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February 2023

FEATURE ARTICLES

- 7 WORLDWIDE OBESITY CRISIS
- 22 POMEGRANATE PROMOTES HEART HEALTH
- 34 ENHANCE IMPACT OF RESVERATROL
- 42 NOVEL THERMOGENIC WEIGHT LOSS
- 50 QUERCETIN REDUCES VASCULAR RISKS
- 60 BOOST IMMUNITY TO COMBAT INFECTION
- 69 PROTECT AGAINST DOPAMINE DEFICIT



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REPORTS



PAGE 42

Burn More Body Fat

A compound in **red chili peppers** called **capsaicin** increases calorie burning.

A clinical trial showed reduced *body mass* after just 28 days.

22 POMEGRANATE PROMOTES HEART HEALTH

Nutrient-dense **pomegranate** protects the **heart** and **endothelium**. In a clinical study pomegranate substantially *reduced* **arterial plaque**.



34 UNLEASH FULL POTENTIAL OF RESVERATROL

Resveratrol, when combined with **hydrogel fiber**, becomes up to **10 times more bioavailable**, delivering longevity effects throughout the body.



50 QUERCETIN IMPROVES METABOLIC HEALTH

Quercetin, found in certain plants, can *improve* metabolic age while *reducing* cardiovascular risk factors.



60 FEEL BETTER FASTER

Human studies show that **elderberry**, **zinc**, and **vitamin C**, taken in the *early* stages of a cold or flu, can *activate* the body's **immune** functions and *shorten* the duration of the illness.



69 PROTECT AGAINST DOPAMINE DEFICIT

Inhibiting MAO-B impedes **dopamine** breakdown, protecting brain structures and improving mood.



DEPARTMENTS

ON THE COVER: PAGE 7

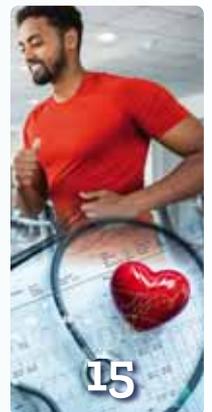
WORLDWIDE OBESITY CRISIS

Obesity prevalence has **tripled** across the globe since **1975**.

Capsaicin, found in **red chili peppers**, increases calorie burning. A new method protects against stomach irritation and improves capsaicin **bioavailability** to promote **weight loss**.

15 IN THE NEWS

Low testosterone associated with cardiovascular disease risk; deficient vitamin D doubles mortality risk in older adults; omega-3 fatty acids improve immunotherapy; higher intake of vitamins A, C, and E cut glaucoma risk.





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Contributors

Alan Bell • Michael Downey • Laurie Mathena • William Patel
 Richard Stevens

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

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MEDICAL ADVISORY BOARD

Gustavo Tovar Baez, MD, operates the Life Extension Clinic in Caracas, Venezuela. He is the first physician in Caracas to specialize in anti-aging medicine.

Ricardo Bernales, MD, is a board-certified pediatrician and general practitioner in Chicago, IL, focusing on allergies, bronchial asthma, and immunodeficiency.

Mark S. Bezzek, MD, FACP, FAARM, FAAEM, is board-certified in internal medicine, emergency medicine, and anti-aging/regenerative medicine. He is the director of Med-Link Consulting, which specializes in bioidentical hormone replacement therapy, natural alternatives, anti-aging, and degenerative diseases. He holds U.S. patents for a multivitamin/mineral supplement, an Alzheimer's/dementia compilation, and a diabetic regimen.

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.

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*. He is also medical director of the online heart disease prevention and reversal program, *Track Your Plaque* (www.trackyourplaque.com).

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.

Norman R. Gay, MD, is proprietor of the Bahamas Anti-Aging Medical Institute in Nassau, Bahamas. A former member of the Bahamian Parliament, he served as Minister of Health and Minister of Youth and Sports.

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.

Garry F. Gordon, MD, DO, is a Payson, Arizona-based researcher of alternative approaches to medical problems that are unresponsive to traditional therapies. He is president of the International College of Advanced Longevity Medicine.

Richard Heifetz, MD, is a board-certified anesthesiologist in Santa Rosa, CA, specializing in the delivery of anesthesia for office-based, plastic/cosmetic surgery, chelation therapy, and pain management.

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 Montenaполеone 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.

Allan Rashford, MD, graduated from the University of Iowa Medical School. Upon completing medical training, he became chief of medicine at St. Francis Hospital in South Carolina, and he was later named president of the Charleston Medical Society.

Marc R. Rose, MD, practices ophthalmology in Los Angeles, CA, and is president of the Rose Eye Medical Group. He is on the staff of Pacific Alliance Medical Center, Los Angeles, and other area hospitals.

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. He is board-certified in anti-aging medicine.



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.



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



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



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



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



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

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



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



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



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



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.



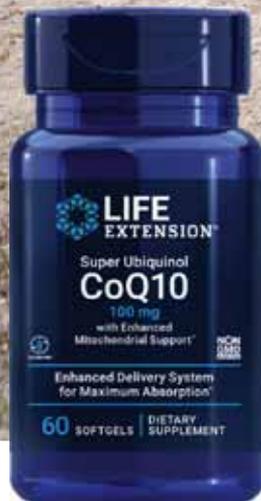
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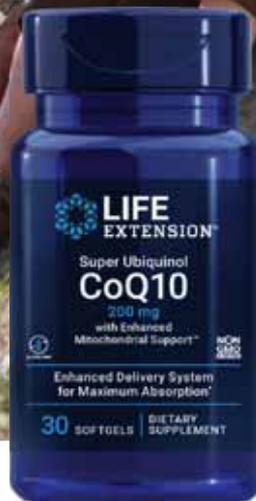
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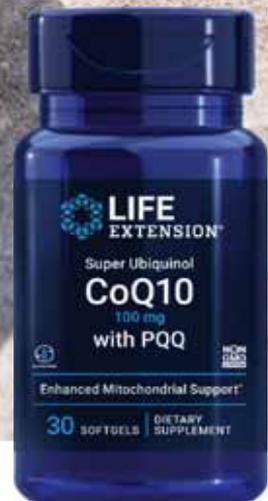
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Worldwide Obesity Crisis



WILLIAM FALOON

Obesity prevalence has **tripled** across the globe since **1975**.¹

Nearly **60%** of **Europe's** adults are now **overweight** or **obese**.²

A record **73%** of **Americans** are in this category—with nearly **10%** defined as **severely obese**.³⁻⁵

The penalty for this glut of **body fat** is premature **illness** and **death**.⁶

Healthcare systems worldwide struggle to handle surging numbers of patients afflicted with **obesity-related** diseases.^{7,8}

An impediment to shedding pounds with **low calorie** diets is that our body turns **down energy expenditure** to conserve calories as **body fat**.

This biological response is called **adaptive thermogenesis**^{9,10} and is explained in the next column.

➤ **Thermogenesis** converts calories into heat energy. Extra calories not burned get stored as **body fat**.^{11,12}

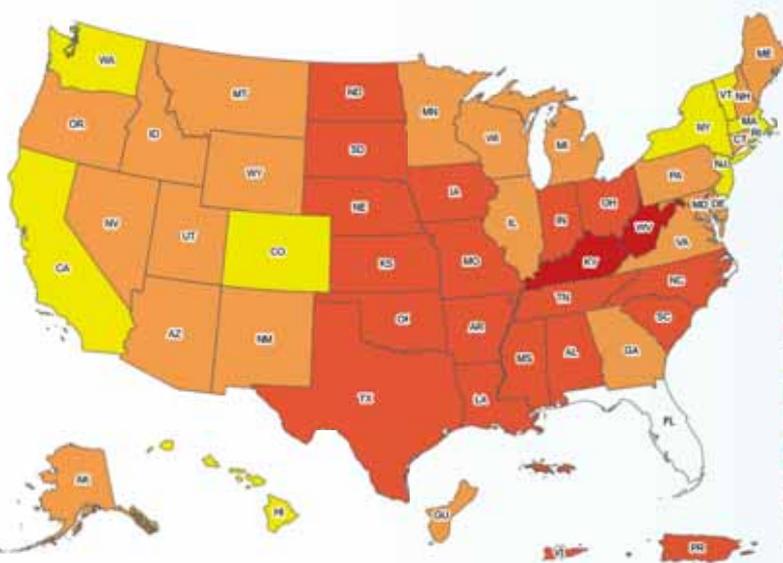
➤ **Adaptive** in this instance means turning down **thermogenic** rate in response to **reduced food intake**.

Adaptive thermogenesis is a factor that thwarts most **reduced-calorie** diets because **decreased** calorie burn results in **less fat loss**.^{9,10}

Judicious use of agents to **boost metabolic rates** while **reducing calorie intake** is a promising strategy to help people lose weight.¹²

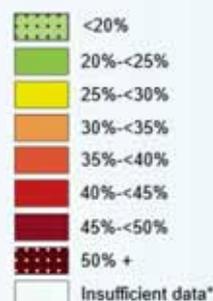
A low-cost method has been found to do just that, i.e., **increase energy expenditure** **without** creating stimulatory side effects.¹²

This month's issue describes how one can safely augment a **weight loss** program.



Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2021

Content source: Centers for Disease Control and Prevention.³



This map shows Prevalence of self reported obesity among U.S. Adults by state and territory, BRFSS, 2021.

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* Sample size <50, the relative standard error (dividing the standard error by the prevalence) $\geq 30\%$, or no data in a specific year.

Rational Use of Metabolism-Enhancing Agents

Thermogenesis occurs when the body converts a meal including **fats** into heat energy.¹²

When one goes on a **low-calorie** diet, thermogenesis **decreases** over time and creates a “**resistance to weight loss**.”^{10,12}

This occurs as the body compensates for low calorie intake by burning *less calories*, (reduced thermogenesis) thus causing excess weight to stay on.^{10,12} It is a source of frustration to those working to shed fat pounds and keep them off.

A method of counteracting a slowdown in thermogenesis is to take a safe dose of a metabolism-enhancing agent to boost **energy expenditure**.

Red chili peppers have been shown to reduce the risk of becoming overweight or obese.^{13,14} People who include **red chili peppers** in their diet have a **lower overall mortality risk**.¹⁵⁻¹⁷

Capsaicin is a compound found in red chili peppers that **increases thermogenesis**, thus supporting **weight loss**.^{14,18-23}

Tolerability and Bioavailability

Supplements containing **capsaicin** have been sold for decades, but some people experience digestive upset when using them.²⁴

The major challenge of benefiting from **capsaicin** is its **low bioavailability**. It has a short half-life because of rapid **metabolism** that occurs in the **liver**.

A novel formulation helps overcome some of these challenges by delivering a **functional dose** of **capsaicin** without the digestive irritations.^{24,25}

This improved **bioavailability**, low cost, plus **safe** thermogenic mechanism make **capsaicin** a rational adjunct for those seeking meaningful **weight loss** results.

Clinical Trial Reveals Modest Effects in 28 days

The use of **thermogenesis-enhancing** agents, typically combined with calorie reduction, has a potential to induce modest **weight loss**.²²

In order to test the efficacy of a new **capsaicin** formula, a 28-day **placebo-controlled** study was conducted.

Overweight volunteers took a **200 mg** daily dose of **standardized capsaicin** that was enclosed in a **plant fiber** to provide greater systemic **bioavailability** of the capsaicin.

No changes in food intake or physical activity levels were advised over this brief study period.

The **capsaicin** group lost **2.1%** of their **body weight** compared to **0.32%** for the **placebo** arm of the study in four weeks.²⁵





INTERMITTENT FASTING

For Those Interested in Intermittent Fasting

A growing number of people engage in **time-restricted eating** where they **fast** for about **16-hours** most days and only eat during an **8-hour** window.

Others consume very low or no calories **two days** each week.

Time-restricted eating produces many health benefits, but after some time their bodies adapt to a low-calorie diet and no longer sustain much **weight loss**. One reason may be that the body senses food scarcity during the fasting period and conserves energy (body fat).^{9,10}

Use of an effective **capsaicin** formula to increase **energy expenditure** combined with **time-restricted eating** or reduced calorie intake may be better for removing stubborn fat stores.^{14,18-23}

This **2.1%** of **weight loss** occurred over a brief (28-day) period without the volunteers engaging in the kinds of low-calorie **diets** that overweight/obese individuals need to shed meaningful **body fat**.

This study supports previous research showing that **capsaicin** boosts fat-burning **energy expenditure** without the stimulatory effects encountered with **caffeine-ephedrine** formulas.¹²

To achieve sustained reductions in **body fat**, however, decreased calorie consumption along with some increase in physical activity is highly recommended.

A More Comprehensive Approach

The primary benefit of a thermogenic agent is for people committed to achieving a long-term reduction in **body weight**.

This usually requires a **multi-modal** approach that requires a combination of reduced calorie intake and increased energy expenditure through physical activity.^{9,21}



Taking the recommended dose of a thermogenesis-enhancing compound is a rational and promising complement to this approach.

By safely increasing **thermogenesis**, one will likely lose more **fat pounds** especially when combined with a healthier lifestyle that includes reducing excess calories.

Boosting **metabolic rate** using a thermogenic compound enables a more comprehensive approach to losing excess **body fat** than dieting alone.

Based on the 28-day study described earlier, a **225-pound** person using this new **bioavailable capsaicin** would lose about **5 pounds** the first month.

A more comprehensive approach is to combine **capsaicin** with:

- Reduced **calorie intake**
- Increased **physical activity**
- Compounds that boost **AMPK** activity, like the drug **metformin** or the plant extract ***gynostemma pentaphyllum***.

This **multi-modal** strategy will likely produce more sustained results over an extended time period.

Tragedy of Delayed Weight Loss

When **obesity-induced** illnesses like **type II diabetes** strike, a multitude of co-morbidities can follow that include painful neuropathies, kidney impairment, visual disturbances, coronary atherosclerosis, dementia, fatty liver, and/or ischemic stroke.^{6,8,14,21,26,27}

Those who have been overweight for decades often complain about the many degenerative conditions that relentlessly strike them.

I explain to these individuals that **tissue damage** has been smoldering in their **overweight** body for decades, and outward symptoms of these pathologies are only now emerging.

The optimal time to shed excess **body fat** is before serious illnesses develop that are often **irreversible**.

When combined with a healthier lifestyle, using a **thermogenic** compound to maintain **metabolic rates** represents a multi-pronged approach to cutting more body fat.

The article on page 42 describes the **weight loss** mechanisms that occur in response to boosting thermogenic energy expenditure.

I hope our readers who harbor excess fat pounds can lose at least **10%** of their body weight in **2023**.

Significant health and longevity benefits occur in those who achieve even modest **body fat** loss.²⁸

For longer life,



William Faloon, Co-Founder
Life Extension®

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



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

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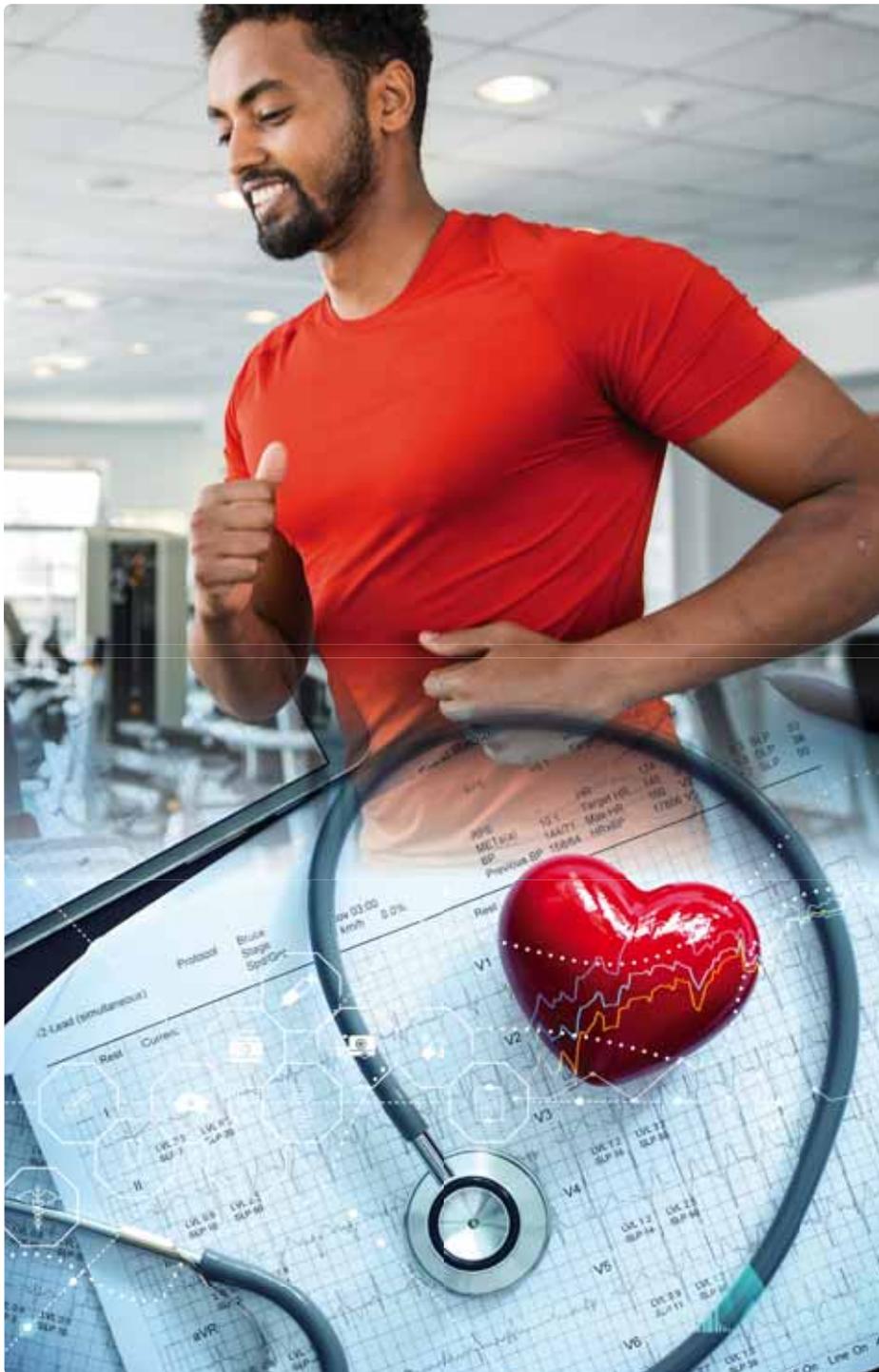


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In the News



Reduced Testosterone Levels Associated with Greater Risk of Cardiovascular Disease

A retrospective cohort study suggests that decreased testosterone levels in young males is associated with increased risk of developing **cardiovascular disease**.*

The investigators used two risk assessment tools to predict the 10-year cardiovascular risk of 1,253 men between the ages of **30** and **79**.

In men aged 30-49, cardiovascular incidence was more pronounced, with a **16%** and **20%** increased risk of disease with low testosterone levels estimated by two risk assessment tools.

Editor's Note: The association between increased cardiovascular risk and low testosterone was consistent in all participants.

* *Front Cardiovasc Med.* 2022 Apr 14;9:869251.

Improving Vitamin D Levels in Older Age is Linked to Lower Risk of All-Cause Mortality

The benefits of correcting and maintaining vitamin D deficiency accrue even in older age, according to the results of a study published in *BMC Geriatrics*.*

The participants included 1,362 individuals in the Chinese Longitudinal and Health Longevity Survey, aged **60 to 113** whose serum vitamin D levels were measured in 2012 and 2014. Mortality data were collected in 2018. Deficient vitamin D levels were detected among **67.5%** of the participants in 2012 and **68.4%** in 2014.

During follow-up, 420 deaths occurred. Individuals who were deficient in vitamin D in 2012 and 2014 had more than twice the **mortality risk** than those who maintained higher levels.

Among participants who maintained sufficient vitamin D or were deficient in 2012 and not deficient in 2014, the risk of dying was **30%** and **53% lower**, respectively, compared to participants who were deficient at both points in time.

This highlights the need to address vitamin D deficiency in older individuals to support longevity and healthy aging.

Editor's Note: The greatest benefit associated with improved vitamin D status was found among women and those people who were 80 years of age or older, the "oldest old."

* *BMC Geriatr* 22, 245 (2022).



Omega-3 Fatty Acids Could Improve Immunotherapy

Findings from a study done on mice, reported at the American Society for Investigative Pathology's annual meeting, revealed a benefit for adding omega-3 fatty acids to cancer-fighting immunotherapy.*

The mice were fed either a standard diet, a diet enhanced with omega-3, or a diet high in omega-6, beginning 10 days before injecting them with tumor cells. One week after the injections, the animals were given either immunotherapy, an anti-inflammatory therapy, both therapies, or no therapy.

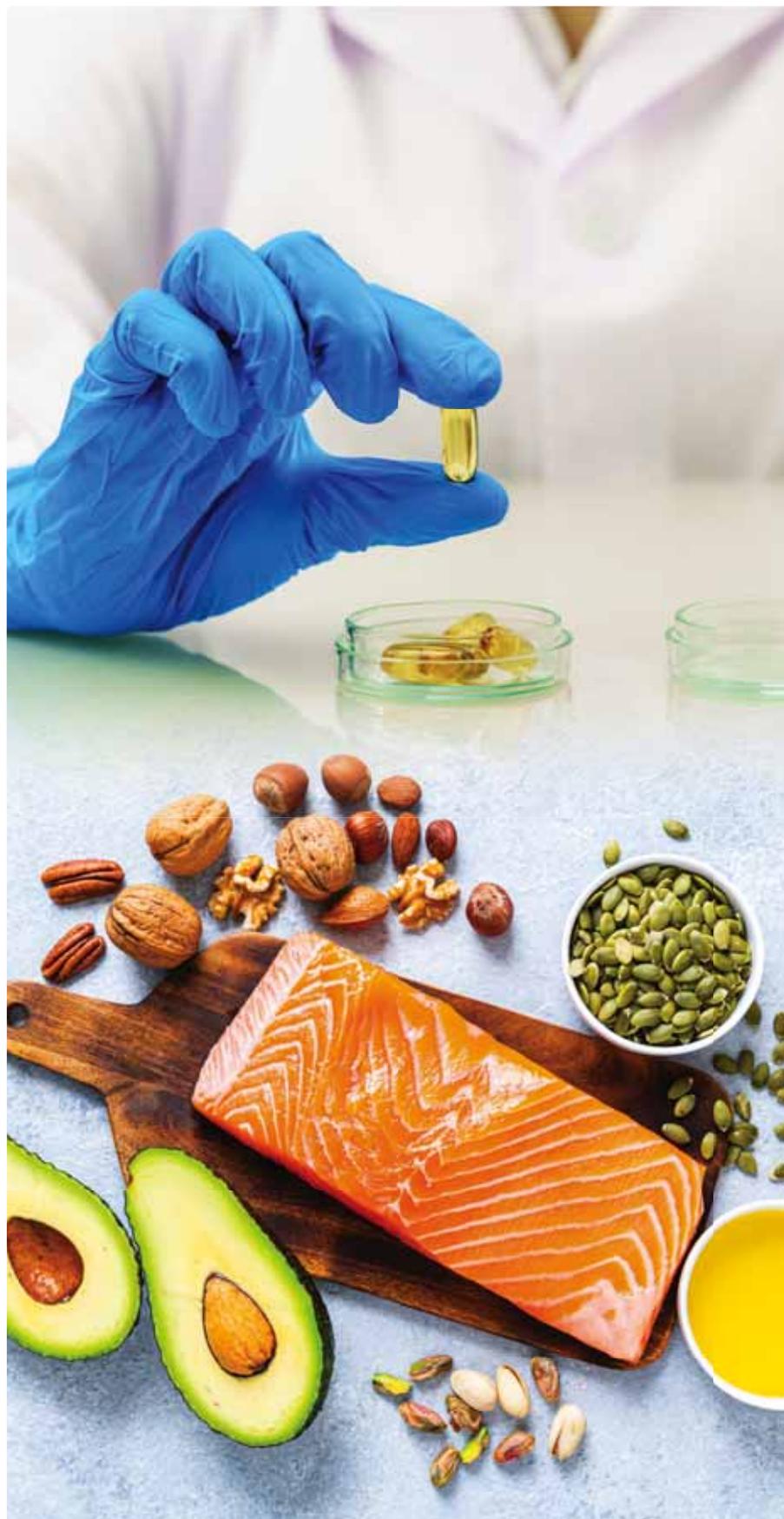
Compared to a standard diet, the addition of omega-3 fatty acids resulted in more robust response to the treatment compared to the animals that received immunotherapy or immunotherapy plus anti-inflammatory therapy alone.

Mice that received both cancer therapies and the high omega-3 diet had up to **67% less** tumor growth than animals that received no cancer therapies and a standard diet.

An **omega-6**-enhanced diet was associated with significant acceleration of the growth of one tumor type. The typical American diet is loaded with **omega-6** fats and deficient in **omega-3s**.

Editor's Note: Immunotherapy involves harnessing the body's immune system to combat cancer or other diseases. Supplementation with Omega-3 PUFA may enhance its effect. This combination is predicted to revolutionize cancer therapy.

* Available at: <https://www.eventscribe.net/2022/EB2022/index.asp?posterTarget=466274>. Accessed November 4, 2022



Greater Intake of Vitamins A, C, and E Associated with Lower Glaucoma Risk

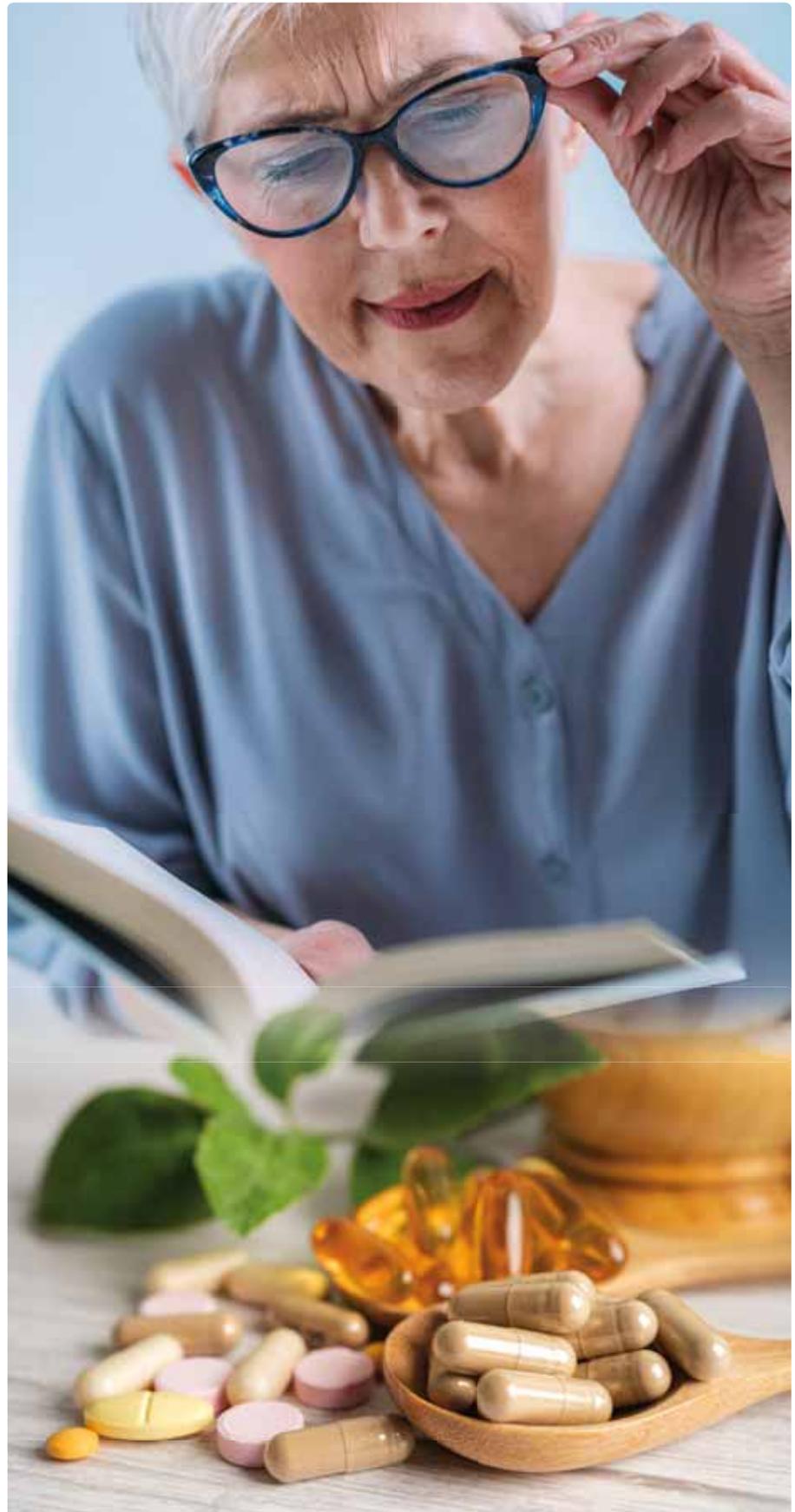
A study presented at the American Academy of Ophthalmology Annual Meeting found an association between *higher* intake of vitamins A, C, and E, and a lower risk of glaucoma.*

A total of 18,669 participants completed questionnaires every other year, providing information about food and supplement intake, and other factors. During a 12-year average follow-up, 266 new cases of glaucoma occurred.

Those who consumed high amounts of vitamins A, C, and E during follow-up had an adjusted **47% lower** risk of developing glaucoma in comparison with those who consumed low amounts.

Editor's Note: The protective effect was observed only when higher amounts of all three vitamins were consumed in combination.

* Available at: <https://www.aao.org/news-room/news-releases/detail/combination-of-vitamins-may-help-prevent-glaucoma>. Accessed Nov. 4, 2022.



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

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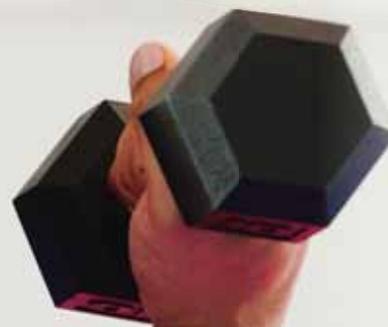
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Testosterone builds muscle, maintains sexual health, supports cardiac function, strengthens bones, and nourishes brain cells.^{1,2}

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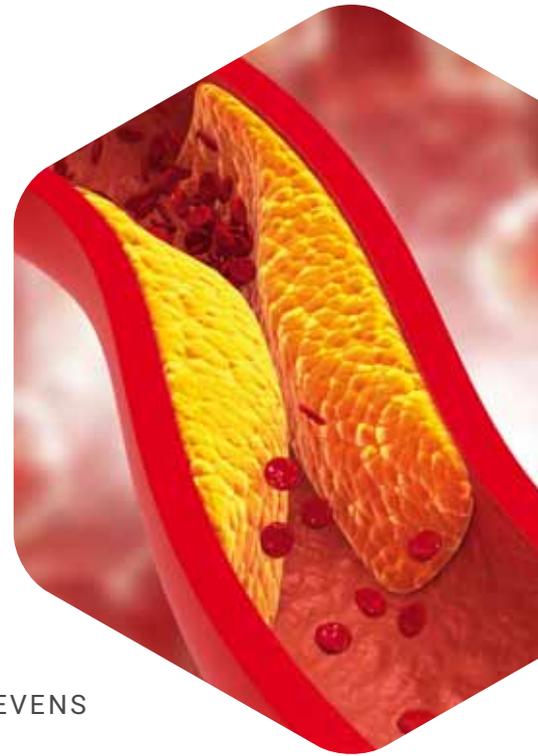
† This product is intended to support testosterone levels but does not contain testosterone. Tesnor® is a trademark of Laila Nutra and Gencor.



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HOW POMEGRANATE PROMOTES HEART HEALTH



BY RICHARD STEVENS

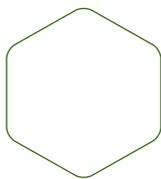
Pomegranate is a nutrient-dense food with compounds that promote **heart health**.¹⁻⁴

Preclinical and clinical studies show that pomegranate can improve blood flow,^{6,7} reduce arterial blood clots,⁵ and modestly lower cholesterol, triglycerides, and blood pressure.⁸

Most notably, pomegranate has been shown to help prevent and even reverse some of the blood vessel damage that can lead to **heart attack** and **stroke**.^{1,2,9,10}

A clinical study in patients with **atherosclerosis** found that **pomegranate** consumption substantially decreased thickness of **carotid artery** plaques.⁹

Fresh pomegranate fruit or juice can be high in fructose.¹¹ For those who want to avoid the sugar, **pomegranate extracts** provide an alternative.



A Nutritional Powerhouse

All parts of the pomegranate plant, including the fruit, leaves, peel, seeds, and flowers, are packed with beneficial compounds.

These include anthocyanins, flavonoids, and unique tannins (such as punicalagin).²

One of pomegranate's most impressive effects is its ability to protect **aging arteries** in multiple ways, including preventing and even reversing **endothelial dysfunction**.^{1,2}

Endothelial dysfunction refers to damage to the delicate inner lining of blood vessels. This dysfunction is an important contributor to **atherosclerosis**, the buildup of plaque in the arteries.^{10,12}

Atherosclerosis is responsible for a major share of deaths worldwide.^{13,14}

Improving Lipid Levels

Animal models have shown that **pomegranate** can reduce blood levels of total cholesterol, **LDL cholesterol**, and **triglycerides**.¹⁵⁻¹⁸

Oxidation of LDL cholesterol makes it more dangerous than normal LDL. Oxidized LDL accumulates in blood vessel walls more easily and accelerates the progression of atherosclerosis. Pomegranate *decreases* the oxidation of lipids.^{19,20}

In **human** studies, pomegranate use significantly *reduces* blood levels of **oxidized LDL** and reduces **LDL aggregation**.^{19,21}

Restoring Blood Vessel Function

An important indicator of **endothelial dysfunction** is an impaired ability of blood vessels to **dilate** (widen) when necessary.^{10,22}

Pomegranate and its extracts *improve* the ability of the **endothelium** to promote arterial relaxation and dilation.^{6,7}

Nitric oxide is one of the body's main **vasodilators**, which means it induces the dilation of arteries.

In endothelial dysfunction, production of *nitric oxide declines*. Preclinical evidence shows that **pomegranate** can boost *nitric oxide* production and improve arterial dilation.²³⁻²⁶

Preventing Blood Clots

Endothelial dysfunction and atherosclerosis increase the risk of abnormal **blood clots**.

Most **heart attacks** and **strokes** are caused by clots forming inside diseased arteries, which reduces blood flow to the heart or brain.^{27,28}

Some of the same compounds contained in pomegranate that benefit arterial health also influence the function of **platelets**, the tiny cells in our blood that form clots.

Thromboxane A2, which is *reduced* by pomegranate, activates platelets and causes their aggregation.^{29,30}

In animal studies, pomegranate *reduced clotting* associated with platelets and other factors, even when exposed to stimuli that would normally cause their aggregation.^{5,29}



Improving Blood Pressure

High **blood pressure** is a major risk factor for atherosclerosis and is closely linked with endothelial dysfunction.³¹⁻³³

A class of drug used to lower blood pressure are the **ACE inhibitors**.

Preclinical and clinical research has demonstrated that, like these medications, pomegranate extracts can *inhibit* ACE activity.^{34,35} In fact, multiple clinical studies show that pomegranate is able to help reduce elevated blood pressure.⁸

In people with **high blood pressure**, two weeks of pomegranate intake decreased blood ACE activity by **36%**. In this study, pomegranate lowered systolic blood pressure by **5%**.³⁵

In other human studies, pomegranate consumption led to reductions in **systolic** and **diastolic** blood pressure.^{8,36,37}

In a study of subjects with **atherosclerosis** in the carotid artery, one year of pomegranate intake reduced **systolic blood pressure** by an average of **12%**.⁹

Those with **systolic blood pressure** levels chronically above **115-120 mmHg** should seek professional guidance on the appropriate medication and/or lifestyle intervention (such as weight loss) to safely achieve **optimal** blood pressure control.

Blood Glucose

Poor control of **blood glucose** levels is a powerful contributor to both endothelial dysfunction and to atherosclerosis.¹

In animal studies, **pomegranate extract** improved **insulin sensitivity** and reduced **fasting blood glucose** levels.^{38,39}

In studies of patients with **type II diabetes** or impaired glucose control, a single dose of pomegranate improved insulin sensitivity and blood glucose control.^{40,41}

Pomegranate may also protect against the damage that glucose causes to tissues, including arteries. A large part of this damage is due to **glycation**, when sugars bind to proteins and alter their function.⁴²

Punicalagin from pomegranate has been shown preclinically to *suppress* the **glycation** of proteins and prevent their accumulation, even in mice fed a **high-sugar** diet.⁴³



WHAT
YOU
NEED
TO
KNOW

Pomegranate Improves Endothelial Health

- **Heart disease** is the most common cause of death worldwide.
- **Endothelial dysfunction**, damage to the layer of cells lining the inside of arteries, is closely linked to atherosclerosis and risk for cardiovascular disease.
- **Pomegranate** and its extracts contain many free-radical quenchers and anti-inflammatory nutrients that can shield against a wide range of chronic age-related cardiovascular risks.
- Many of the health benefits of pomegranate are related specifically to blood vessel health, reducing the progression of **endothelial dysfunction** and **atherosclerosis** in animal and human studies. This reduces the risk of developing cardiovascular disease.
- Even in subjects already experiencing signs of **heart disease**, pomegranate intake has been shown to reduce symptoms.

Those with less-than-optimal glycemic markers (glucose + A1C + fasting insulin) despite healthy diet and lifestyle should seek professional guidance on a range of medications that can lower excess blood sugar.

Reducing Atherosclerotic Plaques

Pomegranate has a profound impact on blood vessel health.

In preclinical investigations, **punicalagin** and **pomegranate extract** have both been shown to help reverse endothelial dysfunction.^{44,45}

Animal models of accelerated **atherosclerosis** also show that pomegranate can prevent and reverse the progression of atherosclerotic plaque.

For example, rodent studies show that **pomegranate** helped maintain arterial health and significantly slowed progression of **atherosclerosis**.^{46,47} In a mouse study, pomegranate reduced the size of plaques by **44%**.²¹

Human trials have found striking effects on improving **cardiovascular disease** parameters.



One clinical study evaluated patients with **atherosclerosis** in the **carotid arteries**.⁹ Pomegranate consumption *decreased* the extent of atherosclerotic plaque by up to **35%** after a year. Those who did not receive pomegranate had a **9% worsening** of atherosclerosis.

In adults with ischemic **heart disease** (insufficient oxygen delivery and blood flow to the heart muscle), pomegranate significantly reduced the intensity, occurrence, and duration of **angina** (chest pain) episodes.⁴⁸ It also lowered the level of **troponin** in the blood, an acute marker of damage to the heart muscle.

Another study in patients with **heart disease** found that while exercise-induced **ischemia** (reduced blood flow) of the heart increased in a control group over three months, patients receiving **pomegranate juice** had a significant ischemia *decrease*.⁴⁹

These studies and others make it clear that pomegranate can help reduce risks for atherosclerosis *and* symptoms of heart damage in those with existing cardiac issues.

Summary

Pomegranate and its **extracts** have demonstrated abilities to prevent and reverse endothelial dysfunction, a blood vessel malfunction that contributes to **atherosclerosis**.

Pomegranate also improves blood pressure, glucose, lipid status, and abnormal clotting.

Through all these actions, pomegranate may reduce the risk of developing cardiovascular disorders and relieve symptoms in people with preexisting heart disease. •

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

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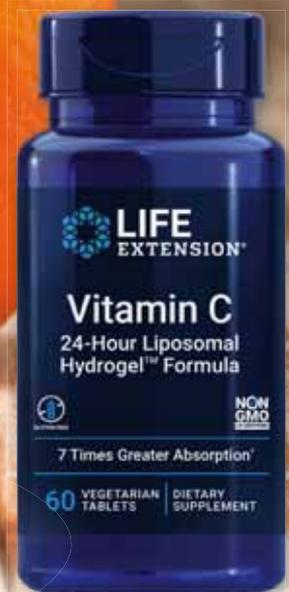


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Mary

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



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Unleash the
Full Potential of
RESVERATROL



BY ALAN BELL

Resveratrol is one of those nutrients that is a multi-tasker.¹⁻³

It has potential to increase **longevity** and promote better **cardiovascular, brain, and metabolic** health.¹⁻³

One challenge with resveratrol has been finding ways to make it more **bioavailable**.

Despite having good initial **absorption**, resveratrol is rapidly metabolized, leaving little of the original compound circulating in blood.

Scientists have made an advance in improving resveratrol **delivery**.

Formulating it into a **hydrogel** fiber blend enables up to **10 times greater bioavailability** compared to unformulated resveratrol.⁴

This enhances the amount and time that **resveratrol** can **deliver** its multiple benefits throughout the body.

Resveratrol Bioavailability

Resveratrol is a polyphenol compound found in several plants, most notably red grapes, some berries, and Japanese knotweed.

In its **free form**, resveratrol has poor **bioavailability**.⁴⁻⁶ Most of the free resveratrol does not end up in the bloodstream and cannot get to the tissues where it can exert beneficial effects.

The main reason is that active resveratrol is rapidly **metabolized**.⁴⁻⁶

Protecting Against Rapid Degradation

Researchers discovered that a plant fiber formulation can **protect** resveratrol from rapid metabolism, greatly enhancing its **bioavailability** and delivery to tissues.⁴

Galactomannans are a plant-derived, indigestible fiber. Human *enzymes* cannot break this fiber down.

Embedding resveratrol in a matrix of these fibers creates a **hydrogel** that protects the resveratrol from rapid degradation in the liver and digestive tract.

In a recent trial, **human** subjects were randomized to receive either this new **hydrogel** form of resveratrol or the same dose of regular unformulated resveratrol.⁴ The new formulation *increased* **bioavailability** of resveratrol by more than **10 times**.

In addition, the hydrogel resveratrol resulted in almost **four-fold** greater **peak blood levels** of resveratrol and nearly a **four-fold** greater **half-life**. That means the new resveratrol reached *higher* levels in the body *and* stayed in the bloodstream longer.



Why Resveratrol Is Biologically Important

Resveratrol is a phytonutrient that impacts several cellular processes.

For example, it activates:^{2,3}

- **Sirtuins**, proteins that regulate cellular health and longevity,
- **Nrf2**, a master regulator of the body's defense against oxidative damage, and
- **FOXO**, a regulator of autophagy, the process of "cellular housekeeping" that keeps tissues healthy.

Through its impact on these and other systems, **resveratrol** helps prevent or mitigate several different forms of **chronic disorders**.

Resveratrol's actions also mimic some beneficial actions found with **calorie-restricted** diets and **exercise**, which both improve metabolic health.

Through its various actions, **resveratrol** provides a broad array of benefits that can help improve **insulin sensitivity**, activate **longevity genes**, and reduce **chronic inflammation**.^{2,3}



Multifaceted Effects

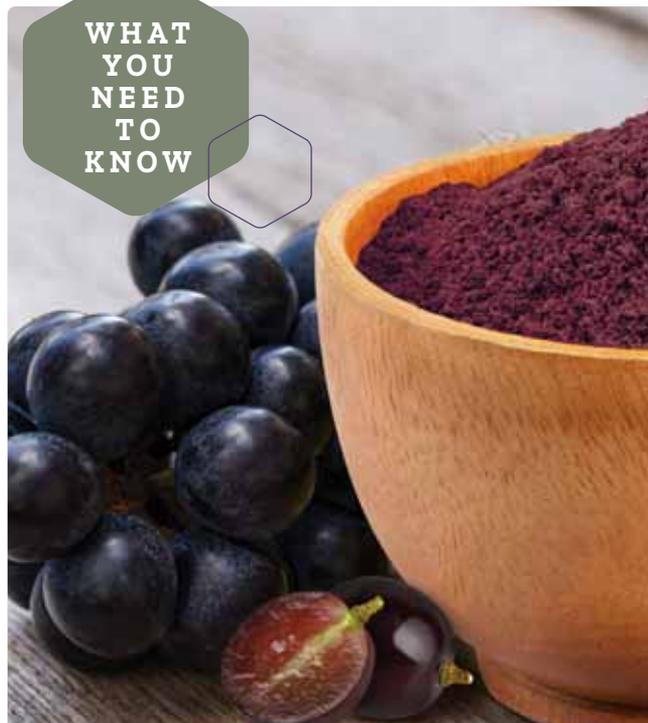
The effects of resveratrol extend to practically every organ system.

Among the potential benefits observed in a wide range of studies, **resveratrol** has been shown to:

- **Promote longevity.** Resveratrol intake is associated with longer lifespan in a range of model organisms. For example, short-lived flies fed different resveratrol concentrations had mean lifespan extension of **10% to 29%**.⁷⁻⁹ In bees, it increases the maximum lifespan by **38%**.¹⁰
- **Improve metabolic health.** Metabolic health underpins the health of *all systems* in the body, and resveratrol supports optimal metabolism. Preclinical and clinical research shows it can help improve insulin sensitivity and lipid levels, aid in control of diabetes, decrease body weight, and improve the mix of healthy intestinal flora.^{3,11-19}
- **Protect heart parameters.** In clinical and pre-clinical studies, resveratrol has been shown to improve blood vessel function and blood pressure. By these and other means, resveratrol can help fight underlying causes of cardiovascular disorders.^{2,15-17,20,21}
- **Improve brain indicators.** Data from preclinical studies have shown that resveratrol can reduce neuroinflammation and the accumulation of abnormal proteins associated with neurodegenerative diseases like Alzheimer's and Parkinson's disease.^{1,3,22-24} In a fruit fly model, a special form of resveratrol also conferred neuroprotective benefits.⁸
- **Encourage immune and anti-inflammatory effects.** Resveratrol has shown immunomodulatory effects in preclinical trials, which could bolster healthy immune function to defend against various pathogens and toxins. It also possesses anti-inflammatory properties.^{1,3,20}
- **Promote anti-cancer activity.** Preclinical studies show resveratrol has anti-cancer activity, blocking abnormal cell growth, killing aberrant cells, and preventing the spread of these cells in the body.³

With greater bioavailability, **hydrogel resveratrol** can maximize the potential to achieve these types of benefits.

WHAT
YOU
NEED
TO
KNOW



A Better Resveratrol at Last

- **Resveratrol** is a polyphenol compound found in various plants, particularly red grapes, some berries, and Japanese knotweed.
- It has been shown in a number of different models to promote **longevity**, and has been studied for improving metabolic, cardiovascular, brain, and immune health.
- Until recently, resveratrol suffered from poor **bioavailability**.
- A new **hydrogel** formula uses plant-derived fiber to protect resveratrol from being metabolically broken down, improving the bioavailability of resveratrol by up to **10 times**, allowing it to reach greater concentrations in the bloodstream, for a longer time.

Summary

Resveratrol has shown an ability in preclinical models and in different types of organisms to prolong life as well as to dampen an array of pathologic mechanisms.

In humans, resveratrol has been studied to target a number of disease mechanisms.

Poor bioavailability of **resveratrol** has long been an issue, but a new **hydrogel** formulation protects it, allowing greater **bioavailability**.

A clinical study has shown that this **hydrogel resveratrol** offers up to **10 times** greater bioavailability than unformulated resveratrol. •

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

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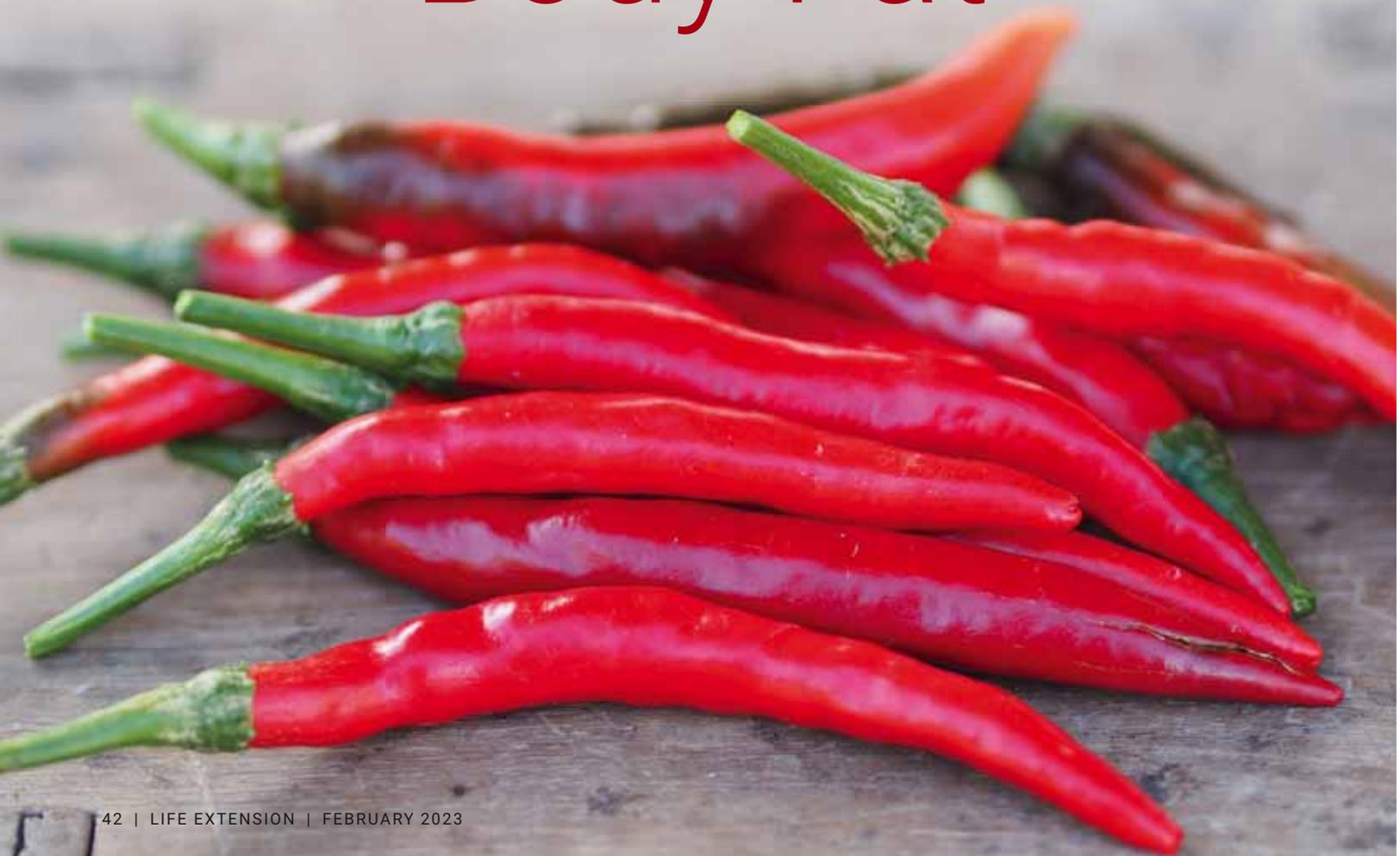


*ACS Omega. 2022 Apr 19;7(15):12835-45.

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How **CAPSAICIN** Burns Body Fat





BY MICHAEL DOWNEY



Sometimes, no matter how much we **diet**, we don't lose significant **weight**.

Many people ask, "Why am I not losing more fat pounds when I am eating less and watching my calories?"

One reason is that the body adapts to lower calorie intake by burning less energy when we're at rest.^{1,2}

Scientists have long searched for a solution to increase resting energy expenditure.

A compound derived from **red chili peppers**, called **capsaicin**, does exactly that.^{2,3}

The challenge was finding a way for people to take capsaicin at a dose that will yield the desired effect without experiencing stomach irritation.⁴

The solution is an **encapsulation** process that protects the stomach while delivering capsaicin's **thermogenic** properties to the body.

In a **clinical trial**, encapsulated **capsaicin** was shown to promote **weight loss** in just four weeks.⁴

Compared to the **placebo** group, people taking **capsaicin** had greater reductions in **body weight**.⁴

Why Diets Stop Working

One principle of weight gain is simple—energy intake exceeds energy expenditure.¹

Reducing calorie intake and increasing exercise is usually viewed as the best way to overcome this imbalance.^{1,3}

However, a phenomenon known as **adaptive thermogenesis** can limit the success of a calorie-lowering, weight loss program.²

Thermogenesis is a body process that converts calories into heat energy. This allows the body to maintain a stable temperature, support healthy metabolism—and control **body weight**.⁵

Adaptive thermogenesis occurs when the body reacts to reduced calorie intake by **lowering** the amount of energy (fat) it burns, particularly when the body is at rest.^{1,2}

This makes it harder to lose weight and creates a vicious cycle in which the **more** calories are reduced, the **less** effect it has on weight loss. It's one reason that dedicated dieters often regain weight.^{1,2}

This is where **thermogenesis** comes in.

Augment A Weight Loss Plan

Nutrients that support thermogenesis can help augment an existing weight management program by **increasing** the resting energy expenditure, **burning** more fat and calories.⁶

One of the most potent, plant-based thermogenic compounds is **capsaicin**. It is the major “thermogenic” compound in **red chili peppers**.^{3,4}

Capsaicin increases **resting energy expenditure**, so that more calories are burned even when the body is at rest.

It has long been of interest as a means to *boost* the effects of a **weight loss** program.

Activating Beneficial Brown Fat

Scientists believe capsaicin's thermogenic properties relate to its ability to activate **brown fat**.^{3,6-9}

Normal fat is **white fat**, which can be **pro-inflammatory** when accumulated in excess, particularly when it collects in the **abdomen**.

Brown fat, on the other hand, burns energy, often when triggered by cold temperatures. While white fat cells **store** excess energy, brown fat cells **dissipate** energy as heat.^{8,10}

Brown fat tissue is associated with greater calorie burning and protection against obesity and metabolic diseases.¹⁰

Preclinical studies also show that the presence of **brown fat** is associated with thermogenesis, lower body mass index (BMI), and improved fasting glucose levels.^{3,6-8}

By activating brown fat, **capsaicin** supports weight loss.

Capsaicin's Fat-Reducing Mechanism

Research published in **2021** by **Harvard Medical School** suggests that capsaicin can mimic the effect of cold temperatures in order to activate energy-burning **brown fat** cells.¹⁰

It appears to do so by activating a protein known as **TRPV1 (transient receptor potential vanilloid type-1)**, which regulates body metabolism and temperature.^{3,6,7}

By activating TRPV1, **capsaicin** triggers the body to activate **brown fat cells**, which in turn burn calories through **thermogenesis**.^{3,6,7}



WHAT
YOU
NEED
TO
KNOW

Boost Your Weight Loss Plan

- **Capsaicin**, a compound derived from red chili pepper, has been shown to increase the body's energy expenditure by promoting the burning of calories, even at rest.
- The stomach discomfort associated with oral ingestion of *unformulated* capsaicin has long discouraged its use.⁵ Scientists have developed a formula that provides a safe and tolerable way to obtain its weight loss benefits.
- A human study shows that this new form of capsaicin reduced **body weight**, waist-to-hip ratio, body mass index, and appetite.
- This patented capsaicin formulation can help boost any existing weight loss program.

Protection Against Stomach Irritation

There has long been a problem with taking capsaicin. It is the compound responsible for **red chili peppers'** heat.

Capsaicin can irritate the lining of the digestive tract, causing nausea, diarrhea, and acid reflux.^{4,11}

Scientists have devised a solution.

Encapsulating the capsaicin in a patented fiber **hydrogel** *inhibits* the compound's irritating effects and gastrointestinal discomforts.¹¹

This allows capsaicin to be safely ingested *and* better absorbed.

Clinical Validation

To test this **capsaicin** formula, researchers enlisted 21 overweight volunteers aged 38 years, on average, for a **placebo-controlled** clinical trial.⁴

Subjects were already moderately active, getting one to five hours of moderate exercise weekly. During the study, they maintained their regular food intake and activities. They also completed two questionnaires about appetite and eating behavior.

One group took **200 mg** of **encapsulated capsaicin** every morning, half an hour after breakfast, while the other received a **placebo**.

After only 28 days, the capsaicin group had:⁴

- An average **2.1% reduction** in **body weight** (compared to **0.32%** for the placebo group),
- A mean **4% decrease** in **waist-to-hip ratio** (vs. **1%** for the placebo group), and
- A **reduction** of **2.2%** in **body mass index** (vs. **0.3%** for the placebo group).

This **2.1%** body weight reduction represents a loss of about **one pound** of weight *per week*.

The questionnaires revealed that treated subjects reported a significant *reduction* in **uncontrolled eating** and **appetite**.

The encapsulated **capsaicin** was found to be safe, with high tolerability, and was determined to be **well-absorbed** into the blood.

Other Benefits

Capsaicin is associated with effects beyond thermogenesis. Increasing evidence suggests that it may play a role in:^{3,7,11-13}

- Regulation of metabolic health,
- Glucose metabolism,
- Cardiovascular health,
- Anti-obesity effects, and
- Reduced mortality risk.

Summary

Studies show that **capsaicin**, derived from red chili peppers, increases resting energy expenditure and boosts the burning of calories.

Researchers have created a unique form of capsaicin by encapsulating it in a plant fiber hydrogel. The result is more thermogenic benefits without the stomach distress of regular capsaicin.⁴

Clinical data show that it can safely promote **weight loss**, lower waist-to-hip ratio and body mass index, and reduce appetite.

This **capsaicin** formulation offers a new way for people to **augment a weight loss** program. •

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

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Not All Capsaicin Is the Same

Capsaicin is derived from red chili pepper. Studies have shown that it is an effective compound to help reduce body weight by promoting energy expenditure.^{5,6}

Regular capsaicin can cause stomach distress. This has discouraged people from taking advantage of capsaicin's weight loss benefits.

In a recent development, a **patented** process surrounds the capsaicin, using a **fenugreek galactomannan fiber**, which allows for sustained, targeted, and minimally irritating intestinal delivery.

This enhances absorption and **bioavailability**.⁴

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

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

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Improve Metabolic Health with QUERCETIN





BY WILLIAM PATEL

Metabolic disorders can result in rapid onset of chronic illnesses.

Dietary factors, sedentary lifestyle, and poor gut health are contributors to poor metabolic health.¹⁻³

Scientists have learned that **quercetin**, found in plant foods, can *counter* metabolic dysfunction.⁴

A clinical study in older adults with **metabolic syndrome** found that **quercetin** reduced cardiovascular risk factors.⁵



What is Metabolic Syndrome?

Metabolic syndrome is a cluster of conditions that includes any three of the following:⁶

- Elevated blood pressure
- High blood sugar
- Large waist circumference
- Low HDL cholesterol
- High triglycerides

Individuals with **metabolic syndrome** are at increased risk of diabetes and its complications, cardiovascular disease, age-related disorders, and death.^{6,7}

Quercetin to the Rescue

Scientists have long been intrigued about why unprocessed, plant-based diets are protective against metabolic disease.

One nutrient, the flavonoid **quercetin**, is particularly prevalent in a wide range of fruits, vegetables, and medicinal plants. Hundreds of studies—in cell culture, animals, and humans—have documented the multiple properties of this nutrient.

Many of its effects in the body apply directly to metabolic health, reversing many of the changes present when metabolic health is not ideal.⁴

In a controlled clinical trial in older adults with **metabolic syndrome**, quercetin was shown to improve metabolic health, reduce cardiovascular risk factors, and decrease participants' metabolic age.⁵

Better Blood Glucose Control

Metabolic disease is usually thought to be caused by **insulin resistance** and insufficient blood **glucose control**.

The hormone insulin helps cells to take up and process nutrients from the diet, including sugars. In most metabolic diseases, cells fail to respond to insulin appropriately; this is called **insulin resistance**.^{8,9}

The result of **insulin resistance** is high **blood levels of glucose** that contribute to chronic degenerative diseases that accompany aging. That is why individuals with diabetes or the metabolic syndrome have *higher* rates of most chronic diseases.²

After-meal glucose spikes are damaging for all individuals, and likely more so for diabetics. These blood sugar surges are contributors to cellular and vascular damage and raise the risk of cardiovascular disease and premature death.

Quercetin has been shown to *improve glucose control* as shown on the following page:



WHAT YOU NEED TO KNOW

- Preclinical studies show **quercetin** helps activate cellular pathways—such as **AMPK**—that improve metabolism and reverse insulin resistance.^{4,10,11}
- A meta-analysis of randomized controlled trials revealed that **quercetin** supplementation for eight weeks or more, at a dosage of **500 mg** or higher, reduced fasting blood glucose. That same dose also reduced excess insulin concentrations.¹²
- Remarkably, even **one single dose** of quercetin has been demonstrated to exert a beneficial clinical effect in a study in type II diabetics. In a randomized, placebo-controlled trial, 24 diabetics already being treated with medication were given **400 mg** of quercetin before receiving a simple sugar. After the sugar dose, blood glucose was suppressed in those who received quercetin, compared to the placebo arm.¹³
- Another clinical trial found that long-term quercetin supplementation resulted in a significantly improved response (lower blood sugar spike) to an oral glucose tolerance test.⁵

Quercetin supplementation clearly resulted in improved glucose control and a healthier carbohydrate metabolism.

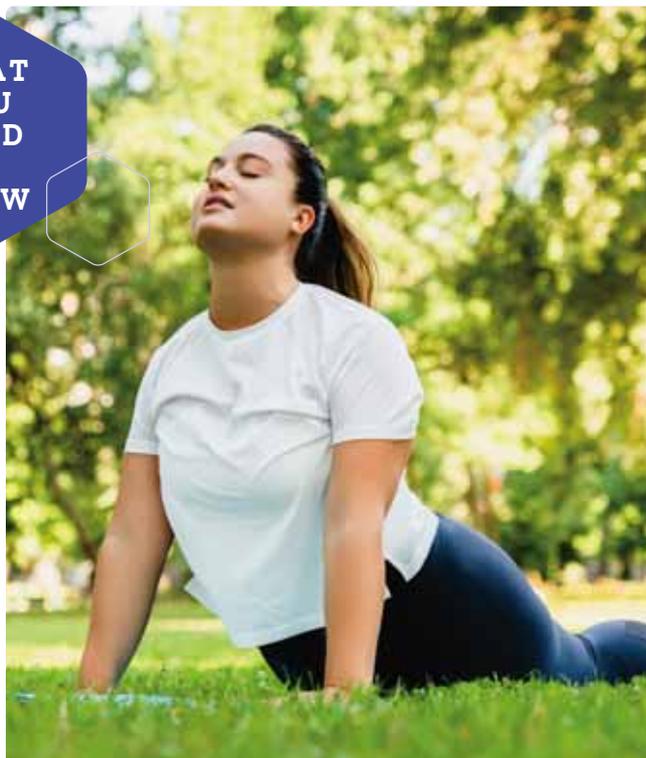
Improved Lipid Levels

Another prominent feature of metabolic disease is elevated levels of LDL cholesterol and triglycerides and reduced HDL cholesterol (the “good cholesterol”).² Like elevated blood glucose, these changes are contributors to cardiovascular disease.^{1,2}

Multiple human studies have shown the benefits of quercetin for lipid abnormalities.

In overweight and obese adults with early metabolic syndrome, **150 mg** of quercetin daily reduced **blood pressure** and oxidized **LDL cholesterol**.¹⁴

In healthy men, **150 mg** of quercetin daily for eight weeks decreased **waist circumference**, after-meal **systolic blood pressure** (top number), and after-meal **triglyceride** levels.¹⁵



Improve Metabolism with Quercetin

- Metabolic disorders are increasingly common, and scientists warn of a growing epidemic.
- Metabolic abnormalities include obesity, diabetes, the metabolic syndrome, abnormal blood lipid levels, and non-alcoholic fatty liver disease.
- All these related disorders dramatically increase the risk for age-related chronic diseases, from cancer to dementia.
- Scientists have found that quercetin—a flavonoid found in many plants—is protective of metabolic health.
- Clinical and preclinical studies show that supplementation with quercetin can benefit many aspects of metabolic disease, improving blood glucose control and lipid levels while protecting the liver and reducing inflammation and oxidative stress.

In a placebo-controlled trial in 110 patients with metabolic syndrome, aged 60-74, **240 mg** of quercetin daily for three months lowered **total** and **LDL cholesterol**.⁵

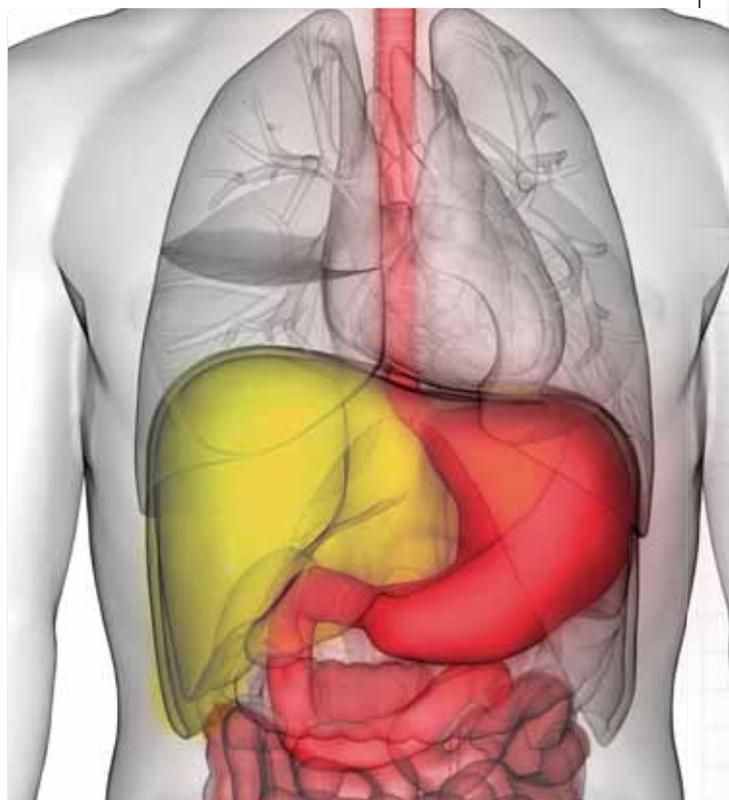
A randomized controlled trial found that daily supplementation with quercetin lowered total cholesterol, LDL cholesterol, and triglycerides, and raised HDL cholesterol.¹⁶

Protection of the Gut and Liver

Animal research has shown that quercetin can protect the liver from abnormal accumulations of fats and can improve lipid metabolism.¹⁷⁻²¹

Even in patients being treated for **non-alcoholic fatty liver** disease, quercetin supplementation has been found to improve liver health, reducing signs of liver damage and inflammation while improving lipid levels.²²

It may also improve the gut microbiome, the mix of bacteria that reside in the intestines. Quercetin may help shift the mix of these microorganisms into a healthier form. Such changes would be expected to reduce inflammation and “leaky gut” and to have the potential of improving the health of other organs as well, body wide.²³



Obesity and Metabolic Syndrome

Obesity adds to risks of metabolic disturbances. A prospective study assessing the mortality status of 6,678 healthy middle-aged men concluded that **metabolic syndrome** increased the risk of sudden death from **heart attack** by **68%**.⁷

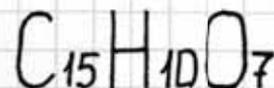
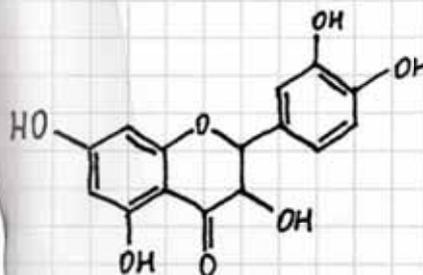
A trial of overweight and obese adults with early metabolic syndrome tendencies tested **150 mg** of quercetin daily. This modest dose reduced blood pressure and lowered levels of oxidized LDL cholesterol.²⁴

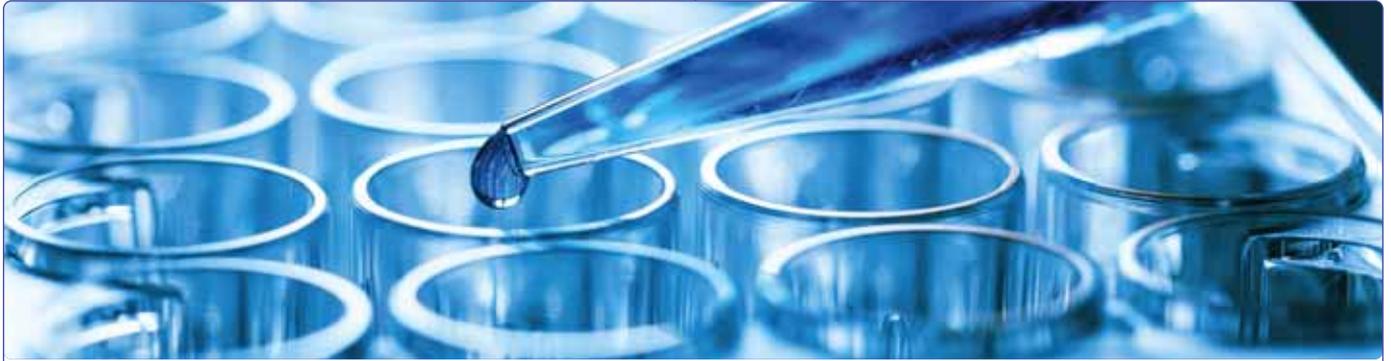
Not All Quercetin is the Same

Despite its wide-ranging benefits, quercetin is generally difficult for the body to fully absorb.

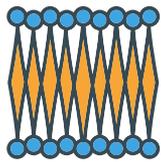
Looking to solve this problem, researchers discovered that when quercetin was surrounded by a plant-based **phytosome**, it became much more absorbable. In a clinical study, a **phytosome quercetin** provided **50 times** more bioavailability than regular quercetin for enhanced therapeutic benefits. So, for example, a **10 mg** dose of phytosome quercetin is the equivalent of a **500 mg** dose of regular quercetin.³⁰

Quercetin





METABOLIC SYNDROME



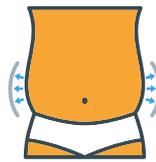
Lipid
Abnormalities



Hypertension



Insulin
Resistance



Visceral
Obesity



Type II
Diabetes



Low HDL
Cholesterol

Another clinical study found that the same dose of quercetin (**150 mg/day**) for eight weeks decreased waist circumference and *after-meal* systolic blood pressure, while also lowering *after-meal* triglyceride levels in a group of otherwise healthy men.¹⁵

Reduction in Inflammation & Oxidative Stress

Chronic inflammation and oxidative stress due to free radicals are major contributors to all chronic diseases, especially metabolic disease.

Quercetin provides potent activity against both issues. It reduces oxidative stress and promotes the expression of antioxidant enzymes so that the body can better protect itself.

At the same time, quercetin powerfully controls **inflammation** by modulating cell signaling pathways. Clinical and non-clinical studies have demonstrated that it decreases production of pro-inflammatory compounds and helps prevent **chronic inflammation**.²⁵⁻²⁸

Increased dietary intake of flavonoids such as quercetin may reduce the risk of chronic illnesses.²⁹

Summary

Metabolic disease is increasingly common. Abnormalities of metabolism manifest in several different conditions including diabetes, obesity, lipid abnormalities, and non-alcoholic fatty liver disease.

The epidemic of these disorders is expected to increase and will contribute to rapid aging and most chronic diseases.

Quercetin, a flavonoid found in several different fruits and vegetables, has a profound effect on metabolic health.

Studies show that supplementation with quercetin has positive effects on many aspects of metabolism, including improved blood glucose control, trimmer physique, improved blood lipid levels and gut health, and protection of the liver. •

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

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Feel Better *FASTER* During COLDS & FLU

BY MICHAEL DOWNEY

Colds and **flu** can make anyone miserable.

They pose a particular risk to **older adults**, who have reduced **immune** responses.^{1,2}

Human studies show that three nutrients, taken in the *early* stages of a cold or flu, can *activate immune* functions to ***change the course of the illness.***³⁻⁶

These nutrients can reduce the **duration** and **severity** of the cold or flu, making people feel better faster and decreasing the danger to older adults.

Protection Against Colds and Flu

Over **one billion colds** occur in the U.S. each year,⁷ typically lasting about seven days.⁸

Up to **20%** of Americans contract the **flu** each year, which can lead to sometimes-fatal complications including **pneumonia**—particularly in older adults.⁷

Flu vaccines don't protect against **colds**⁷ and don't even protect against all the strains of **flu virus**.⁹

In human studies, scientists have demonstrated that **elderberry**, **zinc**, and **vitamin C** can help target respiratory infections:³⁻⁶

- **Elderberry** extract was shown to resolve upper respiratory symptoms up to **four days earlier** than a placebo,^{4,5}
- **Zinc** lozenges were found to reduce duration of colds by up to **44%** and severity of symptoms by as much as **50%** when initiated soon after symptoms appear,³ and
- **Vitamin C** reduced duration of colds by **9.4%** overall and by **18%** in children.⁶

Supplementation should be started as soon as possible after symptoms begin.^{3,4,6,10} This strategy applies to all approaches including anti-viral flu drugs such as Xofluza® to get people back on their feet quickly.¹¹



Elderberry

Elderberries contain anthocyanins, which are plant pigments that have demonstrated immunomodulating, antioxidant, antiviral, and anti-inflammatory effects.^{5,12,13}

Elderberries' **antiviral** effects have been shown in two major reports:

- A systematic review of previous studies published in **2021** found that elderberry extract may safely **reduce** the **duration** of **flu** and **cold** infections and **reduce** the **severity** of colds.⁵
- An earlier meta-analysis of clinical trials showed that elderberry extract can significantly **reduce** the **duration** of illness in people with **flu** or **cold** infections.¹²

Cell culture studies found that **elderberry** and its extract had direct antiviral effects against **viral respiratory tract infections** such as colds and flu.

In high (in vitro) doses, **nearly 100%** of cells were protected against infection.^{14,15} The positive outcomes were observed even in the virulent form of flu virus that caused the **1918** Spanish flu pandemic (**H1N1**).¹⁵

Later studies demonstrated similar effects in **humans**. In one, people suffering from upper respiratory symptoms who used **elderberry extract** had their symptoms resolve **four days earlier** than those taking a **placebo**.⁴

Zinc

Zinc is critical to maintaining **immune system** strength. It helps with normal development and function of key immune components, including:¹⁶

- **Natural killer cells**, which kill virally infected cells and tumor cells,
- **Lymphocytes**, which produce antibodies and help control immune responses,
- **Neutrophils**, which travel to infection sites and ingest bacteria or viruses, and
- **Macrophages**, which surround and kill harmful microorganisms.

Zinc deficiency is common among the elderly.^{17,18} Data show that oral intake of zinc by the elderly boosts the stress response of **white blood cells**, enhancing immune response.¹⁹

WHAT
YOU
NEED
TO
KNOW



Elderberry

Zinc also seems to **coat the receptors** that **viruses** use to bind to cells. This means that viruses may be kept out of body cells, effectively **blocking** them from replicating out of control.²⁰

A meta-analysis of clinical trials evaluated the effects of taking more than **75 mg** of zinc per day, in the form of **zinc acetate lozenges** every few hours throughout the day, starting after the first sign of symptoms. Results of this analysis showed:

- Reduced **duration** of various cold symptoms by between **18%** to **54%**, and
- Colds themselves were reduced in duration by **42%**.

Vitamin C

Vitamin C enhances growth and survival of infection-fighting **immune cells** by:²¹⁻²³

- Helping to increase levels of antibody-producing lymphocytes,
- Boosting function of infection-engulfing neutrophils, and
- Supporting natural killer cell activity.

Scientists have also demonstrated broader immune benefits of **vitamin C**, including:^{23,24}

- Neutralization of excess **free radicals** caused by the immune system's fight against infectious organisms,²³
- Preclinically, increased **interferons** have been demonstrated; these are chemical signaling molecules the body produces to trigger immune mechanisms,²³
- Support for production of **collagen**, the protein that helps respiratory and digestive tract linings maintain an anti-infection barrier,²⁴ and
- Reduction of **histamine**, a pro-inflammatory compound that plays a role in infections and allergy symptoms.²⁴

A large review paper on **vitamin C** and infections found that vitamin C **reduced duration** of colds by **9.4%** on average (**8%** in adults, **18%** in children).⁶

Strengthen Your Immune System—Fast

- Respiratory infections, such as **colds** and **flu**, have the potential to be life-threatening for aging people.
- Research has found that **zinc**, **elderberry**, and **vitamin C** help support the immune system and can reduce the *severity* and *duration* of colds and flu when taken at the first sign of symptoms.
- **Zinc** lozenges have been shown to reduce duration of colds by an average of **42%**.
- **Elderberry** extract helps resolve upper respiratory symptoms up to **four days earlier** than a placebo.
- **Vitamin C** has been shown to reduce duration of colds by an average of **9.4%** overall and by **18%** in children.

Other studies have found that vitamin C reduces **duration**^{6,25,26} and **incidence**²⁷⁻²⁹ of colds. Some evidence has suggested greater benefit with *higher* doses and if intake begins right after symptom onset.⁸

The human body cannot produce or effectively store vitamin C. So, levels should be replenished **daily**.³⁰

In an analysis of two clinical trials scientists found that a combination of **1,000 mg** vitamin C plus **10 mg** zinc over five days of treatment, was more efficient in reducing symptoms of cold than a placebo.³¹ This may indicate the importance of a multi-nutrient strategy.

Along with **elderberry** and **zinc**, **vitamin C** can provide important **immune support**.

Summary

Colds and flu can pose a substantial risk to older adults due to age-related immune decline.

Clinical studies demonstrate that, when taken for a short course at the first sign of symptoms, **elderberry**, **zinc**, and **vitamin C** can support the immune functions and reduce the *severity and duration* of certain viral infections. •

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

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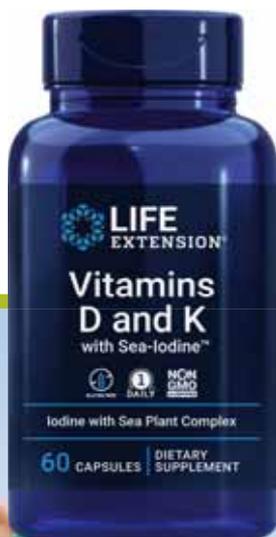
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Increase the “Feel-Good” Neurotransmitter

BY LAURIE MATHENA



Many people accept brain fog, slower brain speed, and lack of motivation as a normal part of aging.

It doesn't have to be.

Cognitive changes can occur due to an increase in an *enzyme* called **MAO-B** (monoamine oxidase B) in the brain.

MAO-B breaks down *dopamine*, a neurotransmitter that is central to many aspects of **cognitive functioning**.¹

Overactivity of MAO-B also produces **toxic compounds** that damage brain cells and contribute to **neurodegenerative** risks.^{1,2}

Research has shown that *inhibiting* MAO-B reduces **cognitive decline**.^{1,2}

In animal studies, lowered MAO-B activity is associated with **increased longevity**.³⁻⁶

Preclinical evidence has revealed that **phellodendron tree bark** is an **inhibitor** of **MAO-B**.⁷

By preserving healthy **dopamine** levels, **phellodendron bark** may help maintain clear thinking, cognitive function, and motivation—while reducing potential risk for neurodegeneration.

What is Dopamine?

Dopamine is a neurotransmitter that carries signals—chemical “messages”—between brain cells.¹

It is sometimes called the “feel-good” neurotransmitter. It also plays a role in various aspects of **cognitive functioning**, including attention, motivation, and movement.^{8,9}

The levels of **dopamine** decline by about **13%** each decade after age 45.¹⁰ A meta-analysis of 95 studies including 2,611 healthy adults concluded that activity in the brain’s dopamine system decreases by an average of **3.7%–14.0%** per decade age.¹¹

Low dopamine levels are associated with depression, lack of motivation and pleasure, and symptoms of drug withdrawal.^{2,8}

Loss of dopamine function has also been shown to play a major role in the development of some neurodegenerative diseases.¹²

How MAO-B Overactivity Damages the Brain

One potential underlying cause of low brain dopamine levels is an increase in the enzyme **MAO-B**, which breaks down dopamine.¹

MAO-B activity *increases* in the brain as we age.¹³

As MAO-B increases, highly **toxic byproducts** are formed that can damage brain cells.² This damage has been linked to brain deterioration and development of age-related neurodegenerative diseases, including **Parkinson’s** and **Alzheimer’s**.

Researchers have hypothesized that when MAO-B activity is **normal**, these toxic byproducts are largely neutralized by antioxidant defenses.^{2,13,14}

Inhibiting MAO-B overactivity *prevents* some of the breakdown of dopamine that occurs with aging.

The dopamine system is complex, including not only dopamine levels but also multiple types of dopamine receptors and transporters, all of which vary across different brain regions.¹¹

Phellodendron Inhibits MAO-B

Scientists have identified, in pre-clinical models, **phellodendron tree bark** as one of the strongest and most selective plant-derived **MAO-B inhibitors**.^{7,15}

One study found that **phellodendron** inhibited activity up to **5.6-fold**. This is comparable to **deprenyl**, an MAO-B-inhibiting drug used to treat Parkinson’s and depression.⁷

The ability of **phellodendron** to inhibit MAO-B means it has the potential to maintain dopamine levels *and* block the neurotoxic effects of the enzyme’s overactivity.

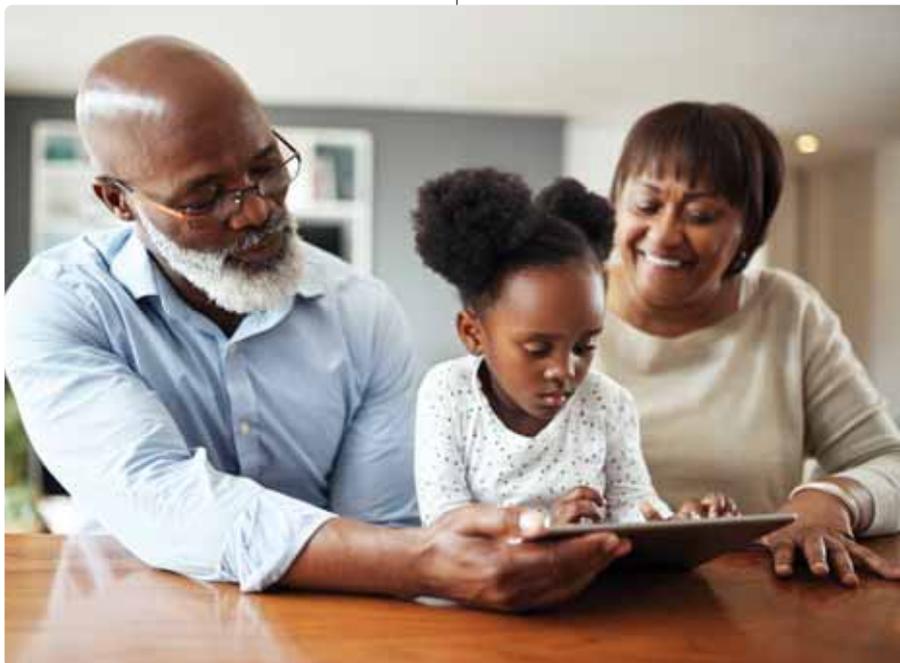
Phellodendron Protects Cognitive Function

Phellodendron has **neuroprotective** properties that go beyond MAO-B inhibition.¹⁶⁻¹⁸

In one cell model of **Alzheimer’s disease**, phellodendron extract protected against **beta-amyloid toxicity**,¹⁷ which is commonly seen in the brains of people with Alzheimer’s.

In a rodent model, phellodendron protected against **neuroinflammation**, amyloid production, and other changes associated with Alzheimer’s.^{18,19}





In humans, these mechanisms could help maintain **cognitive function** into older age.

Summary

With age, overactivity of the enzyme **MAO-B** occurs in the brain.

This may result in *reduced* levels of the critical neurotransmitter **dopamine**.

MAO-B also produces toxic compounds that damage brain cells and contribute to the risk for neurodegenerative diseases.

Phellodendron bark extract can *inhibit* MAO-B activity.

This may help maintain **dopamine levels** and prevent the neurotoxicity associated with MAO-B overactivity. Studies also show that phellodendron has other **neuroprotective** properties.

Those who take MAO-B-inhibiting drugs like **deprenyl** do not need to take **phellodendron**. Phellodendron is not a substitute for physician-prescribed medications. •

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

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RESTORE YOUTHFUL CELL ENERGY WITH **R-LIPOIC ACID**

Powerful **energizing** support to help reduce oxidative stress and body fat.

R-Lipoic Acid achieves **10-30 times** higher peak blood levels.

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

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

Bio-Enhanced® is a registered trademark of GeroNova Research, Inc.



SUPER SALE PRICE

Item #01208 • 60 vegetarian capsules
1 bottle **\$33.08**

4 bottles \$30.38 each

Suggested dose is one to two capsules daily.

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



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

Slow Down Aging

Life Extension® carnosine is available in three different formulas to allow you to customize your longevity program.



Carnosine, a unique dipeptide that can inhibit *glycation* throughout the body, helping to slow normal aging processes.



Super Carnosine provides the same strong potency of carnosine plus luteolin to inhibit inflammatory factors and fat soluble vitamin B1 (benfotiamine) to further impede glycation reactions.



Mitochondrial Energy Optimizer with PQQ contains same optimal dose of carnosine plus, R-lipoic acid, taurine, benfotiamine, and PQQ to provide broad-spectrum support.

SUPER SALE PRICE

Item #01829 • 60 vegetarian capsules
1 bottle **\$24.30** • 4 bottles \$21.60 each

Life Extension® was the first to introduce high-dose (**500 mg**) carnosine back in **1999**.

SUPER SALE PRICE

Item #02020 • 60 vegetarian capsules
1 bottle **\$27** • 4 bottles \$24.30 each

Carnosine has been shown to help protect against several normal **aging** processes.

SUPER SALE PRICE

Item #01868 • 120 vegetarian capsules
1 bottle **\$45.90** • 4 bottles \$40.50 each

Each formula provides high doses of carnosine to ensure sustained benefits.

For full product description and to order **Carnosine**, **Super Carnosine** or **Mitochondrial Energy Optimizer with PQQ**, call **1-800-544-4440** or visit www.LifeExtension.com

Bio-Enhanced® is a registered trademark of Geronova Research, 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.



A
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.

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

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

SUPER SALE PRICE

(1,000 mcg of lithium per tiny cap)

Item #02403

100 vegetarian capsules

1 bottle **\$10.80**

4 bottles **\$9.45** each

Each bottle lasts 100 days.



GLUTEN
FREE

**NON
GMO**
LE CERTIFIED

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

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.

"It improves my mental focus."

Brenda

VERIFIED CUSTOMER REVIEW

DOPAMINE

The "FEEL GOOD"
Neurotransmitter

Dopamine, the "feel good" neurotransmitter, regulates motivation, mood, movement, and cognitive function.

With age, dopamine levels *decline* due to the increase of the **MAO-B enzyme**.

Amur Cork Tree (Phellodendron bark) can help *preserve dopamine* by *inhibiting MAO-B* activity.

Dopamine Advantage provides **500 mg** of **Amur Cork Tree** and **500 mcg** of **Vitamin B12** in each capsule.

Feel Better,
THINK
More Clearly



SUPER SALE PRICE

Item #02413

500 mg • 30 vegetarian capsules
1 bottle **\$12.15** • 4 bottles \$10.80 each

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



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

ACTIVE LIFESTYLE & FITNESS

- 01529 Creatine Capsules
- 02020 Super Carnosine
- 02023 Tart Cherry with CherryPURE®
- 02246 Wellness Code® Advanced Whey Protein Isolate Vanilla
- 02221 Wellness Code® Muscle Strength & Restore Formula
- 02127 Wellness Code® Plant Protein Complete & Amino Acid Complex
- 02261 Wellness Code® Whey Protein Concentrate Chocolate
- 02260 Wellness Code® Whey Protein Concentrate Vanilla
- 02243 Wellness Code® Whey Protein Isolate Chocolate
- 02242 Wellness Code® Whey Protein Isolate Vanilla

AMINO ACIDS

- 00038 Arginine Ornithine Powder
- 01253 Branched Chain Amino Acids
- 01829 Carnosine
- 01671 D,L-Phenylalanine Capsules
- 01624 L-Arginine Caps
- 01532 L-Carnitine
- 00345 L-Glutamine
- 00141 L-Glutamine Powder
- 01678 L-Lysine
- 01827 Taurine
- 00133 Taurine Powder
- 00326 Tyrosine Tablets

BLOOD PRESSURE & VASCULAR SUPPORT

- 01824 Advanced Olive Leaf Vascular Support
- 02004 Arterial Protect
- 02497 Endothelial Defense™ Pomegranate Plus
- 56885 Natto Activ Cardiovascular & Respiratory Support
- 02320 NitroVasc™ Boost
- 00984 Optimal BP Management
- 01953 Pomegranate Complete
- 00956 Pomegranate Fruit Extract
- 02024 Triple Action Blood Pressure AM/PM
- 02102 Venoflow™

BONE HEALTH

- 01726 Bone Restore
- 02123 Bone Restore Chewable Tablet
- 02416 Bone Restore Elite with Super Potent K2
- 01727 Bone Restore with Vitamin K2
- 01725 Bone Strength Collagen Formula
- 00313 Bone-Up™
- 01963 Calcium Citrate with Vitamin D
- 01506 Dr. Strum's Intensive Bone Formula
- 02417 Mega Vitamin K2
- 01476 Strontium Caps

BRAIN HEALTH

- 01524 Acetyl-L-Carnitine
- 01974 Acetyl-L-Carnitine Arginate
- 02419 B12 Elite
- 02510 Brain Fog Relief
- 01659 CDP Choline
- 02321 Cognitex® Basics
- 02396 Cognitex® Elite
- 02397 Cognitex® Elite Pregnenolone
- 01540 DMAE Bitartrate
- 02006 Dopa-Mind™
- 02413 Dopamine Advantage
- 02212 Focus Tea™
- 01658 Ginkgo Biloba Certified Extract™
- 01527 Huperzine A
- 00020 Lecithin
- 02101 Memory Protect
- 00709 Migra-Eeze™

- 01603 Neuro-Mag® Magnesium L-Threonate Caps
- 02032 Neuro-Mag® Magnesium L-Threonate Powder
- 00888 Optimized Ashwagandha
- 01676 PS (Phosphatidylserine) Caps
- 02406 Quick Brain Nootropic
- 01327 Vinpocetine

CHOLESTEROL MANAGEMENT

- 01828 Advanced Lipid Control
- 01359 Cho-Less™
- 01910 CHOL-Support™
- 01030 Red Yeast Rice
- 01304 Theaflavins Standardized Extract
- 00372 Vitamin B3 Niacin Capsules

DIGESTION SUPPORT

- 53348 Betaine HCl
- 02412 Bloat Relief
- 30747 Digest RC®
- 01736 Effervescent Vitamin C - Magnesium Crystals
- 02021 Enhanced Super Digestive Enzymes
- 02022 Enhanced Super Digestive Enzymes and Probiotics
- 02033 EsophaCool™
- 01737 Esophageal Guardian
- 01706 Extraordinary Enzymes
- 02100 Gastro-Ease™
- 01122 Ginger Force™
- 00605 Regimint
- 01386 TruFiber®

ENERGY MANAGEMENT

- 01628C Adrenal Energy Formula • 60 veg capsules
- 01630C Adrenal Energy Formula • 120 veg capsules
- 00972 D-Ribose Powder
- 01473 D-Ribose Tablets
- 01900 Energy Renew
- 01544 Forskolin
- 01805 Ginseng Energy Boost
- 00668 Metabolic Advantage Thyroid Formula™
- 01869 Mitochondrial Basics with PQQ
- 01868 Mitochondrial Energy Optimizer with PQQ
- 01904 NAD+ Cell Regenerator™ • 100 mg, 30 veg capsules
- 02344 NAD+ Cell Regenerator™ 300 mg, 30 veg capsules
- 02348 NAD+ Cell Regenerator™ and Resveratrol Elite™
- 01500 PQQ Caps • 10 mg, 30 vegetarian capsules
- 01647 PQQ Caps • 20 mg, 30 vegetarian capsules
- 00889 Rhodiola Extract
- 02003 Triple Action Thyroid

EYE HEALTH

- 01923 Astaxanthin with Phospholipids
- 00893 Brite Eyes III
- 02323 Digital Eye Support
- 01514 Eye Pressure Support with Mirtogenol®
- 01992 MacuGuard® Ocular Support with Saffron
- 01993 MacuGuard® Ocular Support with Saffron & Astaxanthin
- 01873 Standardized European Bilberry Extract
- 01918 Tear Support with MaquiBright®

FISH OIL & OMEGAS

- 01937 Mega EPA/DHA
- 02218 Mega GLA Sesame Lignans
- 01983 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 softgels
- 01988 Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill & Astaxanthin
- 01982 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 softgels
- 01985 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 enteric coated softgels

- 01984 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 enteric coated softgels
- 01986 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 240 softgels
- 01812 Provinal® Purified Omega-7
- 01640 Vegetarian DHA

FOOD

- 02008 California Estate Extra Virgin Olive Oil
- 02170 Rainforest Blend Decaf Ground Coffee
- 02169 Rainforest Blend Ground Coffee
- 02171 Rainforest Blend Whole Bean Coffee
- 00438 Stevia™ Organic Liquid Sweetner
- 00432 Stevia™ Sweetener

GLUCOSE MANAGEMENT

- 01503 CinSulin® with InSea²® and Crominex® 3+
- 01620 CoffeeGenic® Green Coffee Extract
- 02122 Glycemic Guard™
- 00925 Mega Benfotiamine
- 01803 Tri Sugar Shield®

HEART HEALTH

- 01066 Aspirin (Enteric Coated)
- 01842 BioActive Folate & Vitamin B12 Caps
- 01700 Cardio Peak™
- 02121 Homocysteine Resist
- 02018 Optimized Carnitine
- 01949 Super-Absorbable CoQ10 Ubiquinone with *d*-Limonene • 50 mg, 60 softgels
- 01951 Super-Absorbable CoQ10 Ubiquinone with *d*-Limonene • 100 mg, 60 softgels
- 01929 Super Ubiquinol CoQ10
- 01427 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 30 softgels
- 01425 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 100 softgels
- 01437 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 30 softgels
- 01426 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 60 softgels
- 01431 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 200 mg, 30 softgels
- 01733 Super Ubiquinol CoQ10 with PQQ
- 01859 TMG Liquid Capsules
- 00349 TMG Powder

HORMONE BALANCE

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

IMMUNE SUPPORT

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

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

INFLAMMATION MANAGEMENT

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

JOINT SUPPORT

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

KIDNEY & BLADDER SUPPORT

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

LIVER HEALTH & DETOXIFICATION

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

LONGEVITY & WELLNESS

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

MEN'S HEALTH

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

MINERALS

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

MISCELLANEOUS

- 00577 Potassium Iodide
- 00657 Solarshield® Sunglasses

MOOD & STRESS MANAGEMENT

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

MULTIVITAMINS

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

NERVE & COMFORT SUPPORT

- 02202 ComfortMAX™
- 02303 Discomfort Relief

PERSONAL CARE

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

PET CARE

- 01932 Cat Mix
- 01931 Dog Mix

PROBIOTICS

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

SKIN CARE

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

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

SLEEP

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

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

VITAMINS

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

WEIGHT MANAGEMENT & BODY COMPOSITION

- 02479 7-Keto® DHEA Metabolite • 100 mg, 60 veg capsules
- 02207 AMPK Metabolic Activator
- 02504 Body Trim and Appetite Control
- 02478 DHEA Complete
- 01738 Garcinia HCA
- 02506 Mediterranean Weight Management
- 01432 Optimized Saffron
- 00818 Super CLA Blend with Sesame Lignans
- 02511 Thermo Weight Control
- 02509 Waistline Control™

WOMEN'S HEALTH

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

*Super Health.
Super Libido.
Super Miraforte.*

Maintaining healthy **testosterone** levels helps men regain health and improve performance.

By the time a man is 70 years old, he may produce **60% less** testosterone than he did at age 40.*

The time is now to add **Super Miraforte with Standardized Lignans** to your supplement regimen.

Top Off Your TESTOSTERONE



Low Testosterone Levels May Lead to:

- Reduced Sex Drive
- Less Energy
- Cloudy Thinking
- Weight Gain
- Cardiovascular Factors



SUPER SALE PRICE

Item #01940 • 120 vegetarian capsules
1 bottle **\$41.85**
4 bottles **\$37.80 each**

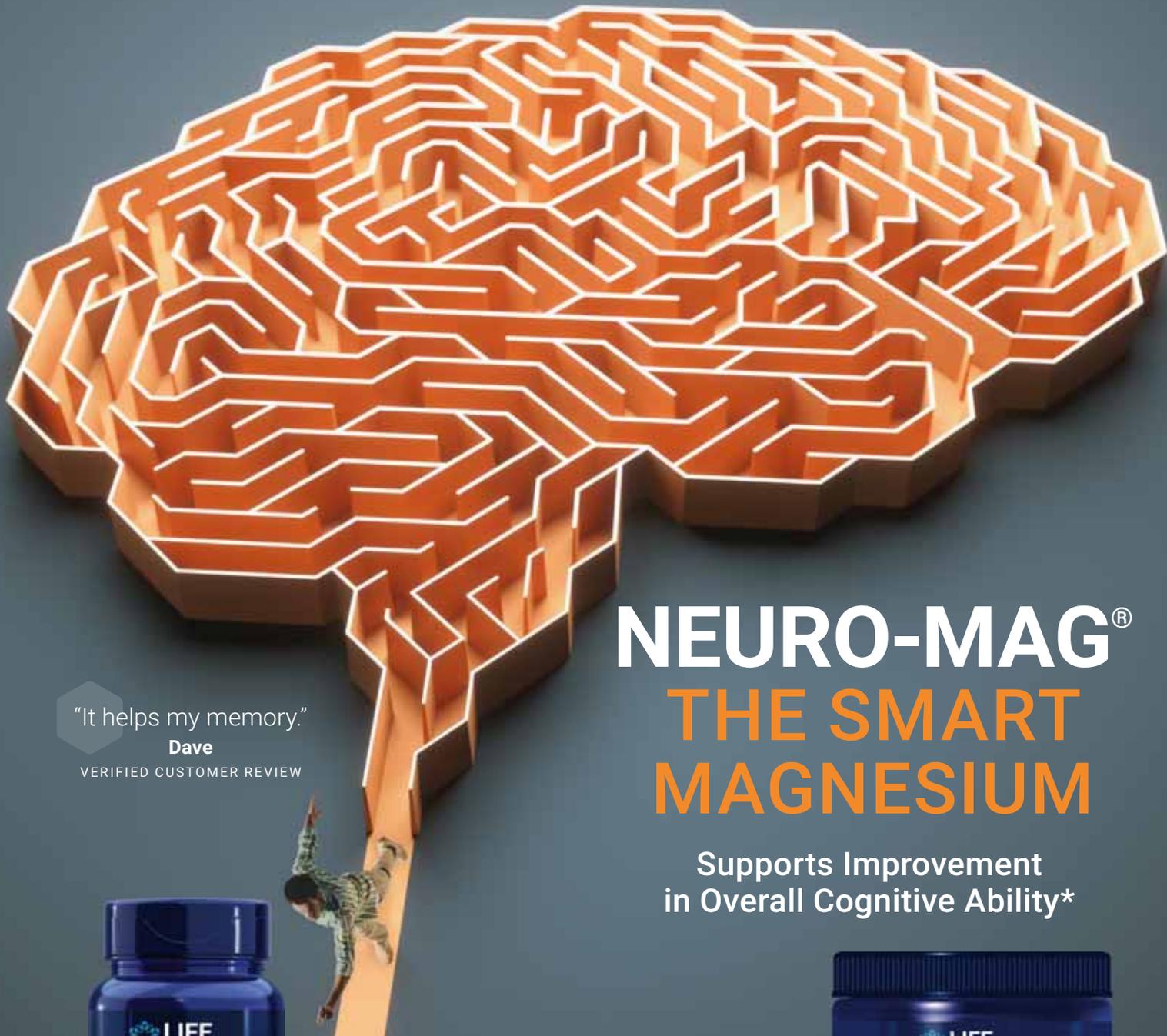
For full product description and to order **Super Miraforte with Standardized Lignans**, call 1-800-544-4440 or visit www.LifeExtension.com

* J Clin Endocrinol Metab. 2002 Feb;87(2):589-98.

Caution: Do not take more than 15 mg per day of Bioperine®. If you are taking any medication, use only under physician supervision. Men with existing prostate cancer may not be able to use this product. Elevations in free testosterone can unmask an occult (hidden) prostate cancer. Anyone with this concern should have a baseline PSA prior to using this product and a follow-up PSA test 60 days later. If a significant elevation of PSA is found, discontinue this product and advise physician.

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



"It helps my memory."

Dave

VERIFIED CUSTOMER REVIEW

NEURO-MAG[®]

THE SMART MAGNESIUM

Supports Improvement
in Overall Cognitive Ability*



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

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



SUPER SALE PRICE

Item #01603 • 90 vegetarian capsules

1 bottle \$27.68 • 4 bottles \$24.75 each



SUPER SALE PRICE

Item #02032 • 93.35 grams of powder

1 jar \$27.68 • 4 jars \$24.75 each

For full product description and to order **Neuro-Mag[®] Magnesium L-Threonate** or **Neuro-Mag[®] Magnesium L-Threonate Powder**, call 1-800-544-4440 or visit www.LifeExtension.com

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

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



The Science of a Healthier Life®

PO BOX 407198
FORT LAUDERDALE, FLORIDA 33340-7198



WHAT'S NEW THIS MONTH...



7



22

7 WORLDWIDE OBESITY CRISIS

Obesity prevalence has **tripled** since **1975**. A compound found in **red chili peppers** increases calorie burning. A new method improves **bioavailability** to promote **weight loss**.

22 POMEGRANATE AND HEART HEALTH

Pomegranate protects the **heart** and **endothelium**. In a clinical study pomegranate *reduced* **arterial plaque**.



34



50

34 UNLEASH RESVERATROL'S POTENTIAL

Encasing **resveratrol** in a **hydrogel fiber** enables it to become up to **10 times more bioavailable**, delivering longevity effects throughout the body.

50 QUERCETIN IMPROVES METABOLIC HEALTH

Quercetin, found in certain plants, can *improve* **metabolic syndrome** while *reducing* cardiovascular risk factors.

60 FEEL BETTER FASTER

Studies show that **elderberry**, **zinc**, and **vitamin C**, taken in the *early* stages of a cold or flu, can *shorten* their duration.



60



69

69 SOLUTIONS: PROTECT AGAINST DOPAMINE DEFICIT

Inhibiting an *enzyme* called MAO-B boosts brain **dopamine** levels, protecting neuronal structures, and improving mood.

SuperSale IS ON!

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