

Protect Against Viral Induced Cancers

LifeExtension[®]

LifeExtension.com

Stay Healthy, Live Better

November 2018

BERRIES *Combat* **OBESITY**

Reduce Risk of
Frailty and Falls

Restore Youthful
Immune Function

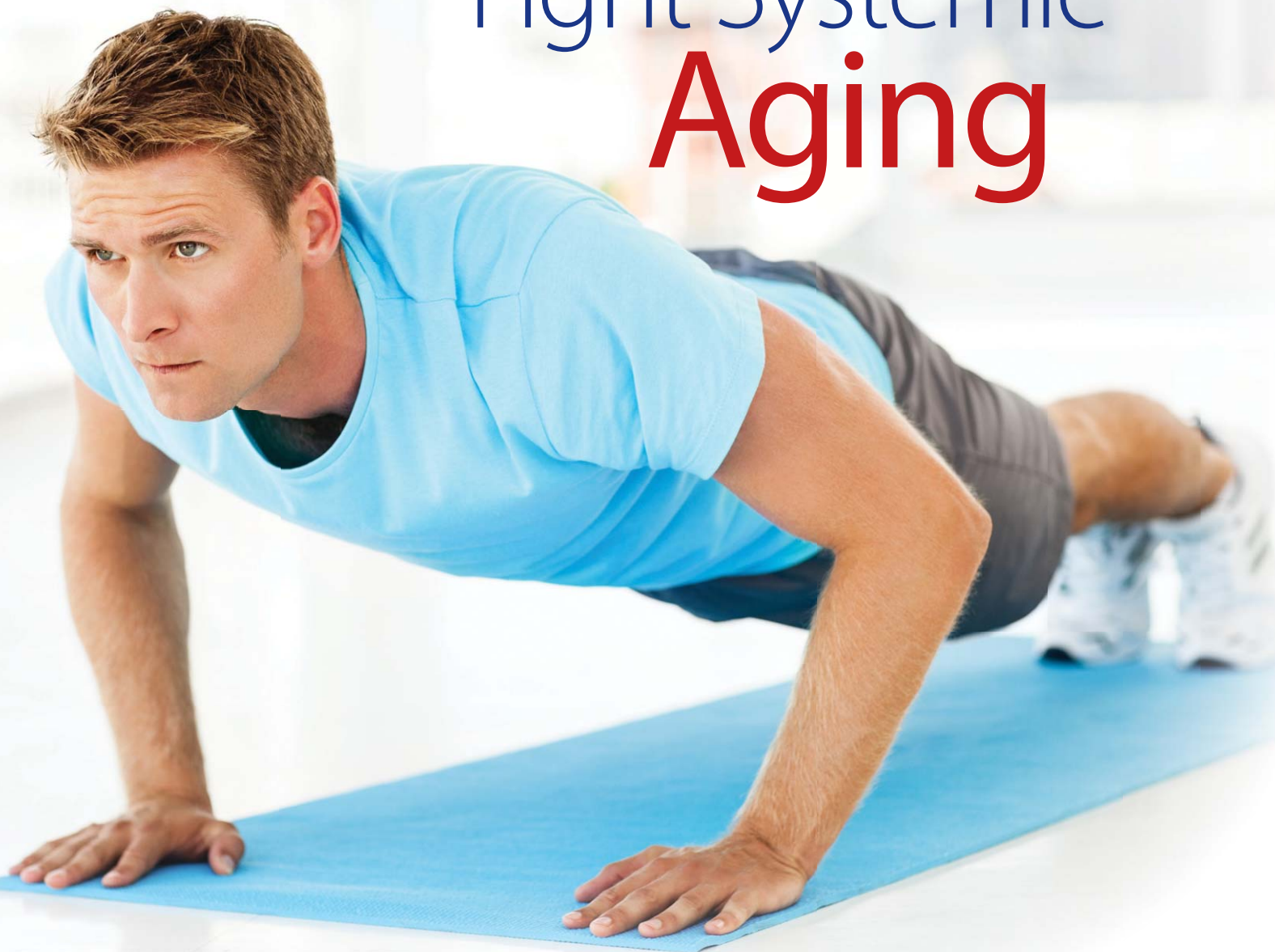
How Broccoli Guards
Against Breast Cancer

Impede Arterial
Plaque Buildup

Boost *Muscle*
STRENGTH
at Any Age

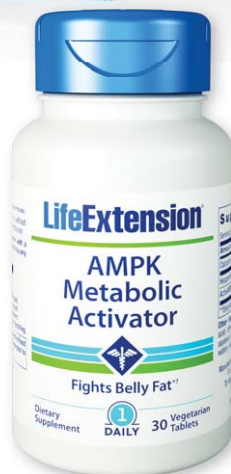


Fight Systemic Aging



The plant compounds in **AMPK Metabolic Activator** help boost AMPK, a cell enzyme that mitigates mechanisms of aging and promotes vascular function while helping reduce belly fat.

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



1
DAILY

	Retail Price	Your Price
1 bottle	\$38	\$28.50
4 bottles		\$24 each
Item #02207 • 30 vegetarian tablets		



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.

REPORTS



26 HOW BERRIES REDUCE OBESITY DAMAGE

Mixed berry extracts contain *bioactive compounds* that help combat the harmful effects caused by excess weight. **Berry extracts** can *reduce* the size of fat cells, *promote* fat burning, and *improve* insulin sensitivity.



46 INHIBIT ARTERIAL PLAQUE

Two **plant extracts** can *reduce* arterial plaque progression by **95%** while promoting plaque stability to lessen the risk of acute arterial occlusion.



57 GREEN TEA AND BROCCOLI COMBAT BREAST CANCER

Compounds in **green tea** and **broccoli** can reprogram **genes** in treatment-resistant malignant cells to make them more susceptible to eradication by conventional therapies. The combination of green tea and broccoli can **reduce tumor size** in difficult-to-treat cancers.



66 RESTORE YOUTHFUL IMMUNE FUNCTION

Immune senescence underlies many diseases of aging. **Cistanche**, **Reishi mushrooms**, and **Pu-erh tea** have been shown to **reverse** harmful changes that occur in the immune system with age.



76 REPAIR SUN DAMAGED LIPS

A unique **lip balm** containing plants extracts with vitamins and minerals can *prevent* and *repair* damage from ultraviolet radiation and aging. The result is enhanced skin moisture and long-lasting relief that restores youthful softness and suppleness.



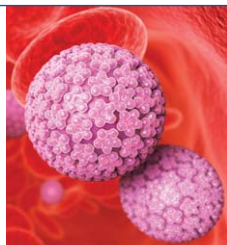
36 ON THE COVER

PREVENT MUSCLE LOSS AND FRAILTY

Age-related **muscle loss** (called **sarcopenia**) *increases* the risk for falls and fractures.

Two nutrients have been shown to *rebuild lost muscle* in older individuals. **HMB** *increases and preserves muscle* mass. **Vitamin D** supports muscle strength and helps to prevent frailty issues that can lead to falls.

DEPARTMENTS



7 AS WE SEE IT: VIRAL INDUCED CANCERS

Largely affecting men, the incidence of neck and head cancers caused by HPV is surging. Eleven million American males are infected with this virus. The healthy diet and supplement programs Life Extension® readers follow offer a degree of protection, and the right regimen may even promote a protective antibody response.



19 IN THE NEWS

New evidence for Mediterranean diet; selenium reduces mortality; coffee inhibits arrhythmia; and vitamins lower pancreatic cancer risk.



87 HEALTHY EATING

In her book, *Juice + Nourish: 100 Refreshing Juices and Smoothies to Promote Health, Energy, and Beauty*, naturopath Rosemary Ferguson provides juicing recipes specifically tailored for everything from stress to lack of strength. We provide a few for you to try.

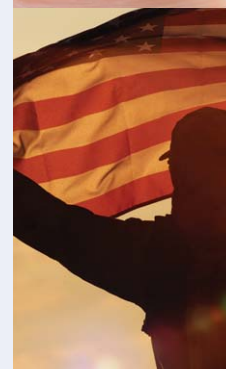
93 SUPER FOODS: BASIL

In addition to taste, the herb **basil** contains unique phytochemicals that can play a role in respiratory health, fight bacteria, and possibly reduce cancer risks.



95 AUTHOR INTERVIEW: MISSION BETRAYED: HOW THE VA REALLY FAILS AMERICA'S VETS BY MICHAEL J. MANN, MD

In his new book, *Mission Betrayed: How the VA Really Fails America's Vets*, Michael J. Mann, MD, draws on his years with the widely criticized agency to deliver a compelling exposé of the dysfunctional Veterans Health Administration.



Connect with Life Extension on the Web!



[Facebook.com/LifeExtension](https://www.facebook.com/LifeExtension)

For instant access to special offers and promotions, product news, and exclusive health and wellness information.



[Twitter.com/LifeExtension](https://twitter.com/LifeExtension)

For up-to-the-minute health tips, breaking industry news, and the latest updates in medical research.

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

Visit the Life Extension Nutrition Center Store

- The Most Complete Line of Life Extension Supplements
- Blood Testing and Analysis
- Personal Consultation with Life Extension Product/Wellness Specialist



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

Publisher • LE Publications, Inc.

Editorial

Editor-in-Chief • Philip Smith
Executive Managing Editor • Renee Price
Medical Editor • Hernando Latorre, MD, MSc
Senior Copy Editor • Laurie Mathena
Senior Staff Writer • Michael Downey
Associate Writer • Garry Messick
Creative Director • Robert Vergara
Art Director • Alexandra Maldonado

Chief Medical Officer

Steven Joyal, MD

Scientific Advisory Board

Örn Adalsteinsson, PhD • Richard Black, DO • John Boik, PhD • Aubrey de Grey, PhD
Frank Eichhorn, MD • Deborah F. Harding, MD • Steven B. Harris, MD
Peter H. Langsjoen, MD, FACC • Dipnarine Maharaj, MD • Ralph W. Moss, PhD
Michael D. Ozner, MD, FACC • Jonathan V. Wright, MD, Xiaoxi Wei, PhD

Senior Vice President Product Development and Scientific Affairs

Andrew Swick, MS, PhD

Contributors

Steve Collins • Michael Downey • Gary Goldfaden, MD • Robert Goldfaden
Gary Greenberg • Garry Messick • Jason Meyers • Stephanie Ross • Janet Seiken

Advertising

Vice President of Marketing • Rey Searles • rsearles@lifeextension.com
National Advertising Manager • Tamu Mills • 404-347-1755

Senior Director of Sales and Business Development

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

Circulation & Distribution

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

Customer Service: 800-678-8989

Email: customerservice@LifeExtension.com

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

At *Life Extension Magazine*[®] we value your opinion and welcome feedback.

Please mail your comments to *Life Extension Magazine*,

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

or email us: LEmagazine@LifeExtension.com



#1 Rated Catalog/Internet Merchant—3-Time Winner

Ratings based on results of the

2018 ConsumerLab.com

Survey of Supplement Users.

More information at

www.consumerlab.com/survey2018.



LIFE EXTENSION (ISSN 1524-198X) Vol. 24, No. 11 ©2018 is published monthly except bi-monthly in April by LE Publications, Inc. at 3600 West Commercial Blvd., Fort Lauderdale, FL 33309-3338. LE Publications, Inc. All rights reserved. Published 13 times a year. Subscription rate: \$40 per year in the United States. US \$47 in Canada. US \$60 in other countries. Mail subscriptions or address changes to: LE Publications, Inc., P.O. Box 407198, Fort Lauderdale, FL 33340-7198, USA. Or phone us toll-free at: 1-800-841-5433. Canada Subscriptions: Publications mail agreement number 40028967. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B4R6. You will be sent your first issue within six weeks after LE Publications, Inc. receives your subscription fee. Periodicals Postage paid at Fort Lauderdale, FL and at additional mailing offices. POSTMASTER: Send address changes to Life Extension, P.O. Box 407198, Ft. Lauderdale, Florida 33340-7198, USA. 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[®] 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 Life Extension magazine[®] except to state that they are advertisers who may have paid Life Extension for placement of an advertisement in this publication. Life Extension disclaims any and all responsibilities or warranties as to the accuracy of information contained in advertisements for non-Life Extension branded products or services. For Canadian customers send change of address information and blocks of undeliverable copies to P.O. Box 1051, Fort Erie, ON L2A 6C7.

Put a *pause* TO THE cause

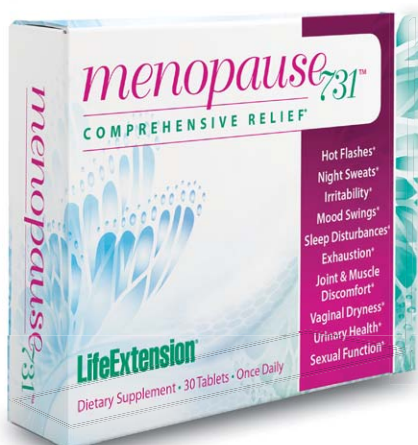
Menopause is more than just hot flashes...

Menopause 731™ is a clinically studied extract of **Siberian rhubarb**.

Used in Germany since **1993**, this plant extract provides **hormone-free** menopause management including:

- Hot flashes
- Night sweats
- Irritability

Siberian rhubarb can enable maturing women to feel more youthful even after menopause.



1
DAILY

	Retail Price	Your Price
1 box	\$36	\$27
4 boxes		\$24 each

Item #02204 • 30 tablets



LifeExtension®
Stay Healthy, Live Better

For full product description and to order **Menopause 731™**,
call **1-800-544-4440** or visit **www.LifeExtension.com**

ERr 731® is a registered trademark of Chemisch-Pharmazeutische Fabrik Göppingen Carl Müller Apotheker GmbH & Co.

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. Bezzek, MD, FACP, FAARM, FAAEM, is board-certified in internal medicine, emergency medicine, and anti-aging/regenerative medicine. He is the director of Med-Link Consulting, which specializes in bioidentical hormone replacement therapy, natural alternatives, anti-aging, and degenerative diseases. He holds US 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.

Carmen Fusco, MS, RN, CNS, is a research scientist and clinical nutritionist in New York City who has lectured and written numerous articles on the biochemical approach to the prevention of aging and degenerative diseases.

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 hemapoetic 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, AZ-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 Montepapaleone 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 hon. res. professor, Human Nutrition Dept, TWU, USA. He is the author of over 130 papers and 400 congress 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 considered 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 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, CA.

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.

Scientific Advisory Board



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 obtained 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 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 Castrangius, 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 new University of Central Florida Medical School.



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 over 1.5 million copies.



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

Up to 7-Times Better Absorption **Super Bio-Curcumin®**



Super Bio-Curcumin®

Item #00407 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$38	\$28.50
4 bottles		\$26.25 each

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.

Suggested dose for either **Bio-Curcumin®** formula is one capsule or softgel daily for otherwise healthy individuals.



Advanced Bio-Curcumin® with Ginger & Turmerones

Item #01924 • 30 softgels

	Retail Price	Your Price
1 bottle	\$30	\$22.50
4 bottles		\$20.25 each

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.

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.



BY WILLIAM FALOON

Viral Induced Cancers

Most people associate **viruses** with the **flu** or **common cold**.

Few understand that **viruses** cause about **15%** of all **cancers**.^{1,2}

One such virus is oral **human papillomavirus** (HPV). It is present in **1** of every **9** American men.³

HPV mutates cellular **DNA** in a way that causes certain **cancers**.

In women, this usually manifests as **cervical** malignancies⁴ that can be screened for (Pap smear) and are easy to cure when caught early.⁵

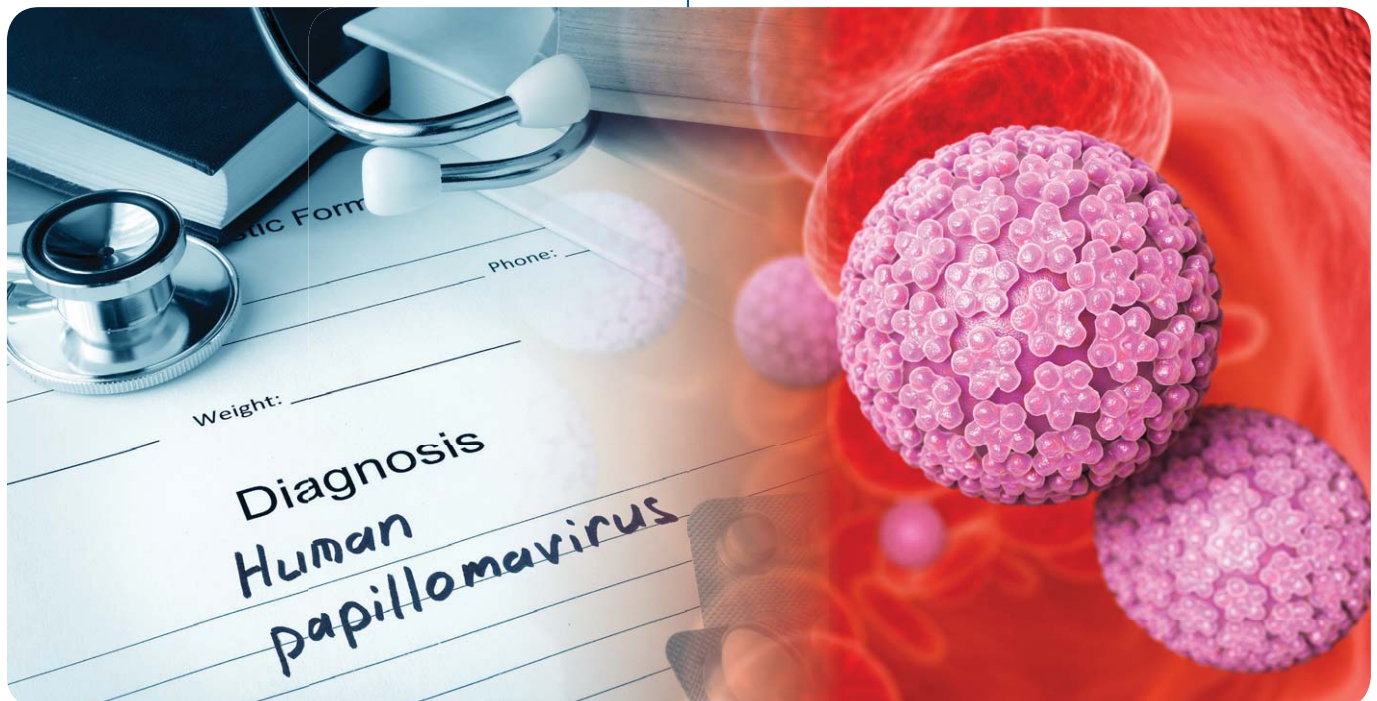
In men, **HPV** infection is causing more **head and neck** cancers than it does **cervical** cancers in women.

Head and neck cancers are not as easy to screen for and require toxic treatments.^{6,7}

Head and neck cancers (oropharyngeal squamous cell carcinoma) are more common in **men** than in women. They have increased **300%** in men over the past 20 years.^{3,7} A prime culprit is **HPV infection**.

For those who abstain from sex or are in monogamous relationships, their risk of **HPV** is lower. Those with multiple partners are at high risk, especially males.

This editorial describes risk factors behind **head and neck cancers** as well as what may be done to circumvent **viral-induced** malignancies.



Actor **Michael Douglas** was diagnosed with **head and neck cancer** in 2010.

As with other benevolent celebrities (like **Suzanne Somers** and **Ben Stiller**, who let the world know about their health issues), **Michael Douglas** went on national TV to warn that **head and neck** cancers are no longer confined to **tobacco** users.

Michael Douglas made it clear that his **head and neck cancer** was not caused by **tobacco**, but instead by his (promiscuous) lifestyle.

He described the chronic **throat pain** he endured during and after harsh radiation treatments, which appear to have been curative. Many patients undergo both surgery and radiation.

Jamie Dimon, CEO of **JP Morgan Chase Bank**, found himself in a similar predicament in 2014, and he has been apparently put into a complete response with conventional treatment.

Head and neck cancers have been historically linked to **alcohol** and **tobacco** use, but **HPV** is increasingly the underlying culprit.

Startling Statistics

More than **64,000** Americans (47,650 men/17,040 women) will develop **head and neck cancer** this year.⁸

Most are over age 50 when diagnosed.⁸

An estimated **13,000** deaths will occur from **head and neck cancer** this year.⁸

To put this in perspective, about **50,000** Americans die annually of **colorectal cancer**.⁹

Colorectal cancer death rates are **declining** for reasons that include better screening and healthier diets.⁹

Head and neck cancers are surging. Of the estimated 13,000



annual deaths from this malignancy, about **10,000** occur in **men** and **3,000** in **women**.⁸

Yet there is little advocacy for **head and neck cancer** prophylaxis or screening.

Risk Factors for Head and Neck Cancers

In earlier decades, **head and neck cancers** were rare except among those who used **tobacco** or indulged in excessive **alcohol** ingestion.¹⁰

Over the past several decades, physicians began noting a growing number of newly diagnosed patients with **head and neck cancer** that never smoked and were not heavy drinkers.^{11,12}

What many of these **head and neck cancer** patients have in common are multiple sex partners. This enables a dangerous strain of **human papillomavirus** (HPV-16) to be continuously transmitted.¹²

The only encouraging news about **HPV-induced** head and neck cancers is that they respond

better to conventional therapy than **head and neck cancers** caused by **tobacco**. (This is because **HPV-16** damages DNA differently than **tobacco**.)^{11,13}

This is of little consolation when one considers the pain of surgery, high-intensity radiation therapy, and the risks for secondary cancers that radiation creates.

Magnitude of Risk Increase

Tobacco and **alcohol** consumption are still the main risk factors for head and neck squamous cell carcinoma.¹⁴

Human papillomavirus (HPV) infection also plays a causative role in **head and neck** cancers that occur in the oropharynx.¹⁵⁻¹⁸

The oropharynx is part of the throat and includes the base of tongue, tonsils, soft palate, and the cavity behind nose and mouth that connects to the esophagus.

A study published in **2017** assessed the independent effects of **tobacco**, **alcohol**,

and HPV **infection** on the risk of oropharyngeal cancer, a common head and neck cancer. The results found:¹⁹

- **Heavy smoker (no HPV)**
→ **1.9-fold greater odds**
- **Heavy drinker (no HPV)**
→ **2.7-fold greater odds**
- **Heavy smoker (+ HPV)**
→ **49-fold greater odds**
- **Heavy drinker (+ HPV)**
→ **51-fold greater odds**

This magnitude of increased risk associated with HPV infection among heavy smokers and drinkers shown above is startling.

The question most readers of this magazine may ask is what about those who don't smoke or heavily drink, but nonetheless are persistently exposed to **HPV-16**.

Another **2017** study provided unsettling data for some of us. After adjusting for smoking, alcohol, and low education, those infected with **HPV-16** had a:²⁰

- **4-fold** greater odds of overall **head and neck cancers**
- **10-fold** greater odds of **oropharyngeal** cancer

Oropharyngeal refers to the roof of the mouth, the tongue, tonsils, and part of the throat behind the mouth and nasal cavity.

HPV-16 infection is implicated as a **causative factor** behind **oropharyngeal cancers**, even in those who don't smoke or heavily ingest alcohol.

In some regions, HPV strains are thought to cause up to **60%** of **oropharyngeal cancers**. This has resulted in an increased incidence among *younger* non-smokers that has been equated to as "**epidemic**" by some investigators.²¹

How Some Young People Avoid HPV

Eleven million American **men** are now infected with oral **human papillomavirus**.³

According to a **2017** report, the most likely to be infected are those who have had multiple oral sexual partners or who also have genital HPV infection.³

When looking at current promiscuous sexual behaviors, a significant percentage of the male population is at risk for **HPV-induced cancers**.

Yet most of the public has no idea that cancer can be caused by this readily transmissible **virus** (HPV-16 and variants).

Younger people have access to the **HPV vaccine** that is partially effective in preventing cancers of the cervix, genitals, and anus, along with **head and neck cancer**. Some groups are vociferously against HPV vaccines because of side effect concerns.



Older individuals who have already been infected by **HPV-16** do not appear to benefit from the vaccine.³

What Older People Should Do

Those who are in monogamous relationships or who abstain from contact with other people are at lower risk of persistent HPV infection.

Unlike chronic viruses (such as cytomegalovirus), a healthy **immune system** often clears **HPV-16** before it inflicts enough DNA mutations to cause **cancer**.

For those who have had chronic HPV exposure, but follow healthy lifestyles, there is some encouraging news to report.

Our **Life Extension**® staff reviewed a large volume of data to ascertain if there were validated ways to protect against **HPV-induced** cancers.

To our surprise, the healthy diet and supplement programs most of you already follow appear to offer a degree of protection.

HPV-16 mutates DNA in ways that are different from the DNA damage inflicted by tobacco.

Nutrients like **folate**,²² **lycopene**,²³ and **cruciferous vegetable extracts** (indole-3-carbinol²⁴ and sulforaphane²⁵) appear to help protect against **viral-induced** DNA damage.

We've long advocated the periodic use of **cimetidine**, a low-cost drug that requires no prescription, to boost immune function and suppress viral activity.²⁶

Those who may be chronically exposed to **HPV** and other viruses may consider **800 mg of cimetidine** each night for 1–2 months each year. Cimetidine should not be taken continuously as it can cause side effects in some people.

It is important to remember that **HPV** is often (but not always)

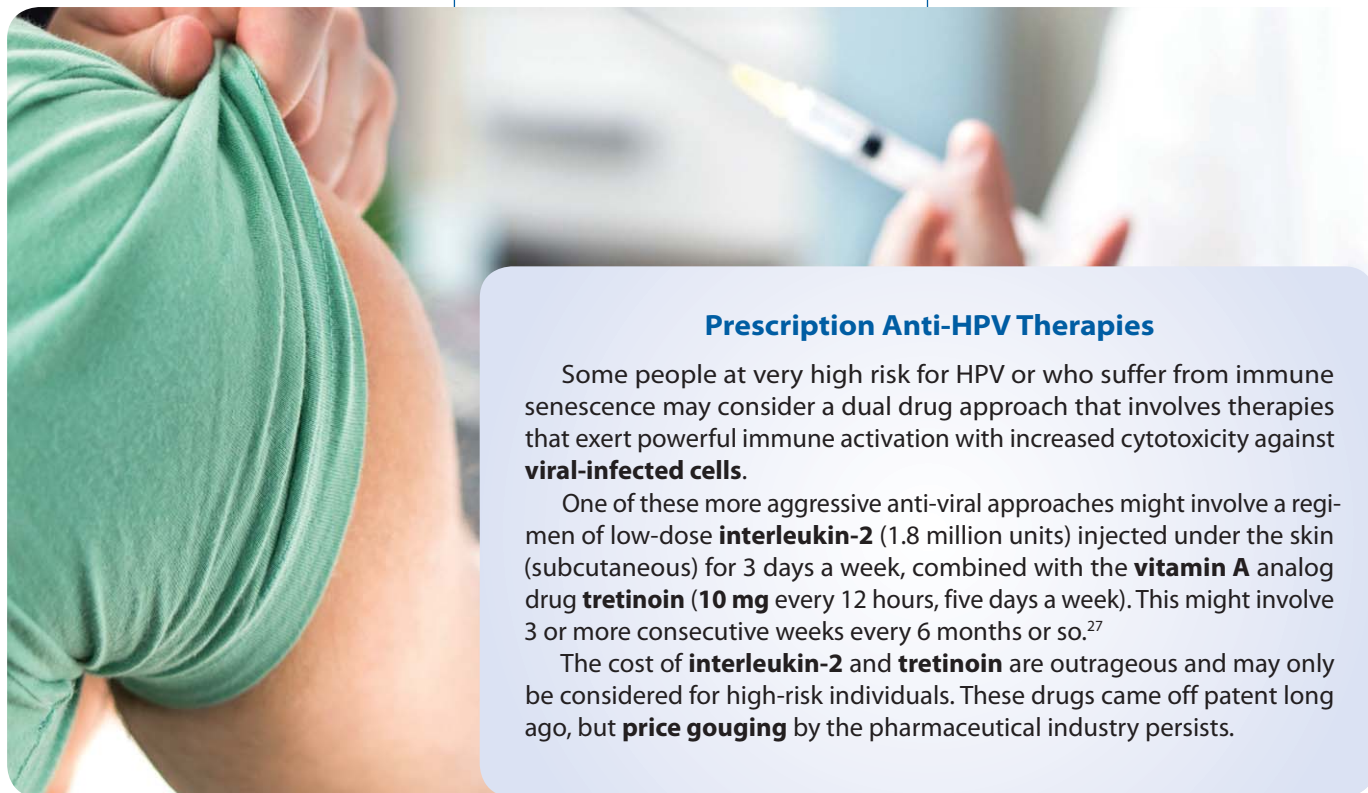
cleared from the body. Persistent exposure to new HPV infections, however, results in chronic mutations to our cellular DNA that can lead to **cancers**.

Why Men Are More Vulnerable to Oral HPV Infection

HPV can survive in the flat, thin cells on the surface of the skin, cervix, vagina, anus, vulva, penis, mouth, and throat.⁷

The virus is spread through contact with infected skin, mucous membranes, and bodily fluids.⁷ This includes during intercourse or oral sex, as actor **Michael Douglas** pointed out years ago.

Virtually all sexually active people will acquire HPV at some point. The virus is usually wiped out by the **immune system** before it can sufficiently damage DNA to cause **cancer**.



Prescription Anti-HPV Therapies

Some people at very high risk for HPV or who suffer from immune senescence may consider a dual drug approach that involves therapies that exert powerful immune activation with increased cytotoxicity against **viral-infected cells**.

One of these more aggressive anti-viral approaches might involve a regimen of low-dose **interleukin-2** (1.8 million units) injected under the skin (subcutaneous) for 3 days a week, combined with the **vitamin A** analog drug **tretinoin** (10 mg every 12 hours, five days a week). This might involve 3 or more consecutive weeks every 6 months or so.²⁷

The cost of **interleukin-2** and **tretinoin** are outrageous and may only be considered for high-risk individuals. These drugs came off patent long ago, but **price gouging** by the pharmaceutical industry persists.

In **women**, HPV infection usually sets off an **antibody** response that destroys the invader and then maintains **immune cells** that are ready to attack if HPV reappears.

Men do not usually mount this aggressive **antibody** response.

A study titled *The HPV Infection in Men* collected genital, anal, and oral samples from over 4,000 (unvaccinated) **men** between 2005 and 2009. These samples were analyzed for two high-risk HPV subtypes and two that cause genital warts.

For this analysis, a sub-cohort of **384** men were studied. They had any of these HPV-subtypes and had not produced antibodies at the time of detection.²⁸

Within 36 months following HPV detection in this sub-cohort, only **35** produced anti-HPV **antibodies**.²⁸

This meager response rate varied depending on the site of infection. Most disconcerting was that none of the **orally HPV-infected** men produced **antibodies**.

To reiterate, men in this study who were **orally** infected with HPV produced no anti-HPV antibodies.

This lack of antibody response reduced the ability of men to **clear HPV** and increased the risk of getting infected with the same HPV type again.

One of the researchers overseeing this study at the **Moffitt Cancer Center** (Tampa, Florida) said recurring infections in some people may be due to reactivation of dormant virus or from the spreading of HPV infection from one part of the body to another, or from something yet to be discovered.⁷

The science behind this **HPV/cancer epidemic** is still evolving. Men up to **26 years** of age may benefit from a four-virus-based **vaccine** that reduces infection with **HPV-6, HPV-11, HPV-16, and HPV-18**.²⁹



How Older Men Might Generate an Antibody Response

DHEA is a hormone that initially demonstrated immune-enhancing benefits, including improved **antibody** responses to vaccines.³⁰

Subsequent studies yielded inconsistent results as it related to improving **antibody** response to **vaccines** administered to elderly persons (who all likely suffered **immune senescence**).^{31,32}

As it relates to **HPV** infection, **DHEA** has been shown to inhibit **cervical cell** proliferation in a dose-dependent manner. One study found that **DHEA** induced cell death via apoptosis in **HPV-infected** cells. The authors of this 2009 study boldly concluded that *"DHEA could therefore be used as an alternative in the treatment of cervical cancer."*³³

An intriguing pilot trial published in **2003** studied the effects of **intra-vaginal DHEA** in women with low-grade cervical dysplasia, a precursor to cervical cancer.

In this study, 12 women with low-grade dysplasia were given 150 mg of **intravaginal micronized DHEA** daily. After 6 months, 10 of the 12 women (**83%**) had no evidence of dysplasia. The remaining 2 had normal exams showing atypical cells of undetermined significance. These results suggest that intra-vaginal DHEA may promote regression of low-grade cervical lesions.³⁴

While these studies focused on cervical cancers, they provide intriguing clues for the many of our **male** readers who supplement with **DHEA** to help maintain **immune** competence.

With age, DHEA levels plummet. Men who take **25 mg** of DHEA a day usually restore levels of this hormone back up to youthful ranges.

Women sometimes need only **15 mg** of DHEA daily to maintain youthful DHEA levels.

As discussed in the box on the next page, many of the **nutrients** and **supplements** taken regularly by readers of this magazine appear to confer some protective effect against HPV-induced malignancies.

Other Pesky Viruses

HPV is not the only cancer-causing virus.

Epstein-Barr virus (EBV) has been implicated in Hodgkin's lymphoma, as well as stomach and nasopharyngeal cancers.³⁵⁻³⁸ EBV is often a persistent viral infection.

Shingles is caused by a **herpes virus** that reactivates as we undergo **immune senescence**.³⁹ Although the herpes virus that causes shingles lies dormant in our nerves before reactivation, shingles causes very painful skin lesions.

Another **herpes**-family infection most adults harbor is **cytomegalovirus**. This virus accelerates immune senescence by depleting our pool of **naïve T-cells**.⁴⁰⁻⁴³ Active **cytomegalovirus** infections decrease human lifespan by several years.^{44,45}

As it relates to **sexually transmitted** viruses, **HIV** is what terrifies people most. Yet HIV is still relatively rare in most population groups.

Hepatitis B and **C** viruses cause **liver cancer**.⁴⁶ (Hepatitis C is curable with drugs like **Sovaldi**®.)⁴⁷

We at **Life Extension** are poring over newly published literature to identify better methods of boosting immunity and/or purging the body of **chronic viral infections** that worsen as immune function deteriorates with age.

An Overlooked Epidemic

According to **Centers for Disease Control and Prevention** (2013–2014), more than **45%** of men are infected with genital **HPV**.⁵¹

Genital HPV is more common than the oral type. About **40%** of women carry genital HPV.⁵¹

Genital HPV can cause cancer of the anus, penis, and vagina. Vaginal HPV causes about **70%** of all cases of cervical cancer.⁵²

Multi-Vitamins Protect Against Cervical Cancer

Risk factors for cervical cancers include cigarette smoking and unhealthy diets.

A higher **HPV** load has been associated with **3.3-fold** greater odds for cervical intraepithelial neoplasia, a diagnosable precursor to cervical cancer.⁴⁸

In a meta-analysis by type of vitamin or antioxidant, a significant **preventive** effect on **cervical neoplasm** was found as follows:⁴⁹

Nutrient	Less Chance of Cervical Neoplasm
Vitamin B12	65%
Vitamin C	33%
Vitamin E	44%
Beta-Carotene	32%

Another study showed that **cervical intraepithelial neoplasia** patients who took **multivitamins** had a lower HPV-viral load and decreased frequency of **cervical intraepithelial neoplasia** stage I (**65% less chance**) and **cervical intraepithelial neoplasia** stage II or III (**89% less chance**).⁴⁸

More specifically, the following results were found for **cervical intraepithelial neoplasia stage II or III** in relation to common dietary supplements:

Nutrient(s)	Less Chance of Cervical Intraepithelial Neoplasia
Multivitamins	79%
Vitamin A	81%
Vitamin E	80%
Calcium	79%

These studies provide good data for cervical cancer risk reduction, but what about **head and neck cancers**? A **2012** study evaluated a number of factors and stated:⁵⁰

"Increased fruit and vegetable consumption has been repeatedly shown to be associated with a reduced risk of HNC [head and neck cancer]...There are a large number of compounds in plant foods that may influence the risk of cancer, including both micronutrients for normal metabolism and other bioactive compounds with unknown metabolic significance. Therefore, whether dietary supplements containing micronutrients found in plant foods would be effective chemopreventive agents is of considerable public health interest."

Studies like this provide intriguing insights into potential ways of reducing **head and neck cancer** risk, but proactive steps should be taken to boost **immune function**, especially in those who have physical contact with multiple sex partners.

Oral HPV infection is causing **head and neck** malignancy rates to surge, especially in **men**.

Many of you reading this may have little risk of HPV infection(s), while others have been exposed to numerous strains of cytomegalovirus, Epstein-Barr, and other viruses.

Aggressive **immune system** vigilance is imperative in higher risk individuals.

An article on page 66 of this month's issue suggests non-prescription approaches to boosting **immune function**.

For longer life,



William Faloon, Co-Founder
Life Extension Buyers Club

References

1. Morales-Sanchez A, Fuentes-Panana EM. Human viruses and cancer. *Viruses*. 2014 Oct 23;6(10):4047-79.
2. zur Hausen H. Viruses in human cancers. *Science*. 1991 Nov 22;254(5035):1167-73.
3. Available at: <https://consumer.healthday.com/sexual-health-information-32/human-papillomavirus-hpv-news-756/1-in-9-american-men-infected-with-oral-hpv-727553.html>. Accessed August 27, 2018.
4. zur Hausen H. Immortalization of human cells and their malignant conversion by high risk human papillomavirus genotypes. *Semin Cancer Biol*. 1999 Dec;9(6):405-11.
5. Available at: <https://www.acog.org/Patients/FAQs/Abnormal-Cervical-Cancer-Screening-Test-Results>. Accessed August 27, 2018.
6. Available at: <https://www.nbcnews.com/health/health-news/silent-epidemic-cancer-spreading-among-men-n811466>. Accessed August 27, 2018.
7. Available at: <http://www.chicagotribune.com/lifestyles/health/ct-hpv-oral-cancer-in-men-20180312-story.html>. Accessed August 27, 2018.
8. Available at: <https://www.cancer.net/cancer-types/head-and-neck-cancer/statistics>. Accessed August 27, 2018.
9. Available at: <https://www.cancer.org/cancer/colon-rectal-cancer/about/key-statistics.html>. Accessed August 27, 2018.
10. Maier H, Dietz A, Gewelke U, et al. Tobacco and alcohol and the risk of head and neck cancer. *Clin Invest*. 1992 Mar-Apr;70(3-4):320-7.
11. Available at: <https://www.cancer.gov/types/head-and-neck/head-neck-fact-sheet>. Accessed August 29, 2018.
12. Rettig E, Kiess AP, Fakhry C. The role of sexual behavior in head and neck cancer: implications for prevention and therapy. *Expert Rev Anticancer Ther*. 2015 Jan;15(1):35-49.
13. Dok R, Nuyts S. HPV Positive Head and Neck Cancers: Molecular Pathogenesis and Evolving Treatment Strategies. *Cancers (Basel)*. 2016 Mar 29;8(4).
14. Available at: <https://ghr.nlm.nih.gov/condition/head-and-neck-squamous-cell-carcinoma#genes>. Accessed August 27, 2018.
15. Mehanna H, Beech T, Nicholson T, et al. Prevalence of human papillomavirus in oropharyngeal and nonoropharyngeal head and neck cancer—systematic review and meta-analysis of trends by time and region. *Head Neck*. 2013 May;35(5):747-55.
16. D'Souza G, Kreimer AR, Viscidi R, et al. Case-control study of human papillomavirus and oropharyngeal cancer. *N Engl J Med*. 2007 May 10;356(19):1944-56.





17. Strome SE, Savva A, Brissett AE, et al. Squamous cell carcinoma of the tonsils: a molecular analysis of HPV associations. *Clin Cancer Res.* 2002 Apr;8(4):1093-100.
18. Hocking JS, Stein A, Conway EL, et al. Head and neck cancer in Australia between 1982 and 2005 show increasing incidence of potentially HPV-associated oropharyngeal cancers. *Br J Cancer.* 2011 Mar 1;104(5):886-91.
19. Farsi NJ, Rousseau MC, Schlecht N, et al. Aetiological heterogeneity of head and neck squamous cell carcinomas: the role of human papillomavirus infections, smoking and alcohol. *Carcinogenesis.* 2017 Dec 7;38(12):1188-95.
20. Laprise C, Madathil SA, Schlecht NF, et al. Human papillomavirus genotypes and risk of head and neck cancers: Results from the HeNCe Life case-control study. *Oral Oncol.* 2017 Jun;69:56-61.
21. Curry JM, Sprandio J, Cognetti D, et al. Tumor Microenvironment in Head and Neck Squamous Cell Carcinoma. *Seminars in Oncology.* 2014 2014/04/01;41(2):217-34.
22. Bai LX, Wang JT, Ding L, et al. Folate deficiency and FHIT hypermethylation and HPV 16 infection promote cervical cancerization. *Asian Pac J Cancer Prev.* 2014;15(21):9313-7.
23. Sedjo RL, Roe DJ, Abrahamsen M, et al. Vitamin A, carotenoids, and risk of persistent oncogenic human papillomavirus infection. *Cancer Epidemiol Biomarkers Prev.* 2002 Sep;11(9):876-84.
24. Jin L, Qi M, Chen DZ, et al. Indole-3-carbinol prevents cervical cancer in human papilloma virus type 16 (HPV16) transgenic mice. *Cancer Res.* 1999 Aug 15;59(16):3991-7.
25. Bauman JE, Zang Y, Sen M, et al. Prevention of Carcinogen-Induced Oral Cancer by Sulforaphane. *Cancer Prev Res (Phila).* 2016 Jul;9(7):547-57.
26. Available at: https://www.lifeextension.com/Magazine/2001/3/report_tagamet/Page-01. Accessed August 27, 2018.
27. William Faloon's Personal Experimental Protocol. 2018.
28. Giuliano AR, Viscidi R, Torres BN, et al. Seroconversion following anal and genital HPV infection in men: The HIM study. *Papillomavirus Research.* 2015 2015/12/01;1:109-15.
29. Hillman RJ, Giuliano AR, Palefsky JM, et al. Immunogenicity of the Quadrivalent Human Papillomavirus (Type 6/11/16/18) Vaccine in Males 16 to 26 Years Old. *Clinical and Vaccine Immunology.* 2012;19(2):261-7.
30. Degelau J, Guay D, Hallgren H. The effect of DHEAS on influenza vaccination in aging adults. *J Am Geriatr Soc.* 1997 Jun;45(6):747-51.
31. Hazeldine J, Arlt W, Lord JM. Dehydroepiandrosterone as a regulator of immune cell function. *J Steroid Biochem Mol Biol.* 2010 May 31;120(2-3):127-36.
32. Ben-Yehuda A, Danenberg HD, Zakay-Rones Z, et al. The influence of sequential annual vaccination and of DHEA administration on the efficacy of the immune response to influenza vaccine in the elderly. *Mech Ageing Dev.* 1998 May 15;102(2-3):299-306.
33. Giron RA, Montano LF, Escobar ML, et al. Dehydroepiandrosterone inhibits the proliferation and induces the death of HPV-positive and HPV-negative cervical cancer cells through an androgen- and estrogen-receptor independent mechanism. *Febs j.* 2009 Oct;276(19):5598-609.
34. Suh-Burgmann E, Sivret J, Duska LR, et al. Long-term administration of intravaginal dehydroepiandrosterone on regression of low-grade cervical dysplasia—a pilot study. *Gynecol Obstet Invest.* 2003;55(1):25-31.
35. Pallesen G, Hamilton-Dutoit SJ, Rowe M, et al. Expression of Epstein-Barr virus latent gene products in tumour cells of Hodgkin's disease. *Lancet.* 1991 Feb 9;337(8737):320-2.
36. Lee JH, Kim SH, Han SH, et al. Clinicopathological and molecular characteristics of Epstein-Barr virus-associated gastric carcinoma: a meta-analysis. *J Gastroenterol Hepatol.* 2009 Mar;24(3):354-65.
37. Khan G, Hashim MJ. Global burden of deaths from Epstein-Barr virus attributable malignancies 1990-2010. *Infect Agent Cancer.* 2014;9(1):38.
38. Cao Y. EBV based cancer prevention and therapy in nasopharyngeal carcinoma. *npj Precision Oncology.* 2017 2017/05/15;1(1):10.
39. Zerboni L, Sen N, Oliver SL, et al. Molecular mechanisms of varicella zoster virus pathogenesis. *Nat Rev Microbiol.* 2014 Mar;12(3):197-210.
40. Tatum AM, Hill A. Chronic viral infections and immunosenescence, with a focus on CMV. *Open Longevity Science.* 2012;6:33-8.
41. Fletcher JM, Vukmanovic-Stejic M, Dunne PJ, et al. Cytomegalovirus-specific CD4+ T cells in healthy carriers are continuously driven to replicative exhaustion. *J Immunol.* 2005 Dec 15;175(12):8218-25.
42. van de Berg PJ, Griffiths SJ, Yong SL, et al. Cytomegalovirus infection reduces telomere length of the circulating T cell pool. *J Immunol.* 2010 Apr 1;184(7):3417-23.
43. Meijers RW, Litjens NH, de Wit EA, et al. Cytomegalovirus contributes partly to uraemia-associated premature immunological ageing of the T cell compartment. *Clin Exp Immunol.* 2013 Dec;174(3):424-32.
44. Wang GC, Kao WH, Murakami P, et al. Cytomegalovirus infection and the risk of mortality and frailty in older women: a prospective observational cohort study. *Am J Epidemiol.* 2010 May 15;171(10):1144-52.
45. Savva GM, Pachnio A, Kaul B, et al. Cytomegalovirus infection is associated with increased mortality in the older population. *Aging Cell.* 2013 Jun;12(3):381-7.
46. Bartosch B. Hepatitis B and C viruses and hepatocellular carcinoma. *Viruses.* 2010 Aug;2(8):1504-9.
47. Available at: <https://www.scientificamerican.com/article/we-now-have-the-cure-for-hepatitis-c-but-can-we-afford-it/>. Accessed August 28, 2018.
48. Hwang JH, Kim MK, Lee JK. Dietary supplements reduce the risk of cervical intraepithelial neoplasia. *Int J Gynecol Cancer.* 2010 Apr;20(3):398-403.
49. Myung SK, Ju W, Kim SC, et al. Vitamin or antioxidant intake (or serum level) and risk of cervical neoplasm: a meta-analysis. *Bjog.* 2011 Oct;118(11):1285-91.
50. Li Q, Chuang SC, Eluf-Neto J, et al. Vitamin or mineral supplement intake and the risk of head and neck cancer: pooled analysis in the INHANCE consortium. *Int J Cancer.* 2012 Oct 1;131(7):1686-99.
51. Available at: <https://www.cdc.gov/nchs/products/databriefs/db280.htm>. Accessed August 28, 2018.
52. Available at: https://www.cdc.gov/cancer/hpv/basic_info/cancers.htm. Accessed August 28, 2018.

IMMUNE SYSTEM SUPPORT

Lactoferrin is a versatile protein found in mother's milk that plays an important role in immune system response.¹

Lactoferrin's benefits include:^{2,3}

- Enhancing natural killer (NK) cell activity
- Stimulating macrophages to aid in healthy cell mediated immunity
- Promotes healthy tissue protection



1
DAILY



Item #01681 • 60 capsules
Retail Price is \$44 • **Your price is \$33**
4 bottles are only \$30 each
Contains milk.

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

References

1. *Breastfeed Rev.* 2002 Nov;10(3):5-18.
2. *J Endotoxin Res.* 2002;8(6):403-17.
3. Available at: <https://www.webmd.com/vitamins/ai/ingredient-mono-49/lactoferrin>. Accessed September 11, 2018.

Bioferrin® is a registered trademark of Glanbia.

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 FLORA



One of the most exciting fields of scientific research is focused on the trillions of bacteria that live in our bodies.

Researchers have discovered that these **flora** play an enormous role in immunity as well as overall health.

Life Extension®'s FLORASSIST® products can help maintain that important digestive environment and support healthy function of the heart, throat, mood, digestive tract, oral hygiene, immune system, and nasal passages.



FLORASSIST® GI with Phage Technology

- Provides broad spectrum of healthy bacteria for the digestive tract plus phages that target undesirable intestinal bacterial strains.

	Retail Price	Your Price
1 bottle	\$33	\$24.75
4 bottles		\$22.50 each

Item #02125 • 30 liquid vegetarian capsules



FLORASSIST® Heart Health

- Supports heart health.

	Retail Price	Your Price
1 bottle	\$32	\$24
4 bottles		\$21 each

Item #01821 • 60 vegetarian capsules



FLORASSIST® Prebiotic Chewable

- Promotes friendly bacteria.

	Retail Price	Your Price
1 bottle	\$20	\$15
4 bottles		\$13 each

Item #02203 • 60 chewable tablets



FLORASSIST® Throat Health

- Probiotic defense for your throat.

	Retail Price	Your Price
1 bottle	\$20	\$15
4 bottles		\$13.50 each

Item #01920 • 30 lozenges

For full descriptions and to order any of these FLORASSIST® products, 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 diagnose, treat, cure, or prevent any disease.

HEALTHY YOU!



FLORASSIST® Oral Hygiene

- Supports healthy bacteria in gums.

	Retail Price	Your Price
1 bottle	\$20	\$15
4 bottles		\$13 each

Item #02120 • 30 lozenges



FLORASSIST® Nasal

- Balances immune response to seasonal changes.

	Retail Price	Your Price
1 bottle	\$36	\$27
4 bottles		\$24 each

Item #02208 • 30 vegetarian capsules



FLORASSIST® Mood

- Positively influences the nervous system for healthy mood.

	Retail Price	Your Price
1 bottle	\$33	\$24.75
4 bottles		\$22.50 each

Item #02000 • 60 capsules



FLORASSIST® Immune Health

- Protects respiratory system from year-round immune challenges.

	Retail Price	Your Price
1 bottle	\$26	\$19.50
4 bottles		\$18 each

Item #02124 • 30 vegetarian capsules

BLIS K12® is the registered trademark of BLIS Technologies Limited. BLIS™ and BLIS M18™ are trademarks of Blis Technologies Limited and the subject of USA patent no. 7226590. PreticX™ is a trademark of AIDP, Inc. Immuno-LP20® is a registered trademark of House Foods Group Inc. EpiCor® is a registered trademark of Embria Health Sciences, L.L.C. L-92® is a registered trademark of Asahi Calpis Wellness Co., Ltd., Tokyo, Japan.

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.

EXTEND-RELEASE

MAGNESIUM

WHEN YOU NEED IT

Unique delivery system provides immediate and extended release magnesium for full-body coverage of this essential mineral.



	Retail Price	Your Price
--	--------------	------------

1 bottle	\$13	\$9.75
----------	------	--------

4 bottles		\$8.75 each
-----------	--	-------------

Item # 02107 • 60 vegetarian capsules

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

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

Vitamin Supplements Associated with Lower Risk of Pancreatic Cancer

A meta-analysis found an association between higher **vitamin** intake and a lower risk of cancer of the pancreas.*

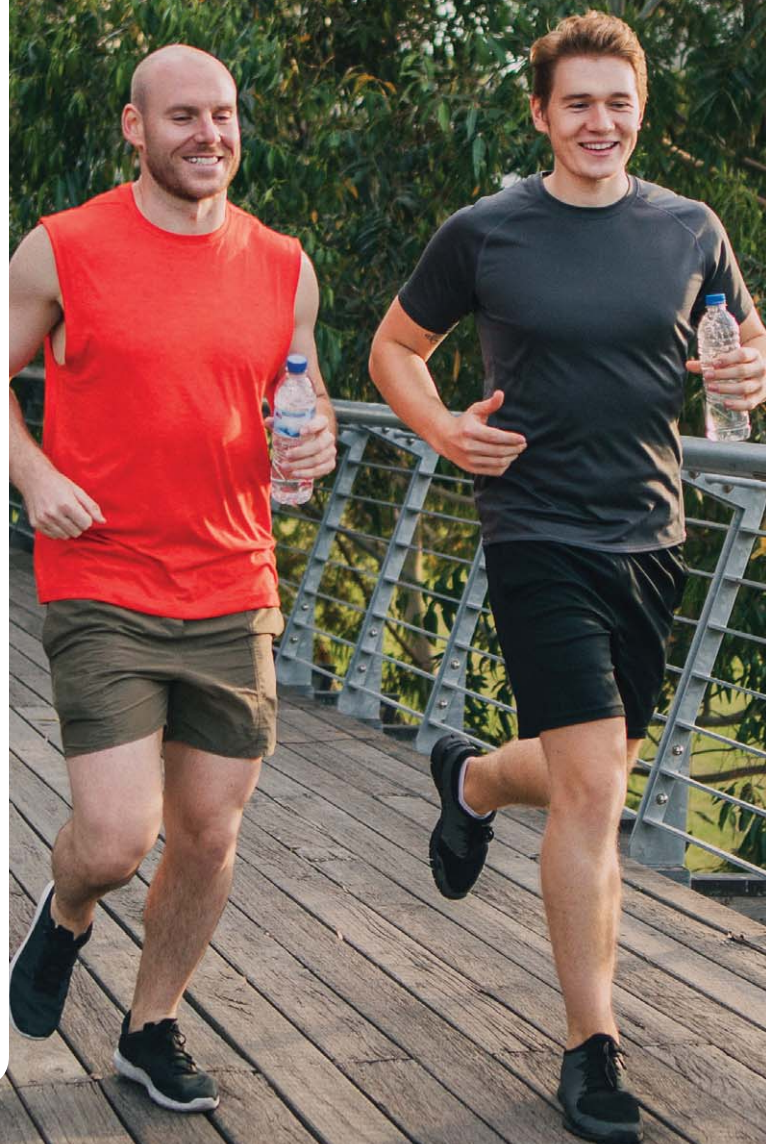
Ying Liu and colleagues selected 25 studies that included 1,214,995 subjects for their analysis. Studies included case-control investigations, randomized controlled trials, cohort studies, prospective studies and retrospective studies that provided data on the intake of **vitamin A, B, C, D, or E**. Pancreatic cancer cases totaled 8,740.

Subjects with the highest vitamin intake in the prospective studies had a **10%** lower adjusted risk of developing pancreatic cancer compared to those among the lowest intake group. In retrospective studies, the risk was **21%** lower for those whose vitamin intake was highest.

In a dose-response meta-analysis, intake of **10 mcg** or more of **vitamin B12** lowered the incidence of pancreatic cancer by **27%**. For **vitamin D**, the risk was lowered by **25%**.

Editor's Note: In their discussion, the authors list a number of mechanisms to explain the effects of vitamins on pancreatic cancer cells. As examples, **vitamin E** has been shown to induce cell-cycle arrest and apoptosis (programmed cell death) in human pancreatic cancer cells, and **vitamin B1** has been shown to increase caspase-3 activity (involved in apoptosis) and decrease pancreatic cell proliferation.

* *Medicine (Baltimore)*. 2018 Mar;97(13):e0114.



Selenium Linked to Lower Mortality Risk

Research published in March 2018 revealed a lower risk of mortality over a ten-year period among older men and women who had higher serum levels of the mineral **selenium**.*

The investigation included 347 participants in “Aging and Longevity in the Sirente” (iSLIRENTE), a prospective cohort study that involved men and women aged 80 years and older who resided in a mountain community in Italy. Blood samples collected at enrollment were analyzed for factors that included serum selenium, which was categorized as low or high.

Subjects were followed for 10 years, during which 248 deaths occurred.

Having a high level of selenium was associated with a **29%** lower adjusted risk of death from all causes over the ten-year follow-up period compared with lower levels.

Editor’s Note: Greater selenium levels were associated with lower levels of interleukin-6 and C-reactive protein, which are markers of inflammation.

* *J Nutr Health Aging*. 2018;22(5):608-612.

Coffee May Help Prevent Arrhythmia

Contrary to common belief, **coffee** does not increase abnormal heart rhythms (arrhythmia) but helps prevent them, according to a review in the April 2018 issue of *Journal of the American College of Cardiology: Clinical Electrophysiology*.*

One cup of coffee contains an average **95 mg** of caffeine. Caffeine blocks the effects of adenosine, a compound that can facilitate the type of arrhythmia known as atrial fibrillation.

Population-based studies have documented an association between a reduction in atrial fibrillation and greater caffeine ingestion.

A meta-analysis that included 228,465 subjects found a relationship between drinking coffee and lower atrial fibrillation occurrence.

While regular coffee drinkers had a **6%** average reduction in atrial fibrillation, pooled, adjusted results from studies found a decrease of **11%** for low doses and **16%** for high doses of caffeine.

Editor's Note: Researchers Peter Kistler and colleagues determined that caffeine also has no effect on ventricular arrhythmias. Doses of up to **500 mg** per day have not been associated with ventricular arrhythmia rate or severity. Only at 9-10 cups per day has coffee been associated with an increase in risk.

*JACC: Clin Electrophysiol. 2018 Apr;4(4):425-432.

More Evidence for Mediterranean Diet Benefits

A recent series of journal articles reveals new associations between a **Mediterranean diet** and healthy aging outcomes.*

In a review by Luigi Fontana and colleagues, a number of potential health-modifying effects induced by the Mediterranean diet were considered, including: lipid reduction, protection against inflammation and oxidative stress, and modification of cancer-promoting growth factors.

Other articles documented the benefit of the diet on physical function, the effects of adding a **CoQ10** supplement to the diet, the interaction between genetic variants and the diet on inflammation and aging, and the favorable role of adherence to the Mediterranean diet at midlife on health maintenance during aging.

Editor's Note: The Mediterranean diet is characterized by a high intake of whole grains, legumes, fresh vegetables, fruit, extra-virgin olive oil, nuts and seeds, moderate consumption of fish, and the inclusion of small amounts of dairy products and wine.

* *J Gerontol A Biol Sci Med Sci.* 2018 Mar 2;73(3):315-317.

WITH EVERY BEAT...

*Energize Your Heart
Energize Your Cells
Energize Your Life*



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

	Retail Price	Your Price
--	-----------------	---------------

1 bottle	\$50	\$37.50
4 bottles		\$30 each

Item #01733 • 30 softgels



PrimaVie® is a registered trademark of Natreon, Inc.

Q+®, Kaneka Ubiquinol™, and the quality seal™ are registered or pending trademarks of Kaneka Corp.



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.



Joint Action

SUPERIOR JOINT AND CARTILAGE FORMULA



Clinical trials demonstrate that the plant extracts in **ArthroMax® Elite** support healthy inflammatory response, help maintain healthy connective cartilage tissue, and promote comfortable joint function.

Each tablet provides optimal potencies of **Chinese skullcap**, **cutch tree** and **white mulberry**. Suggested dose is one tablet daily, with or without food.



Retail
Price

Your
Price

1 bottle

\$30

\$22.50

4 bottles

\$20 each

Item # 02138 • 30 vegetarian tablets

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

Keep out of reach of children. Do not exceed recommended dose.



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



Low-Cost Biologically Active B-COMPLEX

Enzymatically Active Vitamins

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

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

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



BioActive Complete B-Complex

Item #01945 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$12	\$9
4 bottles		\$8 each



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





Mixed Berries Reduce Obesity Damage

Obesity contributes to practically every disease associated with aging.

Just losing weight is not always enough to overcome the **damage** caused by **inflammatory** fat cells.

Berry extracts contain bioactive compounds called **anthocyanins** that help combat the harmful effects caused by excess weight.

Anthocyanins are a type of **flavonoid** that give berries their bright red, blue, and purple colors.

What has excited researchers is that a **mixture** of berries has been shown to reduce the **size** of fat cells.

Berry extracts do this by giving stubborn **white fat** cells some properties of **brown fat**, which promotes fat burning and improves insulin sensitivity.^{1,2}

As a result, **mixed berries** can play a role in limiting the systemic damage caused by obesity and foster metabolic improvements.

For those who want to avoid the **sugars** contained in **fresh berries** or are unable to consume up to a pound a day of expensive fresh berries, standardized **extracts** from **berries** are a great alternative.

Why Obesity is So Dangerous

The worst consequences of obesity have nothing to do with appearance.

In obese people, fat cells churn out damaging **inflammation**. This chronic low-grade inflammation causes cell damage that speeds aging. It also contributes to heart disease, stroke, dementia, cancer, and diabetes.³

The connection between obesity, inflammation, and disease is so uniquely damaging that scientists have coined a new term—**meta-inflammation**—to describe the chronic metabolic inflammation driven by obesity.^{3,4}

Suppressing—or preventing—**meta-inflammation** is now a hotly pursued way to combat obesity and its consequences.³

Combatting Obesity-Induced Inflammation

Compounds found in berries called **anthocyanins** have the ability to safely reduce the risk of obesity—as well as the problems it can cause.^{3,5,6}

These compounds have properties that tune up the entire metabolic process and help limit aging.

While some studies in animals show that anthocyanins contribute directly to weight loss, there's a bigger picture to consider.

The great value in these plant extracts is in their ability to disrupt the vicious cycle of **obesity** and **inflammation**.

A randomized, placebo-controlled trial found that oral administration of a **mixture** of **berry anthocyanins** improved multiple health indices—including a dramatic reduction in **inflammatory** markers—in individuals with high cholesterol.⁷

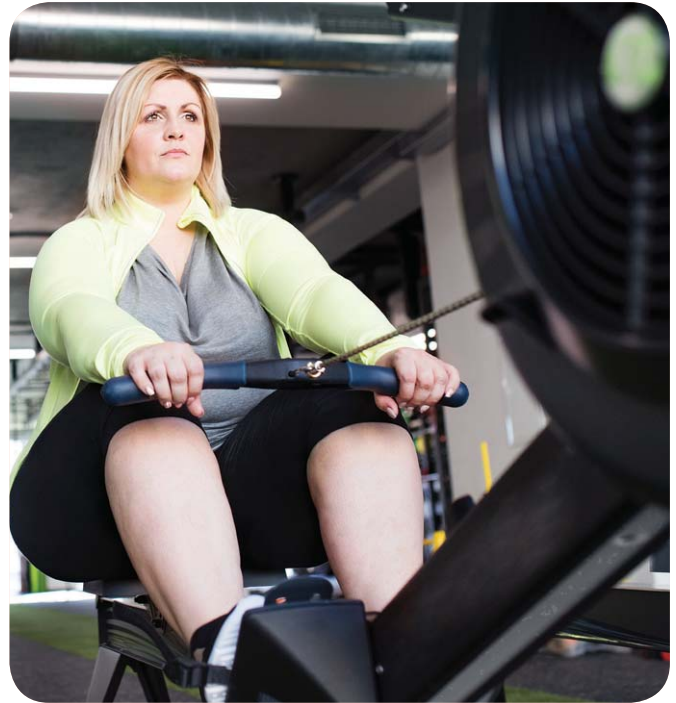
Because berries aren't always available, and not everyone wishes to consume them in the quantities required to deliver their benefits, **mixed berry extracts** are an excellent and affordable way to gain access.

Good Fat vs. Bad Fat

Not all body fat is the same.

White fat makes up the majority of the fat in the body. When people gain weight, it is generally the result of an accumulation of excess **white fat**. In obesity, white fat releases harmful inflammation-promoting chemicals that promote metabolic dysfunction. In this way, **white fat** drives the destructive cycle of obesity and inflammation.³

Brown fat, on the other hand, is beneficial because it burns calories for energy, rather than storing them. It also produces negligible inflammation.



Until recently, scientists believed brown fat was only found in infants and hibernating animals. We now know that this beneficial (brown) fat is found in human adults as well, where it has numerous health benefits.

Even more exciting, scientists have discovered that it is possible to give harmful **white fat** properties of beneficial **brown fat**—and **berries** contain compounds that enable the body to do just that.

Berries Promote “Good” Fat

Berries have been shown to promote brown fat-like properties in white fat.^{1,2}

This produces numerous metabolic benefits throughout the body, including reducing the size of fat cells, suppressing inflammation, and improving insulin sensitivity (in obesity and insulin resistance, fat cells notoriously lose their capacity to respond to insulin).¹

Remarkably, they also increase activation of **AMPK**, the universal energy regulator that promotes youthful cellular metabolism (fat-burning and limited fat storage, rapid intracellular cleanup, reduced sugar production).^{1,2,8,9}

Reducing Inflammation in the Gut

Another consequence of obesity and high-fat diets is a disruption in the gut **microbiome** (the community of microbes living in the intestinal tract). This is yet another factor that contributes to obesity-induced **meta-inflammation**.

Blueberry supplementation has been shown to improve the composition of the gut microbiome and reduce inflammation in obese animals fed a high-fat diet.¹⁰

In addition, blueberry supplemented animals showed favorable improvements in markers of insulin sensitivity.¹⁰

Another way **berry supplements** prevent **inflammation** is by reducing **metabolic endotoxemia**, a condition in which toxic bits of bacterial membranes make their way into the circulation via leaky gut, and then provoke body-wide inflammation.¹¹

Human Studies

Human studies bear out these preliminary findings, showing that **berry supplementation** produces important metabolic improvements that can lower the risk of disease.

In one study, adults with abdominal obesity and high blood lipids supplemented with freeze-dried strawberries. After 12 weeks, they experienced decreases in total and LDL cholesterol with improved **LDL cholesterol particle size**, compared with control subjects.¹²

Particle size is important because the larger the particle size, the lower the cardiovascular risk.

In another study, obese adults who took a strawberry-cranberry polyphenol extract for six weeks experienced improved **insulin sensitivity** compared with control subjects.¹³ When insulin sensitivity is improved, sugar can be removed from the bloodstream more efficiently, and insulin levels remain lower.

Keeping insulin levels to a minimum is essential in preventing multiple problems associated with **meta-inflammation** and obesity, including metabolic syndrome, type II diabetes, and even cancer.

Preventing Obesity-Induced Diabetes

Obesity is a major risk factor for **type II diabetes**, which in turn is a massive risk factor for the heart, brain, and liver disorders that accelerate aging and shorten lifespans.

Chronically **high blood sugar levels** cause proteins to undergo chemical changes that promote **inflammation**, resulting in stiffening blood vessels, damaged brain cells, and fattened livers.¹⁴⁻¹⁷

What You Need to Know

Berry Extracts Reduce Obesity Risks

- Obesity drives body-wide inflammation that accelerates aging and raises the risk for practically every chronic, age-related condition.
- Berries are rich in polyphenols called **anthocyanins** that can safely and effectively reduce the inflammation caused by obesity.
- Berries and berry extracts have been shown to reduce insulin resistance, lower cholesterol levels, and slash liver fat accumulation—benefits that, taken as a whole, would be of crucial importance for anyone with type II diabetes or prediabetes.
- Mixed berry extracts are a practical and affordable way to access the high polyphenol content that can protect our bodies from excessive harmful fat and chronic inflammation, and can lower our risk of age-related degenerative diseases.



Berries and their extracts may have a beneficial impact on the interaction of the **obesity-inflammation-type II diabetes** connection, with important benefits for aging adults carrying extra pounds.

In a study of animals fed a high-fat diet, adding freeze-dried strawberry and blueberry *extracts* to the animals' diets reduced **weight gain** and the animals' body fat percentage, while also lowering **insulin** levels.

Lower insulin levels reflect an improvement in **insulin sensitivity**. This improvement in insulin metabolism likely accounts for the beneficial effects on weight and body fat.¹⁸



Best Sources for Anthocyanins

Anthocyanins have tremendous potential to reduce misery and disease. The primary dietary sources of anthocyanins are dark fruits, especially berries.²⁸⁻³²

Even if Americans increase their consumption of cherries, strawberries, blackberries, blueberries, and others, few will be able to do it consistently enough to substantially affect healthy aging. Overconsumption of any fruit, even including berries, can overload the body with fructose (fruit sugar).

Fortunately, anthocyanin extracts can achieve similar benefits to berries themselves. Interestingly, because these highly concentrated anthocyanin extracts are inherently stable; they cost less when taken as supplements compared to buying fresh fruits that spoil rapidly.

Insulin resistance is the driving factor that leads to type II diabetes.

In another study, freeze-dried red raspberries produced similar results, significantly lowering blood sugar and decreasing insulin resistance in a mouse model of diet-induced obesity and inflammation.¹⁹

Diabetes-Related Heart Problems

Type II diabetics have a much higher risk of developing cardiovascular disease.

Chronic exposure to elevated levels of both sugar and fats contributes to **endothelial dysfunction**.^{20,21}

When applied to human arterial cells in culture, **blueberry metabolites** prevented endothelial damage and the inflammation that occurs as a result.

Blueberry metabolites also restored normal structure of the vessel walls that assures vascular integrity and flexibility.^{20,21}

They also prevented inflammatory cells from binding to diabetics' vessel walls.²¹ This is an important finding that suggests that blueberry metabolites reduce the tendency to form artery-clogging plaques.

Diabetes-Related Memory Problems

People with type II diabetes and those with **metabolic syndrome** develop cognitive dysfunction, which may lead to neurodegenerative diseases like Alzheimer's disease.²²⁻²⁴

Working memory, which is important for reasoning and decision-making, is an early victim of diet-induced obesity and diabetic changes.

Supplementing with a berry beverage based on a mixture of berries has been shown to improve working memory. Supplemented subjects also had lower blood sugar and insulin levels compared to controls.²⁵

Unfortunately, the study required that subjects consume nearly a **pound** of fruit **per day** to achieve the high polyphenol intake necessary to obtain these benefits.²⁵

Berries Block Fatty Liver

A serious potential complication of obesity, diabetes, and metabolic syndrome is **non-alcoholic fatty liver disease (NAFLD)**, a condition characterized by fat accumulation in the liver.

NAFLD is a massive source of inflammation and liver cell damage. Left unchecked, it can lead to **non-alcoholic steatohepatitis (NASH)**, a highly inflamed state that can progress to cirrhosis, liver failure, and even liver cancer.²⁶

One study found that simply adding a type of berry to the diet produced substantial benefits in patients with NAFLD.

These results were seen in a study in which two groups of people with NAFLD ate identical diets, but one group included **currants** (dried berries).²⁷

The group eating the currants experienced drops in fasting blood sugar and inflammatory cytokine levels, while the control group experienced no such improvements. Those eating the berries also had lower body fat, waist circumference, and fat on the lower part of the body—and saw improved liver appearance on ultrasound.²⁷

If these changes could be sustained by continued consumption of currants, or perhaps by the active constituents in currants, this dietary intervention may represent a way to prevent progression to more aggressive liver disease and fibrosis.

In another study, people using purified anthocyanins from **bilberry** and **black currants** experienced reductions in blood markers of liver cell damage and oxidative stress compared with placebo.²⁶

Summary

Obesity contributes to chronic disorders that accelerate aging. In obesity and insulin resistance, fat tissue releases cytokines that contribute to a state of **chronic inflammation**, increasing the risk for all manner of age-related diseases.

Berry extracts help combat obesity-driven inflammation. They are rich in **anthocyanins** and other

molecules that intervene at multiple points in the obesity-inflammation-disease cascade.

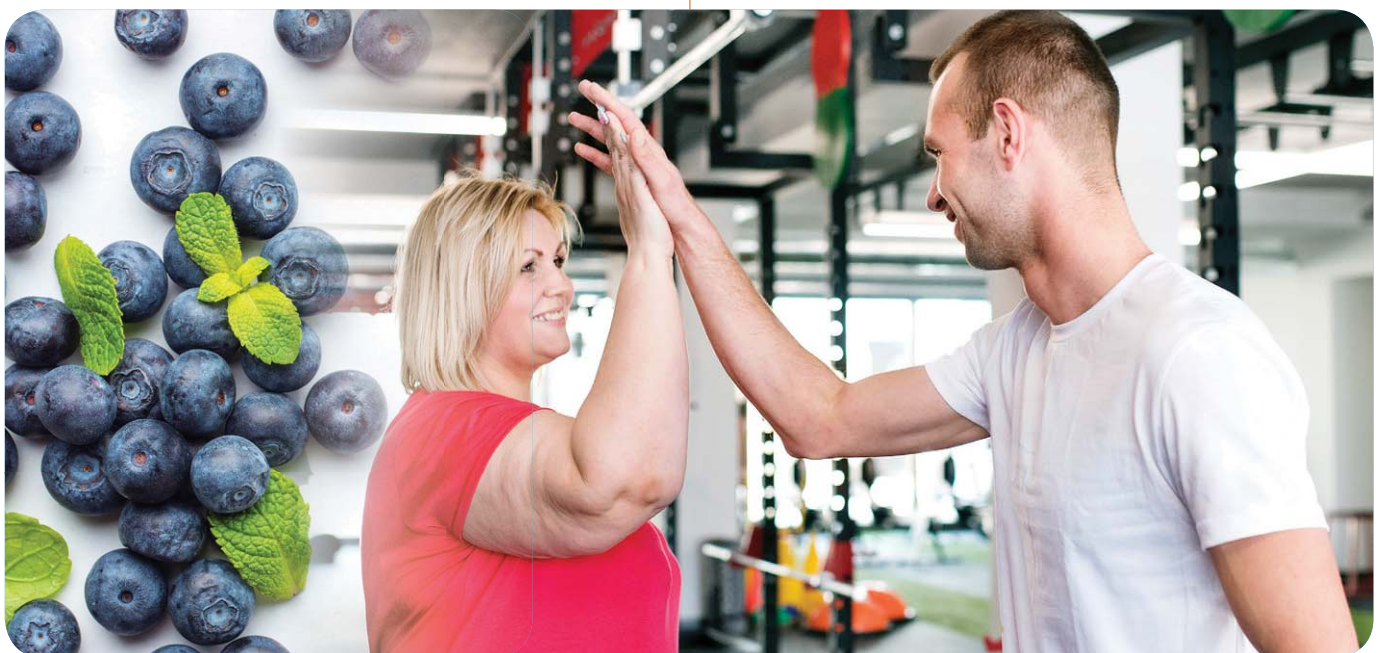
Berries and berry extracts have been shown to produce favorable changes in body weight, fat mass, and liver fattiness. They can help prevent type II diabetes by lowering insulin levels and improving insulin resistance, and may protect against the heart- and brain-damaging effects of obesity and diabetes.

As we age, we are more likely to become overweight or obese, which curtails our chances for long life. Anthocyanin-rich berry extracts can help counteract the negative effects of obesity. ●

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

1. Xing T, Kang Y, Xu X, et al. Raspberry Supplementation Improves Insulin Signaling and Promotes Brown-Like Adipocyte Development in White Adipose Tissue of Obese Mice. *Mol Nutr Food Res*. 2018 Mar;62(5).
2. Zou T, Wang B, Yang Q, et al. Raspberry promotes brown and beige adipocyte development in mice fed high-fat diet through activation of AMP-activated protein kinase (AMPK) alpha1. *J Nutr Biochem*. 2018 May;55:157-64.
3. Lee YM, Yoon Y, Yoon H, et al. Dietary Anthocyanins against Obesity and Inflammation. *Nutrients*. 2017 Oct 1;9(10).
4. Singer K, Lumeng CN. The initiation of metabolic inflammation in childhood obesity. *J Clin Invest*. 2017 Jan 3;127(1):65-73.
5. Cefalu WT, Ye J, Zuberi A, et al. Botanicals and the metabolic syndrome. *Am J Clin Nutr*. 2008 Feb;87(2):481S-7S.



6. He J, Giusti MM. Anthocyanins: natural colorants with health-promoting properties. *Annu Rev Food Sci Technol*. 2010;1:163-87.
7. Zhu Y, Ling W, Guo H, et al. Anti-inflammatory effect of purified dietary anthocyanin in adults with hypercholesterolemia: a randomized controlled trial. *Nutr Metab Cardiovasc Dis*. 2013 Sep;23(9):843-9.
8. Li D, Wang P, Luo Y, et al. Health benefits of anthocyanins and molecular mechanisms: Update from recent decade. *Crit Rev Food Sci Nutr*. 2017 May 24;57(8):1729-41.
9. Tsuda T. Regulation of adipocyte function by anthocyanins; possibility of preventing the metabolic syndrome. *J Agric Food Chem*. 2008 Feb 13;56(3):642-6.
10. Lee S, Keirsey KI, Kirkland R, et al. Blueberry Supplementation Influences the Gut Microbiota, Inflammation, and Insulin Resistance in High-Fat-Diet-Fed Rats. *J Nutr*. 2018 Feb 1;148(2):209-19.
11. Anhe FF, Varin TV, Le Barz M, et al. Arctic berry extracts target the gut-liver axis to alleviate metabolic endotoxaemia, insulin resistance and hepatic steatosis in diet-induced obese mice. *Diabetologia*. 2018 Apr;61(4):919-31.
12. Basu A, Betts NM, Nguyen A, et al. Freeze-dried strawberries lower serum cholesterol and lipid peroxidation in adults with abdominal adiposity and elevated serum lipids. *J Nutr*. 2014 Jun;144(6):830-7.
13. Paquette M, Medina Larque AS, Weisnagel SJ, et al. Strawberry and cranberry polyphenols improve insulin sensitivity in insulin-resistant, non-diabetic adults: a parallel, double-blind, controlled and randomised clinical trial. *Br J Nutr*. 2017 Feb;117(4):519-31.
14. Ashraf JM, Ansari MA, Fatma S, et al. Inhibiting Effect of Zinc Oxide Nanoparticles on Advanced Glycation Products and Oxidative Modifications: a Potential Tool to Counteract Oxidative Stress in Neurodegenerative Diseases. *Mol Neurobiol*. 2018 Sep;55(9):7438-52.
15. Di Pino A, Currenti W, Urbano F, et al. High intake of dietary advanced glycation end-products is associated with increased arterial stiffness and inflammation in subjects with type 2 diabetes. *Nutr Metab Cardiovasc Dis*. 2017 Nov;27(11):978-84.
16. König A, Vicente Miranda H, Outeiro TF. Alpha-Synuclein Glycation and the Action of Anti-Diabetic Agents in Parkinson's Disease. *J Parkinsons Dis*. 2018;8(1):33-43.
17. Palma-Duran SA, Kontogianni MD, Vlassopoulos A, et al. Serum levels of advanced glycation end-products (AGEs) and the decoy soluble receptor for AGEs (sRAGE) can identify non-alcoholic fatty liver disease in age-, sex- and BMI-matched normo-glycemic adults. *Metabolism*. 2018 Jun;83:120-7.
18. Aranaz P, Romo-Hualde A, Zabala M, et al. Freeze-dried strawberry and blueberry attenuates diet-induced obesity and insulin resistance in rats by inhibiting adipogenesis and lipogenesis. *Food Funct*. 2017 Nov 15;8(11):3999-4013.
19. Zhu MJ, Kang Y, Xue Y, et al. Red raspberries suppress NLRP3 inflammasome and attenuate metabolic abnormalities in diet-induced obese mice. *J Nutr Biochem*. 2018 Mar;53:96-103.
20. Bharat D, Cavalcanti RRM, Petersen C, et al. Blueberry Metabolites Attenuate Lipotoxicity-Induced Endothelial Dysfunction. *Mol Nutr Food Res*. 2018 Jan;62(2).
21. Cutler BR, Gholami S, Chua JS, et al. Blueberry metabolites restore cell surface glycosaminoglycans and attenuate endothelial inflammation in diabetic human aortic endothelial cells. *Int J Cardiol*. 2018 Jun 15;261:155-8.
22. Alfaro FJ, Gavrieli A, Saade-Lemus P, et al. White matter microstructure and cognitive decline in metabolic syndrome: a review of diffusion tensor imaging. *Metabolism*. 2018 Jan;78:52-68.
23. Mansur RB, Lee Y, Subramaniapillai M, et al. Cognitive dysfunction and metabolic comorbidities in mood disorders: A repurposing opportunity for glucagon-like peptide 1 receptor agonists? *Neuropharmacology*. 2018 Jul 1;136(Pt B):335-42.
24. Paul KC, Jerrett M, Ritz B. Type 2 Diabetes Mellitus and Alzheimer's Disease: Overlapping Biologic Mechanisms and Environmental Risk Factors. *Curr Environ Health Rep*. 2018 Mar;5(1):44-58.
25. Nilsson A, Salo I, Plaza M, et al. Effects of a mixed berry beverage on cognitive functions and cardiometabolic risk markers: A randomized cross-over study in healthy older adults. *PLoS One*. 2017;12(11):e0188173.
26. Zhang PW, Chen FX, Li D, et al. A CONSORT-compliant, randomized, double-blind, placebo-controlled pilot trial of purified anthocyanin in patients with nonalcoholic fatty liver disease. *Medicine (Baltimore)*. 2015 May;94(20):e758.
27. Kaliora AC, Kokkinos A, Diolintzi A, et al. The effect of minimal dietary changes with raisins in NAFLD patients with non-significant fibrosis: a randomized controlled intervention. *Food Funct*. 2016 Nov 9;7(11):4533-44.
28. Smeriglio A, Barreca D, Bellocco E, et al. Chemistry, Pharmacology and Health Benefits of Anthocyanins. *Phytother Res*. 2016 Aug;30(8):1265-86.
29. Basu A, Nguyen A, Betts NM, et al. Strawberry as a functional food: an evidence-based review. *Crit Rev Food Sci Nutr*. 2014;54(6):790-806.
30. Garcia-Alonso M, Miniñane AM, Rimbach G, et al. Red wine anthocyanins are rapidly absorbed in humans and affect monocyte chemoattractant protein 1 levels and antioxidant capacity of plasma. *J Nutr Biochem*. 2009 Jul;20(7):521-9.
31. McGhie TK, Ainge GD, Barnett LE, et al. Anthocyanin glycosides from berry fruit are absorbed and excreted unmetabolized by both humans and rats. *J Agric Food Chem*. 2003 Jul 30;51(16):4539-48.
32. Skrovankova S, Sumczynski D, Mlcek J, et al. Bioactive Compounds and Antioxidant Activity in Different Types of Berries. *Int J Mol Sci*. 2015 Oct 16;16(10):24673-706.



Protect Your Brain Against Sugar Overload

Elevated sugar can impact the brain as it does the rest of the body.

Benfotiamine promotes healthy brain function¹ supporting healthy blood sugar metabolism and protecting it against the effects of sugar on the brain.²

	Retail Price	Your Price
1 bottle	\$30	\$22.50
4 bottles		\$20.25 each

Item# 00925 • 120 vegetarian capsules



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

References

1. Available at: <http://lpi.oregonstate.edu/mic/vitamins/thiamin>. Accessed January 4, 2018.
2. *Neurosci Bull.* 2016;32(6):591-6.

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.

TURN ON YOUR Cellular Energy

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**.

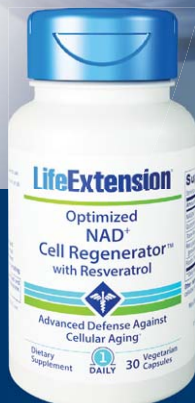
For **resveratrol** to deliver functional results, it requires **NAD⁺**.

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



Optimized NAD⁺ Cell Regenerator™
Item #02148 • 30 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$54	*



NAD⁺ Cell Regenerator™
Item #02144 • 30 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$48	*



* For pricing available to readers of this magazine, call 1-800-544-4440 or visit LifeExtension.com/NAD

For full product description and to order **NAD⁺ Cell Regenerator™** or **Optimized NAD⁺ Cell Regenerator™ with Resveratrol**, call **1-800-544-4440** or visit **www.LifeExtension.com**

NIAGEN® is registered trademark of ChromaDex, Inc., Patents see: www.ChromaDexPatents.com



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.

UNLOCK THE POWER OF

Berries

Mixed berries are rich
in polyphenols and
bio-active compounds.

Berry Complete delivers
over a dozen types of berries
without the excess sugar.

Just one easy-to-swallow
capsule each day.



Item #01206 • 30 veg. caps

Retail Price is \$21 • **Your price is \$15.75**

4 bottles are only \$14 each

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

VitaBerry® and AnthoComplete™ are trademarks of
VDF Futureceuticals, Inc., used under license.

POMELLA® Extract is covered under U.S. Patent 7,638,640 and
POMELLA® is a registered trademark of Verdure Sciences, 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.



The Dangers of Inactivity

The impact of inactivity on **muscle mass** is severe.

In a group of otherwise healthy study subjects, there was a striking **4.4 pound loss** of lean body mass after only **10 days** of complete bed rest.

The arm of this study supplementing with an amino acid metabolite lost only **0.37 pounds** of muscle when confined to bed for 10 days.²³

This study reveals how quickly muscle loss occurs and how to prevent it.



Prevent Age-Related Muscle Loss, Frailty *and* Risk Factors *for* Falls

Every adult loses muscle mass with age.¹

This is not just a cosmetic issue.

Age-related **muscle loss** increases the risk for falls, fractures, loss of independence, and ultimately, loss of life.

This decline in muscle mass, which begins as early as the 4th decade, is called **sarcopenia**.² It leads to increased nursing home placement and hospitalization rates.³ And as muscle mass falls, the risk of **disability** greatly increases.^{4,5}

Exercise can help prevent age-related muscle loss, but is only one of the components necessary to maintain adequate muscle strength.

Two key nutrients have been shown to **rebuild lost muscle** in aging individuals:

Beta-hydroxy beta-methylbutyrate (HMB) increases and preserves muscle mass in adults of all ages, especially those older than 65.⁶⁻⁸

Vitamin D3 supports muscle strength and helps to prevent the falls that often trigger an early decline into frailty.⁹⁻¹²

HMB and **vitamin D3** help maintain and restore muscle mass even as we age.

Why Sarcopenia is So Dangerous

Starting around age 40, an estimated **8% loss** of muscle mass is seen **per decade**. After age 70, muscle mass decreases by about **15% per decade**.¹

This drastic decline leaves individuals not only weaker, but also in less control of their bodies—and more prone to falls and other injuries.

The word for this loss of skeletal muscle mass is **sarcopenia**.

Sarcopenia triggers a vicious cycle, in which decreased muscle strength limits physical activity, which leads to further muscle loss. Eventually, a condition called **frailty** can set in, leaving a person weak and vulnerable to external stressors that would otherwise be minor (such as a mild injury or illness).

As frailty worsens and function declines, each subsequent stressor speeds the road to lost independence and increases the risk of early death.

As we'll now see, clinical evidence supports HMB and vitamin D3 supplementation as a way of heading off sarcopenia and frailty.

HMB Preserves Muscle Mass, Prevents Muscle Atrophy

Beta-hydroxy beta-methylbutyrate, or **HMB**, is a natural, bioactive product of metabolism of the amino acid **leucine**.¹³

HMB is essential to maintaining the balance between muscle **catabolism** (breakdown) and **anabolism** (buildup or restoration).¹⁴⁻²⁰

HMB levels decline with age, a drop that correlates precisely with diminished lean muscle mass and strength.²¹ This finding leads to an important question: Can supplementing with HMB protect—or even restore—lean muscle mass in older people?

Multiple human trials have shown the value of HMB for preserving and improving muscle mass.

Overcoming a Major Cause of Sarcopenia

A 2015 meta-analysis included data from seven trials involving a total of 287 older adults. It found that supplementing with HMB preserved muscle mass in older adults and may be useful in preventing muscle atrophy.²²

One of those studies involved healthy older adults who voluntarily subjected themselves to 10 days of **complete bed rest**²³—a known cause of **sarcopenia**.^{24,25}

Subjects supplemented with either a **placebo** powder or a powder providing **1.5 grams of HMB** twice daily, starting five days prior to the bed-rest period and continuing until the end of the rehabilitation phase.

The control group experienced a reduction in total lean body mass of about **4.4 pounds**. In contrast, HMB-supplemented subjects lost just **0.37 pounds** (not a significant difference from baseline).²³

In this study, HMB supplementation **preserved lean body mass** in the face of a powerful stimulus for sarcopenia: sustained bed rest.





What You Need to Know

Protect Against Age-Related Sarcopenia

- The age-related loss of muscle tissue, called **sarcopenia**, leaves us not only weakened, but vulnerable to falling, increasing the risk for fractures, immobility, and premature death.
- Two supplements have been shown to combat sarcopenia by maintaining or boosting muscle mass and performance.
- HMB, a derivative of the common amino acid leucine, has been found to enhance lean muscle mass, prevent its loss, and promote improved muscle function.
- Vitamin D3 has important effects on aging muscles, including producing significantly greater muscle strength and exercise performance.
- Anyone concerned about maintaining optimal muscle mass, strength, and function into their golden years should consider supplementing with a combination of HMB and vitamin D3.

Boosting Lean Body Mass During Exercise

Other researchers set out to determine if HMB could help boost lean body mass when used in addition to resistance training.

For the study, a group of 70-year-old individuals participated in a resistance training exercise program five days a week. During that time, they took **1 gram of HMB or placebo** three times a day.⁶

After eight weeks, the supplemented subjects experienced an **increase** in lean body mass of **1.76 pounds**, while the placebo recipients **lost 0.44 pounds**—despite the fact that they were exercising five days a week! Those who supplemented with HMB also lost more body **fat** than the placebo subjects.

This study showed that HMB supplementation can augment strength training in older adults in a way similar to that already proven in younger people.⁶

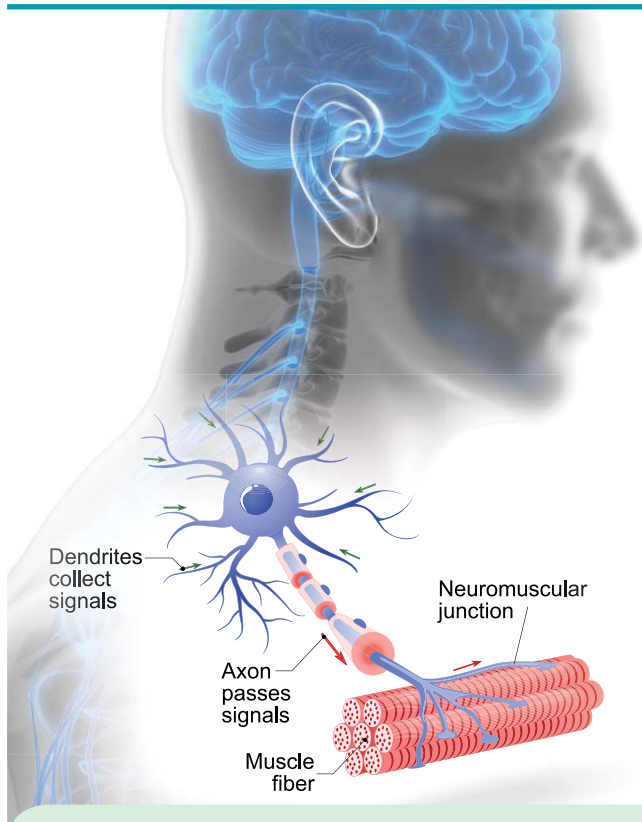
Overall, these studies consistently show that supplementation with HMB improves **lean body mass** in older adults while contributing to better **body fat distribution**.

Vitamin D3 can complement that action by enhancing muscle **strength**.

Vitamin D3 Boosts Strength and Performance

Vitamin D3 supplementation improves muscle strength and performance.^{26,27} Studies show that it's possible to increase muscle strength simply by boosting vitamin D levels.

A **muscle strength/frailty** study enrolled 160 postmenopausal women, aged 50-65, who all had a history of falling.²⁸ Falls are a common destabilizing factor that can arise from both **inadequate muscle mass** and **poor coordination** and **balance**.²⁹ Vitamin D3 shows promise for combatting both factors.



Researchers in this study randomly assigned women to receive vitamin D3 (**1,000 IU/day**) or placebo.²⁸ After nine months, those who took the vitamin D experienced a **25.3% increase** in leg muscle strength.²⁸ During the same period, women in the **placebo** group *lost 6.8%* of their lean mass.

The vast difference between the supplemented and unsupplemented women indicates vitamin D's ability to not only preserve—but also **improve**—muscle strength.

Finally, a 2014 meta-analysis of data from 30 randomized controlled trials involving more than 5,600 people evaluated the effects of vitamin D3 supplementation on muscle performance. The results showed that vitamin D3 had a significant positive effect on **overall muscle strength**. This is an important finding, since loss of overall muscle strength can increase the risk of mortality.²⁶

The greatest benefits were seen in those who had the lowest vitamin D levels at the beginning of the study (less than **12 ng/mL**) and in older vs. younger subjects.²⁶ This is good news for those already supplementing with higher-dose vitamin D3.

Beyond Muscle: Neurological Contributions to Age-Related Muscular Dysfunction

Recent research has found that age-related loss of muscle strength cannot be explained by changes in muscle alone.³⁶ Deterioration of the nervous system likely also contributes to the symptoms of sarcopenia.

The nervous system is critically important for the control of muscular contraction, from the initial planning of movements to the signals that directly activate muscles. Several of these regions involved in control of movement undergo deterioration with age.³⁶

For instance, structures in the brain involved in motor planning, initiation, and coordination all demonstrate significant functional decline in the aging process. Likewise, the connections of nerve cells that directly activate muscles undergo changes that negatively affect motor function.

Fortunately, new studies have begun to demonstrate that nutritional factors may ameliorate loss of function both in the nervous system and muscle.³⁷ These nutrients may contribute both to direct effects on muscles as well as to improvement in nervous system function:

- **Omega-3 fatty acids**, long recognized for their contribution to brain health, improve neuromuscular function as well. Higher levels and supplementation of omega-3s have been associated with improved muscle size and strength.³⁸⁻⁴⁰
- **Creatine**, an amino acid derivative important for cellular energy supply, appears to benefit both the nervous system and muscle. Recent studies have shown the potential of creatine to prevent loss of muscle mass and improve strength and endurance.³⁷
- Increasingly common in older adults, low levels of **vitamin D** have been associated with decline of nervous system function and motor performance. Those individuals with higher levels demonstrate superior motor function compared to those with deficiency; and increased intake in deficient elderly adults results in improved strength and balance and a decreased risk of falls.³⁷
- In addition to direct effects in muscle, **HMB** has been shown in laboratory research to prevent some age-related changes in nerve cell connections and promote the growth of new nerve branches.^{41,42} These studies may provide a clue to the mechanisms by which HMB supports healthy nervous system control of movement, helping to maintain functional connections in the nervous system and between nerves and muscle.

Combating Some Underlying Factors of Sarcopenia

There are four primary factors that contribute to **sarcopenia**. Together, either **HMB** or **vitamin D3** mitigate each of these underlying factors. Take a look:

FACTOR #1: Skeletal muscle protein imbalance.

Muscles constantly undergo cycles of breakdown (catabolism) and restoration (anabolism). Muscle mass is simply the sum of catabolic breakdown and anabolic restoration.³⁰ With aging, the formation of new muscle is greatly reduced, while muscle protein breakdown continues unabated. This imbalance results in decreased muscle mass, or sarcopenia.

→ **HMB** exerts pro-anabolic (muscle build-up) and anti-catabolic (anti-breakdown) properties.²⁰

FACTOR #2: Shifts in hormone signaling.

Declining sex hormone levels during aging reduce muscle mass, contributing to sarcopenia.

→ **Vitamin D** is a steroid hormone that supports both sex hormone synthesis and muscle contractile strength.^{31,32}

FACTOR #3: Mitochondrial dysfunction.

Falling numbers and activity of energy-producing mitochondria contribute heavily to sarcopenia.³³

→ Vitamin D3 signaling improves mitochondrial function and dynamics, factors that can increase muscle strength.³⁴

FACTOR #4: Inflammatory factors.

As muscles break down, levels of pro-inflammatory markers rise. People with sarcopenia have higher levels of chronic inflammation than those with normal muscle mass.³⁵

→ **Vitamin D3** has potent immunomodulatory properties and has been linked to improvements in inflammatory markers.³⁵

Summary

Sarcopenia is a leading contributor to frailty and early death in older adults.

Two supplements have been shown to combat sarcopenia by maintaining or boosting muscle mass and performance.

HMB promotes muscle growth and function while preventing muscle breakdown. Human studies show that supplementation with HMB contributes to improvements in strength and lean muscle mass.

Supplementation with vitamin D3 has been shown to boost exercise performance and muscle strength.

These two nutrients are available in a combination powder suitable for convenient mixing in any drink of choice and taken once daily. ●

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

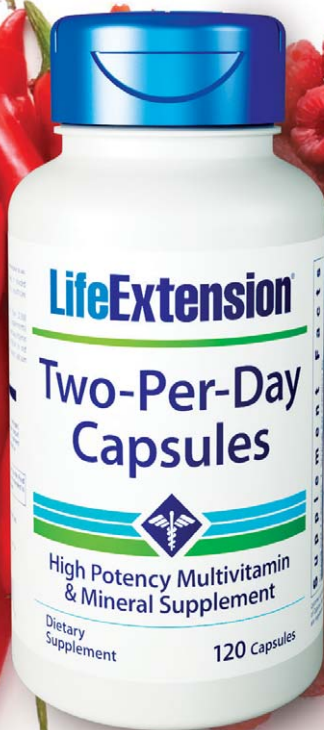


References

- Kim TN, Choi KM. Sarcopenia: definition, epidemiology, and pathophysiology. *J Bone Metab.* 2013;20(1):1-10.
- Walston JD. Sarcopenia in older adults. *Curr Opin Rheumatol.* 2012;24(6):623-7.
- Beaudart C, Rizzoli R, Bruyere O, et al. Sarcopenia: burden and challenges for public health. *Arch Public Health.* 2014;72(1):45.
- Janssen I, Baumgartner RN, Ross R, et al. Skeletal muscle cut-points associated with elevated physical disability risk in older men and women. *Am J Epidemiol.* 2004;159(4):413-21.
- Janssen I, Shepard DS, Katzmarzyk PT, et al. The healthcare costs of sarcopenia in the United States. *J Am Geriatr Soc.* 2004;52(1):80-5.
- Vukovich MD, Stubbs NB, Bohlken RM. Body composition in 70-year-old adults responds to dietary beta-hydroxy-beta-methylbutyrate similarly to that of young adults. *J Nutr.* 2001;131(7):2049-52.
- McIntosh ND, Love TD, Haszard JJ, et al. beta-Hydroxy beta-Methylbutyrate (HMB) Supplementation Effects on Body Mass and Performance in Elite Male Rugby Union Players. *J Strength Cond Res.* 2018;32(1):19-26.
- Sanz-Paris A, Camprubi-Robles M, Lopez-Pedrosa JM, et al. Role of Oral Nutritional Supplements Enriched with beta-Hydroxy-beta-Methylbutyrate in Maintaining Muscle Function and Improving Clinical Outcomes in Various Clinical Settings. *J Nutr Health Aging.* 2018;22(6):664-75.
- Duval GT, Pare PY, Gautier J, et al. Vitamin D and the Mechanisms, Circumstances and Consequences of Falls in Older Adults: A Case-Control Study. *J Nutr Health Aging.* 2017;21(10):1307-13.
- Gallagher JC. Vitamin D and falls - the dosage conundrum. *Nat Rev Endocrinol.* 2016;12(11):680-4.
- Smith LM, Gallagher JC, Suiter C. Medium doses of daily vitamin D decrease falls and higher doses of daily vitamin D3 increase falls: A randomized clinical trial. *J Steroid Biochem Mol Biol.* 2017;173:317-22.
- Uusi-Rasi K, Patil R, Karinkanta S, et al. A 2-Year Follow-Up After a 2-Year RCT with Vitamin D and Exercise: Effects on Falls, Injurious Falls and Physical Functioning Among Older Women. *J Gerontol A Biol Sci Med Sci.* 2017;72(9):1239-45.
- Slater GJ, Jenkins D. Beta-hydroxy-beta-methylbutyrate (HMB) supplementation and the promotion of muscle growth and strength. *Sports Med.* 2000;30(2):105-16.
- Bruckbauer A, Zemel MB. Effects of dairy consumption on SIRT1 and mitochondrial biogenesis in adipocytes and muscle cells. *Nutr Metab (Lond).* 2011;8:91.
- Feige JN, Lagouge M, Canto C, et al. Specific SIRT1 activation mimics low energy levels and protects against diet-induced metabolic disorders by enhancing fat oxidation. *Cell Metab.* 2008;8(5):347-58.
- Nissen S, Sharp RL, Panton L, et al. beta-hydroxy-beta-methylbutyrate (HMB) supplementation in humans is safe and may decrease cardiovascular risk factors. *J Nutr.* 2000;130(8):1937-45.
- Nissen SL, Abumrad NN. Nutritional role of the leucine metabolite -hydroxy -methylbutyrate (HMB). *The Journal of Nutritional Biochemistry.* 1997;8(6):300-11.
- Smith HJ, Mukerji P, Tisdale MJ. Attenuation of proteasome-induced proteolysis in skeletal muscle by [beta]-hydroxy-[beta]-methylbutyrate in cancer-induced muscle loss. *Cancer Res.* 2005;65(1):277-83.
- Smith HJ, Wyke SM, Tisdale MJ. Mechanism of the attenuation of proteolysis-inducing factor stimulated protein degradation in muscle by beta-hydroxy-beta-methylbutyrate. *Cancer Res.* 2004;64(23):8731-5.
- Wilkinson DJ, Hossain T, Limb MC, et al. Impact of the calcium form of beta-hydroxy-beta-methylbutyrate upon human skeletal muscle protein metabolism. *Clin Nutr.* 2017.
- Kuriyan R, Lokesh DP, Selvam S, et al. The relationship of endogenous plasma concentrations of beta-Hydroxy beta-Methyl Butyrate (HMB) to age and total appendicular lean mass in humans. *Exp Gerontol.* 2016;81:13-8.
- Wu H, Xia Y, Jiang J, et al. Effect of beta-hydroxy-beta-methylbutyrate supplementation on muscle loss in older adults: a systematic review and meta-analysis. *Arch Gerontol Geriatr.* 2015;61(2):168-75.
- Deutz NE, Pereira SL, Hays NP, et al. Effect of beta-hydroxy-beta-methylbutyrate (HMB) on lean body mass during 10 days of bed rest in older adults. *Clin Nutr.* 2013;32(5):704-12.
- Coker RH, Wolfe RR. Bedrest and sarcopenia. *Curr Opin Clin Nutr Metab Care.* 2012;15(1):7-11.
- English KL, Paddon-Jones D. Protecting muscle mass and function in older adults during bed rest. *Curr Opin Clin Nutr Metab Care.* 2010;13(1):34-9.
- Beaudart C, Buckinx F, Rabenda V, et al. The effects of vitamin D on skeletal muscle strength, muscle mass, and muscle power: a systematic review and meta-analysis of randomized controlled trials. *J Clin Endocrinol Metab.* 2014;99(11):4336-45.
- Rejnmark L. Effects of vitamin D on muscle function and performance: a review of evidence from randomized controlled trials. *Ther Adv Chronic Dis.* 2011;2(1):25-37.
- Cangussu LM, Nahas-Neto J, Orsatti CL, et al. Effect of vitamin D supplementation alone on muscle function in postmenopausal women: a randomized, double-blind, placebo-controlled clinical trial. *Osteoporos Int.* 2015;26(10):2413-21.
- Gama ZA, Gomez-Conesa A. Risk factors for falls in the elderly: systematic review. *Rev Saude Publica.* 2008;42(5):946-56.
- Cuthbertson D, Smith K, Babraj J, et al. Anabolic signaling deficits underlie amino acid resistance of wasting, aging muscle. *FASEB J.* 2005;19(3):422-4.
- Girgis CM, Clifton-Bligh RJ, Hamrick MW, et al. The roles of vitamin D in skeletal muscle: form, function, and metabolism. *Endocr Rev.* 2013;34(1):33-83.
- Kinuta K, Tanaka H, Moriwake T, et al. Vitamin D is an important factor in estrogen biosynthesis of both female and male gonads. *Endocrinology.* 2000;141(4):1317-24.
- Marzetti E, Calvani R, Cesari M, et al. Mitochondrial dysfunction and sarcopenia of aging: from signaling pathways to clinical trials. *Int J Biochem Cell Biol.* 2013;45(10):2288-301.
- Ryan ZC, Craig TA, Folmes CD, et al. 1alpha,25-Dihydroxyvitamin D3 Regulates Mitochondrial Oxygen Consumption and Dynamics in Human Skeletal Muscle Cells. *J Biol Chem.* 2016;291(3):1514-28.
- Dalle S, Rossmislova L, Koppo K. The Role of Inflammation in Age-Related Sarcopenia. *Front Physiol.* 2017;8:1045.
- Kwon YN, Yoon SS. Sarcopenia: Neurological Point of View. *J Bone Metab.* 2017;24(2):83-9.
- Kougias DG, Das T, Perez AB, et al. A role for nutritional intervention in addressing the aging neuromuscular junction. *Nutr Res.* 2018;53:1-14.
- Reinders I, Song X, Visser M, et al. Plasma phospholipid PUFAs are associated with greater muscle and knee extension strength but not with changes in muscle parameters in older adults. *J Nutr.* 2015;145(1):105-12.
- Rodacki CL, Rodacki AL, Pereira G, et al. Fish-oil supplementation enhances the effects of strength training in elderly women. *Am J Clin Nutr.* 2012;95(2):428-36.
- Smith GI, Jullian S, Reeds DN, et al. Fish oil-derived n-3 PUFA therapy increases muscle mass and function in healthy older adults. *Am J Clin Nutr.* 2015;102(1):115-22.
- Kougias DG, Nolan SO, Koss WA, et al. Beta-hydroxy-beta-methylbutyrate ameliorates aging effects in the dendritic tree of pyramidal neurons in the medial prefrontal cortex of both male and female rats. *Neurobiol Aging.* 2016;40:78-85.
- Salto R, Vilchez JD, Giron MD, et al. beta-Hydroxy-beta-Methylbutyrate (HMB) Promotes Neurite Outgrowth in Neuro2a Cells. *PLoS One.* 2015;10(8):e0135614.

MORE

Two-Per-Day Offers You More Benefits Than Centrum®



50 TIMES THE VITAMIN B1
25 TIMES THE VITAMIN B6
12 TIMES THE VITAMIN B12
10 TIMES THE BIOTIN
10.5 TIMES THE SELENIUM
8 TIMES THE VITAMIN C
2.5 TIMES THE VITAMIN B3
2 TIMES THE VITAMIN D
2 TIMES THE VITAMIN E
2.2 TIMES THE ZINC



#1 Rated
Multi-vitamin
6X Winner!*

Why settle for **subpar** supplements?

Two-Per-Day Tablets

Item #02215 • 120 tablets

Retail Price is \$23

Your Price is \$17.25

4 bottles are only \$15.50 each

Two-Per-Day Capsules

Item #02214 • 120 capsules

Retail Price is \$24

Your Price is \$18

4 bottles are only \$16 each



Each bottle provides a two-month supply.

For full product description and to order **Two-Per-Day**, call **1-800-544-4440** or visit **Life Extension.com**

* Rated based on results of the 2018 ConsumerLab.com Survey of Supplements Users. More information at www.consumerlab.com/survey2018

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.

WAKE UP TO THE HEALTHY COFFEE

Rainforest Blend

POLYPHENOL-RETAINED COFFEE

Most of a coffee bean's **polyphenol** content is **destroyed** during the typical roasting process.

Among the most beneficial of these polyphenols is **chlorogenic acid**.

Rainforest Blend coffee utilizes the patented **Healthy Roast®** process, which retains the naturally occurring polyphenols like **chlorogenic acid**.

A Patented Organic Roast

Life Extension®'s Rainforest Blends are made using a patented, **100% natural** process consisting of **100% USDA certified organic arabica** coffee beans.

Savory Taste Without Stomach Upset

The **HealthyRoast®** process also preserves special, naturally occurring compounds in coffee that **soothe** your stomach.

Tasty Decaf

Rainforest Blend is also available in a **decaffeinated** blend. The caffeine is removed through a chemical-free **water process**. It delivers the full flavor, aroma, and body of the *arabica* bean.



Rainforest Blend

Item #02169 • 12 oz bag

	Retail Price	Your Price
1 bag	\$13	\$9.75



Rainforest Decaffeinated Blend

Item #02170 • 12 oz bag

	Retail Price	Your Price
1 bag	\$14	\$10.50

For full product description and to order either of the **Rainforest Blend Coffees** call **1-800-544-4440** or visit **www.LifeExtension.com**

Promote Healthy *Muscle Strength* at any Age

STAY STRONG & YOUNG

Muscle Strength & Restore Formula provides ingredients that can enhance **muscle strength** while helping reduce loss of muscle mass that occurs with normal aging. It contains:

- **HMB (Beta-hydroxy beta-methylbutyrate):** increases and preserves muscle mass in adults of all ages.
- **Vitamin D3 (1,000 IU):** supports muscle strength and performance.

Mix one scoop with approximately **8 oz.** of cold water or other beverage, preferably a protein shake, and drink once daily or as recommended by a health practitioner.



Item # 02221 • About 30 servings
94.2 g (3.32 oz.) Container
Retail price \$36 • Your price \$27
4 containers \$24 each

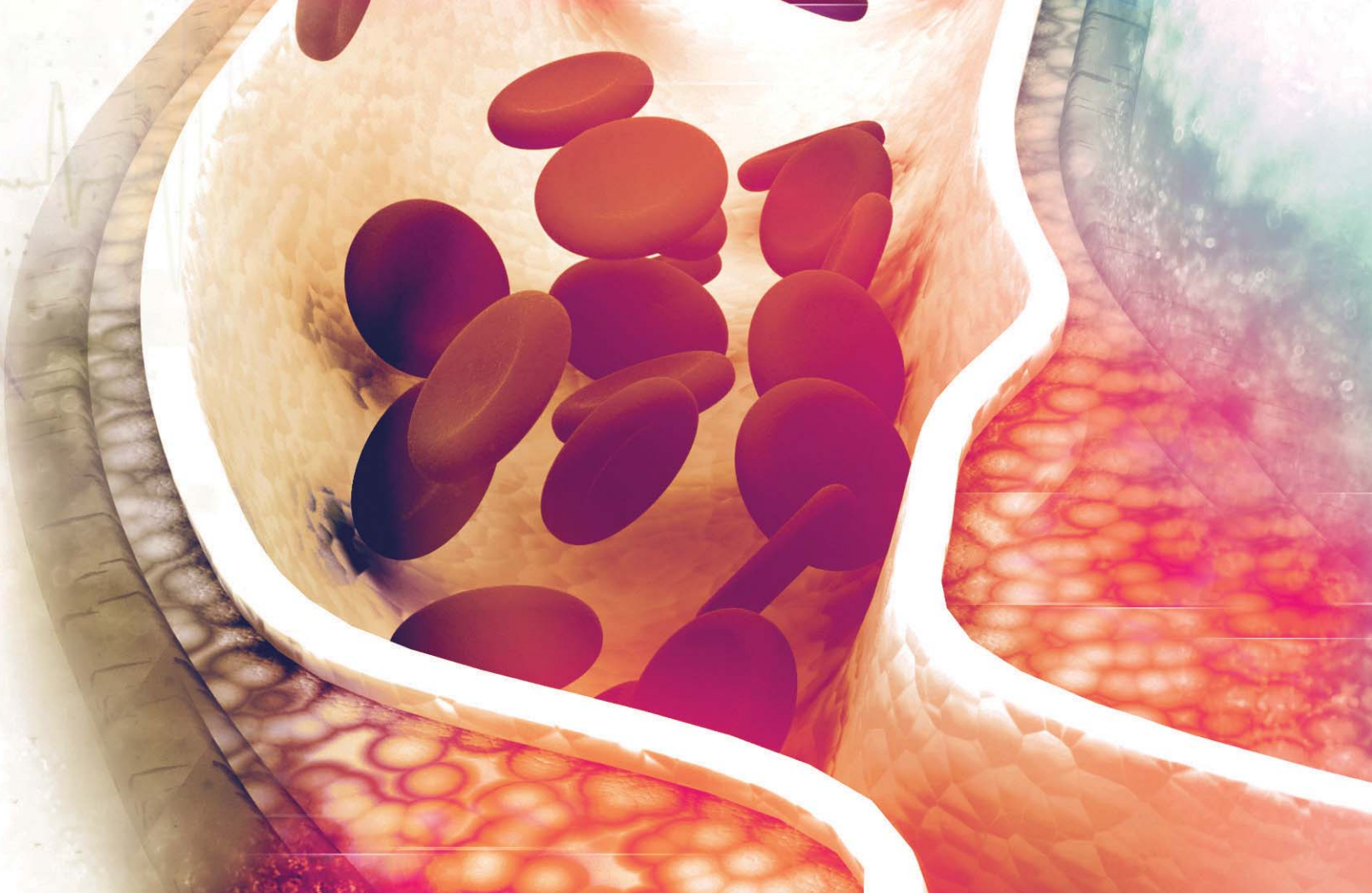
Uses of CaHMB and Vitamin D are licensed under
U.S. Patent Nos. 8,815,280, 9,259,430, 9,539,224 and 9,707,241.

For full product description and to order
Muscle Strength & Restore Formula, call
1-800-544-4440 or visit www.LifeExtension.com

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.





Impede Arterial Plaque Accumulation

Atherosclerosis remains the Achilles tendon of aging humans.

A key characteristic is accumulation of **plaque** inside **coronary, carotid**, and other **arteries**.^{1,2}

The risk of a cardiovascular event is highest for those with the most advanced **arterial plaques**. There are often no symptoms until this process triggers a **stroke** or **heart attack**.³

A standardized extract derived from **French maritime pine bark** has been shown to halt plaque accumulation.

Supporting this, the plant extract ***Centella asiatica*** has been shown to help preserve the hard cap on existing atherosclerotic plaques, making them less likely to **rupture** and cause a fatal cardiovascular event.

Compelling studies reveal that when these plant extracts are *combined*, they provide more powerful benefits—for instance, reducing **plaque progression** by a compelling **95%**!⁴

Let's examine how these natural compounds work.

French Maritime Pine Bark Extract Blocks Plaque

French maritime pine extract contains a complex mixture of compounds known as **procyanidins** and **phenolic acids**^{5,6} that help *slow* the progression of **arterial plaque**.⁴ How does it achieve this?

This pine bark extract alters fat metabolism and various cell-signaling factors (inflammatory cytokines) that contribute to plaque formation and progression.^{7,8}

French maritime pine bark reduces a major inflammation-signaling molecular complex (**nuclear factor kappaB**), resulting in lower levels of inflammation.^{7,8} This is critical, because chronic inflammation is a major factor in the development of atherosclerosis.

Animal studies have documented that French maritime pine bark reduces areas of plaque and lipid deposition in mice with atherosclerosis. This is accompanied by reductions in total cholesterol and triglyceride levels and increases in protective high-density lipoprotein (HDL) cholesterol.⁸

Another way that French maritime pine bark reduces the progression of atherosclerotic plaque is by *improving* **endothelial** function.^{9,10} Evidence shows that it accomplishes this by stimulating a vital enzyme that produces **nitric oxide**. Nitric oxide is a signaling molecule that endothelial cells use to communicate with the smooth muscle cells in arterial walls—helping them to relax and open up arteries.¹¹

Scientists demonstrated this ability in lab experiments in which they constricted tissue from the aorta, the main blood vessel leading from the heart. They did this by using norepinephrine and epinephrine which is

normally released in response to stress. This mimicked what happens in human arteries when blood flow is reduced.¹¹

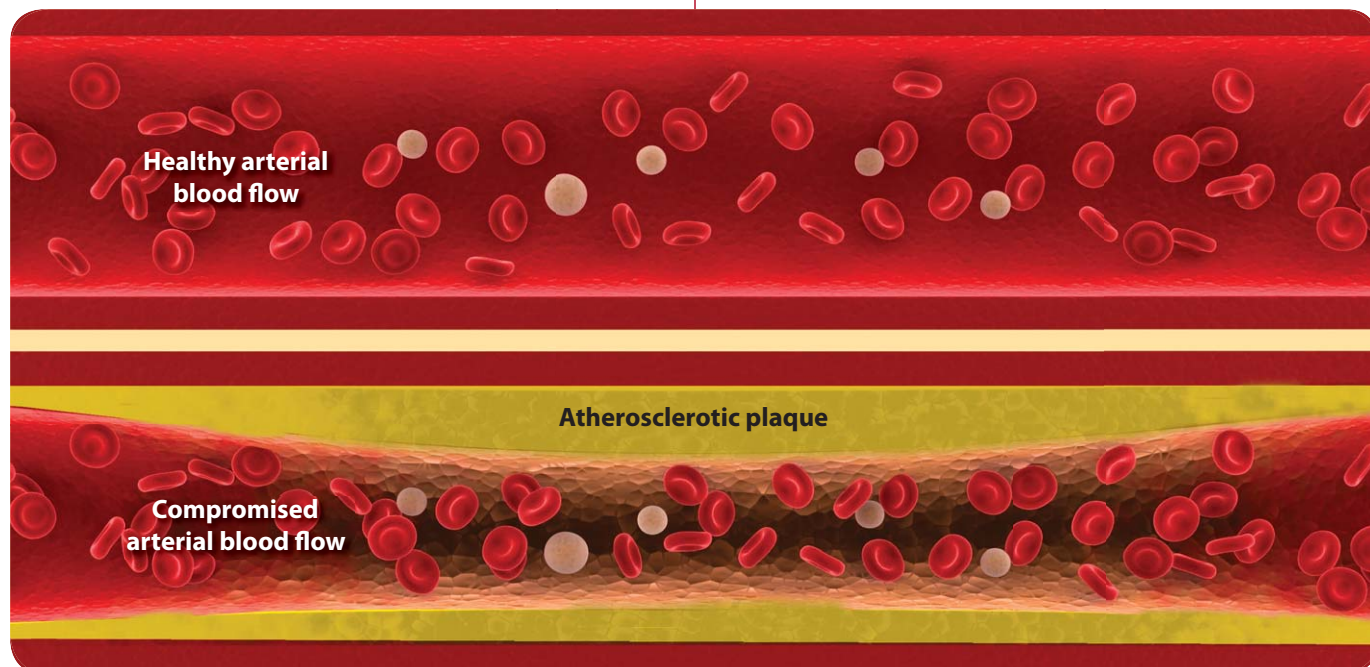
When the aorta was pretreated with French maritime pine bark, this blood-vessel constriction was **prevented** due to increased synthesis of *nitric oxide*, which signaled arterial wall cells to relax. This process produced a wider artery and increased blood flow. Additionally, researchers found that increasing nitric oxide levels decreased platelet aggregation and the tendency to stick to vessel walls—which reduces the risks of blood clots and enlarging plaques.¹¹

To validate these powerful and complementary actions, scientists conducted controlled clinical trials on human volunteers.

French Maritime Pine Bark Documented in Controlled Clinical Studies

When plaque and inflammation narrow the coronary arteries—which supply the heart with blood, oxygen, and nutrients, the result is **coronary artery disease**. To show how French maritime pine bark improves blood flow and endothelial function in patients with this condition, researchers conducted a randomized, placebo-controlled, crossover study on 23 patients with coronary artery disease.¹²

Patients received either placebo or **200 mg** of French maritime pine bark daily for eight weeks. Then, after a two-week “washout” period, each patient received the opposite treatment for another eight weeks.





What You Need to Know

Protect Against Arterial Plaque

- The risk of a lethal cardiovascular event is highest for those with the most advanced **arterial plaque**—usually causing no symptoms until this process triggers a stroke or heart attack.
- Two compounds, standardized extracts of **French maritime pine bark** and ***Centella asiatica***, have been documented to safely target this lethal process.
- Studies show that—taken together—they slow and even reverse plaque accumulation, while also boosting the stability of deadly soft plaque to help prevent a plaque rupture.

By using a measure of how much the brachial artery (the main artery to the forearm) dilated in response to changes in blood flow (flow-mediated dilation), researchers were able to assess **endothelial function** at the start of the study and after each treatment period.¹²

While placebo treatment produced no significant changes, the pine bark extract treatment was shown to produce a significant **32% increase in endothelial function** and in **flow-mediated dilation**.

Pine bark extract also reduced levels of compounds known as **isoprostanes**—an index of how much **oxidized fat** is present and a measure of overall oxidant stress while **placebo** treatment produced no change. These findings demonstrated the pronounced ability of this pine bark extract to slow the fundamental, early arterial changes that lead to plaque formation and progression.¹²

Next, scientists in Italy designed a study to test the effects of this pine bark extract on individuals who had no obvious atherosclerotic changes in their blood vessels and who had not yet developed any clinically relevant coronary artery disease. They limited the experiment to volunteers who had definitive risk factors, including borderline levels of high blood pressure, blood lipids, and blood sugar—like most aging people. And like most people, these study subjects were in an ideal position for early, preventive intervention.¹³

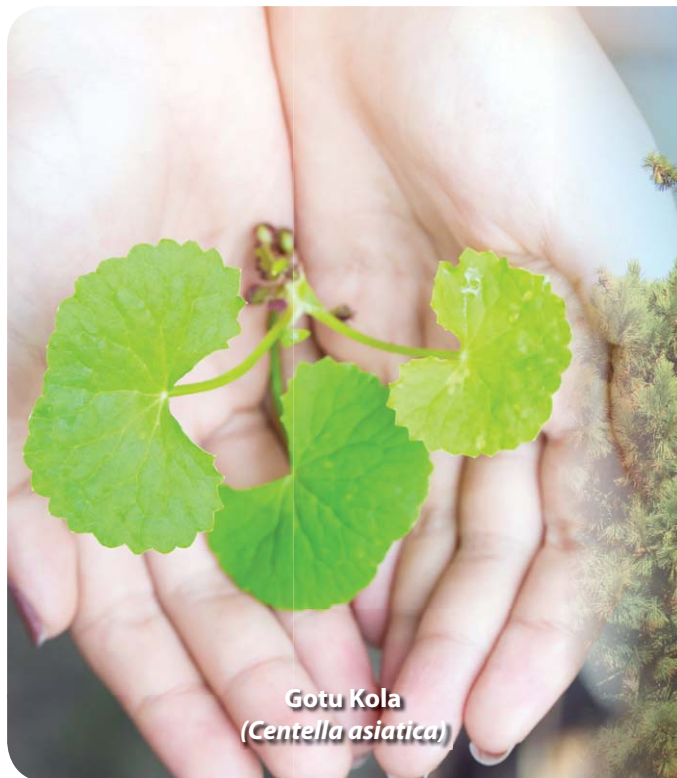
Of the 93 volunteers, 32 had elevated blood pressure, 31 had high blood lipids, and 30 had elevated blood sugar. All participants continued their medical manage-

ment of symptoms, but half of the subjects also took **150 mg** of French maritime pine bark extract per day. Measurements of flow-mediated dilation were taken at the outset of the study, at eight weeks, and again at 12 weeks.¹³

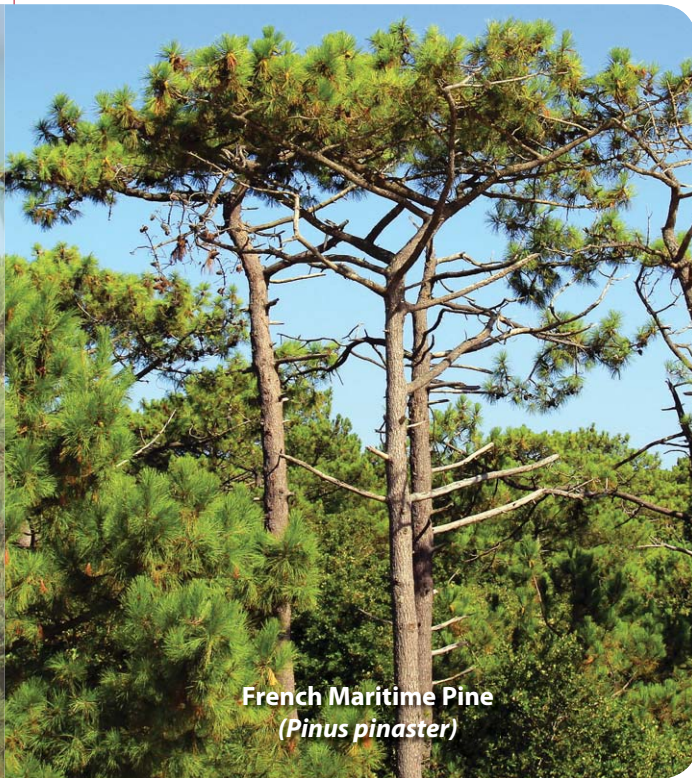
The researchers found an increase in flow-mediated dilation of **55%** in the supplemented group after eight weeks and an increase of **66%** after 12 weeks. Also, measuring blood flow by a different method—laser Doppler flux—the team demonstrated similar increases at 8 and 12 weeks. Control participants, however, showed no significant changes in blood flow.¹³

Keep in mind that these study participants reflected the same borderline status that applies to most people—no symptoms, but a growing risk for the endothelial dysfunction that leads to plaque formation, progression, and ultimately, a serious cardiovascular event. Stressing this point, the study author wrote that French maritime pine represents, “...an **important preventive possibility for borderline hypertensive, hyperglycemic, and hyperlipidemic subjects**.”¹³

Now, let's look at how this natural plaque-preventing pine bark extract can be complemented by another **plant extract** that reduces the instability—and thus, the lethal risk of pre-existing plaque.



Gotu Kola
(*Centella asiatica*)



French Maritime Pine
(*Pinus pinaster*)

Centella asiatica Demonstrated to Stabilize Existing Plaques

Early on in the process, arterial **plaques** are **soft** on the inside but covered with a hard, thick, **fibrous cap** on the plaque surface that faces the blood flow.

As long as these plaques remain **thick**, they are **stable**, meaning they're firm enough not to pose a major risk of rupturing.^{14,15}

Over time, this cap begins thinning and weakening, making plaque rupture more likely. The result is a deadlier, more unstable, softer plaque that may lead to ischemic stroke or heart attack.

So as critical as it is to **prevent** plaque buildup, scientists have also long sought a way to **stabilize** soft plaques.

Centella asiatica, also known as **gotu kola**, is an Asian aquatic plant containing compounds (triterpenoids) that stabilize soft plaque by improving the synthesis of collagen.¹⁶⁻¹⁹ Collagen is a component of the thick caps that hold soft plaque in place.^{17,20}

Furthermore, this plant extract helps inhibit progression of plaque by reducing the adhesion of immune system cells (monocytes) that promote atherosclerosis.²¹

Participants with soft plaque were given **60 mg** of *Centella asiatica* extract three times daily. After 12 months, their carotid-artery plaque was denser (harder, safer) by an average of **30%**.²⁰

Then, in phase two, researchers used the same dose, but in a randomized, placebo-controlled trial.

The results showed that carotid-artery **plaque stability** significantly improved. MRI scans demonstrated reduced blood flow to the brain in **17%** of controls, but only in **7%** of the *Centella asiatica* group. And supplemented subjects experienced **41% fewer** cardiovascular events.²⁰

In a similar, placebo-controlled study of volunteers with soft (high-risk) plaque in their femoral artery (the major artery in the thigh), scientists found that **60 mg** of *Centella asiatica* extract three times daily produced a **63%** harder plaque—indicating reduced rupture risk—in just 12 months. Critically, plaque size increased **23%** in controls while *Centella*-supplemented patients showed **zero** plaque-size increase.¹⁷

Scientists then decided to combine plaque-stabilizing *Centella asiatica* with plaque progression-inhibiting **French maritime pine bark**. Let's now examine some studies conducted with this **dual-compound** formula.

Clinical Effects of Dual-Compound Supplement

To demonstrate the atherosclerosis-inhibiting effects of combining French maritime pine with *Centella asiatica*, scientists enlisted individuals aged 45 to 60 who had no cardiovascular risk factors or symptoms—but who did have plaques that did not narrow their arteries more than **50%** (class IV).⁴

Several groups were assigned different supplements along with lifestyle, diet, education, and exercise recommendations. After 30 months, using ultrasound, researchers found that the percentage of **plaques** that had worsened from class IV to V (blocking over 50% of an artery) was:⁴

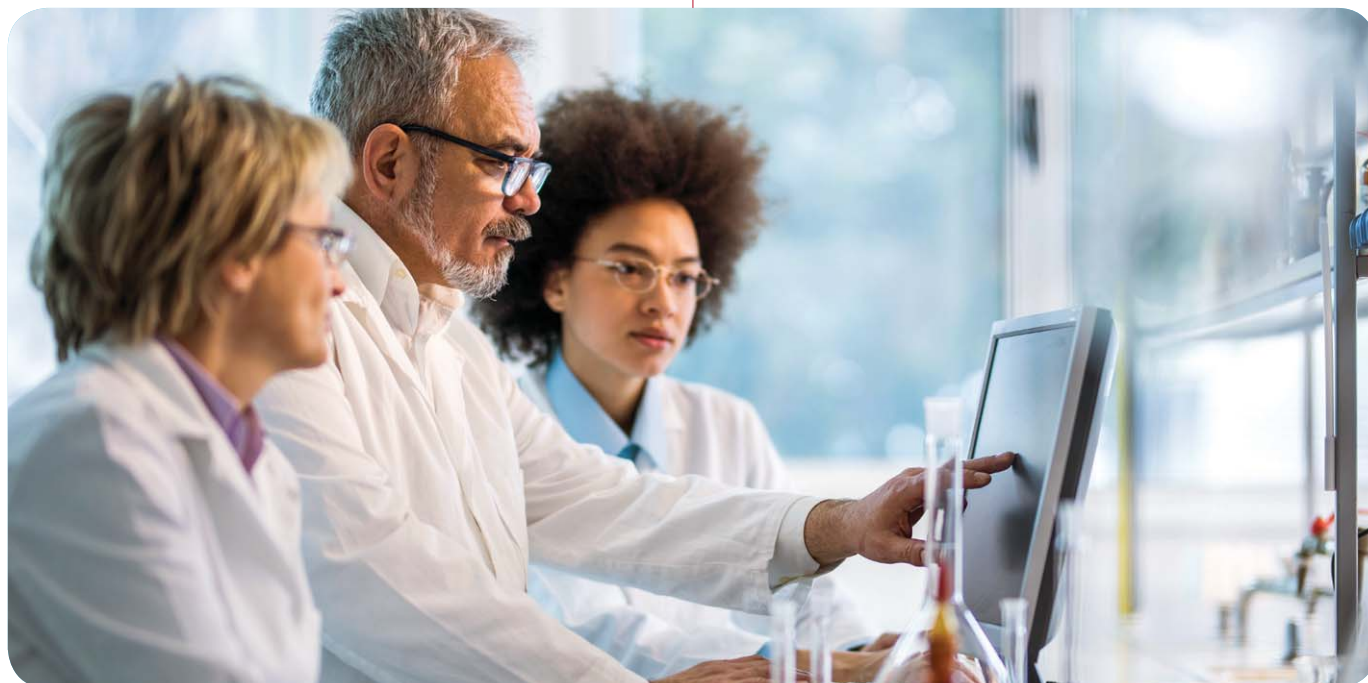
- **21.3%** in controls receiving only diet/lifestyle recommendations (worst-performing group),
- **16.6%** with **100 mg** aspirin (or ticlopidine, an antiplatelet drug, for aspirin-intolerant subjects),
- **8.4%** with **50 mg** standardized French maritime pine bark alone,
- **5.3%** with **100 mg** standardized French maritime pine bark alone,
- **4.0%** with **100 mg** standardized French maritime pine bark plus **100 mg** aspirin (or ticlopidine), and
- **1.1%** with **100 mg** standardized French maritime pine bark plus **100 mg** extract of *Centella asiatica* (best-performing group).

So in volunteers taking both compounds, **plaque progression** was an impressive **95%** lower than in controls!⁴

Then, scientists assigned the same dosages to subjects with advanced atherosclerosis—meaning at least one class V arterial lesion. Class V involves an **instance** of over-**50%** blockage without symptoms, while class VI also involves symptoms such as numbness, tingling, pain, or other, more serious symptoms. After 42 months, the percentage with plaques that had progressed from class V to VI was:²²

- **48%** in controls (worst-performing group),
- **21%** with taking aspirin or ticlopidine,
- **11%** with **100 mg** standardized French maritime pine bark plus aspirin,
- **10%** with **100 mg** standardized French maritime pine bark alone, and
- **6.5%** with **100 mg** standardized French maritime pine bark plus **100 mg** extract of *Centella asiatica* (best-performing group).

The combination of standardized extracts of **French maritime pine bark** and *Centella asiatica* provided a **7.4-fold reduction** in the risk of developing cardiovascular-disease symptoms compared to controls—and a nearly **four-fold reduced** risk of being hospitalized for a full-blown cardiovascular event.²²



Next, scientists conducted a study that demonstrated the effects of this dual-nutrient formula in **stabilizing** soft arterial plaques—and in blocking the **progression** of **plaque accumulation** in aging arteries.²³

They evaluated carotid plaque stability, before and after three months' supplementation, in 50 symptom-free volunteers with arterial plaque stenosis of less than 50% (class IV), high oxidative stress, and a mean age of 61.5 years. Daily for three months, half were given 150 mg of standardized extract of **French maritime pine** bark along with 225 mg of an extract of *Centella asiatica*. All patients also received standard management care.²³

Compared to controls, supplemented patients *significantly improved* on the **plaque stability index**. The “white component” of their plaque substantially increased, based on ultrasound imaging, indicating improved plaque density and significant risk reduction. Also, plaques were decreased in length, height, and number. Free radicals in the supplemented group's plasma were significantly reduced. There were no adverse effects. By contrast, standard plaque management produced no significant improvements.²³

Further Clinical Validation

Two recent studies further document the capacity of this dual-compound formula to both inhibit plaque progression and stabilize plaques.^{24,25}

Scientists enlisted patients, aged 45 to 60, with at least one instance of atherosclerotic plaque of 50%-60% occlusion and divided them into three groups. All groups were managed with education, exercise, diet and

lifestyle changes. One group also received 100 mg of standardized French maritime pine bark daily, while another group received 100 mg of the pine bark extract plus 100 mg daily of *Centella asiatica*.²³

After four years, there was a significant reduction in plaque progression rates for both treatment groups, but the *combined* formula provided the “best effects” in terms of plaque thickness and length.

Angina and oxidative stress were less for both treatment groups (pine bark alone or pine bark + *Centella*). But **heart attacks** (myocardial infarctions) were fewer in the **dual-extract** group. The study author wrote that both the pine bark extract alone and the combined formula “*reduce the progression of arterial plaques and the progression to clinical stages.*”²⁴

Then, a study team used a measure called **echogenicity** to assess (carotid-femoral) plaques in 79 asymptomatic patients with atherosclerosis risk factors—either mildly high blood pressure or elevated cholesterol—all of whom were given standard control management. Only 36 of these patients received daily supplements of both French maritime pine and *Centella asiatica*.²⁵

After six months, compared to controls, the supplemented participants were found to have greater plaque-stability scores, better plaque “white component” (more density), fewer plaques, decreased maximum plaque height, and decreased plasma free radicals—with no adverse events.²⁵

Clearly, French maritime pine bark and *Centella asiatica* extracts—both individually and especially combined—reduce plaque progression and promote plaque stability.





Summary

The accumulation of **plaque** inside the coronary and other arteries often occurs without symptoms up until a stroke or heart attack strikes.

Researchers have identified two natural compounds that safely target this lethal progression.

Together, they have been shown to slow and even reverse plaque accumulation, while boosting the stability of deadly soft plaque to help prevent a plaque rupture.

A combination of **French maritime pine bark** and **Centella asiatica** provides the backup that most adults need to support more comprehensive cardiovascular protection. ●

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

- Bentzon JF, Otsuka F, Virmani R, et al. Mechanisms of plaque formation and rupture. *Circ Res*. 2014 Jun 6;114(12):1852-66.
- Fava C, Montagnana M. Atherosclerosis Is an Inflammatory Disease which Lacks a Common Anti-inflammatory Therapy: How Human Genetics Can Help to This Issue. A Narrative Review. *Front Pharmacol*. 2018;9:55.
- Available at: <https://www.nhlbi.nih.gov/health-topics/atherosclerosis#Signs,-Symptoms,-and-Complications>. Accessed August 21, 2018.
- Belcaro G, Dugall M, Hosoi M, et al. Pycnogenol(R) and Centella Asiatica for asymptomatic atherosclerosis progression. *Int Angiol*. 2014 Feb;33(1):20-6.
- D'Andrea G. Pycnogenol: a blend of procyanidins with multifaceted therapeutic applications? *Fitoterapia*. 2010 Oct;81(7):724-36.
- Rohdewald P. A review of the French maritime pine bark extract (Pycnogenol), a herbal medication with a diverse clinical pharmacology. *Int J Clin Pharmacol Ther*. 2002 Apr;40(4):158-68.
- Gu JQ, Ikuyama S, Wei P, et al. Pycnogenol, an extract from French maritime pine, suppresses Toll-like receptor 4-mediated expression of adipose differentiation-related protein in macrophages. *Am J Physiol Endocrinol Metab*. 2008 Dec;295(6):E1390-400.
- Luo H, Wang J, Qiao C, et al. Pycnogenol attenuates atherosclerosis by regulating lipid metabolism through the TLR4-NF-kappaB pathway. *Exp Mol Med*. 2015 Oct 23;47:e191.
- Badimon L, Hernandez Vera R, Vilahur G. Atherothrombotic risk in obesity. *Hamostaseologie*. 2013;33(4):259-68.
- Chistiakov DA, Revin VV, Sobenin IA, et al. Vascular endothelium: functioning in norm, changes in atherosclerosis and current dietary approaches to improve endothelial function. *Mini Rev Med Chem*. 2015;15(4):338-50.
- Fitzpatrick DF, Bing B, Rohdewald P. Endothelium-dependent vascular effects of Pycnogenol. *J Cardiovasc Pharmacol*. 1998 Oct;32(4):509-15.
- Enseleit F, Sudano I, Periat D, et al. Effects of Pycnogenol on endothelial function in patients with stable coronary artery disease: a double-blind, randomized, placebo-controlled, cross-over study. *Eur Heart J*. 2012 Jul;33(13):1589-97.
- Hu S, Belcaro G, Cornelli U, et al. Effects of Pycnogenol(R) on endothelial dysfunction in borderline hypertensive, hyperlipidemic, and hyperglycemic individuals: the borderline study. *Int Angiol*. 2015 Feb;34(1):43-52.
- Cheruvu PK, Finn AV, Gardner C, et al. Frequency and distribution of thin-cap fibroatheroma and ruptured plaques in human coronary arteries: a pathologic study. *J Am Coll Cardiol*. 2007 Sep 4;50(10):940-9.
- Leskinen MJ, Kovanen PT, Lindstedt KA. Regulation of smooth muscle cell growth, function and death in vitro by activated mast cells—a potential mechanism for the weakening and rupture of atherosclerotic plaques. *Biochem Pharmacol*. 2003 Oct 15;66(8):1493-8.
- Gohil KJ, Patel JA, Gajjar AK. Pharmacological Review on Centella asiatica: A Potential Herbal Cure-all. *Indian J Pharm Sci*. 2010 Sep;72(5):546-56.
- Incandela L, Belcaro G, Nicolaides AN, et al. Modification of the echogenicity of femoral plaques after treatment with total triterpenic fraction of Centella asiatica: a prospective, randomized, placebo-controlled trial. *Angiology*. 2001 Oct;52 Suppl 2:S69-73.
- Incandela L, Cesarone MR, Cacchio M, et al. Total triterpenic fraction of Centella asiatica in chronic venous insufficiency and in high-perfusion microangiopathy. *Angiology*. 2001 Oct;52 Suppl 2:S9-13.
- James JT, Dubery IA. Pentacyclic triterpenoids from the medicinal herb, Centella asiatica (L.) Urban. *Molecules*. 2009 Oct 9;14(10):3922-41.
- Cesarone MR, Belcaro G, Nicolaides AN, et al. Increase in echogenicity of echolucent carotid plaques after treatment with total triterpenic fraction of Centella asiatica: a prospective, placebo-controlled, randomized trial. *Angiology*. 2001 Oct;52 Suppl 2:S19-25.
- Ivanov V, Ivanova S, Kalinovskiy T, et al. Plant-derived micronutrients suppress monocyte adhesion to cultured human aortic endothelial cell layer by modulating its extracellular matrix composition. *J Cardiovasc Pharmacol*. 2008 Jul;52(1):55-65.
- Belcaro G, Ippolito E, Dugall M, et al. Pycnogenol(R) and Centella asiatica in the management of asymptomatic atherosclerosis progression. *Int Angiol*. 2015 Apr;34(2):150-7.
- Luzzi R, Belcaro G, Ippolito E. Carotid plaque stabilization induced by the supplement association Pycnogenol(R) and centella asiatica (Centellicum(R)). *Minerva Cardioangiol*. 2016 Dec;64(6):603-9.
- Belcaro G, Dugall M, Ippolito E, et al. Pycnogenol(R) and Centella asiatica to prevent asymptomatic atherosclerosis progression in clinical events. *Minerva Cardioangiol*. 2017 Feb;65(1):24-31.
- Belcaro G, Cornelli U. Variations in Echogenicity in Carotid and Femoral Atherosclerotic Plaques with Pycnogenol + Centella Asiatica Supplementation. *Int J Angiol*. 2017 Jun;26(2):95-101.

Maintain Youthful Homocysteine Levels

for Brain, Heart, and Hearing Health



Homocysteine Resist

Item #02121 • 60 vegetarian capsules



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

Just one daily capsule of **Homocysteine Resist** provides:

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



	Retail Price	Your Price
1 bottle	\$26	\$19.50
4 bottles		\$17.50 each

For full product description and to order **Homocysteine Resist**, 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.

Maintain Endothelial
Plaque Stability with
**ARTERIAL
PROTECT**



1
DAILY

Arterial Protect can help stabilize endothelial plaque and promote healthy blood flow throughout the body.*

Just one capsule a day provides the patented **pine bark extract** used in clinical studies along with ***Centella asiatica***.

	Retail Price	Your Price
1 bottle	\$44	\$33
4 bottles		\$29 each

Item# 02004 • 30 vegetarian capsules

Reference

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

Note: Do not change dosing or discontinue cardiovascular medications unless advised to do so by your physician.

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



For full product description and to order **Arterial 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.



SUPPORT ARTERIAL HEALTH

WITH **3** FORMS OF **VITAMIN K**

Just one daily softgel of
Super K provides:

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

Super K with Advanced K2 Complex

Item #02034 • 90 softgels

	Retail Price	Your Price
1 bottle	\$30	\$22.50
4 bottles		\$20.25 each

Each bottle lasts for three months.



For full product description and to order
Super K with Advanced K2 Complex,
call **1-800-544-4440** or visit **www.LifeExtension.com**

Vitamin K1, vitamin K2 (MK-4), and vitamin K2 (MK-7) can also be found in Once-Daily **Health Booster**. If you take Health Booster, you do not need additional Super K with Advanced K2 formula.

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

*Optimize your **vitamin K**
and help keep
calcium in your bones and
out of blood vessels.*



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.



Green Tea and Broccoli Reduce Breast Cancer Risk

BY JANET SEIKEN

Certain types of breast cancer cells are notoriously difficult to treat.

These cancers can undergo changes that make them impervious to some of the most effective treatments available.

Green tea and **broccoli** contain compounds that can **restore** treatment sensitivity to treatment-resistant breast cancer cells.

They accomplish this by *reprogramming* the **genes** of the malignant cells.

In a recent study, difficult-to-treat tumors from mice supplemented with **both** green tea and broccoli weighed only about a third as much as the same type of tumors from control mice.¹ This indicated that the combination of green tea and broccoli could **reduce tumor size** in hard-to-treat cancers.

The ability to produce such changes makes these compounds promising against difficult-to-treat breast cancers—and may offer hope to the thousands of women impacted every year.

Why Some Cancers are Difficult to Treat

Breast cancer is the most common malignancy in women, with a quarter of a million diagnosed every year. And it is the second leading cause of cancer death in women, killing more than 40,000.²

There are numerous types of breast cancer, some of which are more difficult to treat than others.

Estrogen receptor (ER) positive cancers are easier to treat because they have estrogen receptors on their surface. **Tamoxifen** can bind to the estrogen receptor and prevent estrogen from stimulating the growth of cancer cells.³⁻⁵

The problem is that some originally ER positive cells lose these receptors during cancer development, turning them into **estrogen receptor (ER) negative** cells.

Without estrogen receptors, hormone treatments like tamoxifen are not effective. This deprives its victims from an effective form of treatment—and condemns them to much higher risks of death.

New science has discovered that **green tea** and **broccoli** contain compounds that can **restore** the estrogen receptors in ER negative cells.

These findings may make these difficult-to-treat-cancers easier to destroy by anti-estrogen therapies.

Extracts Change Cancer Cell Genetics for the Better

Green tea and broccoli have a long list of anti-cancer actions.

Studies show that green tea contains **polyphenols** (particularly one called **epigallocatechin-3-gallate**, or **EGCG**) that have favorable effects against tumor cells of all kinds. This includes



halting the cell reproductive cycle, triggering programmed cancer cell death, and preventing tumors from spreading (metastasis).^{1,6,7}

Broccoli contains **sulforaphane**, a compound that shares some of EGCG's anti-cancer properties, but in addition can prevent the liver from converting potential carcinogens into active ones.^{1,8-10}

These compounds also have properties capable of **reversing** several cancer-related gene alterations. Both **EGCG** and **sulforaphane** have the ability to turn “on” genes that suppress tumors, while turning “off” genes that promote tumors (though they accomplish them by entirely different mechanisms).^{1,11-15}

This ability to “turn genes on and off” — that is, to control their expression — is called **epigenetics**. This is an exciting area in medical science, as it is now understood that genes don't need to be

replaced, or have their structure altered, to determine whether or not they function. They can, in effect, be (epigenetically) reprogrammed.

In an effort to better understand how these two natural compounds can be therapeutically applied to breast cancer, researchers decided to test their specific epigenetic effects on breast cancer cells.¹

In part one, researchers found that either compound alone significantly reduced survival of ER-negative breast cancer cells. When both compounds were used together, the result was further cancer cell death—showing that the combination is more potent than either phytonutrient on its own.¹

The reason why the compounds were able to effectively sensitize the cells to the anti-breast cancer hormonal drug tamoxifen was because they reprogrammed the

The Bigger Picture

genes of the ER-negative cells to begin generating the missing estrogen receptors. Doing so abruptly restored the cells' responsiveness to estrogen's growth-promoting—and tamoxifen's growth-inhibiting—effects.¹

In other words, the botanicals produced an **epigenetic change**—causing undesirable ER-negative cells to alter their genetic expression and become ER-positive cells that are sensitive to being killed by tamoxifen.

Genetically Altering Breast Cancer Cells

For part two of the study, the scientists implanted human ER-negative breast cancer cells into mice and allowed the tumors to grow.

Then they fed different groups of animals and tracked the growth of the tumors:¹

- A standard diet (control group), with and without the addition of tamoxifen.
- Diets supplemented with either green tea polyphenols or with broccoli (separately), or
- A combination of green tea and broccoli, with and without the addition of tamoxifen.

In mice treated with tamoxifen alone, the tumors were no smaller than those in untreated animals.¹ This was expected since ER-negative cells **cannot** respond to tamoxifen because they lack the proper receptors.

But the combination of green tea and broccoli produced an entirely different effect.

Tumors from mice supplemented with **both** green tea and broccoli weighed only about a third as much as tumors from

control mice.¹ This indicated that the combination of green tea and broccoli could **reduce tumor size** in these hard-to-treat cancers.

This was an important finding on its own. But the interesting part of this work was that tumors from mice treated with the supplement combination—and **also** with *tamoxifen*—were smaller than any other tumors. They weighed only about **14%** as much as tumors from untreated animals, and less than half as much as those from animals treated with the two supplements but not with tamoxifen.¹

This finding validates that the combination of green tea and broccoli can **alter** the gene expression of treatment-resistant, ER-negative breast cancer cells, turning them into treatment-responsive, ER-positive cells.

This finding is potentially good news for people with breast cancer, particularly ER-negative tumors that currently resist available therapy.

But its greater importance lies in its demonstration that a combination of botanicals can reprogram cells' genes to make them function in a more normal, healthy fashion.

This finding has implications far beyond cancer treatment and prevention.

Imagine combinations that can switch on and off genes that contribute to Alzheimer's and Parkinson's diseases, those that generate over-active inflammation, or those that contribute to aging of our cells, tissues, and organs.



Summary

Researchers have shown that **green tea** and **broccoli** can change deadly, *treatment-resistant* breast cancer cells into *treatment-sensitive* cells by altering their genetic expression.

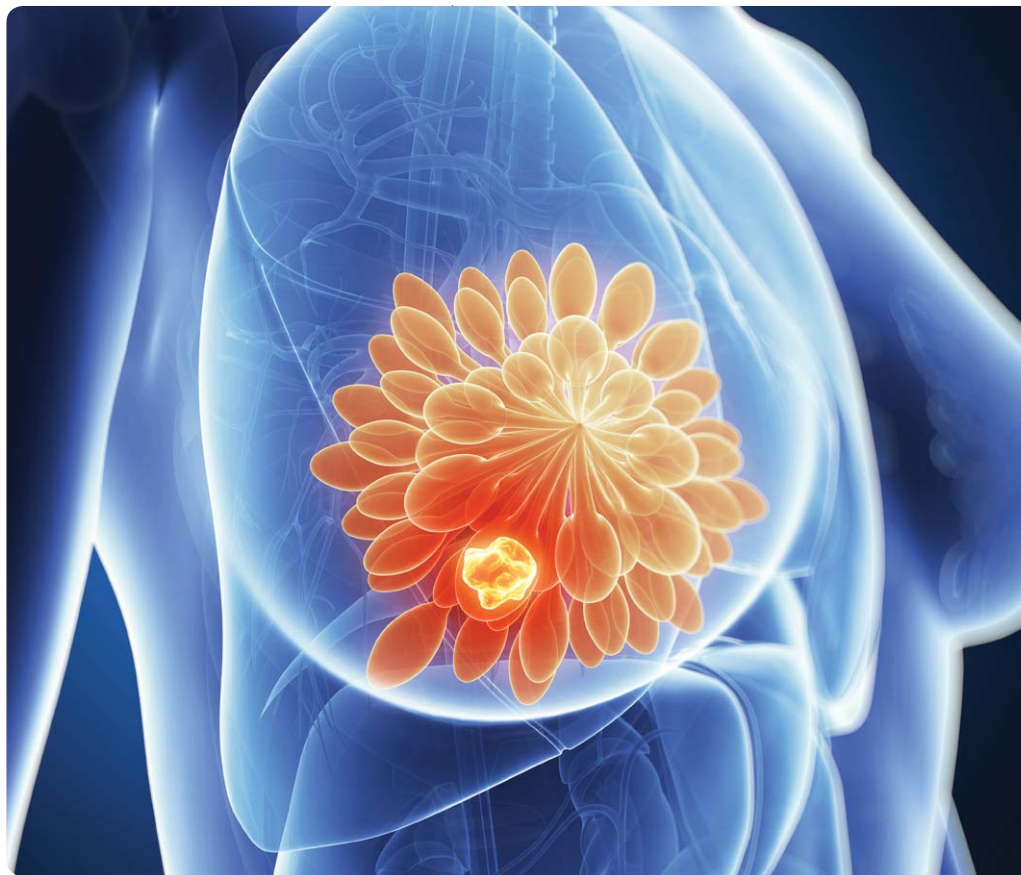
This is for good news for cancer patients.

This study opens the door to future therapies using compounds to *modify gene expression* and restore nature's own means of preventing disease. ●

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

References

1. Li Y, Meeran SM, Tollefsbol TO. Combinatorial bioactive botanicals re-sensitize tamoxifen treatment in ER-negative breast cancer via epigenetic reactivation of ER α expression. *Sci Rep*. 2017 Aug 24;7(1):9345.
2. Available at: <http://www.nationalbreast-cancer.org/breast-cancer-facts>. Accessed August 20, 2018.
3. Kerdivel G, Flouriot G, Pakdel F. Modulation of estrogen receptor α activity and expression during breast cancer progression. *Vitam Horm*. 2013;93:135-60.
4. Rugo HS, Vidula N, Ma C. Improving Response to Hormone Therapy in Breast Cancer: New Targets, New Therapeutic Options. *Am Soc Clin Oncol Educ Book*. 2016;35:e40-54.
5. Spears M, Bartlett J. The potential role of estrogen receptors and the SRC family as targets for the treatment of breast cancer. *Expert Opin Ther Targets*. 2009 Jun;13(6):665-74.
6. Thangapazham RL, Singh AK, Sharma A, et al. Green tea polyphenols and its constituent epigallocatechin gallate inhibits proliferation of human breast cancer cells in vitro and in vivo. *Cancer Lett*. 2007 Jan 8;245(1-2):232-41.
7. Yang CS, Landau JM, Huang MT, et al. Inhibition of carcinogenesis by dietary polyphenolic compounds. *Annu Rev Nutr*. 2001;21:381-406.
8. Cheung KL, Kong AN. Molecular targets of dietary phenethyl isothiocyanate and sulforaphane for cancer chemoprevention. *AAPS J*. 2010 Mar;12(1):87-97.
9. Higdon JV, Delage B, Williams DE, et al. Cruciferous vegetables and human cancer risk: epidemiologic evidence and mechanistic basis. *Pharmacol Res*. 2007 Mar;55(3):224-36.
10. Pledgie-Tracy A, Sobolewski MD, Davidson NE. Sulforaphane induces cell type-specific apoptosis in human breast cancer cell lines. *Mol Cancer Ther*. 2007 Mar;6(3):1013-21.
11. Meeran SM, Patel SN, Tollefsbol TO. Sulforaphane causes epigenetic repression of hTERT expression in human breast cancer cell lines. *PLoS One*. 2010 Jul 6;5(7):e11457.
12. Fang M, Chen D, Yang CS. Dietary polyphenols may affect DNA methylation. *J Nutr*. 2007 Jan;137(1 Suppl):223S-8S.
13. Meeran SM, Patel SN, Chan TH, et al. A novel prodrug of epigallocatechin-3-gallate: differential epigenetic hTERT repression in human breast cancer cells. *Cancer Prev Res (Phila)*. 2011 Aug;4(8):1243-54.
14. Fang MZ, Wang Y, Ai N, et al. Tea polyphenol (-)-epigallocatechin-3-gallate inhibits DNA methyltransferase and reactivates methylation-silenced genes in cancer cell lines. *Cancer Res*. 2003 Nov 15;63(22):7563-70.
15. Ho E, Clarke JD, Dashwood RH. Dietary sulforaphane, a histone deacetylase inhibitor for cancer prevention. *J Nutr*. 2009 Dec;139(12):2393-6.



Not Eating Enough Veggies? No Problem!

Get Protective Benefits Of

Cruciferous Vegetables

with **Apigenin**

It's not easy to get in five servings of vegetables a day—and even if you do, cooking can destroy many of the protective compounds found in **broccoli, Brussels sprouts, cauliflower, and celery.**

Triple Action Cruciferous Vegetable Extract combines vital plant **extracts** that have been shown to protect cellular DNA.

The formula provides optimal potencies of cruciferous extracts like **I3C** (*Indole-3-carbinol*) and **DIM** (*di-indolyl-methane*) to favorably modulate estrogen metabolism,¹⁻⁵ along with **apigenin**.

For full product description and to order
Triple Action Cruciferous Vegetable Extract, call **1-800-544-4440**
or visit **www.LifeExtension.com**

1. *Biochem Pharm.* 2002; 64;393-404.
2. *Toxicol Appl Pharm.* 2001 Jul 15;174(2):146-52.
3. *In Vivo.* 2006 Mar-Apr;20(2):221-8.
4. *Cancer Detect Prevent.* 2004;28:72-9.
5. *Mol Carcinog.* 2012 Mar;51(3):244-56.

Triple Action Cruciferous Vegetable Extract

Item #01468 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$24	\$18
4 bottles		\$16.50 each



Triple Action Cruciferous Vegetable Extract with Resveratrol

Item #01469 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$32	\$24
4 bottles		\$22.20 each



'C' TO THE MAX

Humans don't manufacture **vitamin C** internally, so it must be obtained through dietary sources or supplements.

Vitamin C is water soluble and needs to be constantly replenished.¹

Fortunately, a *flavonoid* known as *dihydroquercetin* functions as a **vitamin C** "supercharger" that helps maintain its concentration throughout the body.^{2,3}

References

1. PLoS Med. 2005 Sep;2(9):e307;author reply e309.
2. Am J Clin Nutr. 1988 Sep;48(3):601-4.
3. J Food Tech. 1969;4:255-67.

Vitamin C

Item #00927 • 250 vegetarian tablets

	Retail Price	Your Price
1 bottle	\$30	\$22.50
4 bottles		\$20 each



For full product description and to order **VITAMIN C with Dihydroquercetin**, 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.

MEGA GREEN TEA EXTRACT

Powerful DNA Protection



FOR LESS
THAN
25¢
A DAY!

Mega Green Tea Extract provides powerful antioxidant effects throughout the body.

Each **725 mg** capsule of **Mega Green Tea Extract** is standardized to 98% polyphenols that provide **326 mg** of **EGCG** to:

- Protect against DNA damage and oxidative stress¹
- Support healthy blood sugar levels²
- Enhance heart health³
- Boost brain function⁴
- Support strong bones⁵
- Maintain healthy cholesterol levels already within normal range⁶

Each cost-effective bottle lasts over three months!

References

1. *Mutagenesis*. 2015;30(1):129-37.
2. *Curr Opin Clin Nutr Metab Care*. 2013;16(6):688-97.
3. *Circ J*. 2010;74(3):578-88.
4. *Nutrition*. 2014;30(3):337-42.
5. *BMC Musculoskelet Disord*. 2009;10:110.
6. *J Transl Med*. 2015;13:79.

Mega Green Tea Extract Decaffeinated

Item #00954 • 100 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$30	\$22.50
4 bottles		\$18 each

Mega Green Tea Extract Lightly Caffeinated

Item #00953 • 100 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$30	\$22.50
4 bottles		\$18 each

Note: **EGCG** is the acronym for **epigallocatechin gallate**, which is the polyphenol in green tea that has demonstrated the most robust health benefits.



For full product description and to order **Mega Green Tea Extract**, 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 diagnose, treat, cure, or prevent any disease.

Shipping available to most states!



RETAIL PHARMACY

- Accepts major insurance plans
- Durable Medical Equipment and supplies
- Vitamins and supplements
- Kosher and organic products
- Alkaline water
- Custom orthotics

COMPOUNDING

- Bio-identical hormone replacement
- Erectile dysfunction meds
- Topical anesthetics
- Gynecological preparations
- Hemorrhoid treatments
- Custom veterinary meds

20% OFF
your next cash RX
when you refer a
new RX customer!*

*Some restrictions apply



(877) 877-9700

Phone: (954) 989-6524

Fax: (866) 892-3432

4401 Sheridan St.
Hollywood, FL 33021

www.PostHastePharmacy.com

**About Health
in a Different Light**

Jarrow
FORMULAS®

THE PROBIOTIC FOR WOMEN ♀

Clinically Documented Probiotic Strains That Promote Healthy Vaginal Microflora and Urinary Tract Health*

Jarro-Dophilus® Women contains the four predominant *Lactobacilli* strains of the healthy vaginal tract.*

All four strains were isolated from the vaginal tracts of healthy pregnant women and have been clinically tested for efficacy in helping to maintain protective, healthy vaginal microflora and urinary tract health.*

L. crispatus LbV 88

L. jensenii LbV 116

L. gasseri LbV 150N

L. rhamnosus LbV 96

When it comes to choosing effective probiotics, clinically documented strains matter.*

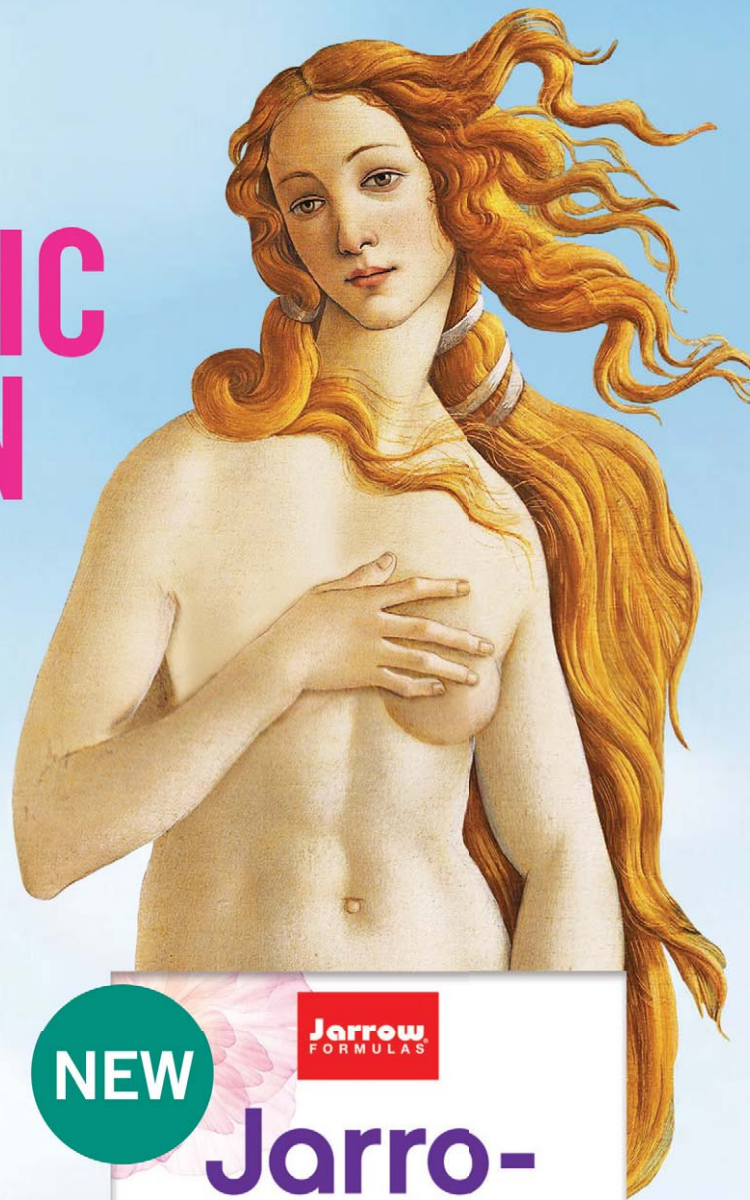
Choose science.

Choose Jarro-Dophilus® probiotics.

Jarro-Dophilus® Women 5 Billion Per Capsule 30 Veggie Caps

Item # 52142 Retail Price \$27.95 Your Price \$20.96

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



Jarro-Dophilus® Women contains the clinically tested Astarte® strains which are protected by U.S. Patent 8,846,027 and European Patent 2,509,610. Astarte® is owned by HSO Health Care GmbH, Vienna, Austria, and licensed in the U.S. to Jarrow Formulas, Inc. Other international patents pending.

ASTARTE

*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.

Visit us at www.jarrow.com for more product information.

© 2018 Jarrow FORMULAS®



Restore *Youthful* Immune Function

The diseases of aging such as cancer, pneumonia, and dementia are linked to a malfunctioning immune system.

This degenerative impairment is known as **immune senescence**. It accelerates **aging** by causing **chronic inflammation** while failing to protect against pathogens and malignancies.¹⁻⁵

Not only do we lose the ability to defend against cancers and infections, but our failing immune cells create a state of **hyper-inflammation** that destroys neurons, the endothelium, and joints.^{6,7}

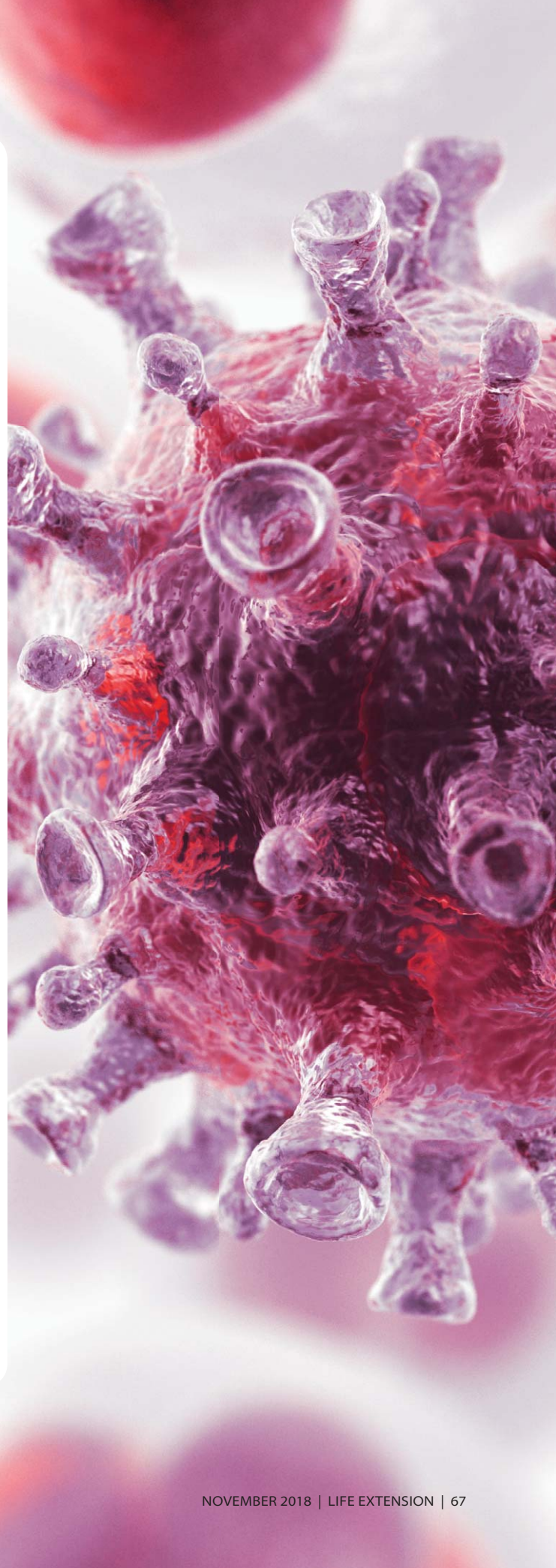
In an effort to reverse this decline, **Life Extension®** is interacting with scientists seeking to restore youthful immune function. Each advance we uncover urgently needs to transition into routine clinical practice.

Researchers have identified **three** natural compounds that have been shown to **reverse** a broad spectrum of harmful changes that occur in the immune system with advancing age.

These three compounds are extracts of **Reishi mushrooms**, **Cistanche** and **Pu-erh tea**.

Each of these natural compounds produces unique immune system-modulating effects that deter the pathologic components of immune senescence.

Together, these nutrients can help improve immune functions lost to aging.



Rejuvenate the Immune System

If we are to live longer, healthier lives, we need our immune system to function at peak capacity.

Three compounds that have demonstrated an impressive ability to rescue the immune system from senescent decline are:

- 1) *Cistanche*
- 2) **Reishi mushrooms**
- 3) **Pu-erh tea**

Together, these natural extracts help combat immune senescence by several complementary mechanisms that include enhancing activity of **natural killer cells** and **T cells**.

Reishi Mushroom Extract

The immune-boosting properties of **Reishi mushrooms** have been appreciated in Eastern medicine for thousands of years. Modern science is just now beginning to validate their health-promoting properties.^{8,9}

Studies show that consuming these mushrooms improves immune function and has anti-tumor effects.⁹⁻¹⁶ In mice, Reishi has been found to promote the maturation and *activation* of immune system cells such as **T cells**, **natural killer cells**, **dendritic cells**, and **macrophages**.¹⁰⁻¹³ Lab studies show that Reishi also helps raise protective **IL-10** levels and lower pro-inflammatory **IL-6** levels.^{17,18}



Reishi mushrooms

This indicates that Reishi augments the function of both the **innate** and **adaptive immune system**.

The **innate immune system** can be thought of as the body's first line of defense, responding rapidly to potentially harmful insults such as viruses, bacteria, and cancer cells.

Natural killer cells are an important component of this innate immunity.¹⁹⁻²⁴ The diminished numbers of active natural killer cells that can occur with aging predispose an individual to high rates of infection by viruses ranging from the common cold to herpes viruses.²³⁻²⁸

The **adaptive immune system** acts slower than the innate immune system but mounts a more specific, powerful attack against pathogens using specialized immune system cells called **T cells**.

With its ability to boost components of both innate and adaptive immunity, Reishi can protect the aging body from infections. This benefit has been borne out in laboratory studies demonstrating protection from many common viruses, including:

- Herpes simplex viruses—which cause oral and genital herpes viruses²⁹
- Influenza viruses—which cause the flu³⁰
- Epstein-Barr virus—which causes mononucleosis but can also contribute to the formation of cancer^{31,32}
- Hepatitis B virus—a common cause of liver disease that can lead to liver failure^{33,34}
- Human immunodeficiency virus (HIV)—the virus which causes AIDS^{35,36}

In addition to offering protection from infection, Reishi exhibits **anti-cancer** properties as well—largely because of its ability to enhance immune function. In particular, the boost Reishi gives to natural killer cell, T cell, and macrophage function aids in the identification and destruction of abnormal cells that may develop into cancer.^{9,16}

Reishi can also directly combat tumors by impairing the ability of tumor cells to grow, preventing tumor blood vessels from developing, starving the abnormal cells, and even directly killing cancer cells.^{9,16}

In one study, Reishi mushrooms were applied to various human cancer cell lines.¹⁶ Not only did the Reishi reduce the growth of the cells, but it induced cell death in many of the diseased cells.

Perhaps most impressively, Reishi has been shown to significantly **extend lifespan** of mice.³⁷ Researchers followed two groups of mice, one fed a normal control diet and the other fed a diet enriched with a Reishi extract. When most of the mice had passed away from old age, the **Reishi** supplemented group had lived as much as *148 days longer* than the control group. Given that the lifespan of a mouse is typically less than two years, this represents a dramatic increase in longevity.

These studies provide support for why Reishi has earned the nickname, “**mushroom of immortality**.”

Cistanche Extract

Cistanche is a type of desert plant that, like Reishi mushrooms, has long been appreciated for its medicinal uses in Eastern medicine. Recently, several studies have confirmed the ability of *Cistanche* extract to boost immune cells in the body.³⁸⁻⁴¹

In one study, researchers utilized a strain of **senescence-accelerated** mice, which age more rapidly than normal mice and display the same deterioration in immune function seen in human immune senescence. The mice fed a diet supplemented with *Cistanche* extract for only four weeks were found to have a significantly increased number of both **T cells** and **natural killer cells** in the blood, while lowering **pro-inflammatory IL-6** levels in blood.

This enhancement in immune function translated to an **extended lifespan** as well. The average age after supplementation with *Cistanche* was **15%** longer than controls.³⁸

In addition to T cells and natural killer cells, *Cistanche* also helps activate other important immune cells, including macrophages, dendritic cells, and B cells.^{39,40}

Encouraging results have been demonstrated in a human study as well. When elderly subjects took **100 mg** of *Cistanche* extract daily for 12 weeks, there was a **6.1%** increase in **helper T cells** and an almost **12%** increase in **natural killer cell** activity. This increase represents a significant immune-boosting effect.⁴¹

Patients also experienced improved markers of vascular function and a decrease in fatigue. No significant adverse effects were observed.

Given that these same improvements in immune function resulted in enhanced longevity in animal studies, it can be assumed that the rejuvenating effect *Cistanche* has on the human immune system may assist in prolonging human lifespan as well.



Cistanche

What You Need to Know

Boosting the Aging Immune System

- Older age is associated with a decline in immune system function, known as immune senescence.
- Immune senescence increases the risk for infections and cancer.
- Certain plants and fungi have been found to bolster immune system cells and functions, improving immunity.
- Reishi mushrooms, *Cistanche*, and Pu-erh tea have all been shown to improve immune function by various complementary mechanisms.
- Intake of extracts of these plants and fungi may help restore immune function, reducing the risk for infection and cancer.



Pu-erh tea

Pu-erh Tea Extract

Both green tea and black tea have long been cherished for their numerous health benefits. One particular variety of fermented black tea, called **Pu-erh**, is especially beneficial for the aging immune system.⁴²

Studies show that Pu-erh tea and its extract combat immune senescence by multiple mechanisms.⁴² Two of the chief ones include increasing **natural killer** and **T cells**.

In addition to its ability to bolster the immune system itself, Pu-erh tea appears to provide even more protection from infection with direct antibacterial and antiviral effects as well. Several studies have demonstrated that Pu-erh tea directly kills or inhibits the growth of bacteria and suppresses the growth of viruses such as hepatitis B virus.⁴²

It also displays anti-tumor effects and it has been shown to lower cholesterol levels, fight obesity, and help control diabetes.

In one investigation, scientists studied the effects of Pu-erh tea on the senescence-accelerated strain of mice discussed previously.⁴³

Before supplementation with Pu-erh tea, the mice demonstrated the same features of immune system deterioration seen in aging humans, including lower numbers of active T cells and natural killer cells.

In addition, levels of the powerful pro-inflammatory cytokine **IL-6** were markedly elevated in the senescence-accelerated mice, compared with controls. Remarkably, treating these mice with Pu-erh tea **reversed** their immune senescence.

The treated mice experienced enhanced numbers of T cells and natural killer cells and a significant **43%** decrease in **IL-6**—benefits that more closely resemble a normal healthy immune system.

Based on these immune-boosting results, the researchers concluded that intake of Pu-erh tea may help older individuals prevent infection and cancer.

Powerful Anti-Inflammatory Effects in Humans

A **human** study of Pu-erh tea extract further emphasizes its role in reversing **inflammatory cytokine levels**. The study was performed among a group of patients with **metabolic syndrome**, a common condition defined by central obesity, borderline or high fasting glucose, and elevated triglycerides and cholesterol.⁴⁴ Those with metabolic syndrome have higher levels of inflammation and are at an increased risk of having immune impairments.⁴⁵

Subjects were given either Pu-erh tea extract twice daily or a placebo. They were instructed to exercise and observe a healthy diet during the study period, but were permitted no medicines that might otherwise affect the results.

After three months, patients provided blood samples for analysis of **inflammatory cytokines** and other markers of inflammation.

As expected, placebo recipients showed no significant changes in blood levels of TNF- α or IL-6 (pro-inflammatory cytokine), IL-10 (an anti-inflammatory cytokine), or C-reactive protein (CRP, a marker of total body inflammation).

Subjects supplemented with **Pu-erh tea extract** showed robust improvements in immune status, including:

- **21%** reduction in **IL-6**,
- **23%** reduction in **TNF- α** ,
- **26%** reduction in **CRP**, indicating significant decreases in their overall inflammatory status, and
- **34%** increase of *inflammation-quelling* **IL-10**, further demonstrating the overall reduction in inflammation.

Clearly, Pu-erh tea extract offers multiple benefits to prevent the progress of immune senescence. But, just as a good roof provides multiple, overlapping structures to prevent leaks, good immune system coverage should offer multiple, overlapping mechanisms to ensure that no possible holes are left to allow untimely infections, inflammation, or cancers to progress.

Summary

Immune senescence puts the elderly at increased risk for frequent and severe infections, cancer, and a variety of chronic inflammatory diseases.

Compounds found in various plants and fungi bolster the weakened immune system, improving immunity and reducing the risk for infections and cancer.

Reishi mushrooms, **Cistanche**, and **Pu-erh** tea boost the immune system by several complementary mechanisms, including amplifying the activity of natural killer cells, T cells, and various other immune system components.

Adding these immune-boosters to the diet may help thwart waning immunity in older age, helping give our body a fighting chance against many infectious diseases and cancer. ●

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



The Immune System

A Breakdown in the First Line of Defense

Natural killer cells are the body's **first responders** against viral infections and cancer cells, and play an important role in battling bacterial and fungal infections.¹⁹⁻²⁴ The age-related decline in the function of natural killer cells leads to higher rates of many viral, bacterial, and fungal infections—and these infections are more likely to be serious in age-related immune senescence.²⁶⁻²⁸

For example, research shows that the common cold (which is caused by a virus) is more frequent in individuals with low numbers of natural killer cells—and conversely, that greater natural killer cell function helps protect against viral outbreaks.²³⁻²⁵

The decline in natural killer cells has also been shown to increase the rates of viral infections, including viruses that cause **influenza** and viruses in the **herpes family**.²⁶ These include **cytomegalovirus (CMV)**, **Epstein-Barr virus**, **varicella zoster** (which causes chicken pox and shingles), and **herpes simplex viruses** (causing oral and genital herpes).

Compounding the problem, cytomegalovirus (CMV) itself may directly contribute to the loss of immune function.^{46,47} In one study, higher levels of CMV in older women correlated with an increased five-year risk of all-cause **mortality**.⁴⁸

A Breakdown in the Body's Targeted Killers

T cells are targeted killers that are part of the body's **adaptive immunity**. If any infections go undetected by the natural killer cells, T cells are the "big guns" that step in and eliminate the infected cells.

These cells hunt down one specific target and stage a powerful attack to eliminate it once the enemy has been identified.

T cells contribute to **long-term immunity**, the phenomenon in which the body "remembers" an antigen (a virus, bacteria, or even a vaccine). That way if an individual is later exposed to the same virus, bacteria, or antigen, the immune system is primed to destroy it more quickly in the future—often before any signs of the disease occur.

References

- Ginaldi L, De Martinis M, D'Ostilio A, et al. The immune system in the elderly: I. Specific humoral immunity. *Immunol Res.* 1999;20(2):101-8.
- Ginaldi L, De Martinis M, D'Ostilio A, et al. The immune system in the elderly: II. Specific cellular immunity. *Immunol Res.* 1999;20(2):109-15.
- Ginaldi L, De Martinis M, D'Ostilio A, et al. The immune system in the elderly: III. Innate immunity. *Immunol Res.* 1999;20(2):117-26.
- Gruver AL, Hudson LL, Sempowski GD. Immunosenescence of ageing. *J Pathol.* 2007 Jan;211(2):144-56.
- Pawelec G. Hallmarks of human "immunosenescence": adaptation or dysregulation? *Immun Ageing.* 2012 Jul 25;9(1):15.
- Bueno V, Sant'Anna OA, Lord JM. Ageing and myeloid-derived suppressor cells: possible involvement in immunosenescence and age-related disease. *Age (Dordr).* 2014;36(6):9729.
- Pera A, Campos C, Lopez N, et al. Immunosenescence: Implications for response to infection and vaccination in older people. *Maturitas.* 2015 Sep;82(1):50-5.
- Babu PD, Subhasree R. The sacred mushroom "Reishi"-a review. *American-Eurasian Journal of Botany.* 2008;1(3):107-10.
- Xu Z, Chen X, Zhong Z, et al. Ganoderma lucidum polysaccharides: immunomodulation and potential anti-tumor activities. *Am J Chin Med.* 2011;39(1):15-27.
- Cao LZ, Lin ZB. Regulation on maturation and function of dendritic cells by Ganoderma lucidum polysaccharides. *Immunol Lett.* 2002 Oct 1;83(3):163-9.
- Chang CJ, Chen YY, Lu CC, et al. Ganoderma lucidum stimulates NK cell cytotoxicity by inducing NKG2D/NCR activation and secretion of perforin and granulysin. *Innate Immun.* 2014 Apr;20(3):301-11.
- Wang PY, Zhu XL, Lin ZB. Antitumor and Immunomodulatory Effects of Polysaccharides from Broken-Spore of Ganoderma lucidum. *Front Pharmacol.* 2012;3:135.
- Chang YH, Yang JS, Yang JL, et al. Ganoderma lucidum extract promotes immune responses in normal BALB/c mice In vivo. *In Vivo.* 2009 Sep-Oct;23(5):755-9.
- Chen WY, Yang WB, Wong CH, et al. Effect of Reishi polysaccharides on human stem/progenitor cells. *Bioorg Med Chem.* 2010 Dec 15;18(24):8583-91.
- Ji Z, Tang Q, Zhang J, et al. Immunomodulation of bone marrow macrophages by GLIS, a proteoglycan fraction from Lingzhi or Reishi medicinal mushroom Ganoderma lucidum (W.Curt.:Fr.) P. Karst. *Int J Med Mushrooms.* 2011;13(5):441-8.
- Ruan W, Wei Y, Popovich DG. Distinct Responses of Cytotoxic Ganoderma lucidum Triterpenoids in Human Carcinoma Cells. *Phytother Res.* 2015 Nov;29(11):1744-52.
- Pan K, Jiang Q, Liu G, et al. Optimization extraction of Ganoderma lucidum polysaccharides and its immunity and antioxidant activities. *Int J Biol Macromol.* 2013 Apr;55:301-6.
- Choi S, Nguyen VT, Tae N, et al. Anti-inflammatory and heme oxygenase-1 inducing activities of lanostane triterpenes isolated from mushroom Ganoderma lucidum in RAW264.7 cells. *Toxicol Appl Pharmacol.* 2014 Nov 1;280(3):434-42.
- Chijioke O, Landtwing V, Munz C. NK Cell Influence on the Outcome of Primary Epstein-Barr Virus Infection. *Front Immunol.* 2016;7:323.
- Novakova L, Lehuen A, Novak J. Low numbers and altered phenotype of invariant natural killer T cells in recurrent varicella zoster virus infection. *Cell Immunol.* 2011;269(2):78-81.
- Orange JS. Natural killer cell deficiency. *J Allergy Clin Immunol.* 2013 Sep;132(3):515-25.
- Vivier E, Tomasello E, Baratin M, et al. Functions of natural killer cells. *Nat Immunol.* 2008 May;9(5):503-10.
- Jost S, Altfeld M. Control of human viral infections by natural killer cells. *Annu Rev Immunol.* 2013;31:163-94.
- Vidal SM, Khakoo SI, Biron CA. Natural killer cell responses during viral infections: flexibility and conditioning of innate immunity by experience. *Curr Opin Virol.* 2011 Dec;1(6):497-512.
- Xu M, Muto T, Yabe T, et al. The relationship between the frequency of the common cold and the activities of natural killer cells. *Environ Health Prev Med.* 2000 Jan;4(4):212-6.
- Hazeldine J, Lord JM. The impact of ageing on natural killer cell function and potential consequences for health in older adults. *Ageing Res Rev.* 2013 Sep;12(4):1069-78.
- Ongradi J, Kovesdi V. Factors that may impact on immunosenescence: an appraisal. *Immun Ageing.* 2010 Jun 14;7:7.
- Fuentes E, Fuentes M, Alarcon M, et al. Immune System Dysfunction in the Elderly. *An Acad Bras Cienc.* 2017 Jan-Mar;89(1):285-99.
- Eo SK, Kim YS, Lee CK, et al. Possible mode of antiviral activity of acidic protein bound polysaccharide isolated from Ganoderma lucidum on herpes simplex viruses. *J Ethnopharmacol.* 2000 Oct;72(3):475-81.
- Avtonomova AV, Krasnopolskaya LM. Antiviral properties of basidiomycetes metabolites. *Antibiot Khimioter.* 2014;59(7-8):41-8.
- Akihisa T, Nakamura Y, Tagata M, et al. Anti-inflammatory and anti-tumor-promoting effects of triterpene acids and sterols from the fungus Ganoderma lucidum. *Chem Biodivers.* 2007 Feb;4(2):224-31.
- Iwatsuki K, Akihisa T, Tokuda H, et al. Lucidenic acids P and Q, methyl lucidenate P, and other triterpenoids from the fungus Ganoderma lucidum and their inhibitory effects on Epstein-Barr virus activation. *J Nat Prod.* 2003 Dec;66(12):1582-5.
- Li Y, Yang Y, Fang L, et al. Anti-hepatitis activities in the broth of Ganoderma lucidum supplemented with a Chinese herbal medicine. *Am J Chin Med.* 2006;34(2):341-9.
- Li YQ, Wang SF. Anti-hepatitis B activities of ganoderic acid from Ganoderma lucidum. *Biotechnol Lett.* 2006 Jun;28(11):837-41.
- Lu YZ, Wu XX, Chen S, et al. Effectiveness of Ganoderma lucidum preparation in treating simian acquired immune deficiency syndrome. *Zhongguo Yi Xue Ke Xue Yuan Xue Bao.* 2011 Jun;33(3):318-24.
- Akbar R, Yam WK. Interaction of ganoderic acid on HIV related target: molecular docking studies. *Bioinformation.* 2011;7(8):413-7.
- Wu Z, Zhang Y, Tan N, et al. ReishiMax extends the lifespan of mice: A preliminary report. *The FASEB Journal.* 2011 April 1, 2011;25(1 Supplement):601.2.
- Zhang K, Ma X, He W, et al. Extracts of Cistanche deserticola Can Antagonize Immunosenescence and Extend Life Span in Senescence-Accelerated Mouse Prone 8 (SAM-P8) Mice. *Evid Based Complement Alternat Med.* 2014;2014:601383.
- Zhang YH, Wang LC, Tu PF, et al. Macrophage activation by low molecular weight saccharides from Cistanche deserticola. *Zhongguo Zhong Yao Za Zhi.* 2017 Nov;42(21):4207-10.
- Zhang A, Yang X, Li Q, et al. Immunostimulatory activity of water-extractable polysaccharides from Cistanche deserticola as a plant adjuvant in vitro and in vivo. *PLoS One.* 2018;13(1):e0191356.
- Yonei Y, Kitano T, Ogura M, et al. Effects of Health Food Containing Cistanche Deserticola Extract on QOL and Safety in Elderly: An Open Pilot Study of 12-week Oral Treatment. *Anti-Aging Medicine.* 2011;8(2):7-14.
- Lee LK, Foo KY. Recent advances on the beneficial use and health implications of Pu-Erh tea. *Food Research International.* 2013 10;53(2):619-28.
- Zhang L, Shao WF, Yuan LF, et al. Decreasing pro-inflammatory cytokine and reversing the immunosenescence with extracts of Pu-erh tea in senescence accelerated mouse (SAM). *Food Chem.* 2012 Dec 15;135(4):2222-8.
- Chu SL, Fu H, Yang JX, et al. A randomized double-blind placebo-controlled study of Pu'er tea extract on the regulation of metabolic syndrome. *Chin J Integr Med.* 2011 Jul;17(7):492-8.
- Ugarte-Gil MF, Sanchez-Zuniga C, Gamboa-Cardenas RV, et al. Circulating naive and memory CD4+ T cells and metabolic syndrome in patients with systemic lupus erythematosus: data from a primarily Mestizo population. *Rheumatology (Oxford).* 2015 Jul;54(7):1302-7.
- Solana R, Tarazona R, Aiello AE, et al. CMV and Immunosenescence: from basics to clinics. *Immun Ageing.* 2012 Oct 31;9(1):23.
- Pawelec G, McElhaney JE, Aiello AE, et al. The impact of CMV infection on survival in older humans. *Curr Opin Immunol.* 2012 Aug;24(4):507-11.
- Wang GC, Kao WH, Murakami P, et al. Cytomegalovirus infection and the risk of mortality and frailty in older women: a prospective observational cohort study. *Am J Epidemiol.* 2010 May 15;171(10):1144-52.

PROSTATE HEALTH

The best way to keep
You in the picture.

Ultra Prostate Formula was created to help maintain prostate health. It contains a dozen *standardized* ingredients to:

- Support healthy urination
- Promote healthy prostate function
- Encourage healthy prostate cell division

Ultra Prostate Formula is a unique comprehensive *standardized*-ingredient prostate-health supplement.

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



	Retail Price	Your Price
1 bottle	\$38	\$28.50
4 bottles		\$26.25 each

Item# 02029 • 60 softgels

AprèsFlex® is a registered trademark of Laila Nutraceuticals exclusively licensed to PL Thomas-Laila Nutra LLC. HMRLignan™ is a trademark used under sublicense from Linnea S.A. Lyc-O-Mato® is a registered trademark of Lycored Corp. Albion® is a registered trademark of Albion Laboratories, Inc. Graminex® is a registered trademark of Graminex LLC.



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

MKNZAV180602



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 1-888-210-7256 toll-free
Use Code YRX801A.

LifeExtension®

Premier service is good for a full 12 months from the date of purchase or renewal and can only be renewed 6 months after the date of your last Premier purchase or renewal. 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 U.S. dollar at checkout. FREE unlimited standard shipping (3 to 5 business days) to any mailing address within the United States, excluding U.S. territories. Also includes discounts on non-standard shipping and shipping outside of the U.S. international customers can join Premier for \$59.95.

SUPPORT YOUR AGING IMMUNE SYSTEM

Three natural plant extracts—
***Cistanche*, *Pu-erh Tea*,**
and ***Reishi Mushroom***—
have been shown to support
more youthful immune function.

Cistanche

- Supports longer lifespan in animals.¹
- Optimizes the ratio of CD4 to CD8 cells, indicative of a more youthful immune system.¹

Pu-erh tea

- Boosts natural killer and naïve T cells while decreasing interleukin-6 (IL-6).²

Reishi

- Helps reduce biomarkers of immune senescence.³

For full product description and
to order **Immune Senescence
Protection Formula™**,
call **1-800-544-4440** or
visit **www.LifeExtension.com**

References

1. *Anti-Aging Med.* 2011;8(2):7-14.
2. *Food Chem.* 2012 Dec 15;135(4):2222-8.
3. *Am J Chin Med.* 2011;39(1):15-27.


	Retail Price	Your Price
1 bottle	\$40	\$30
4 bottles		\$27 each
Item #02005 • 60 vegetarian tablets		



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.

BY ROBERT GOLDFADEN AND GARY GOLDFADEN, MD





Relieve Dry and Chapped Lips Naturally

All of us at one point or another have experienced the dryness, soreness, and cracking of chapped lips, especially during the winter months.

This painful and unsightly problem arises because the lips have an ultra-thin layer of skin without any oil glands. This makes them susceptible to moisture loss, sun-damage, allergies, irritants, and environmental insults that accelerate the aging process.^{1,2}

The skin on your lips also produces less melanin—the pigment that acts as a sunscreen.³⁻⁵ Without this built-in protection against harmful ultraviolet rays, the lips are prone to the development of precancerous and cancerous conditions over time, particularly with added risk factors such as smoking and alcohol consumption.^{6,7}

Commercial lip balms typically contain unstable ingredients that only provide temporary relief. These balms remain largely inadequate for repairing damage caused by these multiple risk factors, paving the way for more serious skin conditions including actinic keratosis, cheilitis, and various types of cancers.

A novel lip balm can reverse and repair lip damage caused by ultraviolet radiation and external factors. The compounds in this lip balm enhance moisture to provide immediate and long-lasting relief that restores youthful softness and suppleness.

Vitamin C

Lips are composed of a very thin layer of skin and contain less of the pigment melanin. This means our lips are less able to protect themselves against repeated exposure to ultraviolet radiation and environmental pollutants.

Protecting lips against dryness, soreness, and chapping becomes more difficult as we grow older due to a significant drop in skin concentrations of vitamin C.⁸

Research shows that topical application of vitamin C can turn the odds back in your favor by effectively penetrating lip skin where it operates through two mechanisms to combat aging:

1. **Neutralizes** damaging free radicals from long-term sun exposure. This reduces oxidative stress that speeds up the loss of collagen—the skin's structural foundation.⁹⁻¹¹
2. **Builds new collagen** by activating collagen gene transcription and facilitating enzymatic reactions involved in stabilizing and organizing collagen molecules.^{12,13}

Randomized controlled trials deliver clear confirmation that topical vitamin C safely improves the appearance of photoaged skin.¹⁴⁻¹⁶ In one noteworthy study, dermatological evaluations revealed that **84.2%** of participants applying topical vitamin C to their photoaged skin for three months experienced significant improvements in tactile roughness, fine wrinkles, and tone compared to **15.8%** in the control group.¹⁶

Thanks to these anti-aging effects, one review paper noted that “...*topical vitamin C has become a useful part of the dermatologist's armamentarium.*”¹⁷

Malpighia emarginata Fruit Extract

Inflammation is an underlying cause of many age-related conditions, and this holds true for skin aging.^{18,19}

Your lips are under constant attack from chronic inflammatory stimuli such as ultraviolet radiation, pollution, pathogens, and chemical irritants in lip products like fragrances and artificial colors. This compromises skin function and integrity, in addition to creating an excessive immune response that contributes to inflammatory lip conditions like eczematous cheilitis.²⁰

The skin protective compounds found in **acerola cherries** make them a powerful ally in the fight against chronic inflammation. They have long been valued for their abundant supply of vitamin C, containing the **highest** amount per serving compared to other fruit sources.²¹





What You Need to Know

Soothe Dry and Chapped Lips

- The surface of the lips amounts to just a very thin layer of skin, with no oil glands and little melanin. This makes them vulnerable to the damaging effects of ultraviolet light and environmental exposures.
- The loss of structural collagen and moisture as a result of external factors usually results in painful, dry, and chapped lips.
- A novel lip balm has been formulated with natural ingredients that provide immediate and long-lasting relief from dry and chapped lips, in turn restoring youthful softness and suppleness.
- Vitamin C, *Malpighia emarginata* fruit extract, and zinc oxide deliver potent free-radical protection, while vitamin C and *Malpighia emarginata* boost collagen synthesis—all of which helps prevent and repair sun-damaged skin.
- Beeswax and *Olea europaea* leaf extract work together to replenish the skin's natural moisture barrier to improve hydration and eliminate dryness.

In addition to vitamin C, acerola cherries possess a high concentration of oxidant reducers called **carotenoids** and **anthocyanins**.²²⁻²⁴ The former has a proven track record for reducing the inflammatory response to ultraviolet light, owing to its remarkable ability to scavenge free radicals.^{25,26}

Anthocyanins provide the deep blue-purple color of fruits and vegetables. They have been shown to defend dermal fibroblasts from the pro-inflammatory cytokine prostaglandin E2 responsible for suppressing production of collagen and enhancing its degradation.^{27,28}

A human study revealed that a topical formulation containing acerola cherries decreased the appearance of wrinkles on the lips by **58%** in four months.²⁹

Beeswax

Windy, cold, and dry environments tend to dry out your lips. Tightness and cracking soon follow. This occurs because the lips lack the oil glands necessary for moisturization.² **Beeswax**, derived from the honeycomb, acts as a natural moisturizer to attract and hold onto water—making it an ideal candidate for rehydrating the skin on the lips.³⁰

The antibacterial properties of beeswax also come in handy, as cracked lips increase the risk for skin infection.³¹ Lastly, beeswax might provide relief for those suffering from atopic dermatitis—a chronic skin disorder characterized by redness, flaking, and itching. One study showed that **80%** of patients with atopic dermatitis who applied a topical mixture containing beeswax saw significant improvements in symptoms after just **two weeks**!³²



Olea europaea Leaf Extract

Olive oil contains at least **30** phenolic compounds, many of which modulate sun-induced inflammatory processes throughout the skin.^{33,34}

Not surprisingly, topically applied olive oil in mice was found to reduce the number of tumors after exposure to ultraviolet radiation.³⁵ Also, olive oil contains squalene and vitamin E that improves the skin's moisture barrier to eliminate dryness.^{36,37}

Zinc Oxide

Zinc provides optimal skin protection as an essential component of copper/zinc superoxide dismutase, an oxidant-reducing enzyme that neutralizes dangerous free radicals responsible for the undesirable characteristics of aging lips.³⁸

Zinc limits DNA damage, enhances wound healing, and is essential for immune function.^{38,39}

Research shows that zinc oxide effectively reflects ultraviolet light, thereby inhibiting its absorption and destructive effects in the skin.⁴⁰

Summary

Our lips are a focal point of social interactions on a daily basis, from speaking, to kissing, to conveying facial expressions and emotions.

Despite being in the limelight, they still remain a mere afterthought in most skin care regimens.

The lips are ultra-sensitive to external factors that compromise skin structure and integrity, which can result in unsightly and painful dry and chapped lips.

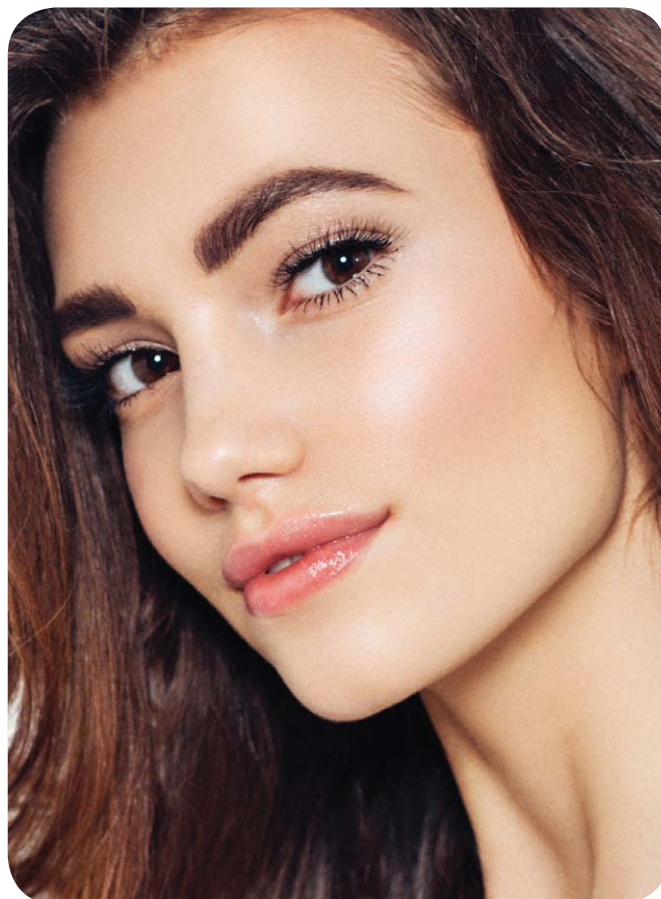
A new lip balm has been formulated with vitamin C, beeswax, zinc oxide, and acerola fruit and *Olea europaea* (olive) leaf extracts that protect against UV-induced photoaging, while ensuring adequate skin moisture to restore lips' youthful qualities. ●

Gary Goldfaden, MD, is a clinical dermatologist and lifetime member of the American Academy of Dermatology. He is the founder of Academy Dermatology in Hollywood, FL, and Cosmesis Skin Care. Dr. Goldfaden is a member of **Life Extension**'s Medical Advisory Board. All Cosmesis products are available online.

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

1. Trookman NS, Rizer RL, Ford R, et al. Clinical assessment of a combination lip treatment to restore moisturization and fullness. *J Clin Aesthet Dermatol*. 2009;2(12):44-8.
2. Rogers RS, 3rd, Bekic M. Diseases of the lips. *Semin Cutan Med Surg*. 1997;16(4):328-36.
3. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK507900/>. Accessed August 9, 2018.
4. Brenner M, Hearing VJ. The protective role of melanin against UV damage in human skin. *Photochem Photobiol*. 2008;84(3):539-49.
5. D'Orazio J, Jarrett S, Amaro-Ortiz A, et al. UV radiation and the skin. *Int J Mol Sci*. 2013;14(6):12222-48.
6. Maruccia M, Onesti MG, Parisi P, et al. Lip cancer: a 10-year retrospective epidemiological study. *Anticancer Res*. 2012;32(4):1543-6.
7. Czerninski R, Zini A, Sgan-Cohen HD. Lip cancer: incidence, trends, histology and survival: 1970-2006. *Br J Dermatol*. 2010;162(5):1103-9.
8. Rhie G, Shin MH, Seo JY, et al. Aging- and photoaging-dependent changes of enzymic and nonenzymic antioxidants in the epidermis and dermis of human skin in vivo. *J Invest Dermatol*. 2001;117(5):1212-7.
9. Burke KE. Photodamage of the skin: protection and reversal with topical antioxidants. *J Cosmet Dermatol*. 2004;3(3):149-55.



Restore Smoother, Youthful-Looking Skin from the Inside Out

Wrinkling, dryness, and loss of firmness are outward signs of normal aging.

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

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



1
DAILY

	Retail Price	Your Price
1 bottle	\$25	\$18.75
4 bottles		\$17.25 each

Item #02096 • 30 liquid vegetarian capsules

For full product description
and to order

Skin Restoring Ceramides,
call 1-800-544-4440

or visit www.LifeExtension.com

Contains wheat. Gluten free.



Ceratiq® is a registered joint-trademark of PLT Health Solutions and Arco, Robertet group, France.

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.

Beautiful, Rejuvenated Lips

Keep your lips soft, moisture-rich, and firm with **Vitamin C Lip Rejuvenator**.

Olive fruit oil and **beeswax** provide a natural moisture barrier to improve hydration. Meanwhile, **vitamin C** and **acerola cherry extract** promote collagen production. **Zinc oxide** provides skin protection.

For full product description and to order **Vitamin C Lip Rejuvenator**, call 1-800-544-4440 or visit www.LifeExtension.com



	Retail Price	Your Price
1 tube	\$24	\$18
4 tubes		\$15.60 each
Item #80171 • 0.5 fl. oz. bottle		



Not tested on animals.
Keep out of reach of children.
For external use only.
Avoid contact with eyes.

Sweet DREAMS

Choose the Melatonin That's Right For You

Healthy sleep is one of the best ways to feel revitalized and maintain optimal health.

While many people find melatonin helps improve sleep, others take it nightly for its **immune** protecting effects.

Individual doses range from **300 mcg** to **10 mg** taken 30-60 minutes before going to sleep.

Caution: Consult your health care provider before taking this product if you are being treated for a medical condition (especially autoimmune or depressive disorders). Use caution if combining with alcohol. This product is not intended for children, pregnant or lactating women, or women trying to become pregnant. Do not attempt to drive or operate heavy machinery after taking this product.

Sendara® is a registered trademark of NutraGenesis, LLC., and is protected under U.S. Patent No. 8,206,757. MicroActive® Melatonin is a registered trademark of Bioactives LLC. Lactium® is used under license.

For occasional sleeplessness.



Melatonin Timed Release 300 mcg
100 vegetarian tablets
Retail: \$12
Your Price: \$9
Item # 01787



Melatonin 3 mg
60 vegetarian capsules
Retail: \$8
Your Price: \$6
Item # 00330



Melatonin 500 mcg
200 vegetarian capsules
Retail: \$18
Your Price: \$13.50
Item# 01083



Melatonin 3 mg
60 vegetarian lozenges
Retail: \$8
Your Price: \$6
Item# 00332



Melatonin Timed Release 750 mcg
60 vegetarian tablets
Retail: \$8
Your Price: \$6
Item # 01788



Melatonin Timed Release 3 mg
60 vegetarian tablets
Retail: \$12
Your Price: \$9
Item # 01786



Melatonin 1 mg
60 capsules
Retail: \$5
Your Price: \$3.75
Item# 00329



Enhanced Sleep with Melatonin
30 capsules
Retail \$22
Your Price \$16.50
Item# 01551



Melatonin 10 mg
60 vegetarian capsules
Retail: \$28
Your Price: \$21
Item# 00331



Enhanced Sleep without Melatonin
30 capsules
Retail: \$22
Your price: \$16.50
Item# 01511



Melatonin 300 mcg
100 vegetarian capsules
Retail: \$7
Your Price: \$5.25
Item# 01668



Melatonin IR/XR
60 capsules
Retail: \$12
Your Price: \$9
Item# 02201



For full product description and to order any of these premium-grade Melatonin supplements, call 1-800-544-4440 or visit www.LifeExtension.com

FORESIGHT FOR YOUR EYESIGHT

MacuGuard® Ocular Support provides lutein, *trans*-zeaxanthin, and *meso*-zeaxanthin to help maintain structural integrity of the macula and retina.¹⁻⁵

Alpha-carotene is included based on new evidence that it helps support the macular pigment.¹

People supplementing with saffron showed an improvement in vision as measured by them seeing an average of two additional lines on the eye chart commonly used by doctors to test vision.¹

This formula provides the optimal dose of saffron along with cyanidin-3-glucoside to support healthy vision.⁶⁻⁸



MacuGuard® Ocular Support with Saffron

Item #01992 • 60 softgels

Retail Price is \$25

Your Price is \$18.75

4 bottles are only \$17.50 each

Each bottle lasts for two months.

References

1. JAMA Ophthalmol. 2015;133(12):1415-24.
2. Nutrients. 2013 April;5(4):1169-85.

3. Nutrition. 2011 Sep;27(9):960-6.
4. Free Radic Biol Med. 2012;53(6):1298-307.
5. J Ophthalmol. 2015;2015:523027.

6. Evid Based Complement Alternat Med. 2012;2012:429124.
7. Invest Ophthalmol Vis Sci. 2010;51(12):6118-24.
8. J Agric Food Chem. 2003 Jun 4;51(12):3560-3.

For full product description and to order **MacuGuard® Ocular Support**, 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.

Life Extension® Skin Care Collection

ERASE *the* YEARS

Advanced skin-renewal
program supports cell
regeneration, replenishes
moisture and helps
diminish signs of aging.

SAVE
50%



Made in USA.

NIGHT CREAM

Ultra-rich **melatonin**-based formula provides *retinyl palmitate* (1.0%) and moisturizing *ceramides* (0.5%) along with science-based botanicals to help rejuvenate facial skin while sleeping.

Item #02131 • 1.65 oz • Retail Price \$39 • Sale price \$19.50

Offer expires October 15, 2018.

Paraben Free. No Animal Testing.

For full product description and to order **Life Extension® Night Cream**
call **1-800-544-4440** or visit **www.LifeExtension.com**

Juice + Nourish:

100 Refreshing Juices and Smoothies to Promote Health, Energy, and Beauty

By Rosemary Ferguson

Going back at least as far as the '70s, when fitness fanatic Jack LaLanne promoted the practice, juicing has been very popular among people who take a serious interest in maintaining a healthy diet.

That's where Rosemary Ferguson comes in. As a full-time model in the '90s, she discovered that juices made from combinations of fresh vegetables, fruits, and grains helped give her the boost in energy that she needed in order to keep up with the long hours her job often demanded. Now a qualified naturopath, Ferguson is focused on aiding clients with proper nutrition at her clinic in London. Her book, *Juice + Nourish: 100 Refreshing Juices and Smoothies to Promote Health, Energy, and Beauty*, is based on her many years of knowledge and experience in nutrition and juicing.

The book is organized by topic, with recipes specifically tailored for help in relieving everything from stress to lack of strength and low energy.

Here, we present a few of the recipes featured in *Juice + Nourish*, along with Ferguson's brief notes on the nutrients contained in each of them. So crank up your blender and enjoy!

Asparagus SOS

Asparagus contains enzymes that help break down any alcohol residues left in your system. This amazing juice is packed with oxidant reducers and is far better than the hair of the dog—any day!

Small handful of spinach

1 apple

5 spears of asparagus

1 small tomato

1-inch to 2-inch piece of fresh ginger

Juice of 1 lemon

Pass all the ingredients through the juicer, except the lemon juice, stirring it in at the end.

Happy Every Day (smoothie)

This smoothie is high in tryptophan, which is essential to making serotonin, a good-mood chemical that stimulates both happiness and sleep. Maca helps to fight fatigue, and if you aren't tired but full of energy, it will sustain energy levels—yippee!

1 banana, peeled

1 zucchini

10 raspberries

2 tsps pumpkin seeds

1 tsp maca powder

1 cup (150 g) ice cubes

½ cup (125 ml) filtered water

Place all the ingredients together into a blender and whiz together.

On An Even Kale

This is a boosting juice that helps if you're feeling fatigued in the morning. Much better than reaching for sugary drinks or food. It's a superb versatile juice, a great way to start the day—in fact, a great way to start every day! It contains soluble fiber, which slows the absorption of fruit sugars into the body. Because the absorption process is slower, we get more chance to take in the nutrient too.

4 kale leaves

1 apple (green if you are diabetic)

1 small pear

1 tsp spirulina

2 tsps ground cinnamon

(build up to this amount, start small!)

Juice the kale, apple, and pear, and then stir in the spirulina and ground cinnamon at the end.





Super Herb Helper (juice or smoothie)

If you are feeling congested mentally or physically, this should help to clear it! The juice uses powerful herbs to help stimulate your system, clear the airways, and relieve any tension in the body.

Handful of mint leaves

1 zucchini

1 apple

1-inch to 2-inch piece of fresh ginger

Juice of 1 lemon

1 tsp matcha green tea powder

1 tsp ground turmeric

1 tsp ground cardamom

1 tsp raw honey

Pinch of Himalayan crystal salt

Juice the mint, zucchini, apple, and ginger, and stir in the lemon juice. Add the matcha green tea powder, turmeric, cardamom, honey, and crystal salt at the end, or you can whiz it all in the blender and make a smoothie.

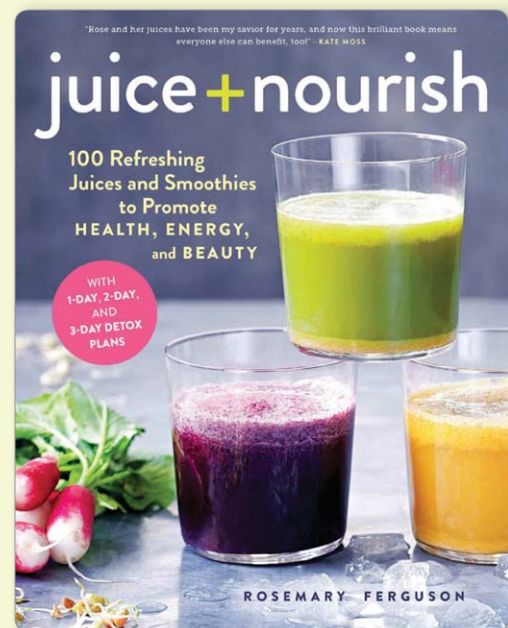
If you have any questions on the scientific content of this article, please call a Life Extension® Wellness Specialist at 1-866-864-3027.

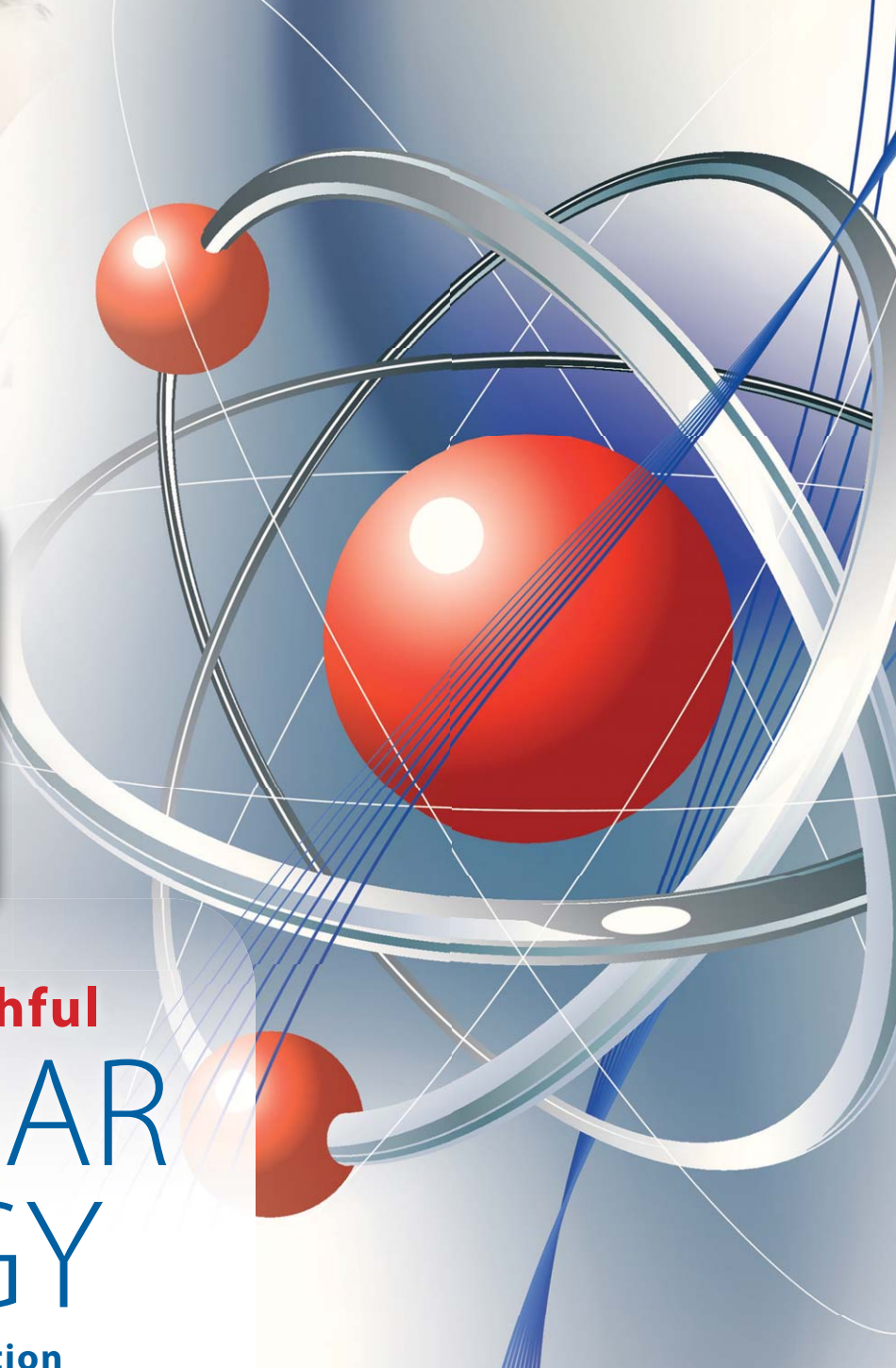
Recipes from *Juice + Nourish: 100 Refreshing Juices and Smoothies to Promote Health, Energy, and Beauty* © Rosemary Ferguson, 2015. Reprinted by permission of the publisher, The Experiment.

Available wherever books are sold. theexperimentpublishing.com

To order a copy of *Juice + Nourish*, call 1-800-544-4440 or visit www.LifeExtension.com

Item #34146
Retail Price \$16.95
Your Price \$12.71





Preserve Youthful
**CELLULAR
ENERGY**
with Next-Generation
LIPOIC ACID

Super R-Lipoic Acid is more bioavailable, stable, and potent, achieving **10-30 times** higher peak blood levels. This unique **sodium-R-lipoate** can help you reach peak plasma concentrations within just 10-20 minutes of supplementation.

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

Super R-Lipoic Acid

Item# 01208 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$49	\$36.75
4 bottles		\$33.75 each



Suggested dose is one to two capsules daily.

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

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

Give Your Multivitamin a BOOST!

GET THE COVERAGE YOU NEED.
Health Booster provides important vitamins you may be missing.



Once-Daily Health Booster

Item #02091 • 60 softgels • Two-month supply

	Retail Price	Your Price
1 bottle	\$54	\$40.50
4 bottles		\$38 each

Optimal potencies of vitamin K2, gamma tocopherol, lycopene, cholorphyllin, lutein, zeaxanthin and lots more in one softgel.



For full product description and to order **Once-Daily Health Booster**, call **1-800-544-4440** or visit **www.LifeExtension.com**

Caution: Avoid use during pregnancy. Consult your healthcare practitioner before using this product if you are taking anti-coagulant or anti-platelet medications or have a bleeding disorder. **Lyc-O-Mato®** is a registered trademark of Lycored, Ltd. **LuteinPlus®** and **Mz®** are registered trademarks of NutriProducts Ltd., UK, licensed under U.S. Patent 8,623,428.

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.

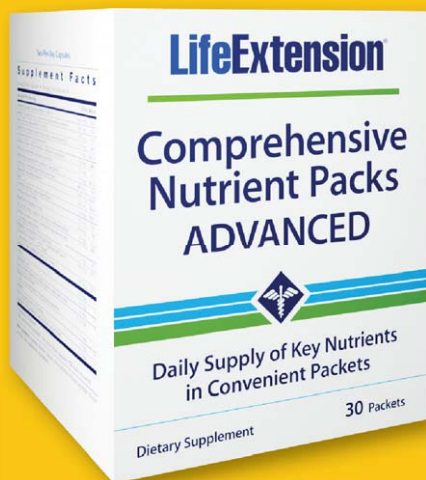
Health On the Go!

We know how it is. You're busy, and it's tough to make sure you're getting the optimum allotment of daily nutrients.

That's why **Life Extension®** created **Comprehensive Nutrient Packs ADVANCED**, a super-convenient 30-packet supply of some of the most important key nutrients to keep you on the go!

EACH PACKET CONTAINS A DAILY DOSE OF:

- **Two-Per-Day Capsules (two capsules)**
Broad-spectrum vitamins, minerals, and plant extracts in concentrated capsules
- **Super Omega-3 EPA/DHA (two softgels)**
a five-star-rated fish oil with sesame lignans and olive polyphenol extract
- **Once-Daily Health Booster (one softgel)**
provides fat-soluble nutrients like vitamin K2, gamma tocopherol, lutein, zeaxanthin, and lycopene
- **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support (one 100-mg softgel)**
a highly bioavailable form of CoQ10
- **Super Bio-Curcumin® (one capsule)**
absorbs up to seven times better than conventional curcumin.



For full product description and to order **Comprehensive Nutrient Packs ADVANCED**, call **1-800-544-4440** or visit **www.LifeExtension.com**

Item # 02298 • One box, 30 packets • Retail Price is \$90
Your price is \$67.50 • 4 boxes are only \$61.50 each

Lyc-O-Mato® and Tomat-O-Red® are registered trademarks of Lycored LTD. • SelenoExcell® is a registered trademark of Cypress Systems Inc. • L-OptiZinc® is a registered trademark of InterHealth N.J. LuteinPlus® and MZ® are registered trademarks of Nutriproducts Ltd., UK, licensed under U.S. Patent 8,623,428. • Crominex® 3+, Capros® and PrimaVie® are registered trademarks of Natreon, Inc. Bio-Curcumin® and BCM-95® are registered trademarks of Dolcas-Biotech, LLC. • Q+®, Kaneka Ubiquinol™, and the quality seal™ are registered or pending trademarks of Kaneka Corp.

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.

Basil

BY GARRY MESSICK

Widely used as an herb in cooking, the basil plant belongs to the same family as mint and is native to tropical areas around the world. Basil is available in a variety of types or hybrids, but the most commonly used version has a fairly strong, pungent taste with notes of sweetness.

Its fame as a universal seasoning staple aside, basil also has a number of health benefits. Here are some examples...

Antibacterial Effects

There's evidence that basil has strong antibacterial properties. One study pitted basil oil in various diluted concentrations against the multi-drug-resistant bacteria *Enterococcus*, *Staphylococcus*, and *Pseudomonas*. Results showed the basil oil had an inhibitory effect on the bacteria, which researchers found encouraging, given how widespread these difficult-to-treat bacteria are.¹

Tuberculosis Symptoms

Research in 2012, looking at the traditional use of basil in treating the symptoms of respiratory illnesses, found that the extracts from the plant (leaves, fruits, and flowers) had potential for use in helping to ease tuberculosis symptoms "due to a synergistic effect" of active compounds.²

Cancer-Fighting Potential

In a 2013 study, researchers found that basil may have the potential to help in fighting several types of cancer—including oral, liver, skin, and lung cancer—through a variety of mechanisms, such as triggering apoptosis (cell death), antioxidant activity, and slowing down cell division.³ They attributed these effects to basil's phytochemical content—luteolin, apigenin, eugenol, rosmarinic acid, and myrtenal, among other compounds. The study authors say the results were encouraging, but further research is needed to establish the possible utility of basil in cancer prevention and treatment.

References

1. *J Microbiol Methods*. 2003 Jul;54(1):105-10.
2. *J Ethnopharmacol*. 2012 Oct 31;144(1):220-2.
3. *Nutr Cancer*. 2013;65 Suppl 1:26-35.

Keep Your Best Friends Healthy

DOG MIX AND CAT MIX
ADVANCED MULTI-NUTRIENT FORMULA!

Specially formulated to
meet the nutritional needs
of your pets.

Dog or Cat Mix can be
easily added to your pet's
food to provide flavonoids,
amino acids, probiotics,
and essential fatty acids.



	Retail Price	Your Price
1 jar	\$14	\$10.50
4 jars		\$8.25 each
Item #01932 • 100 grams		



	Retail Price	Your Price
1 jar	\$18	\$13.50
4 jars		\$11.25 each
Item #01931 • 100 grams		



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

Betatene® is a registered trademark of BASF SE.

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.

BY GARRY MESSICK

Mission Betrayed: How the VA Really Fails America's Vets

BY MICHAEL J. MANN, MD

Author Interview

In his book, *Mission Betrayed: How the VA Really Fails America's Vets*, Michael J. Mann, MD, draws on his years of experience working in the Veterans Health Administration to write a compelling exposé of the widely criticized government agency.

Dr. Mann, a cardiothoracic surgeon and innovator of genetic and molecular therapies, argues that the inexcusably long wait times that received much media attention in 2014 are only a part of the problem. His book documents a deeply flawed system that allows VA administrators to conceal mediocrity, abuse and neglect.

Dr. Mann joined the faculty at the University of California, San Francisco (UCSF), in 2003, having received an A.B. (summa cum laude) in synthetic chemistry from Princeton University and an MD from Stanford University. He completed his fellowship in cardiothoracic surgery at UCSF, and has been named to the *U.S. News and World Report* list of Top Doctors in the United States. Limited space allows Dr. Mann in the following interview to only scratch the surface of VA malfeasance, but still paints a disturbing picture of an agency in serious need of reform.

LE: You say that the VA scandal of 2014, which centered on waiting times for patients, was just the tip of the iceberg. Why?

MM: As shocking as many of the 2014 revelations may have been, they pale in comparison to the true, appalling depth of abuse to which our veterans are routinely subjected at the VA. Just about any thoughtful medical academician who has worked at the VA could tell you that the VA wait list scandal was nothing more than a reflection of the way everything is managed in that monolithic federal institution. And when an entire, badly broken healthcare system boils down to the generation and worship of a few dramatically misleading statistics, the disheartening result is not only a danger zone for our unsung heroes, but the violation of one of our nation's most important promises to a deserving, underserved population.

There is great resistance in medicine to airing our own dirty laundry—the VA is a deep-set fixture in American medicine that very few care to rock. I actually

began to collect my own notes of VA abuses after leaving my part-time involvement as the leader of a surgical sub-specialty program at the San Francisco VA in 2011. Although I had begun to organize these notes even before the 2014 wait-list scandal erupted, I was subsequently convinced to complete a memoir of my time at the VA. (My book is) the result of an effort to make sense of those notes and to put them into a larger perspective, a perspective that reflects back on the countless stories that have too quietly been told since the 2014 wait-list scandal broke.

LE: In your book, you recount specific cases you were involved with, including that of a veteran you call Edward Perry, who had lung cancer that was caught early, but who nevertheless ended up dying after the VA mishandled his case.

MM: Edward Perry was one of many vets who were not given a chance to receive high-risk but potentially lifesaving surgery at the San Francisco VA and at VA hospitals nationwide.

In fact, the San Francisco VA has been recognized as one of the best medical centers in the entire VA system. And by 2008, our hospital staff had grown accustomed to receiving blanket emails from our administration highlighting data that portrayed the Veterans Health Administration as the “best healthcare system in America,” statistics that proved that the VA had superior “quality of care” and “patient satisfaction.” Why then did Edward Perry fail to receive this superior quality of care? Why did we not save his life? And why do so many other vets who trust the VA fail to receive the quality of care our nation has promised?

Over time, I realized that beyond this paradox was a more insidious connection between these very claims of superlative VA care and the deaths of patients like Edward Perry. Perry did not die from the high risk of his case. He was killed by an increasingly effective systemic VA approach that limits the negative impact of high-risk cases on VA statistics, and therefore on the careers of VA administrators.



LE: How did that systemic approach work?

MM: It was about the numbers. Limiting the number of deaths following surgery raised the rating of a VA hospital, and in so doing enhanced bureaucrats' careers (and annual bonuses). Without the need for any orchestrated conspiracy, decisions for or against surgery in particular cases were too often based not on the rights and well-being of the patients, but on the likelihood that surgical outcomes—outcomes that had at one time rescued the VA from harsh congressional scrutiny—would remain blemish-free. There was no need for conspiracy. It was simply the VA way.

Throughout the VA system in recent years, deaths following surgeries have been drastically, almost miraculously, reduced, just in response to heightened scrutiny. Why? Had surgeons' skills, and the intricate coordination of complex care suddenly, spontaneously, and drastically improved? Or had people at the VA simply done what decades of box checking and obfuscation had taught them to do—game the system and make sure things looked the way people wanted?

Years after Edward Perry died, the nation was shocked to learn that dozens of VA hospitals had falsified waiting lists to overcome what had begun as an unreasonable bureaucratic demand to schedule every patient within two weeks. Yet no one has ever suggested an organized conspiracy. It wasn't necessary. Large numbers of VA administrators, doctors, and nurses had simply done things the VA way.

Mr. Perry lived and died the VA way. But what should have mattered more—bureaucrats' liveli-



hoods or the lives of a veteran and his family?

LE: In another of many examples in your book of VA ineptitude and neglect, you mention the case of a man you call Dan Carney, a diabetic with non-healing ulcers on his feet caused by poor circulation, ulcers that could have been prevented with special “orthotic” shoes.

MM: Mr. Carney had indomitably high spirits. By the time we met, he was about to have his left foot cut off to prevent a potentially lethal spread of infection up his leg and into his bloodstream. Despite a long history of ulcers, and despite the fact he routinely sought care at the VA for years, no one had thought to intervene early, when the simple solution of an appropriate shoe might have made all the difference to his imperiled left foot. Instead, Mr. Carney's non-orthotic shoes inevitably continued to engender ulcers that threatened not to heal.

LE: What was it like working for the VA? What did you observe about the way they relate to their patients?

MM: The VA wears you down. When you walk into a VA hospital, you don't always see the kinds of patients you see at most private American hospitals. Many of the vets treated at VA hospitals are poor. Some of them are not so well dressed, not so well put together. Many have lived difficult lives, and it shows in their bearing and the way they walk. They are not used to expecting or demanding the best. They are grateful, most of the time, if they are handed second or maybe even third best. They are generally very grateful for whatever they get at the VA. They are particularly grateful to get it for free.

The collective, perhaps unconscious, attitude of the institution assumes that whatever it provides is basically good enough. Sometimes, individual providers do strive to reach a level of excellence that they are used to at other



institutions, but they inevitably accept “reality” when other elements of the VA machinery make that truly excellent care more difficult, or sometimes “impossible” to achieve.

LE: How widespread is that point of view in the VA?

MM: This unspoken attitude applies to nearly everyone in the institution—from the maintenance staff up through the doctors and administrators. It wasn’t, for example, obvious to me and to other VA doctors that we shared such an attitude toward the vets, or that it influenced our expectations of what we needed to accomplish on their behalf. But we did share it. And that was precisely because the attitude was so effectively pervasive: These were the “vets.”

LE: How deeply did that attitude reflect on the quality of the staff?

MM: It was not that all VA employees were incompetent or lazy, or that there were no incredibly tal-

ented, hardworking individuals at the VA. Certainly there were. But every VA employee was affected by an *institutional* laziness, institutional assumptions about what could and could not get done. Even when VA initiatives and congressional appropriations led to updated equipment and facilities, these entrenched attitudes and assumptions remained. If acceptance of reduced pay and professional self-esteem was associated with a career at the VA, there had to be some benefit in return. A quid pro quo. For many—not all, but many—it was the promise of a slow and comfortable pace of work, an environment where checking boxes would fully meet professional expectations and where demands for outstanding performances just did not exist.

For those few who remained committed to achieving the best possible care for their VA patients, the institutional laziness meant that *their* work would be even harder and more exhausting.

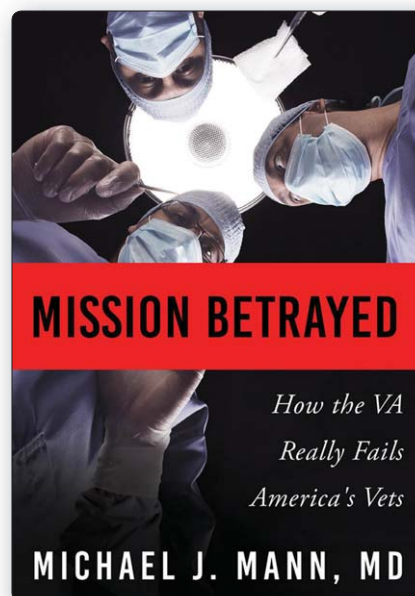
LE: Is there anything you’d like to add in summation?

MM: It is time for American doctors and other healthcare professionals—people who have been aware of what the VA really represents and how our veterans are truly being treated—to force Americans to open their eyes to a much more fundamental failure of their government. A failure both to fulfill a promise and to remain accountable to the men and women who have already sacrificed so much for their country. ●

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

To order a copy of *Mission Betrayed*, call 1-800-544-4440 or visit www.LifeExtension.com

Item# 34145
Retail Price \$28
Your Price \$21



Advanced Technology TO OPTIMIZE B12 ABSORPTION



 **ELIGEN B12™**
(cyanocobalamin/SNAC)
1000 mcg/100 mg tablets

Learn more at www.EligenB12.com

Eligen B12™ helps maintain normal vitamin B12 levels. Eligen® Technology is designed to allow patients to absorb an oral B12 formulation independent of intrinsic factor, a protein required to effectively absorb B12.

Eligen B12™ uses an advanced patented carrier technology to optimize vitamin B12 absorption by chaperoning B12 through the gastric lining directly into the bloodstream within 30 minutes. This enables individuals who are unable to absorb vitamin B12 intestinally to use an oral supplement to help inhibit B12 deficiency.

BENEFITS AT A GLANCE:

- Optimizes B12 absorption, especially among individuals lacking intrinsic factor.
- Helps maintain consistent long-term and predictable healthy B12 blood levels with a single daily dose.
- Helps inhibit B12 deficiency.

ABOUT EMISPHERE

Emisphere is a drug delivery company that utilizes its proprietary Eligen® Technology to develop new oral formulations of therapeutic agents. Emisphere is currently partners with global pharmaceutical companies for the development of new orally delivered therapeutics. For more information, please visit the company's website at www.emisphere.com.

Eligen B12 30 Tablets

Item Number: 53518 Retail: 45.99 Your Price: 34.49

For full product description and to order Eligen B12™, please call 1-800-544-4440 or visit www.LifeExtension.com



© 2018 Emisphere Technologies
All Rights Reserved
Roseland NJ 07068

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.

14 DAY
MONEY BACK
GUARANTEE

GET RELIEF FROM FOOT, LEG & BACK PAIN

Kenkoh® Revitalizes and Rejuvenates Your Whole Body!

A clinical study in a Japanese school of medicine concluded that Kenkoh massage footwear improves circulation, reduces swelling around the legs and ankles, and improves energy levels and mood.

MANY
ADDITIONAL
STYLES &
COLORS
AVAILABLE

Kenkoh®

"The Original Japanese Massage Sandal"

LEM.DiscoverKenkoh.com

1-800-336-6657

THE **Kenkoh** MASSAGE SANDAL IS UNIQUELY DESIGNED TO STIMULATE THOUSANDS OF NERVE ENDINGS IN THE FEET

- Nerves corresponding to organs and tissues are concentrated in the soles of the feet.
- Stimulating these nerves daily helps improve overall health.
- Orthotic arch support alleviates foot pain.

FOOT REFLEXOLOGY CHART



Kenkoh IS JAPANESE FOR HEALTH AND BEAUTY



Kyu-Kichi Yamanashi invented the Kenkoh massage sandal in Japan in 1962. He designed the unique foot bed to mimic two ancient healing techniques that saved his life: *Aodake-Fumi* (stepping on bamboo) and *Sokushindo* (Japanese reflexology), meaning "the path that leads to the heart."

A FOOT MASSAGE WITH EVERY STEP

ENZYMEDICA®

A Natural Digestive Health & Wellness Company

Fast-Acting Betaine HCl

for **Relief** of occasional **Heartburn & Indigestion***



The right amount

Balanced gentle potency to speed up the digestive process.*



Optimize acid levels

for those taking acid blockers for occasional heartburn.*



Speeds up digestion

for those with low acid*

Mucosave® blend

provides a protective barrier for the stomach lining*



*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.

Enzymedica Betaine HCl

120 caps

Item Number: **53348**

Retail: **\$22.59**

Your Price: **\$16.94**

For full product description and to order **Enzymedica Betaine HCl**, please call **1-800-544-4440** or visit **www.LifeExtension.com**



1-2-3 EASY How it works:

ORDER

Call 1-800-208-3444 toll-free or visit
LifeExtension.com/LabServices.

DRAW

For blood tests, take your form to a local lab. Collect at home for saliva, breath, etc.

REVIEW

Go over results **for free** with our Wellness Specialists by calling **1-800-226-2370**. You may wish to review them with your doctor as well.

IT'S THAT SIMPLE! DON'T DELAY! CALL TODAY!

For Our Local Customers:

For those residing in the Ft. Lauderdale, Florida, area, blood-draws are also performed at the Life Extension Nutrition Center from 9:00 am to 2:00 pm Monday through Saturday. Simply purchase the blood test and have it drawn with no wait! Our address is:

**5990 NORTH FEDERAL HIGHWAY,
FT. LAUDERDALE, FL, 33308-2633**

Terms and Conditions

This blood test service is for informational purposes only and no specific medical advice will be provided. National Diagnostics, Inc., and Life Extension contract with a physician who will order your test(s), but will not diagnose or treat you. Both the physician and the testing laboratory are independent contractors and neither National Diagnostics, Inc., nor Life Extension will be liable for their acts or omissions. Always seek the advice of a trained health professional for medical advice, diagnosis, or treatment. When you purchase a blood test from Life Extension/National Diagnostics, Inc., you are doing so with the understanding that you are privately paying for these tests. There will be absolutely no billing to Medicare, Medicaid, or private insurance.

LifeExtension Blood Testing The Ultimate Information

YOUR
PRICE

\$35

○ **CBC/CHEMISTRY PROFILE (LC381822) includes:**

Lipid Profile:

Total cholesterol • Triglycerides
HDL cholesterol • LDL cholesterol (calc.)
VLDL cholesterol (calc.)
Total cholesterol/HDL ratio
Estimated Coronary Heart Disease risk

Liver Function:

Alkaline phosphatase • LDH (lactate dehydrogenase)
AST (aspartate aminotransferase)
ALT (alanine transaminase)
Total protein • Albumin • Globulin
Albumin/globulin ratio • Bilirubin

Electrolytes and Minerals:

Sodium • Potassium • Chloride
Calcium • Phosphorus • Iron

Blood Sugar:

Glucose

Kidney Function:

Uric acid • BUN (blood urea nitrogen)
Creatinine • BUN/creatinine ratio
eGFR (estimated glomerular filtration rate)

Complete Blood Count:

Red blood cell count • Hemoglobin
Hematocrit • MCV (mean corpuscular volume)
MCH (mean corpuscular hemoglobin)
MCHC (mean corpuscular hemoglobin concentration)
RDW (red blood cell distribution)
White blood cell count
Immune Cell Differentiation Count
Platelet count

○ **NEUROTRANSMITTER PANEL** (LC100058) \$199**

Serotonin, Dopamine, Epinephrine, Norepinephrine, GABA, Glutamate, Glycine, Histamine, and PEA. Alternations in these nine neurotransmitters play a significant role in contributing to symptoms such as cognitive disorders, depression, anxiety, diminished drive, fatigue and sleep difficulties, cravings, addictions, pain and more! Not available in NY.

○ **FOOD SAFE ALLERGY TEST – BASIC** (LCM73001) \$198**

This test measures delayed (IgG) food allergies for 95 common foods.

○ **TOXIC METALS PANEL (FECAL) ** (LC100076) \$170**

The results of fecal elemental analysis can help you identify and eliminate dietary exposure to toxic metals, while also assessing the body's natural excretion of metals. The panel tests Antimony, Arsenic, Beryllium, Bismuth, Cadmium, Copper, Lead, Mercury, Nickel, Platinum, Thallium, Tungsten, and Uranium.

○ **FOOD SAFE ALLERGY TEST – COMBO** (LCM73003) \$375**

This test measures delayed (IgG) food allergies to all 190 foods found in our Basic and Extended panels.

GENETIC TESTING

○ **DNA GENETIC CANCER RISK PROFILE** (LC100057) \$265**

With only a saliva sample, you can identify your risk for 25 hereditary cancers by analyzing 98 genes from your DNA including the well-known BRCA1, BRCA2, TP53, and APC. Not available in NY and RI.

○ **APOE GENETIC TEST FOR ALZHEIMER'S AND CARDIAC RISK ** (LC100059) \$149**

Apolipoprotein E (ApoE) is an important regulator of cholesterol and triglycerides levels in your blood and supports lipid transport and injury repair in your brain. Genetically, E4 is the strongest risk factor for developing Late Onset Alzheimer's disease. According to the National Institute of Health, inheriting a single copy of ApoE4 increases the risk of Alzheimer's disease by about three-fold. Inheriting two copies increases the risk by about 12-fold. In fact, almost 40% of AD patients have inherited an E4 allele.

○ **PATHWAY FIT®- DNA WEIGHT MANAGEMENT PANEL (LC100067) ** \$299**

Your DNA holds the blueprint to how your body responds to both food and exercise! This panel looks at 40+ genetic traits.

○ **PAIN MEDICATION DNA INSIGHT® PROFILE (LC100069) ** \$299**

This profile helps you understand your body's likely response to pain relief for 13 commonly prescribed pain medications.

○ **MENTAL HEALTH DNA INSIGHT® PROFILE (LC100068) ** \$299**

The Mental Health DNA Insight® profile helps you understand your body's likely response to 50+ psychiatric medications.

BLOOD TEST PANELS

MALE LIFE EXTENSION PANEL (LC322582)

CBC/Chemistry Profile • DHEA-S • PSA (prostate-specific antigen) Homocysteine • C-Reactive Protein (high-sensitivity) • Apolipoprotein B (ApoB) Free Testosterone • Total Testosterone • Estradiol • TSH for thyroid function • Vitamin D (25-hydroxyvitamin D) • Hemoglobin A1c

YOUR PRICE
\$269

MALE ELITE PANEL (LC100016)*

CBC/Chemistry Profile • Free and Total Testosterone • Total Estrogens Estradiol • DHEA-S • Progesterone • Pregnenolone • DHT • FSH • LH • TSH Free T3 • Free T4 • Reverse T3 • Free and Total PSA • IGF-1 • SHBG • HbA1c Vitamin D 25-OH • hs-CRP, ferritin • Homocysteine • Hemoglobin A1c Apolipoprotein B (ApoB)

YOUR PRICE
\$575

MALE COMPREHENSIVE HORMONE PANEL (LC100010)*

CBC/Chemistry Profile • DHEA-S, Estradiol • DHT • PSA Pregnenolone • Total and Free Testosterone • SHBG • TSH • Free T3
This panel now includes Free T4 and Cortisol with no increase in price!

YOUR PRICE
\$299

MALE BASIC HORMONE PANEL (LC100012)

DHEA-S • Estradiol • Total and Free Testosterone • PSA

YOUR PRICE
\$75

FEMALE LIFE EXTENSION PANEL (LC322535)

CBC/Chemistry Profile • DHEA-S • Estradiol • Homocysteine C-Reactive Protein (high-sensitivity) • Progesterone • Free Testosterone Total Testosterone • TSH for thyroid function • Apolipoprotein B (ApoB) Vitamin D (25-hydroxyvitamin D) • Hemoglobin A1c

YOUR PRICE
\$269

FEMALE ELITE PANEL (LC100017)*

CBC/Chemistry Profile • Free and total Testosterone • Total Estrogens Estradiol • Estrone • DHEA-S • Progesterone Pregnenolone • Apolipoprotein B (ApoB) DHT • FSH • LH • TSH • Free T3 • Free T4 • Reverse T3 • IGF-1 • SHBG • HbA1c Vitamin D 25-OH • hs-CRP • Ferritin • Homocysteine • Hemoglobin A1c

YOUR PRICE
\$575

FEMALE COMPREHENSIVE HORMONE PANEL (LC100011)*

CBC/Chemistry Profile • DHEA-S, Estradiol • Total Estrogens Progesterone • Pregnenolone • Total and Free Testosterone • SHBG TSH • Free T3
This panel now includes Free T4 and Cortisol with no increase in price!

YOUR PRICE
\$299

FEMALE BASIC HORMONE PANEL (LC100013)

DHEA-S • Estradiol • Total and Free Testosterone • Progesterone

YOUR PRICE
\$75

NMR LIPOPROFILE® (LC123810)

The NMR Lipoprofile® directly measures LDL particle size and number as well as HDL particle number, total cholesterol, and triglycerides. It also provides a calculation of one's risk of insulin resistance by assessing abnormalities in lipoprotein markers.

YOUR PRICE
\$99

WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028)

CBC/Chemistry Profile • DHEA-S • Free and Total Testosterone • Estradiol Progesterone • Cortisol, TSH • Free T3 • Free T4 • Reverse T3 • Insulin Hemoglobin A1c • Vitamin D 25-hydroxy • C-reactive protein (high sensitivity) Ferritin

YOUR PRICE
\$275

HEALTHY AGING PANEL-COMPREHENSIVE (LC100026)*

CBC/Chemistry Profile • C-reactive protein (high sensitivity) Vitamin B12 • Folate • Homocysteine • Vitamin D 25-hydroxy • Hemoglobin A1c TSH • Free T3 • Free T4 • Ferritin • Urinalysis • Fibrinogen • Insulin

YOUR PRICE
\$249

ADRENAL STRESS PROFILE – SALIVA (LC100070) **

Check your red flags of adrenal imbalance. This panel contains Cortisol (x4), DHEA, SalA.

YOUR PRICE
\$159

SIBO HOME BREATH KIT (LACTULOSE) (LC100063) **

SIBO stands for small intestinal bacterial overgrowth. Research shows that up to 70% or more of those diagnosed with IBS have SIBO.

YOUR PRICE
\$249

COMPREHENSIVE THYROID PANEL (LC100018)

TSH, Total T4, Free T4, Free T3, Reverse T3, Thyroglobulin Antibody (ATA), Thyroid Peroxidase Antibody (TPO)

YOUR PRICE
\$199

THYROID PANEL WITH REVERSE T3 (LC100044)

TSH, Total T4, Free T4, Free T3, Reverse T3

YOUR PRICE
\$120

OMEGA-3 INDEX COMPLETE ** (LC100066)

Beneficial for everyone taking omega-3/fish oil! You want to target a range of 8%-12% for optimal health.

YOUR PRICE
\$99



With Your Healthy Rewards, you earn LE Dollars back on every purchase you make — including blood tests!

See www.LifeExtension.com/Rewards for details.

This is NOT a complete listing of LE blood test services. Call 1-800-208-3444 for additional information.

* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit and will incur an additional \$35 charge. If the customer is having blood drawn at a LabCorp facility, this extra charge does not apply.

** This test is packaged as a kit.

Blood tests available in the continental United States only. Restrictions apply in NY, NJ, RI, and MA. Not available in Maryland. Kits not available in Pennsylvania.

Amino Acids

Arginine & Ornithine Capsules
Arginine Ornithine Powder
Branched Chain Amino Acids
D,L-Phenylalanine Capsules
L-Arginine Caps
L-Carnitine
L-Glutamine
L-Glutamine Powder
L-Lysine
L-Taurine Powder
L-Tyrosine Powder
Super Carnosine
Taurine

Blood Pressure & Vascular Support

Advanced Olive Leaf Vascular Support
with Celery Seed Extract
Arterial Protect
Blood Pressure Monitor Arm Cuff
Endothelial Defense™ with Pomegranate
Complete and CORDIART™
Endothelial Defense™ with GliSODin®
Optimal BP Management
NitroVasc with CORDIART™
Pomegranate Complete
Pomegranate Fruit Extract
Triple Action Blood Pressure AM/PM
VenoFlow™

Bone Health

Bone Restore
Bone Restore-Sugar Free
Bone Restore with Vitamin K2
Bone Strength Formula with KoAct®
Bone-Up™
Calcium Citrate with Vitamin D
Dr. Strum's Intensive Bone Formula
Strontium Caps

Brain Health

Acetyl-L-Carnitine
Acetyl-L-Carnitine Arginate
Blast™
Brain Shield® Gastrodin
Cognitex® Basics
Cognitex® with Brain Shield®
Cognitex® with Pregnenolone & Brain Shield®
Cognizin® CDP-Choline Caps
DMAE Bitartrate (dimethylaminoethanol)
Dopa-Mind™
Focus Tea™
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin Granules
Memory Protect
Migra-Eeze™
Neuro-Mag® Magnesium L-Threonate
Optimized Ashwagandha Extract
PS (Phosphatidylserine) Caps
Vinpocetine

Cholesterol Management

Advanced Lipid Control
Cho-Less™
CHOL-Support™
Red Yeast Rice
Theaflavins Standardized Extract
Vitamin B3 Niacin Capsules

Digestion Support

Digest RC®
Effervescent Vitamin C - Magnesium Crystals
Enhanced Super Digestive Enzymes
Enhanced Super Digestive Enzymes
W/Probiotics
EsophaCool™
Esophageal Guardian
Extraordinary Enzymes
Gastro-Ease™

Ginger Force®
Regimint
Tranquil Tract™
TruFiber™
WellBetX PGX plus Mulberry

Energy Management

Adrenal Energy Formula
Asian Energy Boost
D-Ribose Powder
D-Ribose Tablets
Forskolin
Mitochondrial Basics with PQQ
Mitochondrial Energy Optimizer with PQQ
NAD+ Cell Regenerator™
Optimized NAD+ Cell Regenerator™
with Resveratrol
PQQ Caps
Rhodiola Extract
RiboGen™ French Oak Wood Extract
Triple Action Thyroid

Eye Health

Astaxanthin with Phospholipids
Brite Eyes III
Eye Pressure Support with Mirtogenol®
MacuGuard® Ocular Support
MacuGuard® Ocular Support with Astaxanthin
Standardized European Bilberry Extract
Tear Support with MaquiBright®

Fish Oil & Omegas

OMEGA FOUNDATIONS® Clearly EPA/DHA
OMEGA FOUNDATIONS® Mega EPA/DHA
OMEGA FOUNDATIONS® Mega GLA
with Sesame Lignans
OMEGA FOUNDATIONS® Super Omega-3
EPA/DHA with Sesame Lignans &
Olive Extract
OMEGA FOUNDATIONS® Super Omega-3
Plus EPA/DHA with Sesame Lignans,
Olive Extract, Krill & Astaxanthin
OMEGA FOUNDATIONS® Provinal®
Purified Omega-7
OMEGA FOUNDATIONS® Vegetarian DHA
Organic Golden Flax Seed

Food

California Estate Extra Virgin Olive Oil
Kenyan Green Tea Crystals
Kenyan Purple Tea Crystals
Rainforest Blend Decaf Ground Coffee
Rainforest Blend Ground Coffee
Rainforest Blend Ground Natural Mocha Flavor
Rainforest Blend Natural Vanilla Flavor
Rainforest Blend Whole Bean Coffee
Stevia Sweetener

Glucose Management

CinSulin® with InSea²® and Crominex® 3+
Glycemic Guard™
Mega Benfotiamine
Tri Sugar Shield®

Heart Health

Aspirin (Enteric Coated)
BioActive Folate & Vitamin B12 Caps
Cardio Peak™ with Standardized
Hawthorn and Arjuna
Homocysteine Resist
Optimized Carnitine
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with PQQ
Super Ubiquinol CoQ10 with Enhanced
Mitochondrial Support™
Super-Absorbable CoQ10 Ubiquinone
with *d*-Limonene
TMG Powder
TMG Liquid Capsules

Hormone Balance

DHEA (Dehydroepiandrosterone)
Pregnenolone
Triple Action Cruciferous Vegetable Extract
with Resveratrol
Triple Action Cruciferous Vegetable Extract

Immune Support

AHCC®
Enhanced Zinc Lozenges
Immune Modulator with Tinofend®
Immune Protect with PARACTIN®
Immune Senescence Protection Formula™
Kinoko® Gold AHCC
Kinoko® Platinum AHCC
Kyolic® Garlic Formula 102
Kyolic® Reserve
Lactoferrin (Apolactoferrin) Caps
NK Cell Activator™
Optimized Garlic
Optimized Quercetin
Peony Immune
ProBoost Thymic Protein A
Reishi Extract Mushroom Complex
Standardized *Cistanche*
Ten Mushroom Formula®
Zinc Lozenges

Inflammation Management

5-LOX Inhibitor with AprèsFlex®
Advanced Bio-Curcumin® with Ginger &
Turmerones
Black Cumin Seed Oil
Black Cumin Seed Oil with Bio-Curcumin®
Boswellia
ComfortMax™
Cytokine Suppress™ with EGCG
Serrafazyme
Specially-Coated Bromelain
Super Bio-Curcumin®
Zyflamend™ Whole Body

Joint Support

Arthro-Immune Joint Support
ArthroMax® Advanced with UC-II® & AprèsFlex®
ArthroMax® with Theaflavins & AprèsFlex®
ArthroMax® Elite
Fast-Acting Joint Formula
Glucosamine/Chondroitin Capsules
Krill Healthy Joint Formula
MSM (Methylsulfonylmethane)
NT2 Collagen™

Kidney & Bladder Support

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

Liver Health & Detoxification

Anti-Alcohol HepatoProtection Complex
Calcium D-Glucarate
Chlorella
Chlorophyllin
European Milk Thistle
Glutathione, Cysteine & C
HepatoPro
Liver Efficiency Formula
N-Acetyl-L-Cysteine
PectaSol-C®
Silymarin
SODzyme® with GliSODin® & Wolfberry

Longevity & Wellness

Alpha-Lipoic Acid
AppleWise Polyphenol Extract
Berry Complete
Blueberry Extract
Blueberry Extract with Pomegranate
DNA Protection Formula
Enhanced Berry Complete with Acai
GEROPROTECT® Ageless Cell™
GEROPROTECT® Longevity A.I.™

Grapeseed Extract
Mediterranean Whole Food Blend
Mega Green Tea Extract (decaffeinated)
Mega Green Tea Extract (lightly caffeinated)
Optimized Fucoidan with Maritech® 926
Optimized Resveratrol
Pycnogenol® French Maritime
Pine Bark Extract
Resveratrol
RNA (Ribonucleic Acid)
Super R-Lipoic Acid
X-R Shield

Men's Health

Male Vascular Sexual Support
Mega Lycopene Extract
PalmettoGuard® Saw Palmetto with
Beta-Sitosterol
PalmettoGuard® Saw Palmetto/Nettle Root
Formula with Beta-Sitosterol
Pomi-T®
Prelox® Enhanced Sex for Men
Super MiraForte with Standardized Lignans
Triple Strength ProstaPollen™
Ultra Prostate Formula

Minerals

Boron
Extend-Release Magnesium
Ionic Selenium
Iron Protein Plus
Magnesium (Citrate)
Magnesium Caps
Only Trace Minerals
Optimized Chromium with Crominex® 3+
Sea-Iodine™
Se-Methyl L-Selenocysteine
Vanadyl Sulfate
Zinc Caps

Miscellaneous

Potassium Iodide
Solarshield® Sunglasses

Mood & Stress Management

Advanced Cortisol Balance
Enhanced Stress Relief
5 HTP
L-Theanine
SAmE (S-Adenosyl-Methionine)

Multivitamins

Children's Formula Life Extension Mix™
Comprehensive Nutrient Packs ADVANCED
Life Extension Mix™ Capsules without Copper
Life Extension Mix™ Capsules
Life Extension Mix™ Powder without Copper
Life Extension Mix™ Powder
Life Extension Mix™ Tablets with Extra Niacin
Life Extension Mix™ Tablets without Copper
Life Extension Mix™ Tablets
Once-Daily Health Booster
One-Per-Day Tablets
Two-Per-Day Capsules
Two-Per-Day Tablets

Personal Care

Anti-Aging Rejuvenating Scalp Serum
Biosil
Dr. Proctor's Advanced Hair Formula
Dr. Proctor's Shampoo
European Leg Solution Featuring Certified
Diosmin 95
Hair, Skin & Nail Rejuvenation Formula
W/VERISOL®
Hair Suppress Formula
Life Extension Toothpaste
Venotone
Xyliwhite Mouthwash

Pet Care

Cat Mix
Dog Mix

Probiotics

Bifido GI Balance
FLORASSIST® Balance
FLORASSIST® GI with Phage Technology
FLORASSIST® Heart Health
FLORASSIST® Immune Health
FLORASSIST® Mood
FLORASSIST® Nasal
FLORASSIST® Oral Hygiene
FLORASSIST® Prebiotic
FLORASSIST® Throat Health
Jarro-Dophilus® for Women
Theralac® Probiotics
TruFlora® Probiotics

Skin Care

Adult Blemish Lotion
Advanced Peptide Anti-Oxidant Serum
Advanced Growth Factor Serum
Advanced Hyaluronic Acid Serum
Advanced Lightening Cream
Advanced Peptide Hand Therapy
Advanced Triple Peptide Serum
Advanced Under Eye Serum with Stem Cells
All-Purpose Soothing Relief Cream
Amber Self MicroDermAbrasion
Anti-Aging Face Oil
Anti-Aging Mask
Anti-Aging Rejuvenating Face Cream
Anti-Aging Rejuvenating Scalp Serum
Anti-Oxidant Serum with
Blueberry & Pomegranate Extracts
Anti-Oxidant Facial Mist Hydrator
Collagen Boosting Peptide Serum
Cucumber Hydra Peptide Eye Cream
DNA Support Cream
Environmental Support Serum
Essential Plant Lipids Serum
Eye Lift Cream
Face Rejuvenating Anti-Oxidant Cream
Hyaluronic Facial Moisturizer
Hyaluronic Oil-Free Facial Moisturizer
Hydrating Anti-Oxidant Facial Mist
Hydroderm
Lifting & Tightening Complex
Melatonin Advanced Peptide Cream
Melatonin Cream
Mild Facial Cleanser
Multi Stem Cell Skin Tightening Complex
Neck Rejuvenating Anti-Oxidant Cream
Rejuvenex® Body Lotion
Rejuvenex® Factor Firming Serum
Resveratrol Anti-Oxidant Serum
Shade Factor™
Shade Factor™ Sunscreen Lotion
Shade Factor™ Sunscreen Spray
Skin Care Collection Anti-Aging Serum
Skin Care Collection Body Lotion
Skin Care Collection Day Cream
Skin Care Collection Night Cream
Skin Firming Complex
Skin Lightening Serum
Skin Restoring Ceramides
Skin Stem Cell Serum
Skin Tone Equalizer
Stem Cell Cream with Alpine Rose
Tightening & Firming Neck Cream
Triple-Action Vitamin C Cream
Ultimate MicroDermabrasion
Ultra Eyelash Booster
Ultra Lip Plumper
Ultra Rejuvenex®
Ultra RejuveNight®
Ultra Wrinkle Relaxer
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Lip Rejuvenator
Vitamin C Serum
Vitamin D Lotion
Vitamin K Cream
Youth Serum

Sleep

Bioactive Milk Peptides
Enhanced Sleep with Melatonin
Enhanced Sleep without Melatonin
Fast-Acting Liquid Melatonin
Glycine
L-Tryptophan
Melatonin
Melatonin IR/XR
Optimized Tryptophan Plus
Quiet Sleep Melatonin

Sports Performance

Creatine Capsules
Plant Protein Complete & Amino Acid Complex
Tart Cherry with CherryPure®
Wellness Code™ Muscle Strength
and Restore Formula
Wellness Code™ Whey Protein Concentrate
(Chocolate and Vanilla Flavor)
Wellness Code™ Advanced Whey Protein
Isolate (Vanilla Flavor)
Wellness Code™ Whey Protein Isolate
(Chocolate and Vanilla Flavor)

Vitamins

Ascorbyl Palmitate
Benfotiamine with Thiamine
Beta-Carotene
BioActive Complete B-Complex
Biotin
Buffered Vitamin C Powder
Fast-C® with Dihydroquercetin
Gamma E Mixed Tocopherol Enhanced
with Sesame Lignans
Gamma E Mixed Tocopherol/Tocotrienols
High Potency Optimized Folate
Inositol Caps
Liquid Emulsified Vitamin D3
Liquid Vitamin D3
Low-Dose Vitamin K2
Methylcobalamin
MK-7
No Flush Niacin
Optimized Folate (L-Methylfolate)
Pantothenic Acid (Vitamin B-5)
Pyridoxal 5'-Phosphate Caps
Super Absorbable Tocotrienols
Super K with Advanced K2 Complex
Super Vitamin E
Vitamin B12
Vitamin B6
Vitamin C with Dihydroquercetin
Vitamin D3 with Sea-Iodine™
Vitamin D3
Vitamins D and K with Sea-Iodine™

Weight Management

7-Keto® DHEA Metabolite
Advanced Anti-Adipocyte Formula
Advanced Appetite Suppress
AMPK Metabolic Activator
CalReduce Selective Fat Binder
DHEA Complete
Garcinia HCA
HCAActive™ Garcinia Cambogia Extract
Integra-Lean®
Mediterranean Trim with Sinetrol™-XPur
Optimized Irvingia with Phase 3™ Calorie
Control Complex
Optimized Saffron with Satiereal®
Super CLA Blend with Sesame Lignans
Waist-Line Control™

Women's Health

Enhanced Sex for Women 50+
Breast Health Formula
Femmenessence MacaPause®
Estrogen for Women
Menopause 731™
Progesta-Care®
Super-Absorbable Soy Isoflavones
Ultra Soy Extract

		YOUR PRICE					
ITEM No.	PRODUCT	Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
A							
01524	ACETYL-L-CARNITINE • 500 mg, 100 veg. caps	34.00	25.50	22.50			
01974	ACETYL-L-CARNITINE ARGINATE • 90 veg. caps	38.00	28.50	26.00			
01628	ADRENAL ENERGY FORMULA • 60 veg. caps	24.00	18.00	16.50			
01630	ADRENAL ENERGY FORMULA • 120 veg. caps	46.00	34.50	31.50			
01807	ADVANCED APPETITE SUPPRESS • 60 veg. caps	38.00	28.50	25.50			
02012	ADVANCED CORTISOL BALANCE • 30 veg. caps	45.00	33.75	30.00			
01828	ADVANCED LIPID CONTROL • 60 veg. caps	30.00	22.50	20.25			
00681	AHCC® • 500 mg, 30 caps	61.98	46.49				
24404	AHCC® (KINOKO® PLATINUM) • 750 mg, 60 veg. caps	84.95	63.71				
29727	AHCC® (KINOKO® GOLD) • 500 mg, 60 veg. caps	74.95	52.47				
00457	ALPHA-LIPOIC ACID W/BIOTIN • 250 mg, 60 caps	37.00	27.75	24.00			
02207	AMPK METABOLIC ACTIVATOR • 30 veg. tabs	38.00	28.50	24.00			
01509	ANTI-ADIPOCYTE FORMULA W/MERATRIM® & INTEGRA LEAN® (Advanced) • 60 veg. caps	39.00	29.25	27.00			
02240	ANTI-ALCOHOL HEPATOPROTECTION COMPLEX • 60 veg. caps	22.00	16.50	15.00			
01625	APPLEWISE 600 mg, 30 veg. caps	21.00	15.75	14.25			
01039	ARGININE & ORNITHINE • 500/250, 100 caps	17.99	13.49				
00038	ARGININE/ORNITHINE POWDER • 150 grams	22.95	17.21	14.25			
01624	(L)-ARGININE CAPS • 700 mg, 200 veg. caps	26.50	19.88	17.44			
02004	ARTERIAL PROTECT • 30 veg. caps	44.00	33.00	29.00			
01617	ARTHRONAX® W/THEAFLAVINS & APRÈSFLEX® 120 veg. caps	44.00	33.00	30.00			
01618	ARTHRONAX® ADVANCED W/UC-II® & APRÈSFLEX® 60 caps	36.00	27.00	24.00			
02138	ARTHRONAX® ELITE • 30 veg. tablets	30.00	22.50	20.00			
01404	ARTHRO-IMMUNE JOINT SUPPORT • 60 veg. caps	32.00	24.00	21.00			
01533	ASCORBYL PALMITATE • 500 mg, 100 veg. caps	22.50	16.88	15.00			
00888	ASHWAGANDHA EXTRACT (Optimized) • 60 veg. caps	10.00	7.50	6.75			
01805	ASIAN ENERGY BOOST • 90 veg. caps	24.00	18.00	16.50			
01066	ASPIRIN • 81 mg, 300 enteric coated tablets	6.00	4.50	4.00			
01923	ASTAXANTHIN WITH PHOSPHOLIPIDS • 4 mg, 30 softgels	16.00	12.00	10.50			
B							
01945	B-COMPLEX (Bio-Active Complete) • 60 veg. caps	12.00	9.00	8.00			
00920	BENFOTIAMINE W/ THIAMINE • 100 mg, 120 veg. caps	19.95	14.96	13.95			
00925	BENFOTIAMINE (Mega) • 250 mg, 120 veg. caps	30.00	22.50	20.25			
01206	BERRY COMPLETE • 30 veg. caps	21.00	15.75	14.00			
01496	BERRY COMPLETE (Enhanced) • 60 veg. caps	29.00	21.75	19.50			
00664	BETA-CAROTENE • 25,000 IU, 100 softgels	11.75	8.81				
01622	BIFIDO GI BALANCE • 60 veg. caps	20.00	15.00	13.50			
01873	BILBERRY EXTRACT • 100 mg, 90 veg. caps	36.00	27.00	24.00			
01512	BIOACTIVE MILK PEPTIDES • 30 caps	18.00	13.50	12.00			
*01006	BIOSIL™ • 5 mg, 30 veg. caps	19.99	15.99				
*01007	BIOSIL™ • 1 fl oz	31.99	25.59				
00102	BIOTIN • 600 mcg, 100 caps	7.50	5.63	4.88			
SUBTOTAL OF COLUMN 1							

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
01709	BLACK CUMIN SEED OIL • 60 softgels	16.00	12.00	10.50			
01710	BLACK CUMIN SEED OIL W/BIO-CURCUMIN® • 60 softgels	32.00	24.00	22.50			
01008	BLAST™ • 600 grams of powder	26.97	20.23				
70000	BLOOD PRESSURE MONITOR (ACCUFIT™) • med/lg cuff	79.99	49.99				
70004	BLOOD PRESSURE MONITOR • Digital wrist cuff	69.95	52.46				
02024	BLOOD PRESSURE (Triple Action AM/PM) • 60 veg. tabs	44.00	33.00	28.00			
01214	BLUEBERRY EXTRACT • 60 veg. caps	22.50	16.88	15.00			
01438	BLUEBERRY EXTRACT W/ POMEGRANATE • 60 veg. caps	30.00	22.50	20.25			
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) • 300 caps	56.00	42.00	37.50			
01726	BONE RESTORE • 120 caps	22.00	16.50	14.25			
02123	BONE RESTORE • Chocolate, Sugar-Free • 60 chewable tabs	22.00	16.50	14.25			
01727	BONE RESTORE W/VITAMIN K2 • 120 caps	24.00	18.00	16.50			
01725	BONE STRENGTH FORMULA W/KOACT® • 120 caps	45.00	33.75	30.00			
00313	BONE-UP® • 240 caps	28.95	21.71	20.41			
01661	BORON • 3 mg, 100 veg. caps	5.95	4.46	3.94			
00202	BOSWELLA • 100 caps	38.00	28.50	22.50			
00984	BP MANAGEMENT (Optimal) • 60 tablets	44.00	33.00	30.00			
01802	BRAIN SHIELD® GASTRODIN • 300 mg, 60 veg. caps	33.00	24.75	22.50			
01253	BRANCHED CHAIN AMINO ACIDS • 90 caps	19.50	14.63	12.75			
01942	BREAST HEALTH FORMULA • 60 caps	34.00	25.50	22.50			
00893	BRITE EYES III • 2 vials, 5 ml each	34.00	25.50	24.00			
01203	BROMELAIN (Specially-coated) 500 mg, 60 enteric coated tablets	21.00	15.75	14.25			
C							
01963	CALCIUM CITRATE W/VITAMIN D • 200 veg. caps	18.00	13.50	12.50			
01651	CALCIUM D-GLUCARATE • 200 mg, 60 veg. caps	18.00	13.50	11.25			
01823	CALREDUCE SELECTIVE FAT BINDER 120 mint chewable tablets	45.00	33.75	28.50			
01700	CARDIO PEAK™ W/STANDARDIZED HAWTHORN & ARJUNA 120 veg. caps	36.00	27.00	24.00			
02018	CARNITINE (Optimized) • 60 veg. caps	30.00	22.50	20.00			
01532	L-CARNITINE • 500 mg, 30 veg. caps	15.00	11.25	9.90			
01829	CARNOSINE • 500 mg, 60 veg. caps	36.00	27.00	24.00			
02020	CARNOSINE (Super) • 500 mg, 60 veg. caps	40.00	30.00	27.00			
01932	CAT MIX • 100 grams powder	14.00	10.50	8.25			
02199	CHILDREN'S FORMULA LIFE EXTENSION MIX™ 120 chewable tablets	25.00	18.75	17.00			
00550	CHLORELLA • 500 mg, 200 tablets	23.98	17.99				
01571	CHLOROPHYLLIN • 100 mg, 100 veg. caps	24.00	18.00	15.00			
01359	*CHO-LESS™ • 90 capsules	37.50	37.50				
01910	CHOL-SUPPORT™ • 60 liquid veg. caps	48.00	36.00	32.00			
01504	CHROMIUM W/CROMINEX® 3+ (Optimized) 500 mcg, 60 veg. caps	9.00	6.75	6.00			
01503	CINSULIN® W/INSEAZ® AND CROMINEX® 3+ • 90 veg. caps	38.00	28.50	25.50			
01906	CISTANCHE (Standardized) • 30 veg. caps	20.00	15.00	12.00			
00818	CLA BLEND W/SESAME LIGNANS (Super) • 120 softgels	36.00	27.00	24.75	19.75		
01896	COGNITEX® W/BRAIN SHIELD® • 90 softgels	60.00	45.00	39.00	36.00		
SUBTOTAL OF COLUMN 2							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
01897	COGNITEX® W/PREGNENOLONE & BRAIN SHIELD® 90 softgels	62.00	46.50	39.75	37.50		
01421	COGNITEX® BASICS • 60 softgels	38.00	28.50	26.25	24.00		
01659	COGNIZIN® CDP-CHOLINE CAPS • 250 mg, 60 veg. caps	36.00	27.00	25.50			
02202	COMFORTMAX™ • 30 day supply	44.00	33.00	29.00			
01945	COMPLETE B-COMPLEX (BioActive) • 60 veg. caps	12.00	9.00	8.00			
02298	COMPREHENSIVE NUTRIENT PACKS ADVANCED • 30 packs	90.00	67.50	61.50			
01949	COQ10 W/d-LIMONENE (Super-Absorbable) • 50 mg, 60 softgels	25.00	18.75	16.50	15.00		
01951	COQ10 W/d-LIMONENE (Super-Absorbable) 100 mg, 60 softgels	30.00	22.50	20.00			
01929	COQ10 (Super Ubiquinol) • 100 mg, 60 softgels	56.00	42.00	36.00	33.00		
01733	COQ10 W/PQQ (Super Ubiquinol) • 100 mg, 30 softgels	50.00	37.50	30.00	27.00		
01437	COQ10 W/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 100 mg, 30 softgels	33.00	24.75	22.00			
01426	COQ10 W/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 100 mg, 60 softgels	62.00	46.50	39.00	36.00		
01425	COQ10 W/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 50 mg, 100 softgels	58.00	43.50	34.50	31.50		
01427	COQ10 W/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 50 mg, 30 softgels	20.00	15.00	12.00			
01431	COQ10 W/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 200 mg, 30 softgels	62.00	46.50	39.00	36.00		
00862	CRAN-MAX® • 500 mg, 60 veg. caps	17.50	13.13	11.25			
01424	CRAN-MAX® WITH ELLIROSE™ (Optimized) • 60 veg. caps	18.00	13.50	12.00			
01529	CREATINE CAPSULES • 120 veg. caps	10.95	8.21	6.94			
00467	CURCUMIN® (Super Bio) • 400 mg, 30 veg. caps	20.00	15.00	14.00			
00407	CURCUMIN® (Super Bio) • 400 mg, 60 veg. caps	38.00	28.50	26.25			
01924	CURCUMIN® W/GINGER & TURMERONES (Advanced Bio) 30 softgels	30.00	22.50	20.25			
01804	CYTOKINE SUPPRESS™ W/EGCG • 30 veg. caps	30.00	22.50	20.25			
COSMESIS							
80105	ADULT BLEMISH LOTION • 1 fl. oz	74.50	55.88	49.17			
80157	ADVANCED PEPTIDE ANTI-OXIDANT SERUM • 1 fl. oz	53.00	39.75	34.50			
80165	ADVANCED GROWTH FACTOR SERUM • 1 fl. oz	65.00	48.75	42.75			
80170	ADVANCED HYALURONIC ACID SERUM • 1 fl. oz	45.00	33.75	29.25			
80154	ADVANCED LIGHTENING CREAM • 1 oz	65.00	48.75	42.75			
80155	ADVANCED PEPTIDE HAND THERAPY • 4 oz	46.00	34.50	29.25			
80152	ADVANCED TRIPLE PEPTIDE SERUM • 1 fl. oz	65.00	48.75	42.75			
80140	ADVANCED UNDER EYE SERUM W/STEM CELLS • .33 fl. oz	49.00	36.75	31.50			
80139	AMBER SELF MICRODERMABRASION • 2 oz	49.00	36.75	31.50			
80158	ANTI-AGING FACE OIL • 1 fl. oz	59.00	44.25	39.00			
80118	ANTI-AGING MASK • 2 oz	72.00	54.00	47.52			
80151	ANTI-AGING REJUVENATING FACE CREAM • 2 oz	65.00	48.75	42.75			
80153	ANTI-AGING REJUVENATING SCALP SERUM • 2 fl. oz	46.00	34.50	29.25			
80134	ANTI-OXIDANT SERUM W/BLEBERRY & POMEGRANATE EXTRACTS • 1 fl. oz	33.00	24.75	23.51			
80133	ANTI-OXIDANT FACIAL MIST HYDRATOR • 2 fl. oz	32.00	24.00	22.80			
80156	COLLAGEN BOOSTING PEPTIDE SERUM • 1 fl. oz	59.00	44.25	39.00			
80169	CUCUMBER HYDRA PEPTIDE EYE CREAM • .5 oz	38.00	28.50	26.00			
SUBTOTAL OF COLUMN 3							

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
80141	DNA SUPPORT CREAM • 1 oz	49.00	36.75	31.50			
80167	ENVIRONMENTAL SUPPORT SERUM • 1 fl. oz	59.00	44.25	39.00			
80108	ESSENTIAL PLANT LIPIDS SERUM • 1 fl. oz	74.95	56.21	49.46			
80163	EYE LIFT CREAM • 0.5 fl. oz	59.00	44.25	39.00			
80123	FACE REJUVENATING ANTI-OXIDANT CREAM • 2 oz	69.50	52.13	45.87			
80137	ALL-PURPOSE SOOTHING RELIEF • 1 oz	53.00	39.75	34.07			
80109	HYALURONIC FACIAL MOISTURIZER • 1 oz	58.00	43.50	38.28			
80110	HYALURONIC OIL-FREE FACIAL MOISTURIZER • 1 oz	58.00	43.50	38.28			
80138	HYDRATING ANTI-OXIDANT FACE MIST • 4 fl. oz	39.95	29.96	28.50			
80103	LIFTING & TIGHTENING COMPLEX • 1 oz	74.50	55.88	49.17			
80168	MELATONIN ADVANCED PEPTIDE CREAM • 1 oz	38.00	28.50	26.00			
80114	MILD FACIAL CLEANSER • 8 fl. oz	59.00	44.25	38.94			
80159	MULTI STEM CELL SKIN TIGHTENING COMPLEX • 1 fl. oz	59.00	44.25	39.00			
80122	NECK REJUVENATING ANTI-OXIDANT CREAM • 2 oz	64.00	48.00	42.24			
80150	RENEWING EYE CREAM • 1/2 oz	65.00	48.75	42.75			
80142	RESVERATROL ANTI-OXIDANT SERUM • 1 fl. oz	46.00	34.50	29.25			
80166	SKIN FIRMING COMPLEX • 1 fl. oz (2 units \$34.50)	53.00	39.75				
80112	SKIN LIGHTENING SERUM • 1/2 fl. oz	85.00	63.75	56.10			
80130	SKIN STEM CELL SERUM • 1 fl. oz	74.00	55.50	51.75			
80164	SKIN TONE EQUALIZER • 0.4 fl oz	59.00	44.25	39.00			
80143	STEM CELL CREAM W/ALPINE ROSE • 1 oz	66.00	49.50	43.50			
80148	TIGHTENING & FIRMING NECK CREAM • 2 oz	39.00	29.25	26.25			
80161	TRIPLE ACTION VITAMIN C CREAM • 1 oz jar	59.00	44.25	39.00			
80162	ULTIMATE MICRODERMABRASION • 8 fl. oz	39.00	29.25	26.25			
80160	ULTRA EYELASH BOOSTER • 0.25 oz (2 units each \$39)	59.00	44.25				
80116	ULTRA LIP PLUMPER • 1/3 oz	64.00	48.00	42.24			
80101	ULTRA WRINKLE RELAXER • 1 fl. oz	89.95	67.46	59.82			
80113	UNDER EYE REFINING SERUM • 1/2 fl. oz	74.50	55.88	49.17			
80104	UNDER EYE RESCUE CREAM • 1/2 oz	74.50	55.88	49.17			
80171	VITAMIN C LIP REJUVENATOR • 0.5 fl. oz	24.00	18.00	15.60			
80129	VITAMIN C SERUM • 1 fl. oz	85.00	63.75	56.10			
80136	VITAMIN D LOTION • 4 oz	36.00	27.00	25.25			
80102	VITAMIN K CREAM • 1 oz	79.50	59.63	52.47			
80149	YOUTH SERUM • 1 fl. oz	65.00	48.75	42.75			
D							
00658	7-KETO® DHEA METABOLITE • 25 mg, 100 caps	28.00	21.00	18.00			
01479	7-KETO® DHEA METABOLITE • 100 mg, 60 veg. caps	40.00	30.00	27.00			
01640	DHA (Vegetarian) • 30 veg. softgels	20.00	15.00	13.50			
00607	DHEA • 25 mg, 100 tablets (Dissolve in mouth)	14.00	10.50	8.81			
00335	DHEA • 25 mg, 100 caps	16.00	12.00	11.00			
00454	DHEA • 15 mg, 100 caps	14.00	10.50	9.00			
00882	DHEA • 50 mg, 60 caps	19.00	14.25	12.75			
01689	DHEA • 100 mg, 60 veg. caps	24.00	18.00	16.50			
01478	DHEA COMPLETE • 60 veg. caps	48.00	36.00	32.40			
30747	DIGEST RC® • 30 caps	19.95	14.96				
SUBTOTAL OF COLUMN 4							

NOVEMBER 2018

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
02021	DIGESTIVE ENZYMES (Enhanced Super) • 60 veg. caps	22.00	16.50	15.00			
02022	DIGESTIVE ENZYMES W/PROBIOTICS (Enhanced Super)•60 veg. caps	28.00	21.00	18.00			
01671	D, L-PHENYLALANINE • 500 mg, 100 veg. caps	18.75	14.06	12.00			
01540	DMAE BITARTRATE • 150 mg, 200 veg. caps	18.00	13.50	11.25			
02270	DNA PROTECTION FORMULA • 30 veg. caps	20.00	15.00	13.50			
01931	DOG MIX • 100 grams powder	18.00	13.50	11.25			
02006	DOPA-MIND™ • 60 veg. tabs	44.00	33.00	28.00			
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA • 2 oz	39.95	29.96	24.00			
00320	DR. PROCTOR'S HAIR SHAMPOO • 8 oz	24.95	18.71	16.50			
E							
01997	ENDOTHELIAL DEFENSE™ W/POMEGRANATE COMPLETE AND CORDIART™ • 60 softgels	68.00	51.00	46.50			
00997	ENDOTHELIAL DEFENSE™ W/GLISODIN® • 60 veg. caps	54.00	40.50	36.00			
02200	EPA/DHA (Clearly) • 120 softgels	30.00	22.50	20.00			
01937	EPA/DHA (Mega) • 120 softgels	20.00	15.00	13.50			
02033	ESOPHACOO™ • 60 chewable tablets	12.00	9.00	8.00			
01737	ESOPHAGEAL GUARDIAN (Berry flavor) • 60 chewable tablets	36.00	27.00	24.00			
01894	ESTROGEN FOR WOMEN • 30 veg. tabs	30.00	22.50	20.00			
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 600 mg, 30 veg. tabs	20.00	15.00	13.50			
01706	EXTRAORDINARY ENZYMES • 60 caps	26.00	19.50	18.00			
02008	(CALIFORNIA ESTATE) EXTRA VIRGIN OLIVE OIL •500 ml (16.9 fl. oz)	33.00	24.75	22.50			
01514	EYE PRESSURE SUPPORT W/MIRTOGENOL® • 30 veg. caps	38.00	28.50	25.50			
F							
00965	FAST-ACTING JOINT FORMULA • 30 caps	39.00	29.25	27.00			
01717	FAST-C® W/DIHYDROQUERCETIN • 120 veg. tabs	26.00	19.50	18.00			
01064	FEMMENESSENCE MACAPAUSE® • 120 veg. caps	34.99	26.24				
02125	FLORASSIST® GI W/PHASE TECHNOLOGY •30 liquid veg. caps	33.00	24.75	22.50			
01821	FLORASSIST® HEART HEALTH • 60 veg. caps	32.00	24.00	21.00			
02124	FLORASSIST® IMMUNE HEALTH • 30 veg. caps	26.00	19.50	18.00			
02120	FLORASSIST® ORAL HYGIENE • 30 lozenges	20.00	15.00	13.00			
01825	FLORASSIST® BALANCE • 30 liquid veg. caps	32.00	24.00	21.00			
02000	FLORASSIST® MOOD • 60 caps	33.00	24.75	22.50			
02208	FLORASSIST® NASAL • 30 veg. caps	36.00	27.00	24.00			
02203	FLORASSIST® PREBIOTIC • Strawberry flavor, 60 chewable tabs	20.00	15.00	13.00			
01920	FLORASSIST® THROAT HEALTH • 30 lozenges	20.00	15.00	13.50			
02212	FOCUS TEA™ • Spearmint flavor, 14 stick packs	20.00	15.00	13.50			
01913	FOLATE HIGH POTENCY (Optimized) • 5,000 mcg, 30 veg. tablets	18.00	13.50	12.00			
01939	FOLATE (Optimized) • 1,000 mcg, 100 veg. tablets	15.00	11.25	10.00			
01842	FOLATE + VITAMIN B12 (BioActive) • 90 veg. caps	12.00	9.00	8.00			
01544	FORSKOLIN • 10 mg, 60 veg. caps	16.00	12.00	10.50			
01513	FUCOIDAN W/MARITECH® 926 (Optimized) • 60 veg. caps	36.00	27.00	24.75			
G							
02070	GAMMA E MIXED TOCOPHEROL/TOCOTRIENOLS • 60 softgels	40.00	30.00	27.00			
02075	GAMMA E MIXED TOCOPHEROL W/ENHANCED SESAME LIGNANS • 60 softgels	32.00	24.00	21.75			
01394	GARLIC (Optimized) • 200 veg. caps	24.95	18.71	15.75			
02100	GASTRO-EASE™ • 60 veg. caps	44.00	33.00	30.00			
SUBTOTAL OF COLUMN 5							

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
02119	GEROPROTECT® AGELESS CELL™ • 30 softgels	40.00	30.00	27.00			
02133	GEROPROTECT® LONGEVITY A.I.™ • 30 softgels	56.00	42.00	38.00			
01122	GINGER FORCE® • 60 liquid caps	34.95	26.21				
01658	GINKGO BILOBA CERTIFIED EXTRACT™ 120 mg, 365 veg. caps	50.00	37.50	33.00			
02218	GLA WITH SESAME LIGNANS (Mega) • 30 softgels	22.00	16.50	15.00			
00345	(L-) GLUTAMINE CAPSULES • 500 mg, 100 veg. caps	14.95	11.21	10.13			
00141	(L-) GLUTAMINE POWDER • 100 grams	22.00	16.50	15.00			
00522	GLUCOSAMINE/CHONDROITIN CAPSULES • 100 caps	38.00	28.50	24.00			
01541	GLUTATHIONE, CYSTEINE & C • 100 veg. caps	22.00	16.50	15.00			
02122	GLYCEMIC GUARD™ • 30 veg. caps	42.00	31.50	28.00			
01669	GLYCINE • 1,000 mg, 100 veg. caps	12.00	9.00	8.10			
02211	GRAPE SEED EXTRACT 100 mg, 60 veg. caps	35.00	26.25	23.00			
01620	GREEN COFFEE EXTRACT COFFEEGENIC® 400 mg, 90 veg. caps	32.00	24.00	21.00			
00953	GREEN TEA EXTRACT (Mega)•lightly caffeinated,100 veg. caps	30.00	22.50	18.00			
00954	GREEN TEA EXTRACT (Mega)•decaffeinated, 100 veg. caps	30.00	22.50	18.00			
H							
01074	5 HTP • 100 mg, 60 caps	27.95	20.96				
02222	HAIR, SKIN & NAILS REJUVENATION FORM W/VERISOL® 120 tabs	32.00	24.00	22.00			
01738	HCA (Garcinia) • 90 veg. caps	17.00	12.75	11.25			
29754	HCACTIVE™ GARCINIA CAMBOGIA EXTRACT • 90 caps	30.00	22.50				
01393	HEPATOPRO • 900 mg, 60 softgels	50.00	37.50	34.50			
02121	HOMOCYSTEINE RESIST • 60 veg. caps	26.00	19.50	17.50			
01527	HUPERZINE A • 200 mcg, 60 veg. caps	40.00	30.00	27.00			
00661	HYDRODERM® • 1 oz	79.95	59.96	49.00			
I							
01704	IMMUNE MODULATOR W/TINOFEND® • 60 veg. caps	17.00	12.75	11.25			
00955	IMMUNE PROTECT W/PARACTIN® • 30 veg. caps	29.50	22.13	19.91			
02005	IMMUNE SENESCENCE PROTECTION FORMULA™ • 60 veg. tabs	40.00	30.00	27.00			
01674	INOSITOL CAPSULES • 1,000 mg, 360 veg. caps	62.00	46.50	43.50			
01292	INTEGRA-LEAN® AFRICAN MANGO IRVINGIA 150 mg, 60 veg. caps	28.00	21.00	18.00			
30731	IONIC SELENIUM • 300 mg, 2 fl. oz	13.69	10.27				
01677	IRON PROTEIN PLUS • 300 mg, 100 caps	28.00	21.00	19.50			
01492	IRVINGIA W/PHASE 3™ CALORIE CONTROL COMPLEX (Optimized African Mango) • 120 veg. caps	56.00	42.00	36.00			
J, K, L							
52142	JARRO-DOPHILUS® PROBIOTIC FOR WOMEN 30 enteric-coated veg. caps	27.95	20.96				
00056	JARRO-DOPHILUS EPS® • 60 veg. caps	23.95	17.96				
02034	K W/ADVANCED K2 COMPLEX (Super) • 90 softgels	30.00	22.50	20.25			
01600	KRILL HEALTHY JOINT FORMULA • 30 softgels	32.00	24.00	21.75			
01050	KRILL OIL (Jarrow)• 60 softgels	33.95	25.46				
00316	KYOLIC® GARLIC FORMULA 102 • 200 veg. caps	28.55	21.41				
00789	KYOLIC® RESERVE • 600 mg, 120 caps	30.15	22.61				
01681	LACTOFERRIN • 60 caps	44.00	33.00	30.00			
SUBTOTAL OF COLUMN 6							

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
00020	LECITHIN • 16 oz granules	18.00	13.50	12.00			
02255	LIFE EXTENSION MIX™ • 240 tablets	74.00	55.50	48.00	42.00		
02257	LIFE EXTENSION MIX™ W/EXTRA NIACIN • 240 tablets	74.00	55.50	48.00	42.00		
02254	LIFE EXTENSION MIX™ • 360 caps	78.00	58.50	50.00	44.00		
02256	LIFE EXTENSION MIX™ POWDER • 12.70 oz	72.00	54.00	46.00	40.00		
02265	LIFE EXTENSION MIX™ • 240 tablets W/O copper	74.00	55.50	48.00	42.00		
02264	LIFE EXTENSION MIX™ • 360 caps W/O copper	78.00	58.50	50.00	44.00		
01608	LIVER EFFICIENCY FORMULA • 30 veg. caps	18.00	13.50	12.00			
01639	5-LOX INHIBITOR W/APRÈSFLEX® • 100 mg, 60 veg. caps	22.00	16.50	15.00			
01678	L-LYSINE • 620 mg, 100 veg. caps	9.00	6.75	6.00			
00455	LYCOPENE (Mega) • 15 mg, 90 softgels	35.00	26.25	22.50			
M							
01992	MACUGUARD® OCULAR SUPPORT W/SAFFRON • 60 softgels	25.00	18.75	17.50			
01993	MACUGUARD® OCULAR SUPPORT W/SAFFRON & ASTAXANTHIN • 60 softgels	44.00	33.00	30.00			
01459	MAGNESIUM CAPS • 500 mg, 100 veg. caps	12.00	9.00	7.50			
01682	MAGNESIUM (CITRATE) • 160 mg, 100 veg. caps	13.00	9.75	8.50			
02107	(EXTEND-RELEASE) MAGNESIUM • 60 veg. caps	13.00	9.75	8.75			
02209	MALE VASCULAR SEXUAL SUPPORT • 30 veg. caps	24.00	18.00	16.00			
01908	MEDITERRANEAN TRIM WITH SINETROL™-XPUR 60 veg. caps	18.00	13.50	12.00			
02109	MEDITERRANEAN WHOLE FOOD BLEND • 90 veg. caps	44.00	33.00	30.00			
01668	MELATONIN • 300 mcg, 100 veg. caps	7.00	5.25	4.50			
01083	MELATONIN • 500 mcg, 200 veg. caps	18.00	13.50	12.00			
00329	MELATONIN • 1 mg, 60 caps	5.00	3.75	3.47			
00330	MELATONIN • 3 mg, 60 veg. caps	8.00	6.00	5.16			
00331	MELATONIN • 10 mg, 60 veg. caps	28.00	21.00	18.00			
00332	MELATONIN • 3 mg, 60 veg. lozenges	8.00	6.00	5.16			
02234	MELATONIN (Fast-Acting Liquid) • 2 fl. oz (Citrus-Vanilla)	12.00	9.00	8.25			
02201	MELATONIN IR/XR • 60 caps	12.00	9.00	7.50			
01787	MELATONIN TIMED RELEASE • 300 mcg, 100 veg. tabs	12.00	9.00	8.25			
01788	MELATONIN TIMED RELEASE • 750 mcg, 60 veg. tablets	8.00	6.00	5.25			
01786	MELATONIN TIMED RELEASE • 3 mg, 60 veg. tabs	12.00	9.00	8.25			
02101	MEMORY PROTECT • 36 day supply	24.00	18.00	16.00			
02204	MENOPAUSE 731™ • 30 tablets	36.00	27.00	24.00			
01536	METHYLCOBALAMIN • 1 mg, 60 veg. lozenges (vanilla)	9.95	7.46	6.00			
01537	METHYLCOBALAMIN • 5 mg, 60 veg. lozenges (vanilla)	32.00	24.00	18.75	17.25		
00709	MIGRA-EEZE™ (Butterbur) • 60 softgels	33.00	24.75	22.00			
01522	MILK THISTLE (European) • 60 veg. caps	34.00	25.50	22.50			
01922	MILK THISTLE (European) • 60 softgels	28.00	21.00	18.75			
01925	MILK THISTLE (European) • 120 softgels	44.00	33.00	30.00			
01940	MIRAFORTE W/STANDARDIZED LIGNANS (Super) • 120 veg caps	62.00	46.50	42.00			
01869	MITOCHONDRIAL BASICS W/PQQ • 30 caps	40.00	30.00	27.00			
01868	MITOCHONDRIAL ENERGY OPTIMIZER W/PQQ • 120 caps	68.00	51.00	45.00			
00065	MK-7 • 90 mcg, 60 softgels	28.00	21.00	18.75			
00451	MSM (Methylsulfonylmethane) • 1,000 mg, 100 caps	14.00	10.50	8.96			
02221	MUSCLE STRENGTH & RESTORE FORMULA • 94.2 grams powder	36.00	27.00	24.00			
SUBTOTAL OF COLUMN 7							

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE				QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each			
N								
01534	N-ACETYL-L-CYSTEINE • 600 mg, 60 veg. caps	14.00	10.50	9.25				
01904	NAD+ CELL REGENERATOR™ • 100 mg, 30 veg. caps	24.00	call for	pricing				
02144	NAD+ CELL REGENERATOR™ NICOTINAMIDE RIBOSIDE 250 mg, 30 veg. caps	48.00	call for	pricing				
02148	NAD+ CELL REGENERATOR™ W/RESVERATROL (Optimized) 30 veg. caps	54.00	call for	pricing				
01603	NEURO-MAG® MAGNESIUM L-THREONATE • 90 veg. caps	40.00	30.00	27.00				
02032	NEURO-MAG® MAGNESIUM L-THREONATE 93.35 grams • Tropical Punch Flavor	38.00	28.50	26.00				
01990	NITROVASC W/CORDIART™ • 30 veg. caps	18.00	13.50	12.00				
01903	NK CELL ACTIVATOR™ • 30 veg. tablets	45.00	33.75	31.50				
00373	NO FLUSH NIACIN • 800 mg, 100 caps	19.00	14.25	12.75				
02231	NT2 COLLAGEN™ • 40 mg, 60 small caps	34.00	25.50	22.00				
O								
01824	OLIVE LEAF VASCULAR SUPPORT W/CELERY SEED EXTRACT (Advanced) • 60 veg. caps	36.00	27.00	24.00				
01988	OMEGA-3 PLUS EPA/DHA W/SESAME LIGNANS, OLIVE EXTRACT, KRILL & ASTAXANTHIN (Super)• 120 softgels	45.00	33.75	31.50	24.75			
01983	OMEGA-3 EPA/DHA W/SESAME LIGNANS & OLIVE EXTRACT (Super) • 60 softgels	18.00	13.50	12.00	9.38			
01982	OMEGA-3 EPA/DHA W/SESAME LIGNANS & OLIVE EXTRACT (Super) • 120 softgels	32.00	24.00	21.00	17.05			
01984	OMEGA-3 EPA/DHA W/SESAME LIGNANS & OLIVE EXTRACT (Super) • 120 enteric coated softgels	34.00	25.50	23.25	18.00			
01985	OMEGA-3 EPA/DHA W/SESAME LIGNANS & OLIVE EXTRACT (Super) • 60 enteric coated softgels	20.00	15.00	13.50	10.50			
01986	OMEGA-3 EPA/DHA W/SESAME LIGNANS & OLIVE EXTRACT (Super) • 240 small softgels	32.00	24.00	21.00	17.25			
02092	ONCE-DAILY HEALTH BOOSTER • 30 softgels	30.00	22.50	20.00				
02091	ONCE-DAILY HEALTH BOOSTER • 60 softgels	54.00	40.50	38.00				
02213	ONE-PER-DAY • 60 tablets	23.00	17.25	16.00				
01328	ONLY TRACE MINERALS • 90 veg. caps	15.00	11.25	9.38				
P								
01789	PALMETTOGUARD® SAW PALMETTO W/BETA-SITOSTEROL 30 softgels	15.00	11.25	10.50	9.00			
01790	PALMETTOGUARD® SAW PALMETTO/ NETTLE ROOT W/BETA-SITOSTEROL • 60 softgels	28.00	21.00	19.50	18.00			
*00342	PECTA SOL-C® MODIFIED CITRUS PECTIN • 454 grams powder	113.95	96.86					
*01080	PECTA SOL-C® MODIFIED CITRUS PECTIN • 270 veg. caps	82.95	70.51					
01811	PEONY IMMUNE • 60 veg. caps	36.00	27.00	24.00				
*00673	PGX® PLUS MULBERRY (WellBetX®) • 180 veg. caps	34.95	26.21					
01953	POMEGRANATE COMPLETE • 30 softgels	24.00	18.00	15.75				
00956	POMEGRANATE FRUIT EXTRACT • 30 veg. caps	19.50	14.63	13.16				
-01837	POMI-T® • 60 veg. caps	38.00	28.50	26.00				
00577	POTASSIUM IODIDE • 130 mg, 14 tabs	6.95	5.21	3.94				
01500	PQQ CAPS • 10 mg, 30 veg. caps	18.00	13.50	11.00	10.00			
01647	PQQ CAPS • 20 mg, 30 veg. caps	32.00	24.00	18.00	17.00			
00302	PREGNENOLONE • 50 mg, 100 caps	26.00	19.50	16.50				
00700	PREGNENOLONE • 100 mg, 100 caps	30.00	22.50	20.25				
*01373	PRELOX® ENHANCED SEX FOR MEN • 60 tablets	52.00	39.00	36.00				
SUBTOTAL OF COLUMN 8								

NOVEMBER 2018

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
00525	PROBOOST™ THYMIC PROTEIN A • 30 packets	66.60	49.95				
01441	PROGESTA-CARE® • 4 oz cream	36.39	27.29	25.72			
02029	PROSTATE FORMULA (Ultra) • 60 softgels	38.00	28.50	26.25	24.00		
01909	PROSTAPOLLEN™ (Triple strength) • 30 softgels	28.00	21.00	18.75			
02261	PROTEIN CONCENTRATE (Whey) Chocolate • 640 gram	30.00	22.50	19.95			
02260	PROTEIN CONCENTRATE (Whey) Vanilla • 500 grams	30.00	22.50	19.95			
02246	PROTEIN ISOLATE (Advanced Whey) Vanilla • 454 grams	30.00	22.50	19.50			
02243	PROTEIN ISOLATE (Whey) Chocolate • 437 grams	30.00	22.50	19.50			
02242	PROTEIN ISOLATE (Whey) Vanilla • 403 grams	30.00	22.50	19.50			
02127	PROTEIN (PLANT) COMPLETE & AMINO ACID COMPLEX 15.87 oz	34.00	25.50	23.00			
01812	PROVINAL® PURIFIED OMEGA-7 • 30 softgels	27.00	20.25	18.00			
01676	PS CAPS (Phosphatidylserine) • 100 mg, 100 veg. caps	54.00	40.50	36.00			
01209	PUMPKIN SEED EXTRACT (Water-soluble) • 60 veg. caps	20.00	15.00	13.50			
01637	PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT 100 mg, 60 veg. caps	64.00	48.00	45.00			
01217	PYRIDOXAL 5'-PHOSPHATE • 100 mg, 60 veg. caps	22.00	16.50	14.85			
Q, R							
01309	QUERCETIN (Optimized) • 250 mg, 60 veg. caps	22.00	16.50	15.00			
02169	RAINFOREST BLEND GROUND COFFEE • 12 oz. bag	13.00	9.75				
02173	RAINFOREST BLEND GROUND COFFEE Natural Mocha • 12 oz. bag	15.00	11.25				
02172	RAINFOREST BLEND GROUND COFFEE Natural Vanilla • 12 oz. bag	15.00	11.25				
02171	RAINFOREST BLEND WHOLE BEAN COFFEE 12 oz. bag	13.00	9.75				
02170	RAINFOREST BLEND DECAF GROUND COFFEE 12 oz. bag	14.00	10.50				
01030	RED YEAST RICE (Bluebonnet) • 600 mg, 60 veg. caps	18.08	13.56				
00605	REGIMINT • 60 enteric-coated caps	19.95	14.96	14.00			
01708	REISHI EXTRACT MUSHROOM COMPLEX • 60 veg. caps	30.00	22.50	20.25			
01448	REJUVENEX® BODY LOTION • 6 fl. oz	24.00	18.00	14.85	12.75		
01621	REJUVENEX® FACTOR FIRMING SERUM • 1.7 oz	65.00	48.75	37.50			
01220	REJUVENEX® (Ultra) • 2 oz	52.00	39.00	33.00	29.25		
00676	REJUVENIGHT® (Ultra) • 2 oz	39.95	29.96	27.00			
02210	RESVERATROL • 100 mg, 60 veg. caps	32.00	24.00	21.00			
02230	RESVERATROL (Optimized) • 60 veg. caps	45.00	33.75	30.00			
00889	RHODIOLA EXTRACT • 250 mg, 60 veg. caps	14.00	10.50	9.00			
01900	RIBOGEN™ FRENCH OAK WOOD EXTRACT 200 mg, 30 veg. caps	36.00	27.00	24.75			
00972	(D) RIBOSE POWDER • 150 grams	27.50	20.63	18.56			
01473	(D) RIBOSE TABLETS • 100 veg. tabs	32.00	24.00	21.00			
01208	R-LIPOIC ACID (Super) • 240 mg, 60 veg. caps	49.00	36.75	33.75			
00070	RNA CAPSULES • 500 mg, 100 caps	17.95	13.46	12.12			
S							
01432	SAFFRON W/SATIEREAL® (Optimized) • 60 veg. caps	36.00	27.00	24.00			
02175	SAMe (S-Adenosyl-Methionine) 200 mg, 30 enteric coated tablets	25.00	18.75	16.50			
02176	SAMe (S-Adenosyl-Methionine) 400 mg, 30 enteric coated tablets	36.00	27.00	24.00			
SUBTOTAL OF COLUMN 9							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
02174	SAMe (S-Adenosyl-Methionine) 400 mg, 60 enteric coated tablets	66.00	49.50	45.00			
01740	SEA-IODINE™ • 1,000 mcg, 60 veg. caps	8.00	6.00	5.40			
01879	SE-METHYL L-SELENOCYSTEINE • 200 mcg, 90 veg. caps	11.00	8.25	7.50			
00318	SERRAFLAZYME • 100 tablets	18.00	13.50	12.00			
01626	SEX FOR WOMEN 50+ (Enhanced) • 90 veg. caps	59.00	44.25	34.00			
01938	SHADE FACTOR™ • 120 veg. caps	44.00	33.00	30.00			
02110	SHADE FACTOR™ SUNSCREEN LOTION • 4 fl. oz	20.00	15.00	13.00			
02118	SHADE FACTOR™ SUNSCREEN SPRAY • 6 fl. oz	22.00	16.50	14.25			
01884	SILYMARIN • 100 mg, 90 veg. caps	14.00	10.50	9.50			
02129	SKIN CARE COLLECTION ANTI-AGING SERUM • 1.75 fl. oz	60.00	45.00	37.50			
02132	SKIN CARE COLLECTION BODY LOTION • 6 oz	28.00	21.00	18.00			
02130	SKIN CARE COLLECTION DAY CREAM • 1.65 oz	50.00	37.50	33.00			
02131	SKIN CARE COLLECTION NIGHT CREAM • 1.65 oz	39.00	29.25	27.00			
02096	SKIN RESTORING CERAMIDES 30 liquid veg. caps	25.00	18.75	17.25			
01444	SLEEP (Quiet) • 60 veg. caps	13.00	9.75	7.50			
01445	SLEEP MELATONIN (Quiet) • 5 mg, 60 veg. caps	18.00	13.50	12.00			
01551	SLEEP W/ MELATONIN (Enhanced) • 30 caps	22.00	16.50	15.00			
01511	SLEEP W/O MELATONIN (Enhanced) • 30 caps	22.00	16.50	15.00			
00961	SODZYME® W/GLISODIN® & WOLFBERRY • 90 veg. caps	28.00	21.00	18.00			
00657	SOLARSHIELD® SUNGLASSES • Smoke color	12.99	9.74	8.63			
01097	SOY EXTRACT (Ultra) • 150 veg. caps	76.00	57.00	50.00			
01649	SOY ISOFLAVONES (Super Absorbable) • 60 veg. caps	28.00	21.00	18.75			
00432	STEVIA™ (Better) • 100 packets, 1 gram each	9.95	7.46				
00438	STEVIA™ ORGANIC LIQUID SWEETENER (Better) • 2 oz	11.00	8.25				
00987	STRESS RELIEF (Enhanced) • 30 veg. caps	28.00	21.00	18.00			
01476	STRONTIUM • 750 mg, 90 veg. caps	20.00	15.00	13.50			
01778	SUPER SELENIUM COMPLEX • 200 mcg, 100 veg. caps	14.00	10.50	9.00	8.25		
T							
02023	TART CHERRY W/CHERRYPURE® 60 veg. caps	20.00	15.00	14.00			
01827	TAURINE • 1,000 mg, 90 veg. caps	13.00	9.75	9.00			
02205	TEA CRYSTALS (Kenyan Green) • 14 stick packs	12.00	9.00	8.00			
02206	TEA CRYSTALS (Kenyan Purple) • 14 stick packs	18.00	13.50	12.00			
01918	TEAR SUPPORT W/MAQUIBRIGHT® • 60 mg, 30 veg. caps	18.00	13.50	12.00			
00133	L-TAURINE POWDER • 300 grams	20.00	15.00	12.66			
*13685	TEN MUSHROOM FORMULA® • 120 veg. caps	41.95	35.66				
01304	THEAFLAVIN STANDARDIZED EXTRACT • 30 veg. caps	18.00	13.50	12.00			
01683	(L) THEANINE • 100 mg, 60 veg. caps	24.00	18.00	15.38			
**01038	THERALAC® PROBIOTICS • 30 caps	47.95	35.96				
00668	THYROID FORMULA (Metabolic Advantage™) • 100 caps	21.95	16.46				
00349	TMG POWDER • 50 grams	14.00	10.50	8.25			
01859	TMG • 500 mg, 60 liquid veg. caps	13.00	9.75	9.00			
01400	TOCOTRIENOLS (Super Absorbable) • 60 softgels	30.00	22.50	21.00			
01278	TOOTHPASTE • 4 oz tube (Mint)	9.50	7.13	6.50			
SUBTOTAL OF COLUMN 10							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
01917	TRANQUIL TRACT™ • 60 veg. caps	52.00	39.00	34.50			
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT 60 veg. caps	24.00	18.00	16.50			
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL • 60 veg. caps	32.00	24.00	22.20			
02003	TRIPLE ACTION THYROID • 60 veg. caps	36.00	27.00	24.00			
01803	TRI SUGAR SHIELD® • 60 veg. caps	36.00	27.00	24.00			
01386	TRUFIBER™ • 180 grams	32.95	24.71				
01389	TRUFLORA® PROBIOTICS • 32 veg. caps	42.95	32.21				
01722	L-TRYPTOPHAN • 500 mg, 90 veg. caps	33.00	24.75	22.50			
01721	TRYPTOPHAN PLUS (Optimized) • 90 veg. caps	32.00	24.00	21.75			
02216	TWO-PER-DAY • 60 tablets	12.00	9.00	7.50			
02215	TWO-PER-DAY • 120 tablets	23.00	17.25	15.50			
02217	TWO-PER-DAY • 60 caps	13.00	9.75	8.50			
02214	TWO-PER-DAY • 120 caps	24.00	18.00	16.00			
00326	L-TYROSINE • 500 mg, 100 tablets	13.50	10.13				
U, V							
01921	URIC ACID CONTROL • 60 veg. caps	24.00	18.00	16.50			
00213	VANADYL SULFATE • 7.5 mg, 100 veg. tablets	15.00	11.25	9.38			
02102	VENOFLOW™ • 30 veg. caps	52.00	39.00	36.00			
00408	VENOTONE • 60 caps	18.95	14.21	12.00			
01327	VINPOCETINE • 10 mg, 100 veg. tablets	18.00	13.50	10.50			
00372	VITAMIN B3 NIACIN • 500 mg, 100 caps	7.65	5.74	4.99			
02028	VITAMIN B5 • 500 mg, 100 veg. caps (Pantothenic Acid)	14.00	10.50	9.50			
01535	VITAMIN B6 • 250 mg, 100 veg. caps	12.50	9.38	8.25			
00361	VITAMIN B12 • 500 mcg, 100 lozenges	8.75	6.56	5.44			
01634	VITAMIN C W/DIHYDROQUERCETIN 1,000 mg, 60 veg. tablets	10.00	7.50	6.75			
00927	VITAMIN C W/DIHYDROQUERCETIN 1,000 mg, 250 veg. tablets	30.00	22.50	20.00			
00084	VITAMIN C POWDER (Buffered) • 454 grams	28.00	21.00	19.00			
01736	VITAMIN C-MAGNESIUM CRYSTALS (Effervescent) • 180 grams	20.00	15.00	13.50			
02232	VITAMIN D3 • 2,000 IU, 1 fl. oz, Mint flavor	28.00	21.00	18.75			
01753	VITAMIN D3 • 1,000 IU, 90 softgels	7.00	5.25	4.50			
01751	VITAMIN D3 • 1,000 IU, 250 softgels	12.50	9.38	8.44			
01713	VITAMIN D3 • 5,000 IU, 60 softgels	10.00	7.50	6.50			
01718	VITAMIN D3 • 7,000 IU, 60 softgels	14.00	10.50	9.45			
01758	VITAMIN D3 W/SEA-IODINE™ • 5,000 IU, 60 caps	14.00	10.50	9.38			
02244	VITAMIN D3 LIQUID • 2,000 IU, 1 fl. oz	28.00	21.00	18.75			
02040	VITAMINS D AND K W/SEA-IODINE™ • 60 caps	24.00	18.00	16.50			
01863	VITAMIN E (Super) • 400 IU, 90 softgels	28.00	21.00	19.50	18.00		
01936	VITAMIN K2 (Low dose) • 45 mcg, 90 softgels	18.00	13.50	12.00			
W							
01902	WAIST-LINE CONTROL™ • 120 veg. caps	42.00	31.50	28.50			
X, Y							
01919	X-R SHIELD • 90 veg. caps	15.00	11.25	9.75			
00409	XYLIWHITE™ MOUTHWASH • 16 fl. oz	10.00	7.50				
SUBTOTAL OF COLUMN 11							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE				QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each			
Z								
01813	ZINC HIGH POTENCY • 50 mg, 90 veg. caps	9.00	6.75	6.00				
01561	ZINC LOZENGES • 60 veg. lozenges	9.00	6.75	6.00				
01961	ZINC LOZENGES (Enhanced) • 30 veg. lozenges	12.00	9.00	6.00				
*01254	ZYFLAMEND™ WHOLE BODY • 120 liquid veg. caps	72.95	54.71					
BOOKS								
33842	HEART ATTACK PROOF by Michael Ozner, MD • 2018	19.95	11.99					
33998	THE RIGHT TO TRY by Darcy Olsen • 2016	26.99	20.24					
33875	DOCTORED: THE DISILLUSIONMENT OF AN AMERICAN PHYSICIAN • by Sandeep Jauhar • 2015	26.00	19.50					
33874	MISSING MICROBES • by Martin J. Blaser, MD • 2014	28.00	21.00					
DPT05	DISEASE PREVENTION AND TREATMENT, FIFTH EDITION (Hardcover) • 2014	69.95	39.95	36.00				
33862	I'M TOO YOUNG FOR THIS • by Suzanne Somers • 2013	26.00	19.50					
33835	PHARMOCRACY • by William Faloon • 2011	24.00	9.60	8.00				
33838	YOUR GUIDE TO HEALTHY SKIN THE NATURAL WAY by Gary Goldfaden, MD • 2012	26.00	15.00					
33815	KNOCKOUT • by Suzanne Somers • 2009	25.99	17.00					
34132	TWO'S COMPANY: FIFTY YEAR ROMANCE by Suzanne Somers • 2017	26.00	19.50					
33867	THE COMPLETE MEDITERRANEAN DIET by Michael Ozner, MD • 2014	19.95	9.99					
SUBTOTAL OF COLUMN 12								

- * These products are not 25% off retail price.
- ** Due to license restrictions, this product is not for sale to customers outside of the USA.
- *** Due to license restrictions, this product is not for sale to Canada.
- † Due to license restrictions, this product is not for sale to customers outside of the USA and Canada.
- †† These products are not 25% off retail price. Due to license restrictions this product is not for sale to customers outside of the USA.



Not sure exactly which supplements you need?

Talk to a
Wellness Specialist
toll-free at
1-800-226-2370

ORDER SUBTOTALS

SUBTOTAL COLUMN 1

SUBTOTAL COLUMN 2

SUBTOTAL COLUMN 3

SUBTOTAL COLUMN 4

SUBTOTAL COLUMN 5

SUBTOTAL COLUMN 6

SUBTOTAL COLUMN 7

SUBTOTAL COLUMN 8

SUBTOTAL COLUMN 9

SUBTOTAL COLUMN 10

SUBTOTAL COLUMN 11

SUBTOTAL COLUMN 12

ORDER TOTALS

SUBTOTAL OF COLUMNS 1 - 12

†† Customers enrolled in Premier receive free unlimited standard delivery in the U.S., excluding U.S. territories, and do not have to pay the \$5.50 postage and handling fee.

POSTAGE & HANDLING (Any size order, in the U.S., includes Alaska & Hawaii)

\$5.50 ††

C.O.D.s (ADD \$7 FOR C.O.D. ORDERS)

UPS OVERNIGHT add \$16, UPS 2nd DAY AIR add \$7. For Puerto Rico, US Virgin Islands, add \$7. CANADA UPS EXPRESS Flat rate \$17.50, UK Flat rate \$25 USD. ALL OTHER INTERNATIONAL AIR WILL BE ADDED.

SHIPPING

GRAND TOTAL (MUST BE IN U.S. DOLLARS)

PLEASE MAIL TO: Life Extension
P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198
Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050



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 1-888-210-7256 toll-free.

Use Code YRX801A.

LifeExtension®

Premier service is good for a full 12 months from the date of purchase or renewal and can only be renewed 6 months after the date of your last Premier purchase or renewal. 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 U.S. dollar at checkout. FREE unlimited standard shipping (3 to 5 business days) to any mailing address within the United States, excluding U.S. territories. Also includes discounts on non-standard shipping and shipping outside of the U.S. International customers can join Premier for \$59.95.

BILL TO ADDRESS

NAME

E-MAIL

ADDRESS

CITY/STATE/ZIP-POSTAL CODE

COUNTRY

PHONE

FAX

VISA/MASTERCARD/AMEX/DISCOVER #

EXP. DATE

SIGNATURE

SHIP TO ADDRESS

NAME

E-MAIL

ADDRESS

CITY/STATE/ZIP-POSTAL CODE

COUNTRY

PHONE

FAX

SIGNATURE

Prices subject to change without notice.
Please notify Life Extension of any address change.

HIGHLY PURIFIED FISH OIL

YOUR CHOICE OF **HIGHLY-CONCENTRATED** FORMULAS:



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



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



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

	Retail Price	Your Price
1 bottle	\$32	\$24
4 bottles		\$21 each
Item # 01982 • 120 softgels		

	Retail Price	Your Price
1 bottle	\$34	\$25.50
4 bottles		\$23.25 each
Item # 01984 • 120 enteric coated softgels		

	Retail Price	Your Price
1 bottle	\$45	\$33.75
4 bottles		\$31.50 each
Item # 01988 • 120 softgels		



#1 Omega-3 EPA/DHA Products
4-Time Winner!

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.



* Rated based on results of the 2018 ConsumerLab.com Survey of Supplements Users. More information at www.consumerlab.com/survey2018

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.



WHAT'S INSIDE

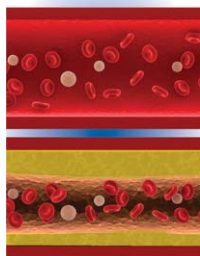
Visit us at www.LifeExtension.com

LifeExtension® Magazine



7 VIRAL INDUCED CANCERS

Head and neck cancer incidence in men is surging. The diet and supplement programs Life Extension® readers follow offer a degree of protection against viral (HPV) induced cancers.



46 INHIBIT ARTERIAL PLAQUE

Two **plant extracts** have been shown to *reduce* arterial plaque progression by **95%** while promoting plaque stability to lessen the risk of rupture and arterial occlusion.



57 GREEN TEA AND BROCCOLI COMBAT BREAST CANCER

Compounds in **green tea** and **broccoli** can reprogram **genes** in treatment-resistant malignant cells to make them more susceptible to eradication by conventional therapies.



26 HOW BERRIES REDUCE OBESITY DAMAGE

Mixed berry extracts can *reduce* the size of fat cells, *promote* fat burning, and *improve* insulin sensitivity to help limit systemic damage caused by obesity.



36 PREVENT MUSCLE LOSS AND FRAILITY

Age-related **muscle loss** *increases* the risk for falls and fractures. Two nutrients have been shown to *rebuild lost muscle* in older individuals while mitigating *frailty*.



66 RESTORE YOUNGER IMMUNE FUNCTION

Cistanche, **Reishi mushrooms**, and **Pu-erh tea** have been shown to **reverse** harmful changes that occur in the immune system with advancing age.