Add 12 to 14 Years to Healthy Life Expectancy

Reduce Overactive Bladder at Night

Impact of Carnosine on Aortic Sclerosis

Internal Protection Against UV Rays

Vitamin D Protects COPD Patients

Inhibit the Trigger of Inflammation
TO YOUR GUT
BE KIND,
KEEP HEALTH IN MIND

FLORASSIST® GI is a blend of potent probiotics and TetraPhage technology. TetraPhage affects only undesirable bacteria, leaving “good” digestive bacteria alone.

The dual-encapsulated probiotic bypasses the harsh stomach environment to go where you need it most.

FLORASSIST® GI
Item #02125 • 30 liquid vegetarian capsules
1 bottle $24.75 • 4 bottles $22.50 each

For full product description and to order FLORASSIST® GI with Phage Technology, 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.
35 CARNOSINE PROTECTS AGAINST FATTY BUILDUP
Carnosine shows promise in preventing initial stages of atherosclerosis and aortic valve stenosis by converting white fat to beneficial brown fat.

42 FIGHTING INFLAMMATION BY INHIBITING NF-KB
Inhibiting a cellular protein complex called nuclear factor kappa B (NF-kB) helps prevent inflammation-driven aging as well as insulin resistance and arthritis. Several nutrients can safely block NF-kB to reduce systemic inflammation.

56 ORAL SUNSCREEN PROVIDES ALL-OVER PROTECTION
Topical sunscreens do not protect all parts of the body from solar radiation. A fern extract and other nutrients taken orally help block UV damage to skin cells, decreasing DNA mutations by 84% and supporting DNA repair.

64 MAKING YOUR HEART AGE SLOWER SO IT LASTS LONGER
The most successful young-heart strategies protect against the way the heart ages. The CR Way Young-heart Strategy can reduce the age of your heart by up to 15 years.

79 HEALTHY EATING
Consuming extra virgin olive oil every day may protect against Alzheimer’s, osteoporosis, skin aging, and cancer, due to its high polyphenol content. To increase daily use, four recipes for delicious, olive-oil-based salad dressings are presented.

85 SUPERFOODS
Walnuts’ unique nutrient composition works to combat heart disease, cancer, and cognitive decline—and even boosts the creation of new brain cells.

87 WELLNESS PROFILE
Gym owner Colleen Sturgess is a certified trainer in Rock Steady Boxing, a non-contact, boxing-based fitness curriculum, scientifically proven to slow the progression of Parkinson’s disease. Sturgess explains its success and how it provides much more than exercise.
• Personal Consultation with Life Extension
• Blood Testing and Analysis
• The Most Complete Line of Life Extension Supplements

Policy

Editorial:

Chief Medical Officer:

Chief Scientific Officer:

Scientific Advisory Board:

Senior Director of Sales and Business Development:

Advertising:

Circulation & Distribution:

Customer Service:

Email:

Visit the Life Extension Nutrition Center Store:

Nutrition Center of Florida, Inc.

5990 North Federal Highway,

Fort Lauderdale, FL 33308-2633 • 954-766-8144

Monday-Friday 9 am-8 pm,

Saturday 9 am-6 pm, Sunday 11 am-5 pm

Customer care is available to take your calls
24 hours a day, 7 days a week.

#1 Rated Catalog/Internet Merchant—3-Time Winner
Ratings based on results of the
More information at

LIFE EXTENSION (ISSN 1524-198X) Vol. 25, No. 7 ©2019 is published monthly except bi-monthly in April by LE Publications, Inc. at 3600 West Commercial Blvd., Fort Lauderdale, FL 33308-3338. LE Publications, Inc. All rights reserved. Published 13 times a year. Subscription rate: $40 per year in the United States. US $47 in Canada. US $60 in other countries. Mail subscriptions or address changes to: LE Publications, Inc., P.O. Box 407198, Fort Lauderdale, FL 33340-7198, USA. Or phone us toll-free at: 1-800-841-5433. Canada Subscription rate is $47 per year in Canada. For Canadian customers send change of address requests to: Publications mail agreement number 40028967. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B 4R6. You will be sent your first issue within six weeks after LE Publications, Inc. receives your subscription fee. Periodicals Postage paid at Fort Lauderdale, FL and at additional mailing offices. POSTMASTER: Send address changes to Life Extension, P.O. Box 407198, Ft. Lauderdale, Florida 33340-7198, USA. Printed in USA. The articles in this magazine are intended for informational purposes only. They are not intended to replace the attention or advice of a physician or other health-care professional. Anyone who wishes to embark on any dietary, drug, exercise, or other lifestyle change intended to prevent or treat a specific disease or condition should first consult with and seek clearance from a qualified health-care professional. LEGAL NOTICE: Health claims contained in articles and advertisements in this publication have not been approved by the FDA with the exception of FDA-approved, qualified health claims for calcium, antioxidant vitamins, folic acid and EPA and DHA omega-3 fatty acids, and selenium as noted where applicable. Life Extension Magazine® does not endorse any of the businesses or the products and/or services that may appear in advertisements for non-Life Extension branded products or services contained in it, except to state that they are advertisers who may have paid Life Extension for placement of an advertisement in this publication. Life Extension disclaims any and all responsibilities or warranties as to the accuracy of information contained in advertisements for non-Life Extension branded products or services. For Canadian customers send change of address information and blocks of undeliverable copies to PO. Box 1051, Fort Erie, ON L2A 6C7.
Enzymatically Active Vitamins

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

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

Reference

Item #01945 • 60 vegetarian capsules
1 bottle $9
4 bottles $8 each

For full product description and to order BioActive Complete B-Complex, call 1-800-544-4440 or visit www.LifeExtension.com

Low-Cost Biologically Active

B COMPLEX

B Complex

B1 vitamin

B2 vitamin

B3 vitamin

B6 vitamin

B9 vitamin

B12 vitamin

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.
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. Bezek, MD, FACR, FAARM, FFAEM, 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.

Prof. Francesco Marotta, MD, PhD, of Montenapoleone 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.

Herbert Pardell, DO, FAAIM, practices internal medicine at the Emerald Hills Medical Center in Hollywood, FL. He is a medical director of the Life Extension Foundation.

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 a 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.

Paul Wand, MD, Fort Lauderdale, FL, is a clinical neurologist with special expertise in treating and reversing diabetic peripheral neuropathy and brain injuries from various causes.
Örn Adalsteinsson, PhD, is chairman of the Life Extension Scientific Advisory board. He holds a master’s and doctorate from the Massachusetts Institute of Technology (MIT). He has specialized in human therapeutics including vaccines, monoclonal antibodies, product development, nutraceuticals, formulations, artificial intelligence, hormones, and nutritional supplementation. He has also authored articles and contributed to peer-reviewed publications and served as an editor for the Journal of Medicinal Food.

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.

Frank Eichhorn, MD, is a urologist specializing in prostate cancer for 10 years. He has a private practice in Bad Reichenhall, Germany, and is prostate cancer consultant at the Urologische Klinik Castrignius, Planegg, Munich. In his integrative approach to prostate cancer he works together with an international network of experts to improve treatment outcomes for prostate cancer patients with a special focus on natural and translational medicine.

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.

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.

Steven B. Harris, MD, is president and director of research at Critical Care Research, a company that grew out of 21st Century Medicine in Rancho Cucamonga, CA. Dr. Harris participates 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
Dr. Dipnarine Maharaj is the Medical Director of the South Florida Bone Marrow Stem Cell Transplant Institute 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.

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 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.
CONQUER BELLY FAT WITH AMPK

There’s an enzyme called AMPK in every cell of your body. Studies show that increasing AMPK activity encourages cells to stop storing fat and start burning it for energy. So we’ve created AMPK Metabolic Activator to help trigger AMPK, causing your body to burn unwanted fat—particularly around your abdomen.

Item #02207 • 30 vegetarian tablets

1 bottle $28.50

4 bottles $24 each

For full product description and to order AMPK Metabolic Activator, call 1-800-544-4440 or visit www.LifeExtension.com

ActivAMP® is a registered trademark of Gencor.

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

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.
Add 12 to 14 Years to Healthy Life Expectancy

BY WILLIAM FALOON

When I founded the Life Extension® group in 1977, our unique purposes attracted a lot of media attention.

A question reporters often asked me was:

"Why do you want to live so long?"

Rather than respond to the obvious, I made it clear that if people followed healthier lifestyles, they could add about 15 years to their lifespans.

Despite the news coverage, public interest in our work was virtually zero until 1980. That’s when we began publishing Anti-Aging News. Three hundred subscriptions were sold the first year at $27 each.

This attracted media questions like: “Is extending human lifespans a fad that will soon disappear?” Our response was that once people feel better and live longer, they will not revert to illness and premature death.

A large study published in 2018 demonstrated that people who adopt five specific healthy lifestyle factors add 12-14 years to their life expectancy.1

None of these healthy choices are surprising today. Each, however, was met with skepticism in earlier years.

We at Life Extension view 15 years of added life as a starting point. Those who go beyond basic preventive practices may live significantly longer.

The 2018 paper, published in a prestigious medical journal, outlines five factors associated with 12-14 years of additional life expectancy at age 50.1 Readers of this magazine engage in far more comprehensive approaches.

These findings, however, serve as a reminder to not overlook the basics of healthy longevity.
Despite spending more on medical care, Americans have a shorter lifespan compared with most other affluent countries.\textsuperscript{2,3}

These higher rates of mortality in the United States prompted a study to estimate the impact of lifestyle factors on life expectancy.\textsuperscript{1}

**The 5 Critical Lifestyle Factors**

The healthy lifestyle factors associated with longer life expectancy in this study were:\textsuperscript{1}

- A healthy diet
- Maintaining a body mass index of 18.5 to 24.9 kg/m\textsuperscript{2}
- 30 minutes or more a day of moderate/vigorous physical activity
- Light alcohol intake
- Never smoking

On the basis of these findings, the researchers wrote that:

“Americans could narrow the life-expectancy gap between the United States and other industrialized countries by adopting a healthier lifestyle.”\textsuperscript{1}

**Impact on Longevity**

*Circulation* is a scientific journal published for the American Heart Association.

This 2018 study published in *Circulation*, incorporated data from more than 123,000 individuals for up to 34 years. Five lifestyle factors made a huge impact on mortality.

People who adhered to all five of these behaviors had a 74% lower risk of dying from any cause, compared to those who didn’t follow any of the health lifestyle measures.\textsuperscript{1}

In people who failed to adhere to any of the five healthy factors, cancer deaths were 65% higher and cardiovascular disease mortality was 82% higher.\textsuperscript{1}

There was a clear trend for lower risk of dying with increasing adherence to the healthy lifestyle factors, even if the participants didn’t adhere to all five.

In other words, adhering to any or all of the healthy lifestyle factors progressively decreased risk of dying compared with adhering to no healthy lifestyle factors.

The researchers projected that 50-year-old women who followed all five healthy lifestyle factors would live an additional 14 years beyond what would be expected for someone who didn’t adhere to any of the lifestyle measures, while 50-year-old men who followed all five healthy lifestyle factors would live 12.2 years longer.\textsuperscript{1}

**Huge Amounts of Data Analyzed**

In this 2018 study, data from the following sources were analyzed:\textsuperscript{1}

- Nurses’ Health Study (1980–2014)
- Health Professionals Follow-up Study (1986–2014)

Combining these two studies allowed the researchers to combine results from more than 123,000 participants and to include up to 34 years of follow-up monitoring.

The title of the paper perfectly reflects the purpose of the study: "Impact of Healthy Lifestyle Factors on Life Expectancies in the U.S. Population."\textsuperscript{1}
These 12 to 14 added years represent a 48% to 49% increased lifespan (starting at age 50) in the healthy lifestyle individuals, compared to those who did not follow any of the five longevity factors.¹

**Real World Benefits**

Findings from this 2018 study are consistent with those from other countries, such as Japan,⁶ Germany,⁵,⁶ and Canada.⁷ This suggests that adherence to a healthier lifestyle exerts robust and durable effects across a wide range of geopolitical and cultural backdrops.

The authors of this study commented that “the United States healthcare system has focused primarily on drug discoveries and disease treatment rather than prevention.”¹

**Vindication for Health-Conscious Individuals**

These life-expectancy gains reported in the 2018 study are not surprising with today’s understanding of disease risks.

To repeat a point that bears emphasizing, people who adhered to all five healthy lifestyle factors had a 74% lower risk of dying from any cause at any time during the follow-up period than people who did not adhere to any healthy lifestyle factors.¹

For those who long ago began engaging in a healthy lifestyle and were criticized by cynics who felt little could be done to influence longevity, this large data analysis represents meaningful vindication.

**No Comparison to Life Extension Supporters**

The majority of people who enjoyed these remarkable lifespan increases did nothing exceptional. Unlike most of you reading this now, the study subjects didn’t take full advantage of longevity insights offered by comprehensive blood testing.

The study subjects contrast sharply with Life Extension readers who intervene to slow aging by correcting NAD⁺ deficits, removing senescent cells, and boosting cellular AMPK activity.

This large study, however, provides compelling evidence that Americans exert a tremendous degree of control over their healthy longevity. It also reveals why preventive healthcare should be a top priority for health policymakers.

Sadly, American medical practice is dominated by pharmaceutical and other financial interests whose profit depends on treating lots of people who contract cancer, or have blocked arteries, dementia, etc.

**Circumventing Degenerative Illnesses**

In 2018 it is estimated that over 600,000 Americans died of cancer.⁸ Heart disease mortality has declined, but still surpasses cancer. Record numbers of Americans are stricken with Alzheimer’s today, though prevalence of dementia has dropped in people who follow preventive behavior patterns.⁹
An abundance of published research validates substantial decreases in disease incidence and mortality in people who proactively take steps to protect their precious health.

In This Month’s Issue...

As men age past 40, they encounter nighttime urinary urgencies related to overactive bladder. Page 24 of this issue discusses a plant extract formula that reduced nighttime urinary frequency in a study group of men over age 45.

On page 42 we examine a primary inflammatory factor inside cells that can be easily suppressed. Most of you have garnered these inflammation-lowering benefits since the early 1990s.

As a reader of this publication, you are kept informed on the latest scientific findings about improving quality-of-life as you add more years to your healthy longevity.

For longer life,

William Faloon, Co-Founder
Life Extension Buyers Club

References

COMBAT Senescent Cells and AGING

New Science of Senolytics!

Senescent cells are old cells that no longer divide but they emit factors that accelerate aging.

Senolytic compounds selectively help target senescent cells in the body.

Laboratory studies show evidence of systemic rejuvenation when the senescent cell burden is reduced.

Once-Weekly Senolytic Formula

Senolytic Activator provides a highly absorbable form of quercetin phytosome and black tea theaflavins designed to enhance the body’s ability to manage senescent cells.

The suggested dose is to take two capsules of Senolytic Activator just once weekly.

Item #02301 - 24 vegetarian capsules

1 box $18
4 boxes $16 each
(Each box lasts three months.)

For full product description and to order Senolytic Activator, 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.
PREMIER PREMIUM REWARDS

FREE Unlimited Shipping 4% Back on Purchases

ALL YEAR LONG

$50 Bonus Credit
Use now or save for later.

Worry Free
No auto-enrollment. Cancel anytime.

Join Premier Today! Only $49.95 per year.

Visit LifeExtension.com/JoinPremier • Call 1-866-748-7504 toll-free
Please Use Code YRX901A

LifeExtension®

Premier Rewards service is good for a full 12 months from the date of purchase and can be renewed as early as 6 months prior to your expiration date. Upon renewal, a full 12 months is added to your current expiration date, or the renewal date if expired. Redeem LE Dollars to purchase virtually anything we sell, including products, lab tests, and sale items — and even to pay shipping fees! — at the rate of 1 LE Dollar equal to $1 USD at checkout (gift cards, Premier fees, and Life Extension Magazine® subscriptions excluded). FREE unlimited standard shipping to any mailing address within the United States, excluding U.S. territories. Also includes discounts on nonstandard shipping and shipping outside of the U.S. International customers can join Premier for $59.95 USD.
Has Your Doctor Recommended CoQ10?

Item# 01426 • 60 softgels • 1 bottle $46.50 • 4 bottles $39 each

For full product description and to order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™, call 1-800-544-4440 or visit www.LifeExtension.com

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Human studies demonstrate robust neurological benefits in response to low-dose lithium and colostrum-derived proline-rich polypeptides.

Memory Protect has been formulated with these two nutrients to support healthy structure of brain cells, normal memory, and recall function.

Each box enables you to take these on the identical dosage schedule used in successful clinical trials.

For full product description and to order Memory Protect, 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.
Curcumin Enhances the Cardioprotective Effect of Metformin

A study published in Biomedicine & Pharmacotherapy showed that curcumin can enhance the cardioprotective effect of metformin in rats with type I diabetes.*

For the study, diabetic rats received either 200 mg/day of metformin, 100 mg/day of curcumin, or a combination of both.

Prior to treatment, the animals developed cardiomyopathy, a disease of the heart muscle that makes it difficult to pump blood. Diabetic cardiomyopathy is a major complication for patients with both type I and type II diabetes and can lead to heart failure and death.

Six weeks of treatment with metformin alone restored most of the measured parameters. However, the addition of curcumin enhanced metformin’s cardioprotective effect.

The combination resulted in a marked reduction in markers of cardiac injury and inflammation, while improving the damaged heart tissue.

Editor’s Note: “These findings suggest that a metformin and curcumin combination is a potential therapeutic candidate for diabetic cardiomyopathy in type I diabetes mellitus,” the authors concluded.

IN THE NEWS

Vitamin D Can Prevent COPD Patients from Getting Worse

According to a study published in the journal *Thorax*, vitamin D supplementation can help patients with chronic obstructive pulmonary disease (COPD).*

In a meta-analysis of three randomized, controlled trials which took place in the UK, Belgium, and the Netherlands, researchers identified data from 469 subjects.

The authors of the study found that patients with deficient vitamin D levels, lower than 10 ng/mL, who received supplementation, were far less likely to experience worsening symptoms and lung attacks. Participants who already had higher levels of vitamin D did not receive more protection when given additional supplementation.

**Editor’s Note:** Lead researcher Dr. Adrian Martineau, Clinical Professor of Respiratory Infection and Immunity at Queen Mary University of London, asserted that, “Our study shows that giving supplements to vitamin D-deficient COPD patients nearly halves their rate of potentially fatal attacks.”

French Oak Wood Extract Eases PTSD

A decrease in symptoms of post-traumatic-stress disorder (PTSD) was found among patients who supplemented with French oak wood extract for four weeks, according to a study reported in Minerva Medica.*

The study included 15 men and 19 women between the ages of 25 and 52, who were receiving supportive psychotherapy for PTSD. Sixteen participants also received 300 mg of French oak wood extract daily for four weeks. PTSD symptoms and oxidative stress levels were assessed at the beginning and end of the study.

At the end of the treatment period, the percentages of participants with PTSD symptoms were all significantly lower among those treated with French oak wood extract compared to standard management alone. At the end of the study French oak wood extract supplementation was also associated with reductions in sleep difficulties, fatigue, irritability, and oxidative stress in comparison with standard management alone.

Editor’s Note: PTSD is a condition associated with recurrent, obsessive recollection of severe traumatic events and can involve episodes of rapid heartbeat, perspiration, and variation in blood pressure. Psychotherapy, exposure therapy, and drugs like selective serotonin reuptake inhibitors (SSRIs) are currently employed to treat the condition.

Antioxidants Protect Against Hypoglycemia’s Damage

Episodes of hypoglycemia (low blood glucose) are common occurrences among diabetics treated with insulin. Repeated episodes are associated with cognitive impairment, which can worsen over time. Research presented at the Society for Endocrinology’s annual conference suggests a protective effect conferred by antioxidants against damage to the brain caused by low glucose.*

In the study, insulin was used in a mouse model of type I diabetes to induce low glucose levels three times weekly for four weeks. One group of mice received sulforaphane, an antioxidant found in broccoli and other vegetables, 24 hours before each low blood glucose episode.

Treatment with sulforaphane resulted in lower levels of hemoglobin A1c, a marker of long-term glucose control. Animals that received the compound experienced an increase in antioxidant markers, a decrease in free radical damage, and better memory, compared to those that were not treated with sulforaphane.

Blueberries Can Help Lower Blood Pressure

Researchers have discovered that anthocyanins, a type of compound found in blueberries, can improve endothelial function, resulting in lower blood pressure, reported *The Journals of Gerontology: Series A.*

The study was conducted by lead researcher Dr. Ana Rodriguez-Mateos and colleagues at King's College London. She noted that, “If the changes we saw in blood pressure function after eating blueberries every day could be sustained for a person’s whole life, it could reduce their risk of developing cardiovascular disease by up to 20%.”

Participants in the study were 40 healthy volunteers who were given either a drink containing 200 grams of blueberries daily or a matched control. The people were monitored for the effects on chemicals in blood and urine, as well as on blood pressure.

The findings showed that the beneficial effects of the blueberries on blood vessel function could be seen two hours later and were sustained for 30 days. During the monthlong duration of the study, in those participants who ingested the blueberries, systolic blood pressure was reduced by 5 mmHg.

Editor’s Note: The authors concluded that, “Daily one-month blueberry consumption increased flow-mediated dilation and lowered 24-hour ambulatory systolic blood pressure.”

THE VERSATILE BENEFITS OF

Pycnogenol® is a plant extract derived from French maritime pine bark. Its benefits are available in these three formulations:

**Arterial Protect**
- Item #02004 - 30 vegetarian capsules
  - 1 bottle $33
  - 4 bottles $29 each
- Provides Pycnogenol® and standardized gotu kola leaf extract to help stabilize endothelial plaque and promote healthy blood flow throughout the body.

**VenoFlow™**
- Item #02102 - 30 vegetarian capsules
  - 1 bottle $39
  - 4 bottles $36 each
- For those who sit for long periods while traveling or in the office, this proprietary blend of Pycnogenol® and nattokinase promotes healthy venous blood flow.

**Pycnogenol® French Maritime Pine Bark Extract**
- Item #01637 - 60 vegetarian capsules
  - 1 bottle $48
  - 4 bottles $45 each
- Numerous published studies describe how concentrated extracts in Pycnogenol® help protect against multiple factors related to premature aging.

For full product descriptions and to order *Pycnogenol®, Arterial Protect*, or *VenoFlow™*, call 1-800-544-4440 or visit www.LifeExtension.com

CAUTION: Consult your healthcare provider before use of VenoFlow™ if taking medication (especially those affecting blood coagulation or blood pressure), being treated for a medical condition (especially bleeding disorders), under the age of 18, pregnant, or lactating.

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.
VITAMIN D3

Systemic support for youthful cell function, bone health, and supporting normal insulin and blood-sugar levels.

Caution: Individuals consuming more than 2,000 IU/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxy vitamin D measurement. Do not exceed 10,000 IU per day unless recommended by your doctor. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

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.
Growth factor peptides have been shown to reduce the appearance of wrinkles, firm sagging skin, and rejuvenate outward signs of aging.

**Ultimate Peptide Serum** provides 7 active ingredients that have been shown to enable younger-looking skin:

- Epidermal growth factor
- Fibroblast growth factor
- Vascular endothelial growth factor
- Acidic fibroblast growth factor
- Insulin-like growth factor (IGF-1)
- Sea Fennel Extract
- Date Palm Extract

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

Not tested on animals. Keep out of reach of children. For external use only. Avoid contact with eyes.
YOUR BONE HEALTH ... NOW Boosted

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

For full product description and to order Bone Restore with Vitamin K2, call 1-800-544-4440 or visit LifeExtension.com

Item #01727 · 120 capsules
1 bottle $18
4 bottles $16.50 each

Note: Those taking the anticoagulant drug Coumadin® (warfarin) should use Bone Restore without vitamin K2.

Fruitex B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. patent #5,962,049. DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. patent 6,706,904 and patents pending.
Reducing Nighttime Urinary Frequency in Men

BY STEPHEN HARRINGTON

Waking up multiple times during the night to urinate is more than an inconvenience.

It’s one of the most common lower urinary tract symptoms in older men.

The medical term for this is **nocturia**.

It disrupts sleep patterns, which can lead to a host of health problems, and it’s a frequent cause of falls and resulting fractures.\(^1\)^\(^2\)

Current medical therapies offer limited improvements.\(^3\)

A recently conducted pilot trial evaluated the effect of four nutrient compounds plus melatonin on mild, lower urinary tract symptoms, especially **nocturia** in healthy, older men.\(^4\)

The primary study outcome was a **decrease** in nighttime urination.\(^4\)

By the end of the study, the number of people suffering from nocturia at all was reduced by **64%**. And not a single participant was left waking up more than one time a night.\(^4\)

This finding can potentially help millions of men who suffer from an **overactive bladder** to improve their sleep health, while reducing risk for falls and injuries.
A Common Aging Problem

The male urinary tract is prone to problems that worsen with age.

Lower urinary tract symptoms (LUTS) are a broad spectrum of clinical manifestations related to the bladder, urethra, and prostate gland. LUTS affect as many as 70% of men over 80 years of age.5

Besides nocturia, these symptoms can include increased urinary frequency, urgency, incontinence, incomplete bladder emptying, hesitancy, prolonged micturition, dribbling and a weak urine stream.6

The worsening of LUTS as men get older is due to various factors that cause dysfunction of the urinary system.7 An overactive bladder, enlargement of the prostate gland, and damage to the urethra can all contribute to urinary symptoms.

Compounds that incite chronic inflammation in the urinary tract can contribute to the development of LUTS and prostate enlargement.8,9 Men with LUTS have increased levels of plasma pro-inflammatory biomarkers.8

The aging process increases the risk for all of these problems. Obesity, diabetes, high blood pressure, smoking, some medications, nervous system disorders, and others can also contribute to LUTS.10

The Dangers of Nocturia

The most common LUTS, and the one which can lead to the most serious problems, is nocturia, the need to get up to urinate during the night, often more than once.1,2

Nocturia can occur in at least half of all men over 50 years of age.11 Clinically relevant nocturia, defined as having to get up to urinate two or more times each night, increases significantly with advancing age, affecting as many as 62% of those aged 70-80.1

Aside from being annoying, nocturia is also a serious health condition that should not be trivialized. Nighttime urinary frequency has the greatest impact of any of the LUTS on quality of life.1,12 Nocturia can result in falls. Particularly in older individuals who may suffer from frailty, poor balance, and bad vision, navigating the way to the bathroom multiple times in the middle of the night can be treacherous.
Remedies for Nocturia

Most pharmaceutical approaches to treating LUTS focus on controlling bladder overactivity and obstruction of urine flow. These drugs are far more effective in treating the daytime symptoms of LUTS, but have little impact on nocturia.17

But research has shown that several compounds have beneficial effects on the aging urinary system and can potentially reduce nocturia. A study showed that the following five compounds work together to maximize the relief from nighttime urinary problems.

**BETA-SITOSTEROL**

Beta-sitosterol is a plant sterol isolated from the oils of certain vegetables and nuts. A study in an animal model established this compound is an inhibitor of an enzyme in the prostate gland, called 5α-reductase, which converts testosterone to dihydrotestosterone.18

By reducing the levels of dihydrotestosterone, beta-sitosterol helps reduce age-related prostate enlargement. When the prostate is enlarged, it blocks the flow of urine through the urethra. This contributes to nocturia and other LUTS. Reducing prostate enlargement supports healthy urine flow.19-22

Clinical studies in men with prostate enlargement show beta-sitosterol improves urinary symptoms. In a randomized, double-blind, placebo-controlled study, scoring of LUTS severity was reduced by 50% and measures of quality of life improved by 42%.20 Experimental evidence also points to anti-inflammatory activities of beta-sitosterol.23-25

**PYGEUM BARK EXTRACT**

Pygeum africanum is the scientific name for the African cherry tree. The bark of this tree has been used in Africa to improve urinary symptoms and bladder discomfort for centuries. Modern science has revealed that this extract works through several mechanisms. In addition to anti-inflammatory effects, it helps control bladder overactivity and reduces prostate enlargement.26,27

Clinical trials of pygeum bark extract have shown a reduction in frequency of nighttime urination. Two meta-analyses of existing studies found an average 19% reduction in nocturia,26,27 and one trial found as much as a 32% reduction in the frequency of nocturnal urination.28

It also has anti-inflammatory properties relevant to prostate enlargement and LUTS.29

Nocturia

- Lower urinary tract symptoms (LUTS) is a constellation of symptoms that affect urinary function in men, caused in part by an overactive bladder, enlargement of the prostate gland, and/or injury to the urethra.
- With advancing age, LUTS is increasingly common, affecting up to 70% of all men over 80 years of age.
- The most common symptom of LUTS is nocturia, the need to wake one or more times during the night to urinate.
- Untreated nocturia is associated with risk for falls and related injuries, poor sleep, and diminishing physical and mental health.
- Five compounds—beta-sitosterol, pygeum bark extract, lycopene, boron, and melatonin—have been shown to reduce LUTS and nighttime urination frequency.
- A pilot clinical trial of these ingredients showed a significant reduction in nocturia in older men suffering from mild LUTS.
LYCOPENE

Found in tomatoes and some other red or pink fruits and vegetables, lycopene is a carotenoid pigment with anti-inflammatory properties. Lycopene naturally tends to concentrate in the prostate gland, making it ideal for reducing the inflammation that can contribute to frequent nighttime urination. Lycopene has anti-proliferative properties, which means it helps prevent the abnormal growth of cells. In studies of prostate cells, lycopene blocks cell division, which may help prevent enlargement.

Lycopene was shown to inhibit pro-inflammatory cytokines such as IL-6 and IL-8, further supporting benefits on LUTS.

BORON

In further support of inflammation management relevant to LUTS, the mineral boron has been shown to reduce several markers of inflammation, such as TNF-α, IL-6, and C-reactive protein.

Boron has effects on other signaling compounds in the body that are associated with development of LUTS and nocturia. It modulates sex hormone function and ameliorates the impact of growth factors, such as IGF-1, which may contribute to prostate enlargement.

MELATONIN

Melatonin is a hormone produced by the pineal gland that is involved in the regulation of sleep-wake cycles. Suppemental melatonin can help induce better sleep.

But beyond sleep support, melatonin has been shown to be helpful in treating nocturia. A randomized controlled trial published in the Journal of Urology evaluated its use in men suffering from significant nocturia, waking on average three times each night to urinate. In these men, 2 mg of melatonin before bed was superior to a placebo in reducing the frequency of nocturia.

Another human study of melatonin found similar effects. Men receiving the same dose of melatonin reduced the frequency of nighttime urination from an average of 3.4 times per night to 2.6 times per night.

Successful Pilot Human Trial

A pilot trial studied a group of men with mild nighttime (LUTS) urinary issues to analyze the effects of a formula containing:

- Beta-sitosterol 180 mg
- Pygeum extract (bark) 100 mg
- Lycopene [LycoBeads® from 15 mg natural tomato extract (fruit)]
- Boron (as Albion® bororganic glycine) 10 mg
- Melatonin 2 mg
Healthy men with mild LUTS, aged 45 to 72 years, were recruited for the trial. Baseline urinary symptoms including the frequency of nocturia were assessed before treatment began. Subjects were then instructed to take one capsule of the bladder control supplement formula daily, just before bedtime. At the end of the 60-day trial period, urinary symptoms were again evaluated.

At the start of the trial, 87% of men reported some degree of nighttime urination. This included roughly 50% of men who had to get up one time at night, and 37% who reported waking two to three times each night to urinate at the beginning of the study.

At the end of the 60 days, the researchers observed a remarkable improvement in nighttime urination frequency. Those suffering from nocturia declined from 87% at the start of the trial to only 23% by the trial conclusion—a 64% reduction!

Particularly notable was the reduction in the most severe cases of nocturia. While 37% of the men originally complained of waking two or more times each night to urinate, none suffered from this degree of nocturia at the end of the study. The 23% who continued to report nocturia by the study’s end were all a single awakening per night.

This means that those who suffered the most extreme nocturia, and were at highest risk for falls, loss of sleep, and diminished quality of life, all had a significant positive impact on their symptoms. Some of these men went from two or three nightly wakings to none—a major impact for those at greatest risk.

**Summary**

Lower urinary tract symptoms (LUTS) are very common in men as they get older. The most prevalent and potentially dangerous of these symptoms is nocturia, the need to get up one or more times during the night to urinate.

Conventional medical treatments for urinary disorders mostly address daytime symptoms. They do relatively little to remedy nocturia, which can increase risk of falls and related injuries, and can lead to diminishing physical and mental health and increased rate of mortality.

In a pilot clinical study, five compounds that included beta-sitosterol, pygeum bark extract, lycopene, boron, and melatonin were shown to improve LUTS, and reduce the frequency of nighttime urination in men.

These findings can potentially improve quality-of-life in men who suffer urinary symptoms.

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


Multi-Action Support for AGING JOINTS!

ArthroMax® Advanced with NT2 Collagen™ & AprèsFlex® is a multinutrient formula that supports healthy joint function.

The clinically validated ingredients in this formula help maintain cartilage and ease inflammation and thus may promote comfortable joint structure and function.

Just two capsules a day provide:

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

Δ3-O-acetyl-11-keto-ß-boswellic acid NT2 Collagen™ is manufactured by Bioibérica. AprèsFlex® is a registered trademark of Laila Nutraceuticals exclusively licensed to PL Thomas - Laila NUTRA LLC. U.S. Patent No. 8,357,695 and other patents pending. FruiteX-B® and OsteoBoron® are registered trademarks of VDF FutureCeuticals, Inc. U.S. Patent No. 5,962,049.

For full product description and to order ArthroMax® Advanced with NT2 Collagen™ & AprèsFlex® 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.
Astaxanthin is a carotenoid that benefits the brain, heart, skin, and immune system.

Found naturally in seafood and algae, as little as 50% of astaxanthin is normally absorbed in the bloodstream.\(^1,2\)

Life Extension\(^R\) combines 4 mg of astaxanthin with a blend of four different phospholipids, which has been shown to enhance carotenoid absorption by several-fold.\(^3\)

References

For full product description and to order Astaxanthin 4 mg with Phospholipids, 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.
Healthy bladder function is critical for aging men, especially at night.

In a clinical study, 64% of aging men experienced improvements in healthy bladder function at night.*

Men’s Bladder Control contains beta-sitosterol, pygeum bark extract, lycopene, boron, and melatonin designed to support and maintain bladder health at night to ensure a good night’s rest. Take one capsule daily, 60 minutes before bedtime.

For full product description and to order Men’s Bladder Control, call 1-800-544-4440 or visit www.LifeExtension.com

The Two-Per-Day multinutrient formula is superior to commercial multivitamins because it provides vastly higher potencies of vitamins, minerals and plant extracts.

Two-Per-Day provides:

- 50 times the vitamin B1
- 25 times the vitamin B6
- 12 times the vitamin B12
- 10 times the biotin
- 10 times the selenium
- 8 times the vitamin C
- 2.5 times the vitamin B3
- 2 times the vitamin D
- 2 times the vitamin E
- 2 times the zinc

Centrum® Can’t Compete

For full product description and to order Two-Per-Day Capsules or Tablets, call 1-800-544-4440 or visit LifeExtension.com

Lycored Lycopene™ is a registered trademark of Lycored; Orange, New Jersey. SelenoExcel® is a registered trademark of Cypress Systems Inc. L-OptiZinc® and logos are trademarks of Lonza or its affiliates. Cromines® 3+, Capros® and PrimaVie® are registered trademarks of Natreon, Inc.
Carnosine is showing promise in preventing the initial stages of atherosclerosis, an occlusive arterial disorder that worsens as people age.

Despite reduced prevalence of coronary artery blockage and ischemic stroke in middle aged adults, these vascular disorders remain leading causes of disability and death.

When atherosclerosis-prone mice were supplemented with carnosine, there was reduced formation of atherosclerotic plaque in their aortic valves and reduced accumulation of aldehyde complexes.¹

Aortic stenosis is especially prevalent in people over age 70 and is a causative factor in chronic heart failure.

Studies show that carnosine (a combination of two amino acids) can help protect aging arteries against the harmful effects of excess body fat.

Red meat is the primary source of carnosine in the diet. Yet even meat eaters obtain only temporary carnosine blood levels. As people switch to healthier plant-based diets, they may be getting no protective carnosine.
Protecting Against Dangerous Aldehydes

Carnosine is being studied by researchers looking for ways to protect against the damaging effects of oxidized fats in the body and lipoproteins (like LDL) in the blood.6,7

Aldehydes are toxic chemicals created when oxidative compounds damage lipids and protein structures in our body. These aldehydes inflict damage on arteries and structures in the heart (including muscle, valves and coronary arteries).8,9

Carnosine seems custom-made to protect against this dangerous onslaught. It can neutralize and protect against oxidized lipids and aldehydes. One group of researchers found that carnosine inhibited

Two Forms of Body Fat: White Fat and Brown Fat

All body fat isn’t the same. White fat is what we usually associate with overweight people. It predominates in adults, stores calories, tends to accumulate where we least want it (especially around the belly), and results in damaging inflammation.

But brown fat is a completely different kind of fat. It is abundant in infants and hibernating animals. It burns calories and releases that energy as heat.2,4

That heat benefits babies, and it’s good for bears in cold environments. In adult humans, that heat represents a desirable “burning” of energy that may reduce the amount of overall fat in the body.3,5

Promoting conversion of white to brown fat may help reduce obesity and the inflammation and other risks that come with it.2,4

Carnosine Reduces Weight Gain

In a study published in 2018, scientists studied carnosine in the muscles and brain of animals to determine its fat-browning properties.2

In this study, rats were fed regular and high-fat diets. For six weeks the rats were either supplemented with carnosine, or not.

Researchers observed the impact of carnosine on the animals’ body weight and markers of oxidative stress.2 This is a way to study some of the factors that contribute to arterial damage that sets the stage for future heart attacks and ischemic strokes.

What they found was that either carnosine alone, or exercise, significantly reduced body weight gain, ameliorated obesity-induced lipid abnormalities, and blunted the rise of chemically-stressed fat molecules and their inflammatory byproducts.2

Underlying these changes, researchers saw an increase in the calories burned and a reduction of the overall fat load.

Not surprisingly, the greatest benefit was seen in the rats that were supplemented with carnosine and subjected to daily exercise, suggesting a synergistic effect.

The bottom line is that carnosine, alone or in combination with exercise, may reduce body weight gain and white fat stores by increasing the amount of brown fat in the body. That, in turn, may drive down the risk for cardiovascular disease and other complications of obesity.
Each 7.1-ounce serving of ground beef in this study contained 248 mg of carnosine.

In the study’s first phase, meat foods were removed from the diet for 48 hours. When fasting blood levels were measured, no carnosine was present.

After the subjects ate 7.1 ounces of ground beef, carnosine was detected in the blood within 15 minutes and continued to increase for several hours. After 5.5 hours, however, there was again no carnosine in the blood. This study showed that 248 mg of dietary carnosine does not provide the body with all-day benefits.

Challenge in Achieving Sustained Carnosine Blood Levels

The primary dietary source of carnosine is red meat, which many health-conscious people are seeking to reduce or eliminate from their diets.

Excess consumption of red meat increases the risk of heart disease, certain cancers, and other disorders. As a result, health-conscious people are eating more fruit, vegetables, and fish, and are staying away from beef.

A fascinating study of 18 people sought to determine carnosine concentrations in blood plasma after eating beef. Each 7.1-ounce serving of ground beef in this study contained 248 mg of carnosine.

In the study’s first phase, meat foods were removed from the diet for 48 hours. When fasting blood levels were measured, no carnosine was present.

After the subjects ate 7.1 ounces of ground beef, carnosine was detected in the blood within 15 minutes and continued to increase for several hours. After 5.5 hours, however, there was again no carnosine in the blood. This study showed that 248 mg of dietary carnosine does not provide the body with all-day benefits.
The reason carnosine disappears so quickly from the blood is the presence of an enzyme (carnosinase) that degrades carnosine in the body. This study on carnosine blood levels after ground beef ingestion confirms earlier recommendations that people supplement with higher doses of carnosine. Most people today supplement with 500 mg of carnosine once or twice daily.

Summary

Carnosine shows promise in combatting the damage that can cause arterial blockage, aortic valve stenosis, and unwanted weight gain.

Dietary sources of carnosine do not provide sustainable blood levels. As people switch to healthier plant-based diets, they may have zero levels of carnosine in their blood.

Carnosine was at one time an expensive dietary supplement. Improvements made nearly 20 years ago enable most people to obtain potent carnosine doses at affordable costs.

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

References

NAD+ levels plummet with age but increase in response to nicotinamide riboside.

Optimized NAD+ Cell Regenerator™ combines 250 mg of nicotinamide riboside with resveratrol and other plant extracts.

For those already taking resveratrol, we also offer NAD+ Cell Regenerator™ that provides 250 mg of nicotinamide riboside.

The only online source of these NAD+ formulas is LifeExtension.com (or by calling 1-800-544-4440).

* For pricing available to readers of this magazine, call 1-800-544-4440 or visit LifeExtension.com/NAD
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.
Carnosine is a unique dipeptide that can inhibit glycation throughout the body, thereby helping to slow normal aging processes. Suggested dose is one 500 mg Carnosine cap taken twice daily.

Super Carnosine provides 500 mg of carnosine per capsule along with fat soluble vitamin B1 (benfotiamine) to further impede glycation reactions.

Mitochondrial Energy Optimizer provides 1,000 mg of carnosine in each four capsule dose along with with R-lipoic acid, benfotiamine, taurine, and PQQ to provide broad-spectrum support.

Carnosine is available in three different formulas to allow you to customize your longevity program. Each formula provides high doses of carnosine to ensure sustained benefits.

Item #01829 60 vegetarian capsules
1 bottle $27
4 bottles $24 each

Item #02020 60 vegetarian capsules
1 bottle $30
4 bottles $27 each

Item #01868 120 capsules
1 bottle $51
4 bottles $45 each

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

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

Bio-Enhanced® is a registered trademark of Geronova Research, Inc.
Where there’s **aging**, there’s also chronic **inflammation**.

The relationship is so close that scientists have coined the term **inflammaging**.\(^1-3\)

It refers to the chronic, low-grade **inflammation** that occurs as we grow older, and contributes to the development of **age-related** disorders.

If we can stop this type of inflammation, we can slow and help reverse a major cause of degenerative aging.

Studies have uncovered one key factor: a gene-regulating protein complex called:

**Nuclear Factor kappa B (NF-kB)**

**NF-kB** is a primary driver of inflammation in the body. Inhibiting production of **NF-kB** can **prevent** inflammation.

No safe and reliable drugs can do that.

But a variety of currently available **nutrients** can.

By inhibiting cellular **NF-kB**, you have the capacity to slow down **inflammaging**.\(^4\)

Numerous studies published in **2018** alone show that **NF-kB-inhibiting** nutrients can help fight the following aging factors:\(^4-14\)

- Insulin resistance
- Brain cell degradation
- Cancer development
- Heart muscle alterations
- Asthma
- Poor wound healing
- Arthritis

This is only a partial list.

The discovery that we can **inhibit NF-kB** means we’re gaining ground on slowing degenerative aging in a practical way.
How NF-kB Promotes Inflammaging

**Inflammation** in cells and tissues has a common pathway: activation of **nuclear factor kappa B (NF-kB)**.

“Nuclear” in this case refers to the **nucleus** of the cell, where chromosomes carry genetic information that influences NF-kB.

When NF-kB gene expression signals move into a cell’s nucleus, it activates **pro-inflammatory** signals called **cytokines**.

These **cytokines** travel through the circulatory system to trigger **inflammatory** changes in tissues everywhere in the body.

Inflammation promotes diseases through an array of biochemical pathways. Inflammation has even been shown to shorten **telomeres**, (repetitive nucleotide sequences at the ends of chromosomes).

When telomeres shorten, cells eventually stop functioning, directly contributing to shortened cellular lifespans.15-18

Increased levels of chronic inflammation induces destructive processes inside cells, rapidly producing still **more** NF-kB activation and an accelerating cycle of inflammation. This results in cell death, tissue loss, DNA damage, and other harmful changes that come with aging.7,17-19

The good news is this cycle can be partially stopped. While NF-kB activation **promotes** inflam-maging, **blocking** NF-kB **inhibits** inflam-maging.

A group of **nutrients**, long ago available in supplement forms, have shown the ability to inhibit NF-kB.20

Curcumin: Grandfather of NF-kB Inhibitors

The turmeric-derived compound **curcumin** is among the oldest-known NF-kB-inhibiting nutrients. More than a thousand studies have been performed on it, most since 2007.

Studies show that curcumin’s NF-kB-inhibiting properties may help prevent and treat cancers, including chronic lymphocytic leukemia, pancreatic cancer, liver cancer, and some pre-malignant conditions (when combined with conventional therapies).21-24

In one finding, curcumin’s **NF-kB blockade** directly led to selective **depletion of cancer stem cells** in a lab model of liver cancer.24 Cancer stem cells retain primitive survival characteristics, often resisting chemotherapy and re-emerging after treatment. This is a major cause of post-therapy cancer recurrence, so getting rid of **cancer stem cells** is critical for long-term, complete responses or remissions.

Another study revealed that curcumin can sensitize liver cancer cells to **radiation treatment** through reduction of NF-kB, with the potential for lowering radiation doses.25

Curcumin’s NF-kB-inhibiting benefits go beyond fighting cancer. In **metabolic diseases** (obesity, diabetes, metabolic syndrome), **fat tissue** pumps out inflammatory cytokines. Animal models show that by inhibiting NF-kB, curcumin protects liver tissues from fat deposition and **prevents** progression of fatty liver disease to **non-alcoholic steatohepatitis** (a precursor of cirrhosis and liver cancer).26
In rats fed a high-fructose diet (a guaranteed way to produce metabolic abnormalities), curcumin treatment reversed insulin resistance. It also lowered blood sugar, cholesterol and triglycerides, and a host of markers of fat-induced inflammation.27

Individual animal studies now indicate promise for curcumin in preventing many other NF-kB-associated ailments, including:

• Toxin-induced liver damage,28
• Colitis (inflammation of the colon, a precursor of colorectal cancer),29
• Stroke-induced brain damage,30
• Lumbar disc degeneration,31
• Obesity-induced, fatty acid damage to heart muscle and resulting fibrosis,32 and
• Severe, acute pancreatitis.33

Curcumin is one of the most important NF-kB-inhibiting natural compounds.

Fish Oil Fights Inflammation

A 2016 study demonstrated that regular fish consumption lowered the risk of dying by 11%.34

This helps support the idea that reducing inflammation can lead to improved longevity. And fish oil (rich in omega-3 fatty acids) has a compelling track record as an anti-inflammatory, with potent impact on NF-kB.35,36

The NF-kB-inhibiting properties of fish oil and omega-3 fatty acids are important in preventing the blood vessel inflammation that contributes to formation of atherosclerosis.

Studies in cell cultures show that by inhibiting NF-kB, the omega-3 fatty acid known as EPA significantly reduces the degree to which blood cells stick to vessel linings, an important early step in plaque formation that leads to artery blockages.37

Diabetes and obesity are major dementia risks, largely due to the chronic neuroinflammation to which they are linked.38 In a mouse model of neuroinflammation, supplementation with two omega-3 fatty acids, EPA and DHA, inhibited NF-kB and sharply suppressed brain cell inflammatory responses.36

Another metabolic disorder that can accompany obesity is non-alcoholic fatty liver disease (NAFLD). This can eventually progress to non-alcoholic steatohepatitis (NASH), an inflammatory condition

NF-kB-Inhibiting Supplements

• Acute inflammation can be lifesaving. It is our body’s immediate response to infection and tissue damage.
• But prolonged, chronic inflammation is a killer, accelerating the aging process and bringing on the dreaded, chronic diseases of aging.
• Ordinarily, medications fight each inflammatory disease separately. One kind of drug treats inflammatory bowel diseases, another targets heart disease and stroke prevention, and still others focus on cancer, osteoporosis, and neurodegenerative diseases.
• Chronic disease continues to debilitate and kill Americans prematurely.
• Inhibiting NF-kB shuts down an entire cascade of signaling events leading to inflammation and chronic disease.
• While no safe and effective drug can suppress NF-kB, many nutritional supplements have that ability, which may account for their unsurpassed impact on slowing aging.
• Age-decelerating properties induced by NF-kB inhibition are now recognized in curcumin, fish oil, the sulfur-containing NAC and ALA molecules, Reishi mushroom extracts, extracts of grapes and other berries, and green tea.
• Slowing aging and supporting total body health has never been easier, with this wide array of age-decelerating, NF-kB-inhibiting supplements at our disposal.
that is a major cause of cirrhosis and liver cancer, and one of the main reasons for liver transplants in the U.S.\textsuperscript{38}

Animal studies reveal that omega-3 supplementation in mice fed a high-fat diet can prevent accumulation of liver fat and suppress markers of inflammation—again, through inhibition of NF-κB.\textsuperscript{39}

**Inflammatory bowel disease** (IBD) is another potentially deadly condition affecting millions of Americans.\textsuperscript{40} IBD can lead to colorectal cancer and may require removal of substantial sections of the bowel. But animal studies show that **omega-3 fatty acids** can augment standard therapy by reducing NF-κB activation, an effect which has also shown promise in reducing colon cancer risk.\textsuperscript{35,41}

Researchers are constantly making new discoveries about the beneficial properties of fish oil. One exciting area of study is the involvement of specialized biochemical mediators derived from fish oil called **resolvins**. Resolvins are remarkable because rather than inhibiting inflammation, these intriguing biochemical factors promote **resolution** of inflammation including reduction of NF-κB.\textsuperscript{42,43}

In a clinical trial in obese women, an increase in resolvins was associated with the improved resolution of a range of inflammatory markers.\textsuperscript{42} This effect could reduce the risk of pro-inflammatory effects on the cardiovascular system related to obesity.

Fish oil and omega-3s have demonstrated, in clinical and animal models, inhibition of NF-κB in several serious conditions:

- **Osteoporosis**,\textsuperscript{44}
- **Leukemia**,\textsuperscript{45}
- “Dry” age-related macular degeneration, a major cause of vision loss in older people, and\textsuperscript{46}
- **Severe, acute pancreatitis.**\textsuperscript{47}

Consuming fish oil is clearly an important way to control NF-κB and improve health—but the source of the fish oil matters.

**Lipoic Acid and NAC Lower NF-κB Levels**

**Oxidative stress** in the body stimulates the activation of **NF-κB**, which leads to harmful **inflammation**.

Two compounds, **lipoic acid (LA)** and **n-acetyl cysteine (NAC)**, have the ability to prevent oxidative stress and damage.\textsuperscript{48-50} They do this by scavenging cellular toxins—particularly reactive oxygen and nitrogen compounds that tear at cell and mitochondrial membranes and damage protein and DNA molecules. By cutting off these stressors, both LA and NAC decrease cellular levels of NF-κB.\textsuperscript{48,49,51}
In animal research, \textit{alpha-lipoic acid} has shown promise for alleviating metabolic abnormalities by reducing, through NF-kB inhibition, the amount and activation of inflammatory cells in fat tissue and artery-hardening plaque.\textsuperscript{52,53}

\textit{Alpha-lipoic acid} also supported bone and joint integrity. It did this by preventing bone loss and NF-kB-induced inflammation and subsequent bone destruction in the joints of animals with experimentally induced arthritis. It also promoted new bone formation in a rat model of post-menopausal osteoporosis.\textsuperscript{48,54}

NF-kB inhibition and the resulting reduction in inflammatory \textit{cytokines} and protein-melting \textit{enzymes} are also credited with preventing ultraviolet-light-induced degeneration of the cornea and conjunctiva of the eye in an animal model. These are vital steps in \textit{cataract prevention}.\textsuperscript{55}

\textit{NAC} has been shown in animal studies to quench NF-kB activation, thereby reducing experimentally induced \textit{autoimmune} reactions, a model of inflammation.\textsuperscript{51}

In animal models of inflammation-driven liver injury, \textit{NAC} prevented \textit{liver cell damage} and enhanced availability of energy to healing liver cells.\textsuperscript{49}

In an animal model of \textit{Parkinson's disease}, NAC's inhibition of NF-kB reduced the loss of important dopamine-receiving cells. The death or impairment of these cells through exposure to inflammatory \textit{alpha-synuclein} is a hallmark of this chronic, neurodegenerative condition.\textsuperscript{56}

In a study on elderly rats, the combination of three nutrients, alpha lipoic acid, NAC, and \textit{alpha-tocopherol} (a vitamin E form), slowed brain aging by inhibiting NF-kB and reducing brain inflammation.\textsuperscript{57}

\textbf{Anti-Inflammatory Effects of Reishi Mushrooms}

The \textit{Reishi mushroom} (\textit{Ganoderma lucidum}) has been demonstrated to have anti-inflammatory properties.\textsuperscript{6,58} Studies have found effects of Reishi components and extracts in models of \textit{inflammatory bowel disease}, in which these compounds reduce the cell-to-cell signaling that promotes and sustains these serious and troubling conditions.\textsuperscript{58,59}

In cultured white blood cells from individuals with Crohn's disease, \textit{Ganoderic acid} derived from reishi mushrooms significantly decreased production of inflammatory cytokines.\textsuperscript{59}

Ganoderic acid also shuts down NF-kB in cancer cells, leading, through a complex signaling cascade, to the cells' self-destruction by the protective process called \textit{apoptosis} (or programmed cell death). This can prevent tumors from fully developing.\textsuperscript{8}
Many other Reishi components have been found to exert chemopreventive effects in lung cancer, the leading cause of cancer deaths in both men and women.\textsuperscript{60}

Reishi mushrooms can also have an impact on the reduction of inflammation in blood vessel walls, a major cause of atherosclerosis and cardiovascular diseases. A study in mice showed that treatment with Reishi polysaccharide components reduced NF-kB-promoted inflammatory signaling in the smooth muscle layer of the aorta, an important first step in preventing plaque formation.\textsuperscript{61}

Brain inflammation increases seizure risk in the short term and contributes to neurodegeneration over longer periods. Ganoderic acid A from Reishi mushrooms, applied to immune system cells (glial cells) from mouse brains, significantly dropped production of inflammatory cytokines through NF-kB inhibition.\textsuperscript{6}
The effect is likely to reduce seizure risk and potentially prevent long-term neurodegeneration.

**Other Plant Extracts That Inhibit NF-κB**

Healthy plant foods form the basis of the best-proven disease-fighting diets. One reason may be their content of compounds (phytonutrients) with a proven ability to inhibit NF-κB.

Here is a short list of some common phytonutrient supplements now known to have NF-kB-inhibiting properties:

- **Green tea** and its primary polyphenol component, *epigallocatechin gallate* (EGCG), have chemopreventive activity. Studies highlight how these compounds block the inflammatory steps that promote cancer growth.\textsuperscript{9,62-64} In a 2018 study, EGCG proved capable of ameliorating age-induced heart muscle enlargement and stiffening, important findings for heart disease prevention.\textsuperscript{10}

- **Cyanidin-3 glucoside** (C3G) is a dark-colored polyphenol, found especially in dark fruits and berries. C3G has NF-kB-inhibiting properties. These effects show promise for prevention of cardiovascular disease (through reduction of inflammation-promoted endothelial dysfunction), inflammatory bowel disease, and retinal degeneration.\textsuperscript{65-71}
Resveratrol is a polyphenol found in red grapes and wine, which has also been shown to prevent retinal degeneration in aging animals, thanks to inhibition of NF-kB. This property of resveratrol has also shown promise in patients with the inflammatory bowel disease ulcerative colitis, for which a dose of 500 mg/day improved quality of life and reduced disease activity. The ability of resveratrol to favorably influence NF-kB signaling helps explain its ability to improve insulin sensitivity in lungs of high-fat-diet-fed mice, to prevent osteoporosis and osteoarthritis-like changes in rats, and to prevent thyroid cancer in rodents.

Summary

Inflammation is a double-edged sword. We need it to fight off infections and clean up at sites of injury or damage. But prolonged, unresolved inflammation promotes degenerative diseases and accelerates aging. Fighting chronic, low-grade inflammation is a critical tool for slowing degenerative aging and mitigating—or preventing—its symptoms.

At the heart of inflammation lies the signaling molecule nuclear factor kappa B (NF-kB), which responds to stimuli outside of cells by migrating to the cell’s nucleus and turning on the genes that generate pro-inflammatory signals (cytokines and other molecules).

By inhibiting NF-kB activation, we can reduce harmful inflammation and decelerate many aging processes.

No safe and reliable drugs exist for that purpose. Fortunately, we can turn to some of the best-known, natural supplements for potent, safe NF-kB inhibition.

Examples abound, from turmeric-derived curcumin to cold water fish oils, lipoic acid and NAC, as well as familiar plant nutrients including green tea, dark berries, and resveratrol.

These non-drug compounds provide a powerful way to keep NF-kB in check—and protect against many of the adverse effects of aging.

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


Folate helps maintain homocysteine levels within the normal range, thereby promoting cardiovascular health. Folate also supports neurotransmitter synthesis—which, in turn, helps maintain cognitive abilities.

However, not everyone has sufficient activity of the enzyme required to convert folate to its biologically active form, 5-methyltetrahydrofolate, or 5-MTHF. 5-MTHF requires no enzymatic conversion to become metabolically active—providing maximum support for both cardiovascular and cognitive health.

Optimized Folate provides metabolically active 5-MTHF folate in 1,000 mcg or 5,000 mcg strengths.

References
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.

Highly Absorbable CURCUMIN

Super Bio-Curcumin® features a patented extract from turmeric root that absorbs up to 7 times better than standard curcumin.

Advanced Bio-Curcumin® contains the same optimal potency of curcumin with the added benefits of ginger and additional turmeric extracts.

Super Bio-Curcumin®
- Item #01924 - 30 softgels
  - 1 bottle $22.50
  - 4 bottles $20.25 each

Advanced Bio-Curcumin®
- Item #00407 - 60 vegetarian capsules
  - 1 bottle $28.50
  - 4 bottles $26.25 each

Suggested dose for either formula is one capsule or softgel daily for otherwise healthy individuals.

For full product description and to order Super Bio-Curcumin® or Advanced Bio-Curcumin® with Ginger & Turmerones, call 1-800-544-4440 or visit www.LifeExtension.com

Bio-Curcumin® and BCM-95® are registered trademarks of Dolcas-Biotech, LLC.
**Ultimate Eye Hydration**

Moisturize Your Aging Eyes

**Brite Eyes III** provides a well-established lubricant in every drop, soothing eye discomfort without irritation.

**N-acetylcarnosine** is used as a stabilizing agent.

---

**Item #00893**
- 2 vials (5 mL each)
- 1 box $25.50
- 4 boxes $24 each

---

For full product description and to order **Brite Eyes III**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com).
Clinical studies show PEA can relieve stubborn, minor pain and discomfort within **14-30 days** of supplementation, and sometimes in just **one week**.\(^1\-^3\)

Each chewable tablet delivers **600 mg** of PEA (palmitoylethanolamide), a natural fatty acid found in the body that works at the site of discomfort.

---

**RELIEF**

**FOR OCCASIONAL MINOR PAIN AND DISCOMFORT***

Take **one to two** chewables daily as needed.

**Item #02303** • 60 Chewable Tablets

- 1 bottle **$25.50**
- 4 bottles **$23 each**

For full product description and to order PEA Discomfort Relief, 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.

References:
For decades, we’ve been told how to protect our skin against the damaging effects of the sun:

**Always wear sunscreen outdoors!**

That’s good advice but it is not a perfect solution. Topical sunscreens must be spread over every exposed area to be effective, they must be reapplied regularly, and they can stain clothing.

Scientists have identified a tropical fern extract called *Polypodium leucotomos* that, when taken orally, works deep inside skin cells to reduce the harmful effects of ultraviolet light.

In fact, *Polypodium*-supplemented participants demonstrated a striking **84% decrease** in DNA mutations when exposed to ultraviolet light.¹

Researchers have combined *Polypodium leucotomos* with two other protective compounds, *nicotinamide* and **red** **orange extract**, offering superior protection from sun damage not available from using sunblock alone.
Protection against Ultraviolet Radiation

**Ultraviolet (UV) radiation** damage to DNA is the main cause of skin cancer, and the primary culprit in skin photoaging. There are multiple reasons UV radiation does so much damage. For one thing, UV radiation from the sun appears to stimulate the most intensive free-radical formation. UV radiation also stimulates reactions that can increase mutations and alter DNA itself.

These reactions alter a vital tumor-suppressor gene called p53. We know that p53 is critical for DNA repair and for programmed cell death (apoptosis) when DNA damage is beyond repair.

UV radiation also inhibits production of ATP (adenosine triphosphate), which is required in order to whisk away damaged DNA segments. Wearing sunscreen is vitally important. But it doesn’t provide total protection from ultraviolet rays. It doesn’t usually protect the scalp or eyelids, it may come off with perspiration or swimming, and most people don’t use nearly enough, or reapply it frequently enough, to block the sun’s harmful rays. UV rays can even penetrate some fabrics to reach parts of the body covered by clothing.

Since protection against UV radiation is never absolute, scientists recognized that it is important to find a way to promote prompt DNA repair in order to prevent malignant transformation in skin cells. Researchers focused on *Polypodium leucotomos*, a tropical fern native to Central and South America. It has been used to treat psoriasis and other skin conditions. Because it is taken orally, it protects all skin areas evenly and won’t wash or rub off.

Research has found that it has an ability to protect and repair DNA. *Polypodium leucotomos* extract is rich in polyphenols that inhibit oxidative stress and inflammation, while protecting skin cells against DNA damage caused by UV radiation.

Through all these mechanisms, this plant extract delivers a powerful internal defense against ultraviolet radiation.

**Results of Clinical Studies**

Scientists enlisted healthy volunteers, aged 29 to 54, for a clinical study. The individuals were divided into control and treatment groups and the treatment participants were given two 240 mg doses of *Polypodium leucotomos* extract orally. All subjects were then exposed to ultraviolet-A radiation (UVA), first at a low exposure level and then at a higher level.

After low-level UVA exposure, scientists found that placebo participants had a 217% increase in damaging DNA mutations. By contrast, the *Polypodium* -supplemented participants had a striking 84% decrease in these mutations. Following high-level UVA exposure, DNA mutations in the placebo group increased by a startling 760%. However, DNA mutations in the *Polypodium*-supplemented group increased by only 61%.

Since DNA mutations are the main cause of prematurely aged skin and skin cancer, this level of DNA protection against ultraviolet exposure has enormous potential benefits. This strong level of sun defense has been further increased. Researchers have combined the fern extract...
Polypodium leucotomos with two additional protective ingredients: nicotinamide and red orange extract for enhanced skin protection.

Benefits of Nicotinamide

Two recent studies summarized the ability of nicotinamide to prevent UV-light-induced skin cancer. This form of vitamin B3 has been shown to:

- Enhance DNA repair,
- Modulate production of inflammatory proteins called cytokines,
- Reduce UV-induced immunosuppression of skin responses,
- Regulate skin barrier function, and
- Restore cellular energy levels after UV exposure.

UV radiation reduces the production of ATP, the cellular energy that the body needs to support DNA repair. Nicotinamide helps solve this problem by preventing loss of ATP in cells. Nicotinamide can also be made into nicotinamide adenine dinucleotide (NAD\(^+\)), a key compound that helps the body make ATP.

To verify these effects, scientists pretreated skin cells with nicotinamide and exposed them to UV radiation. The nicotinamide enhanced the removal and replacement of damaged DNA and significantly increased the number of cells undergoing DNA repair.

Prevent UV-Radiation-Induced Damage

- Photoaging and skin cancer are caused in large part by ultraviolet radiation, but topical sunscreens can wear off with perspiration, stain clothing, and leave some areas unprotected.
- Research shows that a tropical fern extract called Polypodium leucotomos, when taken orally, reduces the harmful effects of solar radiation. It helps prevent cell damage and supports DNA repair, inhibiting cancer risk and skin aging.
- The addition of nicotinamide and red orange extract further boosts sun protection, and all three ingredients work together from the inside out to provide protection that won’t rub or wash off.
- For optimal sun exposure protection, this potent defense should be combined with a high-quality, high-SPF topical sunscreen.
Another clinical trial showed that nicotinamide protects against UV-induced immune suppression. These dual benefits—repairing DNA and inhibiting immune suppression—contribute to nicotinamide’s protection against the sun’s damaging effects.

Scientists conducted a clinical study on 386 healthy individuals who had been diagnosed with at least two non-melanoma skin cancers within the last five years, which placed them in a “high-risk” category. After taking 500 mg of nicotinamide twice daily for 12 months, the rate of new, non-melanoma skin cancers was reduced overall by 23%, compared to the control group.

**Red Orange Extract**

Red orange extract provides further protection against UV-induced inflammation and oxidative stress. Obtained from three pigmented varieties of sweet oranges (*Citrus sinensis*), its benefits result from high levels of three natural compounds with powerful antioxidant effects: anthocyanins, flavanones, and hydroxycinnamic acids.

In a lab study, researchers applied red orange extract to human keratinocytes, the most common type of cell in the epidermis, the outermost layer of our skin. Then they exposed these treated cells to UV radiation, and they observed that the extract significantly reduced cell damage, inflammation, and cell death.

Scientists then moved on to human studies of red orange extract’s protection against UV radiation. Oral supplementation with the extract was demonstrated to reduce sunburn intensity by about 35%.

The amount of lifetime sun exposure and the number of lifetime severe sunburns is closely correlated with the development of skin cancers, so this protection is extremely significant.

In another clinical study, researchers demonstrated that red orange extract protects against UV-induced photaging. For 15 days, volunteers took red orange extract and were exposed regularly to a solar lamp. The extract reduced UV-induced sunburn, as well as age-spot pigmentation, and decreased melanin content from 27% to 7%.

The study concluded that red orange extract can lead to an improvement in skin appearance and can protect the skin from harmful sun damage.

**Summary**

Photoaging and skin cancer can result from exposure to solar ultraviolet radiation. Topical sunscreens seldom protect eyelids and other exposed skin, they wear off with perspiration or swimming, and they can stain clothing.

Research shows that a fern extract called *Polypodium leucotomos*, taken orally, inhibits cell damage and supports DNA repair, two key mechanisms that lower cancer risk and help prevent premature skin aging.

Adding nicotinamide and red orange extract offers a greater level of sun protection. Supplementation with these three ingredients ensures evenly distributed skin protection from the inside out, that doesn’t rub or wash off.

Combined with a high-quality, high-SPF topical sunscreen, this oral supplement provides a potent defense against sun damage.
If you have any questions on the scientific content of this article, please call a Life Extension® Wellness Specialist at 1-866-864-3027.

References


JULY 2019 | LIFE EXTENSION | 61
Shield Your Precious Eyesight

AT FANTASTICALLY DISCOUNTED PRICES!

Consumers often spend hundreds of dollars on just one pair of so-called “designer” sunglasses. Life Extension® supporters can obtain superior protection against damaging solar radiation at a fraction of the price.

SolarShield® sunglasses are recognized as the number-one doctor-recommended sunglasses in the world, with more than 50 million pairs sold to date.

Patented SolarShield® sunglasses with durable polycarbonate lenses and 100% UV protection fit comfortably over prescription eyewear.

Compare the low price to sunglasses sold in stores and see savings exceeding 90%!

SolarShield® is a registered trademark of Dioptics, Inc.

For full product description and to order SolarShield® sunglasses, call 1-800-544-4440 or visit www.LifeExtension.com
SAFE-GUARD
Your Skin from Within

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

Item # 01938 • 120 vegetarian capsules
1 bottle $33
4 bottles $30 each

For full product description and to order Shade Factor™, call 1-800-544-4440 or visit www.LifeExtension.com

This product is not a substitute for topical sunscreens.

Red Orange Complex® is a registered trademark of Bionap S.r.l.

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.
Making Your HEART Age Slower So You Can LAST LONGER
Your heart needs no introduction. It’s one of your body’s most important organs: When it goes, you go—and if it thrives, you will thrive too.

A youthful heart can help you live a vigorous, productive life, and protect against dementia. The other good news is you do not have to be young to have a young-functioning heart.

Ev, an impressive 82-year-old from Hawaii has been a CR Way member for five years. He follows the CR Way’s young-heart strategy and his results are terrific. His blood pressure is 90/70 mmHg, total cholesterol: 149 mg/dL, LDL: 80 mg/dL, triglycerides: 80 mg/dL, HbA1c: 4.5%, and fasting blood glucose: 72 mg/dL.

When you talk with Ev, you might think that he is in his 40s, or maybe 50s. It’s likely that his optimal cardiovascular system helps him sound young and communicate so effectively.
What is Your Young-Heart Strategy?

The American Heart Association’s (AHA) strategy for maintaining a healthy heart suggests four modifiable behaviors (not smoking, healthy weight, eating healthy foods, and being physically active) as well as three objective measures of cardiovascular and metabolic health (blood pressure control, lower cholesterol and blood sugar).²

If you want a normal lifespan of around 80 years, without developing cardiovascular disease, incorporate these conventional guidelines into your life.

To increase your chances of extending your life, slowing your rate of aging, and enjoying a quality of life like that of a person who is 10 or 15 years younger, check out the CR Way Young-Heart Strategy. The CR Way is for people who want an energetic lifestyle: working, hiking, painting their house, playing sports, making love—enjoying whatever activity they choose.

The chart on page 68 shows how the CR Way health behaviors and metrics compare to the American Heart Association’s.³

Addressing How Your Heart Ages

Starting with heart-healthy-living criteria is a great beginning, but the most successful young-heart strategies protect against the way the heart ages.

For example, as the years roll by, your heart and arteries can degenerate, becoming stiff with fibrous tissue. Stiffness impedes blood flow and the constant pumping action your heart must perform. Over time, fibrous remodeling can shorten how long your cardiovascular system lasts.

One potential way to counter some of the long-term buildup of cardiac stiffness is to lower Transforming Growth Factor Beta (TGF-β). TGF-β activity can be reduced through good glucose control.

TGF-β refers to a group of polypeptide growth factors involved in a vast array of functions and pathways in the body.⁴ Unfortunately, excessive glucose can activate TGF-β-promoting fibrous tissue formation in the heart and other organs, including the kidneys and lungs.⁵,⁶

Let AMPK Manage Your Heart

Low glucose levels also help activate a heart-friendly manager that lives within you: Adenosine Monophosphate Activated Protein Kinase or AMPK.⁷

When new members join LivingTheCRWay, they learn how to activate AMPK through an online and telephone, nine-week course in glucose management: The CR Way to Great Glucose Control. A primary goal of the course is to help participants get their fasting glucose to healthy, low levels.

AMPK has beneficial effects for the cardiovascular system.⁸ CR Way practitioners often notice that their total cholesterol levels are reduced along with their LDL (bad cholesterol).

AMPK helps your body shift from fat storage to fat burning. Research shows that AMPK activation reduces atherosclerotic plaque formation in mice.⁹ And with the shift to fat burning, triglycerides are also reduced. My triglycerides were at high risk levels before starting the CR Way. Now they are in the 50s (mg/dL).

Another heart-friendly effect of AMPK is increased production of nitric oxide (NO).¹⁰ Normally, this vital compound decreases with age.¹¹ However, AMPK increases NO, causing arteries to dilate and blood pressure to fall.¹²-¹⁴ The average blood pressure of serious, long-term CR Way practitioners is 100/60 mmHg. Elevated blood glucose decreases the bioavailability of nitric oxide and increases cardiovascular risk.¹⁵
Activating AMPK is fundamental to a new program LivingTheCRWay has launched:

**Optimal Heart Health – The CR Way®**

Created to help people slow heart aging, our Optimal Heart Health Program calls for annual echocardiograms to monitor the heart’s structural changes, as well as sonograms to evaluate calcification buildup and risk.

If you are 60 or older, the chances are good that calcification will show up in such evaluations. In their publication on vascular calcification, Demer and Tintut show that vascular calcification reduces artery elasticity, impairs cardiovascular functions, and may predict cardiovascular mortality.¹⁶

Important questions to ask about artery calcification are *How much?* and *Will it increase from year to year?* Calcification can be pivotal: It could end your life, or—if you can minimize it—your life may last much longer.

New CR Way members are encouraged to get annual scans and to work on cardiovascular risk factors, managing them in a way that minimizes their threats.

**Attention, Breast Cancer Survivors!**

Another concern needs to be mentioned: If you are a breast cancer survivor, you may have had radiation treatment of your breast. Such treatments can contribute to ischemic heart disease (coronary artery disease), and it often doesn’t show up right away. According to one study, patients who receive these treatments are at risk for ischemic heart disease for at least 20 years after treatment.¹⁷

I mention the heart risk posed by radiation therapy for breast cancer because it may be unexpected. It might not be detected by “normal” cardiovascular exams, but an echocardiogram may detect it.

**Microbial Considerations**

The next time you go to your dentist ask about his or her observations regarding periodontal disease and heart health. Most likely, your dentist will know about patients who had gum disease and developed significant heart problems. The dentist may even cite research showing that periodontal disease correlates with pathogens like *P. gingivalis* (Porphyromonas gingivalis), that is part of the normal, healthy, oral microbiome, and is associated with heart disease¹⁸ as well as Alzheimer’s disease¹⁹ and cancer.²⁰

*P. gingivalis* can cause harm when acting alone, but it can also work against your health in combination with other pathogenic species and in people whose immune systems are compromised.

**Change your Heart’s Aging Trajectory**

Globally, more people die annually from cardiovascular diseases (CVD) than from any other cause.²¹

The World Health Organization reports that globally, an estimated 17.9 million people died from CVD in 2016, representing 31% of all deaths.²¹

In the U.S., CVD causes one death approximately every 38 seconds.²²

Protect yourself and everything you hold dear: For your heart’s sake, use science to make that old Frank Sinatra song, “Young at Heart,” your reality.
### American Heart Association Behaviors and Metrics Compared to CR Way®

<table>
<thead>
<tr>
<th>AHA</th>
<th>Living The CR Way®</th>
</tr>
</thead>
</table>
| **Nonsmoking:**  
(Never smoked or quit >1 year ago) | **Nonsmoking:**  
(Never smoked or quit >1 year ago) |
| BMI: 18.5 to 24.9 | BMI: 19 to 23 |
| Physical activity:  
- At least 150 minutes (moderate intensity) weekly,  
- or 75 minutes (vigorous) weekly | Physical activity:  
- 1 to 2 hours daily (moderate intensity)  
- Heavy weights twice weekly |
| Diet:  
- Fruits and vegetables ≥4.5 cups daily  
- Fish (preferably oily) ≥two 3.5 oz. servings weekly  
- Fiber-rich whole grains (1.1 grams fiber per 10 grams carbohydrate) ≥three 1 oz. equivalent servings daily  
- Sodium < 1,500 mg/dL  
- Sugar-sweetened beverages <450 kcal (36 oz. weekly) | Diet:  
- Plant-based, optional fatty fish with high omega-3 content  
- Meals planned to keep your glucose at optimal levels and to activate longevity biochemistry, as described in The CR Way to Great Glucose Control |
| Total cholesterol: <200 mg/dL | Total cholesterol: <150 mg/dL |
| Blood pressure: <120/80 mmHg | Blood pressure: Average: 100/60 mmHg |
| Fasting blood glucose: <100 mg/dL | Fasting blood glucose: <80 mg/dL |

### Additional CR Way behaviors and metrics:
- Deep, satisfying sleep
- Friendly, supportive social network
- Optimal microbiome health (reduced levels of pathogenic microbiota)
- Regular sun exposure
- Pure air to breathe (<40 PM2.5) **
- 99.9% pure H₂O for drinking & cooking
- Annual blood tests, noninvasive heart and artery evaluations
- Thorough dental cleanings and evaluations at least twice yearly

---

* **Note:** This information is intended to be educational and informational and is not to be considered a substitute for advice from a medical professional.

** U.S. Environmental Protection Agency  
Particle Pollution Designations Process:  
https://www.epa.gov/particle-pollution-designations/learn-about-particle-pollution-designations#process
Paul McGlothin and Meredith Averill have discovered the bridge between scientific research and its practical application for a better, longer life. Their work brings real results and longevity benefits to CR Way practitioners. Their CR Way lifestyle is based on decades of research, showing favorable changes in genes and other biomarkers of aging. They have played a pivotal role in this research on aging at Washington University, in St. Louis School of Medicine, and at the University of California at both San Francisco and Riverside. You can find more about them and the benefits of LivingCRWay membership by calling 877-481-4841 or visiting www.livingthercway.com.

References
Superior Probiotics from Jarrow Formulas®

The proper balance of microflora in the intestines is crucial for health and well-being. Jarrow Formulas® probiotic dietary supplements are designed to maintain a healthy balance of these microflora to maximize your digestive and immune system.*

Jarrow Formulas® is a probiotic pioneer and has a complete line of probiotic products, including Jarro-Dophilus EPS®.

For full product description or to order Jarro-Dophilus® EPS call 1-800-544-4440 or visit www.LifeExtension.com

Jarro Dophilus EPS® 5 Billion Per Capsule 60 Veggie Caps
Item # 00056 $17.96

Jarro-Dophilus EPS® 5 Billion Per Capsule 120 Veggie Caps
Item # 21201 $31.46

www.Jarrow.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.

© 2019 Jarrow Formulas®
The CR Way to Great Glucose Control is the online course that helps you learn how to keep your blood glucose at optimal levels.

Since it was introduced in 2009, hundreds of The CR Way to Great Glucose Control participants have benefited:

“I started doing the tease meals about five days ago. My fasting glucose is already in the 80s. The readings were: Sunday 86; Monday 87; Tuesday 87. My fasting glucose before I started the tease meals was 103.” – Dan, Ft. Worth, 2018

“Thanks again. Your program is making a major difference in my life.” – Thomas, Boulder, 2018

Take advantage of the new, expanded program.

- Glucose-control experts Paul McGlothin and Meredith Averill teach all classes—in person!
- Nine live, 30-minute teleconference classes—easy to work into your busy schedule.
- Nine weeks of live CR Way Support Group teleconferences, where resolving glucose and other health challenges with friends happens often.
- Instructional videos, describing key steps to great glucose control.
- Beautifully illustrated five-part e-book with glucose control basics, recipes, food suggestions, meal plans (includes a “Pre-diabetes” Meal Plan) – with new heart-health strategies and fasting options.

Personal Guidance at an Affordable Price—Live!

Personal guidance by experts can cost thousands. To make it possible for all Life Extension® supporters to participate, The CR Way to Great Glucose Control course (item #34154) is offered for $330.

Act now to join Paul & Meredith for this life-changing program. Live classes begin Saturday, July 13, 2019.

Enrollment ends Friday, June 28, 2019.

Don’t risk the suffering and financial ruin that come with memory loss, heart disease, diabetes, cancer, Alzheimer’s disease, or shorter life span—all associated with high blood glucose.

Take advantage of this life-saving opportunity to lower your glucose and live better, longer!

The CR Way to Great Glucose Control Course

Item # 34154
$330

For more information and to enroll in The CR Way® to Great Glucose Control course, call 1-800-544-4440 or visit www.LifeExtension.com/CRWay
Shipping available to most states!

Providing Trusted Prescription Compounding for Over 45 Years!

Call today to see how compounding can transform your healthcare!

**RETAIL PHARMACY**
- Accepts most major insurance plans
- Durable Medical Equipment and Supplies
- Vitamins and Supplements
- Alkaline Water
- Health and Wellness Consultations
- ¡Se habla español!

**COMPOUNDSING**
- Bio-identical Hormone Replacement
- Specialized Erectile Dysfunction Medications
- Topical Anesthetics
- Gynecological Preparations
- Hemorrhoid Treatments
- Custom Veterinary Medications

Dosage forms include creams, ointments, lotions, troches, sublingual lozenges, nasal sprays, suppositories, oral suspensions, capsules, and more!

Register to win at www.PostHastePharmacy.com!

$10 off cash RX w/ $50+ purchase of supplements or compression wear!

*(Some restrictions may apply, offer expires 8/31/19)*

(877) 877-9700
Phone: (954) 989-6524 | Fax: (866) 892-3432
4401 Sheridan St, Hollywood, FL 33021
www.PostHastePharmacy.com
A THERAPEUTIC FOOT MASSAGE WITH EVERY STEP

Kenkoh®
The Original Massage Sandal

MASSAGE IMPROVES CIRCULATION
University of Miami Miller School of Medicine

MASSAGE AIDS MUSCLE RECOVERY AND SPEEDS RECOVERY TIMES
McMaster University, Ontario

A DAILY FOOT MASSAGE LOWERS BLOOD PRESSURE AND LOWERS TRIGLYCERIDE LEVELS
Pusan National University, South Korea

LEM.DiscoverKenkoh.com 1-866-599-2976
Is “Good Cholesterol” Always Good?

Michael Ozner, M.D.

The deadliest killer of men and women, responsible for more deaths than any other disorder, is cardiovascular disease—which includes heart attack and stroke.

“The good news,” says leading cardiologist Dr. Michael Ozner, is that, “cardiovascular disease is virtually preventable with a healthy lifestyle and medications (if needed).”

In this interview with Life Extension® Dr. Ozner discusses new approaches to assessing an individual’s risk factors, preventing illness, and staying healthy. What you may not know about your cholesterol levels could surprise you.

LE: Most people are familiar with their cholesterol levels and the ways in which they may predict risk for cardiovascular disease. Is there anything new you can tell us about that?

Dr. Ozner: **High-density lipoprotein** (HDL) cholesterol is commonly referred to as the “good cholesterol.” That’s because it generally carries harmful fats away from the artery wall to the liver for processing and elimination.

Physicians have told people to aim for an HDL cholesterol level of at least 50 mg/dL for women and at least 40 mg/dL for men. Previous research seemed to indicate that lower levels of HDL were linked to a higher risk for cardiovascular disease (CVD). As far as HDL goes, doctors have always assumed “more is better.”

However, new research has shown that high HDL levels may not always help protect against cardiovascular disease. In addition, clinical trials designed to raise HDL cholesterol with medications have failed to reduce the risk of cardiovascular disease.
JULY 2019 | LIFE EXTENSION | 75

LE: That’s very important, new information. What else has recent research discovered?

Dr. Ozner: More has been discovered about the structure and function of HDL. It has become clear that HDL can be a double-edged sword. HDL can either be helpful by playing an anti-inflammatory and antioxidant role, or dysfunctional and harmful by promoting inflammation and oxidation. In addition, the ability of HDL to remove cholesterol from the artery wall can be variable.

LE: Are you saying that it’s not just about the numbers, the cholesterol levels?

Dr. Ozner: While epidemiology research confirmed the well-established cardiovascular risks for extremely low levels of HDL, the risk or benefit of HDL is dependent on HDL function rather than absolute levels. In addition, low HDL cholesterol is often associated with high triglyceride levels which can be harmful. In fact, several clinical trials looking at genetics demonstrated that it is the elevated triglycerides that cause increased CVD risk, and not the low HDL cholesterol.

LE: So how can you tell what your HDL level means?

Dr. Ozner: One way to measure HDL function is to test cholesterol efflux of HDL particles. However, this test is expensive, and not available in commercial labs. Nevertheless, when looking at one’s risk for cardiovascular disease, the key is to remember that your HDL cholesterol level is only one way that doctors assess the risk.

Dr. Ozner: While most guidelines recommend an LDL cholesterol level of less than 100 mg/dL, clinical studies show that lower is better and optimal levels are less than 70 mg/dL for those at high risk or with preexisting cardiovascular disease. The normal level for triglycerides is less than 150 mg/dL however optimal levels are below 100 mg/dL.

LE: What other lab tests can help people assess their risk for coronary disease and heart attack?

Dr. Ozner: Your level of vascular inflammation, which is most commonly measured by high sensitivity C-reactive protein (hs-CRP) is also helpful in assessing your risk for CVD. Clinical trials have demonstrated that elevated hs-CRP is associated with increased CVD risk.
LE: What do you think about the data linking apolipoprotein B to increased arterial occlusion risk?

Dr. Ozner: Apolipoprotein B (ApoB), which resides on the surface of all potential atherogenic (harmful) cholesterol particles can enter the artery wall and lead to dangerous plaque buildup. ApoB is the best risk marker for coronary heart disease and heart attack risk. An optimal apoB level is less than 80 mg/dL.

LE: What are low-cost and most important blood tests people should consider doing annually?

Dr. Ozner: Health care providers should focus on more than just the “good and bad” cholesterol levels to assess heart attack risk. A lipid panel (total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides and non-HDL cholesterol) and periodically an apolipoprotein B and high sensitivity C-reactive protein measurements are important to assess coronary artery blockage and heart attack risk.

LE: Dr. Ozner, what advice would you give to people concerned about maintaining their cardiovascular health?

Dr. Ozner: It is wise for everyone to be evaluated by their personal physician on a regular basis and to develop a prevention plan before heart disease strikes. Follow well-established heart-healthy habits to keep your risk for cardiovascular disease in check. Eat a healthful diet, such as a Mediterranean-style plan with lots of fruits, vegetables, fatty fish and whole grains. Also, exercise for at least 30 minutes on most days, maintain normal body weight, avoid smoking, manage your stress, and get good-quality sleep.

LE: What do you think about the data linking apolipoprotein B to increased arterial occlusion risk?

Dr. Ozner: Apolipoprotein B (ApoB), which resides on the surface of all potential atherogenic (harmful) cholesterol particles can enter the artery wall and lead to dangerous plaque buildup. ApoB is the best risk marker for coronary heart disease and heart attack risk. An optimal apoB level is less than 80 mg/dL.

LE: What are low-cost and most important blood tests people should consider doing annually?

Dr. Ozner: Health care providers should focus on more than just the “good and bad” cholesterol levels to assess heart attack risk. A lipid panel (total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides and non-HDL cholesterol) and periodically an apolipoprotein B and high sensitivity C-reactive protein measurements are important to assess coronary artery blockage and heart attack risk.

LE: Dr. Ozner, what advice would you give to people concerned about maintaining their cardiovascular health?

Dr. Ozner: It is wise for everyone to be evaluated by their personal physician on a regular basis and to develop a prevention plan before heart disease strikes. Follow well-established heart-healthy habits to keep your risk for cardiovascular disease in check. Eat a healthful diet, such as a Mediterranean-style plan with lots of fruits, vegetables, fatty fish and whole grains. Also, exercise for at least 30 minutes on most days, maintain normal body weight, avoid smoking, manage your stress, and get good-quality sleep.

References

Cardio Core ESSENTIALS PANEL

Identify Cardiovascular Risk Factors for Early Preventive Action

Life Extension® scientists have assembled a multi-component blood test panel to help you better assess your cardiovascular risk factors. Together, these tests provide a low-cost analysis of your heart and vascular health status.

This specialized panel includes:

- **CBC/Chemistry Profile**
  The CBC/chemistry profile includes a complete blood count (CBC) to indicate heart and metabolic health as well as immune health, and platelets for clotting status as well as hemoglobin for oxygen-carrying capacity. The chemistry panel measures glucose levels, electrolytes, important liver enzymes, kidney markers, calcium, and uric acid levels.

- **Lipid Panel**
  The lipid panel measures total cholesterol, HDL, LDL, VLDL, and triglycerides. To determine your total non-HDL, simply subtract your HDL from your total cholesterol.

- **Apolipoprotein B (Apo B)**
  Apolipoprotein B (ApoB) is the main protein constituent of all non-HDL cholesterol in your blood. This test measures potential plaque-forming particles in your blood. The higher your ApoB the higher your risk of future cardiovascular events.

- **C-Reactive Protein (CRP)**
  The C-reactive protein (CRP) blood test measures the level of systemic inflammation, that can indicate the status of your heart health. Elevated CRP over longer periods is associated with increased risk of several diseases and cancer.

Together, these tests are the core essentials to provide information about your potential cardiovascular risk.

**Item #LC100086 • $89**

For full description of the Cardio Core Essentials Panel, call 1-800-208-3444 or visit www.LifeExtension.com/cardiopanel

You can visit one of the blood-drawing facilities provided by LabCorp in your area or at the Life Extension Nutrition Center in Ft. Lauderdale.

Blood testing services are available only in the continental United States and Anchorage, AK. Not available in Maryland. Restrictions apply for residents of MA, NY, NJ, RI, and PA.
Optimal heart health depends on many factors including proper functioning of the **endothelium**—the thin layer of cells lining the interior of the entire circulatory system.

**DUAL-ACTION PROTECTION**

**Endothelial Defense™ with Pomegranate Complete** contains two unique ingredients shown to improve endothelial health.

1. **Pomegranate Complete** provides potent polyphenols scientifically shown to support healthy blood flow.

2. **Superoxide dismutase** (SOD) supports healthy arterial function and boosts the body’s protective enzymes.

3. **Sweet Orange Peel Extract** supports nitric oxide production for healthy circulation.

**Item #02097 • 60 softgels**

1 bottle $51

4 bottles $46.50 each

For full product description and to order **Endothelial Defense™ with Pomegranate Complete**, call 1-800-544-4440 or visit www.LifeExtension.com

**Caution:** Do not take this product if you are allergic to wheat or gluten.

Cardiose® is a registered trademark of INTERQUIM, S.A.d.b.a. Ferrer HealthTech.
POMELLA® Extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Sciences, Inc.

Isocell SA, France is the owner of US Patents Nos. 6,045,809 and 6,426,068B1 and trademark of GliSODin®.
The Mediterranean diet is hailed for its ability to lower the risk of heart disease, high blood pressure, stroke, and overall mortality.\textsuperscript{1-3} Many of these benefits can be credited largely to one key component of the diet: extra virgin olive oil.\textsuperscript{4}

Research shows that people who consume the most olive oil have a lower risk of dying from cardiovascular events, strokes, or from any cause at all.\textsuperscript{5} Consuming olive oil every day may also protect against conditions ranging from Alzheimer’s and osteoporosis, to skin aging, and cancer.\textsuperscript{5-9}

What’s more, all of these benefits are greater when extra virgin olive oil is substituted for regular olive oil.\textsuperscript{10}

Extra virgin olive oil is less refined, which allows it to retain more polyphenols. These beneficial plant compounds are primarily responsible for extra virgin olive oil’s myriad health benefits, including reducing all-cause mortality.\textsuperscript{5}

Unfortunately, just because a product is labeled as “extra virgin” does not mean it has a high polyphenol content. Factors such as soil, climate, moisture, ripeness of the fruit, and processing, greatly impact the polyphenols.

Worse, many producers dilute the extra virgin olive oil with lower-quality oils. Shockingly, about 75%-80% of the extra virgin olive oil brands sold in the U.S. don’t even meet the legal requirements to be called extra virgin!\textsuperscript{11}
A Trusted Source

There is one source of extra virgin olive oil that has been proven to be packed with polyphenols, while being completely pure and unadulterated.

On a family farm in California, non-GMO olives are harvested early in the season, handpicked, and crushed immediately. The oil is then cold-extracted, stored in stainless steel tanks, and then poured directly into dark bottles (protected from the light).

The result is a product that contains over 800 mg/kg of polyphenols, which is three times the average olive oil polyphenol content.

Maximize Olive Oil’s Benefits

When extra virgin olive oil has a high polyphenol content, it’s not just better for you—it tastes better too. Polyphenols are what give extra virgin olive oil its unique, fruity and spicy-peppery taste.

One of the easiest ways to incorporate it into your diet every day is simply through salad dressings.

On the following pages, Life Extension® has compiled a handful of flavorful salad dressing recipes. These provide a variety of flavors, but when using this California-based extra virgin olive oil, they all have one important thing in common: a guaranteed high polyphenol content responsible for the proven health benefits of extra virgin olive oil.

Bon Appetit!

Creamy Cilantro Lime Dressing

Makes 1 cup

¼ cup extra virgin olive oil
1 avocado
¼ cup cilantro, roughly chopped
1 clove garlic, minced
Juice from ½ lime
¼ cup Greek yogurt
¼ tsp salt
¼ tsp pepper
½ cup water

Instructions: Place all ingredients in a blender and process until smooth. Add additional water until the dressing reaches desired consistency.

Sundried Tomato Dressing

Makes 1 cup

1 cup extra virgin olive oil
¼ cup sundried tomatoes, drained
2 tbsp balsamic vinegar
2 cloves garlic, minced
½ tsp salt

Instructions: Combine all ingredients in a blender and process on high until smooth.
Greek Vinaigrette Dressing

Makes 1 cup

½ cup extra virgin olive oil
¼ cup red wine vinegar
¼ cup water
2 cloves garlic, minced
¼ tsp oregano
½ tsp basil
½ tsp salt
¼ tsp pepper
2 tbsp lemon juice

Instructions: Place all ingredients in a bowl and whisk to combine, or place in an air-tight container and shake to combine.

Balsamic Vinaigrette Dressing

Makes 1 cup

½ cup extra virgin olive oil
½ cup balsamic vinegar
1 tsp Dijon mustard
½ tsp parsley
¼ tsp salt
¼ tsp pepper

Instructions: Place all ingredients in a bowl and whisk to combine, or place in an air-tight container and shake to combine.

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

References

HIGHLY PURIFIED FISH OIL

YOUR CHOICE OF HIGHLY-CONCENTRATED FORMULAS:

SUPER OMEGA-3 Fish oil EPA/DHA with sesame lignans and olive polyphenols

Item #01982 • 120 softgels
1 bottle $24
4 bottles $21 each

SUPER OMEGA-3 Fish oil EPA/DHA with sesame lignans and olive polyphenols (Enteric-coated for sensitive stomachs)

Item #01984 • 120 enteric coated softgels
1 bottle $25.50
4 bottles $23.25 each

SUPER OMEGA-3 Fish oil EPA/DHA with krill, astaxanthin, sesame lignans, and olive polyphenols

Item #01988 • 120 softgels
1 bottle $33.75
4 bottles $31.50 each

For full product description and to order Super Omega-3, Enteric Coated Super Omega-3, or Super Omega-3 Plus, call 1-800-544-4440 or visit www.LifeExtension.com

Highest Independent 5-star rating, International Fish Oil Society For Over Nine Years. IFOS™ certification mark is a registered trademark of Nutrasource Diagnostics, Inc.

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
AN AUTHENTIC Extra Virgin Olive Oil YOU CAN TRUST

California Estate Organic Extra Virgin Olive Oil is American grown and lab-tested to be extremely high in polyphenols—over 800 mg per kg—as well as organic, authentic, and unadulterated.

This unfiltered extra virgin olive oil is:
- Cold-extracted at a small family farm in Yolo County, California, within hours of harvesting,
- Made entirely from green olives, handpicked to avoid bruising,
- Rich in distinctive and fruity flavor,
- Documented to have an exceptionally high content of potent polyphenols.

California Estate Organic Extra Virgin Olive Oil
Item #02008 - 500 ml
1 bottle $24.75
4 bottles $22.50 each

For full product description and to order California Estate Organic Extra Virgin Olive Oil, call 1-800-544-4440 or visit www.LifeExtension.com
Magnesium is a critically important mineral, yet most Americans do not obtain enough from their diet.

Magnesium helps:1 2

• Keep heart rhythm steady.
• Promote normal blood pressure.
• Maintain normal muscle and nerve function.
• Support a healthy immune system.
• Keep bones strong.
• Maintain blood sugar levels already within normal range.

The recommended intake of magnesium to maintain vascular health is 500 mg or more a day.

Each Life Extension® Magnesium Caps provides 500 mg of elemental magnesium for 9 cents a day!

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

References

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

TRAACS® is a registered trademark of Albion Laboratories, Inc.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Walnuts are one of the healthiest nuts you can eat. These brain-shaped nuts contain a unique composition of nutrients not commonly found in other whole foods.

This is one reason why this superfood has been shown to help combat cognitive decline, heart disease, cancer, and more.

**Brain Health**

Walnuts contain polyphenol compounds that not only reduce oxidation and inflammation in the brain, but also improve signaling between brain cells and increase neurogenesis (the creation of new brain cells).¹

In a study of mice with Alzheimer’s disease, giving them the human equivalent of a handful of walnuts daily led to enhanced memory and learning skills, superior motor development, and reduced anxiety. The authors concluded that, “Dietary supplementation with walnuts may have a beneficial effect in reducing the risk, delaying the onset, slowing the progression of, or preventing AD [Alzheimer’s disease].”²

In another study, researchers concluded that eating foods like walnuts may increase “health span” while enhancing cognitive and motor function in aging.³

**Heart Protection**

Walnuts have beneficial effects against numerous underlying factors contributing to heart disease.

A meta-analysis was conducted, reviewing 26 clinical trials involving 1,059 people. It found that, compared to people who didn’t eat walnuts, people who ate walnuts on a regular basis had modestly lower total cholesterol (3.25% reduction), lower LDL cholesterol (3.73% reduction), and lower triglycerides (5.52% reduction).⁴ This study also found that eating walnuts did not increase body weight.

**Cancer Prevention**

Walnuts have been shown to have properties that act against numerous types of cancer. A Harvard Medical School study found that diets containing walnuts could slow the growth of colorectal tumors in mice.⁵

Similar results have been found with breast cancer. In a mouse study, mice that ate walnuts every day were less likely to develop breast cancer. And in the mice that did develop breast cancer, the tumors were smaller and slower-growing. Adding walnuts to their diet also slowed the growth of prostate, colon, and renal cancers.⁶

The best way to consume walnuts is with the skin on, as about 90% of the phenols from walnuts are found in the skin.

---

References
Target PSA!

A placebo-controlled, double-blind trial presented September 2013 reported that a specific blend of pomegranate, green tea, turmeric, and broccoli—formulated together in a capsule called Pomi-T®—maintained healthy levels of prostate specific antigen (PSA)! Life Extension® offers this same formula for men who are serious about supporting and protecting their prostate as they age—by targeting PSA.

The four foods in Pomi-T® have healthful whole-body benefits. Their constituent molecules, naturally present in food, have been shown to concentrate in prostate tissue and provide a rich array of complementary, prostate-supporting, PSA-modulating mechanisms.

The novel blend of food in Pomi-T® represents the next generation of targeted support for the aging prostate!

For full product description and to order Pomi-T® call 1-800-544-4440 or visit www.LifeExtension.com

References
When you walk into the Beyond Fitness gym in Delray Beach, Florida, you’ll see people running boxing drills, punching speed bags, doing pushups, and jumping rope.

But this isn’t your typical gym—and these aren’t your typical clients.

These individuals all have Parkinson’s disease.

And they’re not just working out; they’re taking part in a program that has been scientifically proven to slow the progression of their disease. It’s a non-contact, boxing-based fitness curriculum called Rock Steady Boxing.

Non-contact boxing uses the fundamental moves of boxing to improve coordination, timing and aerobic capacity without actually making contact with another person. This reduces the chance of any sort of injury while improving physical stamina.

Rock Steady Boxing’s mission is to “empower people with Parkinson’s disease to fight back”—a mission that Beyond Fitness owner Colleen Sturgess has taken to heart.

Sturgess, 38, has more than 14 years of experience as a fitness teacher and trainer, and has earned more than a dozen fitness certifications from organizations such as the National Academy of Sports Medicine and the National Strength and Conditioning Association. But it wasn’t until she became certified as a Rock Steady Boxing trainer that she truly found her calling.
“I fell in love with it, and realized this was what I wanted to do,” said Sturgess.

While Sturgess holds classes at her gym for many specialty populations, including those with multiple sclerosis, autism, and Down syndrome, her biggest focus is on people with Parkinson’s.

Through the Rock Steady Boxing program, Sturgess helps more than 100 individuals with Parkinson’s fight back against the disease, and she sees incredible results.

“The participants are able to move better, sleep better, and think better,” said Sturgess. “They have better balance, they’re stronger, and they have more energy. Their overall quality of life is better. And they’re happier, too.”

Those improvements strike at the heart of Parkinson’s, which is a degenerative movement disorder that causes deterioration in motor skills, balance, and speech. There is no cure for Parkinson’s, but evidence shows that participating in these classes can improve the quality of life for people in all stages of the disease.

“These boxing classes slow down the progression of the disease,” said Sturgess. “They help the brain start making more connections, and ultimately help the participants improve their quality of life.”

The first program of its kind, Rock Steady Boxing incorporates various exercises that focus on speed, agility, balance, coordination, strength, and flexibility. Taught in a circuit-training format, exercises include activities like high knees, agility drills with a rope ladder, punching-bag drills with alternating hands or while standing on one foot, and much more.

The classes are designed to push people beyond their limits, but what the participants especially appreciate about them is the atmosphere.

“One of the things I like so much about the program is that it’s fun,” said Jeff Swartz, 62, who has been taking the classes for more than a year. “It’s not a chore to go work out. It’s a kick.”

Mary Goldfarb, 55, agreed. “It’s a positive environment the minute you walk through the door,” said Goldfarb. “Colleen is very creative. Every class is different every time we go.”

Sturgess provides three different class levels based on the stages of the disease, from those in the earliest stages to those who use wheelchairs.

“If they’re using a wheelchair or walker, we’ll work on teaching them how to stand up or use their legs a little more. And if they can’t do certain exercises, we’ll give them modifications,” said Sturgess. “Sometimes they do this along with physical therapy, and sometimes instead of physical therapy.”

Rock Steady Boxing was launched in 2006 by former Indiana prosecutor Scott Newman, who was diagnosed with early-onset Parkinson’s at the age of 40. A few years after his diagnosis, Newman began one-on-one boxing training, and something remarkable happened: He saw a dramatic improvement in his physical health, agility, and daily functioning.

As news of Newman’s incredible results spread, other Parkinson’s patients wanted to experience the benefits for themselves. Soon, an Affiliate Certification Training program was developed that could give people the tools necessary to implement the program in their own facilities. And in just a little more than a decade, Rock Steady Boxing ballooned into a worldwide phenomenon, with the program being implemented in more than 700 facilities across the United States, Europe, South America, Asia, Australia, and the Middle East.
Rock Steady’s remarkable success is a testament to one simple fact: It works.

The program has produced such remarkable results that researchers took notice and wanted to put it to the test for themselves. In a case series published in the journal Physical Therapy, researchers followed six patients with Parkinson’s disease who attended between 24 and 36 boxing classes over 12 weeks.* The participants also had the option of continuing the classes for a total of 24 or 36 weeks.

The researchers concluded that, “Despite the progressive nature of Parkinson’s disease, the patients in this case series showed short-term and long-term improvements in balance, gait, activities of daily living, and quality of life after the boxing training program.”

Having a scientific study showing the benefits can go a long way toward validating the program. But those involved in Rock Steady didn’t need a study to tell them it works – they’ve seen the results firsthand.

Improving One Life at a Time

Mary Goldfarb and her husband Mark have only been attending Rock Steady Boxing classes at Beyond Fitness for a few months, but Mary says she noticed improvements right away.

“I have better balance, and it has helped my memory and my overall attitude,” said Mary, who was diagnosed with Parkinson’s more than 10 years ago.

Mary’s husband Mark doesn’t have Parkinson’s, but he attends classes along with Mary to participate, as well as to help out with other people in the class.

“A Parkinson’s doc at the Cleveland Clinic in Florida told us that the best thing you can do to keep going is to have a great attitude and exercise,” said Mark Goldfarb. “It’s a prescription that we fill with Colleen and her gym three to four times a week.”

The classes at Beyond Fitness are led by the powerful duo of Sturges and Morgana Rothbard, a physical therapy and rehab specialist.

“Not only do they have a master teacher in Colleen,” said Rothbard, “They also have a master body therapist in every class. I’m there helping with alignment, helping people stand up tall, adjusting your feet, and in general helping you get full movement out of the exercise.”

It’s a pairing that sets Beyond Fitness apart.

“Our students come from all over the states,” said Rothbard. “And they all say that our classes aren’t like anything they’ve experienced before. I’ve witnessed in our classes people getting out of their wheelchairs and walking. It’s a real gift that we have here.”

“You have people who can hardly move when they get in there. But then when they go through class, it’s like they escape from the reality that they have Parkinson’s,” said Mark. “I’ve never seen anything like it.”

Swartz has experienced similar results. He was diagnosed with Parkinson’s disease 14 years ago, but he’s only been taking the classes for a little over a year.

“I’ve always worked out,” said Swartz, “but since taking the classes, my physical condition is better, my coordination is better, and my boxing is a lot better.”

Swartz says that if you have Parkinson’s, staying in shape is not optional.

“Everyone I know who stays fit does much better than they would have if they didn’t stay fit,” said Swartz. “You have to keep moving and fight this thing.”

In fact, exercise is so critical that doctors have started recommending it to their Parkinson’s patients – and in some cases, they have specifically recommended taking Rock Steady Boxing classes.
Beyond Boxing

As the name itself implies, Beyond Fitness provides much more than exercise classes. Sturgess offers a support group once a month, where individuals learn what foods to eat (like vegetables, beans, and greens) and what foods to avoid (like nightshade vegetables, caffeine, and meat), and are also given information on avoiding pesticides, preservatives, and chemicals.

This is especially important in Parkinson’s disease because, as Sturgess explained, only 10% of Parkinson’s is genetic, which means that 90% is due to other environmental factors.

In addition, Beyond Fitness offers one-on-one sessions with Rothbard, who also serves as the gym’s nutritional counselor. Rothbard believes that proper diet and supplementation help produce the best possible results. And while she carefully tailors dietary and supplementation programs to each individual, there are a handful of nutrients that stand out. These include zinc, glucosamine and chondroitin, omegas, coenzyme Q10, B vitamins, and amino acids, to name a few.

“Parkinson’s is a breakdown of the nervous system and the nerves,” said Rothbard. “We’re helping people rebuild their body, so I recommend nutrients that are going to rebuild muscle tissue and help the synapses in their brain connect.”

Melatonin is high on her list as well.

“Many of these individuals suffer from depression and don’t sleep. Melatonin will help them get deep sleep so their body can rejuvenate,” said Rothbard.

Sturgess, herself, takes numerous supplements to help support her overall health, including probiotics, MSM (methylsulfonylmethane), holy basil leaf, calcium, flaxseed oil, and various Ayurvedic herbs.

Beyond Limitations

Ultimately, Sturgess’s goal is to look beyond her clients’ limitations, and to inspire everyone who walks through the door. It’s a mission her clients especially appreciate about her.

“I wish you could bottle Colleen’s ingredients. I’ve never met anyone with such passion for people,” said Mark.

And that really strikes at the heart of what Beyond Fitness is all about. Because while the classes themselves might produce the bulk of the physical benefits, the secret ingredient is in the relationships that are formed. The participants have a camaraderie with which only those doing battle together in the trenches can identify.

“When you’re with people going through the same thing, you don’t feel like you’re all alone going through this terrible condition,” said Mary.

“\When they’re given a diagnosis that has no cure, these classes give them hope,” said Sturgess. “They’re fighting for their lives and cheering each other on. It’s inspiring.”


Colleen Sturgess has a degree in Exercise Science and Health Promotion from Florida Atlantic University. She worked as a personal trainer for 14 years before opening Beyond Fitness gym in 2016.

To contact Beyond Fitness, call 561-441-4444 or visit www.beyondfitnessdelray.com.

To find a Rock Steady Boxing class near you, visit www.rocksteadyboxing.org.

If you have any questions on the scientific content of this article, please call a Life Extension® Wellness Specialist at 1-866-864-3027.
Nourish your body, muscles and skin with Life-flo Magnesium.

- Sourced from the ancient Zechstein seabed in the Netherlands
- Helps soothe muscles & joints
- Supports healthy skin
- Refreshes body and mind

Experience the Life-flo difference!

Optimal balancing solutions to help support women’s wellness.

- Natural cream free of synthetics including parabens
- Packaged in an airtight hygienically sealed container
- Non-greasy and formulated for excellent absorption

For full product description and to order these Life-flo products, please call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnosis, treat, cure, or prevent disease.
**ACTIVE LIFESTYLE & FITNESS**

- 01529 Creatine Capsules
- 02020 Super Carnosine
- 02023 Tart Cherry with CherryPURE®
- 02146 Wellness Bar—Chocolate Brownie
- 02147 Wellness Bar—Cookie Dough
- 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
- 02220 Wellness Shake™ - Chocolate
- 02219 Wellness Shake™ - Vanilla

**AMINO ACIDS**

- 01039 Arginine & Ornithine Capsules
- 00038 Arginine Ornithine Powder
- 01253 Branched Chain Amino Acids
- 01829 Carnosine
- 01671 L-Phenylalanine Capsules
- 01624 L-Arginine Caps
- 01532 L-Carnitine
- 00345 L-Glutamine
- 00141 L-Glutamine Powder
- 01678 L-Lysine
- 00133 L-Taurine Powder
- 00326 L-Tyrosine Powder
- 01827 Taurine

**BLOOD PRESSURE & VASCULAR SUPPORT**

- 01824 Advanced Olive Leaf Vascular Support with Celery Seed Extract
- 02004 Arterial Protect
- 07000 Blood Pressure Monitor Arm Cuff
- 07004 Blood Pressure Monitor Digital Wrist Cuff
- 02097 Endothelial Defense™ Pomegranate Complete
- 00997 Endothelial Defense™ with GliSODin®
- 02090 NitroVasc™
- 09984 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-Sugar Free
- 01727 Bone Restore with Vitamin K2
- 01725 Bone Strength Formula with KoAct®
- 00313 Bone-Up™
- 01963 Calcium Citrate with Vitamin D
- 01506 Dr. Strum's Intensive Bone Formula
- 01476 Strontium Caps

**BRAIN HEALTH**

- 01524 Acetyl-L-Carnitine
- 01974 Acetyl-L-Carnitine Arginate
- 01008 BlaK™
- 02321 Cognitex® Basics
- 02396 Cognitex® Elite
- 02397 Cognitex® Elite Pregnenolone
- 01659 Cognizin® CDP-Choline Caps
- 01540 DMAE Bitartrate (dimethylaminoethanol)
- 02006 Dopa-Mind™
- 02212 Focus Tea™
- 01658 Ginkgo Biloba Certified Extract™

- 01527 Huperzine A
- 00020 Lecithin Granules
- 02101 Memory Protect
- 00709 Migra-Eeze™
- 01603 Neuro-Mag® Magnesium L-Threonate Caps
- 02032 Neuro-Mag® Magnesium L-Threonate Powder
- 00888 Optimized Ashwagandha Extract
- 01676 PS (Phosphatidylserine) Caps
- 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
- 54160 Black Vinegar
- 30747 Digest RC®
- 01713 Effervescent Vitamin C - Magnesium Crystals
- 02021 Enhanced Super Digestive Enzymes
- 02022 Enhanced Super Digestive Enzymes W/Probiotics
- 02033 Esophaco™
- 01737 Esophageal Guardian
- 01706 Extraordinary Enzymes
- 02100 Gastro-Ease™
- 01122 Ginger Force®
- 00605 Regimint
- 01386 TruFiber™

**ENERGY MANAGEMENT**

- 01628 Adrenal Energy Formula • 60 veg caps
- 01630 Adrenal Energy Formula • 120 veg caps
- 01805 Asian Energy Boost
- 00972 D-Ribose Powder
- 01473 D-Ribose Tablets
- 01544 Forskolin
- 00668 Metabolic Advantage Thyroid Formula™
- 01869 Mitochondrial Basics with PQP
- 01868 Mitochondrial Energy Optimizer with PQQ
- 01904 NAD+ Cell Regenerator™ • 100 mg
- 02144 NAD+ Cell Regenerator™ • 250 mg
- 02148 Optimized NAD+ Cell Regenerator™ with Resveratrol
- 01500 PQQ Caps • 10 mg
- 01647 PQQ Caps • 20 mg
- 00889 Rhodiola Extract
- 01900 Ribogen™ French Oak Wood Extract
- 02003 Triple Action Thyroid

**EYE HEALTH**

- 01923 Astaxanthin with Phospholipids
- 00893 Brite Eyes III
- 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**

- OMEGA FOUNDATIONS®
  - 02311 Clearly EPA/DHA
  - 01937 Mega EPA/DHA
  - 02218 Mega GLA with Sesame Lignans
  - 01983 Super Omega-3 EPA/DHA with Sesame Lignans & Olive Extract
  - 01988 Super Omega-3 Plus EPA/DHA with Sesame Lignans, Olive Extract, Krill & Astaxanthin
01982 Super Omega-3 EPA/DHA w/ Sesame Lignans & Olive Extract • 120 softgels
01985 Super Omega-3 EPA/DHA w/ Sesame Lignans & Olive Extract • 60 enteric coated softgels
01984 Super Omega-3 EPA/DHA w/ Sesame Lignans & Olive Extract • 120 enteric coated softgels
01986 Super Omega-3 EPA/DHA w/ Sesame Lignans & Olive Extract • 240 easy-to-swallow softgels
01812 Provinal® Purified Omega-7
01640 Vegetarian DHA
00463 Organic Golden Flax Seed

**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
00432 Stevia™ Sweetener
00438 Stevia™ Organic Liquid 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™ with Standardized Hawthorn and Arjuna
02121 Homocysteine Resist
02018 Optimized Carnitine
01929 Super Ubiquinol CoQ10
01733 Super Ubiquinol CoQ10 with PQQ
01437 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 30 softgels
01426 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 60 softgels
01427 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 30 softgels
01425 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 100 softgels
01431 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 200 mg, 30 softgels
01949 Super-Absorbable CoQ10 Ubiquinone with d-Limonene • 50 mg, 60 softgels
01951 Super-Absorbable CoQ10 Ubiquinone with d-Limonene • 100 mg, 30 softgels
01859 TMG Liquid Capsules
00349 TMG Powder

**HORMONE BALANCE**

00607 DHEA (Dehydroepiandrosterone) • 25 mg, 100 tablets (dissolve in mouth)
00454 DHEA (Dehydroepiandrosterone) • 15 mg, 100 capsules
00335 DHEA (Dehydroepiandrosterone) • 25 mg, 100 capsules
00882 DHEA (Dehydroepiandrosterone) • 50 mg, 60 capsules
01689 DHEA (Dehydroepiandrosterone) • 100 mg, 60 veg capsules
00302 Pregnenolone • 50 mg, 100 capsules
00700 Pregnenolone • 100 mg, 100 capsules
01468 Triple Action Cruciferous Vegetable Extract
01469 Triple Action Cruciferous Vegetable Extract with Resveratrol

**IMMUNE SUPPORT**

00681 AHCC®
02302 Bio-Quercetin
01961 Enhanced Zinc Lozenges
01704 Immune Modulator with Tinofend®
00955 Immune Protect with PARACTIN®
02005 Immune Senescence Protection Formula™
29722 Kinoko® Gold AHCC
24404 Kinoko® Platinum AHCC
00316 Kyolic® Garlic Formula 102
00789 Kyolic® Reserve
01681 Lactoferin (Apolactoferin) Caps
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®
01924 Advanced Bio-Curcumin® with Ginger & Turmerones Turmeric Extract
01709 Black Cumin Seed Oil
01710 Black Cumin Seed Oil with Bio-Curcumin®
00202 Boswellia
01804 Cytokine Suppresst with EGCG
00318 Serrafrazyme
01203 Specially-Coated Bromelain
00467 Super Bio-Curcumin® Turmeric Extract • 400 mg, 30 veg capsules
00407 Super Bio-Curcumin® Turmeric Extract • 400 mg, 60 veg capsules
01254 Zyflamend™ Whole Body

**JOINT SUPPORT**

01404 Arthro-Immune Joint Support
02238 ArthroMax® Advanced NT2 Collagen™ & AprèsFlex®
01617 ArthroMax® with Theaflavins & AprèsFlex®
02138 ArthroMax® Elite
00965 Fast-Acting Joint Formula
00522 Glucosamine/Chondroitin Capsules
01600 Krill Healthy Joint Formula
01050 Krill Oil
00451 MSM (Methylsulfonymethane)
02231 NT2 Collagen™

**KIDNEY & BLADDER SUPPORT**

00862 Cran-Max® Cranberry Whole Fruit Concentrate
01424 Optimized Cran-Max® with Ellirose™
01921 Uric Acid Control
01209 Water-Soluble Pumpkin Seed Extract

**LIVER HEALTH & DETOXIFICATION**

02240 Anti-Alcohol HepatoProtection Complex
01651 Calcium D-Glucarate
00550 Chlorella
01571 Chlorophyllin
01522 European Milk Thistle • 60 veg capsules
01922 European Milk Thistle • 60 softgels
01925 European Milk Thistle • 120 softgels
01541 Glutathione, Cysteine & C
01393 HepatoPro
01608 Liver Efficiency Formula
01534 N-Acetyl-L-Cysteine
LONGEVITY & WELLNESS
00457 Alpha-Lipoic Acid
01625 AppleWise Polyphenol Extract
01214 Blueberry Extract
01438 Blueberry Extract with Pomegranate
02270 DNA Protection Formula
02119 GEROPROTECT® Ageless Cell™
02133 GEROPROTECT® Longevity A.I.™
02211 Grapeseed Extract
02305 Green T-Max
02109 Mediterranean Whole Food Blend
00954 Mega Green Tea Extract (decaffeinated)
00953 Mega Green Tea Extract (lightly caffeinated)
01513 Optimized Fucoidan with Maritech® 926
02230 Optimized Resveratrol
01637 Pycnogenol® French Maritime Pine Bark Extract
02210 Resveratrol
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 with Beta-Sitosterol
01790 PalmettoGuard® Saw Palmetto/Nettle Root Formula with Beta-Sitosterol
01837 Pomi-T™
01373 Prelox® Enhanced Sex for Men
01940 Super MiraForte with Standardized Lignans
01909 Triple Strength ProstaPollen™
02029 Ultra Prostate Formula

MINERALS
01661 Boron
02107 Extend-Release Magnesium
30731 Ionic Selenium
01677 Iron Protein Plus
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
02312 Cortisol-Stress Balance
00987 Enhanced Stress Relief
01074 5 HTP
01683 L-Theanine
02175 SAMe (S-Adenosyl-Methionine)
  200 mg, 30 enteric coated tablets
02176 SAMe (S-Adenosyl-Methionine)
  400 mg, 30 enteric coated tablets
02174 SAMe (S-Adenosyl-Methionine)
  400 mg, 60 enteric coated tablets

MULTIVITAMINS
02199 Children's Formula Life Extension Mix™
02398 Comprehensive Nutrient Packs ADVANCED
02364 Life Extension Mix™ Capsules without Copper
02354 Life Extension Mix™ Capsules
02356 Life Extension Mix™ Powder
02357 Life Extension Mix™ Tablets with Extra Niacin
02365 Life Extension Mix™ Tablets without Copper
02355 Life Extension Mix™ Tablets
02092 Once-Daily Health Booster - 30 softgels
02091 Once-Daily Health Booster - 60 softgels
02313 One-Per-Day Tablets
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 PEA Discomfort Relief

PERSONAL CARE
01006 Biosil™ - 5 mg, 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 Venitone
00409 Xyliwhite Mouthwash
02304 Youthful Collagen
02252 Youthful Legs

PET CARE
01932 Cat Mix
01931 Dog Mix

PROBIOTICS
01622 Bifido GI Balance
01825 FLORASSIST® Balance
02125 FLORASSIST® GI with Phage Technology
01821 FLORASSIST® Heart Health
01244 FLORASSIST® Immune Health
02000 FLORASSIST® Mood
02208 FLORASSIST® Nasal
02120 FLORASSIST® Oral Hygiene
02203 FLORASSIST® Prebiotic
01920 FLORASSIST® Throat Health
52142 Jarro-Dophilus® for Women
00056 Jarro-Dophilus EPS* - 60 vag capsules
21201 Jarro-Dophilus EPS* - 120 vag capsules
01038 Theratal® 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
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
80133 Anti-Aging Rejuvenating Scalp Serum
80133 Anti-Oxidant Facial Mist Hydrator
80156 Collagen Boosting Peptide Serum
80169 Cucumber Hydra Peptide Eye Cream
80141 DNA Support Cream
80167 Environmental Support Serum
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 Hydrolux
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
01448 Rejuvenex® Body Lotion
01621 Rejuvenex® Factor Firming Serum
80150 Renewing Eye Cream
80142 Resveratrol Anti-Oxidant Serum
01938 Shade Factor™
02129 Skin Care Collection Anti-Aging Serum
02132 Skin Care Collection Body Lotion
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
80160 Ultra Eyelash Booster
01220 Ultra Rejuvenex®
00676 Ultra RejuveNight®
80101 Ultra Wrinkle Relaxed
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
01722 L-Tryptophan
01668 Melatonin - 300 mcg, 100 veg capsules
01083 Melatonin - 500 mcg, 200 veg capsules
00329 Melatonin - 1 mg, 60 capsules
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 Timed Release - 300 mcg, 100 veg tablets
01788 Melatonin Timed Release - 750 mcg, 60 veg tablets
01786 Melatonin Timed Release - 3 mg, 60 veg tablets
01721 Optimized Tryptophan Plus
01444 Quiet Sleep
01445 Quiet Sleep Melatonin

VITAMINS
01533 Ascorbyl Palmitate
00920 Benfotiamine with Thiamine
00644 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 Liquid Emulsified
02244 Liquid Vitamin D3 - 2,000 IU, 1 fl oz, unflavored
02232 Liquid Vitamin D3 - 2,000 IU, 1 fl oz, mint
01936 Low-Dose Vitamin K2
01536 Methylcobalamin - 1 mg, 60 veg lozenges
01537 Methylcobalamin - 5 mg, 60 veg lozenges
00065 MK-7
00373 No Flush Niacin
01939 Optimized Folate (L-Methylfolate)
01217 Pyridoxal 5’-Phosphate Caps
01400 Super Absorbable Tocotrienols
02334 Super K
02335 Super K Elite
01863 Super Vitamin E
02028 Vitamin B5 (Pantothenic Acid)
01535 Vitamin B6
00361 Vitamin B12
02228 Vitamin C and Bio-Quercetin Phytosome
02227 Vitamin C and Bio-Quercetin Phytosome
01753 Vitamin D3 - 1,000 IU, 90 softgels
01751 Vitamin D3 - 1,000 IU, 250 softgels
01713 Vitamin D3 - 5,000 IU, 560 softgels
01718 Vitamin D3 - 7,000 IU, 60 softgels
01758 Vitamin D3 with Sea-Iodine™
02040 Vitamins D and K with Sea-Iodine™

WEIGHT MANAGEMENT & BODY COMPOSITION
00658 7-Keto® DHEA Metabolite - 25 mg, 100 capsules
01479 7-Keto® DHEA Metabolite - 100 mg, 60 veg capsules
01509 Advanced Anti-Adipocyte Formula
01807 Advanced Appetite Suppress
02207 AMPK Metabolic Activator
01823 CalReduce Selective Fat Binder
01478 DHEA Complete
01738 Garcinia HCA
29754 HCActive Garcinia Cambogia Extract
01292 Integra-Lean®
01908 Mediterranean Trim with Sinetrol™-XPur
01492 Optimized Irvingia with Phase 3™ Calorie Control Complex
01432 Optimized Saffron with Satireal™
00818 Super CLA Blend with Sesame Lignans
01902 Waist-Line Control™
02151 Wellness Code Appetite Control

WOMEN’S HEALTH
01626 Enhanced Sex for Women 50+
01942 Breast Health Formula
01064 Femmenessence MacaPause®
01894 Estrogen for Women
02204 Menopause 731™
01441 Progesta-Care®
01649 Super-Absorbable Soy Isoflavones
Refer-a-Friend

Get $10 LE Dollars!

Give your friends the gift of health! Get $10 LE Dollars each time you refer a friend, while they receive FREE shipping on their first order.

Join our referral program and start earning LE Dollars today!

For more information, go to LifeExtension.com/Advocate
Your Brain Health Is in Your Hands

Neuro-Mag® Magnesium L-Threonate was specifically formulated by MIT scientists to be uniquely absorbable by brain and nerve cells.

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.

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

Magtein™ is a registered trademark of Magceutics, Inc. and is distributed exclusively by AIDP Inc. Magtein™ is protected under U.S. patents 8,178,118; 8,142,803; 8,163,301 and other patents pending.
7 ADD 12 TO 14 YEARS TO LIFE EXPECTANCY
Adopting five specific lifestyle factors can increase life expectancy by 12-14 years. Life Extension® readers are proactively taking these steps and more to further increase healthy longevity.

35 CARNOSINE PROTECTS AGAINST FATTY BUILDUP
Carnosine shows promise in preventing initial stages of atherosclerosis by converting white fat to beneficial brown fat.

56 ORAL SUNSCREEN PROVIDES ALL-OVER PROTECTION
A fern extract taken orally helps block solar damage to skin cells, decreasing DNA mutations by 84%.

24 REDUCE URINARY FREQUENCY IN MEN
Nighttime bathroom trips increase risk of falls and lost sleep. In a recent human study, 64% of men using a combination of nutrients experienced a reduction in nighttime overactive bladder.

42 FIGHT INFLAMMATION BY INHIBITING NF-KB
Several nutrients inhibit a cellular protein complex called nuclear factor kappa B (NF-kB) to reduce systemic inflammation.

64 MAKE YOUR HEART AGE SLOWER SO IT LASTS LONGER
The calorie-control Young-Heart Strategy may reduce the biological age of your heart.