



The Science of a Healthier Life®

September/October | 2024

FEATURE ARTICLES

- | | |
|----|---|
| 16 | Magnesium and Metabolic Syndrome |
| 30 | Protect Against Stress-Inflicted Damage |
| 40 | Restore Youthful Skin Structure |
| 50 | Nitric Oxide and Vascular Health |
| 60 | Fatigue-Relieving Effects of Vitamin D |
| 78 | Is Resveratrol a Longevity Nutrient? |

Clinical Effects of VEGAN COLLAGEN on Aging Skin

PLUS: Green Tea
Lowers Diabetic
Cardiovascular Risks





Item #02407

500 mg
60 vegetarian capsules

UP TO 45 TIMES GREATER
BIOAVAILABILITY

Curcumin

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



This product is available at 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.

Brains & BRAWN



Whether you're in the office, at the gym, or helping your kids with their math homework, you need energy. Fuel your mind and body with Creatine & Acetyl-L-Carnitine Energy Plus. This convenient powder helps fight physical and mental fatigue and promotes healthy energy production, cognitive function, exercise performance, and recovery. Power through your day—no athletic skills required.



Item #02532

Net Wt. 233 g (0.51 lb)

This product is available at 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.



MAINTAIN HEALTHY

HOMOCYSTEINE LEVELS

FOR BRAIN, HEART, AND OVERALL HEALTH

Homocysteine Resist supports healthy levels of homocysteine, an unfavorable amino acid that can increase with normal aging.

Just one daily capsule of HOMOCYSTEINE RESIST provides:

5-MTHF (activated folate)	8,500 mcg ^o
Methylcobalamin (activated vitamin B12)	1,000 mcg
Pyridoxal 5'-phosphate (activated vitamin B6)	100 mg
Riboflavin (vitamin B2)	25 mg

^oDFE (Dietary Folate Equivalents)

Item #02121
60 vegetarian capsules

GLUTEN
FREE

1
DAILY

NON
GMO
LE CERTIFIED

VEGETARIAN
LE CERTIFIED

This product is available at 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.

Low-Cost
Biologically
Active

B COMPLEX

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



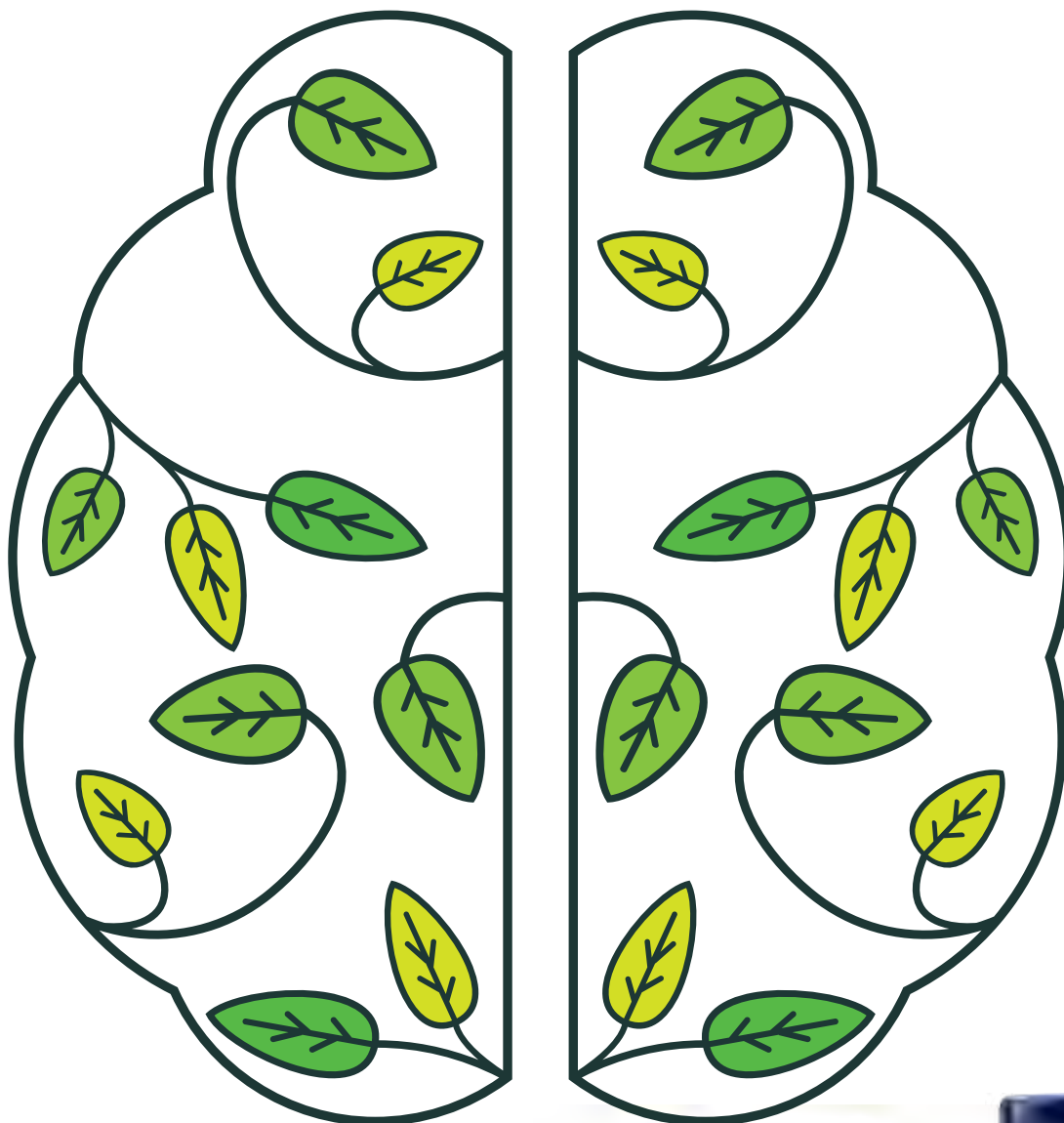
This product is available at fine
health food stores everywhere.

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

* *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.

MANAGE STRESS



Optimized Ashwagandha EXTRACT

Ashwagandha has been shown to:

- Support a healthy response to everyday stress
- Promote emotional well-being
- Encourage already-healthy levels of cortisol, the stress hormone

Optimized Ashwagandha provides **standardized** leaf and root **extracts** at a low cost.



Item #00888

60 vegetarian capsules

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



This product is available at 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.

REPORTS



PAGE 40 ON THE COVER

Effect of Procollagen on Skin Aging

Vegan **procollagen** contains an amino acid profile identical to human skin type 1 collagen.

In a **clinical trial**, an oral **vegan procollagen** formula decreased wrinkles by **13%-14%** in eight weeks.

10 IN THE NEWS

CoQ10 supports heart attack recovery; green tea lowers cardiovascular disease risk in overweight diabetics; higher antioxidant intake linked to less visceral fat; branched chain amino acids improve concussion recovery.

16 MAGNESIUM AND METABOLIC SYNDROME

Magnesium levels are frequently *low* in those with **metabolic syndrome**. A review of **clinical trials** confirmed that oral **magnesium** intake *improves* clinical markers of metabolic syndrome including elevated **blood sugar** and **insulin resistance**.

24 SAFELY LOWER URIC ACID LEVELS

Excess **uric acid** is associated with gout, kidney stones, and kidney disorders. In clinical trials, a plant extract *reduced* uric acid levels by **28.4%** and *improved* markers of **kidney function**.

30 PROTECT AGAINST CHRONIC STRESS DAMAGE

High **cortisol levels** increase the risk of **death** from **cardiovascular** disease five-fold. Clinical evidence shows that several plant extracts reduce elevated cortisol.

50 NITRIC OXIDE AND ARTERIAL HEALTH

An improved form of **L-arginine** stays in the blood *longer* to promote **nitric oxide** production to support circulatory health.

60 FIGHT FATIGUE WITH VITAMIN D

A **human** study found that **72%** of healthy adults with low vitamin D and feelings of fatigue reported **improvement** with vitamin D supplementation.

68 MAXIMIZE THE EFFECTS OF VITAMIN C

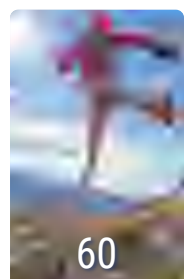
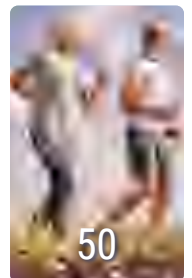
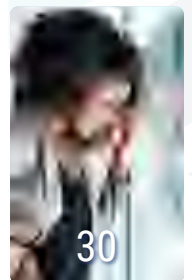
When combined with specific plant compounds, **vitamin C** absorption is improved along with its sustainability in the **bloodstream**.

78 IS RESVERATROL STILL A HEALTHY AGING SUPPLEMENT?

Resveratrol improves biomarkers of *human* health, including bone and heart, indicating that it may also promote **healthy aging**.

88 DEFEND AGAINST GLAUCOMA

Glaucoma is the leading cause of blindness in U.S. adults. Two **plant-based** extracts have been shown to reduce intraocular pressure by **24%**, or by **40%** when taken with standard therapy.





BUILD BETTER
Beauty
WITH VEGAN PRO COLLAGEN

Beautiful skin needs the right building blocks. This vegan collagen alternative reduces the appearance of wrinkles and increases collagen density. Support your skin with Vegan Pro Collagen!

Item #02528
Net Wt. 186 g

*Not a low-calorie food.







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.

Editorial

Editor-in-Chief • Philip Smith
Executive Managing Editor • Renee Smith
Medical Editor • Mahwish Aurangzeb, MD, MPH
Senior Editor • Dan Jewel
Senior Staff Writer • Michael Downey
Department Editor • Laurie Mathena
Associate Editor • Rivka Rosenberger, EdD
Creative Director • Robert Vergara, MS
Art Director • Alexandra Maldonado

Chief Medical Officer

Steven Joyal, MD

Chief Scientific Officer

Andrew Swick, MS, PhD

Scientific Advisory Board

Richard Black, DO • Aubrey de Grey, PhD • Deborah F. Harding, MD
Joel Kahn, MD, FACC • Sandra C. Kaufmann, MD
Peter H. Langsjoen, MD, FACC • Dipnarine Maharaj, MD
L. Ray Matthews, MD, FACS • Ralph W. Moss, PhD
Michael D. Ozner, MD, FACC • Xiaoxi Wei, PhD • Jonathan V. Wright, MD

Contributors

Michael Downey • Chancellor Faloon • Heather L. Makar
Laurie Mathena • Steve Page, OT/L, PhD, MS, MOT • Patrick Suarez
Rick Thatcher

Advertising

Chief Marketing Officer • Rey Searles • rsearles@lifeextension.com
National Advertising Manager • JT Hroncich • 404-347-4170

Senior Director of Sales and Business Development

Carolyn Bouchard • cbouchard@lifeextension.com • 954-202-7685

Circulation & Distribution

Life Extension • 3600 West Commercial Blvd., Ft. Lauderdale, FL 33309
Editorial offices: 954-766-8433 • fax: 954-491-5306

Customer Service: 800-678-8989 • Email: customerservice@LifeExtension.com

Wellness specialists: 800-226-2370 • Email: wellness@LifeExtension.com

Life Extension Magazine® values your opinion and welcomes feedback.

Please mail your comments to *Life Extension Magazine*,

Attn: Letters to the Editor, PO Box 407198, Fort Lauderdale, FL 33340

or email us: LEmagazine@LifeExtension.com

LIFE EXTENSION (ISSN 1524-198X) Sept/October 2024 ©2024 is published monthly except bi-monthly in April by LE Publications, Inc. at 3600 West Commercial Blvd., Fort Lauderdale, FL 33309-3338. LE Publications, Inc. All rights reserved. Published 13 times a year. Subscription rate: \$40 per year in the United States. US \$47 in Canada. US \$60 in other countries. Mail subscriptions or address changes to: LE Publications, Inc., P.O. Box 407198, Fort Lauderdale, FL 33340-7198, USA. Or phone us toll-free at: 1-800-841-5433. Canada Subscriptions: Publications mail agreement number 40028967. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B4R6. You will be sent your first issue within six weeks after LE Publications, Inc. receives your subscription fee. Periodicals Postage paid at Fort Lauderdale, FL and at additional mailing offices. POSTMASTER: Send address changes to Life Extension, P.O. Box 407198, Ft. Lauderdale, Florida 33340-7198, USA. Printed in USA. The articles in this magazine are intended for informational purposes only. They are not intended to replace the attention or advice of a physician or other health-care professional. Anyone who wishes to embark on any dietary, drug, exercise, or other lifestyle change intended to prevent or treat a specific disease or condition should first consult with and seek clearance from a qualified health-care professional. LEGAL NOTICE: Health claims contained in articles and advertisements in this publication have not been approved by the FDA with the exception of FDA-approved, qualified health claims for calcium, antioxidant vitamins, folic acid and EPA and DHA omega-3 fatty acids, and selenium as noted where applicable. *Life Extension Magazine*® does not endorse any of the businesses or the products and/or services that may appear in advertisements for non-Life Extension branded products or services contained in it, except to state that they are advertisers who may have paid Life Extension for placement of an advertisement in this publication. Life Extension disclaims any and all responsibilities or warranties as to the accuracy of information contained in advertisements for non-Life Extension branded products or services. For Canadian customers send change of address information and blocks of undeliverable copies to P.O. Box 1051, Fort Erie, ON L2A 6C7.

H₂O Scams Exposed!

FREE Report

Get the lowdown on bogus water scams... oxygenated, structured, energized, alkalized and micro-clustered.

*Truth revealed about distilled, mineral, spring, filtered, bottled, reverse osmosis, well and ordinary "purified" water. Discover the amazing Waterwise system that **guarantees you consistent water purity.***

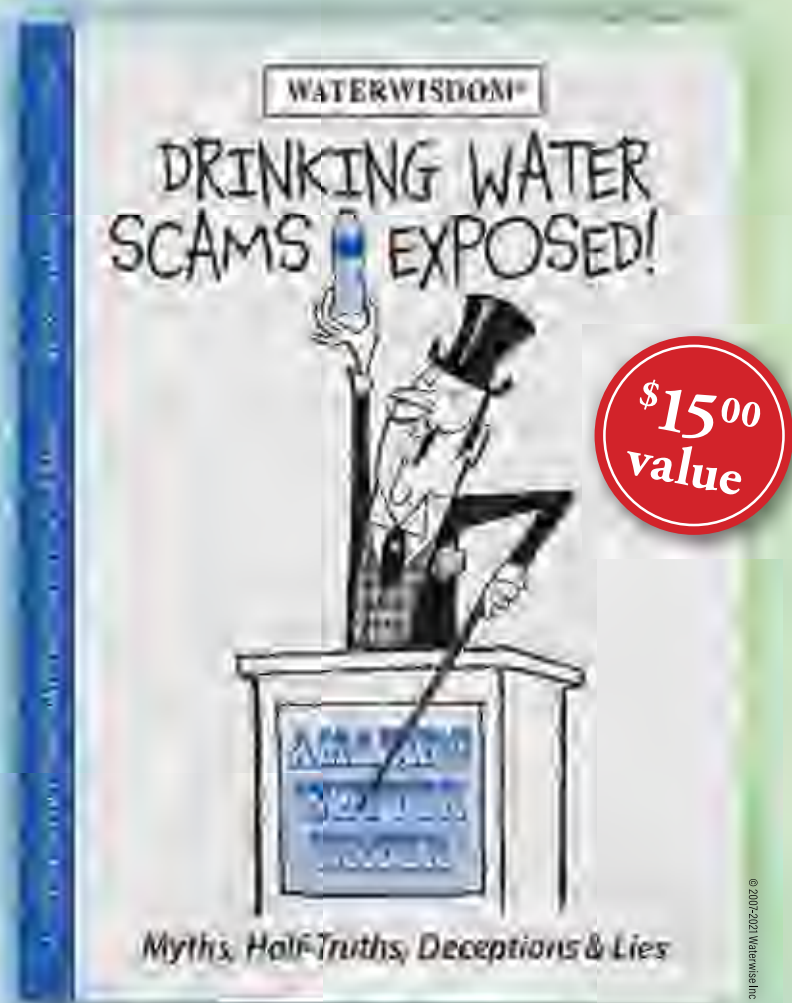
*Learn about the wise alternative to buying bottled and **save 70% or more.***

*Drink the purest... **you should consume about 2,920 glasses** (182 gallons) every year—**be water-wise!***

WATERWISE®
Purity Since 1977
Purification Systems



Call: **800-874-9028** Ext 750
Visit: **waterscamsreport.net**



Waterwise water purifiers are recommended by:

**Dr. Russell Blaylock, Dr. Patricia Bragg,
Dr. Ted Broer, Dr. Michael Colgan, Dr. David
Klein, Dr. Monte Kline, Dr. Bill Misner, Dr. Keith
Nemec, Dr. Scott Senne, Dr. Varah Siedlecki,
Dr. David Williams, and many more...**

Mail to: Waterwise Inc • PO Box 494000 Leesburg FL 34749

☒ **YES!** Please rush my **FREE** Waterwisdom Report
& Catalog... No Cost/No Obligation

LEFT

Name _____

Address _____

City _____ State _____ Zip _____

Mark S. Bezzek, MD, FACP, FAARM, FAAEM, is board-certified in internal medicine, emergency medicine, and anti-aging/regenerative medicine. He holds U.S. patents for a multivitamin/mineral supplement, an Alzheimer's/dementia compilation, and a diabetic regimen.

William Davis, MD, is a preventive cardiologist and author of *Wheat Belly: Lose the Wheat, Lose the Weight* and *Find Your Path Back to Health*.

Thomas F. Crais, MD, FACS, a board-certified plastic surgeon, was medical director of the microsurgical research and training lab at Southern Baptist Hospital in New Orleans, LA, and currently practices in Sun Valley, ID.

Martin Dayton, MD, DO, practices at the Sunny Isles Medical Center in North Miami Beach, FL. His focus is on nutrition, aging, chelation therapy, holistic medicine, and oxidative medicine.

John DeLuca, MD, DC, is a 2005 graduate of St. George's University School of Medicine. He completed his internal medicine residency at Monmouth Medical Center in Long Branch, NJ, in 2008 and is board-certified by the American Board of Internal Medicine. Dr. DeLuca is a Diplomate of the American Academy of Anti-Aging Medicine and has obtained certifications in hyperbaric medicine, pain management, nutrition, strength and conditioning, and manipulation under anesthesia.

Sergey A. Dzugan, MD, PhD, was formerly chief of cardiovascular surgery at the Donetsk Regional Medical Center in Donetsk, Ukraine. Dr. Dzugan's current primary interests are anti-aging and biological therapy for cancer, cholesterol, and hormonal disorders.

Patrick M. Fratellone, MD, RH, is the founder and executive medical director of Fratellone Associates. He completed his internal medicine and cardiology fellowship at Lenox Hill Hospital in 1994, before becoming the medical director for the Atkins Center for Complementary Medicine.

Mitchell J. Ghen, DO, PhD, holds a doctorate in holistic health and anti-aging and serves on the faculty of medicine at the Benemerita Universidad Autonoma De Puebla, Mexico, as a professor of cellular hematopoietic studies.

Gary Goldfaden, MD, is a clinical dermatologist and a lifetime member of the American Academy of Dermatology. He is the founder of Academy Dermatology of Hollywood, FL, and COSMESIS Skin Care.

Miguelangelo Gonzalez, MD, is a certified plastic and reconstructive surgeon at the Miguelangelo Plastic Surgery Clinic, Cabo San Lucas.

Roberto Marasi, MD, is a psychiatrist in Brescia and in Piacenza, Italy. He is involved in anti-aging strategies and weight management.

Maurice D. Marholin, DC, DO, is a licensed chiropractic physician and board-certified osteopathic family physician. While training at the University of Alabama, he completed fellowships in Clinical Nutrition and Behavioral Medicine. He is currently in private practice in Clermont, FL.

Professor Francesco Marotta, MD, PhD, of Montenaepoleone Medical Center, Milan, Italy, is a gastroenterologist and nutrigenomics expert with extensive international university experience. He is also a consulting professor at the WHO-affiliated Center for Biotech & Traditional Medicine, University of Milano, Italy and honorary resident professor, Nutrition, Texas Women's University. He is the author of more than 130 papers and 400 lectures.

Philip Lee Miller, MD, is founder and medical director of the Los Gatos Longevity Institute in Los Gatos, CA.

Michele G. Morrow, DO, FAAFP, is a board-certified family physician who merges mainstream and alternative medicine using functional medicine concepts, nutrition, and natural approaches.

Filippo Ongaro, MD, is board-certified in anti-aging medicine and has worked for many years as flight surgeon at the European Space Agency. He is a pioneer in functional and anti-aging medicine in Italy where he also works as a journalist and a writer.

Lambert Titus K. Parker, MD, an internist and a board-certified anti-aging physician, practices integrative medicine from a human ecology perspective with emphasis on personalized brain health, biomarkers, genomics and total health optimization. He serves as the Medical Director of Integrative Longevity Institute of Virginia, a 501(c)3 Non-Profit Medical Research Institute. He also collaborates on education and research for Hampton Roads Hyperbaric Therapy.

Ross Pelton, RPh, PhD, CCN, is scientific director for Essential Formulas, Inc.

Patrick Quillin, PhD, RD, CNS, is a clinical nutritionist in Carlsbad, CA, and formerly served as vice president of nutrition for Cancer Treatment Centers of America, where he was a consultant to the National Institutes of Health.

Michael R. Rose, MD, a board-certified ophthalmologist with the Rose Eye Medical Group in Los Angeles, CA, is on the staff of the University of Southern California and UCLA.

Ron Rothenberg, MD, is a full clinical professor at the University of California San Diego School of Medicine and founder of California HealthSpan Institute in San Diego.

Roman Rozencwaig, MD, is a pioneer in research on melatonin and aging. He practices in Montreal, Canada, as research associate at Montreal General Hospital, Department of Medicine, McGill University.

Michael D. Seidman, MD, FACS, is the director of skull base surgery and wellness for the Adventist Health System in Celebration, FL.

Ronald L. Shuler, BS, DDS, CCN, LN, is involved in immunoncology for the prevention and treatment of cancer, human growth hormone secretagogues, and osteoporosis.



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.



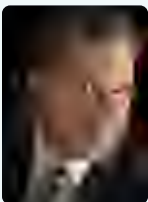
Richard Black, DO, is a dedicated nuclear medicine physician practicing as an independent contractor out of Cleveland, Ohio. Dr. Black is board-certified in internal medicine and nuclear medicine, and is licensed to practice medicine in multiple states throughout the United States.



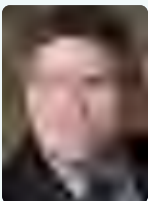
Aubrey de Grey, PhD, is a biomedical gerontologist and Editor-in-Chief of *Rejuvenation Research*, the world's highest-impact, peer-reviewed journal focused on intervention in aging. He received his BA and PhD from the University of Cambridge in 1985 and 2000 respectively. Dr. de Grey is a Fellow of 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.



Joel Kahn, MD, FACC of Detroit, Michigan, is a practicing cardiologist, and a Clinical Professor of Medicine at Wayne State University School of Medicine. He graduated Summa Cum Laude from the University of Michigan Medical School. Known as "America's Healthy Heart Doc", Dr. Kahn has triple board certification in Internal Medicine, Cardiovascular Medicine and Interventional Cardiology. He was the first physician in the world to certify in Metabolic Cardiology with A4M/MMI and the University of South Florida. He founded the Kahn Center for Cardiac Longevity in Bingham Farms, MI.



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.

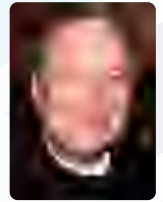
Dipnarine Maharaj MD, MB, ChB, FRCP (Glasgow), FRCP (Edinburgh), FRCPath., FACP, is the Medical Director of the Maharaj Institute of Immune Regenerative Medicine, and is regarded as one of the world's foremost experts on adult stem cells. He received his medical degree in 1978 from the University of 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 *Heart Attacks Are Not Worth Dying For*, *The Great American Heart Hoax*, and *The Complete Mediterranean Diet*. For more information visit www.DrOzner.com.



Jonathan V. Wright, MD, is medical director of the Tahoma Clinic in Tukwila, WA. He received his MD from the University of Michigan and has taught natural biochemical medical treatments since 1983. Dr. Wright pioneered the use of bioidentical estrogens and DHEA in daily medical practice. He has authored or co-authored 14 books, selling more than 1.5 million copies.



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

CoQ10 Improves Early Recovery from Heart Attack

Results from an analysis of a clinical trial revealed a benefit for the use of coenzyme Q10 with standard treatment during early recovery from heart attack in comparison with standard treatment alone.

Investigation of CoQ10's mechanisms of action suggested a healthier inflammatory response among people who consume CoQ10.*

The trial included 120 heart attack patients who underwent stent placement and were treated with antiplatelet therapy and statin drugs. (Statins decrease CoQ10 synthesis.) Sixty-one participants received **30 mg** CoQ10 per day. (A low dose compared to what most supplement users take today.)

At one- and three-month follow-up examinations, trial participants who were given CoQ10 had greater increases in ejection fraction (which is reduced in heart failure) than the control group. At three months, B-type natriuretic peptide (which, when elevated, can indicate heart failure) had declined to a greater extent among those who received CoQ10. These improvements suggest that CoQ10 supported early heart-function recovery.

Editor's Note: Investigation of CoQ10's mechanisms of action in a concurrent mouse study suggested that there was less inflammation in the hearts of mice receiving CoQ10 than in those who did not get it.

* *BMC Cardiovasc Disord.* 2024 Jan 28;24(1):76.



Green Tea Intake Lowers Risk of Cardiovascular Disease in Diabetics

Overweight/obese diabetics with a high intake of green tea had a lower risk of developing cardiovascular disease, coronary heart disease, and stroke than those who did not consume it.*

Researchers evaluated data from 4,756 overweight or obese diabetic participants in the Comprehensive Research on the Prevention and Control of the Diabetes program, an ongoing epidemiologic study in China. They were followed up for a little more than six years.

Compared with participants who did not consume green tea, those who used **five grams** or more of green tea leaves per day had a **29% lower** risk of cardiovascular disease, a **40% lower** risk of coronary heart disease and a **30% reduction** in the risk of stroke.

Editor's Note: "Green tea possesses a great amount of antioxidant components including free amino acids, caffeine and polyphenols," the authors stated.

* *Arch Public Health*. 2024 Feb 2;82:18.



Antioxidant Consumption Linked to Less Visceral Fat

A study published in *Nutrition Research* found a link between increased consumption of antioxidants and decreased visceral adipose tissue.* Visceral fat surrounds the organs within the abdomen.

The study included 10,389 participants in the National Health and Nutrition Examination Survey (NHANES) 2011–2018.

Visceral adipose tissue areas were measured with DXA scans. Responses to dietary recall interviews provided information concerning antioxidant nutrient intake. The Composite Dietary Antioxidant Index was calculated from intake levels of **vitamins A, C and E, carotenoids, selenium, and zinc**.

Higher Composite Dietary Antioxidant Index values were associated with lower visceral adipose tissue areas. Compared with individuals whose values were among the lowest one-third of subjects, those whose values were among the top third had significantly less visceral fat.

Editor's Note: An unhealthy amount of visceral fat is associated with an increased risk factor for diabetes, cardiovascular disease, metabolic-associated fatty liver disease, and some types of cancer, the authors noted.

* *Nutr Res*. 2024 Jan 26;124:13-20.

Branched Chain Amino Acids Boost Concussion Recovery

A pilot, double-blind, randomized controlled clinical study revealed a benefit for branched chain amino acids in the treatment of concussion.* Branched chain amino acids are among the building blocks of the body's proteins.

The trial included 38 concussion patients aged 11–34. Participants received **15, 30, 45 or 54 grams** of branched chain amino acids or a placebo daily for 21 days. Daily neurocognitive tests were conducted, and symptoms, physical and cognitive activity and other factors were evaluated.

At the trial's conclusion, participants who were given branched chain amino acids had decreases in total symptom scores in a dose-dependent manner. Return to physical activity also improved in association with the amount of branched chain amino acids received.

Editor's Note: There was a "significant reduction in total symptom score" (decrease of 4.4 points on a 0-54 scale for every **500 grams** of study drug consumed)," researchers concluded, and an increase in "return to physical activity (increase of 0.5 points on a 0-5 scale for every **500 grams** of study drug consumed)."

* *J Neurotrauma*. 2024 April 11.



TAURINE

Promotes Cardiovascular
Health & Supports
Whole-Body Health

Taurine is a low-cost amino acid that provides **whole-body** support.¹

But taurine **blood levels** in elderly humans are **80% lower** than *younger* people.²

Lower **taurine** levels in **humans** were associated with age-related issues.²



Item #01827

1000 mg
90 vegetarian capsules



Item #00133

300 grams



References:

1. *Mol Med Rep.* 2021 Aug;24(2).
2. Singh P, Gollapalli K, Mangiola S, et al. Taurine deficiency as a driver of aging. *Science.* 2023 Jun 9;380.

**These products are available at fine
health food stores everywhere.**

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.

Aged Black Garlic for Heart Health



Black garlic is created through a patent-pending, solvent-free 90-day **aging process**.

This produces a high content of **s-allyl-cysteine**, a phytochemical associated with **cardiovascular** health.¹⁻⁴

Clinical research has shown that **aged black garlic** provides targeted support for healthy serum triglycerides, blood pressure, and cholesterol within normal range.⁴

References

1. *Molecules*. 2021 Aug 19;26(16):5028.
2. *Journal of Functional Foods*. 107(2023):105657.
3. *Molecules*. 2017 Jun 1;22(6) ; 919.
4. *OAJCAM*. September 20, 2023;6(1).



Item #02530

30 vegetarian capsules

This product is available at fine health food stores everywhere.

Garlzac® is a registered trademark of Olene Life Sciences Pvt. Ltd.

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.

"I won't be without
this product."

PJ

VERIFIED CUSTOMER
REVIEW

SUPPORT HEALTHY
URIC ACID LEVELS

URIC ACID CONTROL



Item #01921

60 vegetarian capsules



A tannin-rich extract derived from the edible fruit of the ***Terminalia bellerica*** tree helps keep uric acid levels within healthy range.

This patent-pending, standardized extract from ***Terminalia bellerica*** supports healthy expression of two critical enzymes involved in uric acid metabolism.

The name of this standardized *Terminalia bellerica* extract is **Ayuric®**. The suggested dose is one capsule twice a day.

This product is available at fine
health food stores everywhere.

Ayuric® is a registered
trademark of Natreon, Inc.
with patents pending.

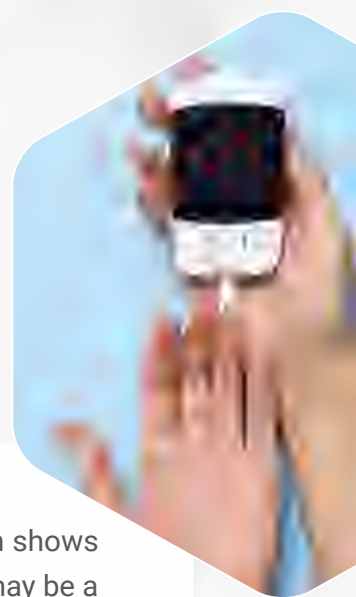
These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.





How **MAGNESIUM** Helps Prevent Metabolic Syndrome

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



Roughly one in three adults in the U.S. has **metabolic syndrome**.¹ This puts them at increased risk of heart disease, stroke, and type II diabetes.²

Few people even know they have it. To be diagnosed with metabolic syndrome, individuals must have at least three of the following conditions:

- Large waist circumference (reflecting **excess abdominal fat**),
- Elevated **blood pressure**,
- Impaired fasting **blood sugar**,
- Low **HDL** ("good") cholesterol, and
- High **triglyceride** levels.

Here's the good news: Research shows that oral intake of **magnesium** may be a helpful tool in managing the conditions that make up **metabolic syndrome**. However, **45%** of people in the United States are deficient in dietary magnesium.³

In human studies, **magnesium** intake:

- Improves blood sugar levels and insulin resistance,^{4,6}
- Reduces elevated blood pressure,⁵
- Lowers markers of inflammation,⁵
- Reduces triglycerides,^{7,8} and
- Improves cholesterol levels.^{7,8}

Dangers of Metabolic Syndrome

Metabolic syndrome has become a major public health concern. Up to a **third** of Americans already have it,⁹ and millions more are at a high risk with at least two of the three conditions that mark it.

Metabolic syndrome refers to a cluster of disorders including abdominal obesity, high blood pressure, low HDL cholesterol, high triglycerides and high blood sugar.¹

That's a drastic problem. People with metabolic syndrome are at much higher risk for chronic diseases, including **cardiovascular disease**, **type II diabetes**, **fatty liver**, and some types of cancers.²

Moreover, while metabolic syndrome is very common in **older adults**,¹⁰ it is increasingly being seen at *younger* ages as well.¹¹

When health care practitioners choose medical treatment for metabolic syndrome, that means they will be treating each contributing condition separately, frequently resulting in a “cocktail” of medications. This may include drugs for **high blood pressure**, **high cholesterol**, and additional medications for other conditions.²

However, the generally recommended first-line treatment targets lifestyle, including improving **diet** and engaging in regular **exercise**.²

But there's another factor that's often overlooked: ensuring adequate intake of **magnesium**.

Importance of Magnesium

Magnesium insufficiency and deficiency are contributors to metabolic disease, including type II diabetes.^{12,13} **Magnesium** is found in low concentrations in a variety of foods, including spinach, almonds, cashews, avocado, black beans, and pumpkin and chia seeds.¹⁴

Magnesium is required for the proper function of hundreds of *enzymes* that regulate protein synthesis, muscle and nerve function, and more.¹⁴

Magnesium has shown a remarkable ability to help prevent or reverse multiple risk factors for **metabolic syndrome**.

Combating Metabolic Syndrome

High blood sugar is a common condition seen in metabolic syndrome. Magnesium helps regulate blood sugar^{5,14} by binding to insulin receptor proteins on cells, enabling **glucose** uptake.⁵ This *reduces* sugar in the bloodstream.¹⁵ Deficiency of magnesium negatively impacts these functions.

This may explain why people who consume more **magnesium** have lower incidences of **type II diabetes**.^{16,17} One meta-analysis of population studies including **637,922** people found that the risk of developing type II diabetes was *reduced* by as much as **13%** for every **100 mg** per day *increase* in magnesium intake.¹⁸

A review of controlled clinical trials confirmed that taking oral magnesium improves **blood sugar levels** and **insulin resistance** in those at high risk for type II diabetes.⁴





WHAT
YOU
NEED
TO
KNOW

Human Studies Test Magnesium

In a clinical trial of individuals with prediabetes, participants were randomized to receive **382 mg** of magnesium or placebo. After four months, the group supplementing with magnesium had about **11.6%** lower fasting blood glucose levels, and an **8.8%** decrease in post-meal glucose as compared to the placebo group.¹⁹

In addition, magnesium helps relax the muscle cells in blood vessel walls,²⁰ reducing high **blood pressure**.²¹ Elevated blood pressure is another condition associated with **metabolic syndrome** and is a risk factor for stroke and early mortality.²²

In a meta-analysis of **34** clinical trials, oral intake of **magnesium** (median dose: **368 mg** daily) reduced **systolic** (top number) and **diastolic** blood pressure in a median time period of just three months.²¹

Obesity can cause low-grade chronic inflammation.²³ **Inflammation** and obesity are drivers of metabolic syndrome.²⁴ Studies have shown an association between *low* magnesium intake with *increased* inflammation and increased risk of cardiovascular diseases, high blood pressure and type II diabetes. A meta-analysis of seven observational studies showed that dietary magnesium intake is inversely associated with **C-reactive protein** levels (a marker of inflammation).²⁵

A meta-analysis of randomized-controlled trials showed that magnesium supplementation reduced **C-reactive protein** levels in individuals with elevated levels of this marker of inflammation.²⁶

Help Ward Off Metabolic Syndrome

- **Metabolic syndrome** is a cluster of conditions that include a large waist circumference (indicating excess abdominal fat), elevated blood pressure, high blood sugar, low HDL cholesterol, and high triglycerides.
- Having three or more of these conditions increases risk for heart disease, type II diabetes, stroke, and premature death.
- Oral intake of the mineral **magnesium** can help prevent or reverse the conditions that make up metabolic syndrome.
- In clinical studies, magnesium intake reduced high blood sugar and blood pressure, lowered triglycerides and markers of inflammation, and improved cholesterol levels.

An additional large review found that taking **oral magnesium** improved multiple risk factors for heart disease and metabolic syndrome, including:²⁷

- Reducing fasting **blood glucose** levels,
- Lowering **triglyceride** levels,
- Reducing **LDL** (bad) cholesterol,
- Increasing **HDL** (good) cholesterol, and
- Lowering systolic **blood pressure** levels.

Given all these benefits, magnesium can be a helpful tool in managing metabolic syndrome.

Summary

Having **metabolic syndrome** increases the likelihood of developing type II diabetes, heart disease, strokes, and other chronic conditions. **Magnesium** levels are frequently low among those with metabolic syndrome and its risk factors.

Clinical studies show that oral intake of **magnesium** can help improve multiple conditions that make up **metabolic syndrome**, including abnormal blood pressure, blood sugar, cholesterol, and triglyceride levels. •

References

1. Available at: <https://www.nhlbi.nih.gov/health/metabolic-syndrome>. Accessed May 20, 2024.
2. Available at: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/the-metabolic-syndrome>. Accessed May 15, 2024.
3. Workinger JL, Doyle RP, Bortz J. Challenges in the Diagnosis of Magnesium Status. *Nutrients*. 2018 Sep 1;10(9).
4. Veronese N, Watutantrige-Fernando S, Luchini C, et al. Effect of magnesium supplementation on glucose metabolism in people with or at risk of diabetes: a systematic review and meta-analysis of double-blind randomized controlled trials. *Eur J Clin Nutr*. 2016 Dec;70(12):1354-9.
5. Grober U, Schmidt J, Kisters K. Magnesium in Prevention and Therapy. *Nutrients*. 2015 Sep 23;7(9):8199-226.
6. WA EL, Naser IA, Taleb MH, Abutair AS. The Effects of Oral Magnesium Supplementation on Glycemic Response among Type 2 Diabetes Patients. *Nutrients*. 2018 Dec 26;11(1).
7. Asbaghi O, Moradi S, Nezamoleslami S, et al. The Effects of Magnesium Supplementation on Lipid Profile Among Type 2 Diabetes Patients: a Systematic Review and Meta-analysis of Randomized Controlled Trials. *Biol Trace Elem Res*. 2021 Mar;199(3):861-73.
8. Salehidoost R, Taghipour Boroujeni G, Feizi A, et al. Effect of oral magnesium supplement on cardiometabolic markers in people with prediabetes: a double blind randomized controlled clinical trial. *Sci Rep*. 2022 Oct 28;12(1):18209.
9. Saklayen MG. The Global Epidemic of the Metabolic Syndrome. *Curr Hypertens Rep*. 2018 Feb 26;20(2):12.
10. Aguilar M, Bhuket T, Torres S, et al. Prevalence of the metabolic syndrome in the United States, 2003-2012. *JAMA*. 2015 May 19;313(19):1973-4.



11. Hirode G, Wong RJ. Trends in the Prevalence of Metabolic Syndrome in the United States, 2011-2016. *JAMA*. 2020 Jun 23;323(24):2526-8.
12. Pelczynska M, Moszak M, Bogdanski P. The Role of Magnesium in the Pathogenesis of Metabolic Disorders. *Nutrients*. 2022 Apr 20;14(9).
13. Piuri G, Zocchi M, Della Porta M, et al. Magnesium in Obesity, Metabolic Syndrome, and Type 2 Diabetes. *Nutrients*. 2021 Jan 22;13(2).
14. Available at: <https://ods.od.nih.gov/factsheets/Magnesium-HealthProfessional/#en22>. Accessed September, 19, 2023.
15. Hosseini Dastgerdi A, Ghanbari Rad M, Soltani N. The Therapeutic Effects of Magnesium in Insulin Secretion and Insulin Resistance. *Adv Biomed Res*. 2022;11:54.
16. Dong JY, Xun P, He K, Qin LQ. Magnesium intake and risk of type 2 diabetes: meta-analysis of prospective cohort studies. *Diabetes Care*. 2011 Sep;34(9):2116-22.
17. Hruby A, Meigs JB, O'Donnell CJ, et al. Higher magnesium intake reduces risk of impaired glucose and insulin metabolism and progression from prediabetes to diabetes in middle-aged americans. *Diabetes Care*. 2014 Feb;37(2):419-27.
18. Fang X, Han H, Li M, et al. Dose-Response Relationship between Dietary Magnesium Intake and Risk of Type 2 Diabetes Mellitus: A Systematic Review and Meta-Regression Analysis of Prospective Cohort Studies. *Nutrients*. 2016 Nov 19;8(11).
19. Guerrero-Romero F, Simental-Mendía LE, Hernández-Ronquillo G, Rodríguez-Morán M. Oral magnesium supplementation improves glycaemic status in subjects with prediabetes and hypomagnesaemia: A double-blind placebo-controlled randomized trial. *Diabetes Metab*. 2015 Jun;41(3):202-7.
20. Fiorentini D, Cappadone C, Farruggia G, Prata C. Magnesium: Biochemistry, Nutrition, Detection, and Social Impact of Diseases Linked to Its Deficiency. *Nutrients*. 2021 Mar 30;13(4).
21. Zhang X, Li Y, Del Gobbo LC, et al. Effects of Magnesium Supplementation on Blood Pressure: A Meta-Analysis of Randomized Double-Blind Placebo-Controlled Trials. *Hypertension*. 2016 Aug;68(2):324-33.
22. Misgana S, Asemahagn MA, Atnafu DD, Anagaw TF. Incidence of stroke and its predictors among hypertensive patients in Felege Hiwot comprehensive specialized hospital, Bahir Dar, Ethiopia, a retrospective follow-up study. *Eur J Med Res*. 2023 Jul 10;28(1):227.
23. Castro AM, Macedo-de la Concha LE, Pantoja-Meléndez CA. Low-grade inflammation and its relation to obesity and chronic degenerative diseases. *Revista Médica del Hospital General de México*. 2017 2017/04/01;80(2):101-5.
24. Reddy P, Lent-Schochet D, Ramakrishnan N, et al. Metabolic syndrome is an inflammatory disorder: A conspiracy between adipose tissue and phagocytes. *Clin Chim Acta*. 2019 Sep;496:35-44.
25. Nielsen FH. Magnesium deficiency and increased inflammation: current perspectives. *J Inflamm Res*. 2018;11:25-34.
26. Simental-Mendia LE, Sahebkar A, Rodriguez-Moran M, et al. Effect of Magnesium Supplementation on Plasma C-reactive Protein Concentrations: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Curr Pharm Des*. 2017;23(31):4678-86.
27. Verma H, Garg R. Effect of magnesium supplementation on type 2 diabetes associated cardiovascular risk factors: a systematic review and meta-analysis. *J Hum Nutr Diet*. 2017 Oct;30(5):621-33.



"Great product!"

Marcia

VERIFIED CUSTOMER
REVIEW

Swimming in Green Tea



Item #00953

100 vegetarian capsules

There's a lot of
goodness to green tea.

It supports brain, heart, and cellular health...
and promotes optimal metabolism.* But,
you'd have to drink several cups a day to get
the benefits of our **Mega Green Tea Extract**.

Each capsule provides **725 mg** of green tea
extract, standardized to **98%** polyphenols—
making it the perfect choice when you don't
have enough time for tea time.

These products are available at
fine health food stores everywhere.



Item #00954

100 vegetarian capsules

* *Biomed Pharmacother.* 2016(3);78:50-9.



"Very good
and easy
to take."

Matthew
VERIFIED CUSTOMER
REVIEW

Support Healthy
Immune Function
with

WHEY Protein



Whey Concentrate



Whey Isolate



Whey + Creatine + Glutamine

Whey protein, packed with vital amino acids, promotes **glutathione** synthesis.^{1,2}

Glutathione plays an important role in supporting **immune** balance in the body.^{1,2}

Whey fractions help modulate a full range of healthy bodily functions.¹⁻⁵

References

1. *J Food Sci Technol*. 2015 Nov;52(11):6847-58.
2. *Nutrients*. 2019 Sep 3;11(9).
3. *Aging Dis*. 2018 Feb;9(1):119-32.
4. *Aging Dis*. 2019 Feb;10(1):157-73.
5. *J Food Sci*. 2015 Mar;80 Suppl 1:A8-a15.

These products are available at fine health food stores everywhere.

Contains milk. Use these products as a food supplement only. Do not use for weight reduction.



Choose the Best Whey for You!

➔ WHEY PROTEIN CONCENTRATE (chocolate or vanilla flavor)

Pure whey with the water removed.
Contains 80% easy-to-digest protein.

Item #02260 Vanilla

Item #02261C Chocolate

➔ WHEY PROTEIN ISOLATE (chocolate or vanilla flavor)

Filtered to reduce carbohydrates, lactose and fat.
Contains 98% protein with some lactose.

Item #02242 Vanilla

Item #02243C Chocolate

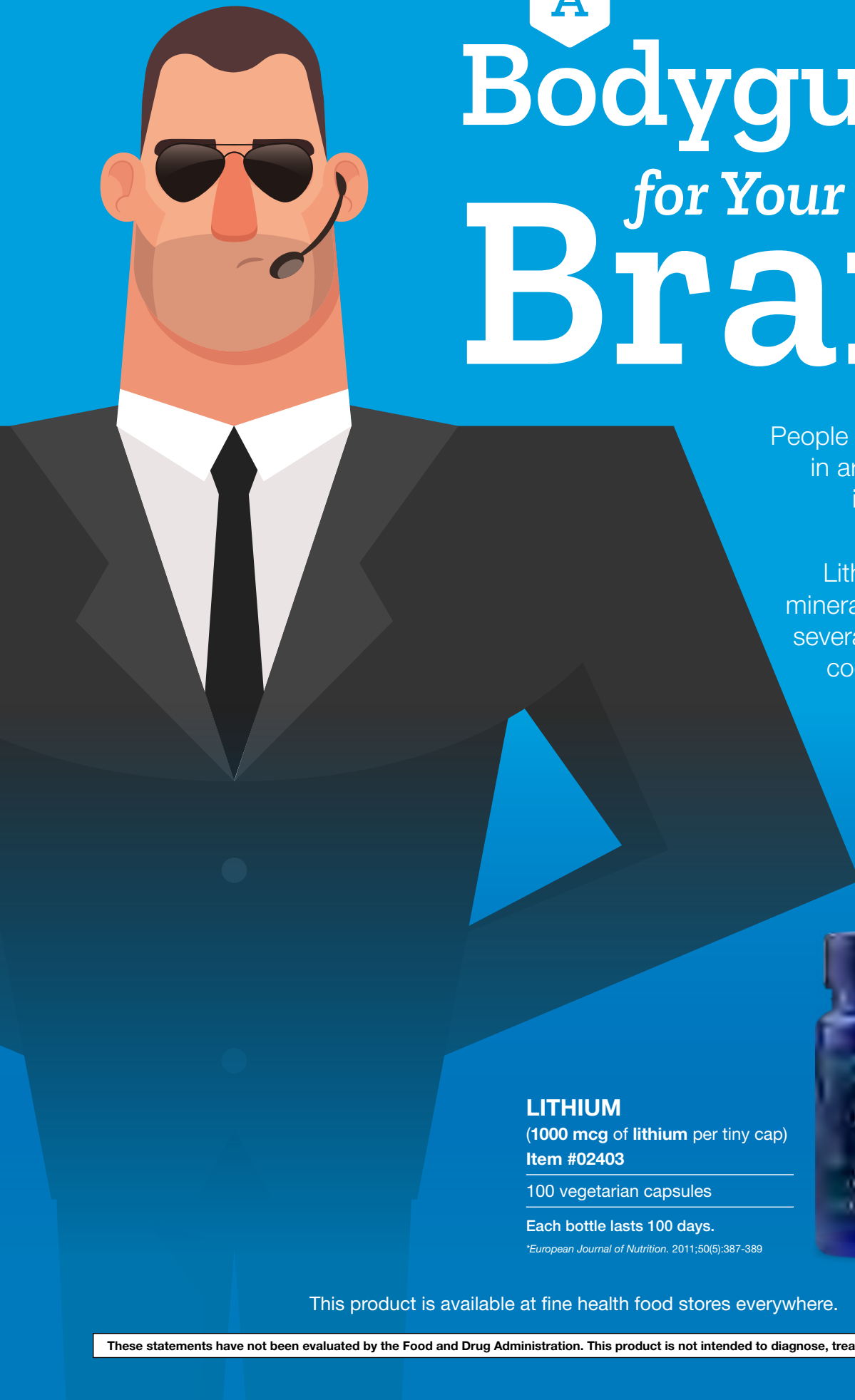
➔ ADVANCED WHEY PROTEIN ISOLATE with GLUTAMINE and CREATINE

A premium isolate for greater strength and exercise performance.

Item #02246C Vanilla



Bodyguard *for Your* Brain



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

Lithium is a low-cost
mineral that functions in
several ways to support
cognition and overall
brain health.

Maintain healthy
cognition with
lithium—it's like
a bodyguard for
your brain!

LITHIUM

(1000 mcg of lithium per tiny cap)

Item #02403

100 vegetarian capsules

Each bottle lasts 100 days.

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



This product is available at 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.

Safely Lower Uric Acid Levels

BY LAURIE MATHENA

Up to **20%** of adults have elevated **uric acid** levels.¹

High **uric acid** levels are associated with gout, kidney stones and kidney disorders.² Uric acid levels have been shown to gradually rise with increasing age.³⁻⁶

An extract from a plant called ***Terminalia bellerica*** was found in a **clinical trial** to help most participants achieve targeted uric acid levels without prescription medication.⁷

T. bellerica supplementation offers a leap forward in *safely* lowering high **uric acid** levels.

Elevated Uric Acid Can Occur in Many Serious Conditions

Elevated levels of **uric acid** are associated with **gout**, an often-excruciating form of arthritis. But people with cardiovascular and metabolic risks can also have **high** uric acid levels.

These conditions include metabolic syndrome and insulin resistance, elevated blood pressure,⁸ atrial fibrillation,⁹ chronic kidney disease, and cardiovascular disease.⁶



Many people discover they have elevated uric acid when their doctor orders routine **blood work**, even when they are asymptomatic.

Symptomatic gout manifests as pain, inflammation, and/or kidney complications from too much uric acid in the bloodstream. It can begin at any time.

Safely Lower Uric Acid

Researchers have identified an extract called ***Terminalia bellerica*** that can safely lower uric acid levels.

In one randomized controlled trial, people with elevated uric acid who took **500 mg** of *T. bellerica* twice daily reduced their uric acid by an average of **28.4%** after 24 weeks.⁷ This decrease in uric acid levels enabled **89%** of the participants who took the extract to achieve **targeted** uric acid serum levels.

In another trial, scientists evaluated the effectiveness of *T. bellerica* in people with chronic kidney disease who had elevated uric acid levels.¹⁰

After 24 weeks, those taking **500 mg** of *T. bellerica* twice a day lowered their uric acid by **20%**.

They also experienced improved kidney function. This was demonstrated by several markers, including:

- Increased **estimated glomerular filtration rate (eGFR)**, a measure of kidney function that indicates how efficiently the kidneys are able to filter blood.¹¹
- An **11.5%** decrease in **creatinine** level, a waste product from protein metabolism that is a common marker of kidney function.¹²

Additional benefits included lowered CRP (C-reactive protein), a marker of systemic inflammation) and improved endothelial function (a sign of blood vessel health).

These results indicate the potential benefits of *T. bellerica* for those with kidney disease and high uric acid levels.

Summary

Levels of uric acid rise with age.

Elevated uric acid levels have long been known to cause gout, the painful arthritic condition.

They are also a risk factor for kidney stones and other kidney conditions. There is increasing awareness that life-shortening conditions like kidney disease, diabetes, metabolic syndrome, and a wide range of cardiovascular disorders are often accompanied by **high** uric acid levels.

Extracts of *T. bellerica* have been shown to reduce uric acid levels.

Many people have elevated uric acid without knowing it, making it essential to have levels tested yearly.

Life Extension and many physicians consider a blood uric acid level of less than 6.0 as optimal. A uric acid level greater than **8.0** has been used to indicate the need for evaluation and treatment.⁶ •

Uric acid is included in **Life Extension®**'s CBC/Chemistry/Lipids **blood test** panel that costs only **\$35**.

To order call 1- 800-208-3444 or visit www.LifeExtension.com/sales/lab-tests

For a comprehensive review of all treatment and prevention strategies for **gout** please visit the Life Extension protocol.
www.LifeExtension.com/gout

References

1. Chen-Xu M, Yokose C, Rai SK, et al. Contemporary Prevalence of Gout and Hyperuricemia in the United States and Decadal Trends: The National Health and Nutrition Examination Survey, 2007-2016. *Arthritis Rheumatol*. 2019;71(6):991-9.
2. Available at: <https://www.uptodate.com/contents/uric-acid-kidney-diseases>. Accessed June 12, 2024.
3. Zitt E, Fischer A, Lhotta K, et al. Sex- and age-specific variations, temporal trends and metabolic determinants of serum uric acid concentrations in a large population-based Austrian cohort. *Scientific Reports*. 2020;10(1):7578.
4. Dai C, Wang C, Xia F, et al. Age and Gender-Specific Reference Intervals for Uric Acid Level in Children Aged 5-14 Years in Southeast Zhejiang Province of China: Hyperuricemia in Children May Need Redefinition. *Front Pediatr*. 2021;9:560720.
5. Kuzuya M, Ando F, Iguchi A, Shimokata H. Effect of Aging on Serum Uric Acid Levels: Longitudinal Changes in a Large Japanese Population Group. *The Journals of Gerontology: Series A*. 2002;57(10):M660-M4.
6. Available at: <https://www.uptodate.com/contents/asymptomatic-hyperuricemia>. Accessed November 21, 2023.
7. Usharani P, Notalapati C, Pokuri VK, et al. A randomized, double-blind, placebo-, and positive-controlled clinical pilot study to evaluate the efficacy and tolerability of standardized aqueous extracts of Terminalia chebula and Terminalia bellerica in subjects with hyperuricemia. *Clin Pharmacol*. 2016;8:51-9.
8. Borghi C, Agnoletti D, Cicero AFG, et al. Uric Acid and Hypertension: a Review of Evidence and Future Perspectives for the Management of Cardiovascular Risk. *Hypertension*. 2022;79(9):1927-36.
9. Ding M, Viet NN, Gigante B, et al. Elevated Uric Acid Is Associated With New-Onset Atrial Fibrillation: Results From the Swedish AMORIS Cohort. *J Am Heart Assoc*. 2023;12(3):e027089.
10. Pingali U, Notalapati C, Koilagundla N, Taduri G. A randomized, double-blind, positive-controlled, prospective, dose-response clinical study to evaluate the efficacy and tolerability of an aqueous extract of Terminalia bellerica in lowering uric acid and creatinine levels in chronic kidney disease subjects with hyperuricemia. *BMC Complementary Medicine and Therapies*. 2020;20(1):281.
11. Available at: <https://www.kidney.org/atoz/content/grf>. Accessed June 13, 2024.
12. Available at: <https://www.kidney.org/atoz/content/serum-blood-creatinine>. Accessed June 13, 2024.



"I love that it's
extend release."

Carol

VERIFIED CUSTOMER
REVIEW

Immediate Uptake. Extended Release. Up to 6 Hours of Support.

Magnesium is terrific for head-to-toe,
in-and-out wellness. Extend-Release
Magnesium is clinically formulated to:

- Deliver magnesium citrate for immediate uptake
- Deliver magnesium oxide for extended release
- Support heart and bone health
- Encourage metabolic health

Item #02107

60 vegetarian capsules



CAUTION: If taken in high doses, magnesium may have a laxative effect.
If this occurs, divide dosing, reduce intake, or discontinue product.

ZümXR® is a registered trademark and protected by patents. See www.ZümXR.com

This product is available at 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.

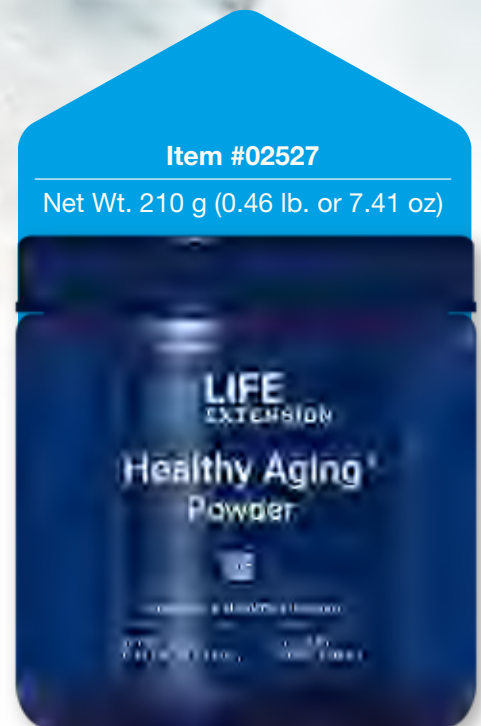


AGING CAN WAIT

Stay ahead of Father Time. Healthy aging means maintaining a “with-it” brain, a healthy heart and an active lifestyle—no matter your age.

That’s why we’ve combined taurine for your heart and exercise performance, lithium for your mood and spermidine from wheat germ extract to help you stay ahead of the aging game into an unflavored, easy-mix powder.

Keep your drive alive with **Healthy Aging Powder!**



This product is available at 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.

BOOST YOUR FREE

TESTOSTERONE

"Excellent."

Chris

VERIFIED CUSTOMER
REVIEW

Testosterone builds muscle, maintains sexual health, supports cardiac function, strengthens bones, 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%** from baseline in just eight weeks.³
- Helps support physical strength and other benefits of healthy testosterone levels.†
- Just one capsule a day.

PLANT-BASED
NUTRIENTS

WINNER
NUTRA
INGREDIENTS
AWARDS 2024

Item #02500

30 vegetarian capsules



References

1. *Rev Urol.* 2004;6 Suppl 6(Suppl 6):S9-S15.
2. *Am J Med.* 2007 Oct;120(10):835-40.
3. Laila Nutraceutical Internal Study. Data on file. 2019.

This product is available at fine health food stores everywhere.

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

Tesnor® is a trademark of Laila Nutra and Gencor.



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.

ARMOR UP

Protect your cells with this powerful antioxidant and glutathione precursor

Help your body fight back against free radicals—and encourage your liver and respiratory health—with this easily absorbed immune health all-star.



Item #01534

600 mg • 60 capsules



This product is available at 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.





Prevent Damage from CHRONIC STRESS



BY HEATHER L. MAKAR

When we face physical or emotional stress, the hormone **cortisol** helps us cope.

In the short term, that's a huge benefit. In the long term, it can be a disaster.

When cortisol remains *persistently high*, it can wreak havoc on our health, aging us faster, putting us at risk of numerous diseases, and ***shortening our lives***.

In a population study, men with high cortisol levels faced a **63% increased** risk of **death** and women with elevated cortisol levels had an **82% increased** risk of **death**.¹

In another study, the risk of death from **cardiovascular disease** escalated **five-fold** in those with high **cortisol** levels.²

Several **plant extracts** have been clinically shown to help reduce elevated **cortisol** levels. This may help prevent the damage inflicted by cortisol and potentially decrease risks of premature death.

Chronically Elevated Cortisol Is Deadly

Cortisol is a hormone produced primarily in the adrenal glands. Under normal circumstances, cortisol functions to regulate the body's metabolism of glucose.

It's often referred to as the "**stress hormone**" since it's also released in response to physical or emotional stress.

Cortisol levels normally fluctuate throughout the day, rising just before you wake in the morning and tapering off through the evening in preparation for sleep.³

However, **chronic stress** disrupts this daily rhythm, which may cause cortisol levels to remain persistently high.^{4,5}

Cortisol levels also tend to rise in older age.^{6,7} The results can be deadly.

Chronically elevated cortisol speeds up the aging process through decreased immunity, increased inflammation, and dysregulated metabolism.⁸

High levels of cortisol are also associated with shortening of **telomeres**, the protective caps on the ends of chromosomes.^{9,10} **Telomere shortening** is associated with shorter lifespan.

One population study showed that **elevated cortisol** levels correlate with a significantly higher mortality risk. Men with **high** cortisol had a **63% increased** risk of death, while women had an **82% increased** risk.¹

And in another study, the risk of death from **cardiovascular disease** jumped **five-fold** in those with high cortisol levels, regardless of their cardiovascular health history.²

Other studies confirm that those with elevated cortisol have **higher mortality rates** and a potentially increased risk for metabolic syndrome, cardiovascular disease, diabetes, and neurodegenerative disorders.^{6,11-15}

Cortisol may also contribute to thinning hair, wrinkles, age spots, and slower healing of wounds.¹⁶⁻¹⁸

Plant Extracts That Help

Many people turn to anti-anxiety **medications** or other drugs to manage *symptoms* of chronic stress. But these often come with side effects and may do little to reduce **chronically elevated cortisol**, allowing the damage to continue.

Several **plant extracts** can reduce cortisol levels in humans, safely relieving stress and protecting against the hormone's long-term harm.

These include extracts of **lychee fruit**, **green tea**, **Magnolia officinalis**, and **Phellodendron amurense**.^{19,20}

Lychee Lowers Cortisol

Lychee, a tropical fruit rich in health-promoting polyphenols, has the ability to fight oxidative stress and inflammation and **lower cortisol levels**.^{19,21,22}

However, most lychee extracts contain long-chain polyphenols, severely limiting their **absorption** in the intestinal tract.



Scientists have developed a blend of **lychee fruit** and **green tea** that provides a low-molecular-size extract that is **three to four times** as **bioavailable** as regular lychee.^{19,21,23}

In a **clinical trial**, healthy but sedentary young men who took **100 mg** of the **lychee-green tea** extract blend for four weeks had a dramatic *reduction* in **cortisol** levels, compared to those who took a placebo.¹⁹

In another clinical trial, healthy male volunteers dipped their legs in hot water, a physical **stressor**. Those who had taken **100 mg** of the **lychee-green tea** blend a half-hour earlier had significantly *lower* blood cortisol levels than those in a placebo group.²¹

In both studies, the men taking the extracts also had a significant reduction in serum levels of **IL-1beta** and **IL-6**, inflammatory cytokines that can cause cortisol levels to rise.

Stress-Relieving Bark Extracts

A combination of bark extracts from two trees, ***Magnolia officinalis*** and ***Phellodendron amurense***, has been shown to reduce **cortisol** and decrease **anxiety**, without the side effects of prescription medications.^{24,25}

In a study of participants with moderate-to-high stress levels, taking **250 mg** of this extract combination twice daily (**500 mg total**) for four weeks resulted in an **18%** reduction in **salivary cortisol** levels compared to those taking a placebo.²⁵

Those in the extract group also reported a significant reduction in **stress**, compared to the placebo group, including a:²⁵

- **13%** reduction in tension,
- **20%** reduction in depression,
- **42%** reduction in anger,
- **31%** reduction in fatigue,
- **27%** reduction in confusion,
- **18%** increase in vigor, and
- **11%** improvement in mood.

In another **clinical trial**, premenopausal women with anxiety who took **250 mg** of the ***Magnolia-Phellodendron*** bark combination three times daily reported significantly lower **anxiety** scores after six weeks.²⁴



WHAT
YOU
NEED
TO
KNOW

Reduce Cortisol for Better Health

- Levels of the hormone **cortisol** rise during times of stress.
- Chronically elevated cortisol weakens immunity and is associated with increased risk of chronic disease and death.
- A **lychee-green tea** extract blend has been clinically shown to significantly reduce cortisol and markers of inflammation.
- A blend of bark extracts from two trees, ***Magnolia officinalis*** and ***Phellodendron amurense***, also reduced cortisol levels in clinical trials. In addition, it improved mood and lowered feelings of stress, anger, depression, and fatigue.
- Combining a lychee-green tea blend with ***Magnolia-Phellodendron*** bark extracts may optimize their ability to lower cortisol levels, reduce stress and anxiety, and help prevent the damage chronic stress can do.

Combining these bark extracts with the **lychee-green tea** blend may maximize their ability to lower cortisol levels, reducing the elevated risk of disease and death that comes with chronic stress.

Summary

Chronic elevated **cortisol** is a deadly issue.

Aging and chronic **stress** can raise cortisol levels and keep them high, increasing risk of illness and death.

A blend of **lychee** and **green tea** extracts has been clinically shown to lower cortisol levels.

A combination of bark extracts from the **Magnolia officinalis** and **Phellodendron amurense** trees has also been shown to reduce cortisol and lower anxiety and stress.

Together, these extracts may optimize cortisol reduction, potentially decreasing the risk of disease and premature death brought on by chronic stress. •

References

1. Schoorlemmer RM, Peeters GM, van Schoor NM, Lips P. Relationships between cortisol level, mortality and chronic diseases in older persons. *Clin Endocrinol (Oxf)*. 2009 Dec;71(6):779-86.
2. Vogelzangs N, Beekman AT, Milaneschi Y, et al. Urinary cortisol and six-year risk of all-cause and cardiovascular mortality. *J Clin Endocrinol Metab*. 2010 Nov;95(11):4959-64.
3. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK538239/>. Accessed March 13, 2024.
4. Hannibal KE, Bishop MD. Chronic stress, cortisol dysfunction, and pain: a psychoneuroendocrine rationale for stress management in pain rehabilitation. *Phys Ther*. 2014 Dec;94(12):1816-25.
5. Hassamal S. Chronic stress, neuroinflammation, and depression: an overview of pathophysiological mechanisms and emerging anti-inflammatories. *Front Psychiatry*. 2023;14:1130989.
6. Yiallouris A, Tsioutis C, Agapidaki E, et al. Adrenal Aging and Its Implications on Stress Responsiveness in Humans. *Front Endocrinol (Lausanne)*. 2019;10:54.
7. Moffat SD, An Y, Resnick SM, et al. Longitudinal Change in Cortisol Levels Across the Adult Life Span. *J Gerontol A Biol Sci Med Sci*. 2020 Jan 20;75(2):394-400.
8. Stamou MI, Colling C, Dichtel LE. Adrenal aging and its effects on the stress response and immunosenescence. *Maturitas*. 2023 /02/01;168:13-9.
9. Burgin D, Varghese N, Eckert A, et al. Higher hair cortisol concentrations associated with shorter leukocyte telomere length in high-risk young adults. *Sci Rep*. 2022 Jul 11;12(1):11730.
10. Tomiyama AJ, O'Donovan A, Lin J, et al. Does cellular aging relate to patterns of allostasis? An examination of basal and stress reactive HPA axis activity and telomere length. *Physiol Behav*. 2012 Apr 12;106(1):40-5.
11. Hackett RA, Kivimaki M, Kumari M, Steptoe A. Diurnal Cortisol Patterns, Future Diabetes, and Impaired Glucose Metabolism in the Whitehall II Cohort Study. *J Clin Endocrinol Metab*. 2016 Feb;101(2):619-25.
12. Aladio JM, Costa D, Matsudo M, et al. Cortisol-Mediated Stress Response and Mortality in Acute Coronary Syndrome. *Curr Probl Cardiol*. 2021 Mar;46(3):100623.
13. Mazgelytė E, Mažeikienė A, Burokienė N, et al. Association between hair cortisol concentration and metabolic syndrome. *Open Med (Wars)*. 2021;16(1):873-81.
14. Iob E, Steptoe A. Cardiovascular Disease and Hair Cortisol: a Novel Biomarker of Chronic Stress. *Curr Cardiol Rep*. 2019 Aug 30;21(10):116.
15. Ouane S, Popp J. High Cortisol and the Risk of Dementia and Alzheimer's Disease: A Review of the Literature. *Front Aging Neurosci*. 2019;11:43.
16. Thom E. Stress and the Hair Growth Cycle: Cortisol-Induced Hair Growth Disruption. *J Drugs Dermatol*. 2016 Aug 1;15(8):1001-4.
17. Noordam R, Gunn DA, Tomlin CC, et al. Cortisol serum levels in familial longevity and perceived age: the Leiden longevity study. *Psychoneuroendocrinology*. 2012 Oct;37(10):1669-75.
18. van Drielen K, Gunn DA, Noordam R, et al. Disentangling the effects of circulating IGF-1, glucose, and cortisol on features of perceived age. *Age (Dordr)*. 2015 Jun;37(3):9771.
19. Lee JB, Shin YO, Min YK, Yang HM. The effect of Oligonol intake on cortisol and related cytokines in healthy young men. *Nutr Res Pract*. 2010 Jun;4(3):203-7.
20. Talbott SM, Talbott JA, Pugh M. Effect of Magnolia officinalis and Phellodendron amurense (Relora®) on cortisol and psychological mood state in moderately stressed subjects. *J Int Soc Sports Nutr*. 2013 Aug 7;10(1):37.
21. Shin Y-O, Lee J-B, Min Y-K, Yang H-M. Effect of oligonol intake on cortisol and cytokines, and body temperature after leg immersion into hot water. *Food Science and Biotechnology*. 2011;20(3):659-63.
22. Nagasawa J SK, Uchimaru J. Oxidative stress in hypobaric and normobaric hypoxia and antioxidant effect of Oligonol. *Japan J Mountain Med*. 2010;30:118-24.
23. Miura T, Kitadate K, Fujii H. The Function of the Next Generation Polyphenol, "Oligonol". *Biotechnology in Functional Foods and Nutraceuticals*: CRC Press; 2010:91-102.
24. Kalman DS, Feldman S, Feldman R, et al. Effect of a proprietary Magnolia and Phellodendron extract on stress levels in healthy women: a pilot, double-blind, placebo-controlled clinical trial. *Nutr J*. 2008 Apr 21;7:11.
25. Talbott SM, Talbott JA, Pugh M. Effect of Magnolia officinalis and Phellodendron amurense (Relora®) on cortisol and psychological mood state in moderately stressed subjects. *J Int Soc Sports Nutr*. 2013 Aug 7;10(1):37.





CoQ10 + PQQ = ENERGIZED CELLS



GLUTEN
FREE

NON
GMO
LE CERTIFIED

Item #01733

30 softgels

PQQ (pyrroloquinoline quinone) supports the growth of new mitochondria.

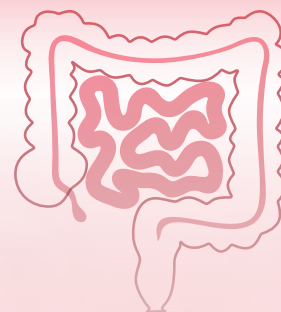
CoQ10 (coenzyme Q10) is essential for mitochondrial energy production.

Together, **CoQ10** and **PQQ** help reenergize aging cells throughout the body.

PrimaVie® is a registered trademark of Natreon, Inc. Q+®, Kaneka Ubiquinol™, and the quality seal™ are registered or pending trademarks of Kaneka Corp.

This product is available at 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.



PROMOTE
DIGESTIVE
HEALTH

FLORASSIST® PROBIOTIC Daily Bowel REGULARITY



Item #02421

30 vegetarian capsules

Discovered in New Zealand yogurt, this novel **probiotic** formula contains **17.2 billion CFU[†]** of *Bifidobacterium lactis* HN019.

This probiotic has been **clinically studied** to help maintain a healthy **colonic transit time**, **combat occasional constipation**, and **support bowel regularity**.¹

One capsule daily of **FLORASSIST® Probiotic Daily Bowel Regularity** formula can help promote healthy, daily movement through the **colon**.

"Whenever I have a problem, this works to get things back on track."

Wendy

VERIFIED CUSTOMER
REVIEW

This product is available at fine
health food stores everywhere.



[†] Colony Forming Units at time of manufacture.

1. *Scand J Gastroenterol.* 2011;46:1057-64.

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.

Optimize Healthy Blood-Sugar Levels

This formula combines **cinnamon** and **seaweed** extracts with a unique **chromium** stabilized with standardized **amla** and **shilajit** to promote healthy blood-sugar levels already in normal range.



Item #01503

90 vegetarian capsules

"This product is fabulous!"

Shirley

VERIFIED CUSTOMER REVIEW

This product is available
at fine health food stores
everywhere.



Crominex®3+, Capros® and PrimaVie® are patent-protected and registered trademarks of Natreon, Inc. CinSulin® is a registered trademark of Tang-An Medical Ltd.

InSea® is a registered trademark of InnoVactiv™.

Caution: If you are taking blood glucose lowering medication, consult your healthcare provider before taking this product.

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



RELIEF

FOR OCCASIONAL MINOR PAIN AND DISCOMFORT

PEA is a fatty acid found in the body that works at the site of discomfort.

Clinical studies show PEA can combat stubborn, minor pain and discomfort within **14-30 days** of supplementation.¹⁻³

Each chewable tablet delivers **600 mg of PEA (palmitoylethanolamide.)**

Take one to two chewables daily as needed.

Item #02303

60 vegetarian chewable tablets

This product is available at fine health food stores everywhere.

References

1. Minerva Med. 2011 Apr;102(2):141-7.
2. Dolor. Investigación Clínica & Terapéutica. 2010;25:35-42.
3. J Orofac Pain. 2012 Spring; 26(2):99-104.



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.

"This is definitely a
forever staple in my
healthcare regimen."

Latricia

VERIFIED CUSTOMER
REVIEW

**BROAD-SPECTRUM
SUPPORT FOR
OPTIMAL
BREAST HEALTH**

Life Extension®'s phyto-
nutrient-based formula
helps support healthy
estrogen activity and
detoxification to preserve
optimal breast health.

Breast Health

FORMULA



Item #01942

60 capsules



This product is available at fine
health food stores everywhere.

Contains soybeans.

Novasoy® is a registered trademark of
Archer Daniels Midland Company.

HMRlignan™ is a trademark used under sublicense from Linnea S.A.

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.



Revitalize Skin with **VEGAN** **PROCOLLAGEN**



BY MICHAEL DOWNEY

Collagen forms **70%** of the skin's underlying scaffolding known as the dermis.¹ It is required to maintain youthful-looking **skin**.^{2,3}

With **age**, our internal **collagen** production markedly declines.^{3,4}

Collagen loss weakens skin structures, leading to dryness, sagging, and **wrinkles**.²

Scientists have developed a **vegan** approach to collagen replenishment known as **procollagen** with inducer compounds that promote the body's production of collagen.

In **2024**, the *Journal of Functional Foods* published the results of a **clinical trial** showing that in just eight weeks, this plant-derived **procollagen**:

- *Decreased* **wrinkles** by **14%**,
- *Enhanced* **smoothness** by **13%**, and
- *Increased* (skin) **collagen density** by **8%**.

These benefits of **collagen** were provided using **vegan** ingredients.

The Secret to Youthful Skin

Collagen, the most abundant protein in the human body³ is essential for **youthful-looking** skin.

Type 1 is the main collagen found in skin, making up **80%-90%** of the subsurface layer of the skin by weight.⁶ **Collagen** gives skin a smooth appearance, firmness, and resilience.⁷

It also provides flexibility. It is integrated with fibers of **elastin**, a protein that allows the skin to stretch and return to its original shape.

Around **age 25**, the cells that produce **collagen fibers** slow down. The remaining fibers can stiffen, break, and lose shape.^{3,7}

With advancing age, the ability to replenish collagen declines by about **1%-1.5% each year**.⁷

Collagen decline accelerates even faster in women **after menopause**.⁸ Smoking, lack of sleep, excess alcohol, and sun exposure also decrease collagen levels.^{3,9-11}

The result of collagen loss is **visible skin aging**, including thinning, sagging, and wrinkles.¹²

A Vegan Collagen Biomimetic

To boost collagen levels, people frequently take **oral collagen**, which is chiefly derived from cows (*bovine* collagen), chicken, or fish (*marine* collagen).

When these collagens are ingested, they are broken down into **amino acids**, which are then absorbed and used by the body.^{3,13}

Although the amino acid profile in **animal** collagen is *similar* to that of **humans**, there may be a challenge due to people's sensitivities and dietary preferences.⁵

Scientists have developed a **vegan alternative** that has *exactly the same* amino acid profile as the most abundant collagen found in **human skin**, known as human **type 1 collagen**.

This precise combination of amino acids is known as a **human type 1 collagen biomimetic**.

This formulation does not contain collagen. It is a **procollagen** (a collagen precursor) that **mimics** the effects of supplementation with animal collagen while using only sustainable, allergen-free, **vegan** ingredients.

Stimulating Collagen Production

Although this procollagen delivers the right **amino acids** in the right proportions, scientists needed to ensure that the **human** body would optimally *assemble* these building blocks into **collagen**.

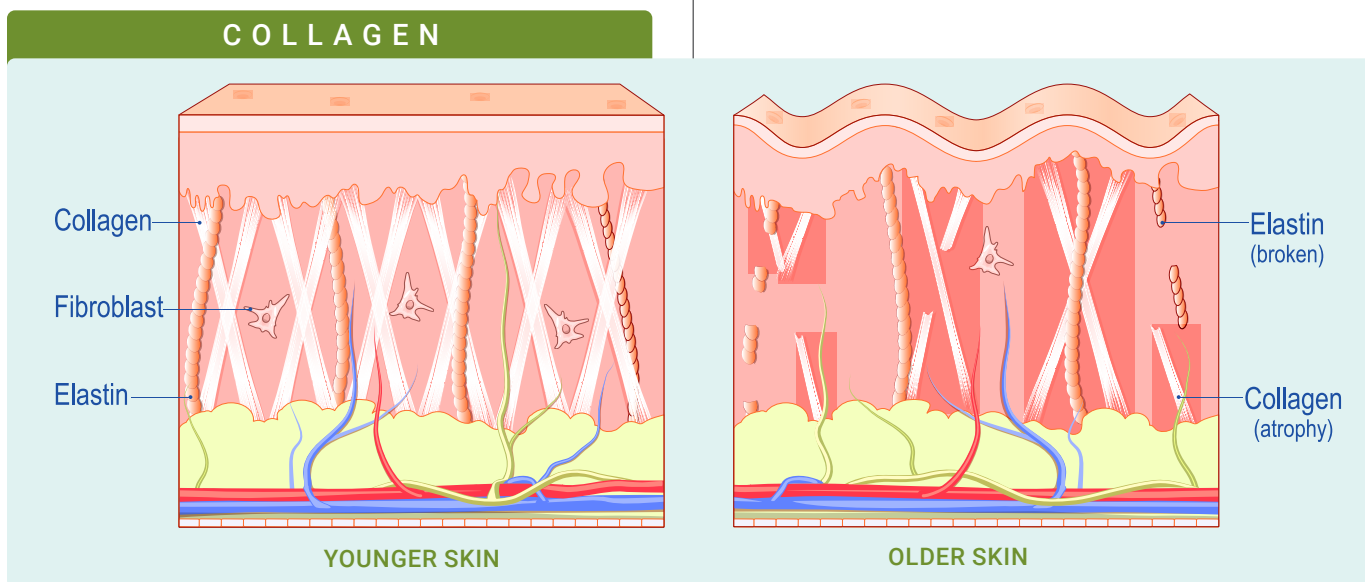
To make this happen, three inducing compounds were added that have been shown in preclinical studies to **stimulate** collagen synthesis.^{5,14,15}

These three **inducing agents** are:

- **Vitamin C**,
- **Ginseng root** extract, and
- **Gotu kola** (*Centella asiatica*) leaf extract.

In a cell study, **human skin fibroblasts** (the cells mainly responsible for collagen synthesis) were treated with this combination of amino acids *and* inducing compounds.

After **48 hours**, the **collagen** in the fibroblasts had increased by **135%**,¹⁶ showing that this formulation induced new collagen synthesis.



 WHAT
YOU
NEED
TO
KNOW

Rejuvenating Skin

Based on these results, scientists proceeded with **human** trials.

In a pilot study, adults who took **3.9 grams** of this **vegan procollagen** daily had a **5%** increase in collagen density and a **13%** decrease in skin **wrinkles** after four weeks.¹⁷

In another pilot study, adults who took **5 grams** of the procollagen daily for four weeks had:¹⁸

- **14%** greater collagen **density**,
- **16%** less **roughness**,
- **16%** less skin **redness**,
- **14%** decrease in **wrinkles**, and
- **7%** increase in skin **hydration**.

No adverse effects were observed.

Turning Back the Clock

Encouraged by these findings, scientists conducted a larger clinical trial of this vegan procollagen and published the results in 2024.

A Vegan Alternative to Collagen

- **Collagen** keeps skin smooth, hydrated, and youthful looking.
- Starting around **age 25**, collagen production *decreases* about **1%-1.5%** per year, leading to **wrinkles**, roughness, and dry, sagging skin.
- Most oral collagen is derived from cows, chicken, or fish. A new, oral **procollagen** is entirely **vegan**, and is used by the human body to make its *own* collagen.
- This procollagen formula contains an **amino acid profile** identical to that of human skin type 1 collagen, plus three inducing compounds that promote the body's own collagen synthesis.
- Human studies showed that taking **5 grams** of this vegan alternative *decreased* **wrinkles** by **14%**, *increased* skin **smoothness** up to **16%**, and improved hydration, elasticity, and redness.

They divided 90 adults into three groups. Daily, before breakfast:⁵

- Group 1 took a **placebo**,
- Group 2 took **5 grams** of **fish collagen**, and
- Group 3 took **5 grams** of **vegan procollagen**.

Wrinkles were measured using forehead skin.

After **eight weeks**, compared to baseline, those who had taken the **procollagen** had:⁵

- **8% increase** in skin collagen **density**,
- **14% decrease** in skin **wrinkles**,
- **6% increase** in skin **elasticity**,
- **13% improvement** in skin **smoothness**, and
- **6% increase** in skin **hydration**.

Of those showing wrinkle reduction in the **procollagen** group, most (**63%**) had a remarkable average **33% reduction** in the size of the **wrinkles**.⁵

Overall, the improvements were **superior** to placebo results and similar to the results for marine collagen, making it an effective **vegan alternative** to collagen.

Summary

Collagen loss results in **wrinkles**, sagging, and other signs of skin aging.

Scientists developed an oral **vegan procollagen** containing the *identical* amino acid profile found in human skin type 1 collagen.



They added **inducing compounds** to *stimulate* the body's own collagen synthesis.

Human trials showed that this formula safely produces a **13%-14% decrease** in skin **wrinkles** in just eight weeks. Smoothness, hydration, elasticity, and redness also improved.

This **procollagen** represents an effective **vegan** alternative to animal-based collagen products. •

References

1. Park S. Biochemical, structural and physical changes in aging human skin, and their relationship. *Biogerontology*. 2022 Jun;23(3):275-88.
2. Rittie L, Fisher GJ. Natural and sun-induced aging of human skin. *Cold Spring Harb Perspect Med*. 2015 Jan 5;5(1):a015370.
3. Available at: <https://www.hsph.harvard.edu/nutritionsource/collagen/>. Accessed May 13, 2024.
4. Quan T, Fisher GJ. Role of Age-Associated Alterations of the Dermal Extracellular Matrix Microenvironment in Human Skin Aging: A Mini-Review. *Gerontology*. 2015;61(5):427-34.
5. Lin Y-K, Liang C-H, Lin Y-H, et al. Oral supplementation of vegan collagen biomimetic has beneficial effects on human skin physiology: A double-blind, placebo-controlled study. *Journal of Functional Foods*. 2024 2024/01/01/;112:105955.
6. Asserin J, Lati E, Shioya T, Prawitt J. The effect of oral collagen peptide supplementation on skin moisture and the dermal collagen network: evidence from an ex vivo model and randomized, placebo-controlled clinical trials. *Journal of Cosmetic Dermatology*. 2015;14(4):291-301.
7. Reilly DM, Lozano J. Skin collagen through the lifestages: importance for skin health and beauty. *Plastic and Aesthetic Research*. 2021;8:2.
8. Available at: <https://www.aad.org/public/everyday-care/skin-care-secrets/anti-aging/skin-care-during-menopause#:~:text=Studies%20show%20that%20women's%20skin,firminess%20and%20begin%20to%20sag>. Accessed May 13, 2024.
9. Gautieri A, Passini FS, Silvan U, et al. Advanced glycation end-products: Mechanics of aged collagen from molecule to tissue. *Matrix Biol*. 2017 May;59:95-108.
10. Danby FW. Nutrition and aging skin: sugar and glycation. *Clin Dermatol*. 2010 Jul-Aug;28(4):409-11.
11. Bosch R, Phillips N, Suarez-Perez JA, et al. Mechanisms of Photoaging and Cutaneous Photocarcinogenesis, and Photoprotective Strategies with Phytochemicals. *Antioxidants (Basel)*. 2015 Mar 26;4(2):248-68.
12. Ganceviciene R, Liakou AI, Theodoridis A, et al. Skin anti-aging strategies. *Dermatoendocrinol*. 2012 Jul 1;4(3):308-19.
13. Naomi R, Ridzuan PM, Bahari H. Current Insights into Collagen Type I. *Polymers (Basel)*. 2021 Aug 9;13(16).
14. Lee J, Jung E, Kim Y, et al. Asiaticoside induces human collagen I synthesis through TGFbeta receptor I kinase (TbetaRI kinase)-independent Smad signaling. *Planta Med*. 2006 Mar;72(4):324-8.
15. Lee J, Jung E, Lee J, et al. Panax ginseng induces human Type I collagen synthesis through activation of Smad signaling. *J Ethnopharmacol*. 2007 Jan 3;109(1):29-34.
16. File. SISDo. Vegan formulation increases collagen synthesis in human fibroblasts 48409.docx. 48409.docx. 2022.
17. File. SISDo. Efficacy Evaluation of VeCollal on Skin Conditions 20220325 .pdf. [Data on File]. 2021.
18. 2022 SISDoF. Clinical Study 2 Human study report-VeCollal (5g) 20220805.pdf. [Data on File]. 2022.

Stressed?

"A great addition to
my regimen."

Kathy

VERIFIED CUSTOMER REVIEW

Stress releases the hormone **cortisol** throughout the body. Maintaining healthy cortisol levels promotes healthy **mood** and **stress response**.

Cortisol-Stress Balance provides a proprietary blend of magnolia, phellodendron, lychee, and green tea extracts for a greater sense of calm.

Item #02312

30 vegetarian capsules



This product is available at fine health food stores everywhere.

Relora® is a trademark of Lonza, registered in the USA. Oligonol® is a registered trademark of Amino Up Chemical Co., Ltd.

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.

COMBAT STRESS *with* CALM-MAG

"This is an excellent
supplement."

Aaron

VERIFIED CUSTOMER REVIEW

A special form of **MAGNESIUM** has
been shown to target occasional **stress**
where it starts—in the **brain**.

Calm-Mag contains **magnesium acetyl-aurinate**
which has been shown in **preclinical studies** to
increase **brain tissue** magnesium levels.

Calm-Mag provides **45 mg** of elemental magnesium
in each daily capsule. It may be used with other
forms of magnesium.



Item #02434

30 vegetarian capsules



This product is available at fine health food stores everywhere.

ATA Mg® is a registered trademark of AIDP, Inc.

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.

Munch,

Crunch, Digest
Your Lunch
(Or breakfast, or dinner...)



Uncomfortable after eating?

Digestive enzymes are specialized proteins that help you break down the foods you eat.*

Enhanced Super Digestive Enzymes combines 10 vegetarian-friendly enzymes to help you break down hard-to-digest foods and encourage a healthy gastrointestinal balance...so you can feel good after you eat!

* Curr Drug Metab. 2016;17(2):187-93.

Item #02021

60 vegetarian capsules

Contains wheat and soybeans.

**This product is available at 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.

Innovative Probiotic and Saffron Blend

Feeling Down?



Item #02250

30 vegetarian capsules

Just one capsule daily.



FLORASSIST® formula provides **clinically-studied** ingredients that have been shown to:

- **Promote relaxation**
- **Enhance mood**
- **Reduce perceived stress**

Two **probiotic** strains enhance **signaling** between the digestive tract and brain to support positive mood.

This **probiotic** blend also contains standardized **saffron** that has been shown to significantly improve mood and promote relaxation.

Contains milk, soybeans.

This product is available at 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.

"I use this as a support
for bone health."

Myron

VERIFIED CUSTOMER REVIEW



Just one daily softgel of
Super K provides:

Vitamin K1	1,500 mcg
Vitamin K2 (MK-4)	1,000 mcg
Vitamin K2 (trans MK-7)	100 mcg

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



Item #02334

90 softgels

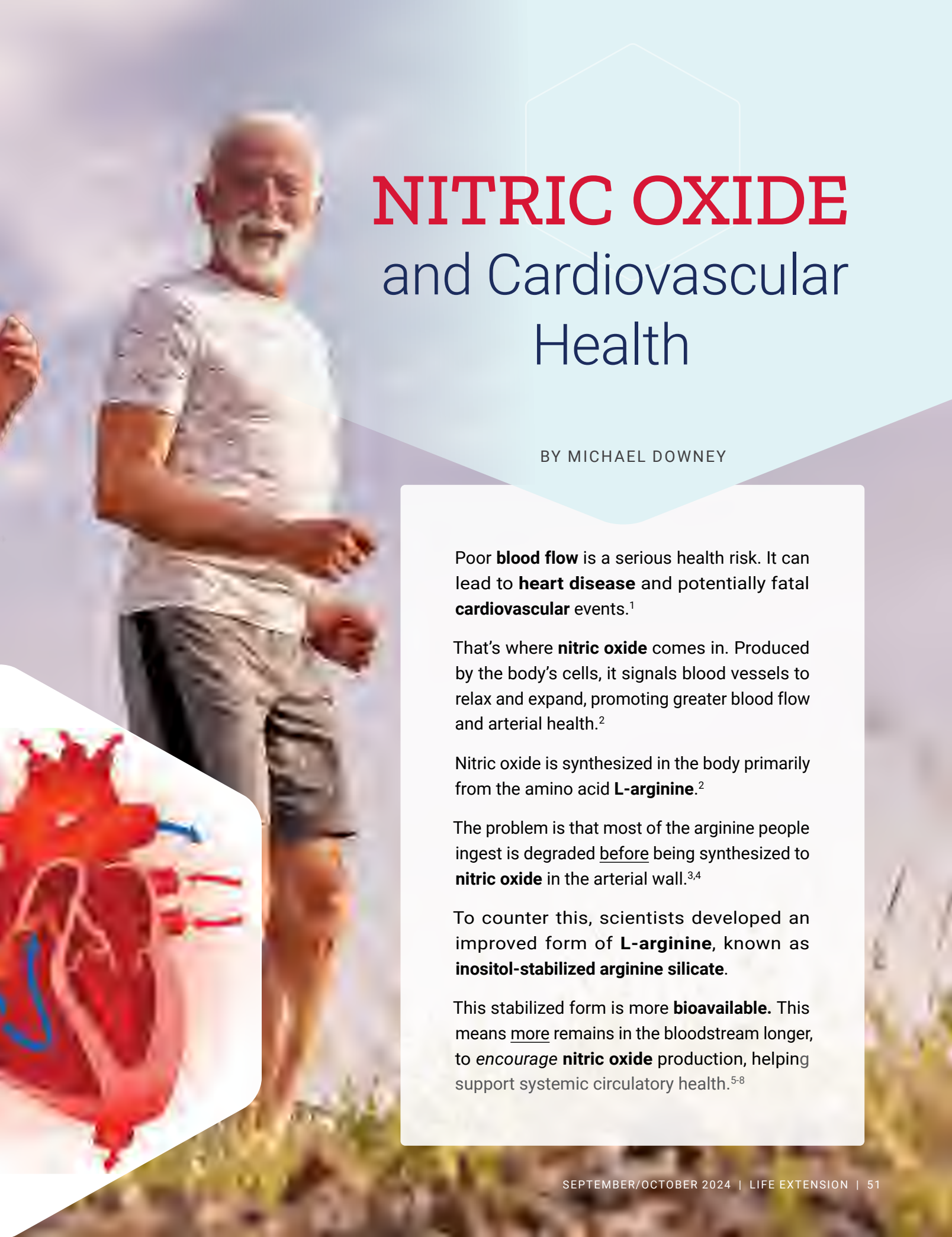
Each bottle lasts for
three months.



This product is available at 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.





NITRIC OXIDE and Cardiovascular Health

BY MICHAEL DOWNEY

Poor **blood flow** is a serious health risk. It can lead to **heart disease** and potentially fatal **cardiovascular** events.¹

That's where **nitric oxide** comes in. Produced by the body's cells, it signals blood vessels to relax and expand, promoting greater blood flow and arterial health.²

Nitric oxide is synthesized in the body primarily from the amino acid **L-arginine**.²

The problem is that most of the arginine people ingest is degraded before being synthesized to **nitric oxide** in the arterial wall.^{3,4}

To counter this, scientists developed an improved form of **L-arginine**, known as **inositol-stabilized arginine silicate**.

This stabilized form is more **bioavailable**. This means more remains in the bloodstream longer, to *encourage* **nitric oxide** production, helping support systemic circulatory health.⁵⁻⁸



The Importance of Nitric Oxide

As we age, the risk of developing **cardiovascular disease** increases.

One reason is **endothelial dysfunction**.⁹⁻¹¹

The *inner lining* of our arteries, called the **endothelium**, plays a critical role in regulating the flow of blood.⁹⁻¹¹

It does so by producing **nitric oxide**, which signals blood vessels to **dilate** (widen/relax).¹⁰ This allows for greater blood flow to tissues, including the **heart** and **brain**.

However, as we age, our bodies tend to make *less* nitric oxide.^{12,13} Because of this, blood vessels may be unable to dilate as needed, reducing blood flow.¹³⁻¹⁶

The consequences of this **endothelial dysfunction** include diminished circulation, high blood pressure, abnormal clotting, and atherosclerosis (the buildup of plaque in arteries). These are major causes of cardiovascular disease, strokes, heart attacks, and **sudden cardiac death**.^{9,10,17,18}

Endothelial dysfunction is surprisingly common. It can lead to a host of problems including increased risks of dementia and kidney failure.^{14,19,20}

But if we can *increase* the **nitric oxide** in our blood vessels, it may stop and even *reverse* **endothelial dysfunction**.

L-Arginine's Essential Role

Nitric oxide is synthesized in the body primarily from the amino acid L-arginine—a direct precursor that blood vessels use to make **nitric oxide**.²¹

To work properly, blood vessels make **nitric oxide** for *themselves* from the amino acid **L-arginine**.

Scientists evaluated whether taking **oral L-arginine** improved blood vessel dilation, with the goal of improving systemic circulation and lowering risk for vascular diseases.²²⁻²⁷

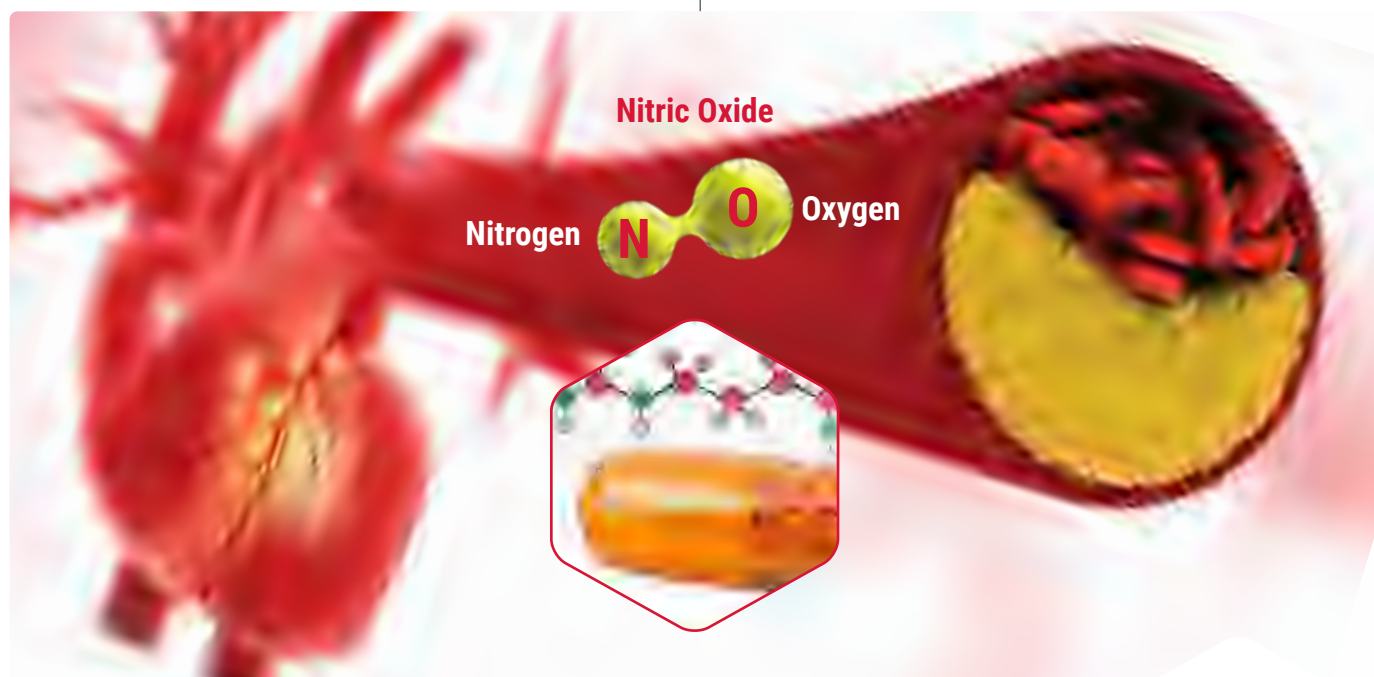
In a **clinical trial**, patients with high blood pressure were given a single dose of **L-arginine** or a placebo. Measurements were taken of **flow-mediated dilation (FMD)**—how much a blood vessel widens in response to an increase in blood flow.²⁷

While the **placebo** group had no change in blood vessel dilation, flow-mediated dilation in those receiving **L-arginine** improved from an average of **1.7% to 5.9%**.²⁷

Considering that each **1%** improvement in flow-mediated dilation has been correlated with a **12% lower risk** of cardiovascular events such as heart attack and stroke, the maintenance of endothelial health is critical.^{28,29}

Some longer-term clinical studies demonstrate that L-arginine supplementation can lower blood pressure and reduce symptoms associated with coronary artery disease.^{22,30}

L-arginine, however, is quickly metabolized and eliminated from the bloodstream.^{3,4}





Longer-Acting Arginine

A key drawback to taking **L-arginine** has been that it needs about an hour to take effect and does not stay in the bloodstream for long.⁶

An enzyme called **arginase** degrades about **40%** of ingested arginine within the intestinal tract *before* it can be absorbed into the bloodstream.^{31,32}

L-arginine is further degraded by other *enzymes* in the bloodstream, leaving only a small amount available to be converted to **nitric oxide**.⁴

Seeking a way around this problem, scientists developed a more **bioavailable** form of L-arginine called **inositol-stabilized arginine silicate** that allows L-arginine to remain present in the plasma for a greater length of time.^{5,6,33}

Clinical studies have demonstrated that in response to *inositol-stabilized arginine silicate*, arginine levels in the blood were increased within **30 minutes** and plasma arginine levels were sustained for up to **six hours**.^{5,6,33}

How It Works

L-arginine supports production of **nitric oxide**.

Inositol-stabilized arginine silicate raises plasma levels of arginine and encourages production of nitric oxide, which helps improve blood flow.⁵⁻⁷

Inositol-stabilized arginine silicate appears to keep L-arginine levels *higher* because it inhibits **arginase**, the primary enzyme that breaks down L-arginine.³³

WHAT
YOU
NEED
TO
KNOW

Boost Nitric Oxide Levels

- The body produces **nitric oxide**, a gas that signals blood vessels to dilate, allowing blood to flow through.
- Aging tends to decrease nitric oxide production, contributing to **endothelial dysfunction** and an increased risk for cardiovascular disease, heart attacks, and strokes.
- **L-arginine** is an amino acid the body uses to make nitric oxide. Scientists have developed a more bioavailable form of L-arginine called **inositol-stabilized arginine silicate**.
- This **superior form** promotes higher L-arginine levels in the bloodstream for a longer period. That can significantly boost nitric oxide production, reducing risk for cardiovascular events.
- In a clinical trial, consumption of **inositol-stabilized arginine silicate** was found to be associated with a significant improvement in flow-mediated dilation.

This allows *more* L-arginine to enter the blood and circulate *longer* compared to standard L-arginine.³³

As a result, this stabilized form of L-arginine has demonstrated **clinical benefits** that standard L-arginine has not been shown to achieve.^{7,8}

In a three-arm crossover design trial of physically active males with normal blood pressure, participants received a one-time dose of either⁸:

- **1,500 mg** of inositol-stabilized arginine silicate,
- **8 grams** of citrulline malate (indirect precursor to nitric oxide), or
- **placebo.**

Flow-mediated dilation of the brachial artery was measured before ingestion of the supplement and one hour after. After the single dose there was a washout period of 7-28 days. It was found that the single dose of inositol-stabilized arginine silicate or citrulline resulted in improvements in flow-mediated dilation of about **31%**, compared to **placebo**.

In another clinical trial, subjects taking **1,500 mg** of this improved form of L-arginine daily had reduced markers of post-workout muscle damage and reported greater feelings of energy than those taking a placebo.⁷

Encouraging the synthesis of *nitric oxide* with **inositol-stabilized arginine silicate** is one way to support cardiovascular health.

Summary

Nitric oxide is produced by the body to support **blood flow**, improving circulatory and cardiovascular health.

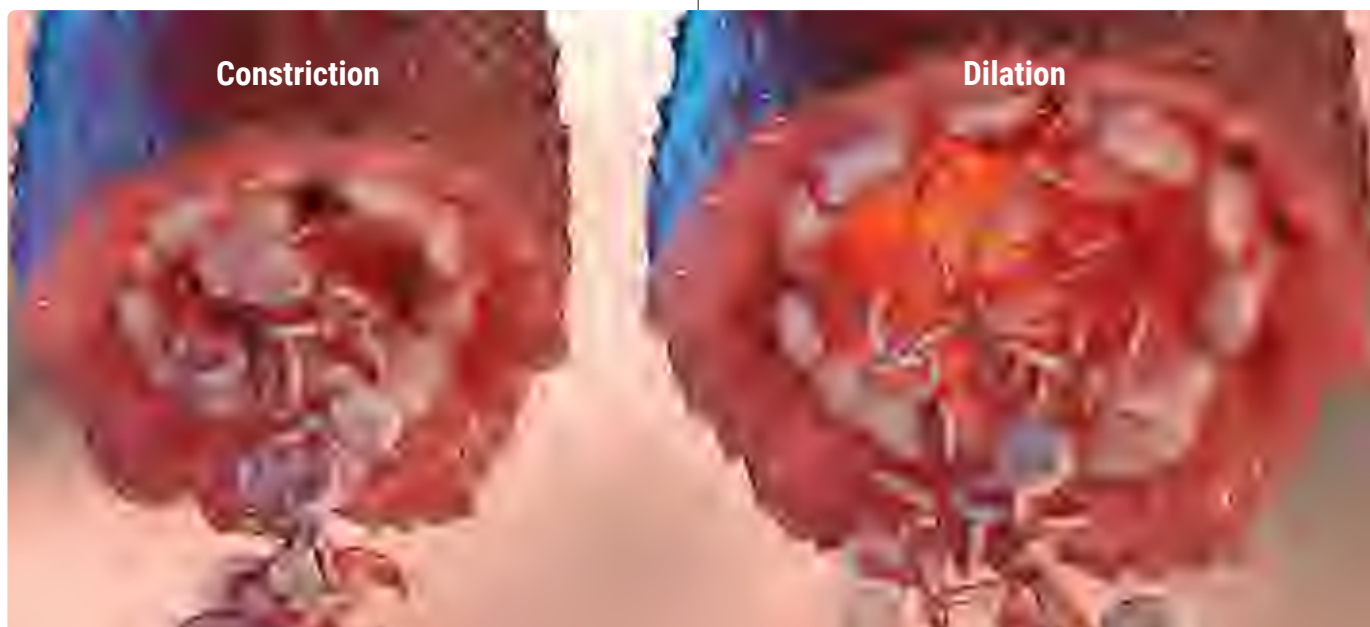
Nitric oxide production tends to decline with age, and this decline has a negative impact on endothelial function. Endothelial dysfunction is a contributor to atherosclerosis and increases the risk of **cardiovascular disease**, heart attacks, and strokes.

L-arginine is the amino acid the body uses to make nitric oxide. Taken orally, it gets degraded by enzymes and only a small amount is available to support the endothelium.

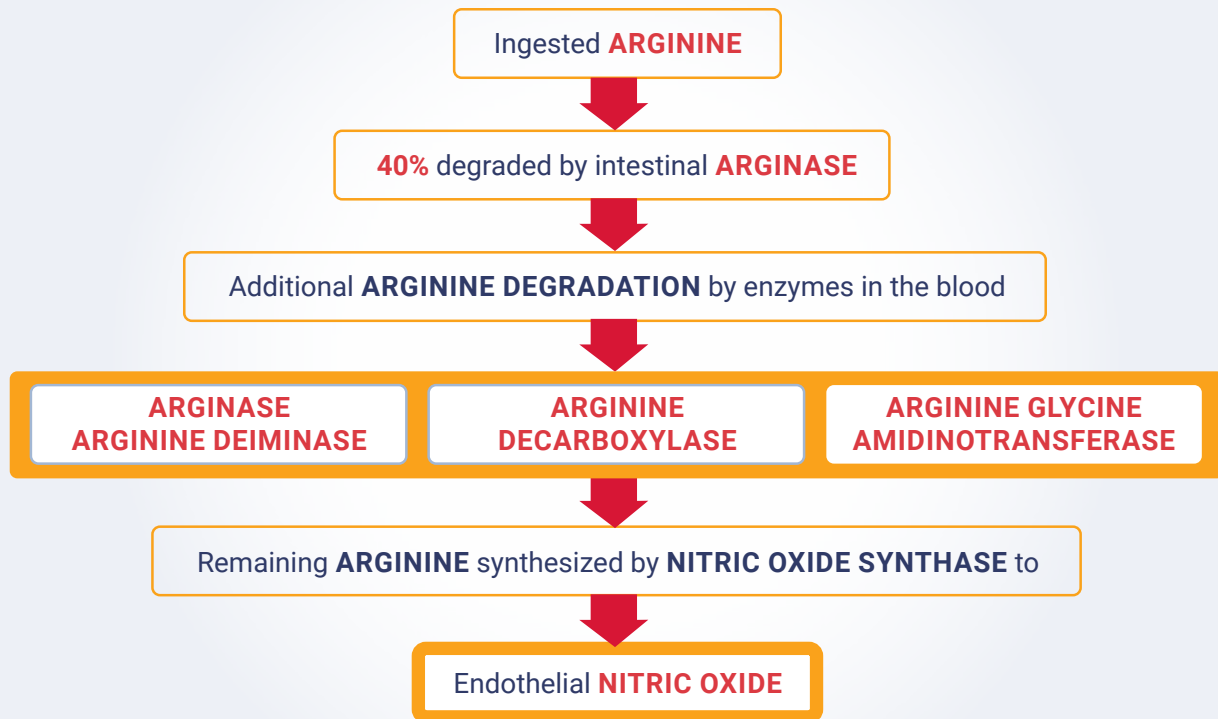
Scientists have developed a better form of L-arginine called **inositol-stabilized arginine silicate**. More of it is absorbed into the bloodstream after ingestion and it remains in the body for a longer time.

This improved L-arginine may boost **nitric oxide** production, reducing the risk for cardiovascular events. •

(See **ARGININE Breakdown Flowchart** on next page)



ARGININE's Formidable Task in Converting to NITRIC OXIDE



The typical American ingests about **4.5 grams** of arginine each day.⁴

But only a tiny amount of ingested arginine is available to convert to endothelial **nitric oxide**.

When arginine is ingested, a substantial percentage of it (about **40%**) is degraded in the small intestine by the enzyme *arginase*. This enzyme is naturally present to degrade the dietary arginine humans ingest each day.⁴

After the remaining **intestinal arginine** is absorbed into the blood, there are more enzymes that rapidly degrade it into a variety of metabolites including ornithine, creatine, proline, glutamine, and various polyamines.

The primary *enzymes* that degrade **arginine** are:

- **Arginase,**
- **Arginine decarboxylase,** and
- **Arginine Glycine amidinotransferase.**

Any arginine that is spared from enzymatic degradation in the body can be converted by the enzyme *nitric oxide synthase* into **nitric oxide**.⁴

Some studies show that supplemental arginine increases nitric oxide levels in the body, while other studies reveal no increase in nitric oxide levels in response to arginine supplementation.^{34,35}

The reason that standard arginine does not consistently elevate **nitric oxide** may be that not enough arginine is able to be acted upon by *nitric oxide synthase* to produce **endothelial nitric oxide**.

Around four hours after standard arginine is ingested, blood levels of arginine return to baseline.³⁶

A new stabilized arginine formula reduces *enzymatic* degradation by arginase to enable *higher* blood levels of **arginine**, sustained for about six hours, to support production of endothelial **nitric oxide**.³³

References

- Available at: <https://www.nhs.uk/conditions/cardiovascular-disease/>. Accessed May 29, 2024.
- Ahmad A, Dempsey SK, Daneva Z, et al. Role of Nitric Oxide in the Cardiovascular and Renal Systems. *Int J Mol Sci*. 2018;19(9).
- Szlas A, Kurek JM, Krejpcio Z. The Potential of L-Arginine in Prevention and Treatment of Disturbed Carbohydrate and Lipid Metabolism-A Review. *Nutrients*. 2022;14(5):961.
- Wu G, Bazer FW, Davis TA, et al. Arginine metabolism and nutrition in growth, health and disease. *Amino Acids*. 2009;37(1):153-68.
- Kalman DS, Feldman S, Samson A, Krieger DR. A clinical evaluation to determine the safety, pharmacokinetics, and pharmacodynamics of an inositol-stabilized arginine silicate dietary supplement in healthy adult males. *Clin Pharmacol*. 2015;7:103-9.
- Komorowski J, Perez Ojalvo S. A pharmacokinetic evaluation of the duration of the effect of inositol-stabilized arginine silicate and arginine hydrochloride in healthy adult males. *The Journal of the Federation of American Societies for Experimental Biology*. 2016.
- James Komorowski DG. Inositol-Stabilized Arginine Silicate Reduces Exercise Induced Muscle Damage and Increases Perceived Energy. *Journal of Exercise and Nutrition*. 2023;6(1).
- Rogers JM, Gills J, Gray M. Acute effects of Nitrosigine(R) and citrulline malate on vasodilation in young adults. *J Int Soc Sports Nutr*. 2020;17(1):12.
- Sun HJ, Wu ZY, Nie XW, Bian JS. Role of Endothelial Dysfunction in Cardiovascular Diseases: The Link Between Inflammation and Hydrogen Sulfide. *Front Pharmacol*. 2019;10:1568.
- Little PJ, Askew CD, Xu S, Kamato D. Endothelial Dysfunction and Cardiovascular Disease: History and Analysis of the Clinical Utility of the Relationship. *Biomedicines*. 2021;9(6):699.
- Pacinella G, Ciaccio AM, Tuttolomondo A. Endothelial Dysfunction and Chronic Inflammation: The Cornerstones of Vascular Alterations in Age-Related Diseases. *Int J Mol Sci*. 2022;23(24).
- Shannon OM, Clifford T, Seals DR, et al. Nitric oxide, aging and aerobic exercise: Sedentary individuals to Master's athletes. *Nitric Oxide*. 2022;125-126:31-9.
- Poeggeler B, Singh SK, Sambamurti K, Pappolla MA. Nitric Oxide as a Determinant of Human Longevity and Health Span. *International Journal of Molecular Sciences*. 2023;24(19):14533.
- Sverdlow AL, Ngo DT, Chan WP, et al. Aging of the nitric oxide system: are we as old as our NO? *J Am Heart Assoc*. 2014;3(4).
- Torregrossa AC, Aranke M, Bryan NS. Nitric oxide and geriatrics: Implications in diagnostics and treatment of the elderly. *J Geriatr Cardiol*. 2011;8(4):230-42.
- Rocha BS. The Nitrate-Nitrite-Nitric Oxide Pathway on Healthy Ageing: A Review of Pre-clinical and Clinical Data on the Impact of Dietary Nitrate in the Elderly. *Front Aging*. 2021;2:778467.
- Eelen G, de Zeeuw P, Simons M, Carmeliet P. Endothelial cell metabolism in normal and diseased vasculature. *Circ Res*. 2015;116(7):1231-44.
- Huveneers S, Daemen MJ, Hordijk PL. Between Rho(k) and a hard place: the relation between vessel wall stiffness, endothelial contractility, and cardiovascular disease. *Circ Res*. 2015;116(5):895-908.
- Fang YC, Hsieh YC, Hu CJ, Tu YK. Endothelial Dysfunction in Neurodegenerative Diseases. *Int J Mol Sci*. 2023;24(3).
- Luca M, Luca A. Oxidative Stress-Related Endothelial Damage in Vascular Depression and Vascular Cognitive Impairment: Beneficial Effects of Aerobic Physical Exercise. *Oxid Med Cell Longev*. 2019;2019:8067045.
- Wu G, Meininger CJ, McNeal CJ, et al. Role of L-Arginine in Nitric Oxide Synthesis and Health in Humans. *Adv Exp Med Biol*. 2021;1332:167-87.
- Lerman A, Burnett JC, Jr., Higano ST, et al. Long-term L-arginine supplementation improves small-vessel coronary endothelial function in humans. *Circulation*. 1998;97(21):2123-8.
- Clarkson P, Adams MR, Powe AJ, et al. Oral L-arginine improves endothelium-dependent dilation in hypercholesterolemic young adults. *J Clin Invest*. 1996;97(8):1989-94.
- Bode-Boger SM, Boger RH, Galland A, et al. L-arginine-induced vasodilation in healthy humans: pharmacokinetic-pharmacodynamic relationship. *Br J Clin Pharmacol*. 1998;46(5):489-97.
- Gambardella J, Khondkar W, Morelli MB, et al. Arginine and Endothelial Function. *Biomedicines*. 2020;8(8):277.
- Yaman H, Tiryaki- Sönmez G, Gürel K. Effects of oral L-arginine supplementation on vasodilation and $\dot{V}O_{2\max}$ in male soccer players. *Biomedical Human Kinetics*. 2010;2(2010):25-9.
- Lekakis JP, Papaathanassiou S, Papaioannou TG, et al. Oral L-arginine improves endothelial dysfunction in patients with essential hypertension. *Int J Cardiol*. 2002;86(2-3):317-23.
- Shimbo D, Grahame-Clarke C, Miyake Y, et al. The association between endothelial dysfunction and cardiovascular outcomes in a population-based multi-ethnic cohort. *Atherosclerosis*. 2007;192(1):197-203.
- Matsuzawa Y, Kwon TG, Lennon RJ, et al. Prognostic Value of Flow-Mediated Vasodilation in Brachial Artery and Fingertip Artery for Cardiovascular Events: A Systematic Review and Meta-Analysis. *J Am Heart Assoc*. 2015;4(11).
- McRae MP. Therapeutic Benefits of L-Arginine: An Umbrella Review of Meta-analyses. *J Chiropr Med*. 2016;15(3):184-9.
- Ming X-F, Yang Z. Functions and Mechanisms of Arginase in Age-Associated Cardiovascular Diseases. *Current Translational Geriatrics and Experimental Gerontology Reports*. 2013;2(4):268-74.
- Kurhaluk N. The Effectiveness of L-arginine in Clinical Conditions Associated with Hypoxia. *Int J Mol Sci*. 2023;24(9).
- Komorowski J, Perez Ojalvo S, Sylla S, Veledar E. Poster Presentation presented at the American Society for Nutrition's Annual Meeting 2018. Arginase inhibition by inositol-stabilized arginine silicate (ASI; Nitrosigine); a novel mechanism by which ASI enhances arginine bioavailability. *Current Developments in Nutrition*. 2018.
- Gonzalez AM, Townsend JR, Pinzone AG, Hoffman JR. Supplementation with Nitric Oxide Precursors for Strength Performance: A Review of the Current Literature. *Nutrients*. 2023;15(3):660.
- Jablecka A, Checinski P, Krauss H, et al. The influence of two different doses of L-arginine oral supplementation on nitric oxide (NO) concentration and total antioxidant status (TAS) in atherosclerotic patients. *Med Sci Monit*. 2004;10(1):CR29-32.
- Komorowski J, Perez Ojalvo S. A pharmacokinetic evaluation of the duration of effect of inositol-stabilized arginine silicate and arginine hydrochloride in healthy adult males. *FASEB J*. 2016;30(1 suppl).



BUILD BETTER *Beauty* WITH VEGAN PRO COLLAGEN

For beautiful skin that lasts, choose the right building blocks. This innovative formula combines the exact amino acid profile as type 1 collagen with **clinically studied** vitamin C, gotu kola and ginseng root extracts to promote healthy collagen production.

Fight the appearance of wrinkles and support beauty from within with new Vegan Pro Collagen!



*Not a low-calorie food.

Item #02528

Net Wt. 189 g (0.417 lb)

This product is available at 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.



Fast-Acting Liquid Melatonin is a popular way to enhance the absorption of melatonin for sleep onset support.

The nice-tasting, citrus-vanilla flavor enables convenient “drop” dosing of **Fast-Acting Liquid Melatonin** for occasional sleeplessness.

Item #02234

3 mg per 20 drops, 2 fl. oz



FOR OCCASIONAL SLEEPLESSNESS.

Life Extension also offers a full range of melatonin in solid forms and a variety of dosages.

This product is available at fine health food stores everywhere.

CAUTION: Do not consume alcohol, drive or operate heavy machinery after taking this product.

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.

NUTRITIONAL SUPPORT FOR A HEALTHY URINARY TRACT

OPTIMIZED CRAN-MAX[®] WITH ELLIROSE[™]

Life Extension[®]'s Optimized Cran-Max[®] with Ellirose[™] uniquely complements whole cranberries' effectiveness for urinary tract health, especially for women.

Optimized Cran-Max[®] provides benefits similar to cranberry juice cocktail in each daily dose, but without the calories.



This product is available at fine health food stores everywhere.

Item #01424

60 vegetarian capsules

Cran-Max[®] and Bio-Shield[®] are registered trademarks of Pharmachem Laboratories, Inc.
Ellirose[™] is a trademark of Naturex, Inc.

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.





Fight **FATIGUE** with **VITAMIN D**

BY RICK THATCHER

Up to a **third** of all patients visiting their primary care doctors report feeling **fatigue**.^{1,2}

Yet physicians rarely come up with an explanation for it, because there are so many possible causes.^{1,2}

But there *is* a common link in many cases: **Fatigue** is often associated with low **vitamin D** levels.³⁻⁹

Vitamin D is instrumental in regulating biological processes that have been tied to fatigue, including neurotransmitter balance in the brain, inflammation, and more.⁴

Studies have found that increasing **vitamin D** intake can help reduce symptoms of **fatigue**, whether tied to a medical condition or not.^{2,10-14}



Causes of Fatigue

Fatigue is one of the most common complaints doctors hear in their clinics.^{1,2} Its prevalence rises with **age**.¹

It can refer to **mental** or **emotional** lethargy and to **physical** exhaustion and muscle weakness.

Some **medical conditions** associated with fatigue include autoimmune conditions, infections, cancer, mental illness, and endocrine disorders.^{1,4}

Cases may also be associated with sleep disturbances, stress, diet, and environmental factors.

Yet for the large majority of people complaining of fatigue, there is no obvious cause.²

However, although many factors may contribute to fatigue, research has revealed that one vitamin may be a critical factor that ties together many cases: **vitamin D**.

The Vitamin D Link

Many cases of **fatigue**, including those without an obvious cause *and* those tied to a medical condition, are associated with low **vitamin D** levels.^{4,5}

For example, fatigue is common in **older individuals**,^{1,3,4,9} as are low **vitamin D levels**.¹⁵

In this group, studies have found a strong association between both **mental** and **physical fatigue** and low levels of **vitamin D**.^{3,4,9} In fact, one study found that the *lower* the vitamin D levels, the *more severe* the fatigue.⁹

Low vitamin D is also often found in many **medical conditions** associated with fatigue. Patients with

fibromyalgia, multiple sclerosis, rheumatological diseases, cancer, and neurodegenerative disorders often have low levels or a deficiency of vitamin D.^{4,6,7}

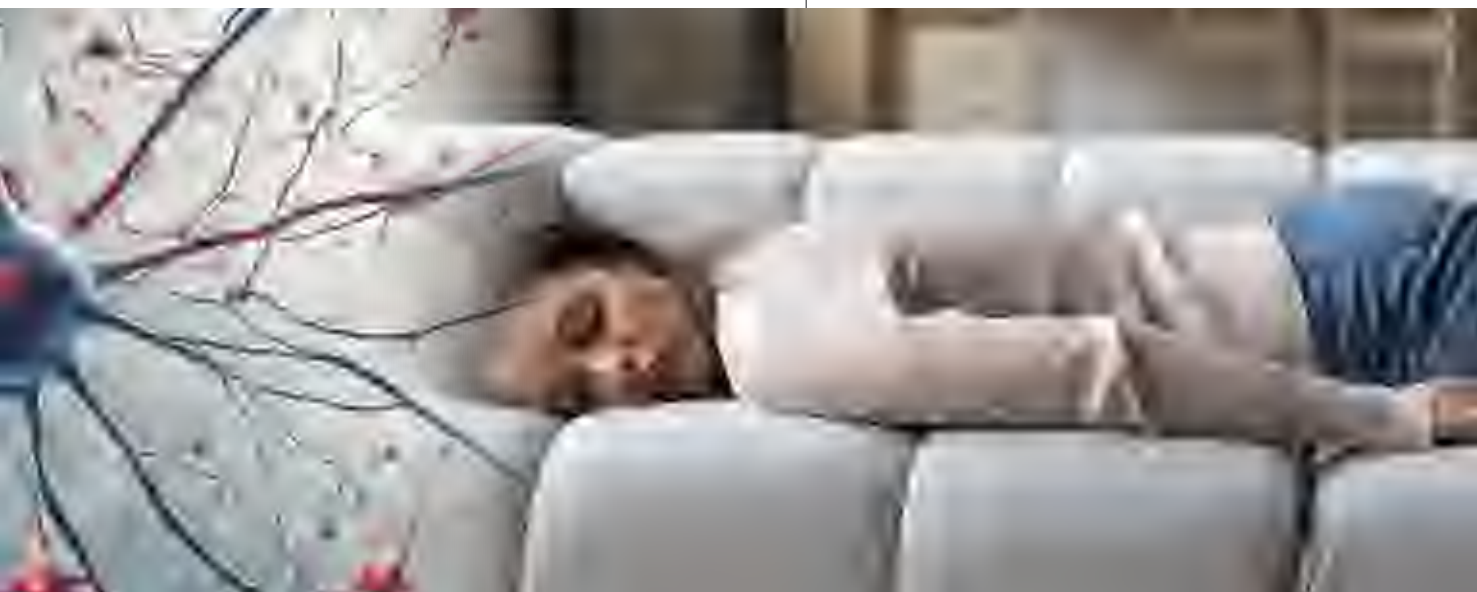
Even **work-related fatigue** may correlate with lower vitamin D levels. In one study of 200 female nurses with a high prevalence of fatigue, **89%** suffered from vitamin D **deficiency**.⁸ The researchers concluded that their high rate of fatigue could be attributed to low vitamin D levels.

Low Vitamin D Drives Fatigue

Whether a cause can be identified or not, **fatigue** is driven by several biological factors.⁴

Many of these can be linked to suboptimal **vitamin D** levels, including:

- **Neurotransmitter imbalances.** Mental and emotional fatigue can be related to alterations in the activity of several neurotransmitters in the brain, particularly **dopamine** and **serotonin**.⁴ Vitamin D is involved in the synthesis and activity of these and other neurotransmitters.⁴ Deficiency of vitamin D can contribute to imbalances that may lead to fatigue.
- **Cellular stress.** Vitamin D plays an important role in the body's defenses against **oxidative stress**. Without sufficient vitamin D, stress and cellular damage worsen, which contributes to chronic fatigue.⁴



- **Low klotho.** Klotho is an **anti-aging protein** with various functions.¹⁶ In animal models, blocking klotho significantly shortens lifespan, while *increasing* its activity *extends* it. Vitamin D activity helps increase levels of this protein, boosting resistance to cellular stress and associated fatigue.⁴
- **Immunity.** Fatigue has been tied to aspects of suboptimal immune balance, including increased production of **pro-inflammatory** compounds.⁴ Vitamin D helps counter these alterations, reducing production of inflammatory compounds and supporting healthy immune balance.^{4,5}
- **Gene expression changes.** When adequate levels of vitamin D are available, genes tied to cellular protection, antioxidant defenses, immune function, growth factors, and more are all favorably expressed. This means they are appropriately “turned on or off” in response to the body’s needs. This helps *minimize* contributions to fatigue and maximize cellular health and defense.⁴

Reducing Fatigue

Many adults suffer from *inadequate* levels of **vitamin D**. These lower levels have been tied to different forms of age-related chronic disease.¹⁷

As a result, taking **oral vitamin D** to maintain optimal levels is widely encouraged by physicians.

Boosting vitamin D levels also can result in improvements in **fatigue**.

In one study, more than **77%** of adult patients complaining of fatigue had low vitamin D.² After taking oral vitamin D to normalize levels, fatigue scores **improved** in all categories, including **physical**, **emotional**, and **mental** fatigue.

Average **fatigue scores** (the higher the number, the more severe the fatigue) dropped from **31.5** points when the study began to **11** points after vitamin D levels were increased, an improvement of **more than 20** points, or **65%**. A change of just **4 to 11** points is considered clinically important.¹⁸

In another study, healthy adults with low vitamin D and feelings of fatigue received either a single, large dose of vitamin D or a placebo. In those receiving vitamin D, fatigue scores decreased and **72%** reported improvement in their fatigue. The *more* vitamin D levels rose, the *greater* the reduction in fatigue.¹³



WHAT
YOU
NEED
TO
KNOW

Fight Fatigue with Vitamin D

- **Fatigue** is reported to doctors at up to **33%** of primary care visits. It is increasingly common with age and often has no clear medical cause.
- Researchers have found that many fatigue cases are associated with low **vitamin D** levels.
- Vitamin D helps counteract many of the **biological mechanisms** that are tied to fatigue.
- Human studies show that increasing **vitamin D** levels through oral intake can **reduce fatigue**.

Several studies have shown that vitamin D intake can also reduce fatigue related to **disease**. For example, taking vitamin D improved symptoms of **fatigue** in studies of patients with multiple sclerosis, kidney transplants, and lupus.^{10-12,14}

Daily oral doses of **5,000-8,000 IU** of **vitamin D3** can help maintain optimal blood levels to fight fatigue. The *25-hydroxy vitamin D* blood test is used to assess and adjust dose. **Life Extension** considers **50-80 ng/mL** of *25-hydroxy vitamin D* to be an optimal level.

Summary

Most cases of **fatigue** have no obvious cause, making them difficult to treat. But they are often associated with **low vitamin D** levels.

Studies have shown that taking **oral vitamin D** to *increase* low vitamin D levels can *reduce* fatigue in healthy adults *and* in those with medical conditions associated with fatigue. •

References

1. Maisel P, Baum E, Donner-Banzhoff N. Fatigue as the Chief Complaint-Epidemiology, Causes, Diagnosis, and Treatment. *Dtsch Arztebl Int*. 2021;118(33-34):566-76.
2. Roy S, Sherman A, Monari-Sparks MJ, et al. Correction of Low Vitamin D Improves Fatigue: Effect of Correction of Low Vitamin D in Fatigue Study (EViDiF Study). *N Am J Med Sci*. 2014;6(8):396-402.
3. Al-Eisa ES, Alghadir AH, Gabr SA. Correlation between vitamin D levels and muscle fatigue risk factors based on physical activity in healthy older adults. *Clin Interv Aging*. 2016;11:513-22.
4. Di Molfetta IV, Bordoni L, Gabbianelli R, et al. Vitamin D and Its Role on the Fatigue Mitigation: A Narrative Review. *Nutrients*. 2024;16(2):221.
5. Hock AD. Review: Vitamin D3 deficiency results in dysfunctions of immunity with severe fatigue and depression in a variety of diseases. *In Vivo*. 2014;28(1):133-45.
6. Koole JL, Bours MJL, van Roekel EH, et al. Higher Serum Vitamin D Concentrations Are Longitudinally Associated with Better Global Quality of Life and Less Fatigue in Colorectal Cancer Survivors up to 2 Years after Treatment. *Cancer Epidemiol Biomarkers Prev*. 2020;29(6):1135-44.
7. Martinez-Alonso M, Dusso A, Ariza G, Nabal M. Vitamin D deficiency and its association with fatigue and quality of life in advanced cancer patients under palliative care: A cross-sectional study. *Palliat Med*. 2016;30(1):89-96.
8. Masoudi Alavi N, Madani M, Sadat Z, et al. Fatigue and Vitamin D Status in Iranian Female Nurses. *Glob J Health Sci*. 2015;8(6):196-202.
9. Pennisi M, Malaguarnera G, Di Bartolo G, et al. Decrease in Serum Vitamin D Level of Older Patients with Fatigue. *Nutrients*. 2019;11(10).
10. Beckmann Y, Ture S, Duman SU. Vitamin D deficiency and its association with fatigue and quality of life in multiple sclerosis patients. *EPMA J*. 2020;11(1):65-72.
11. Han B, Wu X, Guo Y. Improvement of fatigue after vitamin D supplementation in kidney transplant recipients. *Medicine (Baltimore)*. 2017;96(21):e6918.
12. Lima GL, Paupitz J, Aikawa NE, et al. Vitamin D Supplementation in Adolescents and Young Adults With Juvenile Systemic Lupus Erythematosus for Improvement in Disease Activity and Fatigue Scores: A Randomized, Double-Blind, Placebo-Controlled Trial. *Arthritis Care Res (Hoboken)*. 2016;68(1):91-8.
13. Nowak A, Boesch L, Andres E, et al. Effect of vitamin D3 on self-perceived fatigue: A double-blind randomized placebo-controlled trial. *Medicine (Baltimore)*. 2016;95(52):e5353.
14. Ruiz-Irastorza G, Gordo S, Olivares N, et al. Changes in vitamin D levels in patients with systemic lupus erythematosus: Effects on fatigue, disease activity, and damage. *Arthritis Care Res (Hoboken)*. 2010;62(8):1160-5.
15. Wang TY, Wang HW, Jiang MY. Prevalence of vitamin D deficiency and associated risk of all-cause and cause-specific mortality among middle-aged and older adults in the United States. *Front Nutr*. 2023;10:1163737.
16. Zhou H, Pu S, Zhou H, Guo Y. Klotho as Potential Autophagy Regulator and Therapeutic Target. *Front Pharmacol*. 2021;12:755366.
17. Zmijewski MA. Vitamin D and Human Health. *Int J Mol Sci*. 2019;20(1).
18. Chan A, Yo TE, Wang XJ, et al. Minimal Clinically Important Difference of the Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF) for Fatigue Worsening in Asian Breast Cancer Patients. *J Pain Symptom Manage*. 2018;55(3):992-7 e2.

VITAMIN
D



Highway to Heart Health

Stay on the cardio health fast track with NitroVasc™ Boost!

This new and improved formula promotes healthy blood flow and circulation by supporting your body's production of nitric oxide. And our special L-arginine-silicate complex stays in the blood longer than regular arginine, so your heart can stay the course.

Get ready to live life at full speed with this easy-mix berry-flavored powder.

Improved



*Not a low-calorie food.

Item #02320

Net Wt. 78.6 g (0.173 lb.)

This product is available at fine health food stores everywhere.

Nitrosigine® is a registered trademark of Nutrition 21, LLC. Nitrosigine® is patent protected.

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.

NEURO-MAG®

THE SMART MAGNESIUM



Supports
Improvement in
Overall Cognitive
Ability



Item #01603

90 vegetarian capsules

Neuro-Mag® Magnesium L-Threonate was formulated to be uniquely absorbable into the **brain**.

Magnesium L-Threonate has been shown to improve **synaptic density** and other structural components of the brain.¹⁻³



Item #02032

93.35 grams of powder

These products are available at fine health food stores everywhere.

References: 1. *Neuropharmacology*. 2016 2016/09/01;108:426-39. 2. *Journal of Cellular Physiology*. 2016;231(9):1903-12. 3. *J Alzheimers Dis*. 2016;49(4):971-90.

Magtein® is a trademark of Magceutics®, Inc. and is distributed exclusively by AIDP, Inc.

Magtein® is protected under a family of US patents, pending patents, and is protected worldwide.

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.

Maintain Endothelial
Plaque Stability with

Arterial Protect



ARTERIAL PROTECT can help maintain endothelial plaque stability and support blood flow throughout the body.*

Each capsule provides the patented French Maritime **pine bark extract** used in **clinical studies** along with **Gotu Kola**.

**This product is available at fine
health food stores everywhere.**

Item #02004

30 vegetarian capsules

* Int Angiol. 2014 Feb;33(1):20-6.

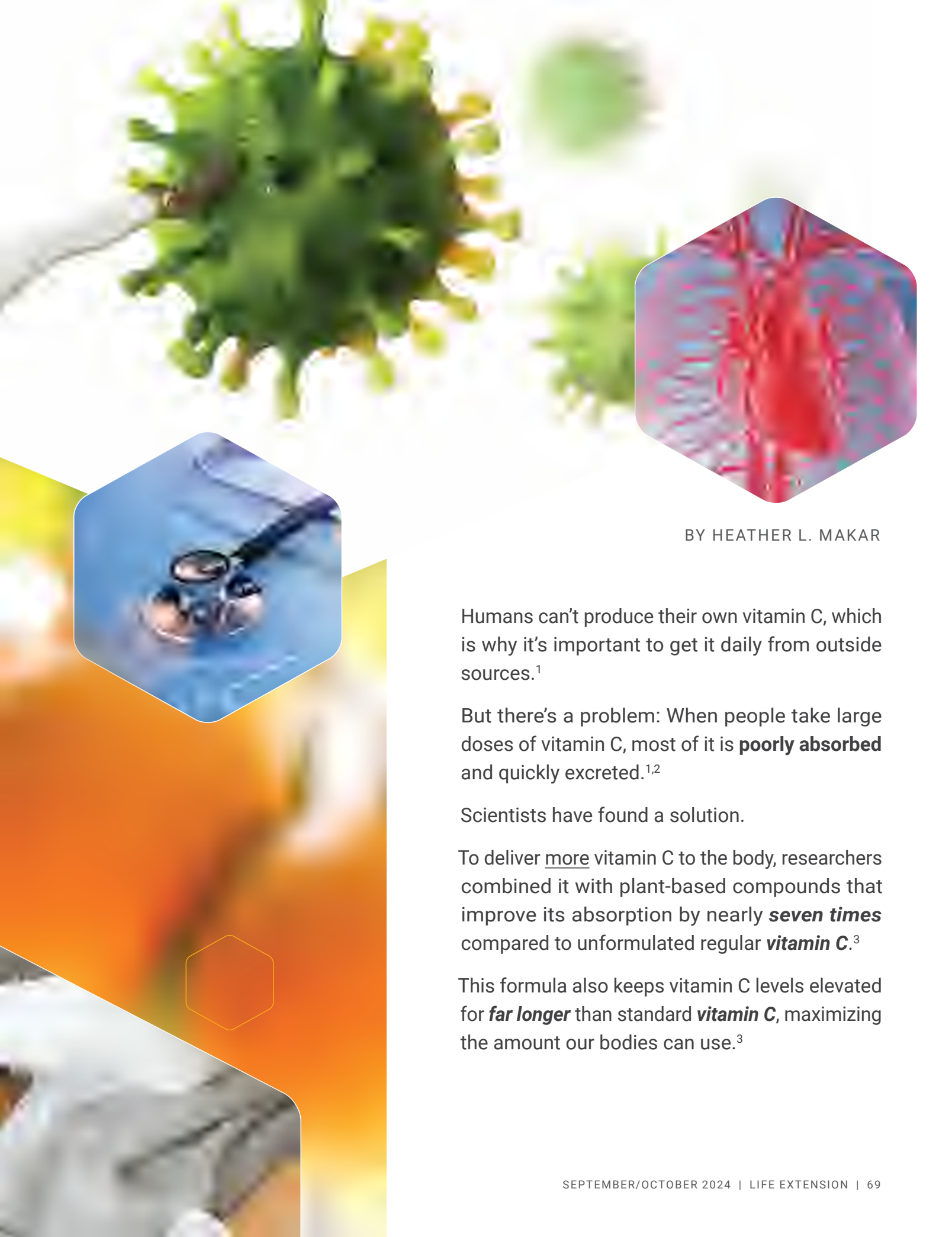
Pycnogenol® and Centellicum® are registered trademarks of Horphag Research and the use of this product is protected by international patents.



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

The background of the page is a blurred image of a woman in a white tank top drinking from a water bottle, and a man in a white shirt sleeping with his hand on his forehead. A large, vibrant orange leaf is positioned in the foreground, partially obscuring the text.

Maximize the Effects of **VITAMIN C**



BY HEATHER L. MAKAR

Humans can't produce their own vitamin C, which is why it's important to get it daily from outside sources.¹

But there's a problem: When people take large doses of vitamin C, most of it is **poorly absorbed** and quickly excreted.^{1,2}

Scientists have found a solution.

To deliver more vitamin C to the body, researchers combined it with plant-based compounds that improve its absorption by nearly **seven times** compared to unformulated regular **vitamin C**.³

This formula also keeps vitamin C levels elevated for **far longer** than standard **vitamin C**, maximizing the amount our bodies can use.³

A Health Enhancer

Vitamin C is a water-soluble nutrient with a variety of health benefits including:

- Supports **immune function** and promotes healthy immune responses,^{1,4,5}
- Improves **cardiovascular health** and function,^{1,4,6}
- Helps protect against viral and other **infections**,⁷⁻¹⁰
- Promotes **wound healing**,^{1,4,11} and
- Reduces **oxidative stress**.^{1,4,12}

Studies suggest that higher intake of vitamin C enhances immune function and may help reduce cardiovascular risk.^{4,6,13}



Many people take high daily doses of standard vitamin C to try to get these benefits. However, there are diminishing returns when oral doses get above a certain level, as efficiency of absorption goes down as oral doses go up.

For instance, at doses over **1 gram** per day, less than **50%** is actually absorbed.¹ Even oral doses above **200-400 mg** lead to decreased absorption.²

This means that higher oral doses of unformulated vitamin C lead to only small increases in vitamin C levels in the body.

Increased Bioavailability

Researchers have developed a delivery system that overcomes these problems, boosting the absorption and optimizing blood levels of vitamin C.³

There are two parts to this formulation:³

- First, vitamin C is encapsulated in **liposomes**, small structures made of **plant-derived phospholipids** (compounds that make up cell membranes). This encapsulation of vitamin C by liposomes improves the absorption of vitamin C into the bloodstream by nearly **seven times** over traditional vitamin C.
- To protect the liposomes, researchers used a second plant-derived compound, a **hydrogel** formed of indigestible fiber called **galactomannans**, derived from fenugreek seeds. This hydrogel surrounds and shields the liposomes, ensuring *sustained absorption* of the vitamin C released in the gut.

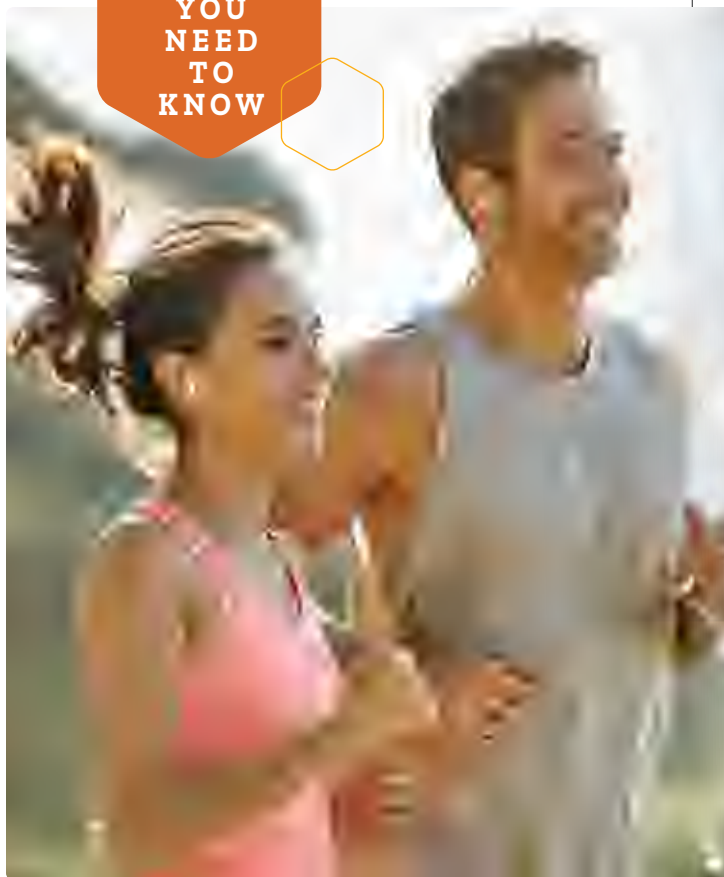
This **liposomal hydrogel vitamin C** has shown remarkable results in elevating vitamin C levels in the body.

With traditional vitamin C, blood levels peak about **one hour** after ingestion, then rapidly drop back to baseline levels.

With liposomal hydrogel vitamin C, blood levels continue to rise up to **four hours** after ingestion and reach a **higher peak**, indicating improved absorption and availability to tissues.

A single daily dose of liposomal hydrogel vitamin C leads to higher **around-the-clock** vitamin C levels in the blood.

WHAT YOU NEED TO KNOW



Strong Immune Support

High circulating vitamin C in the blood can enhance health in several ways. One of the most notable is its support of **immunity**.^{4,14,15}

Vitamin C unlocks functions in the immune system that cannot be activated without sufficient levels of this vitamin, such as controlling inflammation and protecting against cell-damaging oxidants.^{5,10}

Some of the specific ways vitamin C promotes healthy immunity are by:

- Enhancing the ability of **neutrophils**, a first-responder immune defense, to reach the site of infection. In one study of participants with low levels of vitamin C, daily vitamin C intake increased neutrophil response by **20%**.¹⁶
- Promoting **lymphocyte** growth, maturation, survival, and antibody defense.^{17,18} Lymphocytes are part of the innate immune system and include NK (natural killer) cells, B cells, and T cells.

Improved Vitamin C Bioavailability

- Vitamin C plays a critical role in supporting immunity, cardiovascular health, strong connective tissues, and more.
- Traditional vitamin C is poorly absorbed and metabolized quickly. When high doses of this form are taken, much of it is excreted unused.
- Encapsulating vitamin C in a liposomal hydrogel delivery system increases absorption by nearly seven times compared to standard vitamin C, keeping levels high all day long.

- Supporting **collagen synthesis**. Protein collagen is an important structural part of the body's physical barriers against infection from bacteria, viruses, and other microbes. Vitamin C is *required* for collagen to correctly form in the body, even when taking oral collagen.⁵

These and other actions can help fight against **infections**.¹⁰ For example, vitamin C intake has been shown in some studies to reduce the incidence, duration, and severity of **colds**.^{4,13-15}

Why Getting Enough Vitamin C Matters

Elevating and sustaining vitamin C levels in the body can offer additional health benefits, including:

- **Antioxidant Activity:** Vitamin C can help prevent or reduce oxidative damage, a major contributor to aging and age-related diseases.¹²
- **Wound Healing:** Vitamin C's role in the synthesis of collagen, which provides strength to connective tissues throughout the body, helps keep tissues in peak form and accelerates wound healing after injury.¹⁹⁻²¹
- **Cardiovascular Protection:** People with the highest blood levels of vitamin C are less likely to die from cardiovascular causes than those with the lowest levels.²² In patients with heart failure, vitamin C intake improves the flow of blood through arteries.⁴

Liposomal hydrogel vitamin C can maximize the ability of vitamin C to deliver these and other benefits.

Summary

Vitamin C supports a robust immune response and resilient cardiovascular health, and confers other benefits.

Traditional vitamin C is poorly absorbed and much of its common oral dosage is excreted unused.

Encapsulating vitamin C in a protective **liposomal hydrogel** delivery system increases its absorption by nearly **seven times** and keeps levels elevated around the clock. •



References

1. Available at: <https://ods.od.nih.gov/factsheets/VitaminC-HealthProfessional>. Accessed September 18, 2022.
2. Lykkesfeldt J. On the effect of vitamin C intake on human health: How to (mis)interpret the clinical evidence. *Redox Biology*. 2020;07/01/34:101532.
3. Joseph A, Kumar D, Balakrishnan A, et al. Surface-engineered liposomal particles of calcium ascorbate with fenugreek galactomannan enhanced the oral bioavailability of ascorbic acid: a randomized, double-blinded, 3-sequence, crossover study. *RSC Adv*. 2021 Nov 23;11(60):38161-71.
4. Available at: <https://pi.oregonstate.edu/mic/vitamins/vitamin-C>. Accessed, May 23, 2024.
5. Carr AC, Maggini S. Vitamin C and Immune Function. *Nutrients*. 2017 Nov 3;9(11).
6. Morelli MB, Gambardella J, Castellanos V, et al. Vitamin C and Cardiovascular Disease: An Update. *Antioxidants (Basel)*. 2020 Dec 3;9(12).
7. Hemilä H. Vitamin C and Infectious Diseases. Paper presented at: Vitamin C; 1998//, 1998; Milano.
8. Colunga Biancatelli RML, Berrill M, Marik PE. The antiviral properties of vitamin C. *Expert Rev Anti Infect Ther*. 2020 Feb;18(2):99-101.
9. Available at: <https://nutritionsource.hsph.harvard.edu/vitamin-c/>. Accessed May 23, 2024.
10. Ang A, Pullar JM, Currie MJ, Vissers MCM. Vitamin C and immune cell function in inflammation and cancer. *Biochem Soc Trans*. 2018 Oct 19;46(5):1147-59.
11. Pisalsitsakul N, Pinnoi C, Sutanthavibul N, Kamolratanakul P. Taking 200 mg Vitamin C Three Times per Day Improved Extraction Socket Wound Healing Parameters: A Randomized Clinical Trial. *Int J Dent*. 2022;2022:6437200.
12. Monacelli F, Acquarone E, Giannotti C, et al. Vitamin C, Aging and Alzheimer's Disease. *Nutrients*. 2017 Jun 27;9(7).
13. Schlueter AK, Johnston CS. Vitamin C: Overview and Update. *Journal of Evidence-Based Complementary & Alternative Medicine*. 2011;16(1):49-57.
14. Kim TK, Lim HR, Byun JS. Vitamin C supplementation reduces the odds of developing a common cold in Republic of Korea Army recruits: randomised controlled trial. *BMJ Mil Health*. 2022 Apr;168(2):117-23.
15. Bucher A, White N. Vitamin C in the Prevention and Treatment of the Common Cold. *Am J Lifestyle Med*. 2016 May-Jun;10(3):181-3.
16. Moore A, Khanna D. The Role of Vitamin C in Human Immunity and Its Treatment Potential Against COVID-19: A Review Article. *Cureus*. 2023 Jan;15(1):e33740.
17. Huijskens MJ, Walczak M, Koller N, et al. Technical advance: ascorbic acid induces development of double-positive T cells from human hematopoietic stem cells in the absence of stromal cells. *J Leukoc Biol*. 2014 Dec;96(6):1165-75.
18. Manning J, Mitchell B, Appadurai DA, et al. Vitamin C promotes maturation of T-cells. *Antioxid Redox Signal*. 2013 Dec 10;19(17):2054-67.
19. Bikker A, Wielders J, van Loo R, Loubert M. Ascorbic acid deficiency impairs wound healing in surgical patients: Four case reports. *International Journal of Surgery Open*. 2016 03/01;2:15-8.
20. Ravetti S, Clemente C, Brignone S, et al. Ascorbic Acid in Skin Health. *Cosmetics*. 2019;6(4):58.
21. Bechara N, Flood VM, Gunton JE. A Systematic Review on the Role of Vitamin C in Tissue Healing. *Antioxidants (Basel)*. 2022 Aug 19;11(8).
22. Collins BJ, Mukherjee MS, Miller MD, Delaney CL. Effect of Dietary or Supplemental Vitamin C Intake on Vitamin C Levels in Patients with and without Cardiovascular Disease: A Systematic Review. *Nutrients*. 2021 Jul 8;13(7).

D EFEND YOUR HEALTH

Vitamin D3

Systemic support for
immune function, bone health,
and whole-body health.

"Terrific."

Christina

VERIFIED CUSTOMER
REVIEW



Item #01713

125 mcg (5000 IU) • 60 softgels



This product is available at 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.

OPTIMIZE YOUR VENOUS BLOOD FLOW!



For those who find themselves sitting for long periods of time at the office, in daily commutes, or when traveling by plane, the proprietary blend of nutrients in **VenoFlow™** promotes healthy venous blood flow.

Just one capsule of **VenoFlow™** provides **nattokinase** (providing 2,000 fibrinolytic units) and **procyanidins** derived from French maritime pine bark (Pycnogenol®).

Item #02102

30 vegetarian capsules



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

Pycnogenol® is a registered trademark of Horphag Research Ltd.

This product is available at 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.

Menopause *Relief*

**For Hot Flashes and 10 Other
Menopause Discomforts**

Menopause Relief contains a proprietary extract of Siberian rhubarb that in clinical studies provides hormone-free significant relief for all **11 menopause discomforts** on the Menopause Rating Scale, including:

- Hot flashes
- Night sweats
- Irritability
- Heart discomfort
- Mood swings
- Sleep disturbances
- Exhaustion
- Sexual function
- Joint discomfort
- Bladder problems
- Vaginal dryness

CAUTION: Consult with your healthcare practitioner if you have, or have a history of, estrogen-dependent tumors.

**This product is available at fine
health food stores everywhere.**

**ESTROGEN
FREE**


**GLUTEN
FREE**


**1
DAILY**


**NON
GMO
LE CERTIFIED**


**VEGETARIAN
LE CERTIFIED**



Item #02204

**30 enteric-coated
vegetarian tablets**

YOUR **BONE** **HEALTH...NOW** **BOOSTED**



Bone Restore with
Vitamin K2 combines
skeletal-strengthening
nutrients in one formula.

Item #01727

120 capsules



This product is available at fine health food stores everywhere.

Caution: If you are taking a vitamin K antagonist (e.g. warfarin), consult your healthcare practitioner before taking this product.
Fruitex B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. patent #5,962,049.

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.

EYE

PRESSURE SUPPORT

Eye Pressure Support with **Mirtogenol®** is designed to support blood flow in tiny vessels of the eyes, helping to promote healthy fluid pressure.



"It's AWESOME."

Chrissy

VERIFIED CUSTOMER REVIEW

Item #01514

30 vegetarian capsules



This product is available at
fine health food stores everywhere.



Mirtogenol® is a registered trademark of Horphag Research, Ltd.
Mirtoselect® is a registered trademark of Indena, S.p.A., Milan, Italy.
Pycnogenol® is a registered trademark of Horphag Research, Ltd.
Pycnogenol® is protected by U.S. patents #5,720,956 and #6,372,266
and other international patents.

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.

Is **RESVERATROL** Still a Healthy Aging Supplement?





BY CHANCELLOR FALOON

Resveratrol has been a hot topic since the early 2000s, when it was shown to **extend lifespan** in multiple animal models.

Resveratrol has never been directly evaluated on **human longevity** due to our long life expectancy.

However, resveratrol has shown an ability to improve multiple **markers of aging** in randomized, placebo-controlled trials.

These **clinical trials** have shown that resveratrol provides benefits for **aged groups** and people with **metabolic diseases** such as obesity and type II diabetes. This indicates that it may support healthy aging for other groups as well.

The Potential of Resveratrol

Resveratrol is a polyphenol found in red wine and grapes, berries, and some other plants.

It has long been thought to provide a possible explanation for the “**French paradox**,” the observation that French people, who consume moderate amounts of wine, have low incidence of coronary heart disease despite diets rich in saturated fats.¹

Many experiments involving **short-lived animals** such as flies, worms, bees, fish, and mice have found that resveratrol intake increased **lifespan**.^{2,3} Giving honeybees resveratrol, for example, increased their maximum lifespan by **38%**.⁴

It's very challenging to measure lifespan in human trials, due to our long lives. It is much more practical to measure **biomarkers** that reflect our health status and disease risk.

In the past two decades, scientists have tested resveratrol on multiple **human** biomarkers. In clinical trials, taking resveratrol has been shown to improve:

- **Glucose levels** and **insulin resistance**,
- **Heart health**, and
- **Bone health**.

Heart and Diabetes Benefits

Type II diabetes is characterized by insulin resistance and high blood sugar. It inflicts persistent **oxidative stress** and low-grade **inflammation**, drivers of nearly *all* age-related chronic disease.

In a clinical trial of 110 adults who suffered from diabetes for at least five years, participants took either **200 mg of resveratrol** or a **placebo** daily for 24 weeks. Compared to the placebo, those who received resveratrol had reductions in **fasting glucose**, **hemoglobin A1c** (a marker of glucose levels over time), and markers of **oxidative stress** and **inflammation**.

The researchers report a mean **8.6%** decrease in **fasting insulin** and a **14%** decrease in a marker of **insulin resistance**.⁵ Note that fasting **insulin** is often elevated in early-stage type II diabetics. The pancreas secretes high insulin to initially help compensate for the insulin resistance that elevates blood glucose.

In a meta-analysis of **17** randomized, controlled trials of nearly **900 patients** with **diabetes**, those who took at least **500 mg** of resveratrol daily lowered **fasting glucose**, **total cholesterol**, **hemoglobin A1c**, and systolic (top number) **blood pressure** compared to a **placebo**.⁶

Resveratrol may also improve **cardiac remodeling**, harmful changes in the heart's size, shape, and function that occur in response to cardiac disease or damage.



WHAT
YOU
NEED
TO
KNOW

The Anti-Aging Effects of Resveratrol

- **Resveratrol**, a compound found in red wine and grapes, has been shown to extend lifespan in animal models.
- In human trials, resveratrol reduced blood glucose levels, insulin resistance, total cholesterol, and markers of oxidative stress and inflammation in adults with **type II diabetes**.
- Resveratrol also improved **cardiac remodeling**, harmful changes to the heart resulting from cardiac damage or disease.
- Multiple human trials have shown benefits for **bone health**, including increases in bone density and a marker of bone formation.
- These benefits indicate wide-reaching effects that may promote **healthy aging** in adults.

In a clinical trial published in **2023**, 80 people with **hypertension** who took **400 mg** of resveratrol daily for six months, along with conventional therapy, had significantly greater improvements in measurements of **cardiac remodeling** and markers of oxidative stress, healthy aging, and mitochondrial maintenance compared to those who received conventional therapy alone.⁷

Strengthening Bones

The body is continuously recycling old bone for new bone in a crucial process known as bone remodeling.

As we age past adulthood, bone breakdown tends to exceed the rate of bone formation. Resveratrol may reverse this, resulting in a net increase in bone formation.⁸

Different groups of people at high risk of **osteoporosis** have obtained bone benefits from resveratrol supplementation.

In one trial, men with obesity who took **1,000 mg** of resveratrol daily had a **2.6% increase** in **bone mineral density** of the spine after 16 weeks and a **16% increase** in **bone alkaline phosphatase**, a marker for bone formation, after four weeks, compared to a placebo.⁹

Another trial randomized 192 people with type II diabetes to take either **resveratrol (40 mg or 500 mg)** or a placebo daily. After six months, the placebo group had significantly *decreased* bone mineral content and density. Both resveratrol groups preserved **bone mineral density**, and the group that received the **500 mg** dose also preserved **bone mineral** content. Interestingly, in subgroup analyses of **alcohol drinkers** and those with deficiencies in calcium and vitamin D, resveratrol not only maintained bone mineral density, but **increased** it.¹⁰

In another study, **postmenopausal women** who took **75 mg** of resveratrol twice daily for 12 months had an increase in **bone mineral density** of the femoral neck and lumbar spine and a reduction in the 10-year probability of a major **osteoporotic fracture** or hip fracture. In addition, a marker of bone turnover called **C-terminal telopeptide** was significantly lowered, indicating an improvement in the bone turnover process. A subgroup of those taking resveratrol who also took **calcium** and **vitamin D** had the greatest improvement in bone density.

These effects on heart and bone health, glucose metabolism, and longevity biomarkers indicate that resveratrol may help promote healthy aging in adults.

Summary

Resveratrol has been credited as a potential **healthy aging** nutrient since the early 2000s, when it was shown to increase lifespan in multiple animal models.

Since then, **human** trials have found that **resveratrol** may have **biological benefits** in aged groups and those with metabolic disease such as obesity and type II diabetes.

Among other results, it improved the health of the **heart** and **bones**, reduced elevated blood **sugar**, improved **insulin sensitivity**, and reduced **oxidative stress** and **chronic inflammation**.

These benefits may extend to other groups to promote overall **healthy aging**. •

References

1. Bonnefont-Rousselot D. Resveratrol and Cardiovascular Diseases. *Nutrients*. 2016;8(5).
2. Hector KL, Lagisz M, Nakagawa S. The effect of resveratrol on longevity across species: a meta-analysis. *Biol Lett*. 2012;8(5):790-3.
3. Zhou DD, Luo M, Huang SY, et al. Effects and Mechanisms of Resveratrol on Aging and Age-Related Diseases. *Oxid Med Cell Longev*. 2021;2021:9932218.
4. Rascón B, Hubbard BP, Sinclair DA, Amdam GV. The lifespan extension effects of resveratrol are conserved in the honey bee and may be driven by a mechanism related to caloric restriction. *Aging (Albany NY)*. 2012;4(7):499-508.
5. Mahjabeen W, Khan DA, Mirza SA. Role of resveratrol supplementation in regulation of glucose hemostasis, inflammation and oxidative stress in patients with diabetes mellitus type 2: A randomized, placebo-controlled trial. *Complementary Therapies in Medicine*. 2022;66:102819.
6. Abdelhaleem IA, Brakat AM, Adayel HM, et al. The effects of resveratrol on glycemic control and cardiometabolic parameters in patients with T2DM: A systematic review and meta-analysis. *Med Clin (Barc)*. 2022;158(12):576-85.
7. Zheng X, Hai J, Yang Y, et al. Effects of resveratrol supplementation on cardiac remodeling in hypertensive patients: a randomized controlled clinical trial. *Hypertens Res*. 2023;46(6):1493-503.
8. Ahmad Hairi H, Jayusman PA, Shuid AN. Revisiting Resveratrol as an Osteoprotective Agent: Molecular Evidence from In Vivo and In Vitro Studies. *Biomedicines*. 2023;11(5).
9. Ornstrup MJ, Harsløf T, Kjær TN, et al. Resveratrol increases bone mineral density and bone alkaline phosphatase in obese men: a randomized placebo-controlled trial. *J Clin Endocrinol Metab*. 2014;99(12):4720-9.
10. Bo S, Gambino R, Ponzio V, et al. Effects of resveratrol on bone health in type 2 diabetic patients. A double-blind randomized-controlled trial. *Nutr Diabetes*. 2018;8(1):51.
11. Wong RH, Thauang Zaw JJ, Xian CJ, Howe PR. Regular Supplementation With Resveratrol Improves Bone Mineral Density in Postmenopausal Women: A Randomized, Placebo-Controlled Trial. *J Bone Miner Res*. 2020;35(11):2121-31.



Liposomal-Hydrogel™

SUSTAINED SUPPORT

24
HOURS
A DAY

VITAMIN

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

Mary

VERIFIED CUSTOMER REVIEW



Item #02501

60 vegetarian tablets

This product is available at fine
health food stores everywhere.

Buffered **ascorbate** encased in two plant extracts (liposomes plus hydrogel fenu-greek) increases blood (plasma) exposure nearly **seven times more** compared to an equivalent dose of regular vitamin C.

It also maintains *higher* vitamin levels throughout the day.¹

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

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

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.

ADVANCED MILK THISTLE

ULTIMATE SUPPORT
FOR YOUR LIVER



Item #01922

60 softgels

Contains soybeans.



Advanced Milk Thistle contains standardized, top-grade potencies of ***silymarin***, ***silybin***, ***isosilybin A***, and ***isosilybin B***, providing a full spectrum of liver-supportive compounds.

SILIPHOS® phytosome in **Advanced Milk Thistle** resulted in almost **5-fold** greater concentrations of silybin in the blood stream compared to silymarin alone, and its bioavailability to the liver, its target organ, is up to **10-fold** greater than silymarin alone.

This product is available at fine health food stores everywhere.

SILIPHOS® is a registered trademark of Indena S.p.A., Italy.

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.

Love the Sun?

Shield Your Skin
from Within

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

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

Elaine

VERIFIED CUSTOMER REVIEW



Item #01938
120 vegetarian capsules

This product is available at fine health food stores everywhere.



CAUTION: This product is not a substitute for topical sunscreens. Gastric disturbances may occur.
Consult with your healthcare provider before taking this product if you have gout or liver disease.

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.

Fisetin

The Healthy Aging Flavonoid

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

Fisetin has low bioavailability due to its breakdown in the small intestines.

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

A human trial showed **bioavailability** of this fisetin compound increased up to **25 times** compared to fisetin by itself.²

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

Raymond

VERIFIED CUSTOMER REVIEW

References

1. Available at: <https://www.mayo.edu/research/clinical-trials/cls-20438802>. Accessed June 22, 2020.
2. Available at: <https://pubmed.ncbi.nlm.nih.gov/36304817/>

This product is available at fine health food stores everywhere.

Item #02414

30 vegetarian 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.

Choose the Right Fish Oil for Your Needs

Highly Purified Fish Oil

In addition to ultra-pure **fish oil**, **Super Omega-3** provides **olive oil polyphenols** and **sesame lignans** to extend the stability of **DHA** in the blood.



SUPER OMEGA-3
EPA/DHA Fish Oil,
Sesame Lignans
& Olive Extract

(Small, Easy-to-Swallow Softgels)

Item #01986*

240 easy-to-swallow softgels



SUPER OMEGA-3 PLUS
EPA/DHA Fish Oil,
Sesame Lignans,
Olive Extract,
Krill & Astaxanthin

Item #01988

120 softgels



SUPER OMEGA-3
EPA/DHA Fish Oil,
Sesame Lignans &
Olive Extract

*(Enteric Coated Softgels
for Sensitive Stomachs)*

Item #01984*

120 enteric coated softgels



SUPER OMEGA-3
EPA/DHA Fish Oil,
Sesame Lignans
& Olive Extract

(Standard Size Omega-3 Softgels)

Item #01982*

120 softgels

These products are available at fine health food stores everywhere.



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

*IFOS™ certification mark is a registered trademark of Nutrasource Diagnostics, Inc.

This product has been tested to the quality and purity standards of the IFOS™ program conducted at Nutrasource Diagnostics, Inc.

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.



French Maritime Pines





Bilberry

Defend Your Eyes Against GLAUCOMA

BY PATRICK SUAREZ

Glaucoma is the leading cause of **blindness** in adults in the U.S.^{1,2}

Increased pressure within the eye, called **intraocular pressure**, is a risk factor and diagnostic measure for the **optic nerve damage** that is the underlying vision-robbing pathology of glaucoma.¹

Scientists have identified two plant-derived extracts, **bilberry**^{3,4} and **French maritime pine bark**,^{5,6} with impressive health benefits. Taken alone or with glaucoma medications, this extract blend helps maintain healthy **eye pressure**.^{3,7-9}

In one **clinical study**, this combination was shown to *reduce* **intraocular pressure** as much as **24%** —with reductions of **40%** when combined with standard therapy.⁸



A Leading Cause of Vision Loss

Glaucoma is an eye disease that results in gradual vision loss. It affects approximately **80 million** people worldwide.¹

People who are in the early stages of **glaucoma** generally have no symptoms. Glaucoma is caused by damage to the **optic nerve**.¹

It most commonly results from a problem with the drainage system of the eyes, resulting in fluid retention in the eyeball and excess pressure. Over time, this pressure damages the retina and the **optic nerve** (that carries visual information from the eye to the brain).

The result is reduced visual acuity, sometimes leading to permanent blindness.¹⁰

Preventing Glaucoma

There is no cure for **glaucoma**.² But *reducing* elevated intraocular pressure may help prevent progression of glaucoma and vision loss.

Open angle glaucoma is the most common type, and accounts for **90%** of glaucoma cases. This happens as the eye's drainage channels become blocked and intraocular pressure rises.¹¹

Additionally, endothelial dysfunction and vascular structural changes can alter blood flow within the tissues and elevate intraocular pressure, leading to open angle glaucoma.^{10,12,13}

Once the **optic nerve** is damaged, it can't be repaired—even if the raised intraocular pressure is corrected.¹⁴

This makes it essential to find a way to reverse high intraocular pressure *before* it causes the irreversible damage of glaucoma.

Together, two plant-based extracts have shown an ability to reduce this intraocular pressure: **bilberry** and **French maritime pine bark**.

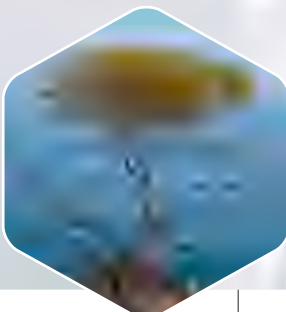
Eye Health Extracts

Bilberries are relatives of blueberries that grow mostly in Europe. They contain high concentrations of health-promoting compounds, particularly **anthocyanins**.¹⁵

Bilberry extracts offer protection from many common eye conditions. Studies indicate that bilberry extracts (alone or in combination with other nutrients) help protect against disorders like **cataract**¹⁶ and **glaucoma**,¹⁷ improve parameters of **dry eye syndrome**,⁴ and help improve symptoms related to **eye fatigue**.¹⁸

Scientists have developed a **standardized extract** of bilberry that contains at least **36% anthocyanins**.⁸

Improved blood flow to the eye may be supportive of maintaining healthy blood flow and pressure. A study showed **bilberry extract** could counteract hyper-permeability of capillaries in the eye. This effect increases ocular blood flow, which may reduce **intraocular pressure**.³



Another extract, derived from the bark of the **French maritime pine tree**, contains a potent mixture of beneficial compounds, including **procyanidins**.^{5,19} This pine bark extract has been found to benefit patients suffering from **diabetic retinopathy** and **retinal micro-hemorrhages**.^{6,20}

French maritime pine bark extract has been shown to improve the function of the **endothelium** (the delicate layer of cells lining the blood vessels).²¹⁻²³ A clinical study found a high prevalence of microvascular endothelial dysfunction in open angle glaucoma patients, compared to controls.¹³

Reduced Eye Pressure

A **combination** of bilberry and pine bark extract has been studied for its ability to relieve the eye pressure that leads to **glaucoma**.

In an animal model, this combination reduced **intra-ocular pressure** and protected critical **nerve cells** of the eye against damage and death.²⁴

Clinical Trial

But the most impressive results have been seen in studies of humans at risk for **glaucoma**.

In an initial controlled trial, adults with elevated eye pressure who had not yet shown evidence of glaucoma were either left untreated or given a combination of **80 mg of French maritime pine bark extract** and **160 mg of standardized bilberry extract** daily for six months.³

After three months, untreated subjects had almost no change, while those receiving the extracts had a nearly **13% decrease** in intraocular pressure.

Those taking the combination also had a significant improvement in **ocular blood flow**.³

A follow-up study compared the two extracts to a common eye pressure-lowering medication, **latanoprost** eye drops. Adults with elevated intraocular pressure received either the extracts, the drops, or both.⁸

In this case, all three groups demonstrated a reduction in intraocular pressure.

While the drops lowered eye pressure by **28%** after four weeks of treatment, the **bilberry-pine bark** blend alone worked more gradually, reducing **intraocular pressure** after six weeks. This improvement progressed so that by sixteen weeks, the extract group had a **24%** reduction in pressure. The extract also had a better safety profile.

The medication and extracts *together* reduced eye pressure by almost **40%** by the end of the 24-week study period, which was greater than the medication alone. These changes were accompanied by improvements in ocular blood flow.



WHAT
YOU
NEED
TO
KNOW

An Extract Blend for Eye Health

- **Glaucoma**, usually driven by elevated eye pressure, is a common cause of blindness.
- Lowering **eye pressure** can help prevent the progression of glaucoma and vision loss.
- Scientists have formulated a blend of **standardized bilberry extract** and **French maritime pine bark extract** that supports eye health.
- In a human study, the combination reduced elevated eye pressure by up to **24%** and improved ocular blood flow.

Summary

Glaucoma, usually driven by elevated eye pressure, can lead to vision loss and blindness.

A blend of standardized **bilberry** extract and **French maritime pine bark** extract can help reduce eye pressure levels and improve ocular blood flow in those at risk for glaucoma.

Taken alone or with medications, the extracts may help protect against glaucoma development and reduce vision loss in those already suffering from glaucoma. •

References

1. Available at: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/glaucoma>. Accessed May 27, 2024.
2. Available at: <https://glaucoma.org/articles/glaucoma-facts-and-stats>. Accessed 05/24/2024.
3. Steigerwalt RD, Gianni B, Paolo M, et al. Effects of Mirtogenol on ocular blood flow and intraocular hypertension in asymptomatic subjects. *Mol Vis*. 2008 Jul 10;14:1288-92.
4. Riva A, Togni S, Franceschi F, et al. The effect of a natural, standardized bilberry extract (Mirtoselect(R)) in dry eye: a randomized, double blinded, placebo-controlled trial. *Eur Rev Med Pharmacol Sci*. 2017 May;21(10):2518-25.
5. Zhang Z, Tong X, Wei YL, et al. Effect of Pycnogenol Supplementation on Blood Pressure: A Systematic Review and Meta-analysis. *Iran J Public Health*. 2018 Jun;47(6):779-87.
6. Steigerwalt R, Belcaro G, Cesarone MR, et al. Pycnogenol improves microcirculation, retinal edema, and visual acuity in early diabetic retinopathy. *J Ocul Pharmacol Ther*. 2009 Dec;25(6):537-40.
7. Gizzi C, Torino-Rodriguez P, Belcaro G, et al. Mirtogenol(R) supplementation in association with dorzolamide-timolol or latanoprost improves the retinal microcirculation in asymptomatic patients with increased ocular pressure. *Eur Rev Med Pharmacol Sci*. 2017 Oct;21(20):4720-5.
8. Steigerwalt RD, Jr., Belcaro G, Morazzoni P, et al. Mirtogenol potentiates latanoprost in lowering intraocular pressure and improves ocular blood flow in asymptomatic subjects. *Clin Ophthalmol*. 2010 May 14;4:471-6.
9. Widyakusuma A, Artini W, Oktariana VD, Prihartono J. The effect of mirtogenol towards the changes in retinal nerve fiber layer thickness and visual field in primary open angle glaucoma. *Ophthalmologica Indonesiana*. 2017;43(1):28-33.
10. Wagner IV, Stewart MW, Dorairaj SK. Updates on the Diagnosis and Management of Glaucoma. *Mayo Clin Proc Innov Qual Outcomes*. 2022 Dec;6(6):618-35.
11. Available at: <https://glaucoma.org/types>. Mau 29, 2024.
12. Moore D, Harris A, Wudunn D, et al. Dysfunctional regulation of ocular blood flow: A risk factor for glaucoma? *Clin Ophthalmol*. 2008 Dec;2(4):849-61.
13. Mudassar Imran Bukhari S, Yew KK, Thambiraja R, et al. Microvascular endothelial function and primary open angle glaucoma. *Ther Adv Ophthalmol*. 2019 Jan-Dec;11:2515841419868100.
14. Miller NR, Tsai RK. Optic Neuropathies: Current and Future Strategies for Optic Nerve Protection and Repair. *Int J Mol Sci*. 2023 Apr 10;24(8).
15. Kopystecka A, Koziol I, Radoska D, et al. Vaccinium uliginosum and Vaccinium myrtillus—Two Species—One Used as a Functional Food. *Nutrients*. 2023 Sep 23;15(19).
16. Herbalist RU. Bilberry Fruit Vaccinium myrtillus L. Standards of Analysis, Quality Control, and Therapeutics. 2004.
17. Shim SH, Kim JM, Choi CY, et al. Ginkgo biloba extract and bilberry anthocyanins improve visual function in patients with normal tension glaucoma. *J Med Food*. 2012 Sep;15(9):818-23.



Eye Support from Carotenoids

The bilberry-French maritime pine bark combination has shown benefits for elevated eye pressure and glaucoma.

Oral intake of **carotenoids**, including **lutein** and **zeaxanthin**, have shown promise to reduce risk for *other* common threats to vision, including cataracts, age-related macular degeneration, and diabetic retinopathy.²⁵

Taking carotenoids with bilberry and French maritime pine bark extracts may offer comprehensive protection against common eye disorders.

18. Ozawa Y, Kawashima M, Inoue S, et al. Bilberry extract supplementation for preventing eye fatigue in video display terminal workers. *J Nutr Health Aging*. 2015 May;19(5):548-54.
19. Rohdewald P. A review of the French maritime pine bark extract (Pycnogenol), a herbal medication with a diverse clinical pharmacology. *Int J Clin Pharmacol Ther*. 2002 Apr;40(4):158-68.
20. Schonlau F, Rohdewald P. Pycnogenol for diabetic retinopathy. A review. *Int Ophthalmol*. 2001;24(3):161-71.
21. Weichmann F, Rohdewald P. Pycnogenol((R)) French maritime pine bark extract in randomized, double-blind, placebo-controlled human clinical studies. *Front Nutr*. 2024;11:1389374.
22. Nishioka K, Hidaka T, Nakamura S, et al. Pycnogenol, French maritime pine bark extract, augments endothelium-dependent vasodilation in humans. *Hypertens Res*. 2007 Sep;30(9):775-80.
23. Enseleit F, Sudano I, Periat D, et al. Effects of Pycnogenol on endothelial function in patients with stable coronary artery disease: a double-blind, randomized, placebo-controlled, cross-over study. *Eur Heart J*. 2012 Jul;33(13):1589-97.
24. Andika YW, Jannah SR, Winarto, et al. Effects of oral Mirtogenol on retinal ganglion cell apoptosis index and intraocular pressure in the Wistar glaucoma model. *J Adv Pharm Technol Res*. 2023 Jul-Sep;14(3):258-62.
25. Johra FT, Bepari AK, Bristy AT, Reza HM. A Mechanistic Review of beta-Carotene, Lutein, and Zeaxanthin in Eye Health and Disease. *Antioxidants (Basel)*. 2020 Oct 26;9(11).



Anti-Aging...? Sweet!

Discover the ultra-bioavailable healthy aging nutrient that helps you age like fine wine.

Resveratrol is good for your heart, mind, and cellular health—but this nutrient is hard to absorb. For a longer, healthier life, maximize your healthy aging routine with up to 10x better bioavailability* of Optimized Resveratrol Elite™!

Item #02230
60 vegetarian capsules

This product is available at fine health food stores everywhere.

*Than unformulated resveratrol

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.

"Great product."

Jack

VERIFIED CUSTOMER REVIEW

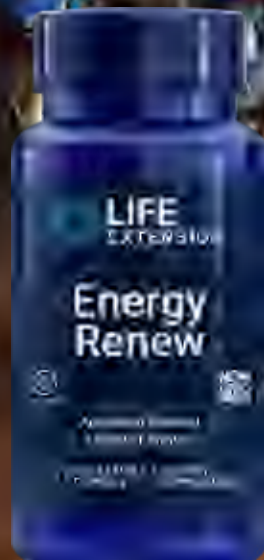
Keep Your ENERGY UP

Occasional feelings of fatigue happen to everyone.

Scientists have found that an extract of **French oak wood** contains compounds that fight fatigue *at the cellular level*.*

Energy Renew contains a proprietary extract of French oak wood that can help promote healthy energy levels.

This product is available at fine health food stores everywhere.



Item #01900

30 vegetarian capsules

GLUTEN
FREE

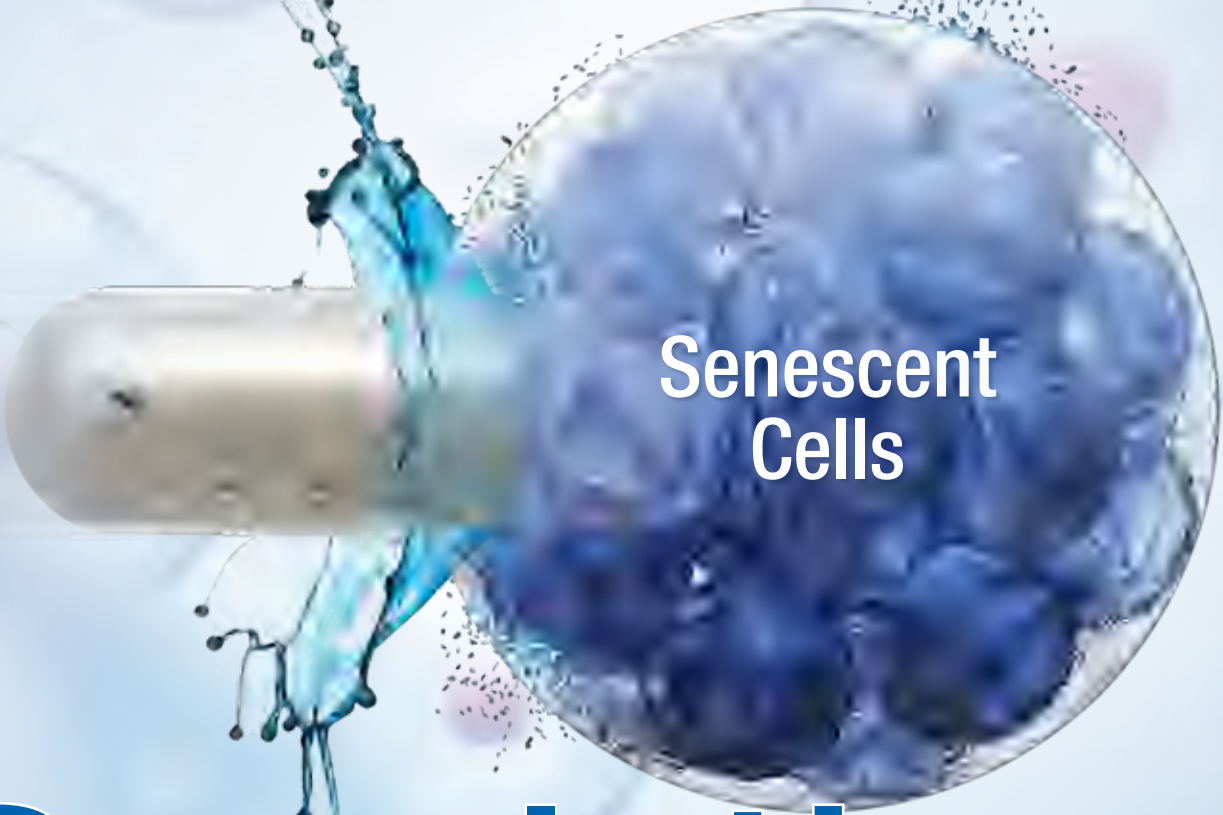
NON
GMO
LE CERTIFIED

VEGETARIAN
LE CERTIFIED

Robuvit® is a registered trademark of Horphag Research and the use of this product is under International patent applications.

* J Agric Food Chem. 2014 Jan 15;62(2):443-53.

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.



Senescent
Cells

Senolytic

ACTIVATOR® with **BIO-FISETIN®**



Item #02301
36 vegetarian capsules

"Taking this supplement, I feel I will be healthy for the long haul."

Larry

VERIFIED
CUSTOMER
REVIEW

With age, our body accumulates **senescent cells** that affect the day-to-day function of the healthy cells around them.

Senolytics are compounds that selectively remove senescent cells.

Senolytic Activator® contains nutrients designed to target senescent cells for normal elimination.

This formula contains a patented **fisetin** that is more **bioavailable** than regular fisetin.

COMPREHENSIVE SENOLYTIC SUPPORT

The **Senolytic Activator®** formula provides the following nutrients:

- **THEAFLAVINS** (polyphenols from black tea)
- **BIO-QUERCETIN®** (ultra-absorbable form)
- **APIGENIN** (a natural flavonoid)
- **BIO-FISETIN®** (up to **25 times** greater bioavailability)

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

This product is available at fine health food stores everywhere.

SUPPORT **HEALTHY LIPID** LEVELS



FRUIT

Amla

EXTRACT

ADVANCED LIPID CONTROL
CAN HELP SUPPORT
HEART HEALTH.



Item #01828

60 vegetarian capsules



ADVANCED LIPID CONTROL

contains a standardized
500 mg extract of **amla** in
each capsule.

Researchers have discovered
that **amla** improves various
markers of **cardiovascular**
health.

In a **placebo-controlled** clinical
trial* **amla extract** supported
healthy levels of:

- ▶ **LDL**
- ▶ **HDL**
- ▶ **Triglycerides**
- ▶ **CRP (C-reactive protein)**

This product is available at fine health food stores everywhere.

*For those already within normal range. *BMC Complement Altern Med. 2019;19:97.

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.

NEW PRODUCTS

BUILD BETTER Beauty

For beautiful skin that lasts, you need the right building blocks.

Looking for a vegan alternative to popular collagen supplements? Our NEW Vegan Pro Collagen formula supports youthful, healthy-looking skin with a clinically studied blend of amino acids and botanical ingredients.

This formula combines the exact amino acid profile as the type I collagen in your skin with vitamin C, gotu kola and ginseng root extracts.

In a clinical trial, this formula helped reduce the appearance of wrinkles up to 14%, enhanced skin texture up to 13% and increased skin collagen density by 8% in just eight weeks.

Nourish youthful, healthy-looking skin with **Vegan Pro Collagen!**



Item #02528
Net Wt. 189 g (0.417 lb)



*Not a low-calorie food.

Brains & Brawn

Tackling the most mentally and physically demanding tasks requires the kind of energy that comes from within. Creatine & Acetyl-L-Carnitine Energy Plus promotes cellular energy for mind and body.

Creatine has a well-deserved reputation for supporting exercise performance and body composition, while acetyl-L-carnitine has been clinically studied to encourage both mental and physical energy as well as cognitive function.

These ingredients help brain and body cells produce their primary source of energy, ATP (adenosine triphosphate).

Try **Creatine & Acetyl-L-Carnitine Energy Plus**—and power through the day!



Item #02532
Net Wt. 233 g (0.51 lb)



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.



LIFE EXTENSION®

The Science of a Healthier Life®

PO BOX 407198
FORT LAUDERDALE, FLORIDA 33340-7198



IN THIS EDITION OF LIFE EXTENSION MAGAZINE®



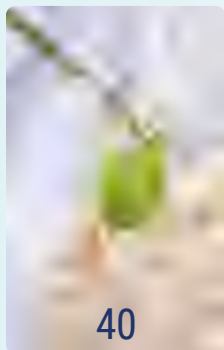
16 HOW MAGNESIUM HELPS PREVENT METABOLIC SYNDROME

A review of **clinical trials** confirmed oral **magnesium** intake *improves* metabolic syndrome markers, including elevated **blood sugar** and **insulin resistance**.



30 PROTECT AGAINST DAMAGE FROM CHRONIC STRESS

High **cortisol levels** increase mortality risk from **cardiovascular** disease. Several **plant extracts** reduce elevated cortisol in clinical studies



40 EFFECT OF PROCOLLAGEN ON SKIN AGING

In a **clinical trial**, an oral **vegan procollagen** formula decreased wrinkles by 13%-14% in eight weeks.



50 NITRIC OXIDE AND ARTERIAL HEALTH

In two **clinical trials**, a novel **arginine** compound increased **flow-mediated dilation** and a marker of **nitric oxide** synthesis.



60 FIGHT FATIGUE WITH VITAMIN D

A **human** study found 72% of adults with low vitamin D blood levels *and* **fatigue** reported **improvement** with supplemental vitamin D.



88 DEFEND AGAINST GLAUCOMA

Glaucoma is the leading cause of blindness in U.S. adults. Two **plant-based** extracts *reduce intraocular pressure* by 24% or by 40% when taken with standard therapy.