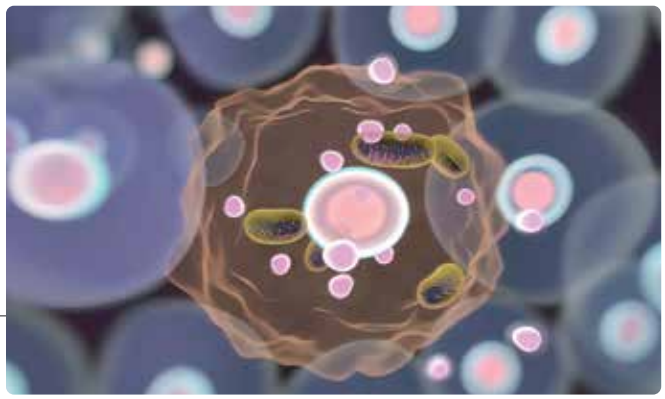

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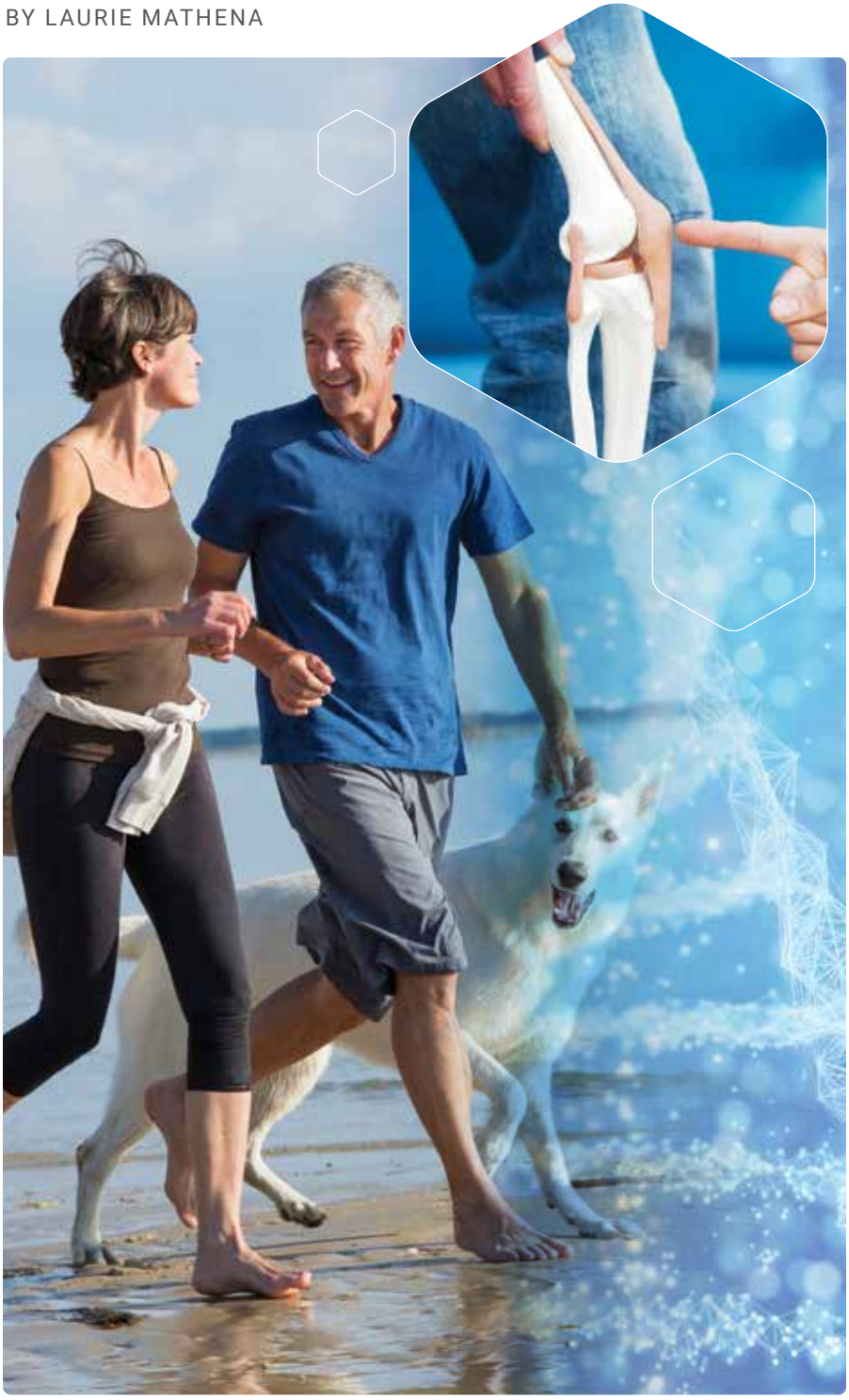
What is SAMe?

BY LAURIE MATHENA



Aging results in a progressive decline in **functions** of living systems.[1] Factors that influence aging include cell senescence, poor nutrition, and stem cell exhaustion.

A measurable aspect of normal aging is **DNA methylation**, a process that can favorably or unfavorably regulate **gene expression**.[2-4]

DNA methylation is so closely connected to age-related changes that one review article called it ***"the 'prophet' of age-related outcomes."***[5]

A compound called **SAMe (*S-Adenosyl-Methionine*)** is a cofactor involved in DNA methylation that helps regulate healthy **gene expression**.[6]

By doing so, **SAMe** can help combat some common causes of age-related decline and could even play a role in **prolonging life**.[5,7]

Understanding DNA Methylation

Genes are made up of DNA.

Our bodies turn genes "on" or "off" as necessary. One of the switches that modulates the way genes are expressed is a process called **methylation**.

Methylation happens when methyl groups are added to the DNA without changing the DNA sequence. Methylation is essential for healthy cellular functions.[8]

The science of **epigenetics** studies how and why and whether genes are expressed or not. One of the key types of **epigenetic modification** is **DNA methylation**. DNA methylation is a key switch that usually silences the expression of a gene or "turns it off."[9]

This occurs when methyl groups are *attached* to the DNA.[10]

The compound **SAMe** is found naturally in the body. Although it is required for many biochemical reactions,[11] one of the most important processes SAMe is involved in is ***methylation***.[6,7] SAMe is the body's primary methyl donor.[10,12]

If we don't have enough of it, the body cannot methylate properly. That can lead to excessive inflammation, tissue damage, and organ failures.[13] Healthy methylation patterns can help degenerative disorders and slow certain aging processes.

Alzheimer's Disease

Disturbances in **DNA methylation** have been identified as one of the potential drivers of **Alzheimer's disease**.[14,15]

Research has shown that Alzheimer's patients have very low levels of SAMe.[16,17]

In an animal Alzheimer's model study, **SAMe** improved cognitive impairment in four weeks, by upregulating early overall **DNA demethylation** to reduce ***amyloid*** pathology.[1]

In four patients with Alzheimer's, **1,200 mg** of **SAMe** daily, in a divided dose for four to eight months, increased the level of SAMe in cerebrospinal fluid by **62.5%**.[16]

Osteoarthritis

Improper methylation impacts two hallmarks of **osteoarthritis**: inflammation[18,19] and cartilage damage.[20,21]

By getting methylation back on track, **SAMe** may modulate those genes and *suppress* inflammation.[22]

In a meta-analysis, scientists found that SAMe was *as effective* as **NSAIDs** (non-steroidal anti-inflammatory drugs) in alleviating pain and optimizing joint function.[23]

In two clinical trials, participants with osteoarthritis of the knee were randomized to receive **NSAIDs** or **SAMe (1200 mg)** per day in divided doses. Participants were evaluated after **8-16 weeks**. It was found that SAMe was as effective as NSAIDs in the management of knee osteoarthritis.[24,25] There were no significant differences in pain relief or tolerability between the NSAID or SAMe group.[24]

Remarkably, SAMe was shown in one study to stimulate production of new **cartilage** in animals.[26] This can potentially be beneficial to slowing or *reversing* the progress of osteoarthritis.

Prolonging Life

Studies show that **aging itself** is associated with *alterations* in DNA methylation.[2,3,27] Methylation isn't just linked to the development of age-related diseases; it also has direct impact on lifespan itself.[27,28]

In one study, giving SAMe to tumor-prone mice prevented the development of liver tumors. It did this by restoring methylation and turning on tumor-suppressor genes.[29]

A study of yeast showed that stimulating SAMe synthesis extended lifespan by activating a well-known enzyme called **AMPK** (AMP-activated protein kinase).[30]

AMPK has been referred to as a "metabolic master switch." In humans APMK helps the body utilize calories more efficiently, reduces fat accumulation, and enhances cleaning of cellular junk.[31]

Summary

The way **genes** are expressed has a great impact on our health and longevity.

DNA methylation is a process that regulates gene expression.

SAMe (S-Adenosyl-Methionine) is an essential factor involved in DNA methylation.

Defects in methylation can lead to chronic disorders.

Increasing SAMe intake provides the body with a critical methylation nutrient, which can help modulate the way genes are expressed.

SAMe has shown clinical success in cases of **osteoarthritis**. Early studies suggest SAMe's status as the body's preferred **methylation** nutrient. It may help contribute to ***longer*** **lifespans**. •

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An *Easy* Way to Increase FIBER INTAKE

BY MICHAEL DOWNEY

About **90% -97%** of American adults do not ingest the recommended amount of dietary **fiber**.[1]

That's a serious health concern.[2-5]

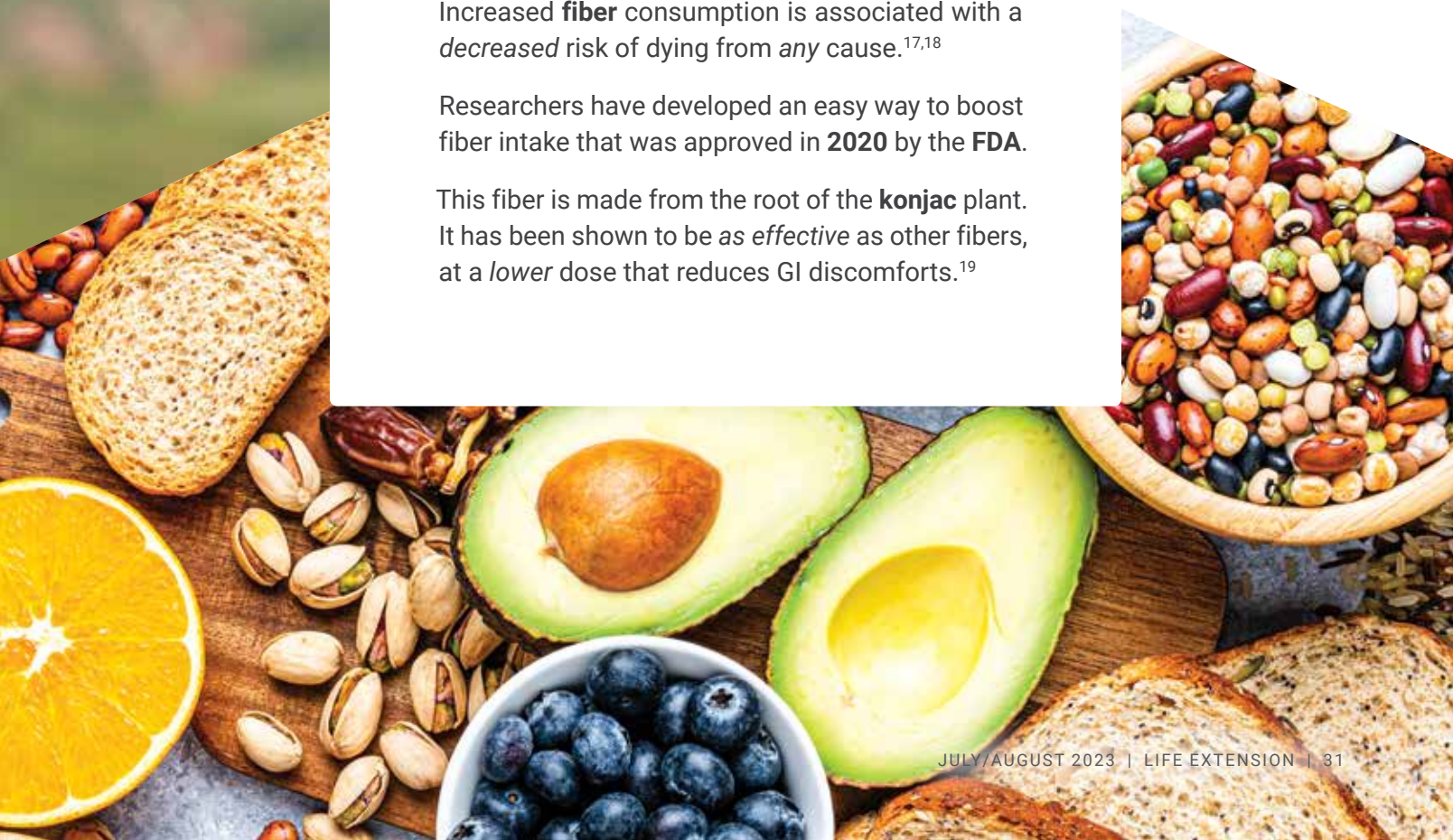
Dietary fiber helps control blood sugar,[6-8] cholesterol,[7,9,10] blood pressure,[7,9,11,12] and body weight,[6,7,9,13] while promoting healthy gut bacteria.[14,15]

Fiber can improve cardiovascular,[10] gastrointestinal,[3] and metabolic health.[16]

Increased **fiber** consumption is associated with a *decreased* risk of dying from *any* cause.[17,18]

Researchers have developed an easy way to boost fiber intake that was approved in **2020** by the **FDA**.

This fiber is made from the root of the **konjac** plant. It has been shown to be *as effective* as other fibers, at a *lower* dose that reduces GI discomforts.[19]



An Alternative Fiber

For adults over 50, the Recommended Daily Allowance (RDA) for fiber is **30 grams** for men and **21 grams** for women. The average American consumes only **10-12 grams** daily.[25]

That means most Americans are missing out on fiber's ability to promote **heart** health,[10] reduce blood sugar[8] and body weight,[12] and support **healthy gut bacteria**.[3]

Fiber intake has also been linked to **lower all-cause mortality risk**.[17,18]

Most fiber products contain **psyllium** husk, which requires *high doses* to deliver benefits. Many people find them unpleasantly filling.

Researchers investigating alternatives identified **konjac root** as a **soluble fiber** that provides the same health benefits as psyllium at significantly **smaller doses**.

Clinical Data

Clinical studies show that **konjac fiber**:

- Improves regularity and the balance of the gut microbiome,[20,21]
- Supports weight loss,[22]
- Reduces post-meal glucose and insulin levels,[6,23] and
- Lowers LDL ("bad") cholesterol by **10%**.[24]

Lower dose efficacy of **konjac fiber** is important. That's because many people experience GI discomfort with traditional fiber and miss out on its lifesaving benefits.

Approved as Dietary Fiber

The **konjac plant** grows in Southeast Asia and Africa.[26] It has been safely used to treat a wide range of ailments in China and Japan for centuries.[9,27]

Consumed orally, konjac fiber passes relatively unchanged into the colon, where it acts as a **prebiotic**, a nutrient source for healthy bacteria.[28,29]

Many studies have documented the benefits of konjac, and in 2020, the **FDA** approved **konjac glucomannan**, fiber derived from **konjac** root, as a dietary fiber.[19]

Regularity and Microbiome Balance

Clinical trials show that konjac fiber benefits **bowel** movements and the **microbiome**.

One study of healthy adults measured the effect of taking **4.5 grams** of **konjac fiber** daily (compared to a placebo period) for three weeks. The results during the **konjac fiber** period were:[20]

- Significantly improved **ease** of bowel movements,
- A **27%** increase in **number** of bowel movements,
- Improved markers of colonic bacteria **fermentation** (breakdown of carbohydrates into beneficial compounds), and
- Higher **concentrations** of beneficial fecal bacteria, including *lactobacilli*.

A similar study focused on adults suffering from **constipation**.[21]

After taking **4.5 grams** of **konjac** fiber daily for three weeks, subjects had, compared to a placebo phase:[21]

- A **29%** increase in **number** of bowel movements,
- Significantly improved **ease** of bowel movements,
- Greater feeling of complete **relief**,
- Increased production of **short-chain fatty acids**, which are critical to gastrointestinal health,
- Higher fecal concentration of beneficial *bifidobacterial* and *lactobacilli* bacteria, and
- *Decreased* proportion of *clostridia*, potentially harmful bacteria.

Weight Loss

Konjac fiber also helps with excess body **weight**.

In a trial, overweight adults were put on a low-calorie diet and randomly assigned to take, in divided doses, either a **placebo** or one of **three** fiber combinations providing a daily total of:[22]

- **1,240 mg** of **glucomannan** derived from **konjac** root, *or*
- **420 mg** of glucomannan plus **420 mg** of guar gum, *or*
- **4,320 mg** of glucomannan plus **900 mg** of guar gum and **900 mg** of alginate.

After **five weeks**, compared to placebo, **1.76 lbs. per week** weight loss was observed among all fiber groups.

However, adding the fibers guar gum and alginate did *not* cause additional weight loss beyond the amount achieved by **konjac glucomannan** alone.[22]

Blood Sugar and Insulin

The effects of **konjac** on **blood sugar** and **insulin** were investigated in adults whose glucose tolerance ranged from normal to borderline.

Over the course of a study, all volunteers received:[23]

- Rice porridge alone,
- Rice porridge with **1 gram** of **konjac** glucomannan added, and
- Rice porridge with **2 grams** of **konjac** glucomannan added.

Adding **konjac** fiber to the porridge significantly *reduced* levels of post-meal **blood sugar** after 30 minutes. Groups that received konjac had up to **14.4 mg/dL** lower blood sugar as compared to the group that received rice porridge alone. Similar results were observed with **insulin**. *Higher* doses resulted in *greater* reductions.[23]

Reductions in blood sugar and insulin were **greater** in subjects with ***borderline*** glucose tolerance than in those with normal glucose tolerance.

Improved Blood Lipids

A meta-analysis of clinical trials on patients with high cholesterol showed that taking **3 grams** daily of **konjac** glucomannan over a median period of four weeks reduced **LDL** ("bad") cholesterol levels by **10%**.[24]

Other types of soluble fiber may lower **LDL** cholesterol by **5%** at doses of **5-10 grams**. *Just* **3 grams** of konjac may reduce LDL by ***twice*** as much.

Data also showed that a median daily dose of **3.3 grams** of konjac fiber for a median of **four weeks** reduced overall **cholesterol** (excluding protective **HDL**) by **7%**.[24]

Along with its other benefits, these results suggest that konjac fiber can significantly improve overall health.

WHAT YOU NEED TO KNOW

The Benefits of Konjac Fiber

- Getting too little **fiber** can cause health problems. Many people find the psyllium fiber in most products to be too bulking.
- A fiber derived from the root of the **konjac** plant provides the same benefits at a lower and *less filling* dose than psyllium.
- Clinical studies show that **konjac** fiber promotes bowel regularity, has prebiotic effects, lowers body weight, reduces blood sugar and insulin levels, and lowers cholesterol.

KONJAC

Summary

Insufficient **fiber** intake increases the risk for serious disorders and early death.

Trials have shown that **konjac** fiber improves bowel regularity, body weight, blood sugar, cholesterol, and microbiome makeup.

Konjac protects as well as **psyllium** but at a ***lower dose***, making it easier to take.

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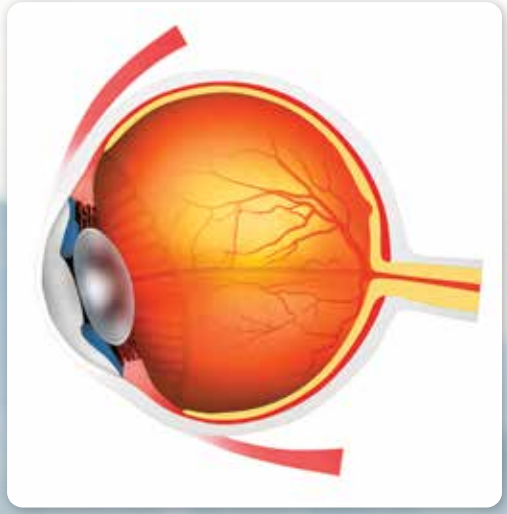

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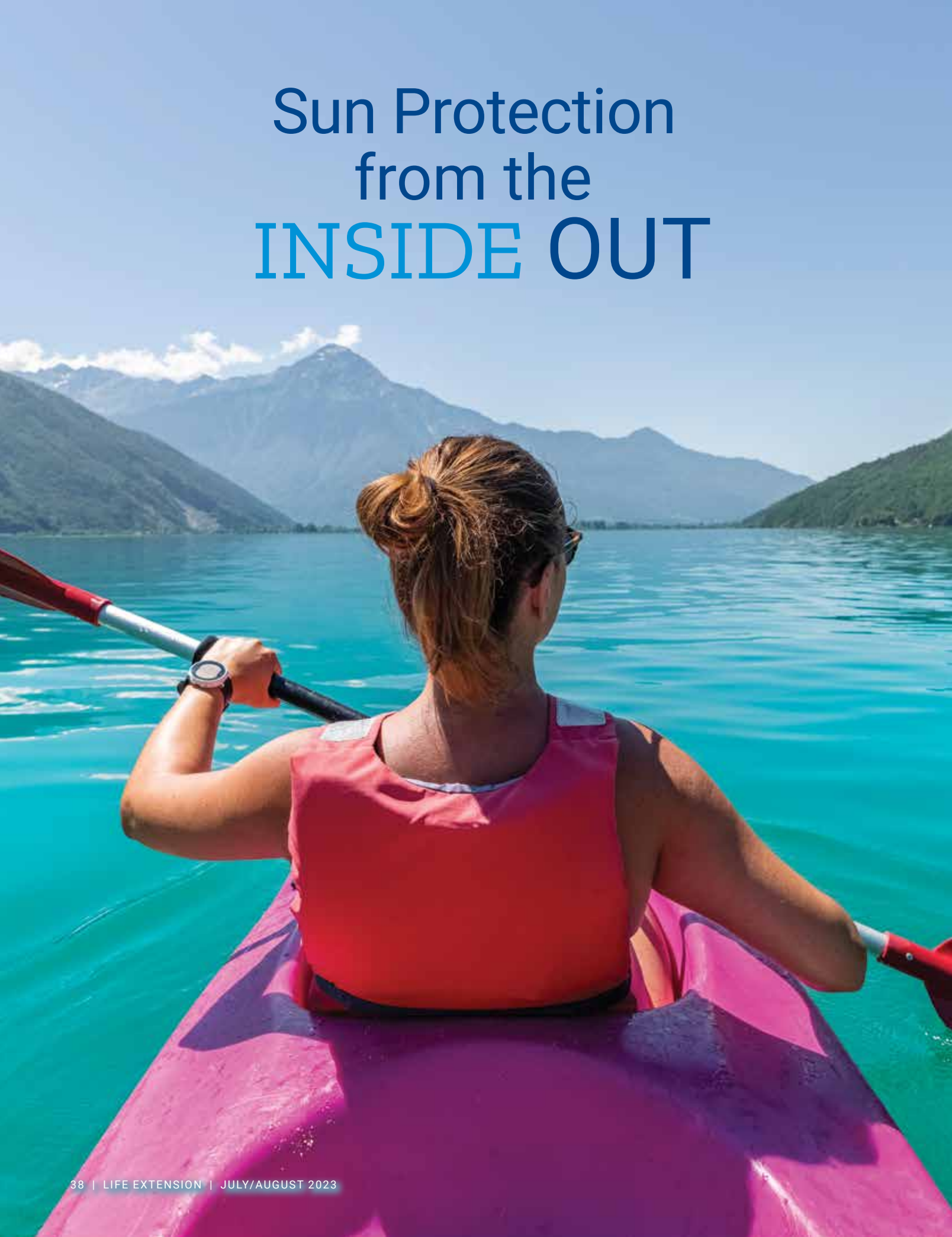


SARAH LOBISCO, ND, IFMCP

The risks of getting too much sun are well known.[1-3]

Sunscreens help absorb the sun's **ultraviolet (UV)** radiation but offer incomplete protection.[1,2]

Research has identified oral compounds that can protect against sun damage *from the inside* out to provide more complete shielding.[4-7]

One clinical study found that an oral extract of the fern ***Polypodium leucotomos*** decreased UV-driven DNA mutations by an astonishing **84%** and mitigated photoaging.[8]

Another nutrient, **nicotinamide**, has been shown to enhance DNA repair and decrease UV-induced skin immune suppression.[9-11] And an extract of **Sicilian red oranges** was found to decrease UV-induced sunburn by **40%**.[6]

Together with topical solutions, these nutrients can greatly enhance **sun protection**.

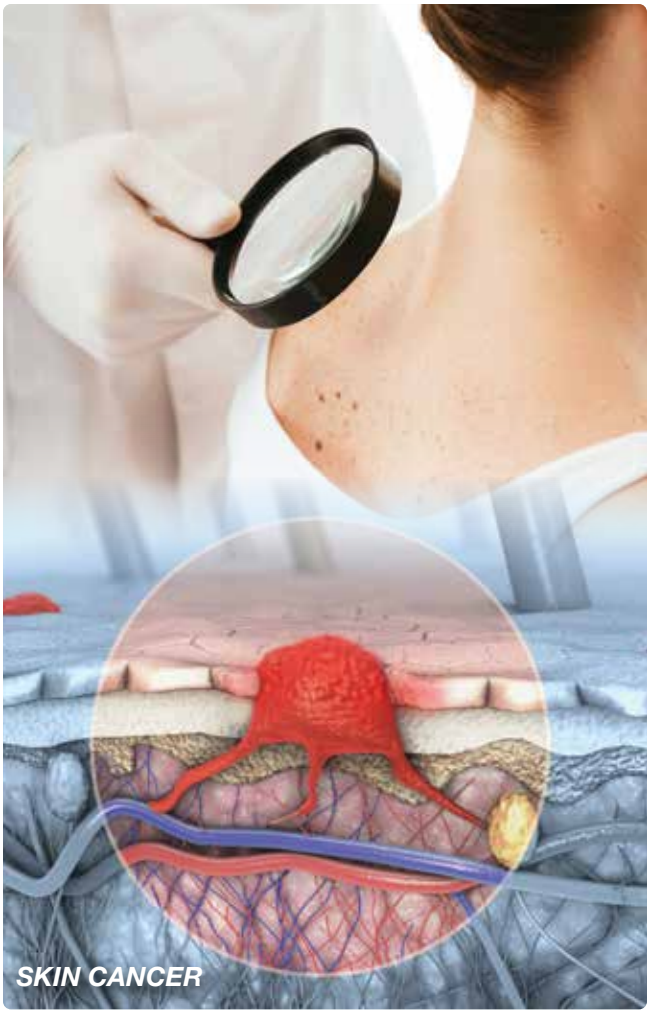
Ultraviolet Radiation and Skin Damage

UVA radiation is associated with premature skin aging, pigmentation, and damage to DNA[2] leading to some skin cancers.[1,2]

UVB rays are responsible for sunburn. They also promote oxidative stress and the inflammation that spurs DNA damage, which increases the risk of skin cancer.[1,2,12]

Sunscreen provides much-needed protection. But it can have several limitations:

- Labeling can be inaccurate,[13,14]
- It mostly shields UVB rays, *not* UVA,[14]
- It washes or rubs off with moisture and clothing,
- Sometimes it degrades with sun exposure,[13,15] and
- It often contains harmful chemicals.[16]



SKIN CANCER

Topically applied titanium dioxide or zinc oxide **sunblocks**[17] and sun-protective clothing[15] can shield individuals from the sun's rays while avoiding chemical exposure. But these are still incomplete barriers, as they may rub off or wash away, and may not cover the skin completely.

Research has identified **plant-derived extracts** and compounds that, when taken orally, safely provide additional protection from damage caused by the sun's radiation.

Polypodium Leucotomos Shields Skin

An extract of a tropical fern called ***Polypodium leucotomos*** contains sun-protective polyphenol compounds.[4,5,18]

Laboratory evidence shows that *Polypodium* extract:

- Fights **oxidative stress** and increases the body's natural antioxidant, **glutathione**,[4]
- Reduces **inflammation**, decreasing skin redness and inflammatory markers,[4,18]
- Supports the immune system's **tumor surveillance**, the ability to identify and destroy cancerous cells,[19,20]
- Inhibits the breakdown of **elastin** and **collagen**, the proteins that keep skin firm, healthy, and youthful looking,[20,21] and
- Protects the skin's tissue, a vital barrier against infection and environmental toxins.[20]

In a clinical trial, people who took **240 mg** of oral ***Polypodium leucotomos*** extract two times, eight hours, and two hours before exposure to UV rays, had an astonishing **84%** ***decrease*** in a marker of **DNA mutation**.

Those who took a placebo had a **217%** ***increase*** in that DNA mutation.[8]

DNA mutations are a main cause of **skin cancer** and one of the causes of prematurely aged skin.

Another clinical study showed that, compared to a placebo, taking ***Polypodium*** extract before UV exposure helped prevent redness and *reduce*:

- Tumor progression markers by **85%-100%**,
- A DNA damage marker by **32%**, and
- An inflammation marker by **78%**.[18]

WHAT YOU NEED TO KNOW

Nicotinamide for Sun Protection

Nicotinamide is a form of vitamin B3.

Preclinical and human studies have demonstrated that **oral nicotinamide** can protect against UV-induced damage by:

- Preventing cellular energy depletion,[22]
- Repairing DNA damage,[23]
- Reducing skin immune suppression,[22]
- Protecting against skin cancer mutations,[22,24]
- Reducing inflammation,[22] and
- Regulating skin barrier function to keep skin hydrated and protected.[9]

These actions can help reduce the risk of **skin cancer**, as clinical trials have shown.

In one human study, taking **500 mg** of **nicotinamide** daily for one week significantly reduced UV-induced skin immune suppression.[10]

In another clinical trial, people deemed high risk for skin cancer who took **500 mg** of nicotinamide for 12 months had new, non-melanoma **skin cancers** reduced by **23%**, compared to those taking a placebo.[25]

Nicotinamide's ability to reduce skin cancer reoccurrence has been confirmed in several other studies.[9,26,27]

Powerful Protection Against Sun Damage

- The sun's ultraviolet rays damage DNA and increase skin aging and **skin cancer** risk.
- Sunscreen offers incomplete protection and often contains harmful chemicals.
- Oral intake of clinically validated nutrients can help prevent premature skin aging, and decrease cancer risk.
- In clinical studies, an oral extract of a fern called ***Polypodium leucotomos*** decreased UV-driven DNA mutations by **84%** and reduced inflammation by **78%**.
- **Nicotinamide** and **Sicilian red orange extract** provide additional protection against UV-induced redness and skin cancer development.
- Used with sunblock, these oral compounds can provide powerful protection against sun damage.

Additional Nutrients That Provide Sun Protection

Several additional nutrients have been found to help prevent UV-induced skin damage. They include:

Astaxanthin. Preclinical and clinical studies show that this carotenoid pigment helps prevent photoaging, sunburn, skin redness, moisture loss, and wrinkling while enhancing skin elasticity.[30-32]

Green tea. A Meta-analysis and a systematic review confirmed that green tea extracts containing the compound **epigallocatechin-3-gallate (EGCG)** reduce low-dose UV-induced redness.[33,34]

Lycopene. A clinical trial of the antioxidant lycopene and lycopene-rich tomato showed significant reductions in UV-driven skin damage and skin reddening.[35]

Curcumin. A randomized controlled trial showed that curcumin significantly inhibited UVB-induced inflammation and increased facial connective tissue and skin hydration.[36] It also prevented melanoma progression in animals.[37]

Quercetin. In a series of preclinical experiments, this antioxidant prevents the degradation of collagen and lowers inflammation.[38]

Olive leaf. The antioxidant **oleuropein** in olive leaf inhibited UVB-induced skin damage and accelerated wound-healing activity in preclinical studies.[39]

Defense with Red Orange

Sicilian red orange is a rich source of bioactive compounds including polyphenols, flavonoids, and anthocyanins, all of which protect cells by fighting oxidative stress and inflammation.[28,29]

In a **human** cell study, skin cells treated with standardized Sicilian red orange extract were exposed to varying doses and types of harmful ultraviolet radiation. The results were promising:[29]

- UV-induced damage was prevented.
- Oxidative stress was improved, and internal antioxidants (ones that the body makes itself) were preserved.
- Protection for DNA was provided.
- There was a decrease in the inflammatory markers (TNF-α, IL-6, and NF-kB), and responses related to photoaging.

One lab study found that Sicilian red orange extract reduced inflammatory markers, cell damage, and cell death in skin cells by preventing UV-induced oxidative stress.[28]

In a clinical study, taking **100 mg** of oral **red orange extract** daily for 15 days reduced UV-induced skin redness and sunburn by **40%** and skin pigment changes by **20%**.[6]

This decrease in sunburn prevalence could substantially reduce **skin cancer** risk over time.

Summary

The sun's ultraviolet rays cause skin damage, premature aging, and skin cancer risk.

Specific nutrients taken orally have been clinically validated to offer protection against sun damage.

Polypodium leucotomos, a fern extract, can support DNA repair, defend against cancer-causing DNA mutations, and decrease skin inflammation.

Nicotinamide and **Sicilian red orange extract** offer additional defense from sun damage.

A **combination** of oral red orange extract, nicotinamide, and *Polypodium leucotomos* may help maximize the protection against sun damage. •

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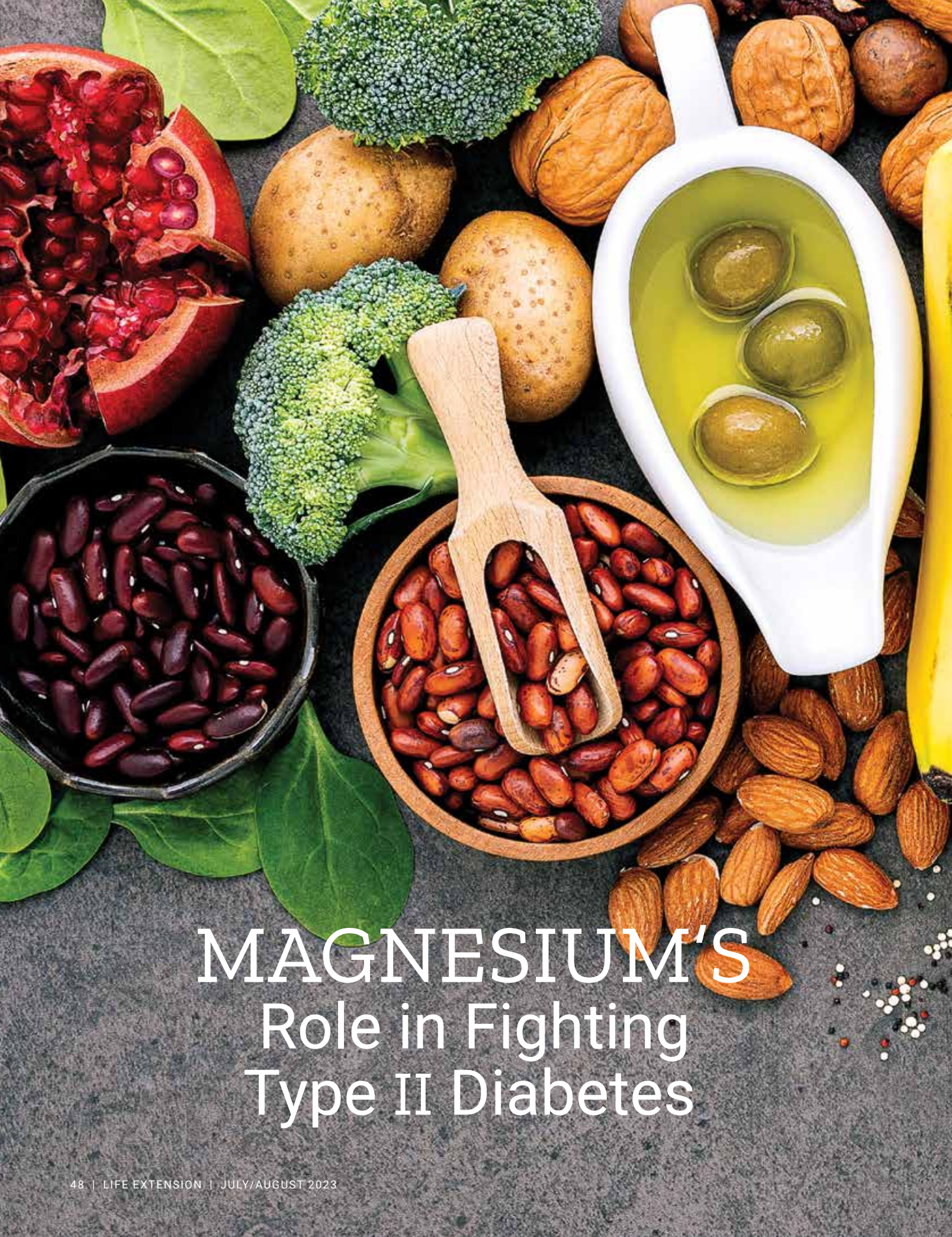

MAGNESIUM'S Role in Fighting Type II Diabetes

BY MARTIN STEPHENS

Roughly **half** of all adults in the U.S. do not get enough **magnesium**.[1,2]

And **25%** of Americans are thought to be magnesium-deficient.[3]

That's a major problem.

Magnesium deficiency is a contributor to metabolic disease, including **type II diabetes**.[4-6]

Human studies suggests that magnesium supplementation could have favorable effects on **glycemic control** in type II diabetics.[7]

In people with **type II diabetes** *or* in those at **high risk** of developing it, several clinical trials have demonstrated that supplemental magnesium can:

- Improve glucose/A1C control,[9-11]
- Enhance insulin sensitivity,[9,12] and
- Correct metabolic imbalances.[8]

These actions may reduce damage inflicted by type II diabetes *and* help delay its development.

A Vital Mineral

Magnesium is one of the most abundant minerals in the body. It is a required **cofactor** ("helper molecule") for hundreds of essential *enzymatic* processes within cells.[4,5]

These enzymes include many that are involved in cell **metabolism** and **energy** production. Deficiency of magnesium negatively impacts these functions.

Magnesium also interacts in a critical way with other nutrients. For example, magnesium is required for the activation of **vitamin D** in the body.[13] If you are taking vitamin D but your magnesium levels are low, vitamin D can't deliver all its benefits.

Type II Diabetes Link

Many of the enzymes and proteins that rely on magnesium play a vital role in **insulin** function and the metabolism of **blood glucose**.[4,5,8]

As a result, the impact that magnesium deficiency has on metabolic health is profound. It contributes to diseases such as **type II diabetes**, metabolic syndrome, and osteoporosis.[1,4] Magnesium deficiency also increases risk for other chronic disorders, especially **cardiovascular disease**.[14,15]

Observational studies show that the *lower* the dietary magnesium intake, the *higher* the prevalence of diabetes.[4,5]

Additionally, individuals who *already* have a diagnosis of **type II diabetes** often have *lower* magnesium levels than healthy individuals.[5,16]

The connection between magnesium and diabetes is so strong because magnesium affects *multiple* aspects of metabolism.

Magnesium is crucial at practically every step of insulin function and sugar metabolism, including:[4,5]

- **Insulin secretion**. After a meal, the hormone **insulin** is secreted by the pancreas to help tissues take up and process blood sugar. With magnesium *deficiency*, the mechanism that leads to insulin secretion is impaired, leaving blood glucose levels elevated.[17]
- **Glucose metabolism**. Many of the enzymes involved in the metabolism of glucose and other nutrients rely on magnesium to function. Low magnesium impairs cells' ability to process nutrients and extract energy from them.
- **Insulin sensitivity**. Magnesium deficiency contributes to **insulin resistance**. This drop in insulin sensitivity is central to type II diabetes and metabolic syndrome.[9,18] Studies have found that *higher* magnesium levels correlate with *higher* insulin sensitivity.[18,19]

Defects in insulin function and glucose metabolism lead to **insulin resistance** and **high blood sugar**. High blood sugar eventually results in complications of diabetes, including kidney failure, eye disease, cognitive decline, and nerve damage.

By preventing or countering these defects, magnesium has shown potential to help prevent or control type II diabetes.[20]

What Human Trials Reveal

Several clinical trials have shown that oral **magnesium** supplementation improves control of blood glucose and insulin sensitivity in people with **type II diabetes**.[9,11,20]

Other studies have shown that magnesium can be beneficial in those ***at risk*** for type II diabetes who do not yet have a diagnosis.

WHAT YOU NEED TO KNOW

How Magnesium May Counter Type II Diabetes

- The mineral **magnesium** is required for the function of hundreds of essential enzymatic processes within cells.
- Over **25%** of Americans are believed to be magnesium-deficient, while it is estimated that roughly **50%** consume inadequate levels of this essential mineral. Low magnesium levels are tied to risk for several chronic diseases, especially **type II diabetes**.
- Human studies show that oral supplementation with magnesium can improve **insulin sensitivity** and **blood glucose control** in those with **type II diabetes**, which may help control the disease and prevent complications.
- Magnesium can also improve insulin sensitivity and blood glucose control in **non-diabetic** adults who are overweight or have insulin resistance, which may prevent diabetes from developing.

For example, in **non-diabetic** adults who have insulin resistance or are overweight, supplemental magnesium has been shown to improve metabolism, insulin sensitivity, and blood **glucose** control.[8,12,21,22]

This indicates that increased magnesium intake, specifically with oral supplements, may not only be useful for those already suffering from diabetes, but may also help in preventing progression to type II diabetes in high-risk people.

Summary

Roughly **half** of all adults in the U.S. do not get enough **magnesium**.

Lower magnesium intake increases the risk for metabolic disease, including **type II diabetes**. Higher magnesium levels correlate with better insulin sensitivity.

Human trials have found that supplementation with oral magnesium can improve metabolism, increase **insulin sensitivity** and improve **blood sugar control** in type II diabetics and those at risk for it. •

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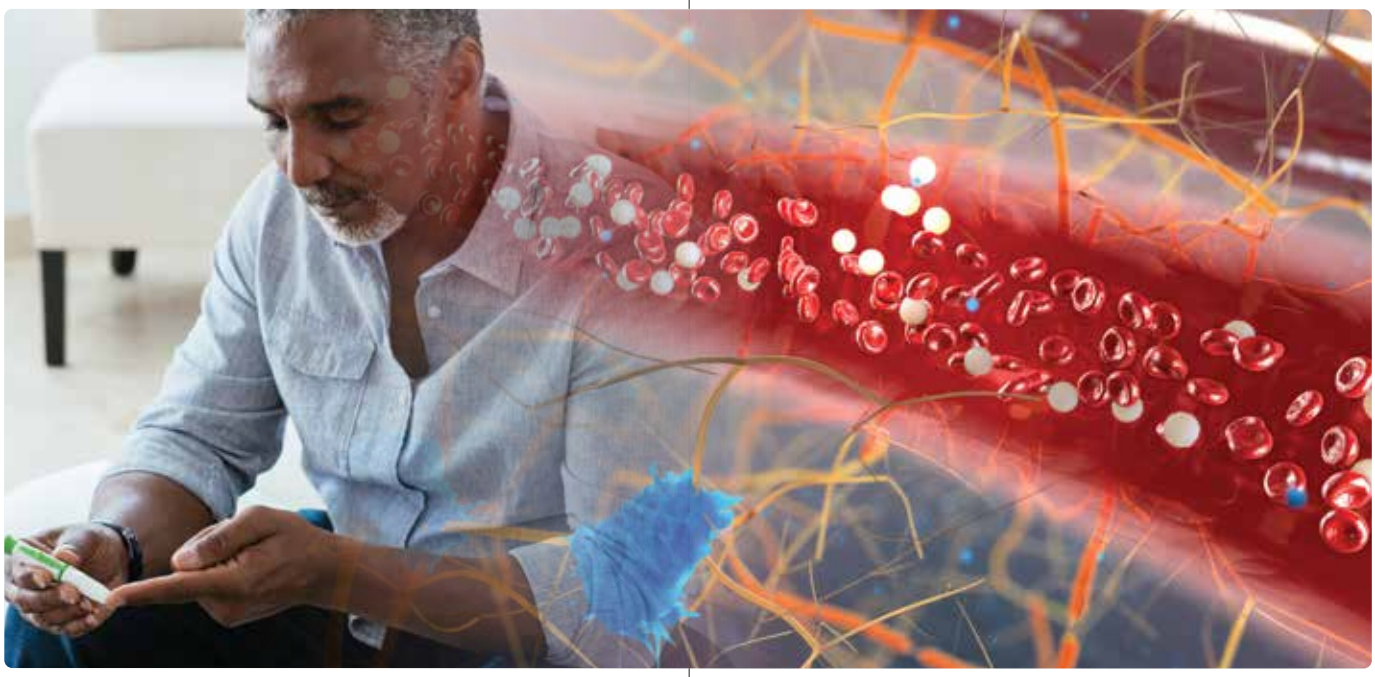

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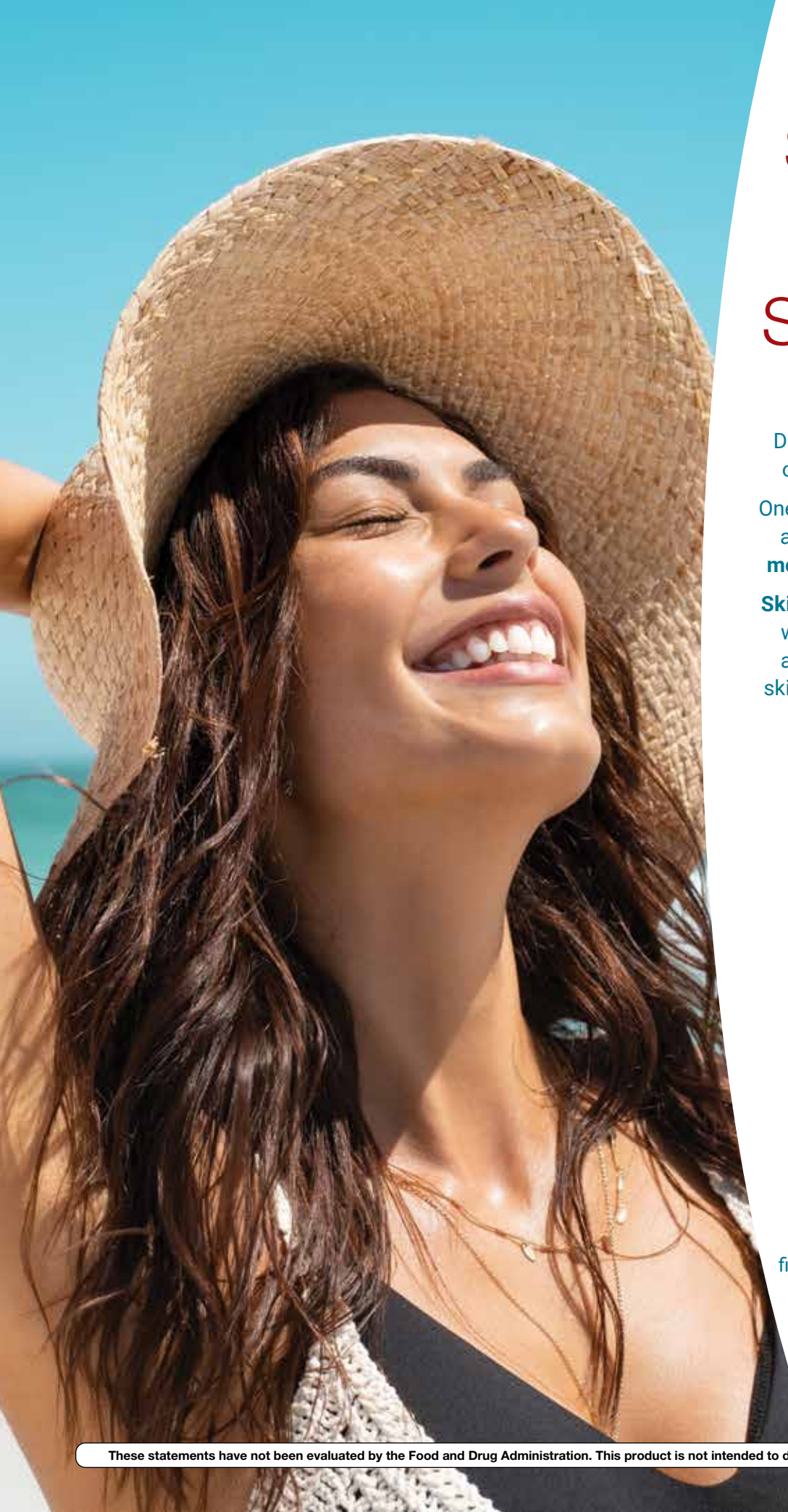

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Activate Your **FAT-BURNING** Enzyme

Turn on more AMPK!

BY MICHAEL DOWNEY

AMPK is a cell enzyme that turns on **fat-burning**[1] and other beneficial cellular processes.[2,3]

With age, **AMPK** activity tends to decrease.[4]

Two **plant compounds** have been shown to promote youthful **AMPK** activity:[5,6]

- ***Gynostemma pentaphyllum***[5,7] and
- **Hesperidin**.[8]

Together, these compounds may help slash unwanted **belly fat**.

What is AMPK?

Excess **abdominal fat** is a major health problem.

It churns out a steady stream of **pro-inflammatory** compounds that damage blood vessels, heart muscle, brain cells, and other tissues.[9,10]

Belly fat is strongly linked to **heart disease**,[10,11] **type II diabetes**,[12] and other health issues.[13,14]

AMPK is an *enzyme* inside cells that helps regulate **glucose** and **fat** metabolism.[15-17]

When activated, AMPK *enhances* energy metabolism,[2,18] which helps *reduce* **abdominal fat**[5] and the inflammation[18] it produces.

AMPK signaling may *decline* with age. This results in impaired metabolic function, increased inflammation, and reduced cellular housekeeping functions—all of which **accelerate aging**.[2,18,19]

A decrease in AMPK activity also leads to **weight gain** because the body is more likely to *store* fat rather than *burn* it for energy.[20]

The plant compounds ***G. pentaphyllum*** and **hesperidin** have been shown to promote **AMPK activity**, mitigating abdominal obesity and the damaging inflammation it generates.

Enhanced *Gynostemma*

Gynostemma pentaphyllum is an herb that has been shown in clinical and preclinical studies to help prevent metabolic disorders like obesity,[21] glucose metabolism,[7] elevated lipid levels,[7,22] and fatty liver.[21-24]

Lab and animal studies also demonstrate that ***G. pentaphyllum*** is an **AMPK activator**[7,23] that stimulates fat burning and cellular uptake of glucose in muscle cells. It has been shown to decrease weight gain and cholesterol levels.[22,23]

In a **2022** mouse study, researchers found that ***Gynostemma*** extract inhibited **weight gain**.[25]

In another study, ***G. pentaphyllum*** extract reduced **fat mass**, enhanced exercise endurance, and increased performance in treadmill-trained mice.[26]

To fully combat the age-related drop-off in AMPK activity in **humans** and the resultant belly fat accumulation, researchers in South Korea developed a ***much stronger form*** of this extract than was initially available at the time.

They used heat and pressure treatments combined with a steam sterilization technique called **autoclaving** to produce a ***G. pentaphyllum*** extract that contains **10 times** the quantity of two of its key AMPK-boosting compounds, **damulin A** and **damulin B**.[27] This specially processed ***G. pentaphyllum*** has been the gold standard for several years.

In a 12-week **human** trial, this extract triggered a remarkable **11%** decrease in **abdominal fat**.[5]

This potent ***G. pentaphyllum*** extract is so novel, it was granted a patent by the U.S. government.[27]

Losing Belly and Body Fat

To validate this extract's ability to reduce abdominal obesity, scientists enlisted 80 overweight people with a **body mass index (BMI)** between **25** and **30 kg/m2**.

Volunteers were randomly assigned to receive **450 mg** a day of the patented ***G. pentaphyllum*** extract or a placebo. Both groups continued their usual diets.

During the 12-week study, total abdominal fat area, body weight, body fat mass, percent body fat, and body mass index all ***decreased*** in those taking ***G. pentaphyllum*** compared to placebo recipients.[5]

The results showed that:[5]

- **Total fat** area fell **6.3%** in people receiving extracts, but less than **1%** in the placebo group,
- **Abdominal fat** deposits fell **11%** in the extract group, but only **3%** in the placebo group, and
- **Subcutaneous fat** (found just under the skin) decreased nearly **4%** in treated subjects, but *increased* slightly in placebo recipients.

Additionally, those receiving ***G. pentaphyllum*** lost an average of one inch off their waistline, equal to about one belt notch.

Fat-Fighting Hesperidin

Hesperidin is a flavonoid found in citrus fruits. Preclinical studies have demonstrated that it activates **AMPK**.[6,8,28,29]

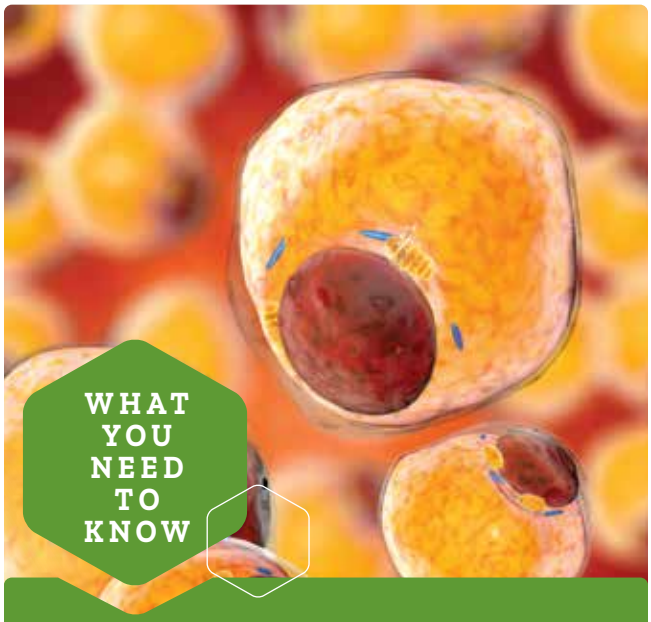
It may help fight fat accumulation in other ways as well, including by:

- Inhibiting **absorption** of dietary fat from the gut,[30,31]
- Inhibiting genes involved in *all* phases of **fat cell** development,[32]
- Promoting the production of **enzymes** that break down body fat,[32,33]
- Reducing body fat **accumulation** and storage,[32] and
- Increasing secretion of **adiponectin**, a hormone that decreases appetite and inflammation.[8]

In a human study, 40 healthy amateur athletes were given **500 mg** of hesperidin or a placebo daily for eight weeks. They maintained their usual diet and lifestyle.[34]

In the hesperidin group, average percent **body fat** decreased by **3.7%**.[34]

In a clinical trial of 24 individuals with metabolic syndrome, participants were given **500 mg** per day of ***hesperidin*** or placebo for three weeks. After three weeks significant improvements in biomarkers of inflammation, vascular function and metabolic parameters were seen in the treatment group compared to placebo.[6]



Get Help Burning Belly Fat

- Activity of the "fat-burning enzyme" **AMPK** can decrease with age, contributing to accumulation of dangerous and inflammatory abdominal fat.
- Researchers developed an extract of ***Gynostemma pentaphyllum*** that contains **10 times** the usual amount of two AMPK-activating compounds.
- This patented ***G. pentaphyllum*** extract was shown in a controlled human study to reduce total fat area by **6.3%** and abdominal fat deposits by **11%**.
- The citrus flavonoid **hesperidin** also boosts AMPK and was shown in a human trial to reduce percent of body fat by **3.7%**.
- ***G. pentaphyllum*** and ***hesperidin*** can be taken together to help activate AMPK and reduce abdominal fat and its deadly effects.

Together, **hesperidin** and ***Gynostemma* extract** may complement each other and maximize the effect of targeting abdominal fat.

Summary

The decline in **AMPK** activity that occurs with aging leads to increased **abdominal fat** and harmful inflammation.

Gynostemma pentaphyllum extract increases AMPK activity and reduces **belly fat**.

Preclinical evidence has revealed that the citrus compound ***hesperidin*** also stimulates AMPK activity and could work in other ways to further reduce belly and overall body fat.

These compounds provide a dual-action approach to reducing **abdominal fat**. •

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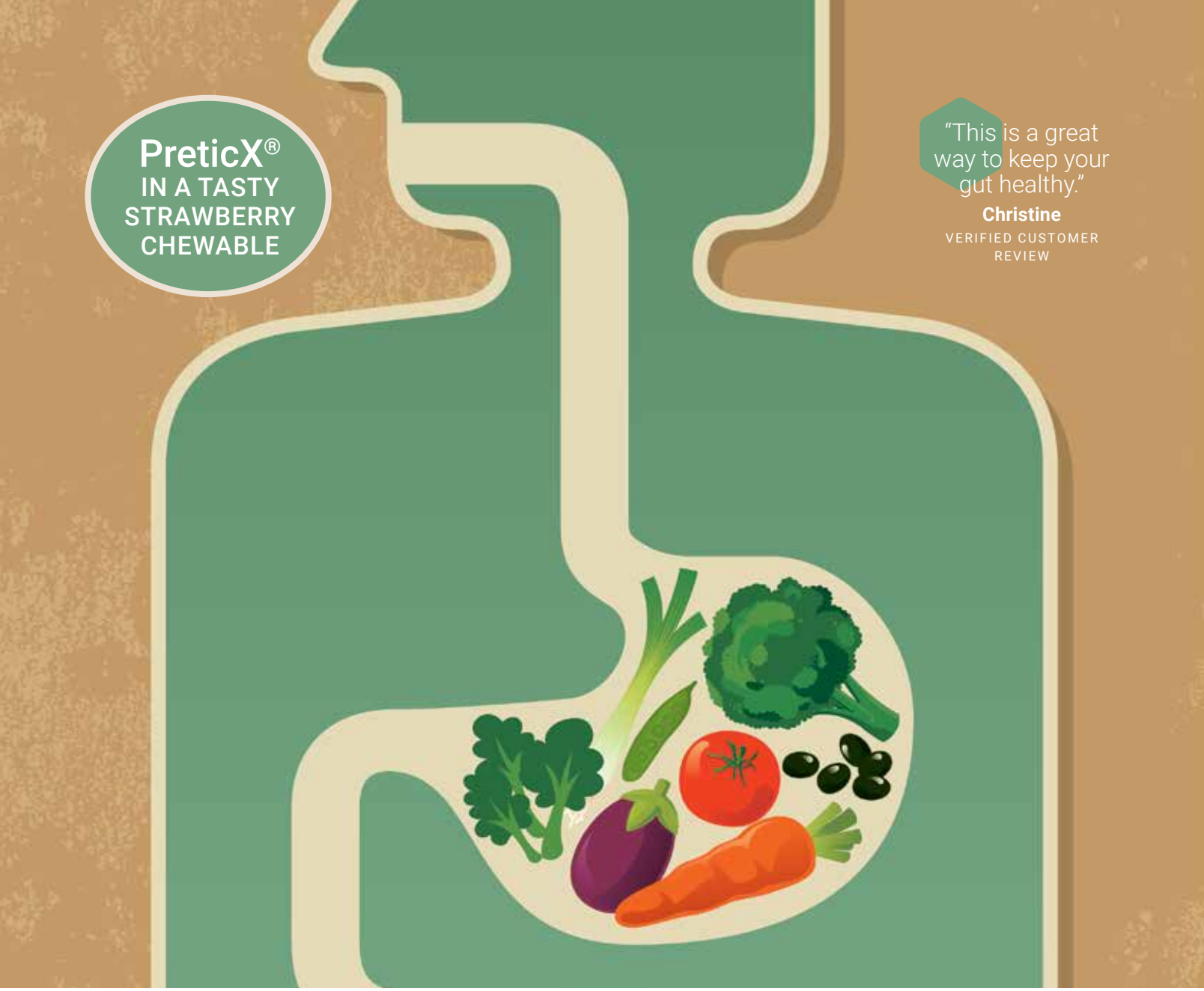

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Protect Against Age-Related Memory Loss

BY LAURIE MATHENA

There is increasing awareness that a**ge-associated memory loss** and early-stage dementia are reversible conditions.[1-3]

Two compounds have been shown in clinical studies to help:[4-10]

- Protect cognitive function,
- Stop memory loss, and
- Potentially ***reverse*** early symptoms of cognitive decline.

Daily intake of the mineral **lithium** has been found to decrease the *rate* of **cognitive decline** in people with Alzheimer's disease.[4]

And a milk-derived compound called **proline-rich polypeptide complex** has been shown to ***improve*** cognitive scores in Alzheimer's patients.[5]

Both nutrients work by targeting harmful changes that occur in the brain with age.

Brain Changes and Dementia

The brain undergoes **structural changes** as we age.

Among the most damaging are the buildup of **amyloid protein clumps**, the dysfunction of **tau** proteins, and chronic **inflammation**.[11]

Over time, these changes lead to the death and dysfunction of brain cells, which cause the brain to ***shrink***.

This damage is associated with memory deficits seen with **mild cognitive impairment** and **dementia**.[11]

The compounds **lithium** and **proline-rich polypeptide complex** help mitigate the progression of structural damage caused by **amyloid** and **tau** that occurs in aging brains.

Lithium Preserves Mental Function

Animal and human studies have shown that low-dose **lithium** works in key ways to guard against harmful changes in the brain by:

- Improving the brain's ability to clear toxic amyloid protein clumps,[12]
- Reducing amyloid plaque and abnormal tau protein in the brain (longer term intake),[13]
- Improving cellular housekeeping (autophagy), mitochondrial function, and the production of brain growth factors, and[14]
- Potentially preserving brain volume in multiple regions, including the hippocampus, which is critical for the formation of new memories.[15]

In a clinical study, a daily **300 mcg** micro-dose of **lithium** for 15 months significantly decreased the progression of cognitive decline in patients with **Alzheimer's disease**.[7]

In a randomized clinical trial of older adults with **mild cognitive impairment**, participants received either **lithium** or a **placebo** for two years. This group was followed for an additional two years.

Researchers found that after two years, **cognitive function** remained **stable** in those taking low-dose lithium, with better performance on **memory** and attention tasks. The **placebo** group showed a significant functional and cognitive decline.

Another study showed that long-term, low-dose **lithium** attenuates **cerebrospinal fluid** biomarkers for **Alzheimer's** disease.[4]

After ***four years***, the progression of mild cognitive impairment to **dementia** was lower in those taking low-dose **lithium** compared to a **placebo**.[4]

Proline-Rich Polypeptides Fight Brain Aging

Another nutrient that can help aging brains resist damaging structural changes is the **proline-rich polypeptide complex**. This is a compound isolated from protein fragments found in **colostrum** (the early milk that mothers produce after a baby is born).

Proline-rich polypeptide complex has been shown to:

- Provide neuroprotective effects *in vitro*,[16]
- Increase the growth of **nerve fibers** and support **connectivity** in the brain,[17,18]
- Stabilize cognitive function in a clinical trial of patients with mild and moderate Alzheimer's disease,
- Enhance the production of enzymes that break down and eliminate amyloid beta protein, and
- Alter the expression of **genes** associated with inflammation, the production of **amyloid**, and the abnormal modification of **tau** proteins.[10]

In a human trial, subjects with *early*-stage **Alzheimer's disease** received either a **proline-rich polypeptide complex** or a placebo.[6]

After **one year**, those in the **placebo** group had a significant reduction in scores on a test of cognitive function, indicating worsening impairment.

Patients with an Alzheimer's diagnosis typically deteriorate over any period of observation. To see an *improvement* in cognitive function is exceptional.

A remarkable **54%** of these early-stage Alzheimer's patients taking the **polypeptide** complex had ***improvements*** in their cognitive scores. The remainder were **stable**, without *any* worsening of cognitive function.

Those who had milder symptoms at the start of the study showed the greatest improvement on average. This suggests that taking the complex *early* in the course of the disease is most beneficial.

Summary

Low doses of the trace mineral **lithium** and a **proline-rich polypeptide complex** can prevent or delay the structural damage that occurs in aging brains.

Human studies demonstrate the ability of these nutrients to stabilize or even ***reverse*** signs of cognitive dysfunction in people with early cognitive impairment and Alzheimer's disease. •

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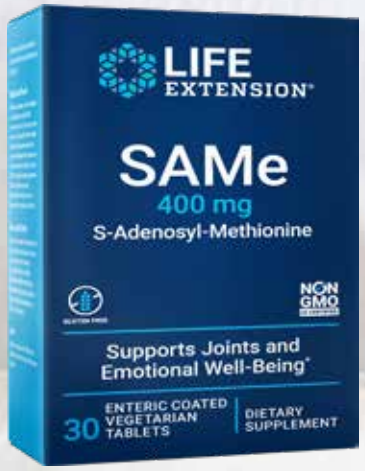

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(SAMe is also available in boxes containing 30 200 mg tablets. **Item #02175**).

Green Coffee
Supports Metabolic and Heart Health

BY STAN LEWIS

Every day, **62%** of American adults consume **coffee.** On average they drink more than three cups a day.[1]

This simple drink contains nutrients that have the potential to improve **metabolic health**[2] and reduce risk for **cardiovascular disease**.[2,3]

But there's a problem. Nearly all coffee beans are **roasted**, which *breaks down* many of the beneficial nutrients and reduces their content.[4.]

The solution: Unroasted **green coffee**.

The nutrients in coffee that are most protective against **metabolic** and **cardiovascular diseases** are found in greater concentrations in **green coffee**.[5]

Human trials show that taking **green coffee extract** can support healthy metabolism. This has been shown to help restore insulin sensitivity,[2,6-8] lower blood sugar, and reduce other risk factors for **heart disease**.[2,12-14]

Metabolic Problems and Cardiovascular Disease

Aging adversely affects metabolism[15] and **metabolic** health issues are widespread. These may include elevated blood glucose, high blood pressure, and abnormal cholesterol and triglyceride levels.[16]

When three or more of these issues occur together, the condition is known as **metabolic syndrome**.[17]

A stunning one in three adults in the U.S. has metabolic syndrome.[18] This condition greatly increases the risks of **type II diabetes**, **cardiovascular disease**, heart attack, and stroke.

Metabolic abnormalities also accelerate the aging process and increase risk for several other conditions,[19] including cognitive decline and dementia, kidney disease, liver disease, and cancer.

Green Coffee Extract

Coffee beans contain a wide array of health-promoting compounds with potent **antioxidant** and **anti-inflammatory** activity, particularly a polyphenol called **chlorogenic acid**.[5]

Chlorogenic acid is *most* abundant in **green coffee**.[5]

Coffee beans are usually roasted before brewing, which *breaks down* chlorogenic acid. **Green coffee beans** have *not* been roasted, leaving them *higher* in **chlorogenic acid** and other bioactive components.

Population and prospective studies have found associations between *higher* **chlorogenic acid** intake and *reduced* risk for several chronic diseases, including metabolic syndrome,[12] liver disease,[8,20] and others.[2,12]

Chlorogenic acid displays anti-diabetic,[11] and blood pressure-lowering effects that may improve health markers associated with metabolic syndrome.[5,8]

Green coffee extracts are often standardized to contain high levels of chlorogenic acid and other beneficial compounds.

Restoring Insulin Sensitivity

Insulin sensitivity refers to the ability of cells to respond appropriately to the hormone **insulin**, which helps the body use blood sugar for energy.

In metabolic disease, insulin sensitivity *drops*. Cells cannot take up and utilize blood glucose as efficiently. The result is high blood sugar levels and increased risk for **type II diabetes**.

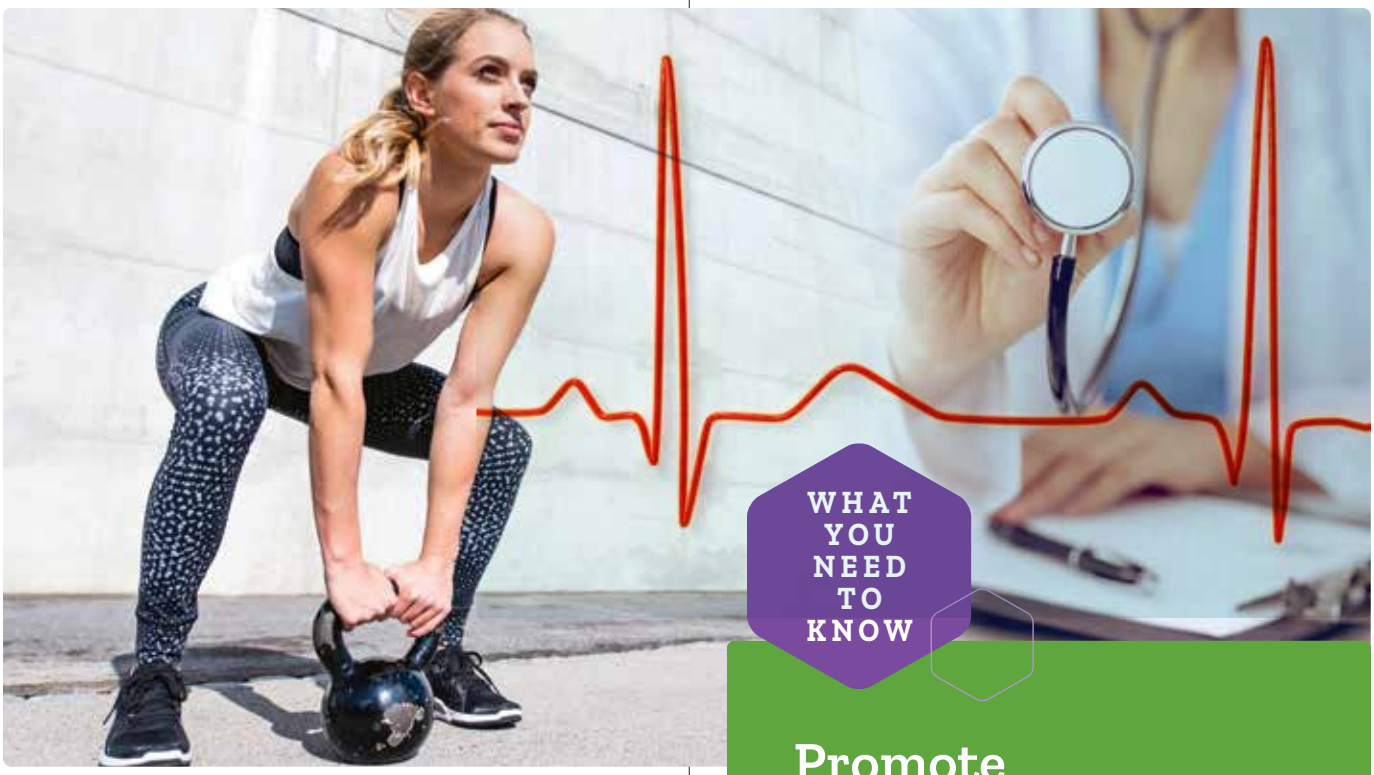
High glucose levels are catastrophic to tissues over time, causing damage that culminates as disorders of the heart, blood vessels, kidneys, eyes, and peripheral nerves.[21]

Studies suggest that green coffee and chlorogenic acid can help support healthy insulin function and restore **insulin sensitivity**.

In rodent models of metabolic disease, **green coffee extract** improves cellular energy metabolism, which results in improved blood glucose control and improved sensitivity to insulin.[22-24]

In **human studies**, green coffee extract intake significantly improved insulin sensitivity and lowered fasting blood glucose levels.[2,6-8,12-14]

Studies that used at least **400 mg** daily of **green coffee extract** more consistently demonstrated a benefit than studies with lower doses.[7]



Other Effects of Green Coffee Extract

In addition to improved insulin sensitivity and glucose control, taking green coffee extract leads to improvements in many other areas of **metabolic health**.

Animal studies show that green coffee augments cellular energy metabolism and reduces triglycerides and blood pressure.[22-24]

One mouse study found that green coffee bean extract reversed insulin resistance by reducing expression of genes involved in inflammation.[24]

Human studies have found that green coffee intake leads to beneficial changes in key markers of metabolism. Among other benefits, taking **green coffee extract**:

- Reduced waist circumference,[2,8,11,25]
- Lowered total cholesterol, **LDL** ("bad") cholesterol, and triglyceride levels, while boosting protective **HDL** cholesterol,[2,6,11,12,14]
- Decreased blood pressure,[2,9,10,13] and
- Reduced markers of systemic inflammation.[14,20,26]

All of these effects improve metabolic health and reduce the risk for **cardiovascular disease**.

WHAT YOU NEED TO KNOW

Promote Metabolic Health with Green Coffee

- **Metabolic disease** is common with aging and increases the risk of type II diabetes, cardiovascular disease, heart attacks, and strokes.
- Markers of metabolic disease include high blood pressure, high blood sugar, and abnormal blood lipid levels.
- **Green coffee extract**, a potent source of the nutrient chlorogenic acid, improves many aspects of metabolic health.
- In animal studies and human trials, taking green coffee extract improved insulin sensitivity, blood glucose levels, lipid levels, and blood pressure.
- These and other improvements help to reduce the risk for **type II diabetes** and **cardiovascular disease**.

Summary

Metabolic disease significantly increases risk for type II diabetes, cardiovascular disease, heart attacks, and strokes.

Green coffee extracts containing **chlorogenic acid** have demonstrated the ability to improve markers of metabolic health in animal studies and human trials.

Oral intake of at least **400 mg** of green coffee extract daily may help increase insulin sensitivity, reduce high blood sugar, lower elevated blood pressure and cholesterol, and improve overall metabolic health. •

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

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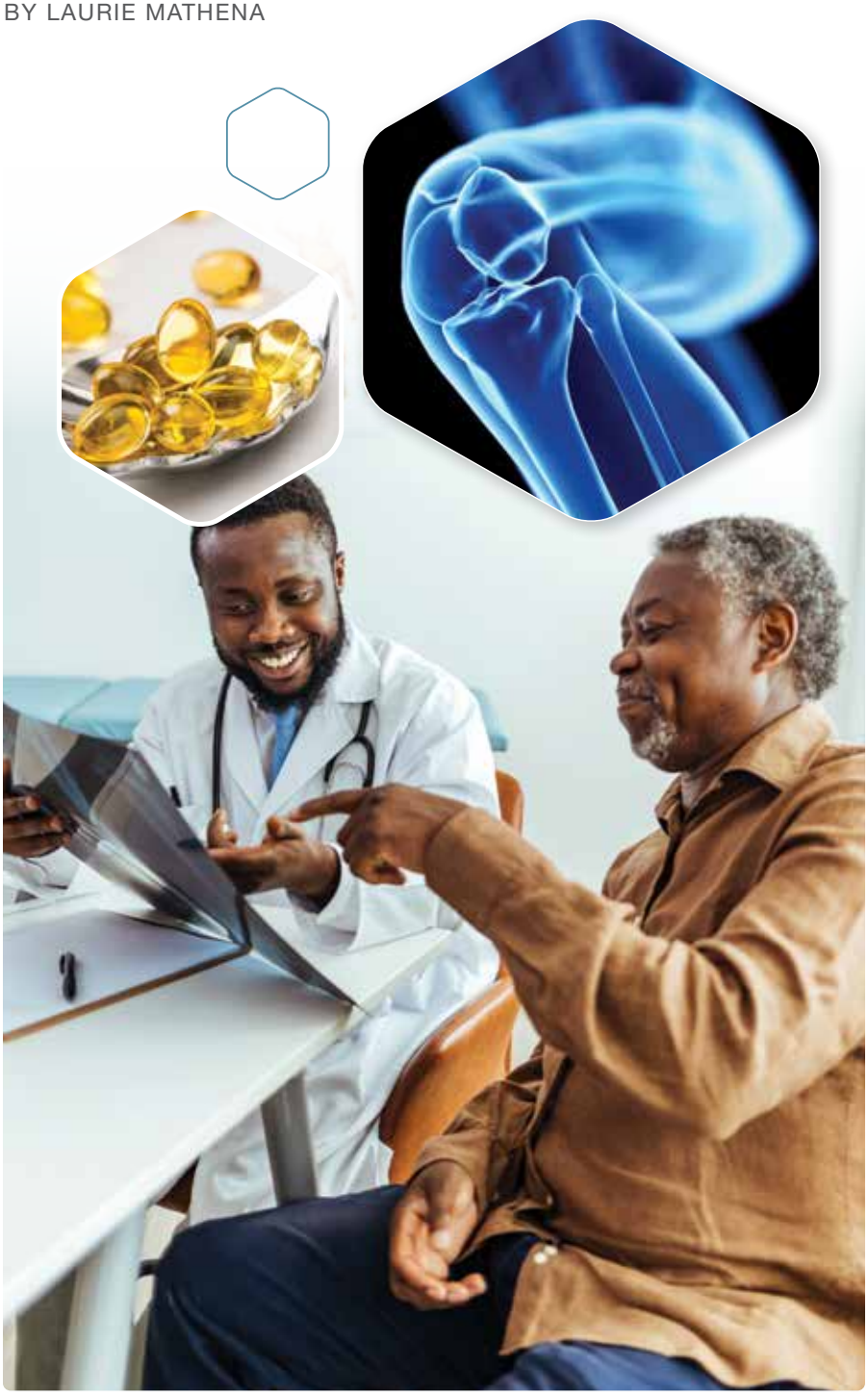
TOCOTRIENOLS to Support Bone Health

BY LAURIE MATHENA



With aging, **bone health** comes under continual attack.

In a condition like **osteoporosis**, weak and brittle bones increase the risk of falls and fractures.[1] Fragility fractures in the elderly are associated with increased mortality rates.[2,3]

Those stricken with **osteoarthritis** can experience swelling and erosion of joint cartilage that may lead to bone erosion and joint deformity, along with pain, stiffness, and disability.[4,5]

Rheumatoid arthritis is an autoimmune, inflammatory disease that causes pain, damage, and disfigurement of peripheral joints.[6]

All these conditions contribute to chronic disease burdens that impact quality of life.

Researchers have investigated a form of **vitamin E** called **tocotrienols**, which is found in various **plant oils**. Published findings indicate that **tocotrienols** could help combat destructive joint processes[5,7-10] and potentially help ***prevent bone loss***.[11,12]

Bone Remodeling

Healthy bones are in a constant state of repair and maintenance. This process is called **bone remodeling**.

Optimal bone remodeling requires a balance of **osteoclasts** (cells that break down older bone tissue—called bone resorption) and **osteoblasts** (cells that help form new bone). If the balance becomes tipped in favor of *osteoclasts*, it gradually leads to cartilage and bone destruction.[13,14]

This imbalance has been implicated in the development of osteoporosis and arthritis. Oxidative stress and chronic inflammation are notable contributors to irregular bone remodeling and contribute to this imbalance.[14]

Research has shown that **tocotrienols** may help combat many of the bone-destructive processes.[12]

OSTEOPOROSIS

Osteoporosis occurs as bone mineral density and bone mass significantly decrease.

This leads to reduced bone strength and increased fracture risk.

Osteoporotic bones become so fragile that fractures can occur spontaneously or as a result of a minor fall or even normal stresses such as bending and lifting.[1]

Preventing fractures is of vital importance, as not only can they cause other medical problems, but fractures in elderly are also associated with increased mortality rates.[2,3]

Osteoporosis involves an imbalance between bone buildup and bone breakdown.

Tocotrienols work in several ways to promote bone density and inhibit bone loss, which suggests they may potentially be beneficial in the fight against osteoporosis.

Preclinical studies have shown that tocotrienols:[14]

- Increase **bone mineralization**, a process essential for forming strong, hard bones;
- Promote formation of bone-building **osteo*blasts***,
- Suppress formation and development of bone-resorbing **osteo*clasts***,
- Reduce oxidative stress and inflammation by downregulating pro-inflammatory cytokines.

In animal models of osteoporosis, tocotrienol intake improves biomarkers of bone formation and bone strength.[14]

In animal model studies of postmenopausal osteoporotic rats, tocotrienol supplementation was found to prevent **bone loss** and to promote fracture healing.[8,9]

A systemic review of preclinical studies suggested **tocotrienols** may potentially be useful for prevention and treatment of bone related diseases involving increased bone loss.[12]

OSTEOARTHRITIS

Osteoarthritis is the most common form of arthritis and is partially caused by mechanical wear and tear on joints. Osteoarthritis typically affects weight-bearing joints and hands.

This disease is characterized by the loss of protective cartilage in joints.[4] Osteoarthritis treatments generally aim to reduce load (losing weight to remove stress from joints), improve joint support, rebuild cartilage, and relieve pain.

In an animal model study of osteoarthritis, tocotrienols showed joint protective effects by preventing cartilage degradation and leading to favorable changes in the joint histology and serum cartilage markers.[5]

In a **clinical trial**, patients with osteoarthritis of the knee were randomized to receive either **1.5 grams** of oral **glucosamine sulphate** or **400 mg** of palm oil rich in **tocotrienols** for six months. The symptoms were assessed using Western Ontario and McMaster Universities' WOMAC osteoarthritis index and visual analogue scale (VAS).

After six months of treatment, both groups showed a significant improvement in WOMAC scale and significant reduction in the VAS score during standing and walking.[15]

This study suggests that daily vitamin E may play a potential role in reducing symptoms of patients with osteoarthritis of the knee. While **tocotrienols** were shown to reduce osteoarthritis symptoms in this human trial, additional studies are needed to confirm these findings.

RHEUMATOID ARTHRITIS

Rheumatoid arthritis is an autoimmune disease in which the body's own immune system attacks the body's joints. The immune attack on joints seen in rheumatoid arthritis causes inflammation and damage to the tissue, which leads to pain and misshapen joints.[6]

One particular pro-inflammatory cytokine that has been shown to be involved in the development of rheumatoid arthritis is **interleukin-17**, or **IL-17**.[16] IL-17 stimulates the production of **RANKL**, a protein that enhances the production and activation of bone-resorbing osteoclasts.[10]

Cell studies have shown that tocotrienols help mitigate the bone-destructive processes that contribute to rheumatoid arthritis by:[10,12]

1. Decreasing the production of RANKL by IL-17, and

2. Preventing IL-17 from forming new osteoclasts.

Tocotrienols also decreased the differentiation of pro-inflammatory cells, called **Th17 cells**, in a recent cell study.[10] This is significant because Th17 cells have been implicated in the development of many autoimmune diseases and inflammation.[17]

Researchers concluded that **tocotrienols** could represent a *novel therapeutic option* for treating the bone-destructive processes in rheumatoid arthritis.[10]

Summary

A healthy balance of bone buildup and breakdown is important for strong, healthy bones.

An *imbalance* promotes bone destruction and is one of the factors that can lead to conditions such as **osteoporosis** and **arthritis**.

By *reducing* the formation of cells that break down bone and promoting formation of cells that build new bone, **tocotrienols** may help restore healthy balance to the bone remodeling process.

This could potentially help combat the bone-destructive processes seen in rheumatoid arthritis and osteoporosis. However, further studies should be performed to clarify the mechanism of joint protection and its effects on functional parameters before firm conclusions are drawn. •

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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.

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Women's Bladder & Urinary Support

Many women need a little help when it comes to bladder and urinary health.[1]

Women's Bladder Support contains three herbal extracts shown to support women's bladder and urinary functions:

- Horsetail
- Lindera
- Three-leaf caper

This three-herb blend can help maintain bladder comfort and normal urinary frequency—with women reporting positive results in a recent clinical study.[2]

Item #02513

60 vegetarian capsules

GLUTEN FREE

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This product is available at fine health food stores everywhere.

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SAFE-GUARD

Your Skin from Within

ORAL formula provides *Polypodium leucotomos* fern extract along with nicotinamide and red orange extract.

Item #01938

120 vegetarian capsules

"I now have peace of mind knowing I'm doing what I can to protect myself."

Elaine

VERIFIED CUSTOMER REVIEW

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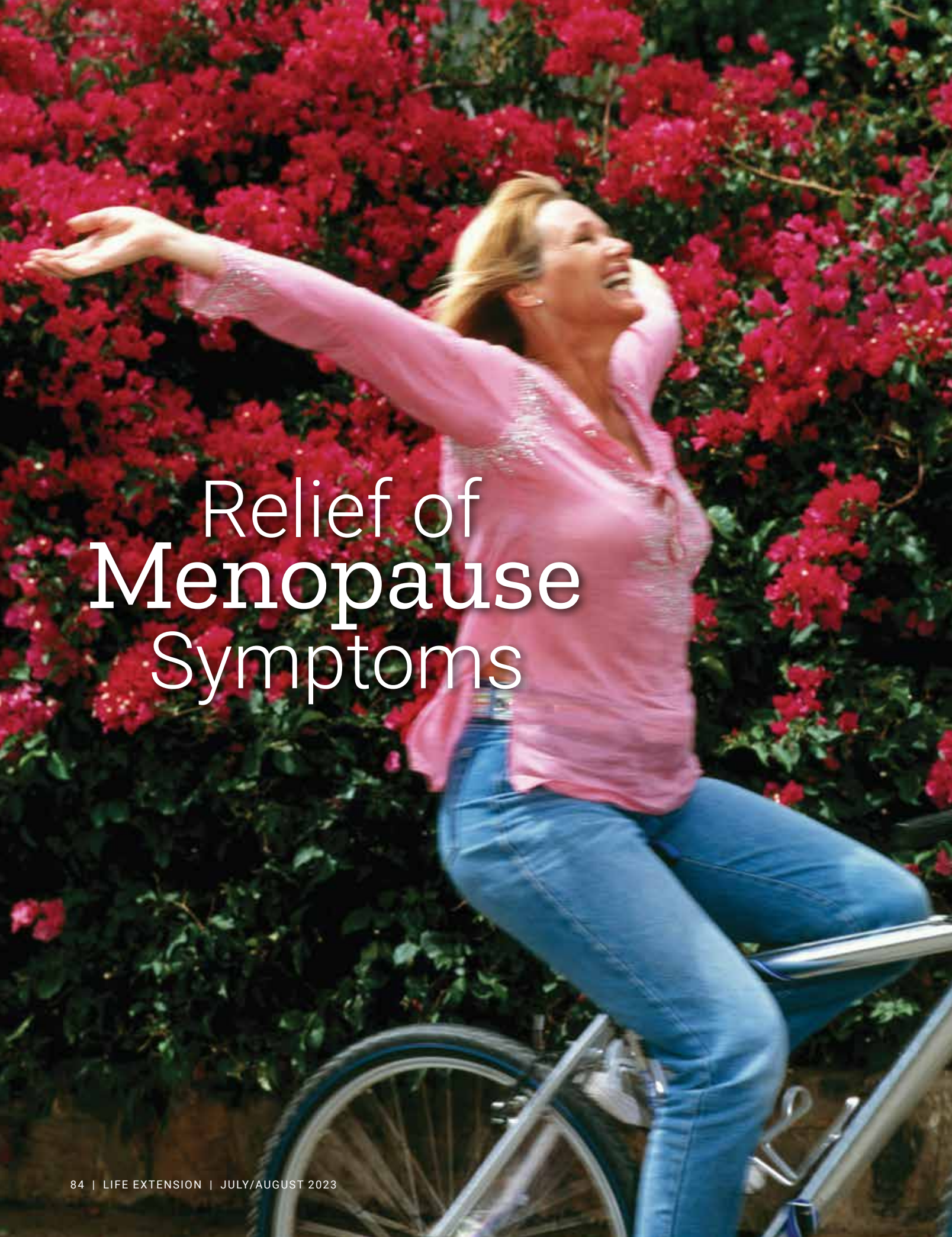
These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



Relief of Menopause Symptoms

STEVE PAGE, OT/L, PHD, MS, MOT

Hot flashes. Mood swings. Trouble sleeping. Sexual/bladder problems.

Menopausal symptoms make women miserable.

For those who prefer to avoid hormones, there's a practical alternative.

Used widely in **Germany** for decades, a **Siberian rhubarb** root extract has been shown to significantly reduce ***all*** common menopausal symptoms—*without* side effects.

In one study, it led to an **83%** reduction in the severity of **menopause** symptoms.[1]

Common Menopause Symptoms

Menopause officially begins when a woman has gone 12 months without menstruating.

Symptoms generally start when a woman is in her 40s in response to reduced production of **estrogen** and **progesterone**.[2]

The **11** commonly recognized symptoms of menopause include:[3]

- Hot flashes and excessive sweating,
- Sleep problems,
- Physical and mental exhaustion,
- Depressive mood,
- Heart discomfort,
- Irritability,
- Anxiety,
- Joint and muscular discomfort,
- Sexual problems,
- Bladder problems, and
- Vaginal dryness.

A **plant extract** has been shown to alleviate ***all*** these symptoms…without hormones.

The Rhubarb Remedy

For decades, Germans have used an extract from the root of the **Siberian rhubarb** plant to treat menopausal symptoms.[4,5]

Most of these symptoms are caused by decreased **estrogen** production. Estrogen binds to **receptor sites** on cell membranes to activate cellular processes.

In preclinical studies, the extract from the roots of **Siberian rhubarb** has shown greater affinity for the beneficial **estrogen receptor-*beta*** (ER-*beta*) than for potentially detrimental **estrogen receptor-*alpha*** (ER-*alpha*).[6,7]

The ability of **Siberian rhubarb** extract to selectively activate **ER-*beta*** but not **ER-*alpha*** is a key reason for its safety.[8]

In multiple studies, this extract has significantly improved ***all 11 symptoms***.

In one study, 109 perimenopausal women received **4 mg** of **Siberian rhubarb extract** or a placebo daily for three months. Within *one month*, those receiving Siberian rhubarb reported significant reductions in the number and severity of **hot flashes**. After three months, women taking the extract had a **54%** reduction in the severity of **menopause symptoms**.[9]

WHAT YOU NEED TO KNOW

Manage Menopause with Siberian Rhubarb

- **Menopause** is accompanied by **11** common symptoms, including hot flashes, sleep problems, mood swings, bladder, and sexual problems, and more.
- **Siberian rhubarb extract** has been widely used in Germany for decades to manage menopause symptoms safely and effectively.
- Multiple human studies show that **Siberian rhubarb extract** significantly relieves ***all 11*** symptoms and reduces overall symptom severity by up to **83%**.

Other studies have reported even more robust benefits.

A trial of 112 menopausal women[10] found that taking **4 mg** of **Siberian rhubarb** for three months decreased the median number of **hot flashes** from **12** episodes to **2** episodes per day. That's a **six-fold** reduction! Women in the **placebo** group had a median **8%** *increase* in the number of daily hot flashes.

In a year-long trial of perimenopausal women, those taking **Siberian rhubarb extract** daily had a remarkable **83%** reduction in the overall severity of symptoms.[1]

Wide-Ranging Relief

The benefits of **Siberian rhubarb** extend to ***all*** common symptoms.

Sleep difficulties affect most menopausal women, particularly during perimenopause.[11,12] Perimenopausal women taking a daily dose of Siberian rhubarb extract reduced the severity of sleep problems by up to **60%**.[10]

Mood changes, **irritability**, **depression**, and **anxiety** are also common during perimenopause.[13,14] One study recruited perimenopausal women who reported feelings of anxiety, including being "in low spirits" most of the time. After taking **Siberian rhubarb** for three months, **59%** of the women reported being "in *good* spirits mostly," and **9%** reported being "in very good spirits mostly." Those taking Siberian rhubarb had an over **60%** decline in anxiety scores.[5]

Research also shows that **physical** and **mental exhaustion**—two of the most common menopausal symptoms[15]—were improved with the extract, in one 48-week observational study, by up to **57%**.[1]

Menopause is also associated with **urogenital** symptoms, including painful intercourse, vaginal dryness, and urinary incontinence.[16]

Women who took Siberian rhubarb daily for three months had about **45%-59%** reduction in severity of **urogenital**, **sexual**, and **vaginal dryness** symptoms, compared to baseline levels.[1]

In a study of self-reported "heart symptoms," menopausal women taking Siberian rhubarb extract reported about **60%** fewer **heart** concerns, including fewer heart palpitations and less discomfort, within about three months.[1]

Strong Safety Record

In Germany, **millions** of menopausal women use **Siberian rhubarb** extract to support vasomotor symptoms, with over **two decades** of data showing that it is safe.[4,6,17]

A study of perimenopausal women in India[17] published in **2021** found that taking **4 mg** of **Siberian rhubarb extract** daily for three months reduced all **11** menopausal symptoms, and caused *no* side effects or significant changes in blood pressure, lipid profile, or C-reactive protein (a marker of inflammation).

These and other studies tracking the health of women who took **Siberian rhubarb** daily found this was safe, with no significant health concerns, such as changes in breast or endometrial tissues, resulting from use.[9,10] Women were followed for up to ***two years*** in one of these studies.[9]

These and other findings support the use of **Siberian rhubarb extract** as an effective way to manage menopausal symptoms.

Summary

The onset of **menopause** is accompanied by uncomfortable symptoms that can last for years.

Siberian rhubarb root extract has been safely used for decades by millions of women in Europe.

Multiple studies affirm its effectiveness in reducing the frequency and severity of **hot flashes**, **sleep problems**, **mood changes**, and all other common menopause symptoms. •

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Counting Sheep *is* So Passé

Sweet dreams, and
no more sheep for you!

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Extended-release melatonin to help you stay asleep*

With age, the body's nocturnal peak of **melatonin** declines, making it harder to fall asleep and stay asleep.

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Clinical results demonstrate reduced **body mass** including a decreased waist-to-hip ratio of **4%*** after only 28 days.

Thermo Weight Control targets calories with **capsaicin** embedded in a plant fiber for optimal systemic benefits.

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

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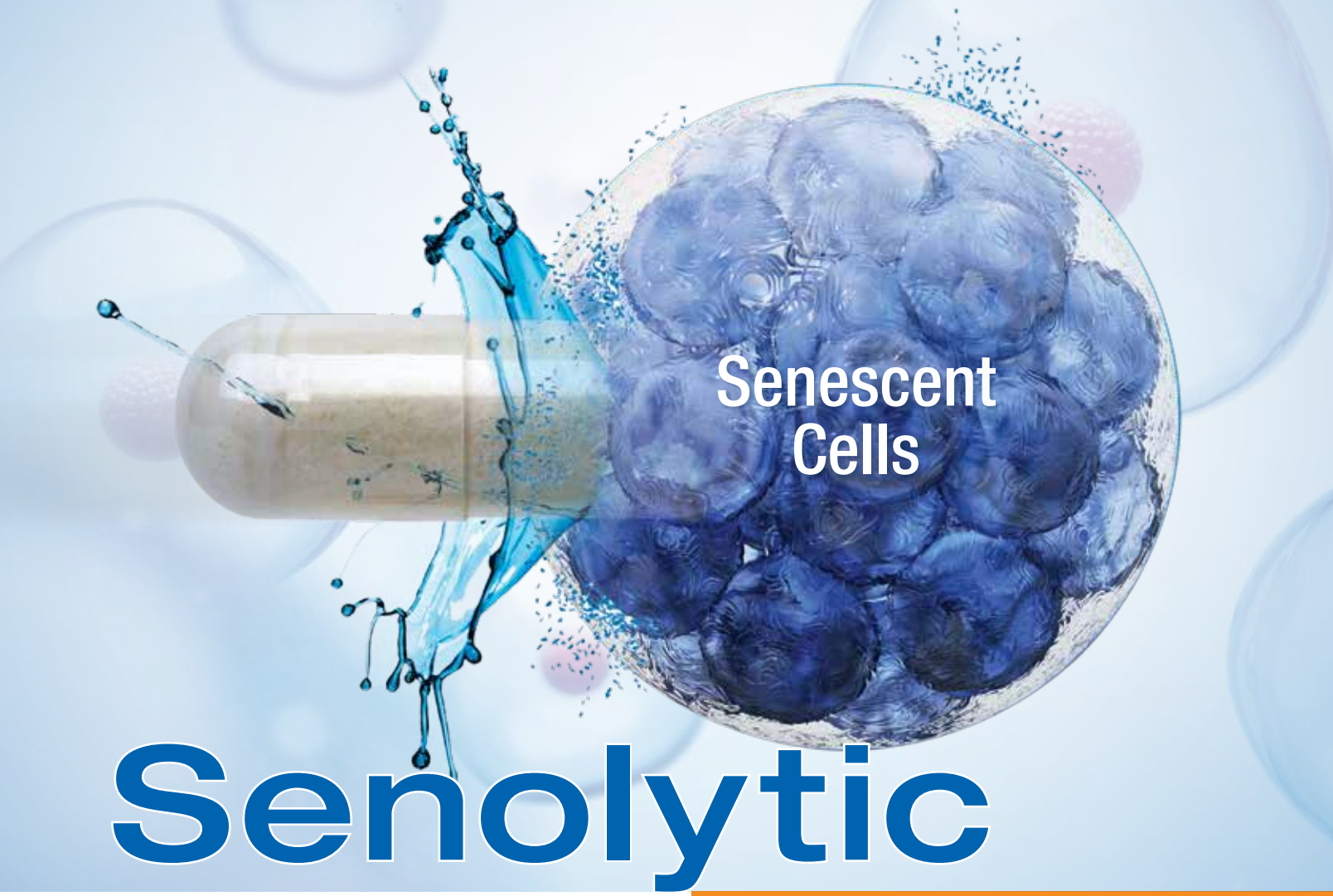
**J Diet Suppl.* 2021;18(4):387-405.



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Larry
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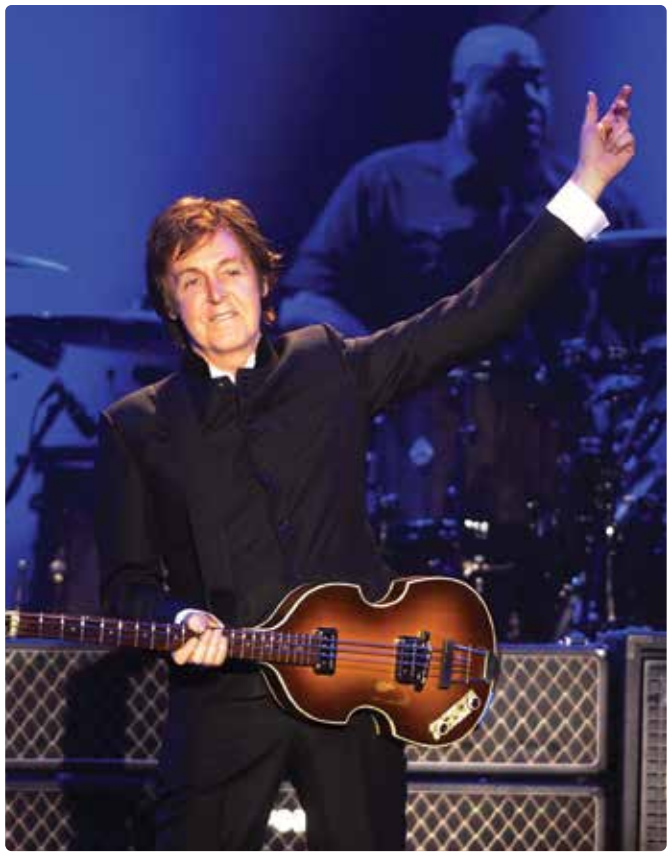
The suggested dose of the **Senolytic Activator®** is **3 capsules** once a week. Each bottle lasts 3 months and costs very little.

Paul McCartney
Still Making His Mark

BY LAURIE MATHENA



In June of 2023, Sir Paul McCartney turned 81 years old. But don't expect the former Beatles singer, songwriter, and musician to retire anytime soon.

As he explained in an interview, "I'm not old, and I'm not retiring."

Indeed, despite his advanced years, McCartney is working harder than ever.

He continues to produce new music, write books, appear on popular television shows like *Saturday Night Live* and *Carpool Karaoke*, and speak out for causes he believes in.

In 2022, McCartney did a 16-show tour in two months, in sold-out venues across the United States.

He easily out-works and out-plays many performers half his age.

These feats leave many people wondering: *How does he do it?*

It turns out he practices many of the top lifestyle habits known to be associated with healthy longevity.

A Lifelong Gift

McCartney's good health and vitality are not a stroke of luck.

For more than 50 years, he has faithfully practiced many of the top lifestyle habits associated with healthy longevity.

At the top of the list is staying active.

In addition to performing 2.5-hour concerts, McCartney does regular cross-training workouts, he runs, and he practices yoga.

"I don't have a trainer," he explained in an interview on the SmartLess podcast. "It's just me."

He does leg stretches, spends time on an elliptical trainer, and ends with "a bit of running." Overall, he says he spends about 5 to 10 minutes per exercise.

"It's not a huge workout, but it's good," said McCartney. "I like it."

And if he's working out at a local gym, he says he likes to show off his headstands, which are part of his regular yoga practice.

McCartney has also been practicing transcendental meditation since his days with the Beatles in the 1960s, when he trained under the yoga guru, Maharishi Mahesh Yogi.

Transcendental meditation involves sitting with eyes closed for 20 minutes, twice a day, repeating a mantra.

"It was a great gift that Maharishi has given us," said McCartney at a press conference. "It came during a period at the end of the 60s when we were looking for something that could bring us more stability, and it was a lifelong gift. It's something you can call on at any time."

Since then, studies have connected transcendental meditation to reductions in anxiety, depression, and negative emotions,[1] and it has been shown to improve markers of learning and memory.[2]

Meat-Free Monday

McCartney is a vegetarian, which he credits as a reason why he's so fit as an octogenarian.

But for McCartney, his meat-free lifestyle is about more than its health benefits. It is about ending animal cruelty, protecting the planet, and conserving natural resources.

"I have been a vegetarian for 40 years," said McCartney on meatfreemondays.com. "I like the idea of saving animals, saving people's health, and saving this beautiful planet of ours."

In 2009, McCartney spoke before the European Parliament to discuss how meat contributes to the destruction of the planet. Today, that speech is recorded in a book entitled, *Less Meat, Less Heat*.

In it, he points out that, "The livestock industry produces more greenhouse gases than all of the transport sectors put together—cars, planes, trains and trucking."

He also proposed a solution.

"What I'm here today to suggest is that the first step is a Meat-Free Monday, or a meat-free day. I urge you, each of you, to do your bit for your people, for their children, and for the planet they will inherit. Go meat-free, one day."

To that end, McCartney founded a nonprofit campaign called the Meat-free Monday Initiative with his two daughters, Stella and Mary McCartney.

By having at least one plant-based day per week, the initiative claims, people can help slow climate change, conserve natural resources, and improve their health.

According to a recent study by Oxford University's department of public health, eating meat no more than three times per week could prevent 31,000 deaths from heart disease, 9,000 deaths from cancer, and 5,000 deaths from stroke per year.[3]

But perhaps McCartney's biggest secret weapon is his eternal optimism. This longevity factor has been proven to contribute to a **15%** longer lifespan, and a greater likelihood of living beyond age 85.[4]

"I've always been an optimistic person because I don't like the alternative," said McCartney while answering questions on his official website, **paulmccartney.com**. "I always try and see the good side—the silver lining—and if you're lucky, it arrives."

Got Back

Now into his eighth decade, McCartney continues to write new music and challenge himself creatively.

During COVID-19, he wrote and recorded his latest solo album, *McCartney III*, on his own. This collection of critically acclaimed work earned two Grammy nominations.

He wrote a book called *The Lyrics: 1956 to Present*, which hit #1 on the *New York Times* bestseller list.

He wrote a children's book called *Grandude's Green Submarine*, a sequel to the *New York Time's* best-selling book, *Hey Grandude*.

He starred in the Hulu docuseries *McCartney 3,2,1*.

And he helped produce Peter Jackson's Beatles documentary, *Get Back*.

These are impressive additions to an already illustrious resume that includes 18 Grammy Awards, an Academy Award, two spots in the Rock and Roll Hall of Fame, and two Grammy Lifetime Achievement Awards (recognizing both his career with the Beatles and his accomplishments as a solo artist).

And in 1997, he was knighted by Queen Elizabeth II for his "service to music," dubbing him with the title, Sir Paul McCartney.

His mark on music history is undeniable—and ongoing.

In 2022, McCartney performed a sold out 16-show U.S. tour in two months called *Got Back*.

But for McCartney, it's safe to say that *he never left*. •

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

Nancy

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120 tablets

Revive Hair, Skin, and Nails from Within

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- **Alpha-carotene** further helps support **macular density**.[1]

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

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