

ARE YOU COOKING YOURSELF TO DEATH?

www.lef.org

LifeExtension®

The ULTIMATE Source For New Health And Medical Findings From Around The World

January 2013

Eliminate After Meal Digestive Discomforts

**Suppress Dangerous
Inflammatory Reactions**

**Lose Weight by
Eating Foods
Cooked at Lower
Temperatures**

**International
Anti-Aging
Conference Reports**

**Renew Your Skin
From the Inside**



PLUS—
Omega-3s Increase Telomere Length in Aging Humans
Coenzyme Q10 and Garlic Reduce Atherosclerosis Progression
Chef Sal's Amazing Journey to Raw Alkaline Cuisine

SUPER SALE

The annual **SUPER SALE** enables members to obtain premium grade supplements at prices substantially **below** what commercial companies charge. When members buy products from the **Life Extension Foundation Buyers Club**, they know that the **quality** of the products are backed by the organization's commitment to achieving an indefinitely extended life span. What follows are a few examples of the **savings** members enjoy during the **SUPER SALE**.



Member SUPER SALE
Retail Discount Price Per Bottle

<p>Super Omega-3 EPA/DHA with Sesame Lignans/Olive Fruit Extract 120 softgels, Item # 01482</p> <p>Super-refined EPA/DHA fish oil plus sesame lignans and olive fruit extract to provide critical omega-3 fatty acids and essential components of the Mediterranean diet.</p>	\$32	\$16.81 <i>(ten-bottle purchase)</i>
<p>PQQ Caps with BioPQQ™ • 10 mg, 30 vegetarian capsules, Item # 01500</p> <p>Promotes mitochondrial biogenesis (generation of new mitochondria) in aging cells.</p>	\$24	\$14.85 <i>(four-bottle purchase)</i>
<p>Super Bio-Curcumin® • 60 vegetarian capsules, Item # 00407</p> <p>Advanced formulation that absorbs <u>six</u> times greater than conventional curcumin.</p>	\$38	\$23.63 <i>(four-bottle purchase)</i>
<p>Bone Restore with Vitamin K2 • 150 capsules, Item # 01711</p> <p>High-potency bone protection formula with with highly <i>absorbable</i> forms of calcium, magnesium, and boron. Available with or without vitamin K2.</p>	\$26	\$15.53 <i>(four-bottle purchase)</i>
<p>ArthroMax™ Advanced with UC-II® and AprèsFlex™ 60 capsules, Item # 01618</p> <p>Promotes joint health and may promote comfortable joint structure and function.</p>	\$36	\$21.60 <i>(four-bottle purchase)</i>
<p>Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ 100 mg, 60 softgels, Item # 01426</p> <p>Superior ubiquinol form of CoQ10 plus an organic compound (shilajit) shown to <u>double</u> mitochondrial CoQ10 levels.</p>	\$62	\$35.10 <i>(ten-bottle purchase)</i>
<p>Ultra Natural Prostate Formula • 60 softgels, Item # 01695</p> <p>Comprehensive prostate protection utilizing nettle, pygeum, saw palmetto, boswellia, lycopene, boron, and other plant extracts.</p>	\$38	\$21.60 <i>(twelve-bottle purchase)</i>
<p>Reishi Extract Mushroom Complex 60 vegetarian capsules, Item # 01708</p> <p>Standardized mushroom extract to restore and regulate immune function.</p>	\$30	\$18.23 <i>(four-bottle purchase)</i>
<p>Optimized Resveratrol with Synergistic Grape-Berry Actives 250 mg, 60 vegetarian capsules, Item # 01430</p> <p>High potency <i>trans</i>-resveratrol with quercetin, plus <i>trans</i>-pterostilbene and fisetin to support DNA "longevity genes." One-per-day resveratrol formula.</p>	\$46	\$27.90 <i>(four-bottle purchase)</i>
<p>Super Booster Softgels with Advanced K2 Complex 60 softgels, Item # 01680</p> <p>A convenient <u>one</u>-per-day softgel that includes optimal potencies of gamma-tocopherol, sesame lignans, lycopene, lutein, ginkgo, chlorophyllin, and both forms of vitamin K2.</p>	\$42	\$25.65 <i>(four-bottle purchase)</i>

The SUPER SALE extends to January 31, 2013.

Members traditionally take advantage of the **SUPER SALE** to stock up on a year's supply of their favorite supplements. To place your order, call **1-800-544-4440** or visit **www.lef.org**
(**SUPER SALE** pricing available only to members in the US, Canada, and England.)

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.

REPORTS



40 SAFELY MODULATE INFLAMMATION

During an infection, the body requires *acute inflammation* to fight off foreign invaders. Over time, aging upsets the inflammatory response balance. The tragic result is *chronic inflammation* that underlies most diseases of aging. Fortunately, scientists have discovered that black cumin seed oil safely *modulates the balance* of the inflammatory response.



52 CERAMIDES NOURISH SKIN FROM WITHIN

Youthful skin is rich in **ceramide molecules** that nourish the skin matrix keeping it firm and supple. With age, our production of ceramides declines resulting in the loss of vital moisture. Researchers have discovered a method to extract **ceramides** from whole grain wheat. Clinical studies document the ability of these ceramides to nourish aging skin from within and avoid the external signs of aging such as dryness and wrinkles.



62 CoQ10: A CRITICAL LONGEVITY FACTOR

While best known for heart health, extensive research shows that CoQ10 boosts cellular energy output throughout the body. By increasing the efficiency of our mitochondria, CoQ10 protects every cell. Laboratory studies demonstrate that CoQ10 can extend life span, suggesting important longevity benefits for humans.



76 SCIENTIFIC RESEARCH CONFERENCES REPORT

The Ellison Medical Foundation Colloquium on Aging featured research discoveries on resveratrol, nicotinamide mononucleotide, protein deprivation, and “jumping genes.” At the 4TH American Academy Of Anti-Aging Medicine Conference held in Thailand, the focus was on the dramatic role **hormone replacement** can play in fighting aging.



28 ON THE COVER

FIGHT BACK AGAINST AFTER-MEAL DIGESTIVE DISCOMFORTS

With age comes a decline in vital *enzymes* needed for proper digestion, nutrient absorption, and elimination. The problem with commercial enzyme supplements is they contain **amylases** that quickly break down starches that contribute to deadly after-meal **glucose spikes**. Taking the proper **digestive enzymes** can protect against gastro-intestinal distress, while helping defend against blood sugar surges.

DEPARTMENTS



7 ARE YOU COOKING YOURSELF TO DEATH?

Eating foods cooked at **high temperature** accelerates aging factors such as **glycation** and **chronic inflammation**. Fortunately most **Life Extension®** members take steps to mitigate the damaging effects of overcooked foods.

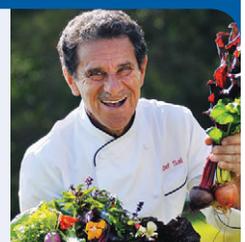


21 IN THE NEWS

Omega-3 fatty acids increase telomere length; lycopene helps prevent stroke; daily multivitamin use reduces the risk of cancer; vitamin C protects against bone loss; and more.

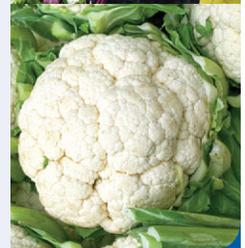
91 WELLNESS PROFILE

International chef and Life Extension member, Sal Montezinos advocates an alkaline diet to balance *pH levels* and prevent toxic body conditions known as acidosis and alkalosis. Chef Sal explains the benefits of the **raw alkaline** diet.



97 SUPER FOODS

Cauliflower contains unique bioactive compounds called **glucosinolates** and **indole-3-carbinol**. Cauliflower offers strong protection against cancer, diabetes, rheumatoid arthritis, and cardiovascular disease.





PUBLISHER • LE Publications, Inc.

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.

Join us on the Life Extension forums:
ask.lef.org

Post your questions, add your comments, and access useful information on health, nutrition, prevention, anti-aging, and more.

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/Health Advisors



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

EDITORIAL

Editor-in-Chief • Philip Smith
Executive Managing Editor • Renee Price
Senior Copy Editor • Laurie Mathena
Medical Editor • Andrea Pryce, ND
Senior Staff Writer • Michael Downey
Department Editor • Jon Finkel
Creative Director • Robert Vergara
Art Director • Alexandra Maldonado

CHIEF MEDICAL OFFICER

Steven Joyal, MD

SCIENTIFIC ADVISORY BOARD

Örn Adalsteinsson, PhD • Russell L. Blaylock, MD • John Boik, PhD
Eric R. Braverman, MD • Frank Eichorn, MD • Deborah F. Harding, MD
Steven B. Harris, MD • Stanley W. Jacob, MD • Richard Kratz, MD, DSci
Peter H. Langsjoen, MD, FACC • Ralph W. Moss, PhD • Michael D. Ozner, MD, FACC
Robert Pastore, PhD, CNS • Stephen B. Strum, MD, FACP
Jonathan Treasure, AHG, MNIMH • Jonathan V. Wright, MD

CONTRIBUTORS

Ben Best • Logan Bronwell • Lina Buchanan • D. Dye
William Gamonski • Emily Perdue • Jeffrey Stout

ADVERTISING

Vice President of Marketing • Rey Searles • rsearles@lifeextension.com
National Advertising Manager • Eric Brown • 404-347-8992

VICE PRESIDENT OF SALES AND BUSINESS DEVELOPMENT

Ron Antriasian • rantriasian@lifeextension.com • 781-271-0089

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@lef.org
Advisors: 800-226-2370 • Advisory email: advisory@lef.org

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@lef.org

LIFE EXTENSION (ISSN 1524-198X) Vol. 19, No.1 ©2013 is published monthly except semi-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. Subscription included as part of Life Extension Foundation membership. Mail subscriptions or address changes to: LE Publications, Inc., P.O. Box 407198, Fort Lauderdale, FL 33340-7198, USA. Or phone us toll-free at: 1-800-841-5433. Canada Subscriptions: Publications mail agreement number 40028967. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B4R6. You will be sent your first issue within six weeks after LE Publications, Inc. receives your subscription fee. Periodicals Postage paid at Fort Lauderdale, FL and at additional mailing offices. POSTMASTER: Send address changes to Life Extension, P.O. Box 407198, Ft. Lauderdale, Florida 33340-7198, USA. Printed in USA. The articles in this magazine are intended for informational purposes only. They are not intended to replace the attention or advice of a physician or other health-care professional. Anyone who wishes to embark on any dietary, drug, exercise, or other lifestyle change intended to prevent or treat a specific disease or condition should first consult with and seek clearance from a qualified health-care professional. LEGAL NOTICE: Health claims contained in articles and advertisements in this publication have not been approved by the FDA with the exception of FDA approved qualified health claims for calcium, antioxidant vitamins, folic acid and EPA and DHA omega-3 fatty acids, and selenium as noted where applicable. Life Extension® 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.

SUPPORT FOR THE IMMUNE SYSTEM

Reishi mushroom has been traditionally used to boost immune system vitality. Its broad-spectrum benefits have been demonstrated in thousands of studies.¹

An advanced extraction technology has resulted in a new **Reishi extract** that make its active compounds even more bio-available.

REISHI SUPPORTS A HEALTHY IMMUNE SYSTEM

An abundance of evidence demonstrates that **Reishi** constituents enhance the protective activity of the body's **hematopoietic stem cells, T-cells**, and other crucial immune factors.²⁻⁹

Reishi's immune-supporting compounds include an array of unique *polysaccharides*, *triterpenes*, and other constituents,^{10,11} many of which assist activation of the cell surface receptors that modulate normal immunity.¹²

The **Reishi** mushroom also supports the body's production of endogenous antioxidant enzymes—such as **superoxide dismutase (SOD)**, **catalase**, and **glutathione**—which, in turn, support the body's natural immune defenses against free radical damage!^{13,14}

ADVANCED EXTRACTION TECHNOLOGY

Reishi Extract Mushroom Complex delivers powerful compounds and represents the **next generation** of natural immune support. Reishi extracts standardized to polysaccharides have been available for years, but most do not standardize for triterpenes and include the spores. This full-spectrum extract has multiple components which have shown to support healthy immune function and enhanced longevity in a natural experimental aging model.¹⁵



The suggested 2 capsules a day of

Reishi Extract Mushroom Complex provide:

Reishi mushroom (<i>Ganoderma lucidium</i>) extract (Fruit body)	980 mg
[standardized to 13.5% polysaccharides (132.3mg) and 6% triterpenes (58.8mg)]	
Reishi mushroom (<i>Ganoderma lucidium</i>) spore	150 mg

A bottle containing 60 vegetarian capsules of **Reishi Extract Mushroom Complex** retails for \$30. If a member buys four bottles during **Super Sale**, the price reduced to **\$18.23**.

References

1. *Front Pharmacol.* 2012;3:51.
2. *Bioorg Med Chem.* 2010 Dec 15;18(24):8583-91.
3. *Br J Pharmacol.* 2003 May;139(2):289-98.
4. *Int J Med Mushrooms.* 2011;13(5):441-8.
5. *Biosci Biotechnol Biochem.* 2009 Dec;73(12):2589-94.
6. *Front Pharmacol.* 2012;3:135.
7. *Mol Pharmacol.* 2006 Aug;70(2):637-44.
8. *Chem Pharm Bull (Tokyo).* 2002 May;50(5):623-9.
9. *Acta Pharmacol Sin.* 2003 Apr;24(4):321-6.
10. *Curr Pharm Biotechnol.* 2009 Dec;10(8):717-42.
11. *Am J Chin Med.* 2011;39(1):15-27.
12. *J Biol Chem.* 2009 Dec 11;284(50):34479-89.
13. *J Basic Clin Physiol Pharmacol.* 2009;20(4):289-307.
14. *Clin Nutr.* 2010 Jun;29(3):406-12.
15. *FASEB.* 2012;26:373.2.

To order Reishi Extract Mushroom Complex, call 1-800-544-4440 or visit www.LifeExtension.com.

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.

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, New Jersey, 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 hemopoietic 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, DDC, DO, is a licensed osteopathic physician and chiropractor. He completed a NIH Fellowship in nutrition at UAB. Board certified in family medicine with a CNS in nutrition, he is currently the medical director at Leon County Jail. He is responsible for 1,100–1,200 inmates' medical needs.

Prof. Francesco Marotta, MD, PhD, gastroenterologist and nutrigenomics expert with extensive international university experience. Consulting Professor, WHO-affiliated Center for Biotech & Traditional Medicine, University of Milano, Italy. Hon. Res. Professor, Human Nutrition Dept, TWU, USA. 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.

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, practices internal medicine at the Integrative Longevity Institute of Virginia in Virginia Beach, VA.

Ross Pelton, RPh, PhD, CCN, is director of nutrition and anti-aging research for Intramedicine, 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 staffs 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 staffs 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 Rozenzweig, 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.

Carol Ann Ryser, MD, FAAP, is medical director of Health Centers of America in Kansas City, MO, and focuses on pediatrics and mental health.

Michael D. Seidman, MD, is the regional coordinator of otolaryngology-head and neck surgery for the Bloomfield satellite of Henry Ford Health System (HFHS), Detroit, MI, co-director of the Tinnitus Center, and co-chair of the Complementary/Alternative Medicine Initiative for HFHS.

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

Herbert R. Slavin, MD, is medical director of the Institute of Advanced Medicine in Lauderhill, FL, specializing in anti-aging medicine, disease prevention, chelation therapy, and natural hormone replacement therapy.

Stephen L. Smith, MD, Richland, WA, focuses on treating allergies and is a member of the American Society for Lasers in Medicine and Surgery.

Stephen Strum, MD, is a medical oncologist who has specialized in prostate cancer treatment since 1983. He is co-founder and past medical director of the Prostate Cancer Research Institute. Currently, he directs a practice for prostate cancer patients in Ashland, OR.

Javier Torres, MD, is a member of the American Academy of Physical Medicine and Rehabilitation and is on the medical staffs of Sunrise Hospital, Desert Springs Hospital, Valley Hospital, and Mountain View Hospital, all in Las Vegas, NV.

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.

Charles E. Williamson, MD, Boca Raton, FL, focuses on anti-aging, longevity, and pain management.

Jonathan V. Wright, MD, is medical director of the Tahoma Clinic in Renton, 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 11 books and publishes *Nutrition and Healing*, a monthly newsletter with a worldwide circulation of more than 100,000.

SCIENTIFIC ADVISORY BOARD



Örn Adalsteinsson, PhD, 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*.



Russell L. Blaylock, MD, is a board-certified neurosurgeon, author, and lecturer. He recently retired from his neurosurgical practice to devote his time to nutritional studies and research. He has written numerous journal articles and three books (*Excitotoxins: The Taste That Kills*, *Health and Nutrition Secrets That Can Save Your Life*, and *Natural Strategies for the Cancer Patient*) and currently publishes a monthly nutrition newsletter, *The Blaylock Wellness Report*.



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 anticancer drugs. He conducted his postdoctoral training at Stanford University Department of Statistics. He is currently president of New Earth BioMed, a nonprofit cancer research corporation that studies mixtures of natural products.



Eric R. Braverman, MD, is director of the Place for Achieving Total Health (PATH Medical and the PATH Foundation) in New York City. Dr. Braverman received his BA from Brandeis University Summa Cum Laude/Phi Beta Kappa and his MD from New York University Medical School with honors. He is the author of *Younger You* (2006) and *Younger Thinner You* (2009) and over 100 research papers and is clinical assistant professor of integrative medicine in the Department of Neurosurgery at Cornell Weill Medical College, as well as a lecturer on mild cognitive decline.



Frank Eichorn, 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 Castringius, Planegg, Munich. In his integrative approach to prostate cancer he is working 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 triple board-certified in internal medicine, sleep disorder medicine, and anti-aging 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.



Stanley W. Jacob, MD, is Gerlinger Distinguished Professor, Department of Surgery, Oregon Health and Science University. He has authored 175 scientific articles and 15 books and holds 3 patents, including the initial patent on the therapeutic implications of dimethyl sulfoxide (DMSO).



Richard Kratz, MD, DSci, is clinical professor of ophthalmology at the University of California, Irvine, and the University of Southern California (Los Angeles). Dr. Kratz pioneered the cataract-removal technique called phacoemulsification and developed intraocular lenses to replace the crystalline lens. He is currently involved in projects relating to glaucoma, cataract extraction, and facilitating eyesight for the totally blind.



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.



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.



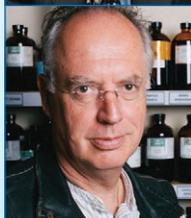
Michael D. Ozner, MD, FACC, FAHA, is a board-certified cardiologist who specializes in cardiovascular disease prevention. He serves as medical director for the Cardiovascular Prevention Institute of South Florida and is a noted national speaker on heart disease prevention. Dr. Ozner is also author of *The Great American Heart Hoax* and *The Miami Mediterranean Diet* (2008, Benbella Books). For more information visit www.drozner.com.



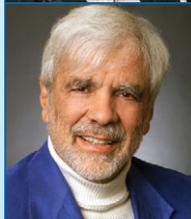
Robert Pastore, PhD, CNS, is a clinical nutritionist practicing in New York City. Due to his thorough nature and focus on organic chemistry and biochemistry, his colleagues have termed his practice forensic nutrition. He is a member of Harvard Medical School Postgraduate Association, the American College of Nutrition, New York Academy of Sciences, and the American Association of Pharmaceutical Scientists.



Stephen B. Strum, MD, FACP, is a medical oncologist who has specialized in prostate cancer treatment since 1983. He is co-founder and past medical director of the Prostate Cancer Research Institute. Currently, he directs a practice for prostate cancer patients in Ashland, OR.



Jonathan Treasure, AHG, MNIMH, is a British medical herbalist at the Centre for Natural Healing in Ashland, OR. Originally a medical sciences graduate from Cambridge University, he studied herbal medicine at the UK School of Phytotherapy. His clinical specialty is integrative botanical medicine for cancer, and his principal research interest is herb/drug interactions.



Jonathan V. Wright, MD, is medical director of the Tahoma Clinic in Renton, 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 11 books and publishes *Nutrition and Healing*, a monthly newsletter with a worldwide circulation of more than 100,000.

World's Most Comprehensive ANTI-AGING SKIN SERUM

SAVE 60% DURING SUPER SALE!

RejuveneX® Factor provides **28** active ingredients in a *deep-penetrating serum*. To get these skin **protecting** and **rejuvenating** compounds elsewhere, you'd need to layer on a dozen expensive creams—each providing only **2 or 3** of these active ingredients.

The good news is that—for a fraction of the cost—**RejuveneX® Factor Firming Serum** delivers optimal dosages of the full range of clinically proven technologies... to promote the appearance of **youthful, firmer, and more vibrant skin**.

SERUM VS. CREAM

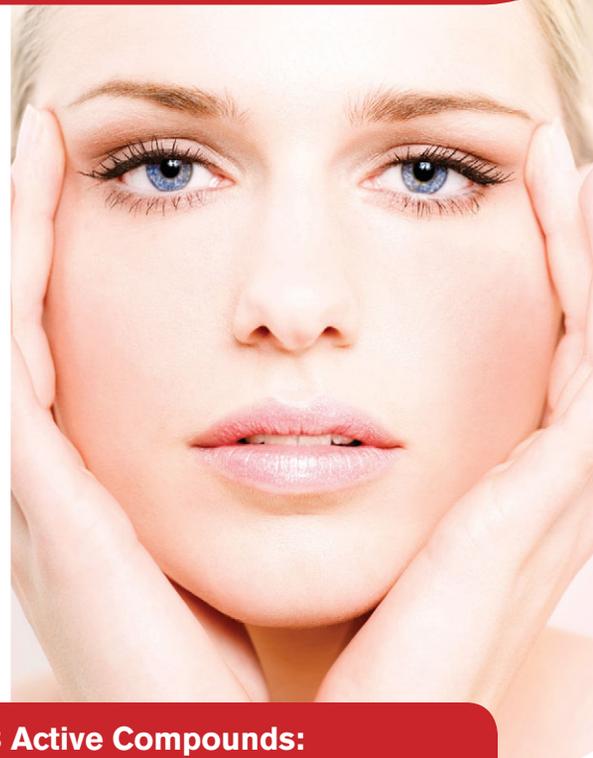
RejuveneX® Factor is a **serum**—a more concentrated format that is thinner than a cream and ensures superior **absorption** of its **28** skin enhancing compounds.

RejuveneX® Factor Firming Serum comes in an airless pump to protect the integrity of the bioactives, and utilizes a patented deep-layer delivery system that provides sustained release for **6 to 8 hours!**

RejuveneX® Factor Firming Serum is uniquely free of paraben, irritants, estrogenic chemicals, mineral oil, and synthetic fragrances.

HUGE SAVINGS DURING SUPER SALE

A 1.7 oz bottle of **RejuveneX® Factor Firming Serum** retails for \$65. If a member buys two bottles during **Super Sale**, the price is reduced to **\$34.20** a bottle. If six bottles are purchased during **Super Sale**, the price is only **\$26** a bottle. Each bottle will last **two months** which brings the cost for **RejuveneX® Factor Firming Serum** to as low as **\$13** per month when purchased during the annual **Super Sale!**



Rejuvenex® Factor Firming Serum Provides 28 Active Compounds:

Taurine: Helps neutralize free radicals and inhibit premature aging of the skin.

Salicylic acid: Supports production of new skin cells.

Ceramide-2: Promotes the shedding of old skin cells and helps retain moisture.

Thioctic acid (alpha lipoic acid): Supports the skin's normal antioxidant protection.

Lactic acid: Helps the body shed dead skin cells.

Vitamin C (ascorbyl phosphate): Helps strengthen the skin barrier and promote collagen production.

Hylasome® EG10 (hyaluronate crosspolymer): Holds more moisture in skin cells and targets free radicals.

Glycerin: Minimizes the appearance of wrinkles by supporting elasticity and moisture retention.

Avobenzonone: Helps protect the skin from the visible effects of sunlight exposure.

Glycine soja (soybean) oil: Promotes collagen production and skin elasticity¹¹ and supports UV defense.

Panthenol: Potent support for skin's normal moisturizing ability.

DMAE (dimethylaminoethanol): Helps smoothe and firm skin.

Botanimoist® AMS (Pyrus malus): Helps boost hydration of skin cells.

Botanistat® PF-64: Helps preserves serum against environmental toxins (*avoiding the preservative paraben*).



ITEM# 01621

Pomegranate (Punica granatum) extract: Reduces visible signs of aging by promoting skin cell turnover.

Green tea (Camellia sinensis) extract: Provides antioxidant support to help prevent signs of premature aging.

White tea (Camellia sinensis) extract: Protects the skin from visible signs of UV exposure.

QuSome® delivery system: Breakthrough delivery system delivers maximum active ingredients directly into the skin.

Matrixyl® synthe'6™: Helps minimize the appearance of fine lines and wrinkles.

Vegetal Filling Spheres™: Expand with moisture to allow plumping of wrinkles.

PolyP (sodium polyphosphate): Supports production of collagen.

Pichia-fermented Resveratrol extract: Increases hydration, diminishing the appearance of lines.

Tocopherol (vitamin E): Superior penetration helps reduce the appearance of fine lines and wrinkles.

Tocopheryl acetate (vitamin E): Promotes skin repair and natural defenses against premature skin aging.

Beta-glucan: Supports collagen formation, defense against UV exposure, and healthy skin.

RNA: Promotes production and turnover of new skin cells.

Sodium PCA: Helps skin stay moisturized, soft, supple, and firm, and helps prevent breakouts.

Hydroxydecyl ubiquinone (CoQ10): Supports collagen and elastin for smoother, younger-looking skin.

To order Rejuvenex® Factor Firming Serum call 1-800-544-4440 or visit www.LifeExtension.com

Are You Cooking Yourself to Death?



BY WILLIAM FALOON



People nowadays categorize foods as being healthy or risky. Overlooked are robust findings showing that how food is **cooked** has a lot to do with whether it prevents or causes disease.

One example is fish. We know that those who eat ocean fish have fewer heart attacks...but if one eats only **fried fish**, risk of heart disease increases.^{1,2}

Depending on the cooking method, the same food can either accelerate obesity or aid in weight loss. Less understood are prevalent ways of cooking that convert foods into deadly **toxins**.

Back in **2003**, I described a study published in the ***Proceedings of the National Academy of Sciences*** showing that eating foods cooked at **high temperature** increases the rate at which we **age**. Scientists uncovered back then that ingestion of **high temperature cooked** foods resulted in chronic **inflammation** and accelerated **glycation**.³

Newly published studies confirm these dangers. For example, **breast** and **prostate cancers** are sharply increased in those who eat heavily cooked meat like hamburgers.⁴⁻⁸

This article will explain how to choose safely cooked foods and methods to protect your body against the lethal impact of foods prepared at **excessively high temperatures**. >

When any food is heated to high temperature (over **300 degrees**), chemical changes occur that inflict damage to our cells after we eat that food.⁹⁻¹¹

Be it fat, carbohydrate, or protein, when exposed to high temperatures, toxic compounds form that you don't want in your body. We have repeatedly warned about the dangers of eating over-cooked foods...especially meat.

A study released in **2012** from a prestigious medical center found that men who ate just **1.5 servings** of **pan-fried red meat** each week increased their risk of advanced **prostate cancer** by **30%**. Men who ate more than **2.5 servings** of red meat cooked at **high temperature** were **40%** more likely to have advanced **prostate cancer**.¹² Considering that some men eat high temperature cooked meat **every** day, is it any wonder that aging men suffer epidemic rates of prostate cancer?

Fortunately most *Life Extension*[®] members take **supplements** with meals that help **neutralize** the proven **carcinogens** that form when meat is over-cooked.¹³

Eating Lower-Temperature Cooked Foods Promotes Weight Loss

In **2003**, we reported on a fascinating study showing that diabetics who consumed a **low-temperature** cooked diet **lost weight** compared to a group that consumed the same numbers of calories, carbohydrates, fats, and protein cooked at **higher temperature**. Not only did the low-temperature prepared diet facilitate **weight loss**, but there were also **reductions** in blood **glucose**.³

This six-week study showed that eating the same food cooked at low-temperature **reduced**

glycated-**LDL** by **33%**, whereas diabetics consuming the same higher temperature prepared foods **increased** glycated-**LDL** by **32%**.³

Move forward to **2012** and a team of researchers at **Mount Sinai School of Medicine** identified a compound in **over-cooked foods** that plays a major role in the development of abdominal obesity and its related diseases.

The scientists found that mice with sustained exposure to this compound (**methyl-glyoxal**) developed significant abdominal weight gain, early insulin resistance, immune changes consistent with inflammation/oxidation and type II diabetes.¹⁴ Methyl-glyoxal is a type of **advanced glycation end product** that is produced when food is cooked with dry heat.

Most of you already know that **glycation** is a deadly mechanism of aging that destroys functioning proteins in the body and induces chronic inflammation, which in turn promotes weight gain.¹⁵⁻¹⁹ Nutrients like **carnosine**,²⁰⁻²⁵ **benfotiamine**,²⁶⁻³² and **pyridoxal-5-phosphate**³³⁻³⁶ are potent anti-glycation agents.

In the **Mount Sinai** study, one group of mice was fed a diet high in **methyl-glyoxal** over four generations, while the control group was fed a diet without methyl-glyoxal. Both diets had normal calories and fat. Over four generations, the mice that ate the methyl-glyoxal developed early insulin resistance and increased body fat, whereas the control group had neither of these conditions.¹⁴

This study showed how a specific **glycation-inducing** compound (methyl-glyoxal), abundant in **over-cooked foods**, contributes to an increase in weight gain, insulin resistance, and diabetes.





Changes in Cooking Methods Can Slow Aging

Advanced glycation end products (AGEs) or **glycotoxins** are found in foods that are overheated or cooked at very high temperatures. This includes foods that have been fried, barbecued, broiled or cooked in the microwave.

While the worst culprits are animal products, since they contain a higher amount of “bad” fats that speed up the formation of **glycotoxins**, any food exposed to extreme high heat can scorch the natural sugars in food and create glycotoxins.¹⁶⁸⁻¹⁷⁰ This is also true of many pre-packed foods that have been preserved, pasteurized, homogenized, or refined, such as white flour, cake mixes, canned milk, dried milk, dried eggs, dairy products including pasteurized milk, and canned

or frozen pre-cooked meals.¹⁷⁰ While it may be impossible to totally avoid glycotoxins, it is possible to reduce exposure by changing the way food is prepared. Consider steaming, boiling, poaching, stewing, stir-frying, or using a slow cooker.^{37,170} These methods not only cook foods with a lower amount of heat, they create more moisture during the cooking process. According to researchers, water or moisture can help delay the reactions that lead to glycotoxins.¹⁷⁰ Marinating foods in olive oil, cider vinegar, garlic, mustard, lemon juice, and dry wines can also help.¹⁷⁰ Finally, consider making small diet changes by adding more fresh fruits and raw and steamed vegetables to your diet.

This same pattern of metabolic disturbance has occurred in human populations over recent decades.

The scientists found that the abdominal fat of the methyl-glyoxal fed mice produced **pro-inflammatory cytokines**, which are major causes of disease and weight gain in humans. In the presence of this glycation-inducing compound, glucose metabolism was impaired and fat turnover slowed. The result was insulin resistance and diabetes. Mice fed the low-glycation diet did not develop such problems.¹⁴

The research team that conducted this study recommends that clinical guidelines be revised to eliminate foods cooked using dry heat and replace them with

methods that use lower heat or lots of moisture (water) as in stewing, poaching, or steaming.³⁷ They gave examples of healthier dietary practices that include stewed beef, chicken, and fish instead of grilled meats.

Extinguishing Inflammatory Fires Within

As humans age, there is a systemic increase in inflammatory cytokines (destructive cell-signaling chemicals) that contribute to virtually *every* degenerative disease.³⁸⁻⁴⁹

While inflammatory cytokines can cause agonizing pain as in

arthritis,^{50,51} they also disrupt the linings of our arteries,⁵²⁻⁵⁵ mutate DNA,⁵⁶⁻⁵⁹ and degrade brain cells.⁶⁰⁻⁶³ Chronic inflammation is directly involved in diseases as diverse as cancer,⁶⁴⁻⁶⁹ atherosclerosis,⁷⁰⁻⁷⁴ diabetes,⁷⁵⁻⁷⁷ aortic valve stenosis,⁷⁸⁻⁸⁰ congestive heart failure,⁸¹⁻⁸⁴ Alzheimer’s disease,⁸⁵⁻⁸⁸ and kidney failure.⁸⁹⁻⁹²

In aging people with multiple degenerative diseases, we often find elevated blood levels of **C-reactive protein**, indicating the presence of an inflammatory disorder.⁹³⁻⁹⁹ These individuals usually have excess levels of one or more of the pro-inflammatory cytokines.

The good news is that many of the nutrients, hormones and drugs



How Glycation Cooks Us to Death

The glycation process that turns a chicken brown in the oven is exactly what happens to the proteins in our body as we age. When body proteins react with sugars they turn brown and fluorescent, lose elasticity and cross-link to form insoluble masses that generate free radicals. The resulting advanced glycation end products (glycotoxins) accumulate in our collagen and skin, cornea, brain and nervous system, arteries, and vital organs as we age. Unfortunately, glycotoxins are highly resistant to the normal processes of protein turnover and renewal that maintain the healthy tone of youthful body tissues and organs.

How does the body cope with these chronic assaults on proteins? Long-lived cells, such as neurons and muscle cells, contain high levels of a dipeptide called **carnosine**, made up of histidine and beta-alanine. Unlike ordinary antioxidants, carnosine blocks numerous pathways involved in the **glycation** process.

being taken by *Life Extension* members suppress the production of these deadly cytokines. An increasing body of evidence reveals that avoiding foods cooked at very **high temperatures** can also reduce production of cytokines, thus helping to extinguish the inflammatory fire raging in the bodies of most aging people today. Wouldn't it be incredible if Americans could throw away side effect-laden pain killing drugs just by changing the way their food is prepared?

Age-Accelerating Effects of Glycation

Glycation can be described as the binding of a protein molecule to a glucose molecule resulting in the formation of damaged protein structures. Many age-related diseases such as arterial stiffening,¹²⁶⁻¹³⁰ cataracts,¹³¹⁻¹³³ and neurological impairment¹³⁴⁻¹³⁹ are at least partially attributable to **glycation**. These destructive glycation reactions render proteins in the body barely functional. As

these degraded proteins accumulate, they cause cells to emit signals that induce the production of inflammatory cytokines.

While there are nutrients (such as **pyridoxal-5-phosphate** and **benfotiamine**) that help protect against glycation,³² reducing consumption of foods cooked at high temperature can dramatically suppress deadly glycation processes, and the subsequent formation of advanced glycation end products (AGEs).

Cooking and Aging Have Similar Biological Properties

Cooking foods at high temperatures results in a "browning" effect, where sugars and certain oxidized fats react with proteins to form glycotoxins in the food. Normal aging can also be regarded as a slow cooking process, since these same glycotoxins form in the skin, arteries, eye lenses, joints, and cartilage of our body.

Studies show that consuming foods high in glycotoxins can be responsible for the induction of a low-grade, but chronic state of inflammation.¹⁵ In addition, the glycotoxins in food cooked at high temperatures also promote the formation of glycotoxins in our living tissues.^{3,140} Thus when we eat foods altered by high temperature cooking, these foods inflict similar damage to living proteins in our body.

Don't "Cook" Yourself to Death

Most *Life Extension* members already follow a healthy lifestyle that helps prevent glycation and chronic inflammation.



Protect Your Genes Against Overcooked Foods

It has long been known that heavily cooked foods inflict massive damage to the genes.

A group at the University of Minnesota reported that women who ate overcooked hamburgers had a **50%** greater risk of breast cancer than women who ate rare or medium hamburgers. The famous Iowa Women's Health Study found that women who consistently eat well-done steak, hamburgers, and bacon have a **4.62-fold** increased risk of breast cancer.¹⁷¹

Cooking foods at high temperatures causes the formation of gene-mutating **heterocyclic amines**, which is why deep fried foods are so dangerous to eat. Heterocyclic amines have been linked to prostate, breast, colorectal, esophageal, lung, liver, and other cancers. While health conscious people try to avoid foods that are known carcinogens, even grilled salmon contains a potent dose of gene-mutating heterocyclic amines.¹⁷²

While one can reduce their exposure to cancer-causing **heterocyclic amines**, it may be impossible to keep them from forming within the body. Enzymatic activities that naturally occur in the liver can inadvertently manufacture heterocyclic amines from otherwise harmless organic compounds.¹⁷³

Neutralizing Dietary Carcinogens

The first lines of defense against carcinogens consumed in the diet are agents that prevent gene mutation. Many anti-mutagenic agents have been identified in fruits and vegetables, the most potent being **indole-3-carbinol** and **chlorophyllin**.¹⁷⁴

Life Extension introduced members to the anti-mutagenic effects of chlorophyllin back in **1989**. The recommendation to supplement with chlorophyllin was based on a study published in the journal *Mutation Research*¹⁷⁵ showing that this plant extract was a more effective anti-mutagenic agent than all other known anti-cancer vitamins at that time.

What impressed us most about the *Mutation Research* study was that chlorophyllin suppressed the mutagenic activity of carcinogens such as fried pork,

diesel emissions, and coal dust by more than **90%**! No other supplement came close to chlorophyllin's ability to inhibit deadly gene mutations.

The great majority of studies about chlorophyllin's health benefits concern its anti-mutagenic and anti-carcinogenic properties. Chlorophyllin 'traps' heterocyclic hydrocarbon carcinogens by reacting with their 'backbone,' making it impossible for them to form adducts with DNA.^{176,177}

Additional Protection Against Carcinogens

Indole-3-carbinol (I3C) is found in anti-cancer vegetables such as cabbage, cauliflower, and broccoli. When I3C is given to rodents before they are treated with cancer-causing chemicals (carcinogens), the number of tumors can be reduced by **96%**. I3C has been shown to extend the length of the time between exposure to carcinogens and development of tumors by nearly **200%**.¹⁷⁸

One of the ways I3C protects cells against cancerous changes is by preventing DNA damage. I3C protects DNA not only in breast tissue, but in other tissues as well. A study from the Medical College of Ohio shows that I3C can cut the rate of DNA damage from chemicals in breast tissue by almost **92%**.¹⁷⁹ Others have shown that I3C decreases DNA damage in white blood cells by **82%**, colon by **67%**, and liver by **69%**.¹⁷⁹ This would seem almost unbelievable if it hadn't been confirmed by others who have shown that I3C can reduce DMBA-induced liver DNA damage by **90%**, lung and trachea by **55%**, and other tissues by similar amounts.¹⁸⁰

Based on this plethora of evidence, if one happens to eat overcooked food, it makes sense to take at the same time, **100 mg** of chlorophyllin and/or **80-240 mg** of indole-3-carbinol and other cruciferous vegetables extracts. Most Life Extension members already obtain these nutrients in supplement formulas they take with meals.

Inflammatory cytokine production can be suppressed with proper supplementation of **fish oil**,¹⁴¹⁻¹⁴⁸ **curcumin**,¹⁴⁹⁻¹⁵² **boswellia**,¹⁵³⁻¹⁵⁶ **DHEA**,^{157,158} **vitamin K**¹⁵⁹⁻¹⁶¹ and other nutrients. Taking steps to shed **abdominal fat** and reduce blood **glucose** is of enormous benefit in lowering production of pro-inflammatory cytokines in the body.¹⁶²

What one eats plays a major role in **chronic inflammatory** processes. Consuming low glycemic foods reduces the insulin surge that contributes to chronic inflammatory processes.

There is compelling evidence that eating too much overcooked food causes an increase in inflammatory cytokines. Since most “junk” foods are cooked at extremely high temperatures, it makes sense to avoid French fries, hamburgers, potato chips, fried food, and other snacks. These foods not only contain lots of glycotoxins, but they also create other metabolic disorders that can induce degenerative disease.

Consuming at least **1,000 mg** a day of **carnosine**,^{163,164} along with **benfotiamine (50-500 mg/day)**,^{32,165} and **pyridoxal-5-phosphate (100-200 mg/day)**^{32,165} can **inhibit** pathological **glycation reactions** in the body.

Avoiding foods cooked at high temperature not only reduces pathological glycation processes, but also prevents the formation of gene-mutating toxins that are known **carcinogens**.

When food is cooked at high temperatures, toxins form that mutate **cell regulatory genes**^{9,166,167}. The tragic result is increased **cancer** risk. This warning has been communicated to readers of this publication for many years.

With overwhelming evidence that overheated food is associated with accelerated aging and

cancer, health conscious individuals have an even greater incentive to pay attention to how they prepare their food. Failure to heed these warnings will invariably cause the majority of aging humans to **“cook themselves to death.”**

Mainstream doctors should be advising patients on safer ways to prepare their food, but this message is still not getting out, despite our warning almost ten years ago.

As a member of the Life Extension Foundation®, you learn about documented methods of reducing disease risk long **before** the general public.

The Time to Stock Up On Life-Saving Supplements

Once a year, we **discount** all of our leading-edge formulas so that members can stock up at extra-low prices. We hope you'll take advantage of this year's **Super Sale** to obtain premium-grade supplements to protect your health today, while helping to support biomedical research that may lead to unprecedented extensions of our healthy life spans.

For longer life,



William Faloon

References

1. Belin RJ, Greenland P, Martin L, et al. Fish intake and the risk of incident heart failure: the Women's Health Initiative. *Circ Heart Fail.* 2011 Jul;4(4):404-13.
2. Mozaffarian D, Gottdiener JS, Siscovick DS. Intake of tuna or other broiled or baked fish versus fried fish and cardiac structure, function, and hemodynamics. *Am J Cardiol.* 2006 Jan 15;97(2):216-22.
3. Vlassara H, Cai W, Crandall J, et al. Inflammatory mediators are induced by dietary glycotoxins, a major risk factor for diabetic angiopathy. *Proc Natl Acad Sci U S A.* 2002 Nov 26;99(24):15596-601.
4. Deitz AC, Zheng W, Leff MA, et al. N-Acetyltransferase-2 genetic polymorphism, well-done meat intake, and breast cancer risk among postmenopausal women. *Cancer Epidemiol Biomarkers Prev.* 2000 Sep;9(9):905-10.
5. Zheng W, Gustafson DR, Sinha R, et al. Well-done meat intake and the risk of breast cancer. *J Natl Cancer Inst.* 1998 Nov 18;90(22):1724-9.
6. Sinha R, Gustafson DR, Kulldorff M, Wen WQ, Cerhan JR, Zheng W. 2-amino-1-methyl-6-phenylimidazo[4,5-b]pyridine, a carcinogen in high-temperature-cooked meat, and breast cancer risk. *J Natl Cancer Inst.* 2000 92:1352-54.
7. Cross AJ, Peters U, Kirsh VA, et al. A prospective study of meat and meat mutagens and prostate cancer risk. *Cancer Research.* 2005 65(24):11779-84.
8. Sinha R, Park Y, Graubard BI, et al. Meat and meat-related compounds and risk of prostate cancer in a large prospective cohort study in the United States. *Am J Epidemiol.* 2009 170(9):1165-77.
9. Jägerstad M, Skog K. Genotoxicity of heat-processed foods. *Mutat Res.* 2005 Jul 1;574(1-2):156-72.
10. Birlouez-Aragon I, Saavedra G, Tessier FJ, et al. A diet based on high-heat-treated foods promotes risk factors for diabetes mellitus and cardiovascular diseases. *Am J Clin Nutr.* 2010 May;91(5):1220-6.
11. Available at: <http://www.cancer.gov/cancer-topics/factsheet/Risk/cooked-meats>. Accessed October 11, 2012.
12. John EM, Stern MC, Sinha R, Koo J. Meat consumption, cooking practices, meat mutagens, and risk of prostate cancer. *Nutr Cancer.* 2011 63(4):525-37.
13. Bear WL, Teel RW. Effects of citrus flavonoids on the mutagenicity of heterocyclic amines and on cytochrome P450 1A2 activity. *Anticancer Res.* 2000 Sep-Oct;20(5B):3609-14.
14. Cai W, Ramdas M, Zhu L, Chen X, Striker GE, Vlassara H. Oral advanced glycation endproducts (AGEs) promote insulin resistance and diabetes by depleting the antioxidant defenses AGE receptor-1 and sirtuin 1. *Proc Natl Acad Sci USA.* 2012 Aug 20.
15. Uribarri J, Cai W, Sandu O, Peppia M, Goldberg T, Vlassara H. Diet-derived advanced glycation end products are major contributors to the body's AGE pool and induce inflammation in healthy subjects. *Ann N Y Acad Sci.* 2005 Jun;1043:461-6.
16. Invitti C. Obesity and low-grade systemic inflammation. *Minerva Endocrinol.* 2002 Sep;27(3):209-14.
17. Engström G, Hedblad B, Stavenow L, Lind P, Janzon L, Lindgärde F. Inflammation-sensitive plasma proteins are associated with future weight gain. *Diabetes.* 2003 Aug;52(8):2097-101.

18. Xu H, Barnes GT, Yang Q, et al. Chronic inflammation in fat plays a crucial role in the development of obesity-related insulin resistance. *J Clin Invest*. 2003 Dec;112(12):1821-30.
19. Fogarty AW, Glancy C, Jones S, Lewis SA, McKeever TM, Britton JR. A prospective study of weight change and systemic inflammation over 9 y. *Am J Clin Nutr*. 2008 Jan;87(1):30-5.
20. Reddy VP, Garrett MR, Perry G, et al. Carnosine: a versatile antioxidant and antiglycating agent. *Sci Aging Knowledge Environ*. 2005 May 4;2005(18):pe12.
21. Brownson C, Hipkiss AR. Carnosine reacts with a glycated protein. *Free Radic Biol Med*. 2000 May 15;28(10):1564-70.
22. Hipkiss AR. Aging, proteotoxicity, mitochondria, glycation, NAD and carnosine: Possible inter-relationships and resolution of the oxygen paradox. *Front Aging Neurosci*. 2010 Mar 18;2:10.
23. Pietkiewicz J, Bronowicka-Szydelko A, Dzierzba K, Danielewicz R, Gamian A. Glycation of the muscle-specific enolase by reactive carbonyls: effect of temperature and the protection role of carnosine, pyridoxamine and phosphatidylserine. *Protein J*. 2011 Mar;30(3):149-58.
24. Alhamdani MS, Al-Azzawie HF, Abbas FK. Decreased formation of advanced glycation end-products in peritoneal fluid by carnosine and related peptides. *Perit Dial Int*. 2007 Jan-Feb;27(1):86-9.
25. Ukeda H, Hasegawa Y, Harada Y, Sawamura M. Effect of carnosine and related compounds on the inactivation of human Cu,Zn-superoxide dismutase by modification of fructose and glycolaldehyde. *Biosci Biotechnol Biochem*. 2002 Jan;66(1):36-43.
26. Stirban A, Negrean M, Stratmann B, et al. Benfotiamine prevents macro- and microvascular endothelial dysfunction and oxidative stress following a meal rich in advanced glycation end products in individuals with type 2 diabetes. *Diabetes Care*. 2006 Sep;29(9):2064-71.
27. Pomero F, Molinar Min A, La Selva M, Allione A, Molinatti GM, Porta M. Benfotiamine is similar to thiamine in correcting endothelial cell defects induced by high glucose. *Acta Diabetol*. 2001 38(3):135-8.
28. Katare RG, Caporali A, Oikawa A, Meloni M, Emanuelli C, Madeddu P. Vitamin B1 analog benfotiamine prevents diabetes-induced diastolic dysfunction and heart failure through Akt/Pim-1-mediated survival pathway. *Circ Heart Fail*. 2010 Mar;3(2):294-305.
29. Hammes HP, Du X, Edelstein D, et al. Benfotiamine blocks three major pathways of hyperglycemic damage and prevents experimental diabetic retinopathy. *Nat Med*. 2003 Mar;9(3):294-9.
30. Balakumar P, Rohilla A, Krishan P, Solairaj P, Thangathirupathi A. The multifaceted therapeutic potential of benfotiamine. *Pharmacol Res*. 2010 Jun;61(6):482-8. Epub 2010 Feb 25.
31. Kihm LP, Müller-Krebs S, Klein J, et al. Benfotiamine protects against peritoneal and kidney damage in peritoneal dialysis. *J Am Soc Nephrol*. 2011 May;22(5):914-26.
32. Miyazawa T, Nakagawa K, Shimasaki S, Nagai R. Lipid glycation and protein glycation in diabetes and atherosclerosis. *Amino Acids*. 2012 Apr;42(4):1163-70. Epub 2010 Oct 19.
33. Higuchi O, Nakagawa K, Tsuzuki T, Suzuki T, Oikawa S, Miyazawa T. Aminophospholipid glycation and its inhibitor screening system: a new role of pyridoxal 5'-phosphate as the inhibitor. *J Lipid Res*. 2006 May;47(5):964-74.
34. Voziyan PA, Metz TO, Baynes JW, Hudson BG. A post-Amadori inhibitor pyridoxamine also inhibits chemical modification of proteins by scavenging carbonyl intermediates of carbohydrate and lipid degradation. *J Biol Chem*. 2002 Feb 1;277(5):3397-403.
35. Chetyrkin SV, Zhang W, Hudson BG, Serianni AS, Voziyan PA. Pyridoxamine protects proteins from functional damage by 3-deoxyglucosone: mechanism of action of pyridoxamine. *Biochemistry*. 2008 Jan 22;47(3):997-1006.
36. Onorato JM, Jenkins AJ, Thorpe SR, Baynes JW. Pyridoxamine, an inhibitor of advanced glycation reactions, also inhibits advanced lipoxidation reactions. Mechanism of action of pyridoxamine. *J Biol Chem*. 2000 Jul 14;275(28):21177-84.
37. Available at: <http://www.sciencedaily.com/releases/2012/08/1208201215102.htm>. Accessed October 2012.
38. Brtünsgaard H, Pedersen BK. Age-related inflammatory cytokines and disease. *Immunol Allergy Clin North Am*. 2003 Feb;23(1):15-39.
39. Roubenoff R, Harris TB, Abad LW, Wilson PW, Dallal GE, Dinarello CA. Monocyte cytokine production in an elderly population: effect of age and inflammation. *J Gerontol A Biol Sci Med Sci*. 1998 Jan;53(1):M20-6.
40. Brennan FM, Maini RN, Feldmann M. Cytokine expression in chronic inflammatory disease. *Br Med Bull*. 1995 Apr;51(2):368-84.
41. Chung HY, Cesari M, Anton S, et al. Molecular inflammation: underpinnings of aging and age-related diseases. *Ageing Res Rev*. 2009 Jan;8(1):18-30.
42. Brod SA. Unregulated inflammation shortens human functional longevity. *Inflamm Res*. 2000 Nov;49(11):561-70.
43. Lencel P, Magne D. Inflammaging: the driving force in osteoporosis? *Med Hypotheses*. 2011 Mar;76(3):317-21. Epub 2010 Oct 18.
44. Kofler S, Nickel T, Weis M. Role of cytokines in cardiovascular diseases: a focus on endothelial responses to inflammation. *Clin Sci (Lond)*. 2005 Mar;108(3):205-13.
45. Blasko I, Grubeck-Loebenstien B. Role of the immune system in the pathogenesis, prevention and treatment of Alzheimer's disease. *Drugs Aging*. 2003;20(2):101-13.
46. Akiyama H, Barger S, Barnum S, et al. Inflammation and Alzheimer's disease. *Neurobiol Aging*. 2000 May-Jun;21(3):383-421.
47. McGeer PL, McGeer EG. Inflammation and neurodegeneration in Parkinson's disease. *Parkinsonism Relat Disord*. 2004 May;10 Suppl 1:S3-7.
48. McGeer PL, McGeer EG. Inflammatory processes in amyotrophic lateral sclerosis. *Muscle Nerve*. 2002 Oct;26(4):459-70.
49. Frischer JM, Bramow S, Dal-Bianco A, et al. The relation between inflammation and neurodegeneration in multiple sclerosis brains. *Brain*. 2009 May;132(Pt 5):1175-89.
50. Isomäki P, Punnonen J. Pro- and anti-inflammatory cytokines in rheumatoid arthritis. *Ann Med*. 1997 Dec;29(6):499-507.
51. McInnes IB, Schett G. Cytokines in the pathogenesis of rheumatoid arthritis. *Nat Rev Immunol*. 2007 Jun;7(6):429-42.
52. Lin L, Park S, Lakatta EG. RAGE signaling in inflammation and arterial aging. *Front Biosci*. 2009 Jan 1;14:1403-13.
53. Khan DA, Ansari WM, Khan FA. Pro/anti-inflammatory cytokines in the pathogenesis of premature coronary artery disease. *J Interferon Cytokine Res*. 2011 Jul;31(7):561-7.
54. Tedgui A, Mallat Z. Cytokines in atherosclerosis: pathogenic and regulatory pathways. *Physiol Rev*. 2006 Apr;86(2):515-81.
55. Kotur-Stevuljevic J, Memon L, Stefanovic A, et al. Correlation of oxidative stress parameters and inflammatory markers in coronary artery disease patients. *Clin Biochem*. 2007 Feb;40(3-4):181-7.
56. Jaiswal M, LaRusso NF, Burgart LJ, Gores GJ. Inflammatory cytokines induce DNA damage and inhibit DNA repair in cholangiocarcinoma cells by a nitric oxide-dependent mechanism. *Cancer Res*. 2000 Jan 1;60(1):184-90.
57. Bartsch H, Nair J. Chronic inflammation and oxidative stress in the genesis and perpetuation of cancer: Role of lipid peroxidation, DNA damage and repair. *Langenbecks Arch Surg*. 2006 391:499-510.
58. Federico A, Morgillo F, Tuccillo C, Ciardiello F, Loguercio C. Chronic inflammation and oxidative stress in human carcinogenesis. *Int J Cancer*. 2007 Dec 1;121(11):2381-6.
59. Meira LB, Bugni JM, Green SL, et al. DNA damage induced by chronic inflammation contributes to colon carcinogenesis in mice. *J Clin Invest*. 2008 Jul;118(7):2516-25.
60. Amantea D, Nappi G, Bernardi G, Bagetta G, Corasaniti MT. Post-ischemic brain damage: pathophysiology and role of inflammatory mediators. *FEBS J*. 2009 Jan;276(1):13-26.
61. Engelhart MJ, Geerlings MI, Meijer J, et al. Inflammatory proteins in plasma and the risk of dementia: the rotterdam study. *Arch Neurol*. 2004 May;61(5):668-72.
62. McGeer PL, McGeer EG. Inflammation, autotoxicity and Alzheimer disease. *Neurobiol Aging*. 2001 Nov-Dec;22(6):799-809.

63. Rubio-Perez JM, Morillas-Ruiz JM. A review: inflammatory process in Alzheimer's disease, role of cytokines. *Scientific World Journal*. 2012 2012:756357.
64. Caruso C, Lio D, Cavallone L, Franceschi C. Aging, longevity, inflammation, and cancer. *Ann NY Acad Sci*. 2004 Dec;1028:1-13.
65. Wiseman H, Halliwell B. Damage to DNA by reactive oxygen and nitrogen species: role in inflammatory disease and progression to cancer. *Biochem J*. 1996 Jan 1;313 (Pt 1):17-29.
66. Azad N, Rojanasakul Y, Vallyathan V. Inflammation and lung cancer: roles of reactive oxygen/nitrogen species. *J Toxicol Environ Health B Crit Rev*. 2008 11(1):1-15.
67. Risch HA, Howe GR. Pelvic inflammatory disease and the risk of epithelial ovarian cancer. *Cancer Epidemiol Biomarkers Prev*. 1995 Jul;4(5):447-51.
68. Chen Z, Malhotra PS, Thomas GR, et al. Expression of proinflammatory and proangiogenic cytokines in patients with head and neck cancer. *Clin Cancer Res*. 1999 Jun;5(6):1369-79.
69. Deeb ZE, Fox LA, deFries HO. The association of chronic inflammatory disease in lichen planus with cancer of the oral cavity. *Am J Otolaryngol*. 1989 Sep;10(5):314-6.
70. Tracy RP. Emerging relationships of inflammation, cardiovascular disease and chronic diseases of aging. *Int J Obes Relat Metab Disord*. 2003 27(Suppl 3):S29-S34.
71. Libby P, Ridker PM, Maseri A. Inflammation and atherosclerosis. *Circulation*. 2002 Mar 5;105(9):1135-43.
72. Mach F. Inflammation is a crucial feature of atherosclerosis and a potential target to reduce cardiovascular events. *Handb Exp Pharmacol*. 2005 (170):697-722.
73. Alvaro-Gonzalez LC, Freijo-Guerrero MM, Sadaba-Garay F. Inflammatory mechanisms, arteriosclerosis and ischemic stroke: clinical data and perspectives. *Rev Neurol*. 2002 Sep 1;35(5):452-62.
74. Basta G, Schmidt AM, De Caterina R. Advanced glycation end products and vascular inflammation: implications for accelerated atherosclerosis in diabetes. *Cardiovasc Res*. 2004 Sep 1;63(4):582-92.
75. Negrean M, Stirban A, Stratmann B, et al. Effects of low- and high-advanced glycation endproduct meals on macro- and microvascular endothelial function and oxidative stress in patients with type 2 diabetes mellitus. *Am J Clin Nutr*. 2007 May;85(5):1236-43.
76. Gao S, Roberts HK, Wang X. Cross tissue trait-pathway network reveals the importance of oxidative stress and inflammation pathways in obesity-induced diabetes in mouse. *PLoS One*. 2012;7(9):e44544. doi: 10.1371/journal.pone.0044544. Epub 2012 Sep 17.
77. Bastard JP, Maachi M, Lagathu C, et al. Recent advances in the relationship between obesity, inflammation, and insulin resistance. *Eur Cytokine Netw*. 2006 17(1):4-12.
78. Steiner I, Krbal L, Dominik J. Blood vessels and lymphatics in calcific aortic stenosis—in support of its inflammatory pathogenesis. *Cesk Patol*. 2010 Apr;46(2):33-6.
79. Mohty D, Pibarot P, Després JP, et al. Association between plasma LDL particle size, valvular accumulation of oxidized LDL, and inflammation in patients with aortic stenosis. *Arterioscler Thromb Vasc Biol*. 2008 Jan;28(1):187-93.
80. Mazzone A, Epistolato MC, Gianetti J, et al. Biological features (inflammation and neoangiogenesis) and atherosclerotic risk factors in carotid plaques and calcified aortic valve stenosis: two different sites of the same disease? *Am J Clin Pathol*. 2006 Oct;126(4):494-502.
81. Devaux B, Scholz D, Hürche A, Klövekorn WP, Schaper J. Upregulation of cell adhesion molecules and the presence of low grade inflammation in human chronic heart failure. *Eur Heart J*. 1997 Mar;18(3):470-9.
82. Manabe I. Chronic inflammation links cardiovascular, metabolic and renal diseases. *Circ J*. 2011 75(12):2739-48.
83. Pradhan AD, Manson JE, Rossouw JE, et al. Inflammatory biomarkers, hormone replacement therapy, and incident coronary heart disease: prospective analysis from the Women's Health Initiative observational study. *JAMA*. 2002 Aug 28;288(8):980-7.
84. Bahrami H, Bluemke DA, Kronmal R, et al. Novel metabolic risk factors for incident heart failure and their relationship with obesity: the MESA (Multi-Ethnic Study of Atherosclerosis) study. *J Am Coll Cardiol*. 2008 May 6;51(18):1775-83.
85. Paganelli R, Di IA, Patricelli L, et al. Pro-inflammatory cytokines in sera of elderly patients with dementia: levels in vascular injury are higher than those of mild-moderate Alzheimer's disease patients. *Exp Gerontol*. 2002 Jan;37(2-3):257-63.
86. Zuliani G, Ranzini M, Guerra G, et al. Plasma cytokines profile in older subjects with late onset Alzheimer's disease or vascular dementia. *J Psychiatr Res*. 2007 Oct;41(8):686-93.
87. Azizi G, Mirshafiey A. The potential role of proinflammatory and antiinflammatory cytokines in Alzheimer disease pathogenesis. *Immunopharmacol Immunotoxicol*. 2012 Sep 13. [Epub ahead of print]
88. Akiyama H, Barger S, Barnum S, et al. Inflammation and Alzheimer's disease. *Neurobiol Aging*. 2000 May-Jun;21(3):383-421.
89. Guebre-Egziabher F, Fouque D. Metabolic consequences of inflammation in kidney failure. *Nephrologie*. 2003 24(7):383-6.
90. de Vinuesa SG, Goicoechea M, Kanter J, et al. Insulin resistance, inflammatory biomarkers, and adipokines in patients with chronic kidney disease: effects of angiotensin II blockade. *J Am Soc Nephrol*. 2006 Dec;17(12 Suppl 3):S206-12.
91. Glorieux G, Cohen G, Jankowski J, Vanholder R. Platelet/Leukocyte activation, inflammation, and uremia. *Semin Dial*. 2009 22(4):423-7.
92. Santoro A, Mancini E. Cardiac effects of chronic inflammation in dialysis patients. *Nephrol Dial Transplant*. 2002 17 Suppl 8:10-5.
93. Galante A, Pietroiusti A, Vellini M, et al. C-reactive protein is increased in patients with degenerative aortic valvular stenosis. *J Am Coll Cardiol*. 2001 Oct;38(4):1078-82.
94. Stürmer T, Brenner H, Koenig W, Günther KP. Severity and extent of osteoarthritis and low grade systemic inflammation as assessed by high sensitivity C reactive protein. *Ann Rheum Dis*. 2004 Feb;63(2):200-5.
95. Pasceri V, Willerson JT, Yeh ET. Direct pro-inflammatory effect of C-reactive protein on human endothelial cells. *Circulation*. 2000 Oct 31;102(18):2165-8.
96. Jeppesen J, Hansen TW, Olsen MH, et al. C-reactive protein, insulin resistance and risk of cardiovascular disease: a population-based study. *Eur J Cardiovasc Prev Rehabil*. 2008 Oct;15(5):594-8.
97. Agmon Y, Khandheria BK, Meissner I, et al. C-reactive protein and atherosclerosis of the thoracic aorta: a population-based transesophageal echocardiographic study. *Arch Intern Med*. 2004 Sep 13;164(16):1781-7.
98. Seddon JM, Gensler G, Milton RC, Klein ML, Rifai N. Association between C-reactive protein and age-related macular degeneration. *JAMA*. 2004 Feb 11;291(6):704-10.
99. Erlinger TP, Platz EA, Rifai N, Helzlsouer KJ. C-reactive protein and the risk of incident colorectal cancer. *JAMA*. 2004 Feb 4;291(5):585-90.
100. Lohwasser C, Neureiter D, Weigle B, Kirchner T, Schuppan D. The receptor for advanced glycation end products is highly expressed in the skin and upregulated by advanced glycation end products and tumor necrosis factor-alpha. *J Invest Dermatol*. 2006 Feb;126(2):291-9.
101. Wondrak GT, Roberts MJ, Jacobson MK, Jacobson EL. Photosensitized growth inhibition of cultured human skin cells: mechanism and suppression of oxidative stress from solar irradiation of glycated proteins. *J Invest Dermatol*. 2002 Aug;119(2):489-98.
102. Dyer DG, Dunn JA, Thorpe SR, et al. Accumulation of Maillard reaction products in skin collagen in diabetes and aging. *J Clin Invest*. 1993 9:2463-9.
103. Sell DR, Kleinman NR, Monnier VM. Longitudinal determination of skin collagen glycation and glycoxidation rates predicts early death in C57BL/6N mice. *FASEB J*. 2000 Jan;14(1):145-56.

104. Genuth S, Sun W, Cleary P, et al. Glycation and carboxymethyllysine levels in skin collagen predict the risk of future 10-year progression of diabetic retinopathy and nephropathy in the diabetes control and complications trial and epidemiology of diabetes interventions and complications participants with type 1 diabetes. *Diabetes*. 2005 Nov;54(11):3103-11.
105. Malik NS, Moss SJ, Ahmed N, Furth AJ, Wall RS, Meek KM. Ageing of the human corneal stroma: structural and biochemical changes. *Biochim Biophys Acta*. 1992 Mar 20;1138(3):222-8.
106. Kaji Y, Usui T, Oshika T, et al. Advanced glycation end products in diabetic corneas. *Invest Ophthalmol Vis Sci*. 2000 Feb;41(2):362-8.
107. Kimura T, Takamatsu J, Ikeda K, Kondo A, Miyakawa T, Horiuchi S. Accumulation of advanced glycation end products of the Maillard reaction with age in human hippocampal neurons. *Neurosci Lett*. 1996 Apr 12;208(1):53-6.
108. Li JJ, Dickson D, Hof PR, Vlassara H. Receptors for advanced glycosylation endproducts in human brain: role in brain homeostasis. *Mol Med*. 1998 Jan;4(1):46-60.
109. Münch G, Westcott B, Menini T, Gugliucci A. Advanced glycation endproducts and their pathogenic roles in neurological disorders. *Amino Acids* 2012 42(4):1221-36.
110. Dei R, Takeda A, Niwa H, et al. Lipid peroxidation and advanced glycation end products in the brain in normal aging and in Alzheimer's disease. *Acta Neuropathol*. 2002 Aug;104(2):113-22.
111. Rahmadi A, Steiner N, Münch G. Advanced glycation endproducts as gerontotoxins and biomarkers for carbonyl-based degenerative processes in Alzheimer's disease. *Clin Chem Lab Med*. 2011 Mar;49(3):385-91.
112. Shuvaev VV, Laffont I, Serot JM, Fujii J, Taniguchi N, Siest G. Increased protein glycation in cerebrospinal fluid of Alzheimer's disease. *Neurobiol Aging*. 2001 May-Jun;22(3):397-402.
113. Falcone C, Emanuele E, D'Angelo A, et al. Plasma levels of soluble receptor for advanced glycation end products and coronary artery disease in nondiabetic men. *Arterioscler Thromb Vasc Biol*. 2005 25:1032-7.
114. Semba RD, Ferrucci L, Sun K, et al. Advanced glycation end products and their circulating receptors predict cardiovascular disease mortality in older community-dwelling women. *Aging Clin Exp Res*. 2009 Apr;21(2):182-90.
115. Kilhöv BK, Berg TJ, Birkeland KI, Thorsby P, Hanssen KF. Serum levels of advanced glycation end products are increased in patients with type 2 diabetes and coronary heart disease. *Diabetes Care*. 1999 Sep;22(9):1543-8.
116. Kanauchi M, Tsujimoto N, Hashimoto T. Advanced glycation end products in non-diabetic patients with coronary artery disease. *Diabetes Care*. 2001 Sep;24(9):1620-3.
117. Uribarri J, Peppas M, Cai W, et al. Restriction of dietary glycotoxins reduces excessive advanced glycation end products in renal failure patients. *J Am Soc Nephrol*. 2003;14:728-31.
118. Semba RD, Ferrucci L, Fink JC, et al. Advanced glycation end products and their circulating receptors and level of kidney function in older community-dwelling women. *Am J Kidney Dis*. 2009 Jan;53(1):51-8.
119. Simm A, Casselmann C, Schubert A, Hofmann S, Reimann A, Silber RE. Age associated changes of AGE-receptor expression: RAGE upregulation is associated with human heart dysfunction. *Exp Gerontol*. 2004 Mar;39(3):407-13.
120. Hyogo H, Yamagishi S. Advanced glycation end products (AGEs) and their involvement in liver disease. *Curr Pharm Des*. 2008 14(10):969-72.
121. Reddy VP, Garrett MR, Perry G, Smith MA. Carnosine: a versatile antioxidant and antiglycating agent. *Sci Aging Knowledge Environ*. 2005 May 4;2005(18):pe12.
122. Lee YT, Hsu CC, Lin MH, Liu KS, Yin MC. Histidine and carnosine delay diabetic deterioration in mice and protect human low density lipoprotein against oxidation and glycation. *Eur J Pharmacol*. 2005 Apr 18;513(1-2):145-50.
123. Ukeda H, Hasegawa Y, Harada Y, Sawamura M. Effect of carnosine and related compounds on the inactivation of human Cu,Zn-superoxide dismutase by modification of fructose and glycolaldehyde. *Biosci Biotechnol Biochem*. 2002 Jan;66(1):36-43.
124. Pekcetin C, Kiray M, Ergur BU, et al. Carnosine attenuates oxidative stress and apoptosis in transient cerebral ischemia in rats. *Acta Biol Hung*. 2009 Jun;60(2):137-48.
125. Hipkiss AR. Could carnosine or related structures suppress Alzheimer's disease? *J Alzheimers Dis*. 2007 May;11(2):229-40.
126. McNulty M, Mahmud A, Feely J. Advanced glycation end-products and arterial stiffness in hypertension. *Am J Hypertens*. 2007 Mar;20(3):242-7.
127. Asif M, Egan J, Vasani S, et al. An advanced glycation endproduct cross-link breaker can reverse age-related increases in myocardial stiffness. *Proc Natl Acad Sci USA*. 2000 Mar 14;97(6):2809-13.
128. Pirro M, Schillaci G, Savarese G, et al. Attenuation of inflammation with short-term dietary intervention is associated with a reduction of arterial stiffness in subjects with hypercholesterolaemia. *Eur J Cardiovasc Prev Rehabil*. 2004 Dec;11(6):497-502.
129. Aronson D. Cross-linking of glycated collagen in the pathogenesis of arterial and myocardial stiffening of aging and diabetes. *J Hypertens*. 2003 Jan;21(1):3-12.
130. Ueno H, Koyama H, Tanaka S, et al. Skin autofluorescence, a marker for advanced glycation end product accumulation, is associated with arterial stiffness in patients with end-stage renal disease. *Metabolism*. 2008 Oct;57(10):1452-7.
131. Franke S, Dawczynski J, Strobel J, et al. Increased levels of advanced glycation end products in human cataractous lenses. *J Cataract Refract Surg*. 2003 May;29(5):998-1004.
132. Pokupec R, Kalauz M, Turk N, Turk Z. Advanced glycation endproducts in human diabetic and non-diabetic cataractous lenses. *Graefes Arch Clin Exp Ophthalmol*. 2003 May;241(5):378-84.
133. Gul A, Rahman MA, Salim A, Simjee SU. Advanced glycation end products in senile diabetic and nondiabetic patients with cataract. *J Diabetes Complications*. 2009 Sep-Oct;23(5):343-8.
134. Münch G, Westcott B, Menini T, Gugliucci A. Advanced glycation endproducts and their pathogenic roles in neurological disorders. *Amino Acids*. 2012 Apr;42(4):1221-36.
135. Takeuchi M, Bucala R, Suzuki T, Ohkubo T, Yamazaki M, Koike T, Kameda Y, Makita Z. Neurotoxicity of advanced glycation end-products for cultured cortical neurons. *J Neuropathol Exp Neurol*. 2000 Dec;59(12):1094-105.
136. Dukic-Stefanovic S, Schinzel R, Riederer P, Münch G. AGES in brain ageing: AGE-inhibitors as neuroprotective and anti-dementia drugs? *Biogerontology*. 2001;2(1):19-34.
137. Eikelenboom P, Rozemuller AJ, Hoozemans JJ, Veerhuis R, van Gool WA. Neuroinflammation and Alzheimer disease: clinical and therapeutic implications. *Alzheimer Dis Assoc Disord*. 2000 14 Suppl 1:S54-61.
138. Sugimoto K, Yasujima M, Yagihashi S. Role of advanced glycation end products in diabetic neuropathy. *Curr Pharm Des*. 2008 14(10):953-61.
139. Cameron NE, Gibson TM, Nangle MR, Cotter MA. Inhibitors of advanced glycation end product formation and neurovascular dysfunction in experimental diabetes. *Ann N Y Acad Sci*. 2005 Jun;1043:784-92.
140. Uribarri J, Peppas M, Cai W, Goldberg T, et al. Dietary glycotoxins correlate with circulating advanced glycation end product levels in renal failure patients. *Am J Kidney Dis*. 2003 Sep;42(3):532-8.
141. Kiecolt-Glaser JK, Belury MA, Andridge R, Malarkey WB, Hwang BS, Glaser R. Omega-3 supplementation lowers inflammation in healthy middle-aged and older adults: a randomized controlled trial. *Brain Behav Immun*. 2012 Aug;26(6):988-95.
142. Wu D, Han SN, Meydani M, Meydani SN. Effect of concomitant consumption of fish oil and vitamin E on production of inflammatory cytokines in healthy elderly humans. *Ann NY Acad Sci*. 2004 Dec;1031:422-4.

143. Pischon T, Hankinson SE, Hotamisligil GS, et al. Habitual dietary intake of n-3 and n-6 fatty acids in relation to inflammatory markers among US men and women. *Circulation*. 2003 Jul 15;108(2):155-60.
144. Kremer JM. n-3 fatty acid supplements in rheumatoid arthritis. *Am J Clin Nutr* 2000 Jan;71(1 Suppl):349S-51S.
145. Madsen T, Skou HA, Hansen VE, et al. C-reactive protein, dietary n-3 fatty acids, and the extent of coronary artery disease. *Am J Cardiol*. 2001 Nov 15;88(10):1139-42.
146. Moertl D, Hammer A, Steiner S, Hutuleac R, Vonbank K, Berger R. Dose-dependent effects of omega-3-polyunsaturated fatty acids on systolic left ventricular function, endothelial function, and markers of inflammation in chronic heart failure of nonischemic origin: a double-blind, placebo-controlled, 3-arm study. *Am Heart J*. 2011 May;161(5):915 e1-9.
147. Kesavalu L, Bakthavatchalu V, Rahman MM, et al. Omega-3 fatty acid regulates inflammatory cytokine/mediator messenger RNA expression in Porphyromonas gingivalis-induced experimental periodontal disease. *Oral Microbiol Immunol*. 2007 Aug;22(4):232-9.
148. Jolly CA, Muthukumar A, Avula CP, Troyer D, Fernandes G. Life span is prolonged in food-restricted autoimmune-prone (NZB x NZW)F(1) mice fed a diet enriched with (n-3) fatty acids. *J Nutr*. 2001 Oct;131(10):2753-60.
149. Chainani-Wu N. Safety and anti-inflammatory activity of curcumin: a component of turmeric (*Curcuma longa*). *J Altern Complement Med*. 2003 Feb;9(1):161-8.
150. Satoskar RR, Shah SJ, Shenoy SG. Evaluation of anti-inflammatory property of curcumin (diferuloyl methane) in patients with postoperative inflammation. *Int J Clin Pharmacol Ther Toxicol*. 1986 Dec;24(12):651-4.
151. Ramsewak RS, DeWitt DL, Nair MG. Cytotoxicity, antioxidant and anti-inflammatory activities of curcumins I-III from *Curcuma longa*. *Phytomedicine*. 2000 Jul;7(4):303-8.
152. Pendurthi UR, Williams JT, Rao LV. Inhibition of tissue factor gene activation in cultured endothelial cells by curcumin. Suppression of activation of transcription factors Egr-1, AP-1, and NF-kappa B. *Arterioscler Thromb Vasc Biol*. 1997 Dec;17(12):3406-13.
153. Ammon HP. Boswellic acids in chronic inflammatory diseases. *Planta Med*. 2006 Oct;72(12):1100-16.
154. Chevrier MR, Ryan AE, Lee DY, Zhongze M, Wu-Yan Z, Via CS. Boswellia carterii extract inhibits TH1 cytokines and promotes TH2 cytokines in vitro. *Clin Diagn Lab Immunol*. 2005 May;12(5):575-80.
155. Safayhi H, Sailer ER, Ammon HP. Mechanism of 5-lipoxygenase inhibition by acetyl-11-keto-beta-boswellic acid. *Mol Pharmacol*. 1995 Jun;47(6):1212-6.
156. Sailer ER, Subramanian LR, Rall B, Hoernlein RF, Ammon HP, Safayhi H. Acetyl-1 keto-beta-boswellic acid (AKBA): structure requirements for binding and 5-lipoxygenase inhibitory activity. *Br J Pharmacol*. 1996 Feb;117(4):615-8.
157. Casson PR, Andersen RN, Herrod HG, et al. Oral dehydroepiandrosterone in physiologic doses modulates immune function in postmenopausal women. *Am J Obstet Gynecol* 1993 Dec;169(6):1536-9.
158. Kipper-Galperin M, Galilly R, Danenberg HD, et al. Dehydroepiandrosterone selectively inhibits production of tumor necrosis factor alpha and interleukin-6 [correction of interleukin-6] in astrocytes. *Int J Dev Neurosci*. 1999 Dec;17(8):765-75.
159. Shea MK, Booth SL, Massaro JM, et al. Vitamin K and vitamin D status: associations with inflammatory markers in the Framingham Offspring Study. *Am J Epidemiol*. 2008 Feb 1;167(3):313-20.
160. Ozaki I, Zhang H, Mizuta T, et al. Menatrenone, a vitamin K2 analogue, inhibits hepatocellular carcinoma cell growth by suppressing cyclin D1 expression through inhibition of nuclear factor kappaB activation. *Clin Cancer Res*. 2007 Apr 1;13(7):2236-45.
161. Reddi K, Henderson B, Meghji S, et al. Interleukin 6 production by lipopolysaccharide-stimulated human fibroblasts is potentially inhibited by naphthoquinone (vitamin K) compounds. *Cytokine*. 1995 Apr;7(3):287-90.
162. Shoelson SE, Herrero L, Naaz A. Obesity, inflammation, and insulin resistance. *Gastroenterology*. 2007 May;132(6):2169-80.
163. Rajasekar P, Anuradha CV. L-Carnitine inhibits protein glycation in vitro and in vivo: evidence for a role in diabetic management. *Acta Diabetol*. 2007 Jun;44(2):83-90.
164. Swamy-Mruthinti S, Carter AL. Acetyl-L-carnitine decreases glycation of lens proteins: in vitro studies. *Exp Eye Res*. 1999 Jul;69(1):109-15.
165. Syngle A, Vohra K, Garg N, Kaur L, Chand P. Advanced glycation end-products inhibition improves endothelial dysfunction in rheumatoid arthritis. *Int J Rheum Dis*. 2012 Feb;15(1):45-55.
166. Hindsø Landin H, Tareke E, Rydberg P, Olsson U, Törnqvist M. Heating of food and haemoglobin adducts from carcinogens: possible precursor role of glycidol. *Food Chem Toxicol*. 2000 Nov;38(11):963-9.
167. Sugimura T, Wakabayashi K, Nakagama H, Nagao M. Heterocyclic amines: Mutagens/carcinogens produced during cooking of meat and fish. *Cancer Science*. 2004 95(4):290-9.
168. Peppia M, Goldberg T, Cai W, Rayfield E, Vlassara H. Glycotoxins: a missing link in the "relationship of dietary fat and meat intake in relation to risk of type 2 diabetes in men". *Diabetes Care*. 2002 Oct;25(10):1898-9.
169. Hegele J, Buetler T, Delatour T. Comparative LC-MS/MS profiling of free and protein-bound early and advanced glycation-induced lysine modifications in dairy products. *Anal Chim Acta*. 2008 Jun 9;617(1-2):85-96. Epub 2008 Jan 3.
170. Xanthos A, Hatzitolios A, Koliakos G, Tatos V. Advanced glycosylation end products and nutrition—a possible relation with diabetic atherosclerosis and how to prevent it. *J Food Sci*. 2007 Oct;72(8):R125-9.
171. Zheng W, Gustafson DR, Moore D, et al. Well-done meat intake and the risk of breast cancer. *J Natl Cancer Inst*. 1998;90(22):1724-9.
172. Gross GA, Gruter A. Quantitation of mutagenic/carcinogenic heterocyclic aromatic amines in food products. *J Chromatogr*. 1992 Feb 21;592(1-2):271-8.
173. Guengerich FP, Shimada T, Bondan A, Macdonald TL. Cytochrome P-450 oxidations and the generation of biologically reactive intermediates. *Adv Exp Med Biol*. 1991;283:1-11.
174. Negishi T, Rai H, Hayatsu H. Antigenotoxic activity of natural chlorophylls. *Mutat Res*. 1997 May 12;376(1-2):97-100.
175. Ong TM, Whong WZ, Stewart J, Brockman HE. Chlorophyllin: a potent antimutagen against environmental and dietary complex mixtures. *Mutat Res*. 1986 Feb;173(2):111-5.
176. Hernaez J, Xu M, Dashwood R. Effects of tea and chlorophyllin on the mutagenicity of N-hydroxy-IQ: studies of enzyme inhibition, molecular complex formation, and degradation/scavenging of the active metabolites. *Environ Mol Mutagen*. 1997;30(4):468-74.
177. Dashwood R, Yamane S, Larsen R. Study of the forces of stabilizing complexes between chlorophylls and heterocyclic amine mutagens. *Environ Mol Mutagen*. 1996;27(3):211-8.
178. Grubbs CJ, Steele VE, Casebolt T, et al. Chemoprevention of chemically-induced mammary carcinogenesis by indole-3-carbinol. *Anticancer Res*. 1995 May-Jun;15(3):709-16.
179. He YH, Friesen MD, Ruch RJ, Schut HA. Indole-3-carbinol as a chemopreventive agent in 2-amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (PhIP) carcinogenesis: inhibition of PhIP-DNA adduct formation, acceleration of PhIP metabolism, and induction of cytochrome P450 in female F344 rats. *Food Chem Toxicol*. 2000 Jan;38(1):15-23.
180. Telang NT, Katdare M, Bradlow HL, Osborne MP, Fishman J. Inhibition of proliferation and modulation of estradiol metabolism: novel mechanisms for breast cancer prevention by the phytochemical indole-3-carbinol. *Proc Soc Exp Biol Med*. 1997 Nov;216(2):246-52.

FIGHT BACK AGAINST AGING!



Aging is Characterized by Inflammation, Glycation, and Mitochondrial Decay

The loss of cellular vitality is caused by a number of factors, including mitochondrial problems, glycation, and free-radical reactions. Life Extension® members have access to a state-of-the-art nutritional formula called MITOCHONDRIAL ENERGY OPTIMIZER WITH BioPQQ™ that helps protect delicate cellular structures and enables cells to perform life-sustaining metabolic processes.

Mitochondrial Energy Optimizer with BioPQQ™ is designed to counteract age-related structural and functional changes by providing the following unique ingredients:

- **CARNOSINE:** As humans age, proteins in their bodies become **irreversibly damaged** by glycation reactions. Glycation is the cross-linking of proteins and sugar to form **non-functioning** structures called advanced glycation end products in the body, which can lead to alterations of normal cell function. Carnosine is not only a powerful **anti-glycating** agent, but it also protects **neurons** against reactive and cytotoxic protein carbonyl species associated with normal aging.¹⁻⁵
- **PQQ:** This breakthrough micronutrient has been shown to trigger **mitochondrial biogenesis**—the growth of **new** mitochondria in aging cells!⁶ PQQ also activates genes involved in protecting the delicate structures within the mitochondria.⁷⁻¹⁰
- **LUTEOLIN:** Systemic inflammation is involved in most undesirable consequences of aging. Culprits behind **inflammatory** reactions are pro-inflammatory **cytokines**, such as **interleukin-1** and **tumor necrosis factor-alpha**. Luteolin is a flavonoid that has been shown to help suppress these inflammatory cytokines.¹¹⁻¹⁶
- **BENFOTIAMINE:** Effectively modulates multiple destructive biochemical pathways that are induced by higher than desirable blood glucose levels. Human mortality studies indicate that **ideal** fasting glucose levels are between **74–85 mg/dL**. Yet many aging people have fasting glucose above **90 mg/dL**, which is less than optimal.¹⁶⁻¹⁹ Benfotiamine protects endothelial cell integrity from the effects of high glucose levels. In addition, benfotiamine exhibits direct antioxidative capacity and supports DNA function.²⁰
- **PYRIDOXAL 5'-PHOSPHATE:** Aging results in the formation of **advanced glycation end products** throughout the body. **Pyridoxal 5'-phosphate** is the active form of vitamin B6 that has been shown to protect against both lipid and protein glycation reactions.²¹⁻²⁴

- **R-LIPOIC ACID:** Destructive free-radical activity in the **mitochondria** plays a major role in the loss of cellular vitality. A **microencapsulated Bio-Enhanced® R-lipoic acid** facilitates youthful **mitochondrial energy output** while guarding against **free radicals**. Two forms of lipoic acid are sold on the supplement market, but **R-lipoic acid** is far more potent.²⁵⁻²⁸
- **ACETYL-L-CARNITINE ARGINATE:** The amino acid L-carnitine is required to transport fats into the **mitochondria** to be burned for cellular energy. **Acetyl-L-carnitine arginate** is a patented form of carnitine that also **supports neurites** in the brain.²⁹

Taking all of the individual ingredients in the **Mitochondrial Energy Optimizer with BioPQQ™** separately would be prohibitively expensive, but Life Extension® members obtain this comprehensive formula at substantial savings.

A bottle of **Mitochondrial Energy Optimizer with BioPQQ™** containing **120 capsules** retails for \$94. If a member buys four bottles during **Super Sale**, the price is reduced to **\$56.70** per bottle. Contains soybeans.

Just four capsules of Mitochondrial Energy Optimizer with BioPQQ™ provide:

Carnosine	1000 mg
ArginoCarn® Acetyl-L-carnitine arginate DiHCl	675 mg
R-Lipoic acid (as microencapsulated Bio-Enhanced®)	150 mg
Benfotiamine	150 mg
Pyridoxal 5'-Phosphate	100 mg
BioPQQ™	10 mg
Luteolin	8 mg



Item # 01568

To order Mitochondrial Energy Optimizer with BioPQQ™, call 1-800-544-4440 or visit www.LifeExtension.com

References

1. *Hormones (Athens)*. 2008 Apr-Jun;7(2):123-32.
2. *Protein Pept Lett*. 2008;15(4):385-91.
3. *J Adhesions Dis*. 2007 May;11(2):229-40.
4. *Ann N Y Acad Sci*. 2006 May;1067:369-74.
5. *Sci Aging Knowledge Environ*. 2005 May 4;2005(18):pe12.
6. *J Biol Chem*. 2010 Jan;285:142-52.
7. *Alt Med Rev*. 2009; 14(3):268-77.
8. Entrez Gene: PAR6C1A peroxisome proliferator-activated receptor gamma, coactivator 1 alpha [Homo sapiens] GeneID: 10891.
9. Entrez Gene: CREBBP CREB binding protein [Homo sapiens] GeneID: 1387.
10. *Hum Mol Genet*. 2008 Nov 1;17(21):3357-67.
11. *Life Sci*. 2007 Nov 30;81(23-24):1602-14.
12. *J Nutr*. 2006 Jun;136(6):1517-21.
13. *Biochem Pharmacol*. 2005 Jan 15;69(2):241-8.
14. *Immunology*. 2005 Jul;115(3):375-87.
15. *Am J Respir Crit Care Med*. 2002 Mar 15;165(6):818-23.
16. *Eur J Pharmacol*. 2006 Jul 10;541(1-2):95-105.
17. *Nat Med*. 2003 Mar;9(3):294-9.
18. *Acta Diabetol*. 2001;38(3):135-8.
19. *Diabetes*. 2006 Aug;55(8):2231-7.
20. *Diabetes Metab Res Rev*. 2008 Jul-Aug;24(5):371-7.
21. *J Lipid Res*. 2006 May;47(5):964-74.
22. *Biochem Biophys Acta*. 2001 Feb;1415(3):210-9.
23. *J Am Soc Nephrol*. 2005 Jan; 16(1):144-50.
24. *Life Sci*. 1988;43(21):1725-31.
25. *Biochem Biophys Res Commun*. 1996 Apr 16;221(2):422-9.
26. *FASEB J*. 1999 Feb;13(2):411-8.
27. *Antioxid Redox Signal*. 2000 Fall;2(3):473-83.
28. *Biochem Mol Biol Int*. 1995 Oct;37(2):361-70.
29. *Nerochem Res*. 1995 Jan;20(1):1-9.

Bio-Enhanced® is a registered trademark of GeroNova Research, Inc. ArginoCarn® is a registered trademark of Sigma-tau HealthScience, Inc. and is protected by U.S. patent nos. 6,365,622, US 6,703,042, and EP1202956. BioPQQ™ is a trademark of MGC (Japan).

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.

TRIPLE ACTION CRUCIFEROUS

Vegetable Extract with Apigenin



Item # 01468

Item # 01469

Triple Action Cruciferous Vegetable Extract provides the following concentrates in just one vegetarian capsule:

Broccoli Extract	400 mg
[standardized to 4% glucosinolates (16 mg)]	
Watercress 4:1 extract	50 mg
Indole-3-Carbinol (I3C)	80 mg
Rosemary Extract	50 mg
Cat's Claw Extract	50 mg
Cabbage Extract	25 mg
DIM (di-indolyl-methane)	14 mg
Apigenin	25 mg

Scientists have identified specific extracts from **cruciferous vegetables**—such as broccoli, cauliflower, cabbage and Brussels sprouts—that help maintain healthy hormone metabolite balance. **Triple Action Cruciferous Vegetable Extract** combines some of these plant extracts into a comprehensive formula for optimal DNA protection.

I3C (indole-3-carbinol) and **DIM (di-indolyl-methane)** favorably modulate estrogen metabolism and induce liver detoxification enzymes to help neutralize potentially harmful estrogen metabolites and xenoestrogens (potentially toxic, estrogen-like environmental chemicals).¹⁻⁴

Extracts of **broccoli**, **watercress**, and **rosemary** provide **glucosinolates**, **isothiocyanates**, **carnosic acid**, and **carnosol**—bioactive compounds that have a multitude of favorable effects on estrogen metabolism and cell division.⁵⁻⁸ **Apigenin**, a powerful plant flavonoid found in plants such as **parsley** and **celery**, is also added to the formula to boost cell protection,⁹ while 25 mg of a natural source of benzyl isothiocyanate (BITC), are included to maintain cell health.¹⁰

Consumers should be aware that while consumption of cruciferous vegetables is highly recommended, the cooking process depletes many of the beneficial compounds such as **I3C**.

For those weighing less than 160 pounds, just one capsule a day provides optimal potencies. Those weighing over 160 pounds should consider taking two capsules a day. A 60 vegetarian capsules bottle of **Triple Action Cruciferous Vegetable Extract** retails for \$24. If a member buys four bottles during **Super Sale**, the price is reduced to **\$14.85 per bottle**.

Those who want to obtain the benefits of **trans-resveratrol** can order **Triple Action Cruciferous Vegetable Extract with Resveratrol**. Each capsule provides **20 mg of trans-resveratrol** in addition to the **vegetable extracts** and retails for \$32 per 60-capsule bottle. When a member buys four bottles during **Super Sale**, the price is reduced to **\$19.98 per bottle**.

Contains corn.

REFERENCES

1. *Biochem Pharm.* 2002, 64;393-404.
2. *Toxicol Appl Pharm.* 2001 Jul 15;174(2):146-52.
3. *J Natl Cancer Inst.* 1997 May 21;89(10):718-23.
4. *Cancer Detect Prevent.* 2004;28:72-9.
5. *Carcinogenesis.* 2002 Apr;23(4):581-6.
6. *Mol Cancer Ther.* 2003 Oct;2(10):1045-52.
7. *Carcinogenesis.* 1998 Oct;19(10):1821-7.
8. *Carcinogenesis.* 1995 Sep;16(9):2057-62.
9. *J Clin Biochem Nutr.* 2009 May;44(3):260-5.
10. *Food Chem Toxicol.* 2008 Jul;46(7):2358-64.

To order Triple Action Cruciferous Vegetable Extract, call 1-800-544-4440 or visit www.LifeExtension.com

High Potency **FAT-SOLUBLE** NUTRIENTS in ONE Softgel

Most people don't get enough oil-based nutrients like **vitamin K**, **lycopene**, and **gamma tocopherol**. This problem is solved with a one-per-day softgel called **Super Booster**. It provides high potencies of **fat-soluble** compounds lacking in dry powder formulas, along with other nutrients.

Just one **SUPER BOOSTER** provides:

- **VITAMIN K2** Scientific studies show **vitamin K2** provides superior benefits for the bones, arteries, and other tissues. The **MK-4** form of vitamin K2 is the most rapidly absorbed and is now routinely used in Japan to maintain healthy bone density. **MK-4**, however, only remains active in the blood for a few hours. The **MK-7** form of K2, on the other hand, remains bioavailable to the human body over a sustained **24-hour period**. Super Booster provides a potent dose of **MK-7 and MK-4** to keep calcium in the bone and out of the arteries.

- **LUTEIN** The carotenoid lutein helps maintain healthy cell division, supports the macula of the eye, and protects the endothelial lining of the arteries.

- **GINKGO** Hundreds of studies substantiate the multifaceted effects of *Ginkgo biloba* in promoting healthy circulatory and neurological function.



Item # 01680

- **GAMMA TOCOPHEROL** If one consumes only alpha tocopherol, the critically important **gamma** tocopherol is displaced from cells within the body. While *alpha tocopherol* vitamin E inhibits *lipid peroxidation*, the *gamma tocopherol* form quenches the dangerous *peroxynitrite* free radical. It is especially important for those who take vitamin E supplements to make sure they consume at least 200 mg a day of gamma tocopherol.

- **LYCOPENE** Evidence suggests that people who ingest the carotenoid lycopene enjoy healthier prostate function. Lycopene also helps guard against LDL oxidation.

- **CHLOROPHYLLIN** Scientific studies indicate that chlorophyllin may protect against environmentally induced damage to DNA.

JUST ONE SOFTGEL OF SUPER BOOSTER SUPPLIES:

Vitamin K2 (as menaquinone-7)	200 mcg	Sesame lignans	20 mg
Vitamin K2 (as menaquinone-4)	1000 mcg	Lycopene	10 mg
Vitamin K1 (as phytonadione)	1000 mcg	Lutein	2 mg
Gamma Tocopherol	230 mg	Vitamin B12	300 mcg
Ginkgo extract	120 mg	Vitamin C	95 mg
Chlorophyllin	100 mg		

A bottle of 60 **Super Booster** softgels retails for \$42. If a member buys four bottles during **Super Sale**, the price is reduced to **\$25.65** per bottle.

The **Super Booster** saves consumers **huge dollars** by combining a wide variety of costly nutrients into one daily softgel. If you add up the price of the individual ingredients contained in the **Super Booster**, you would spend **two to three times more** for this potency if taken separately.

To order Super Booster,
call **1-800-544-4440** or
visit **www.LifeExtension.com**

Contains soybeans.

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

Tomat-O-Red® is a registered trademark of LycoRed, Ltd.

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

ARE YOU GETTING Curcumin's BENEFITS?



How Much Curcumin Are You Absorbing?

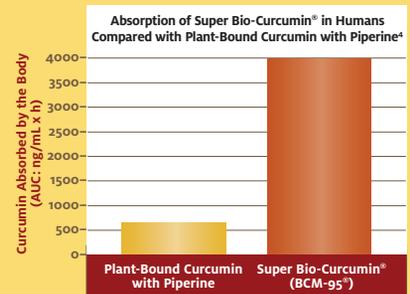


Chart 1. Super Bio-Curcumin® (BCM-95®) showed 6.3 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with plant-bound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed by the body over 8 hours).

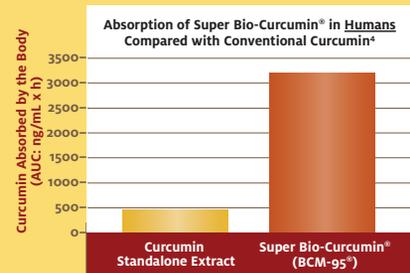


Chart 2. Super Bio-Curcumin® (BCM-95®) showed 6.9 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with conventional curcumin (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed by the body over 8 hours).

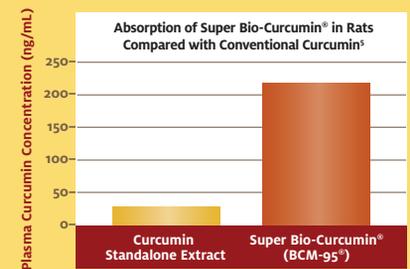


Chart 3. Bioavailability in rats fed with BCM-95® is 7.8 times higher than conventional curcumin.

Curcumin is the health-promoting trace compound derived from the Indian spice **turmeric**. But not all turmeric is alike.

The curcumin found in the vast majority of dietary supplements is derived from turmeric that is **nutritionally inferior**.

Why? Almost all growers harvest turmeric at the point when the turmeric root turns its signature yellow color, but *before* it has fully matured.

The turmeric root requires more time in the ground for highly beneficial phytonutrients called **curcuminoids** and **sesquiterpenoids** to attain peak concentrations.

Life Extension®'s Super Bio-Curcumin® derives from turmeric that is grown with organic practices, cultivated to maturity, then specially transported and processed to preserve and deliver the root's most **complete** nutritional profile.

In recent studies comparing the effects of standard curcumin against turmeric extracts comparable to **Super Bio-Curcumin®**, researchers observed:^{1,2}

- Nearly **twice** the support for **immune** health.
- Approximately twice the support for **inflammatory** issues.
- Almost **double** the **antioxidant** support.

A separate study indicated that an antioxidant-rich curcumin extract³ provided powerful support for heart health.

Unrivalled Potency and Absorbability with BCM-95®

Curcumin is neither absorbed nor *retained* well in the blood, which is another challenge facing those who wish to maximize its benefits.

The highly popular **Super Bio-Curcumin®** uses **BCM-95®**, a patented, *bioenhanced* preparation of curcumin. It has been shown to reach up to **7 times higher concentration** in the blood than standard curcumin.⁴

The graphs on this page illustrate that one 400 mg vegetarian capsule per day of **Super Bio-Curcumin®** supplies the equivalent of **2,500-2,800 mg** of commercial curcumin supplements.

A bottle containing 60 vegetarian capsules of **Super Bio-Curcumin®** retails for \$38. If a member buys four bottles during **Super Sale**, the price is reduced to only **\$23.63** per bottle.

Contains rice.



Item # 00407

References

1. *Int J Pharmacol.* 2009;5(6):333-45.
2. *J Food Nutr Res.* 2009;48(3):148-52.
3. *Arch Gerontol Geriatr.* 2002;34:37-46.
4. *Indian J Pharm Sci.* 2008 Jul-Aug;70(4):445-9.
5. Bioavailability study of BCM-95® in rats. Orcas International Inc. 2006.

CAUTION: Do not take if you have gallbladder problems or gallstones. If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

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

U.S. Patent Nos. 7,883,728, 7,736,679 and 7,879,373.

To order Super Bio-Curcumin®
call 1-800-544-4440
or visit www.LifeExtension.com



IN THE NEWS

Resveratrol Increases Life Span in Bees

The journal *Aging* reported the results of research involving honey bees which revealed an ability for resveratrol, a compound that occurs in grapes, to reduce food intake and extend life.* Although resveratrol has been shown to lengthen the lives of yeast, worms, fruit flies, and mice, the study is the first to evaluate the effect of the compound in honey bees.

Researchers compared the effects of an unenhanced honey bee diet to diets containing two different concentrations of resveratrol. The lower concentration of resveratrol was associated with a **38%** increase in average life span and the higher concentration with a **33%** increase under normal oxygen conditions. Maximum life span, which defines the longest lived members of a species (in contrast with average life expectancy) also increased in resveratrol-fed bees.

Editor's Note: In an effort to uncover the mechanisms involved in resveratrol's benefits, the researchers examined the compound's effect on appetite. In comparison with bees that did not receive resveratrol, those given the compound had less interest in consuming sugar solutions unless the sugar was highly concentrated. Further experimentation revealed that resveratrol reduced food consumption in bees allowed to eat as much as they liked of diets containing carbohydrate and protein.

—D. Dye

* *Aging*. 2012 Jul;4(7):499-508.

Omega-3 Fatty Acid Supplementation Improves Marker of Aging

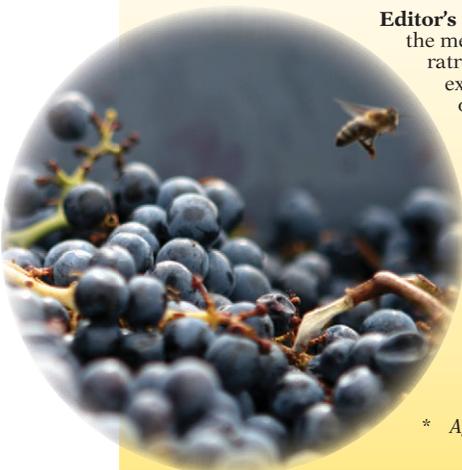
In an article published in *Brain, Behavior, and Immunity*, Jan Kiecolt-Glaser of Ohio State University and her associates report a protective effect for omega-3 fatty acids in the preservation of telomere length among middle-aged and older men and women. Reduced telomere length has been correlated with age-related disease and premature mortality.*

Telomeres—bits of DNA that cap and protect the ends of chromosomes—have been compared to the coating at the ends of shoelaces that prevent them from fraying. The current investigation revealed an increase in telomere length in association with reductions in the participants' plasma omega-6 to omega-3 fatty acid ratio, which declined in those who were supplemented with **1.25 grams** or **2.5 grams** per day EPA and DHA. Those who received the omega-3 fatty acids also had reduced levels of oxidative stress in comparison with those who received a placebo.

Editor's Note: Dr. Kiecolt-Glaser remarked that, "The telomere finding is provocative in that it suggests the possibility that a nutritional supplement might actually make a difference in aging."

—D. Dye

* *Brain, Behav, Immun*. 2012 Sep 23.



Melatonin, Exercise Show Potential as Alzheimer's Treatments

The journal *Neurobiology of Aging* published a report by researchers in Spain that describes a benefit for exercise and the hormone melatonin in a mouse model of Alzheimer's disease.*

Scientists studied the effects of the therapies in mice with three mutations that result in the characteristics of Alzheimer's disease. The animals, which were in the moderate to advanced phases of the disease, were divided to receive **10 mg** melatonin per kilogram of body weight, a daily exercise regimen consisting of unrestricted use of a running wheel, or both treatments. Alzheimer's mice that received neither therapy and a group of mice that did not have the mutations served as controls.

Engaging in exercise reduced behavioral and psychological symptoms, including anxiety, emotionality, and a lack of exploration. Both melatonin and exercise resulted in decreases in cognitive impairment, brain oxidative stress, amyloid beta, and mitochondrial DNA reductions. Combined treatment with exercise and melatonin resulted in additional mitochondrial benefit.

Editor's Note: While the recommendation of melatonin for humans with Alzheimer's disease may be premature at this stage, coauthor Darío Acuña-Castroviejo of the University of Granada noted that, "Other studies which use melatonin as medication show its high level of effectiveness."

—D. Dye

* *Neurobiol Aging*. 2012 Jun;33(6):1124-1129.



Higher Vitamin D Levels Associated with Fewer MS Symptoms

The *Annals of Neurology* reported the finding of researchers at the University of California, San Francisco of a reduction in brain lesions and disease activity in multiple sclerosis (MS) patients who had higher levels of vitamin D.*

The discovery is the result of the five year EPIC study of 469 men and women with multiple sclerosis who underwent yearly blood testing for vitamin D and brain magnetic resonance imaging (MRI) to evaluate disease progression. Ellen M. Mowry, MD, MCR, and her associates determined that with each **10 ng/mL** increase in serum 25-hydroxyvitamin D there was a corresponding **15%** reduction in the risk of new brain lesions as well as a **32%** lower risk of areas of active disease as indicated by white spots visible upon MRI examination. These areas reveal inflammation of the nerve fibers' myelin sheath, which provides insulation and facilitates the transmission of electric signals.

Editor's Note: The decreased prevalence of the MS in lower latitudes has led researchers to suggest a protective effect for sunlight and the vitamin D it produces in the body against the risk of developing the disease.

—D. Dye

* *Ann Neurol*. 2012 Aug;72(2):234-40.

Increased Lycopene Levels Associated with Lower Risk of Stroke

The journal *Neurology* published the finding of Finnish researchers of a protective effect for the carotenoid lycopene, which occurs in high amounts in tomatoes, against the risk of stroke in middle-aged men.*

The study included 1,031 men participating in the Kuopio Ischaemic Heart Disease Risk Factor cohort. Blood tests conducted upon enrollment between 1991 and 1993 evaluated serum carotenoids, vitamins A and E, and other factors. The subjects were followed through 1999, during which 50 men experienced ischemic stroke and 17 men had other types of stroke.

Men who experienced strokes tended to be older and had higher systolic blood pressure, which increases stroke risk. Those whose lycopene levels were among the top **25%** of participants had a **59%** lower adjusted risk of ischemic stroke and a **55%** lower risk of any stroke over follow-up in comparison with men whose lycopene levels were among the lowest fourth.

Editor's Note: Levels of other nutrients measured did not appear to be associated with stroke risk in this study. According to authors Jouni Karpki, PhD, and colleagues, "One possible reason that lycopene might decrease the risk of stroke more than other antioxidants may be the consequence of antioxidant activity. Lycopene is a potent antioxidant and the most effective quencher of singlet oxygen, and it was reported to be more effective than beta-carotene in cell protection against hydrogen peroxide and nitrogen dioxide radicals. Furthermore, different subtypes of stroke have different etiopathologies and thus most likely also have different associations with dietary antioxidants."

—D. Dye

* *Neurol*. 2012 Oct 9;79(15):1540-7.



Large Study Associates Increased Tea Intake with Protection against Digestive System Cancers

Findings from the Shanghai Women's Health Study reported in the *American Journal of Clinical Nutrition* reveal a protective effect for tea drinking against cancers of the stomach, esophagus, and colon in middle-aged Chinese women.*

Researchers analyzed data from 69,310 women who were between the ages of 40 and 70 years upon recruitment in 2000. Interviews and questionnaires completed upon enrollment provided information on tea intake. The participants were followed for an average of 12 years, during which three follow-up surveys were conducted. Over the follow-up period, 1,255 digestive system cancers occurred.

Among regular tea drinkers, categorized as those who consumed tea three or more times per week over a period of no less than six months, a **14%** lower risk of all digestive system cancers was observed in comparison with those who did not consume tea.

Editor's Note: When digestive cancers were analyzed according to type, the protective effect of tea was associated mainly with colorectal and stomach/esophageal cancers, for which there was a **27%** lower age-adjusted risk observed among regular tea drinkers compared to non-drinkers.

—D. Dye

* *Am J Clin Nutr.* 2012 Oct 10.

Vitamin C Supplementation Shows Potential for Menopausal Bone Loss Prevention

The journal *PLoS One* published an article which suggests a protective effect for vitamin C against bone loss associated with the decline in female hormones that occurs during menopause.*

Mone Zaidi, MD, and colleagues at Mount Sinai School of Medicine in New York tested the effects of vitamin C supplementation in mice that had their ovaries removed to mimic the hormonal changes associated with menopause. Another group of mice received sham surgeries. The animals were divided to receive **5 mg/day** vitamin C or no supplementation for eight weeks.

Bone mineral density was assessed before, during, and after the treatment period, and bone samples were analyzed at the end of the study. At four and eight weeks, lumbar spine bone mineral density was found to have significantly decreased in ovariectomized mice compared to the controls, however, the decline was prevented in animals that received vitamin C.

Editor's Note: "Further research may discover that dietary supplements may help prevent osteoporosis in humans," Dr. Zaidi stated. "If so, the findings could be ultimately useful to developing nations where osteoporosis is prevalent and standard medications are sparse and expensive."

—D. Dye

* *PLoS One.* 2012 Oct 8.



Trial Uncovers Protective Effect for Multinutrient Supplement Against Cancer

The *Journal of the American Medical Association* published an article that reports a reduction in the risk of cancer among male physicians who consumed multinutrient supplements.*

The trial included 14,641 men aged 50 or older upon enrollment in the Physician's Health Study II (PHS II). Of these, 1,312 men reported a history of cancer at the beginning of the study. Participants received a daily low-dose multivitamin or a placebo over a period of 10.7 to 13.3 years, during which 2,669 cases of cancer (excluding non-melanoma skin cancers) occurred.

Among those who received the multinutrient supplement, the risk of developing any cancer was **8%** lower in comparison with those who received a placebo. While multinutrient supplementation had no effect on the risk of prostate cancer (which comprised approximately one half of the cancers that occurred), total epithelial cell cancers were reduced by **8%**. The protective effect of supplementation did not differ significantly between those with or without a history of the disease.

Editor's Note: "Although the main reason to take multivitamins is to prevent nutritional deficiency, these data provide support for the potential use of multivitamin supplements in the prevention of cancer in middle-aged and older men," the authors conclude. The Centrum® multivitamin used in this study provided low potencies of only a few of the many cancer-prevention nutrients taken by dedicated health-conscious consumers today. This study received widespread media coverage because of its size and where it was published.

—D. Dye

* *JAMA.* 2012 Oct 17.



Coenzyme Q10 and Garlic Reduce Atherosclerosis Progression in Clinical Trial

The *Journal of Cardiovascular Disease Research* reported the outcome of a trial of middle-aged men which found a protective effect for CoQ10 and garlic extract against the progression of atherosclerosis and inflammation.*

The study included 50 firefighters who were at intermediate risk of a coronary event. Coronary artery calcium scanning, which assesses the extent of atherosclerosis, was conducted prior to enrollment and at the end of the trial. The trial was limited to subjects with coronary artery calcium scores above 10, which indicates the presence of a mild to moderate amount of atherosclerotic plaque. Blood samples were analyzed for C-reactive protein, a marker of inflammation, before and after the treatment period. The participants received a daily placebo or a capsule containing CoQ10 and aged garlic extract for one year.

At the end of the trial, average coronary artery calcium progression was significantly less among those who received CoQ10 and garlic compared to the placebo.

Editor's Note: While C-reactive protein levels increased by an average of **0.91 mg/L** among those who received the placebo, for subjects who received CoQ10 and garlic, CRP levels declined by an average of **0.12 mg/L**.

—D. Dye

* *J Cardiovasc Dis Res.* 2012 Jul;3(3):185-90.

The 2012 Singularity Summit Recap

The Singularity Summit is an annual conference for people who want to learn about the future and about thinking processes. The 2012 Singularity Summit was recently held in San Francisco.

“Singularity” refers to an accelerated growth of technological progress at the point where computers achieve intelligence beyond human intelligence, developing the capability to improve their own intelligence or to build computers that are even more intelligent than themselves. Intelligent computers capable of self-improvement would transform human life so radically that the results become impossible to predict or understand, but the consensus is that this technology will lead to radical improvements and extensions of human life spans.

From its beginning, the Singularity Institute has been concerned with improving human thought in association with the pursuit of machine intelligence. More than anyone, Ray Kurzweil has popularized the concept of Singularity. Kurzweil’s 2005 best-selling book *THE SINGULARITY IS NEAR* predicts that intelligent machines will replace humans as the dominant sentient beings on Earth. During his presentation, Kurzweil devoted himself to explaining and promoting his newest book, *HOW TO BUILD A MIND*. Kurzweil believes that most neuroscientists are like blind men feeling parts of an elephant—trunk, tusks, tail, legs, ears, etc., without seeing the big picture. Kurzweil addressed many other subjects. The ultimate goal of these super-intelligent computers would be to harness all available knowledge and utilize it to improve the overall human condition.

For a report on this year’s Singularity Summit authored by Ben Best of Life Extension Foundation®, log on to www.lef.org/singularity

—B. Best



Advanced RESVERATROL Formula

In 2003, the **Life Extension Foundation**® introduced a standardized **resveratrol** extract shown to favorably alter genes implicated in the aging process—many of the same genes that respond to **calorie restriction**.

Since then, we have identified additional compounds that simulate calorie restriction's ability to trigger youthful **gene expression**—the process by which genes transmit signals that slow certain aspects of aging.

Compelling evidence reveals that certain compounds found in berries, such as **pterostilbene** and **fisetin**, possess potent “longevity gene” activators that work in synergy with **resveratrol**. For example, **fisetin** (found in strawberries) has been shown to **stabilize** resveratrol in the body by shielding it from metabolic breakdown,¹⁻¹⁰ thus extending its beneficial effects.

High-Potency Resveratrol with Synergistic Activators

Life Extension® members gain access to standardized **trans-resveratrol** combined with botanical extracts that favorably influence longevity gene expression. Unlike many commercial formulas, Life Extension standardizes to **trans-resveratrol**, which researchers contend is the most active constituent.

A bottle containing 60 vegetarian capsules of **Optimized Resveratrol with Synergistic Grape-Berry Actives** retails for \$46. If a member buys four bottles during **Super Sale**, the price is reduced to **\$27.90** per bottle. The suggested dose of one capsule a day provides:

Trans-Resveratrol	250 mg
Grape-Berry Actives	85 mg
Quercetin	60 mg
Trans-Pterostilbene	0.5 mg
Fisetin	10 mg

Item # 01430



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

References

1. *Cell*. 2006 Dec 15;127(6):1109-22.
2. *Endocrinology*. 2008 Jan;149(1):84-92.
3. *Crit Care Med*. 2004 Oct;32(10):2097-103.
4. *J Agric Food Chem*. 1999 Apr;47(4):1416-21.
5. *Arch Pharm Res*. 2002 Oct;25(5):561-71.
6. *Nutr Cancer*. 1999;35(1):80-6.
7. *Anticancer Agents Med Chem*. 2006 Sep;6(5):389-406.
8. *Nature*. 2006 Nov 16;444(7117):337-42.
9. *Nature*. 2004 Aug 5;430(7000):686-9.
10. *Xenobiotica*. 2000 Sep;30(9):857-66.

To order Optimized Resveratrol with Synergistic
Grape-Berry Actives, 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.



Remarkable Weight Reduction with **CoffeeGenic™** Green Coffee Bean Extract (GCA™)

In a placebo-controlled, human study, subjects took **350 mg** of **green coffee extract** three times daily (before meals).

Study subjects were not asked to change their calorie intake or exercise level, but people participating in weight loss trials often do make lifestyle changes in order to increase their odds of shedding body fat.

The impressive findings, published in January 2012, noted that men and women lost an average of **17.6 pounds**—over **10%** of body weight—after **12 weeks** of **green coffee extract** supplementation! There was also an average **4.44%** reduction in body fat percentage!¹

The conclusion is that **green coffee extract** supports the ability to lose weight.¹ The form of **green coffee bean extract** used in this successful weight loss study is **CoffeeGenic™ Green Coffee Extract (GCA™)**.

How CoffeeGenic™ Works

The active ingredient in **green coffee bean extract** is **chlorogenic acid**.

Published studies on **chlorogenic acid** demonstrate a wide range of supportive properties related to insulin sensitivity² and to glucose formation^{3,4} and absorption.⁵

Clinical research has shown that **chlorogenic acid** helps limit dangerous after-meal glucose surges, supporting healthy blood sugar levels for those already within the normal range.⁶

CoffeeGenic™ Green Coffee Extract (GCA™) provides a standardized dose of **chlorogenic acid** extracted from **green coffee beans**.

New Comprehensive Formula

The standardized green coffee extract in the new **CoffeeGenic™ Weight Management™** formula has been enhanced with the following nutrients to reinforce the ability to support weight-loss:

1. Green Tea Decaffeinated Extract

Green tea contains health-promoting *polyphenols*, including **epigallocatechin-3-gallate (EGCG)**.⁷ A number of studies suggest it helps support healthy metabolic rate and weight loss.⁸⁻¹³

2. Iodine

This trace element is involved in the production of **thyroid** hormones that regulate the basal metabolic rate—which affects the body's rate of calorie burn.¹⁴

3. Chromium

Chromium plays an important role in glucose utilization and is required for the release of energy from glucose. It is now generally recognized as helping maintain healthy blood sugar levels for those already in the normal range.¹⁵⁻¹⁷

4. Integra-Lean® African Mango IGOB-131®

Fat cells secrete **leptin**, a hormone that signals our brain that we've eaten enough.¹⁸ But some individuals have become resistant to *leptin*, resulting in added pounds. An extract from an African mango called *Irvingia gabonensis* has been shown to support *leptin* sensitivity—followed by weight loss and a slimming of the waistline.^{19,20} African mango also helps the body control the rate of carbohydrate absorption from the intestines, and therefore, the caloric impact of starchy and sugary foods. And this extract supports healthy levels of adiponectin, a hormone that regulates metabolism of lipids and glucose. Research indicates it has the ability to promote weight loss.²⁰

To order CoffeeGenic™ Weight Management™ with Green Coffee Extract (GCA™), call 1-800-544-4440 or visit www.LifeExtension.com

Based on the latest research, **CoffeeGenic™ Weight Management™ with Green Coffee Extract** provides in each capsule:

CoffeeGenic™ Green Coffee Bean Extract [Standardized to 50% <i>chlorogenic acid</i>]	350 mg
Integra-Lean® African Mango (<i>Irvingia gabonensis</i>) proprietary extract (seed)	100 mg
Chromium [as Crominex® 3+ chromium stabilized with Capros® (<i>Phyllanthus emblica</i>) extract (fruit) and PrimaVie® Shilajit]	150 mcg
Iodine (as potassium iodide)	100 mcg
Green Tea decaffeinated extract [98% polyphenols, 45% EGCG]	50 mg

The suggested dose is just one capsule before each meal.

A bottle of **90 vegetarian capsules of CoffeeGenic™ Weight Management™ with Green Coffee Extract (GCA™)** retails for \$48. If a member buys four bottles during **Super Sale**, the price is reduced to **\$28.35 per bottle**.

Caution: This product may lower blood glucose; consult your healthcare provider before taking this product if you are taking blood glucose-lowering medication.

This supplement should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.

Integra-Lean® *Irvingia* is protected by U.S. Patent No. 7,537,790. Other patents pending.

IGOB-131® proprietary extract is a registered trademark of Gateway Health Alliances, Inc.

CoffeeGenic™ contains GCA™ which is a registered trademark of Applied Food Sciences, Inc.

References

1. *Diabetes Metab Syndr Obes*. 2012;5:21-7.
2. *J Nutr Biochem*. 2006 Jan;17(1):63-71.
3. *J Agric Food Chem*. 2010 Apr 14;58(7):4141-4.
4. *Ethnopharmacol*. 2010 Jul 6;130(1):93-7.
5. *J Nutr Sci Vitaminol (Tokyo)*. 2007 Apr;53(2):166-73.
6. Nagendran MV. Effect of Green Coffee Bean Extract (GCE), High in Chlorogenic Acids, on Glucose Metabolism. Poster presentation number: 45-LB-P. Obesity 2011, the 29th Annual Scientific Meeting of the Obesity Society. Orlando, Florida. October 1-5, 2011.
7. *J Environ Pathol Toxicol Oncol*. 1999;18(3):147-58.
8. *Int J Vitam Nutr Res*. 2008 Dec;78(6):275-81.
9. *Obesity*. 2007 Jun;15(6):1473-83.
10. *In Vivo*. 2004 Jan-Feb;18(1):55-62.
11. *Br J Nutr*. 2005 Sep;94(3):432-6.
12. *Obesity*. 2009 Feb;17(2):310-7.
13. *J Nutr Biochem*. 2011 Jan;22(1):1-7.
14. Available at: <http://ods.od.nih.gov/factsheets/Iodine-HealthProfessional/>. Accessed September 24, 2012.
15. *Altern Med Rev*. 2002 Jun;7(3):218-35.
16. *Saudi Med J*. 2000 Jan;21(1):45-50.
17. *Endocr Pract*. 2012 May-Jun;18(3):394-8.
18. *Prog Histochem Cytochem*. 2010 Sep;45(3):143-200.
19. *Lipids Health Dis*. 2008 Nov 13;7:44.
20. *Lipids Health Dis*. 2009 Mar 2;8:7.



Item # 01707

BY JEFFREY STOUT

Are You Obtaining the Proper **Enzymes**?

PROPER ENZYMES

Even if you eat a healthy diet, you may not be **absorb-*ing*** vital fat-soluble nutrients and amino acids needed for optimal health. That's because with age, we experience a decline in the **enzymes** our bodies produce to break down foods into **absorbable** nutrients.¹⁻³

Fortunately, studies show that by supplementing with the right mixture of **digestive enzymes**, older adults can take meaningful steps to maintain their digestive health.^{4,5} The result can be better digestion, less abdominal distress, and greater assimilation of vital nutrients like **vitamins K, D**, and **omega-3s**.⁶⁻⁸

The downside to many digestive enzyme supplements is that they contain specific **amylases** that facilitate that breakdown of dietary **starches** into rapidly-absorbed **glucose**.⁹

The concern is that most aging people already have higher than desirable **fasting** and **after-meal** blood **glucose** levels. A large body of published research documents increased risk of **vascular disease**, **cancer**, **kidney failure**, and **diabetic eye problems** in response to elevated **glucose**.¹⁰⁻¹⁸





Those with specific medical conditions (like pancreatitis) benefit from digestive enzyme formulas that contain **amylases**.¹⁹ The typical aging person, however, is better off taking a **digestive enzyme** formula that facilitates digestion of **protein, fibers**, and beneficial **fats**, but does not promote breakdown of **starches** that are rapidly absorbed as **glucose**.²⁰

This article describes some prevalent digestive problems, including **esophageal reflux**, and a simple solution that does not promote excess absorption of **glucose**. >

Problems with the Modern Diet

Almost none of the foods we eat could be absorbed into our bloodstreams without the action of powerful **enzymes** that breakdown food in order to extract vital nutrients. Without this break down of the food matrix, undigested food passes into the colon, where it can lead to bloating, gas, diarrhea, and cramping. But even worse than these uncomfortable symptoms, poorly digested food contributes to the malnutrition that threatens older people who are already facing reduced appetite and changes in muscle and fat stores.^{21,22}

Not surprisingly, poor oral health—even just wearing dentures—can reduce the efficiency of chewing, putting an extra burden on already-taxed digestive enzymes.²³ That's why supplementing with enzymes is important not just for healthy digestion—but for good health in general.

If we ate a purely raw food diet, we wouldn't need supplemental digestive enzymes. Raw food contains its own enzymes to help kick-start the digestive process.²⁴

Because the modern diet consists primarily of cooked, processed foods, our bodies need to rely almost exclusively on our own natural digestive enzymes. The problem is that as we age, we produce fewer of the enzymes necessary for healthy digestion, which makes it difficult for our bodies to properly breakdown food.



Evidence for Supplementing With Digestive Enzymes

Adding natural enzymes to the human diet is not a new idea. It's been 70 years since scientists first recognized the importance of enzymes in raw foods to boost human nutrition.²⁴ Those early scientists noted that providing supplementary enzymes could restore the rapid digestion of foods in the stomach, mimicking the self-digestion that takes place when people consume raw foods.²⁴

There's also a long medical history of using supplementary digestive enzymes in caring for people with various chronic digestive diseases. People with cystic fibrosis take pancreatic enzyme formulas to help them breakdown proteins, fats, and other nutrients they could not digest well otherwise.²⁵ Individuals with chronic pancreatitis may use lipases to help them breakdown fats.²⁶

But there's growing evidence that suggests that even if you don't suffer from a specific enzyme deficiency, you may benefit from supplementing with helpful digestive enzymes.

Proteases

Protein-digesting enzymes called **proteases** are generated naturally from the pancreas, which channels them into the small intestine via a short duct. Using supplemental proteases eases the burden on the body of producing these complex enzymes entirely on its own.²⁴ Studies have shown that animals supplemented with proteases experience enhanced digestion.²⁷

One important reason to supplement with proteases is to reduce the risk of **intolerance reactions** to foods such as meat proteins, gluten (from wheat) and casein (from milk).²⁸ The structures of these food molecules make them relatively resistant to the limited enzymatic activity in the aging digestive tract. When proteins arrive relatively undigested in the lower intestinal tract, they can trigger **inflammation**, excessive mucous production, cramping, and even bleeding. Millions of people suffer from gluten intolerance or milk protein intolerance.^{29,30} Fortunately, the use of supplemental proteases may help ease their discomfort.³¹

Aging individuals may receive the greatest potential benefits from supplementing with protease enzymes in order to speed protein digestion. Scientists speak of fast and slow digesting proteins. These terms indicate how rapidly amino acids are released from the protein in the intestine, how completely they are absorbed into the bloodstream, and how efficiently they are put to work generating healthy new proteins in the body following a meal.^{32,33}

Because of the decline in enzyme production with age, and also the loss of ability to thoroughly chew foods, older people lose the ability to break down **fast-digesting** proteins that include meat and the dairy protein, called whey.^{23,34} That puts older people at increased risk for poor protein absorption and malnutrition.

Additionally, for aging adults, supplementation with extra protein-digesting enzymes could help them convert foods typically containing slow-digesting proteins that include the dairy protein, casein, into those that are more rapidly broken down.

This idea is further supported by studies showing that predigested proteins already broken down into amino acids, result in more rapid and complete appearance of amino acids into the bloodstream, and greater incorporation into healthy new proteins.³⁵

Finally, in athletes and others who use concentrated protein supplements, it has been shown that adding a blend of **protein-digesting enzymes** to their regimen can afford more complete protein breakdown, allowing people to achieve the full benefit of their additional protein intake.³⁶ That's important, because excessively high concentrations of protein in the digestive tract may overwhelm the existing enzymes' ability to fully break down the proteins.³⁶

Lipases

Lipases are enzymes that separate fats into individual fatty acids. Lipase supplementation promotes more normal fat digestion in people with pancreatic disease.⁹

Even if you don't suffer from an overt pancreatic disorder, you could still benefit from **lipase** supplementation. One critical role of **lipase enzymes** is to facilitate **absorption** of vital fat-soluble nutrients such as **omega-3** fatty acids, along with **vitamin D**, **vitamin K**, **lutein**, and **gamma tocopherol**.⁶⁻⁸

Fiber Digesting Enzymes

Normal human starch-digesting enzymes are collectively called amylases. Amylases break down the bonds between sugar molecules in starches, releasing the sugar for immediate absorption.⁹ A rapid release of sugars from starches produces the dangerous **after-meal** surge in blood **glucose** that damages heart muscle and blood vessels.^{14,18} Most otherwise healthy humans, therefore, have no need for supplementary **amylase**. In fact, amylase-blockers play a useful role in combating overweight and sugar surges.^{20,37}

On the other hand, humans do not have digestive enzymes to process **cellulose**, or **plant fiber**, that is



What You Need to Know

The Power of Digestive Enzymes

- Your ability to completely and safely digest foods gradually wanes with age, producing uncomfortable, embarrassing, and potentially dangerous effects including nutrient loss.
- Production of vital enzymes used to digest proteins and fats is diminished in older adults, as well as in those with certain chronic conditions.
- Humans are unable to digest cellulose, or plant fiber, at any age. Taking cellulose-digesting enzymes with meals can make for more comfortable digestion.
- Supplementation with digestive enzymes is a proven way of restoring lost digestive function and easing symptoms.



part of broccoli and other vegetables, which pass through the intestinal tract undigested by human enzymes. What happens when these foods are eaten is that organisms living in the large intestine break down the plant cellulose into molecules that are then fermented. This fermentation process draws fluid into the colon and produces bloating and gas, which keeps many people from eating healthy vegetables like broccoli.

To prevent these fiber-related complications, supplements with **cellulose-digesting enzymes** such as cellulase, hemicellulase, phytase, beta-glucanase, pectinase, and xylanase can convert cellulose into smaller molecules that can then pass harmlessly through the intestinal tract. The result is a smoother digestion of tough vegetable fiber and an increased availability for absorption of beneficial compounds contained in healthy plant foods.

Supplements containing **cellulose-digesting enzymes** break down **plant fibers**, such as those found in **broccoli**, but don't release free sugars, and therefore don't contribute to deadly after-meal glucose surges.

Digestive Enzyme Supplements

Digestive enzyme supplements appear to be a natural solution to many digestive problems associated with normal aging. Studies show that digestive enzyme preparations do in fact improve digestion and ameliorate many digestive symptoms.³

Human studies have demonstrated beneficial effects from digestive enzyme supplements.³ In one small study, vital measures such as total serum protein and white blood cell counts increased significantly

Avoiding Rapid Starch Breakdown

Starches are long complex chains of simple sugars. They are often referred to as "complex carbohydrates."

It used to be thought that complex carbohydrates do not raise blood sugar as quickly or as much as simple sugars (sucrose and fructose), but we now know that some starches are more glycemic than some sugars.⁹ In this sense, they do not remain "complex" for very long in your digestive tract before converting to rapidly absorbed glucose.

Those seeking to reduce after-meal glucose surges should restrict sugary and starchy food intakes, since most starchy foods rapidly break down into sugar.

Wheat, oats, potatoes, corn, and rice are all very starchy foods. Grains are made into bread, cereal, and pasta, as well as crackers, biscuits, cookies, cakes, pie crust, tortilla, and anything else made with flour. Any of these foods made from grain can sharply spike blood glucose.

When eating starchy foods, taking **amylase-blocking** compounds like **chlorogenic acid** found in **green coffee bean extract** can help reduce the breakdown of starches into rapidly absorbed glucose.³⁸

Most people should reduce consumption of sugars and starches and not take digestive enzymes containing **amylase** that facilitate the rapid breakdown of starches into blood glucose.

following supplementation.³⁹ In a larger, placebo-controlled study of a digestive enzyme supplement, patients had significantly higher global improvement scores than controls, and reported fewer episodes of abdominal pain, nausea, vomiting, heartburn, bloating, flatulence, and appetite loss.⁴⁰

Epidemic of Digestive Discomforts

If you find yourself reaching for drugs like Alka-Seltzer® or Pepto-Bismol® to relieve chronic digestive problems, you could have bigger health problems than you realize. Those OTC drugs might temporarily ease your symptoms, but they're doing absolutely nothing to target the underlying cause of the problem. If that underlying cause goes unchecked, you could be setting yourself up for a host of health issues that are much more devastating than gas or bloating such as food intolerance and malnutrition (in older adults).

Optimal Enzyme Formulation That Avoids Rapid Starch Breakdown

INGREDIENT	PURPOSE
Protein-Digesting Enzymes	
Protease complex	Breaks down whole proteins and smaller peptides into single amino acids.
Trypsin	Breaks down whole proteins into shorter oligopeptides that are further reduced to amino acids by other proteases.
Chymotrypsin	Breaks down whole proteins and shorter oligopeptides.
Fat-Digesting Enzymes	
Lipase complex	Breaks down complex fats into simple free fatty acids.
Fiber-Digesting Enzymes	
Cellulase	Breaks down cellulose, a normally indigestible plant fiber.
Hemicellulase	Breaks down hemicellulose, a structural (and indigestible) component of plant cell walls.
Phytase	Breaks down phytic acid, a grain- and seed-derived sugar containing an indigestible form of phosphorus, releasing phosphorus for biological uses.
Beta-glucanase	Breaks down otherwise indigestible fibers including cellulose.
Pectinase	Breaks down pectin, the jelly-like matrix in plant cell walls, releasing juice and nutrients.
Xylanase	Helps break down hemicellulose into xylose, a simple sugar that helps feed intestinal bacteria.

Example of an enzyme formulation that provides optimal digestion of proteins, fats, and cellulose (plant fiber). Note the absence of amylase, the enzyme category that breaks down dietary starches into blood sugar-boosting simple sugars.



How Starch and Fiber Differ— And Why it Matters to You

Nature produces two major kinds of long-chain molecules (polysaccharides) out of simple sugars.⁴¹ These molecules are identical except for the way the simple sugars are linked together.

In **complex carbohydrates** (starches), the simple sugars are linked together with a bond labeled “alpha.”⁴¹ Humans possess digestive enzymes (mostly amylases) capable of breaking this alpha bond and releasing large amounts of free glucose.⁴² That free glucose is responsible for causing the after-meal surge in blood sugar that’s known to be so deleterious to health.

But polysaccharides with a so-called “beta” bond between the sugars are entirely unaffected by human digestive enzymes.⁴¹ Beta bonded polysaccharides (collectively called **cellulose**) are much stiffer than dietary carbohydrates; they make up most of the structural parts of plants such as leaves and stems, including most cruciferous vegetables.

Starches are broken down into sugars in the small intestine and then absorbed, but cellulose is not.^{41,42} When cellulose fibers reach your large intestine, they are subject to digestion by microorganisms living there. Those bacteria have enzymes capable of breaking down cellulose, and they do so vigorously; fermenting it to release smaller molecules and gas.⁴³ And that produces the bloating, flatulence, and other uncomfortable symptoms that can follow a meal rich in indigestible plant fibers such as broccoli.

The trick when supplementing with digestive enzymes, then, is to include enzymes that partially break down indigestible cellulose, while avoiding enzymes that hasten digestion of dietary carbohydrates to release simple sugars that threaten your health. For those individuals for whom blood sugar spikes are a health risk factor, avoid supplements containing **amylase** or oligosaccharidases. Aim instead for supplements containing helpful fiber-digesting enzymes including **cellulase, hemicellulase, phytase, beta-glucanase, pectinase, and xylanase**. These enzymes can promote more comfortable digestion without exposing you to a dangerous **after-meal** glucose surge.

Drugs like Prilosec® and Prevacid® suppress stomach acid secretion, but do so at the expense of poorer digestion. Even when stomach acid production is blocked, gastric contents and bile secreted by the liver can still reflux back into the **esophagus** and cause heartburn and irritation that lead to serious disease. Those who suffer **esophageal reflux** don’t want undigested food remaining in the stomach any longer than it has to.

The proper enzyme formula facilitates more rapid digestion that can help resolve common digestive discomforts.

Summary

Gradual deterioration of digestive function doesn’t have to be an inevitable part of aging. The right combination of enzymes can mitigate the embarrassing, uncomfortable, and occasionally dangerous consequences of incomplete food digestion.

Digestive enzyme supplements promote complete digestion of food in the stomach and upper small intestine. That prevents undigested food from reaching the colon, where normal bacteria ferment it to produce gas, liquid, and the unpleasant symptoms of a poorly-regulated digestion.

The main problem with most digestive enzyme supplements is that they facilitate the breakdown of **starches** into **simple sugars** that are rapidly absorbed as **glucose** into the bloodstream. Because of its widespread deleterious effects on health, excess glucose is a leading cause of disability and death in modern societies.¹⁰⁻¹⁸

Even if one consumed no carbohydrates, the body would still have plenty of glucose because the liver efficiently converts protein (and fatty acids) into glucose through a process known as **gluconeogenesis**.

It is far more logical to take a **digestive enzyme** supplement loaded with **protease** and **lipase**, and specialized **cellulases**. That way, one facilitates digestion of vital **amino acids, plants, and fat-soluble nutrients** without creating dangerous **glucose spikes**. ●

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

References

- Greenberg RE, Holt PR. Influence of aging upon pancreatic digestive enzymes. *Dig Dis Sci*. 1986 Sep;31(9):970-7.
- Miyasaka K, Kitani K. Aging impairs pancreatic response to refeeding following a protein-free diet. *Pancreas*. 1989;4(3):346-52.
- Wolfson D, Olmstead S, Meiss D, Ralston J. *Making Sense of Digestive Enzymes*: ProThera, Inc.;2008.
- Glade MJ, Kendra D, Kaminski MV, Jr. Improvement in protein utilization in nursing-home patients on tube feeding supplemented with an enzyme product derived from *Aspergillus niger* and bromelain. *Nutrition*. 2001 Apr;17(4):348-50.
- Karani S, Kataria MS, Barber AE. A double-blind clinical trial with a digestive enzyme product. *Br J Clin Pract*. 1971 Aug;25(8):375-7.
- Wooldridge JL, Heubi JE, Amaro-Galvez R, ET AL. EUR-1008 pancreatic enzyme replacement is safe and effective in patients with cystic fibrosis and pancreatic insufficiency. *J Cyst Fibros*. 2009 Dec;8(6):405-17. Epub 2009 Aug 15.
- Hammer HF. Pancreatic exocrine insufficiency: diagnostic evaluation and replacement therapy with pancreatic enzymes. *Dig Dis*. 2010;28(2):339-43. Epub 2010 Sep 1.
- Available at: <http://chemistry-today.teknoscienze.com/pdf/MU%20OMEGA3-08.pdf>. Accessed October 1, 2012.
- Available at: <http://www.us.elsevierhealth.com/media/us/samplechapters/9781437709599/Sample-Chapter-04.pdf>. Accessed October 1, 2012.
- Available at: <http://docnews.diabetesjournals.org/content/2/8/1.2.full>. Accessed October 1, 2012.
- Stattin P, Bjor O, Ferrari P, Lukanova A, et al. Prospective study of hyperglycemia and cancer risk. *Diabetes Care*. 2007 Mar;30(3):561-7.
- Vigneri P, Frasca F, Sciacca L, Pandini G, Vigneri R. Diabetes and cancer. *Endocr Relat Cancer*. 2009 Dec;16(4):1103-23.
- Bash, LD, Selvin E, Steffes M, Coresh J, Astor BC. Poor glycemic control in diabetes and the risk of incident kidney disease even in the absence of albuminuria and retinopathy: atherosclerosis risk in communities (ARIC) study. *Arch Intern Med*. 2008 Dec 8;168(22):2440-7.
- Held C, Gerstein HC, Zhao F, et al. Fasting plasma glucose is an independent predictor of hospitalization for congestive heart failure in high-risk patients. American Heart Association 2006 Scientific Sessions. November 13, 2006. Abstract 2562.
- Healy L, Howard J, Ryan A, et al. Metabolic syndrome and leptin are associated with adverse pathological features in male colorectal cancer patients. *Colorectal Dis*. 2011 Jan 20.
- Park HJ, Jung UJ, Cho SJ, Jung HK, Shim S, Choi MS. Citrus unshiu peel extract ameliorates hyperglycemia and hepatic steatosis by altering inflammation and hepatic glucose- and lipid-regulating enzymes in db/db mice. *J Nutr Biochem*. 2012 Jun 11. [Epub ahead of print]
- Malik VS, Hu FB. Sweeteners and risk of obesity and Type 2 diabetes: The role of sugar-sweetened beverages. *Curr Diab Rep*. 2012 Jan 31. [Epub ahead of print]
- Coutinho M, Gerstein H, Poque J, Wang Y, Yusuf S. The relationship between glucose and incident cardiovascular events: a metaregression analysis of published data from 20 studies of 95,783 individuals followed for 12.4 years. *Diabetes Care*. 1999 Feb;22(2):233-40.
- Domínguez-Muñoz JE. Pancreatic exocrine insufficiency: diagnosis and treatment. *J Gastroenterol Hepatol*. 2011 Mar;26 Suppl 2:12-6.
- Udani J, Hardy M, Madsen DC. Blocking carbohydrate absorption and weight loss: a clinical trial using Phase 2 brand proprietary fractionated white bean extract. *Altern Med Rev*. 2004 Mar;9(1):63-9.
- Bergert FW, Conrad D, Ehrenthal K, et al. Pharmacotherapy guidelines for the aged by family doctors for the use of family doctors: Part D Basic conditions supporting drug treatment. *Int J Clin Pharmacol Ther*. 2009 May;47(5):289-302.
- Evans WJ. Exercise and nutritional needs of elderly people: effects on muscle and bone. *Gerodontology*. 1998;15(1):15-24.
- Ritz P. Factors affecting energy and macronutrient requirements in elderly people. *Public Health Nutr*. 2001 Apr;4(2B):561-8.
- Remond D, Machebeuf M, Yven C, et al. Postprandial whole-body protein metabolism after a meat meal is influenced by chewing efficiency in elderly subjects. *Am J Clin Nutr*. 2007 May;85(5):1286-92.
- Evans KE, Leeds JS, Morley S, Sanders DS. Pancreatic insufficiency in adult celiac disease: do patients require long-term enzyme supplementation? *Dig Dis Sci*. 2010 Oct;55(10):2999-3004.
- Dominguez-Munoz JE. Pancreatic enzyme replacement therapy for pancreatic exocrine insufficiency: when is it indicated, what is the goal and how to do it? *Adv Med Sci*. 2011;56(1):1-5.
- Roxas M. The role of enzyme supplementation in digestive disorders. *Altern Med Rev*. 2008 Dec;13(4):307-14.
- Eun JS, Beauchemin KA. Effects of a proteolytic feed enzyme on intake, digestion, ruminal fermentation, and milk production. *J Dairy Sci*. 2005 Jun;88(6):2140-53.
- Fiocchi A, Restani P, Riva E, et al. Meat allergy: II--Effects of food processing and enzymatic digestion on the allergenicity of bovine and ovine meats. *J Am Coll Nutr*. 1995 Jun;14(3):245-50.
- Fuhrmann G, Leroux JC. In vivo fluorescence imaging of exogenous enzyme activity in the gastrointestinal tract. *Proc Natl Acad Sci USA*. 2011 May 31;108(22):9032-7. Epub 2011 May 16.
- Shattock P, Whiteley P. Biochemical aspects in autism spectrum disorders: updating the opioid-excess theory and presenting new opportunities for biomedical intervention. *Expert Opin Ther Targets*. 2002 Apr;6(2):175-83.
- Dangin M, Boirie Y, Garcia-Rodenas C, et al. The digestion rate of protein is an independent regulating factor of postprandial protein retention. *Am J Physiol Endocrinol Metab*. 2001 Feb;280(2):E340-8.
- Dangin M, Boirie Y, Guillet C, Beaufriere B. Influence of the protein digestion rate on protein turnover in young and elderly subjects. *J Nutr*. 2002 Oct;132(10):328S-33S.
- Koopman R, Crombach N, Gijsen AP, et al. Ingestion of a protein hydrolysate is accompanied by an accelerated in vivo digestion and absorption rate when compared with its intact protein. *Am J Clin Nutr*. 2009 Jul;90(1):106-15.
- Oben J, Kothari SC, Anderson ML. An open label study to determine the effects of an oral proteolytic enzyme system on whey protein concentrate metabolism in healthy males. *J Int Soc Sports Nutr*. 2008;5:10.
- Omogbenigun FO, Nyachoti CM, Slominski BA. Dietary supplementation with multienzyme preparations improves nutrient utilization and growth performance in weaned pigs. *J Anim Sci*. 2004 Apr;82(4):1053-61.
- Saha S, Verma R. Inhibitory potential of traditional herbs on -amylase activity. *Pharm Biol*. 2012 Mar;50(3):326-31. Epub 2011 Dec 2.
- Narita Y, Inouye K. Kinetic analysis and mechanism on the inhibition of chlorogenic acid and its components against porcine pancreas alpha-amylase isozymes I and II. *J Agric Food Chem*. 2009 Oct 14;57(19):9218-25.
- Zentler-Munro PL, Assoufi BA, Balasubramanian K, et al. Therapeutic potential and clinical efficacy of acid-resistant fungal lipase in the treatment of pancreatic steatorrhea due to cystic fibrosis. *Pancreas*. 1992;7(3):311-9.
- Medhekar R. *The first quantitative evidence proving the efficacy of supplemental enzymes*: National Enzyme Company;2004.
- Available at: <http://www.elmhurst.edu/~chm/vchembook/547cellulose.html>. Accessed October 1, 2012.
- Lin AH, Lee BH, Nichols BL, et al. Starch source influences dietary glucose generation at the mucosal -glucosidase level. *J Biol Chem*. 2012 Sep 17. [Epub ahead of print]
- Stevens CE, Hume ID. Contributions of microbes in vertebrate gastrointestinal tract to production and conservation of nutrients. *Physiol Rev*. 1998 Apr;78(2):393-427.



Most Popular DHEA Dosages

DHEA is a critically important hormone, but its production declines sharply as we age. Scientists are discovering numerous health benefits when aging people restore their DHEA to youthful ranges. Life Extension offers a wide range of DHEA supplements to satisfy individual needs.



Item #00335

DHEA 25 mg • 100 Capsules

The minimum dose of DHEA for most healthy aging people is 25 mg a day, though optimal doses are often higher in men. These 25 mg capsules are a popular way to consume the precise amount of DHEA your body may need. A bottle containing 100 **25 mg** capsules of DHEA retails for \$18; if a member orders four bottles during **Super Sale**, the price is reduced to **\$10.13 per bottle**. Contains rice.



Item #00882

DHEA 50 mg • 60 Capsules

The optimal daily dose of DHEA for most people is 50 mg. These economical 50 mg capsules enable most people to conveniently consume the optimal dose of DHEA in just one capsule. A bottle containing 60 **50 mg** capsules of DHEA retails for \$16; if a member orders four bottles during **Super Sale**, the price is reduced to **\$9.45 per bottle**. Contains rice.



Item #00454

DHEA 15 mg • 100 Capsules

While published studies show the greatest benefit occurs when 50-75 mg of DHEA is consumed each day, some women only need a low dose of DHEA. Just one of these 15 mg capsules a day is all some women need to bring DHEA levels back to youthful levels. A bottle containing 100 **15 mg** capsules of DHEA retails for \$12; if a member orders four bottles during **Super Sale**, the price is reduced to **\$6.75 per bottle**.



Item #00607

DHEA 25 mg • 100 Dissolve-in-Mouth Tablets

A bottle containing 100 **25 mg dissolve-in-mouth** tablets of DHEA retails for \$14; if a member orders four bottles during **Super Sale**, the price is reduced to **\$7.93 per bottle**. Some people want to take DHEA in sublingual tablet form to avoid first pass through the liver, though published studies show that swallowing DHEA capsules consistently boosts blood DHEA levels already within normal range. Contains corn

CAUTION: Do not use DHEA if you are at risk for or have been diagnosed as having any type of hormonal cancer, such as prostate or breast cancer.

To order the DHEA supplement that's right for you,
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.

NEW

Extraordinary Enzymes

Digestive Support That Does Not Promote Glucose Spikes

Human studies suggest that supplementary **enzymes** may improve digestion and help minimize post-meal **glucose** surges.^{1,2}

Since proteins, plant fibers, and fats are broken down differently, one needs the proper spectrum of **enzymes** for **optimal digestion**.

A new **multi-enzyme formula** facilitates both optimal nutrient absorption and broad relief from digestive discomforts without promoting after-meal **glucose** surges.^{2,3}

TWELVE PREMIUM ENZYMES

Extraordinary Enzymes provides a potent array of **protease, cellulase, and lipase** enzymes specially formulated to adapt to a variety of stomach acid pH conditions and powerfully support digestion.

With a **total of twelve different enzymes**, this unique formula supports the digestion of just about *any* food that may pose a problem for you—whether a protein, fiber, or fat.

Extraordinary Enzymes provides a blend of powerful enzymes to help your system convert a variety of foods to energy and readily absorb the nutrients in the foods you consume. This formulation may enhance protein content in your body and allow for better fat utilization.^{4,5}

Together, these enzymes work by an all-natural, synergistic process to help provide nutritional support for a healthy digestive system.

The twelve enzymes in value-priced **Extraordinary Enzymes** are:

Protease SP (<i>Bacillus sp., Aspergillus oryzae</i>)	97,000 HUT
Protease S (<i>Aspergillus melleus</i>)	10,500 PC
Acid Protease (<i>Aspergillus niger</i>)	10 SAPU
Lipase (<i>Candida rugosa, Rhizopus oryzae, Aspergillus niger</i>)	4,000 FIP
Cellulase (<i>Trichoderma longibrachiatum</i>)	2,400 CU
Trypsin (Porcine)	20,000 USP
Chymotrypsin (Porcine)	3,336 USP
Phytase (<i>Aspergillus niger</i>)	20 FTU
Beta-Glucanase (<i>Trichoderma longibrachiatum</i>)	30 BGU
Hemicellulase (<i>Aspergillus niger</i>)	4,000 HCU
Pectinase (<i>Aspergillus niger</i>)	50 endo-PGU
Xylanase (<i>Trichoderma longibrachiatum</i>)	600 XU
Total Nutrient Absorption Blend	200 mg



WHAT'S NOT IN EXTRAORDINARY ENZYMES?

Unlike commercial digestive enzyme supplements, **amylase** is intentionally left out of **Extraordinary Enzymes**. The reason is that **amylase** breaks down **starches** into **glucose** that is rapidly absorbed into the bloodstream.²

Extraordinary Enzymes facilitates the healthy breakdown of plant fibers that cause people to avoid healthy vegetables because of digestive discomforts.

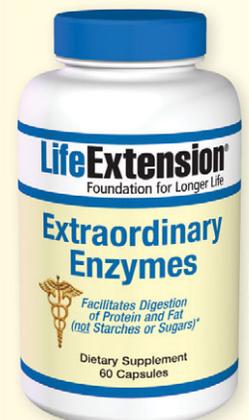
Most people will take one capsule before the two heaviest meals, which provides **400 mg** of natural digestive enzymes each day.

A bottle of 60 capsules of **Extraordinary Enzymes** retails for \$26. If a member buys four bottles during **Super Sale**, the price is reduced to **\$16.20** per bottle.

Contains milk, soybeans, tree nuts (coconut), and wheat.

References

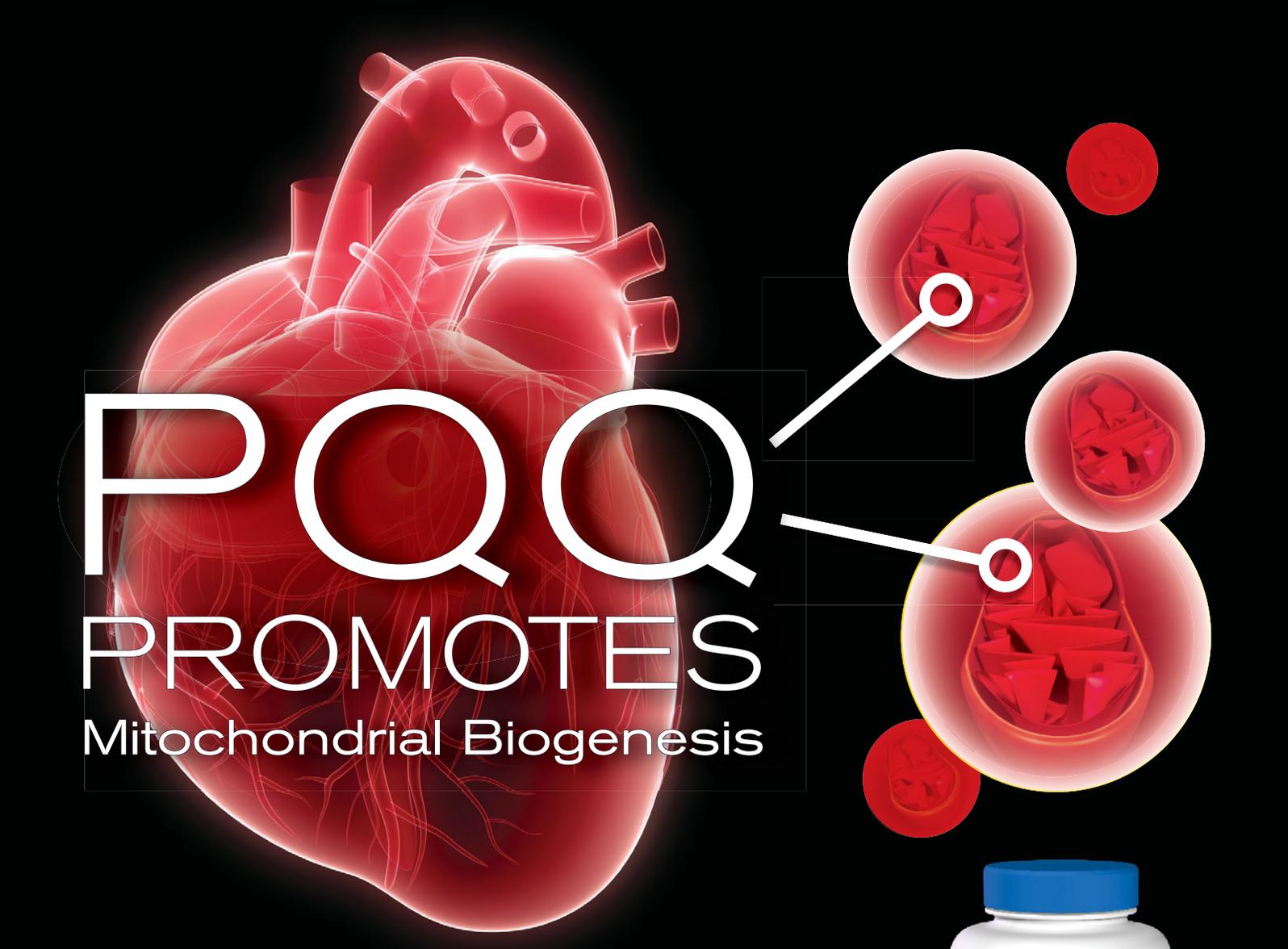
1. Paper: *Making Sense of Digestive Enzymes*: ProThera, Inc.;2008.
2. *Altern Med Rev*. 2004 Mar;9(1):63-9.
3. Available at: <http://www.us.elsevierhealth.com/media/us/samplechapters/9781437709599/Sample-Chapter-04.pdf>. Accessed October 3, 2012.
4. *J Int Soc Sports Nutr*. 2008 Jul 24;5:10.
5. Available at: <http://chemistry-today.teknoscienze.com/pdf/MU%20MEGA3-08.pdf>. Accessed October 3, 2012.



Item# 01706

To order Extraordinary Enzymes, 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.



PQQ

PROMOTES

Mitochondrial Biogenesis

Critical Importance of Mitochondria

Back in 1983, **Life Extension**® was the first to introduce **CoQ10** as a proven method to enhance **mitochondrial** energy production.

CoQ10 has since gained universal recognition for its role in supporting cellular performance throughout the body.¹⁻⁶

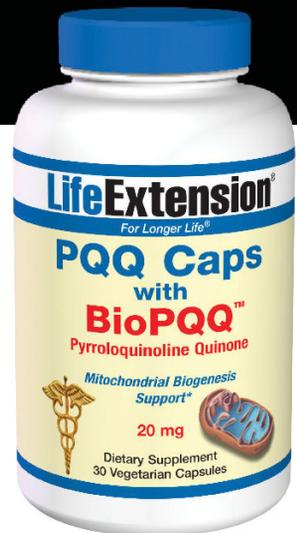
In an unprecedented breakthrough, a compound called **PQQ** (*pyrroloquinoline quinone*) has been shown to support **mitochondrial biogenesis**—the spontaneous generation of **new mitochondria** in aging cells.⁷

PQQ is available as a low-cost dietary supplement.

Mitochondria are cellular energy generators that supply virtually all the power your body requires for a healthy life span. An abundance of published studies underscores the critical importance of the **mitochondria** to overall health, especially as we age.⁸⁻¹⁴ Energy-intensive organs like the heart and brain are *dense* with mitochondria.

Until recently, the only natural ways for aging individuals to increase the number of mitochondria in their bodies were long-term calorie restriction or exhaustive physical activity—which are difficult or impractical for most people to implement.

PQQ offers a viable alternative.



Item #01647

The Ultimate Cell Rejuvenator

The enormous amount of energy generated within the mitochondria exposes them to constant free radical attack. The resulting **mitochondrial decay** is a hallmark of aging.

PQQ protects and augments delicate mitochondrial structures to promote *youthful* cellular function in **three** distinct ways:

- **Antioxidant power.** Like CoQ10, PQQ is a highly potent antioxidant. Its extraordinary molecular stability enables it to facilitate thousands of biochemical reactions in the mitochondria, without breaking down, for maximum antioxidant and bioenergetic support.¹⁵
- **Favorably modulates gene expression.** PQQ activates *genes* that promote formation of **new mitochondria**⁷—and beneficially interacts with genes directly involved in mitochondrial health. These same genes also support **healthy body weight**, normal **fat** and **sugar metabolism**, and **youthful cellular proliferation**.¹⁶
- **Mitochondrial defense.** Mitochondria possess their *own* DNA, distinct from the DNA contained in the nucleus. Unfortunately, compared to nuclear DNA, mitochondrial DNA is relatively unprotected. PQQ's antioxidant potency and favorable gene expression profile act to support mitochondrial defense.

Vital Protection for the Aging Heart and Brain

PQQ is an **essential nutrient**, meaning your body cannot make it on its own. A growing body of research indicates that PQQ's unique nutritional profile supports heart health and cognitive function—alone and in combination with CoQ10.^{17,18} This comes as no surprise, given how much energy these vital organs need.

Research shows that PQQ supports **heart cell function** in the presence of free radicals and promotes blood flow in heart muscle.¹⁹

When taken in combination with **CoQ10**, just **20 mg per day** of PQQ has been shown to promote **memory, attention, and cognition** in maturing individuals.²⁰

A Breakthrough Weapon in the Battle Against Aging

Life Extension® has identified a purified, highly potent form of PQQ from Japan that is produced through a unique fermentation process. The result is the highest quality PQQ available on the market today called **BioPQQ™**.

A bottle containing **30 20 mg** vegetarian capsules of **PQQ Caps with BioPQQ™** retails for \$40. If a member buys four bottles during **Super Sale**, the price is reduced to **\$24.30** per bottle.

BioPQQ™ is a trademark of MGC (Japan).

To order PQQ Caps with BioPQQ™
standalone or any other PQQ-containing
formula call 1-800-544-4440 or visit
www.LifeExtension.com



References

1. *Mitochondrion*. 2007 Jun;7 Suppl:S103-11.
2. *Mech Ageing Dev*. 1978 Mar;7(3):189-97.
3. *Arch Biochem Biophys*. 1992 Jun;295(2):230-4.
4. *Lipids*. 1989 Jul;24(7):579-84.
5. *Biogerontology*. 2002;3(1-2):37-40.
6. *Exp Gerontol*. 2004 Feb;39(2):189-94.
7. *J Biol Chem*. 2010 Jan 1;285:142-52.
8. *Biochimie*. 1999 Dec;81(12):1131-2.
9. *Lancet*. 1989 Mar 25;1(8639):642-5.
10. *Curr Opin Clin Nutr Metab Care*. 2010 Jul 7.
11. *Age (Dordr)*. 2010 Mar 20.
12. *Ageing Res Rev*. 2010 Jun 25.
13. *Cell Mol Life Sci*. 2010 Jun 25.
14. *Zhonghua Yi Xue Za Zhi (Taipei)*. 2001 May;64(5):259-70.
15. *J Nutr*. 2000 Apr;130(4):719-27.
16. Entrez Gene: PARGC1A peroxisome proliferator-activated receptor gamma, coactivator 1 alpha [Homo sapiens] GeneID: 10891.
17. *Cardiovasc Drugs Ther*. 2004 Nov;18(6):421-31.
18. *J Cardiovasc Pharmacol Ther*. 2006 Jun;11(2):119-28.
19. *Biochem Biophys Res Commun*. 2007 Nov 16;363(2):257-62.
20. *FOOD Style*. 2009;21:13(7)50-3. [Tokyo].

BY LOGAN BRONWELL

What Doctors Don't Know about Inflammation

Inflammation is an underlying culprit behind virtually all age-related diseases.^{1,2} That's why nutrients like **curcumin**, **fish oil**, and **vitamin D** have become so popular.

Less understood is that as maturing people suffer **chronic inflammatory** insults, they simultaneously encounter **impairment** of beneficial immune responses necessary to kill foreign invaders and malignant cells.

Aging destroys the **delicate balance** between *destructive* and *protective* inflammatory responses.¹⁻⁴ Fortunately, scientists have discovered a method to *turn back this lethal process!*⁵⁻⁹

In this article, you'll learn about a new discovery that can boost **immune function** while suppressing damaging **inflammatory reactions**.⁵⁻¹³ >





Chronic inflammation damages cells throughout our body, including the delicate linings of our **arteries** and our precious **brain cells**. About **25%** of all **cancers** are associated with **chronic inflammation** that causes mutations that lead to malignant changes.¹⁴

A certain degree of healthy inflammation is needed, however, to protect us when the body encounters infectious agents,³ trauma, and malignant cells.

With aging there is an **imbalance** that results in low-level *systemic* inflammation slowly destroying tissues, while our ability to mount a strong immune

response to pathologic killers is diminished. This imbalance underlies virtually *all* diseases of aging and early death.^{1,2}

Scientists have found that oil from the seed of the **black cumin** plant (*Nigella sativa*) can *reverse this age-related process!*⁵⁻⁹

New discoveries reveal that **black cumin seed oil** contains *potent* but non-toxic compounds that suppress excessive inflammatory molecules⁵⁻⁷ while at the same time stimulating the normal, acute inflammation we need to fight infections and kill cancers.^{8,9,13}

Balanced Inflammation

So how do our bodies distinguish between “good” inflammation and “dangerous” inflammation?

When **optimally balanced**, our bodies' *chemical and cellular systems* fine-tune the inflammatory response, providing enough immediate action to stop an invader, and then, at the correct moment, shut it down when the threat is gone.

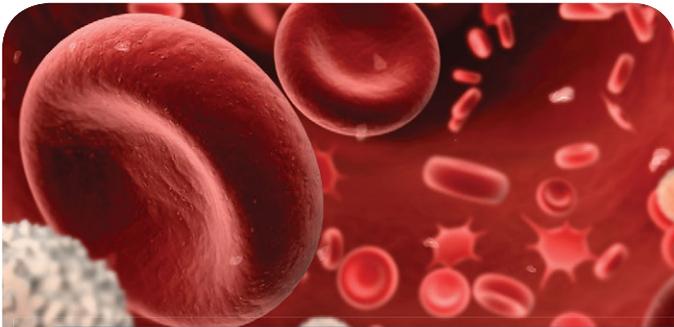
But when age unbalances this system, our bodies gradually shift into a chronically inflamed state called **inflammaging**.³ At the same time, we increas-

ingly develop **immunosenescence**, a loss of immune function that leaves us vulnerable to dangerous infections and cancers, both of which require a vigilant and potent immune system for their prevention.⁴

In recent years, hundreds of studies have emerged indicating that **black cumin seed oil** critically **rebalances** the body's inflammatory factors. Through this delicate balancing effect, this powerful seed oil battles a *broad range* of conditions, including allergies, asthma, cancer, cardiovascular disease, diabetes, rheumatoid arthritis, and colitis.

Managing Arthritis

One of the earliest recorded uses of black cumin seed oil was for the prevention and treatment of arthritis.¹⁵ Nearly **52 million** modern Americans suffer from some form of the disease, almost **23%** of the adult population.¹⁶ Both major forms of arthritis, rheumatoid and osteoarthritis, involve **excessive inflammatory responses**.



Black Cumin Seed Oil Boosts Immunomodulation

Black cumin seed oil joins a small handful of nutraceuticals now known to modulate the immune system in both directions. In addition to suppressing dangerous chronic inflammation, black cumin seed oil has been shown to boost appropriate immune function. The result is enhanced protection against both infections and cancer.¹⁰

In other words, black cumin seed oil offers true immune system balancing, promoting healthy immune function when it's needed, while suppressing excessive immune activity (inflammation), when it's deleterious.

Black cumin seed oil achieves this immunological balancing act by means of several distinct but inter-related mechanisms.

First, black cumin seed oil stimulates actions of patrolling immune system cells on the lookout for invading organisms or abnormal cancer cells. The oil triggers an increase in the activity of **macrophages** (cells that engulf and destroy abnormal cells) and **helper T-cells** (cells that marshal **natural killer cells** and direct them to their targets.)¹¹

Mice injected with the oil were dramatically protected against cytomegalovirus, a version of the herpes virus that can infect humans and cause birth defects and other consequences.¹¹ While control animals still had detectable virus in their systems at 10 days,

treated mice were virus-free, the result of enhanced macrophage and T-helper-cell activity.

Thymoquinone, an active component of black cumin seed oil, specifically boosts survival and activity of other key cells in the immune response to infection or cancer, namely so-called CD-8 T-cells.¹² These cells are the field troops that actively hunt down and kill infected or cancerous cells, after activation by T-helper and macrophage cells. This activity, known as “conditioning,” amplifies the effectiveness of these vital immune system cells against cancer and infectious diseases.¹²

These effects appear in humans treated with black cumin seed oil as well, according to a study presented at a recent international conference. That study reported a **55%** increase in the activity of T-helper cells, and a **30%** increase in natural killer cell function, following black cumin seed oil supplementation.¹³

Black cumin seed oil is a powerful anti-inflammatory agent, capable of suppressing the chronic inflammation that underlies aging and its many symptoms. Now it is showing tremendous promise at combating the gradual loss of immune function we suffer with advancing age. These twin properties give black cumin seed oil unprecedented dual coverage as an age-preventing, health-promoting supplement.

Black cumin seed oil has shown benefits in managing rheumatoid arthritis, a highly inflammatory condition. In addition to the joints, rheumatoid disease can afflict the heart, liver, nerves, and blood-forming cells.

A human study of black cumin seed oil has produced encouraging results. Forty women with rheumatoid arthritis had a one month washout period, during which they took a placebo capsule twice daily, followed by one month of taking **500 mg** of black cumin seed oil **twice daily**.¹⁷ Subjects experienced a significant improvement on a standard 28-point scale used to assess how rheumatoid arthritis is affecting the body as a whole. Additionally, there was a reduction in the number of swollen joints and in the duration of morning stiffness. Remarkably, there was an overall reduction of symptoms in **42.5%** of the patients.¹⁷

Black cumin seed oil has been shown to be effective in experimental models of osteoarthritis, the most common form of arthritis in humans.¹⁸ Treatment with thymoquinone, a component of black cumin seed oil, reduced levels of a protein-melting enzyme, known as **MMP** (matrix metalloproteinase), that destroys bone and joint tissue in osteoarthritis.¹⁵

Allergies and Asthma

Eight percent of Americans—**18 million** people—endure environmental allergies such as hay fever. Another **8.2%** of Americans—**18.7 million**—suffer from asthma.^{19,20}

These conditions are related. Both are driven by an **overreaction** of the **immune system** and resulting **inflammation**.

Nasal congestion and weepy eyes are the recognized symptoms of hay fever, the most common environmental allergy. Underlying these symptoms are marked increases in a host of **pro-inflammatory** factors.

These inflammatory factors include *cytokines*, such as *interleukins*, antibodies called *IgE*, and immune cells called *eosinophils*.

Lab studies show that black cumin seed oil and its active constituents have beneficial effects on all of these inflammatory factors. Thymoquinone, a component found in black cumin seed oil, was found to alter production of interleukins—both suppressing *inflammatory* interleukins and boosting *anti-inflammatory* interleukins.²¹

Mice treated with black cumin seed oil were found to have reduced numbers of eosinophils, cytokines, and inflammatory cells in their lung tissue.²² These changes were equivalent to those induced by *dexamethasone*, a potent, immune-suppressing steroid used to treat arthritis.²²



What You Need to Know

Target the Inflammatory Imbalance of Aging with Black Cumin Seed Oil

- Aging changes the way your immune system functions, increasing inappropriate inflammation while suppressing appropriate immune responses.
- The result of this inflammatory and immunological imbalance is a host of chronic, age-related diseases that contribute to early death.
- The components of black cumin seed oil have unique properties that restore a youthful and optimal inflammatory balance to the immune system's components.
- Through this mechanism, black cumin seed oil has the potential to mitigate—and even reverse—chronic diseases such as arthritis, allergies, asthma, colitis, and cardiovascular disease.
- Studies show that it is possible to achieve a better overall immunological balance, one that promotes health and defeats inflammation, by supplementing with black cumin seed oil.

What Is Black Cumin Seed Oil?

Black cumin is one of the most ancient of herbal remedies. Though it has been used as a spice, black cumin should not be confused with common cumin (*Cuminum cyminum*).⁵ In many folk traditions, black cumin's antioxidant properties made it an attractive food preservative.⁵

Oil extracted from black cumin seeds contains a variety of components, all of which have potent free radical scavenging properties.^{5,7} Of these, thymoquinone is the best understood. In addition to its antioxidant powers, thymoquinone suppresses the activities of enzymes that produce inflammatory cytokines such as interleukins and leukotrienes.

But black cumin seed oil doesn't stop at suppressing inflammation. It contains other powerful ingredients that augment the immune system's patrolling surveillance and "killer" cells responsible for identifying threats such as infection and cancer cells.⁶

It's this ability to restore balance to the aging immune system that justifies black cumin seed's traditional names "seeds of blessing" and "panacea."^{5,7}

A human study of 66 patients with allergic rhinitis produced compelling results. Treatment with black cumin seed oil resulted in a sharp decrease in IgE antibodies in nasal secretions, accompanied by significant reductions in nasal congestion and itching, runny nose, sneezing attacks.²³

Black cumin seed oil also shows great promise in managing asthma, with its many inflammatory and allergic components. Lab studies show that both the seed oil and its thymoquinone constituent trigger relaxation of the trachea and large airways (bronchi), both of which can go into spasm during an asthma attack.^{22,24} The thymoquinone found in black cumin seed oil produces a sharp **reduction in inflammatory mediators** known as interleukins and leukotrienes, both of which play a role in asthma and allergy-related conditions.^{25,26}



Colitis and Gastro-Protection

Colitis—meaning inflammation of the colon, or large intestine—is most commonly seen in inflammatory bowel disease, including Crohn's disease. The Centers for Disease Control estimates that up to **1.4 million** Americans suffer from this condition.²⁷

There is still no medical cure.

However, black cumin seed oil and its components exert powerful effects that can slow colonic inflammation.⁶ Lab studies reveal that pre-treating animals with thymoquinone as extracted from black cumin seed oil completely prevents experimentally-induced colitis.²⁸

Importantly, treatment with black cumin seed oil lowers levels of *pro-inflammatory cytokines*.²⁹

Studies have shown that both black cumin seed oil and thymoquinone strongly protect the delicate stomach lining against the injurious effects of alcohol and other toxins, and even against the effects of stress.^{30,31} Markers of tissue oxidation were sharply reduced.³⁰

Cardiovascular Disease

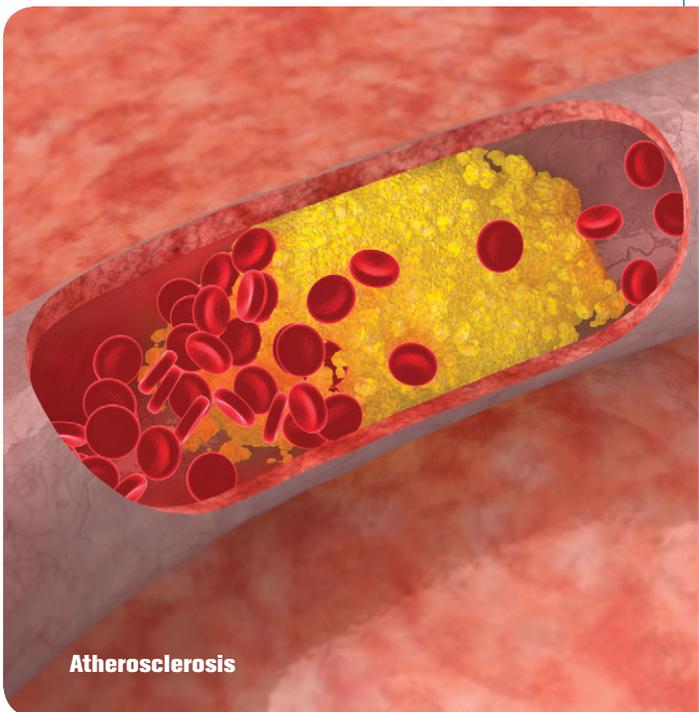
Atherosclerosis is a major consequence of **chronic inflammation**—making it an appropriate target for therapy with *anti-inflammatory* black cumin seed oil, with its powerful *antioxidant* effects. Working together, these two mechanisms lower the risk of atherosclerosis and consequently, heart attacks, strokes, and other artery diseases.

Animals supplemented with black cumin seed oil demonstrated lower levels of dangerous LDL-cholesterol, and higher levels of HDL cholesterol, which may be protective.^{32,33}

Black cumin seed oil neutralizes *lipid oxidation* and reduces the impact of oxidized LDL, a major trigger for the atherosclerotic plaques that block blood flow to cause heart attacks and strokes.³³

Black cumin seed oil has a major impact on a destructive process known as **ischemia-reperfusion injury**. This serious damage occurs to tissue and organs when, following blockage of an artery, the oxygen-rich blood flow is then restored. This complex phenomenon releases a massive outpouring of reactive oxygen species that can damage tissue as *severely* as the *original blockage*! **Ischemia-reperfusion injury** is responsible for many of the debilitating long-term effects seen in survivors of **strokes** and **heart attacks**.

For example, the **powerful protection** provided by black cumin seed oil against ischemia-reperfusion injury has now been convincingly demonstrated in the kidney—one of the main targets of the insidious effects of atherosclerosis.³⁴



Atherosclerosis

How Does Black Cumin Seed Oil Work?

Black cumin seed oil is a complex mixture of antioxidant, anti-inflammatory, and immunomodulatory components. These capabilities have made it useful in fighting diseases related both to excessive inflammation (virtually all age-related conditions) and to the impaired immune response of old age.⁶

Here are the major processes that have been identified as black cumin seed oil's mechanisms of action:

1. Antioxidant: Black cumin seed oil contains powerful antioxidants that reduce intracellular products of oxidation, boost natural cellular antioxidant systems, and scavenge free radicals before they can do harm.^{6,35}

2. Anti-Inflammatory: Black cumin seed oil's constituents that have multiple anti-inflammatory mechanisms:

- Suppress activity of the “master inflammatory regulator” complex NF-kappaB.³⁶
- Inhibit important enzyme systems such as 5-LOX and COX1 that produce inflammatory mediators called leukotrienes and prostaglandins.^{26,37,38}
- Reduce production of a compound called 5-HETE, a precursor of inflammatory molecules.^{38,39}
- Inhibit production and activity of interleukins, cytokines with complex immune modulating properties. **Black cumin seed oil** constituents reduce production of inflammatory interleukins, and may boost production of anti-inflammatory ones.⁴⁰⁻⁴²

3. Immune-Modulating Effects: In addition to suppressing chronic inflammation and free radicals, black cumin oil contributes to beneficial immune responses:

- It boosts the infection- and cancer-fighting abilities of specific cells in the immune system.^{6,7}
- Black cumin seed constituents trigger appropriate activation of pro-inflammatory cytokines in the face of stimulation by dangerous bacterial structural molecules, a function vital for developing acute inflammatory responses to infections.^{8,9}



Summary

The twin problems of increased *harmful* chronic inflammation combined with decreased *beneficial* immune responses are major contributors to aging, chronic disease, and early death.

The oil of **black cumin seed** has historically been used to combat conditions we now understand to be related to these fundamental, age-related, inflammatory and immunological disturbances.

Modern scientific analysis shows that black cumin seed oil contains components that re-establish **optimal inflammatory balance**—powerfully suppressing chronic inflammation, while at the same time promoting healthy immune responses.

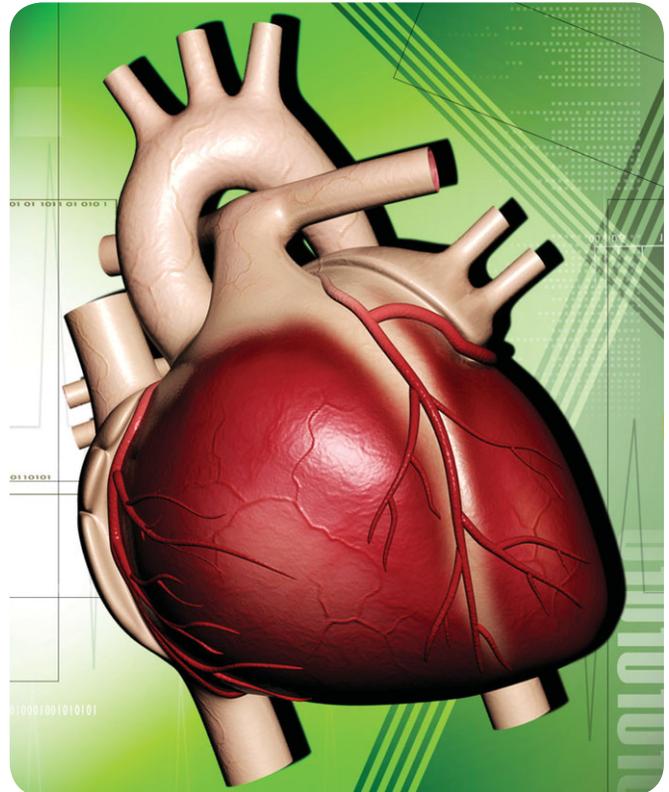
As a result of that delicate immunological balancing, supplementation with black cumin seed oil has the potential to slow—and even reverse—many of the most devastating aging-related conditions. ●

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

References

1. Chung HY, Cesari M, Anton S, et al. Molecular inflammation: underpinnings of aging and age-related diseases. *Ageing Res Rev.* 2009 Jan;8(1):18-30.
2. Jenny NS, French B, Arnold AM, et al. Long-term assessment of inflammation and healthy aging in late life: The Cardiovascular Health Study All Stars. *J Gerontol A Biol Sci Med Sci.* 2012 Feb 24. [Epub ahead of print]
3. Franceschi C. Inflammaging as a major characteristic of old people: can it be prevented or cured? *Nutr Rev.* 2007 Dec;65(12 Pt 2):S173-6.
4. Kanapeckiene V, Kalibatas J, Redaitiene E, Ceremnych J. The association between cytomegalovirus infection and aging process. *Medicina (Kaunas).* 2007;43(5):419-24.
5. Padhye S, Banerjee S, Ahmad A, Mohammad R, Sarkar FH. From here to eternity - the secret of Pharaohs: Therapeutic potential of black cumin seeds and beyond. *Cancer Ther.* 2008;6(b):495-510.
6. Shahzad M, Yang X, Raza Asim MB, et al. Black seed oil ameliorates allergic airway inflammation by inhibiting T-cell proliferation in rats. *Pulm Pharmacol Ther.* 2009 Feb;22(1):37-43. Epub 2008 Nov 27.
7. Butt MS, Sultan MT. *Nigella sativa*: reduces the risk of various maladies. *Crit Rev Food Sci Nutr.* 2010 Aug;50(7):654-65.
8. Finlay TM, Abdulkhalek S, Gilmour A, et al. Thymoquinone-induced Neu4 sialidase activates NFkappaB in macrophage cells and pro-inflammatory cytokines in vivo. *Glycoconj J.* 2010 Aug;27(6):583-600.
9. Finlay TM, Jayanth P, Amith SR, et al. Thymoquinone from nutraceutical black cumin oil activates Neu4 sialidase in live macrophage, dendritic, and normal and type I sialidosis human fibroblast cells via GPCR Galphai proteins and matrix metalloproteinase-9. *Glycoconj J.* 2010 Apr;27(3):329-48.

10. Majdalawieh AF, Hmaidan R, Carr RI. *Nigella sativa* modulates splenocyte proliferation, Th1/Th2 cytokine profile, macrophage function and NK anti-tumor activity. *J Ethnopharmacol.* 2010 Sep 15;131(2):268-75. Epub 2010 Jun 30.
11. Salem ML, Hossain MS. Protective effect of black seed oil from *Nigella sativa* against murine cytomegalovirus infection. *Int J Immunopharmacol.* 2000 Sep;22(9):729-40.
12. Salem ML, Alenzi FQ, Attia WY. Thymoquinone, the active ingredient of *Nigella sativa* seeds, enhances survival and activity of antigen-specific CD8-positive T cells in vitro. *Br J Biomed Sci.* 2011;68(3):131-7.
13. Salem ML. Immunomodulatory and therapeutic properties of the *Nigella sativa* L. seed. *Int Immunopharmacol.* 2005 Dec;5(13-14):1749-70.
14. Available at: <http://www.sciencedaily.com/releases/2011/04/110419091159.htm>. Accessed August 2, 2012.
15. Chen WP, Tang JL, Bao JP, Wu LD. Thymoquinone inhibits matrix metalloproteinase expression in rabbit chondrocytes and cartilage in experimental osteoarthritis. *Exp Biol Med (Maywood).* 2010 Dec;235(12):1425-31.
16. Available at: <http://www.cdc.gov/nchs/fastats/arthritis.htm>. Accessed July 12, 2012.
17. Gheita TA, Kenawy SA. Effectiveness of *Nigella sativa* Oil in the Management of Rheumatoid Arthritis Patients: A Placebo Controlled Study. *Phytother Res.* 2011 Dec 12.
18. Available at: <http://www.cdc.gov/Features/dsArthritis/>. Accessed July 12, 2012.
19. Available at: <http://www.cdc.gov/nchs/fastats/allergies.htm>. Accessed July 12, 2012.
20. Available at: <http://www.cdc.gov/nchs/fastats/asthma.htm>. Accessed July 12, 2012.
21. Umar S, Zargan J, Umar K, Ahmad S, Katiyar CK, Khan HA. Modulation of the oxidative stress and inflammatory cytokine response by thymoquinone in the collagen induced arthritis in Wistar rats. *Chem Biol Interact.* 2012 Apr 15;197(1):40-6.
22. Abbas AT, Abdel-Aziz MM, Zalata KR, Abd Al-Galel Tel D. Effect of dexamethasone and *Nigella sativa* on peripheral blood eosinophil count, IgG1 and IgG2a, cytokine profiles and lung inflammation in murine model of allergic asthma. *Egypt J Immunol.* 2005;12(1):95-102.
23. Nikakhlagh S, Rahim F, Aryani FH, Syahpoush A, Brougerdnya MG, Saki N. Herbal treatment of allergic rhinitis: the use of *Nigella sativa*. *Am J Otolaryngol.* 2011 Sep-Oct;32(5):402-7.
24. Al-Majed AA, Daba MH, Asiri YA, Al-Shabanah OA, Mostafa AA, El-Kashef HA. Thymoquinone-induced relaxation of guinea-pig isolated trachea. *Res Commun Mol Pathol Pharmacol.* 2001;110(5-6):333-45.
25. El Gazzar M, El Mezayen R, Marecki JC, Nicolls MR, Canastar A, Dreskin SC. Anti-inflammatory effect of thymoquinone in a mouse model of allergic lung inflammation. *Int Immunopharmacol.* 2006 Jul;6(7):1135-42.
26. El Gazzar M, El Mezayen R, Nicolls MR, Marecki JC, Dreskin SC. Downregulation of leukotriene biosynthesis by thymoquinone attenuates airway inflammation in a mouse model of allergic asthma. *Biochim Biophys Acta.* 2006 Jul;1760(7):1088-95.
27. Available at: <http://www.cdc.gov/ibd/>. Accessed July 12, 2012.
28. Mahgoub AA. Thymoquinone protects against experimental colitis in rats. *Toxicol Lett.* 2003 Jul 20;143(2):133-43.
29. Isik F, Tunali Akbay T, Yarat A, et al. Protective effects of black cummin (*Nigella sativa*) oil on TNBS-induced experimental colitis in rats. *Dig Dis Sci.* 2011 Mar;56(3):721-30.
30. Kanter M, Demir H, Karakaya C, Ozbek H. Gastroprotective activity of *Nigella sativa* L oil and its constituent, thymoquinone against acute alcohol-induced gastric mucosal injury in rats. *World J Gastroenterol.* 2005 Nov 14;11(42):6662-6.
31. Abdel-Sater KA. Gastroprotective effects of *Nigella Sativa* oil on the formation of stress gastritis in hypothyroidal rats. *Int J Physiol Pathophysiol Pharmacol.* 2009;1(2):143-49.
32. Al-Naqeeq G, Al-Zubairi AS, Ismail M, Amom ZH, Esa NM. Antiatherogenic potential of *Nigella sativa* seeds and oil in diet-induced hypercholesterolemia in rabbits. *Evid Based Complement Alternat Med.* 2011;2011:213628.
33. Nader MA, el-Agamy DS, Suddek GM. Protective effects of propolis and thymoquinone on development of atherosclerosis in cholesterol-fed rabbits. *Arch Pharm Res.* 2010 Apr;33(4):637-43. Epub 2010 Apr 27.
34. Bayrak O, Bavbek N, Karatas OF, et al. *Nigella sativa* protects against ischaemia/reperfusion injury in rat kidneys. *Nephrol Dial Transplant.* 2008 Jul;23(7):2206-12.
35. Woo CC, Kumar AP, Sethi G, Tan KH. Thymoquinone: potential cure for inflammatory disorders and cancer. *Biochem Pharmacol.* 2012 Feb 15;83(4):443-51.
36. Sethi G, Ahn KS, Aggarwal BB. Targeting nuclear factor-kappa B activation pathway by thymoquinone: role in suppression of antiapoptotic gene products and enhancement of apoptosis. *Mol Cancer Res.* 2008 Jun;6(6):1059-70.
37. Houghton PJ, Zarka R, de las Heras B, Hoult JR. Fixed oil of *Nigella sativa* and derived thymoquinone inhibit eicosanoid generation in leukocytes and membrane lipid peroxidation. *Planta Med.* 1995 Feb;61(1):33-6.
38. Mansour M, Tornhamre S. Inhibition of 5-lipoxygenase and leukotriene C4 synthase in human blood cells by thymoquinone. *J Enzyme Inhib Med Chem.* 2004 Oct;19(5):431-6.
39. El-Dakhakhny M, Madi NJ, Lembert N, Ammon HP. *Nigella sativa* oil, nigellone and derived thymoquinone inhibit synthesis of 5-lipoxygenase products in polymorphonuclear leukocytes from rats. *J Ethnopharmacol.* 2002 Jul;81(2):161-4.
40. Vaillancourt F, Silva P, Shi Q, Fahmi H, Fernandes JC, Benderdour M. Elucidation of molecular mechanisms underlying the protective effects of thymoquinone against rheumatoid arthritis. *J Cell Biochem.* 2011 Jan;112(1):107-17.
41. Keyhanmanesh R, Boskabady MH, Khamneh S, Doostar Y. Effect of thymoquinone on the lung pathology and cytokine levels of ovalbumin-sensitized guinea pigs. *Pharmacol Rep.* 2010 Sep-Oct;62(5):910-6.
42. Nemmar A, Al-Salam S, Zia S, et al. Contrasting actions of diesel exhaust particles on the pulmonary and cardiovascular systems and the effects of thymoquinone. *Br J Pharmacol.* 2011 Dec;164(7):1871-82.



BONE RESTORE

NOW WITH VITAMIN K2

and highly absorbable
Magnesium Citrate!



Item #01711

Bone Restore combines critical **bone boosting** nutrients into one superior formula.

Bone Restore includes highly **absorbable** forms of **calcium** and **boron**, along with **vitamin D3**, **magnesium**, **zinc**, **manganese**, and **silicon**. **Bone Restore** is now available with or without **vitamin K2** (MK-7).

Bone Restore contains **magnesium citrate**, which is one of the most absorbable forms of magnesium.

The retail price for 150 capsules of **Bone Restore** is \$26.

If a member buys four bottles during **Super Sale**, the price is reduced to **\$15.53** per bottle. (Item# 01711)

The same **Bone Restore** formula without vitamin K2 (MK-7) is available as well. The retail price for 150 capsules is \$22.50. If a member buys four bottles during **Super Sale**, the price is reduced to **\$13.16** per bottle. (Item# 01611)

Note: Those who take **Super Booster** or **Super K** usually do not need additional vitamin K2. They should order **Bone Restore** without vitamin K2. Those taking the anti-coagulant drug **Coumadin**® (warfarin) should use **BONE RESTORE** without vitamin K2.

Just five capsules of Bone Restore provide:

Highly Absorbable Calcium (as DimaCal® dicalcium malate, TRAACS® calcium glycinate chelate, calcium fructoborate)	1,200 mg
Vitamin D3	1,000 IU
Vitamin K2 (as menaquinone-7)	200 mcg
Magnesium (as magnesium citrate)	100 mg
Boron (calcium fructoborate as patented FruiteX B® OsteoBoron®)	3 mg
Zinc (as TRAACS® zinc glycinate chelate)	2 mg
Manganese	1 mg
Silicon	5 mg

FruiteX B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. patent #5,962,049.

DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. Patent 6,706,904 and patents pending.

To order Bone Restore, 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.

Introducing

BLACK CUMIN SEED OIL



As we age, a *balanced immune* and *inflammatory* response becomes critical to guarding our health.^{1,5}

Research has shown **Black Cumin Seed Oil** to be particularly effective.^{6,8}

UNIQUE MOLECULAR COMPLEX

Scientists have determined that **black cumin seeds** contain a *broad spectrum* of active compounds.⁶ Combined, these compounds provide powerful and wide-ranging *immune* support and promote healthy *inflammatory* response.^{6,7}

DUAL IMMUNE SUPPORT

A number of biological factors contribute to the body's normal inflammatory activity, including cell-signaling chemicals and hormone-like messengers.⁸ In a series of scientific studies, **Black Cumin Seed Oil** has been shown to support the normal effectiveness of these inflammatory factors.^{6,7}

Also, an aging, healthy immune system needs to orchestrate the activity of macrophages and helper T-cells that work together to identify and destroy dangerous microbes and abnormal cells. **Black Cumin Seed Oil** was also shown to support the optimal function of these vitally important defensive activities.⁹⁻¹¹

A BALANCED INFLAMMATION RESPONSE

By acting on *both* immune factors *and* inflammatory factors, **Black Cumin Seed Oil** supports a healthy immune system—which is increasingly important as we age—and facilitates a **healthy inflammatory response!**

The suggested daily dosage of two softgels of **Black Cumin Seed Oil** provides:

Thymocid™ organic Black Cumin seed oil (*Nigella sativa*) 1,000 mg

A bottle containing 60 softgels of **Black Cumin Seed Oil** retails for \$16. If a member buys four bottles during **Super Sale**, the price is reduced to **\$9.45** per bottle. (Item# 01709)

Since **curcumin** possesses some of the properties of **black cumin seed oil**, some people might want to take both nutrients in the same capsule.

The suggested daily dose of two softgels of **Black Cumin Seed Oil with Bio-Curcumin®** provides:

Super Bio-Curcumin® (BCM-95®) (*Curcuma longa*) extract 400 mg

Thymocid™ organic Black Cumin Seed Oil (*Nigella sativa*) 1,000 mg

A bottle containing 60 softgels of **Black Cumin Seed Oil with Bio-Curcumin®** retails for \$32. If a member buys four bottles during **Super Sale**, the price is reduced to **\$20.25** per bottle. (Item# 01710)

To order **Black Cumin Seed Oil** or **Black Cumin Seed Oil with Bio-Curcumin®**, call 1-800-544-4440 or visit www.LifeExtension.com.

For Balanced
Immune Support
and Inflammation
Control



Item# 01709



Item# 01710

References

1. *Curr Alzheimer Res.* 2007 Apr;4(2):117-22.
2. *JAMA.* 2004 Feb 11;291(6):704-10.
3. *Nutr Rev.* 2007 Dec;65(12 Pt 2):S173-6.
4. *Biol Psychiatry.* 2003 Sep 1;54(5):566-72.
5. *Immunol Allergy Clin North Am.* 2003 Feb;23(1):15-39.
6. *Cancer Ther.* 2008;6(b):495-510.
7. *Int Immunopharmacol.* 2005 Dec;5(13-14):1749-70.
8. *Phys Sportsmed.* 2008 Dec;36(1):11-7.
9. *Int J Immunopharmacol.* 2000 Sep;22(9):729-40.
10. *Pulm Pharmacol Ther.* 2009 Feb;22(1):37-43.
11. *Crit Rev Food Sci Nutr.* 2010 Aug;50(7):654-65.

Thymocid™ is a trademark of Verdure Sciences, Inc. Bio-Curcumin® and BCM-95® are registered trademarks of Dolcas-Biotech, LLC. U.S. Patents Nos. 7,883,728, 7,736,679 and 7,879,373.

Discount Prices For Premium-Quality Products



Life Extension® members are longevity enthusiasts, willing to take extraordinary steps to stave off disease, aging, and death. When members buy products from the **Life Extension Foundation Buyers Club**, they are assured of receiving the highest quality products based on the latest scientific studies that demonstrate benefits.

The **discounts** available to Foundation members enable them to purchase **premium-quality** supplements at prices below those charged by commercial companies.

Here are some examples of **savings** members enjoy during the annual **Super Sale**:

	Our Low Retail Price	SUPER SALE Member-Volume Discount Price Per Bottle
Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract 120 softgels, Item # 01482 Super purified EPA/DHA fish oil plus sesame lignans and potent olive fruit extract to provide critical omega-3 fatty acids and essential components of the Mediterranean diet.	\$32	\$16.81 (ten-bottle purchase)
Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ 100 mg, 60 softgels, Item # 01426 The superior ubiquinol form of CoQ10 plus a natural compound (shilajit) shown to double mitochondrial CoQ10 levels.	\$62	\$35.10 (ten-bottle purchase)
Life Extension Mix™ • 315 tablets, Item # 01755 High-potency multi-nutrient formula now with the selenite form of selenium in addition to L-selenomethionine and Se-methyl L-selenocysteine.	\$98	\$46.91 (ten-bottle purchase)
Vitamin D3 • 5,000 IU, 60 softgels, Item # 01713 High-potency vitamin D in a new softgel to provide greater absorption into the bloodstream.	\$11	\$6.68 (four-bottle purchase)
Ultra Natural Prostate Formula with AprèsFlex™ & Standardized Lignans 60 softgels, Item # 01695 Comprehensive prostate protection utilizing nettle, pygeum, saw palmetto, boswellia, and other botanical extracts plus boron.	\$38	\$21.60 (twelve-bottle purchase)
CoffeeGenic™ Weight Management™ with Green Coffee Extract • 90 capsules, Item # 01707 Green Coffee Extract (GCA™) (350 mg) plus irvingia, chromium, and green tea extract.*	\$48	\$28.35 (four-bottle purchase)
Super K with Advanced K2 Complex • 90 softgels, Item # 01724 More potent formula now includes 200 mcg of long-acting MK-7 form of vitamin K2 plus 1,000 mcg of K1 and 1,000 mcg of the MK-4 form of vitamin K2.	\$30	\$18.23 (four-bottle purchase)
PQQ Caps with BioPQQ™ • 10 mg, 30 vegetarian capsules, Item # 01500 Promotes mitochondrial biogenesis (generation of new mitochondria) in aging cells.	\$24	\$14.85 (four-bottle purchase)
DHEA (Dehydroepiandrosterone) • 25 mg, 100 capsules, Item # 00335 A hormone that declines with aging, benefits overall health.	\$18	\$10.13 (four-bottle purchase)
Mitochondrial Energy Optimizer with BioPQQ™ • 120 capsules, Item # 01568 To maintain healthy cellular function, protein structural integrity, and mitochondrial biogenesis.	\$94	\$56.70 (four-bottle purchase)
Super Bio-Curcumin® • 400 mg, 60 vegetarian capsules, Item # 00407 Super-absorbable formulation promotes healthy lipids, joint function, and healthy DNA. Absorbs up to <u>six</u> times greater than conventional curcumin.	\$38	\$23.63 (four-bottle purchase)
Super Zeaxanthin with Lutein, Meso-Zeaxanthin, and C3G 60 softgels, Item # 01685 Supports night vision and macular density.	\$22	\$13.37 (four-bottle purchase)
Optimized Resveratrol with Synergistic Grape-Berry Actives 250 mg, 60 vegetarian capsules, Item # 01430 High potency trans-resveratrol with quercetin, plus trans-pterostilbene and fisetin to support DNA "longevity genes." One per day resveratrol formula.	\$46	\$27.90 (four-bottle purchase)

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.

To order call toll-free **1-800-544-4440**

**Our Low
Retail Price**

SUPER SALE
Member-Volume
Discount Price Per Bottle

Bone Restore with Vitamin K2 • 150 capsules, Item # 01711 High-potency bone protection formula with FruiteX B® OsteoBoron®, Magnesium citrate, and now K2. Available with or without vitamin K2.	\$26	\$15.53 (four-bottle purchase)
Cognitex with NeuroProtection Complex • 90 softgels, Item # 01697 Optimal support for the brain. Includes glyceryl-phosphoryl-choline, vinpocetine, phosphatidylserine, Sharp-PS® GOLD PS-DHA, uridine 5'-monophosphate, and others. Available with or without pregnenolone.	\$74	\$43.20 (twelve-bottle purchase)
Cardio Peak with Standardized Hawthorn and Arjuna 120 vegetarian capsules, Item # 01700 Powerful cardiotoxic botanical extracts modulate a broad spectrum of cardiovascular risk factors.	\$36	\$21.60 (four-bottle purchase)
Reishi Extract Mushroom Complex • 60 vegetarian capsules, Item # 01708 Standardized mushroom extract to restore and regulate immune system function.	\$30	\$18.23 (four-bottle purchase)
Triple Action Cruciferous Vegetable Extract 60 vegetarian capsules, Item # 01468 Comprehensive cruciferous plant extract formulation, with I3C, DIM, apigenin, and other DNA-protecting vegetable concentrates.	\$24	\$14.85 (four-bottle purchase)
Prelox® Natural Sex for Men® • 60 tablets, Item # 01373 Supports healthy endothelial function and blood flow for maximum male performance.	\$52	\$32.40 (four-bottle purchase)
Super R-Lipoic Acid • 300 mg, 60 vegetarian capsules, Item # 01208 Superior efficacy compared to alpha-lipoic acid—supplies 240 mg of stabilized R-lipoic acid.	\$49	\$30.38 (four-bottle purchase)
ArthroMax™ Advanced with UC-II® and AprèsFlex™ • 60 capsules, Item # 01618 Promotes joint health and may promote comfortable joint structure and function.	\$36	\$21.60 (four-bottle purchase)
Extraordinary Enzymes • 60 capsules Item # 01706 Powerful digestive support to promote nutrient absorption while minimizing breakdown of starches into sugar.	\$26	\$16.20 (four-bottle purchase)
Krill Healthy Joint Formula • 30 softgels, Item # 01600 Healthy joint formula provides targeted support for aging joints through a proprietary blend of krill oil, hyaluronic acid, and astaxanthin. One softgel a day formula.	\$32	\$19.58 (four-bottle purchase)
Natural Stress Relief • 30 vegetarian capsules, Item # 00987 With lemon balm extract to help relieve stress and sleeplessness, and pure L-theanine to promote relaxation without drowsiness.	\$28	\$16.20 (four-bottle purchase)
Gamma E Tocopherol with Sesame Lignans • 60 softgels, Item # 00759 Provides the critical gamma tocopherol form of vitamin E plus sesame lignans to enhance the free radical scavenging benefits of alpha and gamma tocopherols.	\$32	\$19.58 (four-bottle purchase)
Black Cumin Seed Oil with Bio-Curcumin® • 60 softgels Item # 01710 Dual support for a balanced immune and inflammation response.	\$32	\$20.25 (four-bottle purchase)
Super Booster Softgels with Advanced K2 Complex • 60 softgels, Item # 01680 A convenient one per day softgel that includes optimal potencies of gamma-tocopherol, sesame lignans, lycopene, lutein, ginkgo, chlorophyllin, and both forms of vitamin K2.	\$42	\$25.65 (four-bottle purchase)
Neuro-Mag™ Magnesium L-Threonate • 90 vegetarian capsules Item# 01603 Optimal form of magnesium to protect synaptic density of neurons.	\$40	\$24.30 (four-bottle purchase)

Order online at www.LifeExtension.com/SuperSale

* This supplement should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.

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 EMILY PERDUE



CERAMIDES Nourish Skin from Within

When we are young, our bodies manufacture ample **ceramide molecules** to keep our skin healthy.¹⁻³

These **ceramides** are a major component of our skin's surface. They protect against moisture loss to keep skin youthful and supple.⁴ Functionally, **ceramides** supports the skin's matrix, keeping it firm.^{2,4}

However, with age, **ceramide** production declines, and skin begins to sag and wrinkle.³

Scientists have found a way to extract **ceramides** from whole grain wheat that allows aging humans to **nourish their skin's structure** from within. Research has shown that ceramides derived from wheat inhibit the elastase enzymes that destroy the skin's elastin, which results in loss of flexibility and increased wrinkling.⁵ Natural ceramides provide continuous maintenance for skin and allow it to sustain its healthy protective function and vital moisture.

This article will examine the laboratory data on whole wheat-derived ceramides for restoring structure to human skin. Impressive clinical data show how supplementing with these ceramides produces smoother, more youthful skin free of the itching and flaking that is so common with age.^{2,3,6} >





Ceramides Preserve Youthful Skin

Aging causes a loss of ceramides naturally found in the skin. The result is thinning of the skin's outer layer that weakens the skin's moisture-retention properties.⁴

The obvious solution is to replace those ceramides. But what is the best way to do so?

Laboratory research reveals some improvement to skin's moisture barrier function when lipids, including ceramides are applied directly to skin.^{4,7} But this topical approach can't match nature's steady supply of ceramides from the inside.

On the other hand, very promising studies show that ceramides, taken as a food supplement, can significantly improve skin moisture levels and reduce the discomfort of dry, aging skin.

Until 1997, ceramides for internal use were derived only from animal sources, chiefly from cows.⁴

Researchers have discovered a number of plant-based ceramides that are available from grains such as rice, corn, and wheat.⁴

A little over a decade ago a French company decided to explore the potential of *wheat-derived ceramides* for use as a skin moisturizer that could be taken orally. This would allow the ceramides to reach the skin's outer layer in a natural fashion, being delivered by the bloodstream and gently nudged into the extracellular matrix, where they would restore the healthy moisture barrier function of the skin.⁴

That same company went on to develop the first ceramide-rich extract of wheat. They used exclusively whole-grain, non-genetically modified wheat as the raw material.^{4,8} The new wheat extract contains purified oils, and has been tested to prove that it has no gluten or other allergy-provoking components.⁴

The product was an instantaneous hit in Japan, where since 1997 it has been used in many popular "beauty drinks" and nutritional supplements.⁴ A number of interrelated studies have now validated that healthy consumer response.⁴⁻⁶

Several early laboratory studies demonstrated that a powdered form of the wheat extract, which is equally potent as the oil form, could hydrate and restore *youthful structure* to human skin after being subjected to disruption of its protective barrier function.⁵ In addition, this study found a substantial reduction in free radicals in the skin, and showed that the wheat extract could inhibit the *elastase enzymes* that ordinarily would destroy elastin and contribute to loss of flexibility and increased wrinkling.⁵

Human Clinical Trials

Clinical studies with the wheat ceramide extract began in **2005**, after an encouraging pilot study.⁶ Women with dry to very dry skin received either a placebo or **200 mg/day** of a powdered form of the wheat ceramide extract; treatment continued for 3 months.

There was a significant improvement in skin hydration as evaluated three ways, by a machine, by a dermatologist's examination, and by the patients' own subjective scores.⁶ Furthermore, women in the wheat extract group, but not the placebo group, experienced a significant reduction in dry patches, roughness,



and itching. These effects are exactly what one would expect as the ceramides made their way through the bloodstream to the skin.

A second, larger study was then done to evaluate the wheat ceramide extract in its oil form.

In that study, women with dry to very dry skin took **350 mg** of the wheat ceramide oil, or a placebo, daily for three months, in a randomized, double-blind fashion.⁴ Again, a series of different measures was used to determine the impact of the supplement.

Skin hydration was objectively measured by a technique called “corneometry.”⁴ By this measure, the supplement (but not the placebo) significantly increased skin hydration of the arms, legs, and overall, with the greatest impact on the arms, where skin hydration had increased by more than **35%**, compared to less than **1%** in the placebo group.⁴

Subjects also rated their own perceptions of the effects of the treatment (supplement or placebo). At all measurement points in the study, the wheat extract scored better on the following measures: **roughness, uniformity of complexion, facial skin hydration, leg skin hydration, suppleness, itchiness, and overall state of the skin.**⁴

No significant adverse effects or side effects were reported, and the supplement proved slightly superior to the placebo in terms of acceptability.⁴

This study was a compelling demonstration of the power of a whole-grain wheat ceramide supplement to improve many of the essential features of the skin’s barrier function, features that are typically lost to aging and environmental exposure. Simply put, women who supplemented with this product experienced measurable improvements in “beauty from within.”

Summary

The centuries-long quest for “beauty from within” is now a reality, thanks to oral supplements derived from the whole wheat grain. A wheat-derived supplement rich in ceramides, which form **35** to **40%** of the “cement” in skin’s outermost layer can restore moisture and reduce dry, flaky, itchy skin.

Ceramides and other rare lipids are natural constituents of the wheat grain. By taking these compounds internally, skin can be nourished naturally, delivering ceramides directly to skin through the bloodstream, where they are taken up and deposited into the barrier layer, or stratum corneum.

Boosting your skin’s ceramide levels can bring back its natural moisture levels yielding a healthy and youthful complexion — from the inside out! ●



What You Need to Know

Maintain Youthful Skin Hydration and Integrity With Ceramides

- With aging, skin loses its youthful moisture, suppleness, and smoothness, thanks to the loss of essential ceramide molecules.
- Skin ceramides make up **35-40%** of the lipids in the extracellular “cement” that binds together protective cells in the outermost skin layer, the stratum corneum.
- Loss of skin ceramides renders aging skin permeable to moisture, leaving skin dry, rough, and itchy; ceramide loss is also a major contributor to wrinkles.
- Ceramide replacement by nutritional supplementation is now a reality, the result of intensive research into the properties of ceramides in whole wheat grains.
- Supplementation with wheat ceramides has been shown to restore ceramide concentrations in the skin while battling other factors that contribute to skin aging.
- Clinical studies show that wheat ceramide supplementation measurably enhances skin moisture and contributes to smoother, more comfortable skin.
- Wheat ceramides offer the first scientifically proven means of enhancing beauty from the inside out.



How Your Skin Ages

Skin is a complex, multilayered organ with a myriad of functions. The most visible manifestations of skin aging occur mostly in the outermost layers.

To understand how aging changes your skin, we need to review the normal structure of the outer layer of skin, called the **stratum corneum**, and what becomes of it over time.

The stratum corneum is composed of flattened, hard, dead skin cells that resemble overlapping bricks, which start as living cells in the lower skin layers. As they are pushed closer to the surface, they flatten out and die, providing a thin but very tough barrier.⁹

But these flat cells would flake away immediately if they weren't held together by a kind of flexible skin cement, which is **35 to 40%** ceramides.⁴ If you think of the stratum corneum cells as bricks, the skin cement is the mortar between them that holds them in place.

Together, these flat cells and the more flexible, lipid-rich cement provide a natural seal that acts as a two-way barrier: it keeps out germs, toxins, and other contaminants, while keeping in moisture to maintain a healthy, flexible, and supple skin texture.¹⁰

Cells in the stratum corneum are constantly replaced from living cells in the deeper skin layers; the outer layers of skin (ie, epidermis) are replaced roughly every **39 days**.¹¹ And the ceramides and other lipids in the extracellular matrix are constantly replenished by nutrients brought to the deeper skin layers by the bloodstream.¹²

At least, that's how it all works in youth.

As we age, our skin, like so many of our other organs, slows down. Studies show that after age 50 or so, new outer layer skin cells take more than **50%**

longer to reach the surface, an indication of delayed proliferation.¹³

Worse, the amount of specialized lipids in the extracellular matrix declines with age and ceramides are among the first to go.¹⁻³ As a result, the "cement" that holds the skin cells together is weakened and loses much of its moisture barrier function.² Lost moisture results in the dry skin that is common in older adults.^{2,14}

Finally, the skin, like every other organ, falls victim to the ravages of chronic oxidant stress and inflammation.¹⁵ Together these omnipresent threats trigger production of enzymes that degrade vital skin proteins. Among their chief targets are collagen, the main structural skin protein, and elastin, which gives skin its suppleness and flexibility.¹⁶ Chronic exposure to sunlight aggravates these processes.^{3,17-19}

One look at a typical older person's skin tells the story. Lost moisture in the stratum corneum leaves the skin surface pale and dry with fine wrinkles.³ Inflammatory changes can produce itching, redness, and dry patches. Loss of collagen thins the skin, while declining elastin renders it less flexible; these changes produce the larger wrinkles we associate with age.²⁰⁻²²

While topical products aim to replenish skin oils from the outside, the skin's natural sealing agents such as ceramides and other specialized lipids, come from inside the body. They're derived from precursor molecules delivered by the bloodstream, that then make their way up through the deeper skin layers, ultimately being deposited in the stratum corneum.¹² No matter how good your topical skin cream or lotion is, it cannot replace the structural barrier created by ceramides.

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

References

1. Saint Leger D, Francois AM, Leveque JL, Stoudemayer TJ, Grove GL, Kligman AM. Age-associated changes in stratum corneum lipids and their relation to dryness. *Dermatologica*. 1988;177(3):159-64.
2. Rogers J, Harding C, Mayo A, Banks J, Rawlings A. Stratum corneum lipids: the effect of ageing and the seasons. *Arch Dermatol Res*. 1996 Nov;288(12):765-70.
3. Hashizume H. Skin aging and dry skin. *J Dermatol*. 2004 Aug;31(8):603-9.
4. Guillou S, Ghabri S, Jannot C, Gaillard E, Lamour I, Boisnic S. The moisturizing effect of a wheat extract food supplement on women's skin: a randomized, double-blind placebo-controlled trial. *Int J Cosmet Sci*. 2011 Apr;33(2):138-43.
5. Boisnic S, Beranger JY, Branchet MC. Cutaneous Hydration Evaluation After a Vegetal Ceramide-Based Cream Application on Normal Human Skin Tissue Model Maintained Alive, Submitted to a Dehydration Model HITEX;2003.
6. Boisnic S. Clinical Evaluation of a Hydrating Food Supplement: Double blind randomized study versus placebo: HITEX;2005.
7. Yilmaz E, Borchert HH. Effect of lipid-containing, positively charged nanoemulsions on skin hydration, elasticity and erythema—an in vivo study. *Int J Pharm*. 2006 Jan 13;307(2):232-8.
8. Whitaker DK, Cilliers J, de Beer C. Evening primrose oil (Epo-gam) in the treatment of chronic hand dermatitis: disappointing therapeutic results. *Dermatology*. 1996;193(2):115-20.
9. Available at: <http://medical-dictionary.thefreedictionary.com/stratum+corneum>. Accessed October 18, 2012.
10. Bouwstra JA, Ponc M. The skin barrier in healthy and diseased state. *Biochim Biophys Acta*. 2006 Dec;1758(12):2080-95. Epub 2006 Jul 11.
11. Weinstein GD, McCullough JL, Ross P. Cell proliferation in normal epidermis. *J Invest Dermatol*. 1984 Jun;82(6):623-8.
12. Nilsson A, Duan RD. Absorption and lipoprotein transport of sphingomyelin. *J Lipid Res*. 2006 Jan;47(1):154-71.
13. Grove GL, Kligman AM. Age-associated changes in human epidermal cell renewal. *J Gerontol*. 1983 Mar;38(2):137-42.
14. Barco D, Gimenez-Arnau A. Xerosis: a dysfunction of the epidermal barrier. *Actas Dermosifiliogr*. 2008 Nov;99(9):671-82.
15. Mastaloudis A, Wood SM. Age-related changes in cellular protection, purification, and inflammation-related gene expression: role of dietary phytonutrients. *Ann N Y Acad Sci*. 2012 Jul;1259:112-20.
16. Robert L, Jacob MP, Frances C, Godeau G, Hornebeck W. Interaction between elastin and elastases and its role in the aging of the arterial wall, skin and other connective tissues. A review. *Mech Ageing Dev*. 1984 Dec;28(2-3):155-66.
17. Scharffetter-Kochanek K, Brenneisen P, Wenk J, et al. Photoaging of the skin from phenotype to mechanisms. *Exp Gerontol*. 2000 May;35(3):307-16.
18. Pillai S, Oresajo C, Hayward J. Ultraviolet radiation and skin aging: roles of reactive oxygen species, inflammation and protease activation, and strategies for prevention of inflammation-induced matrix degradation - a review. *Int J Cosmet Sci*. 2005 Feb;27(1):17-34.
19. Liebel F, Kaur S, Ruvolo E, Kollias N, Southall MD. Irradiation of skin with visible light induces reactive oxygen species and matrix-degrading enzymes. *J Invest Dermatol*. 2012 Jul;132(7):1901-7.
20. Sela BA. Dermatological manifestations of smoking. *Harefuah*. 2002 Aug;141(8):736-40, 60.
21. Imokawa G. Recent advances in characterizing biological mechanisms underlying UV-induced wrinkles: a pivotal role of fibroblast-derived elastase. *Arch Dermatol Res*. 2008 Apr;300 Suppl 1:S7-20.
22. Imokawa G. Mechanism of UVB-induced wrinkling of the skin: paracrine cytokine linkage between keratinocytes and fibroblasts leading to the stimulation of elastase. *J Invest Dermatol Symp Proc*. 2009 Aug;14(1):36-43.



ULTIMATE eye HYDRATION



Item # 00893

The retail price for a box containing two 5 mL vials of **Brite Eyes III** is \$34. If a member buys four boxes during **Super Sale**, the price is reduced to **\$21.60 per box**.

**To order Brite Eyes III,
call 1-800-544-4440
or visit www.LifeExtension.com**

Eye support is *essential* to preventing age-related vision problems.

The older eyes get, the more susceptible they become to an array of debilitating issues that can hamper eyesight and cripple quality of life. With just a few drops of the proper eye lubricant, **eye irritation** stemming from **dryness** may be alleviated.

Brite Eyes by Life Extension® provides a powerful dose of two well-established lubricants in every drop, soothing eye discomfort without irritation. **Hydroxymethylcellulose** and **glycerin** are FDA-approved for ophthalmic use and are uniquely preserved with potent **antioxidants** and **anti-glycating** agents.

The **Brite Eyes** formula is buffered in a way to make it **soothing to the eye**. The suggested use of **Brite Eyes III** is to apply 1 to 2 drops in each eye every day.

Each box of **Brite Eyes III** contains two individual vials that provide 5 mL each. The reason for putting **Brite Eyes** into individual vials is to reduce the risk of bacterial contamination. Having small vials also makes it convenient for consumers to keep **Brite Eyes** readily accessible at home, the office, in one's purse or pocket, and other places where access to a soothing eye drop is needed.



Item # 01502

Your Skin's Internal Moisturizer

Ceramides are essential for preserving healthy-looking skin.^{1,2} That's why they're included in so many anti-aging face creams.

Your body's production of **ceramides declines** with age.³ That's bad news, since **ceramides** make up **35-40%** of the binding matrix that maintains moisture balance and protects the skin's surface.⁴ It's therefore critical that ceramides lost to aging are replaced.

Restore Ceramides Naturally from Within!

The **ceramides** that young skin naturally produces to retain its supple appearance are identical to those present in **wheat!**

Wheat-derived oils have been used *topically* for centuries as a natural moisturizer. But you can't get enough ceramides from topically applied wheat oil to have a long-term impact on your skin's appearance. And they don't appear in sufficient concentration in your diet.

That's why **Life Extension®** brought together these skin-nourishing oils in a concentrated **oral formula** called **Skin Restoring Phytoceramides with Lipowheat™**.

Lipowheat™ is a proprietary **ceramide blend** that offers *nutritional* support for aging skin to complement the topical products you may already be using.

The Moisturizing Pill the Japanese Have Enjoyed for a Decade!

Lipowheat™ ceramides have been available to Japanese women as a functional food since 2000.⁵ The hydrating action of **Lipowheat™ ceramides** have proven effective in clinical trials.

To take one example, after just three months ingesting **200 mg** per day of **Lipowheat™**, a group of people suffering from dry, flaking skin reported dramatic improvement in the look and feel of their skin. These results were verified by electrochemical analysis showing that **95%** of participants exhibited improved skin hydration. Even better, all subjects who at the onset of the study experienced chronic itching reported sharply decreased itching or **complete elimination** of the problem by the end of the study!⁵

Aging Americans can now offset the visible impact of the gradual decline in their ability to produce enough ceramides by using **Skin Restoring Phytoceramides with Lipowheat™**.

One bottle containing 30 **350 mg** liquid capsules of **Skin Restoring Phytoceramides with Lipowheat™** retails for \$25. If a member buys four bottles during **Super Sale**, the price is reduced to **\$15.53**. Contains wheat.

Lipowheat™ is a trademark of LAVIPHARM Group of Companies.

To order **Skin Restoring Phytoceramides with Lipowheat™**
call **1-800-544-4440** or visit **www.LifeExtension.com**

References

1. *Biophys Chem.* 2010 Aug;150(1-3):144-56.
2. *Chemistry and Physics of Lipids.* Apr 2007;146(2):67-75.

3. Baran R, Maibach H, eds. *Textbook of Cosmetic Dermatology.* 3rd ed. Taylor & Francis;2005:177.
4. *Int J Cosmet Sci.* 2010 Jul 14. .

5. www.fda.gov/ohrms/dockets/dockets/95s0316/95s-0316-rpt0275-04-Udell-vol211.pdf
Accessed August 10, 2010.
6. *J Med Esth et Chir Derm.* 2007 Dec; 34(136):239-42.

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.

HALF OF AGING HUMANS IN THE DEVELOPED WORLD ARE MAGNESIUM DEFICIENT!¹

YOU MAY BE ONE OF THEM.

Optimal uptake of magnesium may now be obtained in a highly *absorbable* form called **Neuro-Mag™** available in **capsules** or **tasty natural lemon-flavored powder**.

A Critical Brain Booster. . .

Magnesium is needed for more than **300** biochemical reactions in the body.²

Long known for its role in cardiovascular³⁻⁵ and bone health,⁶ researchers are now focusing *intensely* on magnesium's benefits for **cognitive function**.²

It is very *hard* for your body to maintain optimal levels of magnesium in the **brain**.² This is of *special* concern for maturing individuals, as magnesium deficiency increases over time.¹

Absorbs Into the Brain

Most commercially available magnesium supplements are not readily absorbed into the central nervous system.

To overcome this obstacle, an innovative form of magnesium is being introduced called **Neuro-Mag™**, shown to specifically target the aging brain and nervous system.

In pre-clinical models, **magnesium L-threonate** contained in **Neuro-Mag™** boosted magnesium levels in spinal fluid by an impressive **15%** compared to no increase with conventional magnesium.²

Even more compelling, animal models revealed improvements of **18%** for short-term memory and **100%** for long-term memory using the **Neuro-Mag™** form of magnesium.²

Capsules or Powder...Value Priced

The suggested daily dose of three **Neuro-Mag™ Magnesium L-Threonate Capsules** provides **2,000 mg** of **Magnesium-L-Threonate**. While this supplies a modest **144 mg** of elemental magnesium, its superior **absorption** into the bloodstream and nervous system make it a preferred choice for aging humans to supplement with.

This same brain health-supporting magnesium is also available in a good tasting powder mix called **Neuro-Mag™ Magnesium L-Threonate Powder**. In addition to its appealing natural lemon flavor, the one-scoop per day serving size supplies the same amount of magnesium plus **500 mg** of **calcium** (as calcium lactate gluconate—a highly *soluble* form of calcium) and **1,000 IU** of **vitamin D3**.

A bottle containing 90 vegetarian capsules of **Neuro-Mag™ Magnesium L-Threonate** or **30** scoops of **Neuro-Mag™ Magnesium L-Threonate Powder** retails for \$40. If a member buys four bottles during **Super Sale**, the price is reduced to **\$24.30** per bottle. Contains corn.

References

1. Available at: <http://www.mit.edu/press/2010/magnesium-supplement.html>.
2. *Neuron*. 2010 Jan 28;65(2):165-77.
3. *Ann Pharmacother*. 2002 Feb;36(2):255-60.
4. *Br J Sports Med*. 2006 Sep;40(9):773-8.
5. *Congest Heart Fail*. 2006 Jan-Feb;12(1):9-13.
6. *J Bone Miner Res*. 1998 Apr;13(4):749-58.

Magtein™ is a trademark of Magceutics, Inc, distributed exclusively by AIDP, Inc. Patent pending.

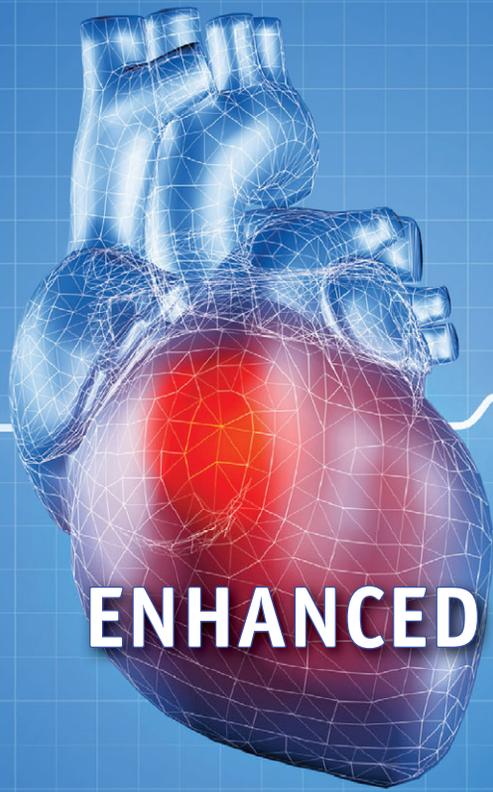
To order **Neuro-Mag™**
Magnesium L-Threonate
Capsules or Powder
call 1-800-544-4440 or visit
www.LifeExtension.com



Item # 01603



Item # 01602



ENHANCED HEART MUSCLE FUNCTION

Cardiotonics have traditionally been used to improve heart function and vitality. Formulated for optimum heart muscle health, **Cardio Peak™ with Standardized Hawthorn and Arjuna** provides dual **cardiotonic** support.

Extensive research demonstrates that the botanical extracts **Hawthorn** and **Arjuna** deliver optimum support for normal heart muscle function and coronary artery health.¹⁻¹⁷

Hawthorn: Peak Cardiotonic Support

Used for centuries in Europe for heart health, the cardiotonic effects of **Hawthorn** extract have been well documented in numerous clinical trials.^{1,9-12}

Hawthorn contains specific *bioflavonoid complexes* targeted to help promote normal circulation and efficient heart muscle function.^{2,5,13}

Studies indicate that the constituents in Hawthorn powerfully support:

- Strong *contractile force* of human heart muscle.³
- Protection for heart muscle cells from oxidant damage.¹²
- Normal gene expression to promote cardiovascular health.^{2,4,5}
- Improved cardiovascular performance.¹¹

Arjuna: Boosting Heart-Health Benefits

Traditionally used for cardiovascular health, **arjuna** extract *complements* the effects of hawthorn in support of enhanced heart function.¹⁴⁻¹⁷ A number of scientific studies have shown that arjuna delivers strong support for:

- Enhanced heart muscle tone, improving its “squeeze” and increasing the amount of blood it can pump each second without exhaustion.¹⁶
- Healthy endothelial function.⁸
- Improved exercise endurance.¹⁷

A comprehensive program that includes diet, exercise, and lifestyle changes is important to your cardiovascular health. For unique **cardiotonic support** for a strong and healthy heart, **Cardio Peak™ with Standardized Hawthorn and Arjuna** may become a key element in your daily regimen!

To order **Cardio Peak™ with Standardized Hawthorn and Arjuna**, call 1-800-544-4440 or visit www.LifeExtension.com

The suggested **twice daily** dosage of **2 capsules** of **Cardio Peak™ with Standardized Hawthorn and Arjuna** provides:

Rejuna™ Arjuna (*Terminalia arjuna*) **1,500 mg**
10:1 extract (bark) [std. to 40% polyphenols (600 mg)]

Hawthorn-Derived Oligomeric Proanthocyanidins (OPCs) **60 mg**
[from standardized Hawthorn (*Crataegus monogyna* and *Crataegus laevigata*) extract (leaf and flower)]

A bottle of 120 vegetarian capsules of **Cardio Peak™ with Standardized Hawthorn and Arjuna** retails for \$36. If a member buys four bottles during **Super Sale**, the price is reduced to **\$21.60** per bottle.



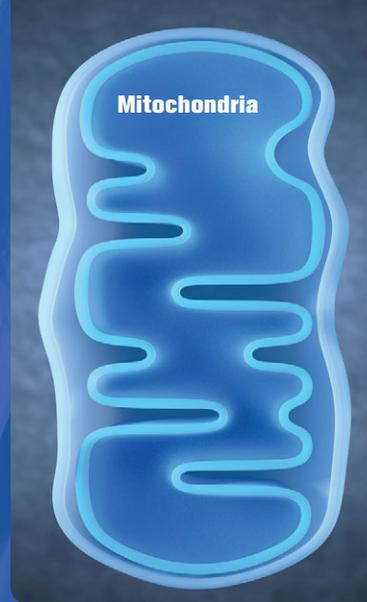
Item# 01700

References

1. *Am J Chin Med.* 2005;33(1):1-10.
2. *Zhongguo Zhong Yao Za Zhi.* 2009 Jan;34(1):96-9.
3. *J Cardiovasc Pharmacol.* 2000 May;35(5):700-7.
4. *Arzneimittelforschung.* 1993 Sep;43(9):945-9.
5. *Life Sci.* 2004 Feb 27;74(15):1945-55.
6. *J Assoc Physicians India.* 2001 Feb;49:231-5.
7. *Indian Heart J.* 2004 Mar-Apr;56(2):123-8.
8. *Life Sci.* 2003 Oct 10;73(21):2727-39.
9. *Fortschr Med.* 1993 Jul 20;111(20-21):352-4.
10. *Eur J Heart Fail.* 2008 Dec;10(12):1255-63.
11. *Fortschr Med.* 1996 Aug 30;114(24):291-6.
12. *Phytomedicine.* 2011 Nov 15;18(14):1214-9.
13. *Arzneimittelforschung.* 1997 Jul;47(7):821-5.
14. *Indian J Exp Biol.* 2011 Apr;49(4):282-8.
15. *Evid Based Complement Alternat Med.* 2011;2011:487916.
16. *J Ethnopharmacol.* 2007 Nov 1;114(2):114-29.
17. *Indian Heart J.* 2002 Mar-Apr;54(2):170-5.

Rejuna™ is a trademark of Verdure Sciences, Inc

BY LINA BUCHANAN



CoQ10: The Longevity Factor

Would you like to potentially add 9 years to your life expectancy? That's what research on the nutrient **coenzyme Q10 (CoQ10)** implies is possible.¹

CoQ10 is well known for its heart and vascular health benefits.² By helping the cellular powerhouses known as **mitochondria** burn fuel more effectively, CoQ10 is able to protect not only the heart but **every** cell in your body.³

That's why scientists are growing increasingly fascinated with the role of CoQ10 in tissues beyond the cardiovascular system.² There is evidence for CoQ10's protective effects in the brain and nervous system, in asthma and chronic lung disease, in diabetes and the metabolic syndrome, on ocular health, and even on the aging immune system.

Most excitingly, there's early support for the idea that CoQ10 supplementation can extend the life span of both primitive animals and mammals, laying the groundwork for a similar pro-longevity effect in humans. >





CoQ10 Extends Life Span

According to the **mitochondrial theory of aging**, oxidant damage to the mitochondria is at the root of aging itself.⁴ Simply put, the more oxidative damage to mitochondria, the shorter the life span of the individual.^{5,6}

Therefore, if we can make mitochondria burn energy more cleanly and efficiently, we can decelerate the aging process. That would mean not only longer life, but a healthier one.

CoQ10 is an essential component of the mitochondrial energy transfer system. When CoQ10 levels fall, mitochondrial dysfunction skyrockets, and aging is accelerated.⁵

However, when CoQ10 is added back to ailing or aging mitochondria, their function rebounds. Studies show that when supplemented with CoQ10, older worms in the species *C. elegans* experience a slowing down of the aging process and an extended life span.⁷

Even studies that don't show life span extension demonstrate a return to youthful behaviors and functions in response to CoQ10 supplementation.⁸

These benefits aren't restricted to primitive invertebrates, however. Research demonstrates that mice supplemented with CoQ10 live longer. In one case, supplemented animals experienced an **11.7%** increase in mean life span, and a **24%** increase in maximum life span.¹ That increase translates into the equivalent of humans gaining over **9** years, based on today's life expectancy of **78.5** years.⁹

The benefits of CoQ10 supplementation in mice aren't restricted solely to extending the quantity of life, however. Lifelong dietary supplementation with CoQ10 decreased objective measures of aging even in middle-aged animals.¹⁰

CoQ10 appears to achieve these exceptional effects through a multi-targeted set of mechanisms.

It is now evident that CoQ10 directly influences the expression of multiple genes involved in aging, especially those regulating inflammation.¹¹⁻¹³ This so-called "epigenetic" effect is at the very forefront of scientific attempts to understand how environmental factors such as nutrition influence our genetic load.

Taken all together, CoQ10's antioxidant, anti-inflammatory, and epigenetic mechanisms combine to offer remarkable protection for a host of body systems, especially those hit hardest by mitochondrial aging.

CoQ10 Preserves Brain Structure, Slows Neurodegeneration

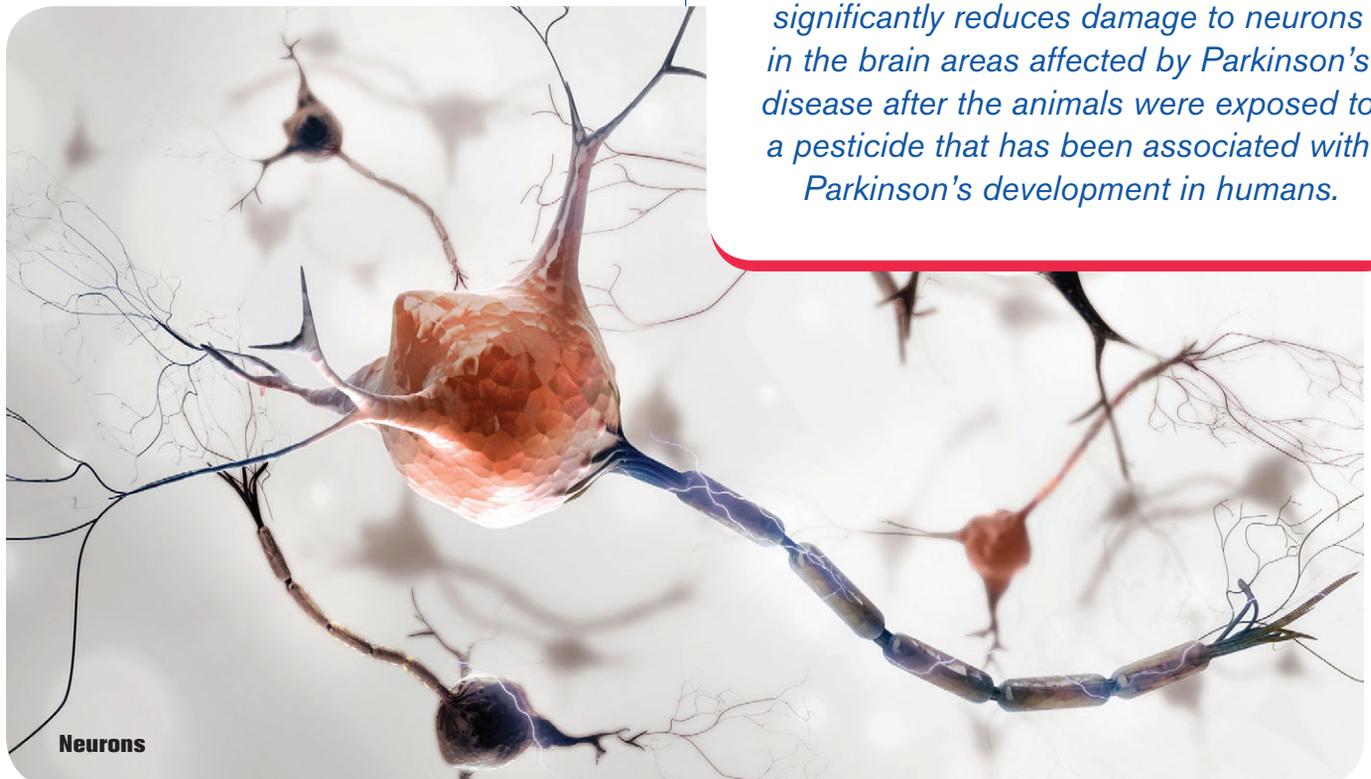
Mitochondrial dysfunction from chronic oxidation and the resulting chronic inflammation are a root cause of neurodegenerative conditions like Alzheimer's, Parkinson's, Huntington's, and ALS (Lou Gehrig's disease).^{6,14-18}

CoQ10 is attracting ever-increasing attention as scientists look for a way to prevent these diseases and treat their causes, rather than simply treating symptoms, which is the best that current medicine can offer.^{17,19}

Alzheimer's disease is the largest cause of dementia among Americans, estimated to affect more than **5 million** people; it is the sixth leading cause of death.²⁰ While many factors contribute to risk for Alzheimer's, age and oxidant stress in the brain are major contributors to this disease.^{15,16,21} Accumulated oxidant stress leads to production and deposition of an abnormal protein called *amyloid β -peptide*, which is itself a trigger for more oxidation and inflammation.²¹

Eventually, brain cells overwhelmed by *amyloid β -peptide* lose their function and die, producing the loss of memory, cognition, and physical function we associate with the disease.

Animal studies have shown that CoQ10 significantly reduces damage to neurons in the brain areas affected by Parkinson's disease after the animals were exposed to a pesticide that has been associated with Parkinson's development in humans.



CoQ10 shows great promise in laboratory and animal studies of Alzheimer's disease. By slowing oxidant damage, CoQ10 is proven to reduce deposition of destructive *amyloid* β -peptide proteins in brain cells.²² It reduces the *amyloid* β -peptide-induced oxidation that contributes to the vicious cycle of oxidation-inflammation-oxidation that accelerates the disease process.²³ Finally, and perhaps most importantly, CoQ10 added to *amyloid* β -peptide-afflicted brain cells causes the destructive protein to become destabilized and weakened even after it is formed.²⁴ This unique CoQ10 mechanism has the potential for reversing Alzheimer's disease at the molecular level.

Animal studies demonstrate reduced oxidative stress and *amyloid* β -peptide deposition when CoQ10 is added to feed.^{22,25-27} CoQ10 supplementation in such animals improves cognitive performance and memory both with CoQ10 alone and when vitamin E is added.^{28,29} These studies provide a useful model of what recovery from Alzheimer's disease might look like in humans.

Human patients with Alzheimer's disease are known to have lower levels of reduced CoQ10 in their spinal fluid, an indication of the intense oxidant stress in their brains.³⁰

CoQ10 and Parkinson's Disease

Parkinson's disease is the second most common aging-related disorder in the world.³¹ Like Alzheimer's, it is the result of oxidant stress triggering production of an abnormal, inflammatory protein.³²⁻³⁴ In Parkinson's the protein is called *alpha-synuclein*, which damages neurons in regions of the brain that control motor function as well as cognition.^{33,34} Symptoms include slowed movements, weakness, cognitive impairment, and eventually dementia.³¹

CoQ10 is showing real promise in human studies of Parkinson's disease.¹⁸ Unlike current treatments, which improve symptoms without changing disease progression, CoQ10 may fundamentally alter and slow the otherwise inevitable decline of patients with Parkinson's.³³

For example, animal studies have shown that CoQ10 significantly reduces damage to neurons in the brain areas affected by Parkinson's disease after the animals were exposed to a pesticide that has been associated with Parkinson's development in humans.^{33,35}

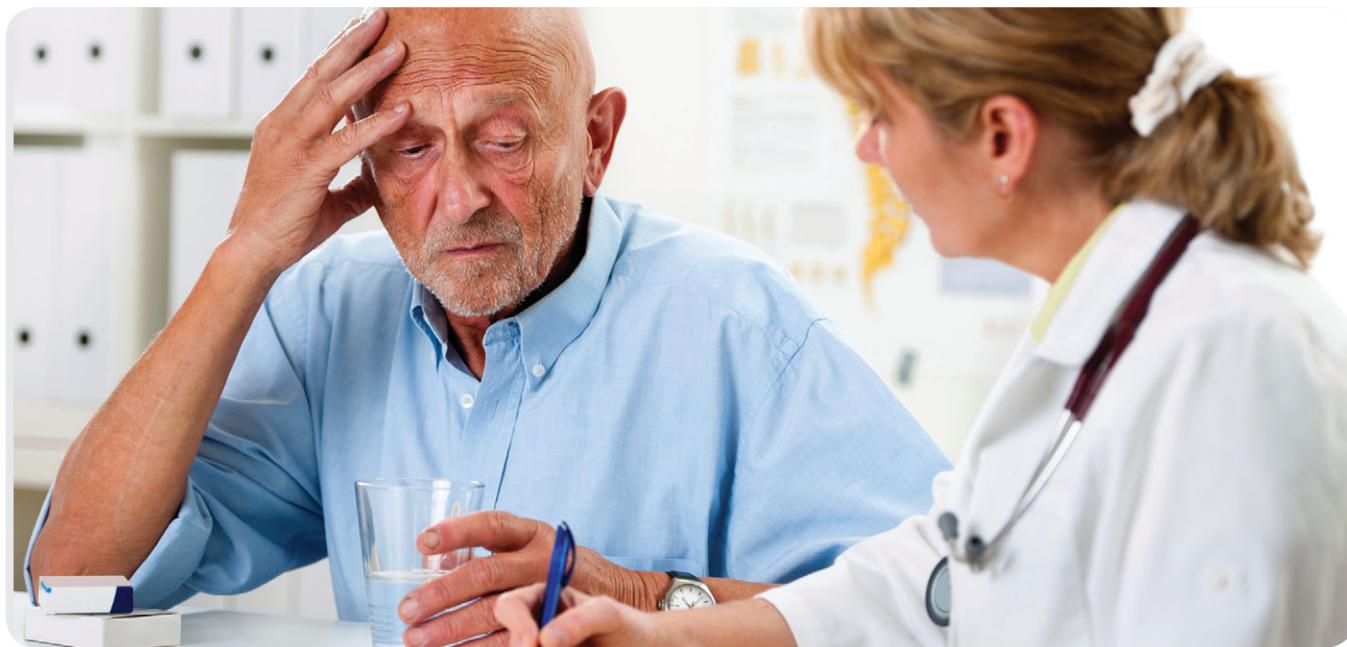
CoQ10 at doses of **300 to 1,200 mg/day** have been used in clinical research, though up to **2,400 mg/day** is well tolerated.³⁶ In studies using the higher doses, improvements on several Parkinson's disease rating scales have been observed.^{32,37} In one important



What You Need to Know

Combat Mitochondrial Decline with CoQ10

- Your mitochondria need to burn fuel cleanly and efficiently to assure their own integrity and your own longevity.
- CoQ10 is an essential coenzyme that, when added to the diet, acts as a fuel additive to optimize mitochondrial performance, extracting the most energy with the least damage.
- Animals from primitive worms to laboratory mice enjoy dramatic extension of their life spans when supplemented with mitochondrial-protecting CoQ10.
- Additional benefits from CoQ10's mitochondrial energy-boosting effects include protection from neurodegenerative diseases and mental health disorders, enhanced lung function, and protection from the effects of elevated glucose in diabetes and metabolic syndrome.
- New findings are adding to the already impressive list of cardiovascular benefits ascribed to CoQ10 supplementation.



study, **1,200 mg/day** produced substantial slowing of disease progression compared with placebo.³⁷

A 2011 meta-analysis (a large study combining data from smaller trials) concluded that **1,200 mg/day** of CoQ10 was well-tolerated by Parkinson's disease patients, and provided significant improvement on numerous measures of disease severity and progression.³⁸

CoQ10 Preserves Brain Function, Fights Migraine, Mental Illness

CoQ10 is essential not only in preventing brain structural deterioration, but in maintaining normal function at all ages. Studies are revealing some startling associations in two areas of brain function in particular: migraine headaches and common mental health problems such as depression and schizophrenia.

Migraine headaches occur in an estimated **8.7 million** women and **2.6 million** men in the United States producing moderate to severe disability. More than **3 million** women and **1 million** men are estimated to suffer 1 or more attacks/month.^{39,40}

The exact chain of events leading up to a migraine is unclear, but it may be related to brain energy levels, as indicated by low CoQ10 levels in people with migraines (almost **33%** of a population with migraine had levels below the standard in one study).⁴¹ Studies of CoQ10 supplementation in children, adolescents, and adults show substantial decreases in the frequency of migraine episodes, number of days with migraine symptoms, headache disability, and frequency of nausea, a common feature of migraines.⁴¹⁻⁴³

CoQ10 is so effective in managing migraine headaches that it is now listed among the 11 most effective "**drugs**" for preventing migraines by the Canadian Headache Society.⁴⁴

Major depression, bipolar disorder, and schizophrenia, long considered separate entities, are now recognized as having common roots in **mitochondrial dysfunction** and elevated brain oxidative stress levels.^{45,46} People with these conditions have higher markers of oxidant damage and lower cellular antioxidant levels than do healthy controls, and CoQ10 is typically lower than normal.^{45,47} In one study, **51.4%** of depressed patients' CoQ10 levels fell below the lowest values in control subjects.⁴⁸

CoQ10 deficiency is particularly marked in people whose depression responds poorly to medication, a possible indication that the deficiency needs to be corrected in order for prescription meds to work.⁴⁸

A major breakthrough in our understanding of the causes of mental illness came in 2011 and 2012, when researchers discovered that oxidative and other related stresses in the brain were capable of creating new molecular configurations that triggered an autoimmune response in the brains of people with depression and schizophrenia.^{45,49,50}

Restoring natural levels of antioxidants such as CoQ10 is therefore an attractive approach in these conditions. One study of depression in older adults with bipolar disorder found a significant reduction in symptom severity during treatment with CoQ10 at **1,200 mg/day**.⁵¹

The **ubiquinol** form of CoQ10 is far better **absorbed**, so a much lower dose, perhaps around **400 mg/day** of

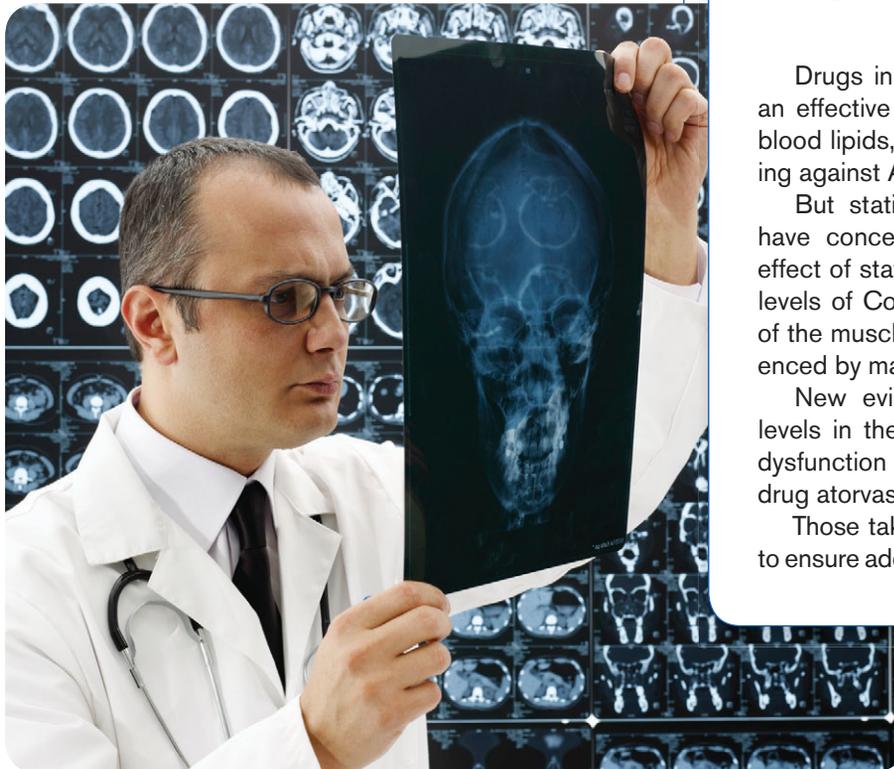
ubiquinol should provide benefits seen when much higher doses of the more common **ubiquinone** form of CoQ10 is used.

Finally, some medications in common use against depression, such as amitriptyline, are capable of lowering CoQ10 levels in the blood, further reducing available energy in the brain. Thus, people taking such drugs are especially likely to benefit from CoQ10 supplementation.⁵²

CoQ10 Protects Lung Function

Your lungs face the most immediate threat of oxidant damage because they interact directly with the **21%** oxygen in air you breathe.⁵³ It's not surprising, therefore, that the major diseases of the lung, asthma and chronic obstructive pulmonary disease (COPD), involve a severe imbalance of oxidation and the body's natural preventive measures, including CoQ10.⁵⁴

Levels of CoQ10 are markedly lower in both asthmatics and patients with COPD.⁵⁵⁻⁵⁷ Conversely, supplementing with CoQ10 offers substantial benefits. In one study, asthmatic patients on chronic steroid treatment to reduce inflammation were able to significantly reduce the amount of steroids they had to give themselves each day.⁵⁸ And a study of COPD patients showed improvements in exercise performance, tissue oxygenation, and heart rate on CoQ10 supplementation at **90 mg/day**.⁵⁹



CoQ10 Fights Metabolic Syndrome and Diabetes

In both metabolic syndrome and diabetes, tissue levels of oxidant stress are markedly elevated.^{60,61} Not surprisingly, levels of the antioxidant CoQ10 are reduced in humans and lab animals with these conditions.^{60,62,63}

Low CoQ10 levels are now recognized as being closely correlated with problematic long-term blood sugar control and many of the complications of diabetes, including diabetic neuropathy (nerve damage), nephropathy (kidney damage), and of course **endothelial dysfunction** and the resulting cardiovascular damage.^{61,64}

Fortunately, supplementation with CoQ10 is a remarkably simple way to restore deficient levels and get better long-term control of blood sugar. Human studies show that adding CoQ10 to the already healthful Mediterranean diet further reduces oxidant stress and fat oxidation in the period immediately following a meal, when your body is especially vulnerable to damage.⁶⁵

This has beneficial effects on long-term blood sugar control. Supplementation with **200 mg/day** of CoQ10 (in the ubiquinol form) reduced levels of hemoglobin A1c, a marker of blood sugar control over time, to

Statin Drugs Drastically Deplete CoQ10

Drugs in the so-called "statin" category are an effective pharmaceutical means of lowering blood lipids, and they may play a role in protecting against Alzheimer's disease.⁷⁹

But statins, like all prescription medicines, have concerning side effects. One important effect of statin treatment is a reduction in blood levels of CoQ10, which may account for some of the muscle pain and other side effects experienced by many people on these drugs.²

New evidence suggests that low CoQ10 levels in the brain may be related to cognitive dysfunction in animals treated with the statin drug atorvastatin (Lipitor®).⁷⁹

Those taking a statin drug are strongly urged to ensure adequate supplementation with CoQ10.



less than **7%**, the upper limit of normal.^{66,67} In both human and animal studies, the supplemented groups had significant decreases in elevated blood pressure and improvements in **endothelial function**.^{61,68,69}

Animal studies demonstrate improved nerve conduction velocity, a measure of nerve function, in diabetic animals supplemented with CoQ10.⁶⁴ Human studies show improvement in endothelial function in diabetics taking **200 mg/day** of CoQ10.⁷⁰ CoQ10 supplements mitigate glucose and oxidant stress-induced damage to kidney tissue in diabetic animal models, restoring kidney function to near-normal levels.^{71,72}

New Developments in CoQ10 and Cardiovascular Health

It's not only people with the metabolic syndrome and diabetes, however, who can benefit from CoQ10 supplementation with regard to cardiovascular disease. The heart and blood vessels are rich with mitochondria, and that requires highly effective and efficient use of energy in those tissues. That's what led the earliest researchers to study CoQ10 as a way of improving heart and blood vessel health.

In less than a decade, we've seen the emergence of remarkable new findings about CoQ10 and its cardiovascular benefits. Here are some highlights:

CoQ10 supplements improve the function of the heart's dominant left ventricle during the vital diastolic, or relaxation phase. This is critical because the diastolic phase is when the heart receives its own surge of blood flow, and statin drugs impair diastolic function.⁷³

Eight weeks of CoQ10 supplementation at **300 mg/day** improved heart muscle function during the systolic, or pumping phase, by enhancing mitochondrial performance and endothelial function.⁷⁴

The addition of CoQ10 to enalapril, a blood pressure drug, promoted normalization of endothelial function and enhanced blood pressure control in patients with "essential hypertension."⁷⁵

The combination of CoQ10 with selenium, another important coenzyme with antioxidant powers, cut the death rate from cardiovascular disease by more than half (to **5.9%** from **12.6%**) in a group of older adults.⁷⁶

CoQ10 plus aged garlic extract, another supplement known to improve endothelial function and slow atherosclerosis, reduced blood vessel stiffness and slowed arterial calcium accumulation in a group of firefighters.^{77,78}

Summary

The enzyme cofactor CoQ10 can help your **mitochondria** burn more cleanly and efficiently. That reduces the amount of oxidant stress and damage to mitochondria, helping to slow pathologic aging processes.

Reducing mitochondrial damage and enhancing performance with CoQ10 supplementation are well known to support cardiovascular function. Scientists are now discovering that CoQ10 contributes to a longer life, the result of the supplement's augmentation of mitochondrial function in brain structure and function, lung defense mechanisms, and disorders related to poor glycemic control and the metabolic syndrome.

Total body health depends heavily on maintaining mitochondrial integrity. CoQ10 represents an efficient way to optimize mitochondrial output by maintaining coenzyme Q10 blood levels in **youthful** ranges. ●

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

References

- Quiles JL, Ochoa JJ, Huertas JR, Mataix J. Coenzyme Q supplementation protects from age-related DNA double-strand breaks and increases lifespan in rats fed on a PUFA-rich diet. *Exp Gerontol*. 2004 Feb;39(2):189-94.
- Littarru GP, Tiano L. Clinical aspects of coenzyme Q10: an update. *Nutrition*. 2010 Mar;26(3):250-4.
- Villalba JM, Parrado C, Santos-Gonzalez M, Alcain FJ. Therapeutic use of coenzyme Q10 and coenzyme Q10-related compounds and formulations. *Expert Opin Investig Drugs*. 2010 Apr;19(4):535-54.
- Lenaz G, D'Aurelio M, Merlo Pich M, et al. Mitochondrial bioenergetics in aging. *Biochim Biophys Acta*. 2000 Aug 15;1459(2-3):397-404.
- Lass A, Agarwal S, Sohal RS. Mitochondrial ubiquinone homologues, superoxide radical generation, and longevity in different mammalian species. *J Biol Chem*. 1997 Aug 1;272(31):19199-204.
- Kidd PM. Neurodegeneration from mitochondrial insufficiency: nutrients, stem cells, growth factors, and prospects for brain rebuilding using integrative management. *Altern Med Rev*. 2005 Dec;10(4):268-93.
- Ishii N, Senoo-Matsuda N, Miyake K, et al. Coenzyme Q10 can prolong *C. elegans* lifespan by lowering oxidative stress. *Mech Ageing Dev*. 2004 Jan;125(1):41-6.
- Takahashi M, Ogawara M, Shimizu T, Shirasawa T. Restoration of the behavioral rates and lifespan in *clk-1* mutant nematodes in response to exogenous coenzyme Q(10). *Exp Gerontol*. 2012 Mar;47(3):276-9.
- Available at: <http://www.cdc.gov/nchs/fastats/lifexp.htm>. Accessed September 14, 2012.
- Yan J, Fujii K, Yao J, et al. Reduced coenzyme Q10 supplementation decelerates senescence in SAMP1 mice. *Exp Gerontol*. 2006 Feb;41(2):130-40.
- Schmelzer C, Kohl C, Rimbach G, Doring F. The reduced form of coenzyme Q10 decreases the expression of lipopolysaccharide-sensitive genes in human THP-1 cells. *J Med Food*. 2011 Apr;14(4):391-7.
- Santos-Gonzalez M, Gomez Diaz C, Navas P, Villalba JM. Modifications of plasma proteome in long-lived rats fed on a coenzyme Q10-supplemented diet. *Exp Gerontol*. 2007 Aug;42(8):798-806.
- Lee BJ, Huang YC, Chen SJ, Lin PT. Effects of coenzyme Q10 supplementation on inflammatory markers (high-sensitivity C-reactive protein, interleukin-6, and homocysteine) in patients with coronary artery disease. *Nutrition*. 2012 Jul;28(7-8):767-72.
- Beal MF. Mitochondrial dysfunction and oxidative damage in Alzheimer's and Parkinson's diseases and coenzyme Q10 as a potential treatment. *J Bioenerg Biomembr*. 2004 Aug;36(4):381-6.
- Spindler M, Beal MF, Henchcliffe C. Coenzyme Q10 effects in neurodegenerative disease. *Neuropsychiatr Dis Treat*. 2009;5:597-610.
- Young AJ, Johnson S, Steffens DC, Doraiswamy PM. Coenzyme Q10: a review of its promise as a neuroprotectant. *CNS Spectr*. 2007 Jan;12(1):62-8.
- Chaturvedi RK, Beal MF. Mitochondrial approaches for neuroprotection. *Ann N Y Acad Sci*. 2008 Dec;1147:395-412.
- Orsucci D, Mancuso M, Ienco EC, LoGerfo A, Siciliano G. Targeting mitochondrial dysfunction and neurodegeneration by means of coenzyme Q10 and its analogues. *Curr Med Chem*. 2011;18(26):4053-64.
- Wollen KA. Alzheimer's disease: the pros and cons of pharmaceutical, nutritional, botanical, and stimulatory therapies, with a discussion of treatment strategies from the perspective of patients and practitioners. *Altern Med Rev*. 2010 Sep;15(3):223-44.
- Available at: <http://www.nia.nih.gov/alzheimers/topics/alzheimers-basics>. Accessed September 14, 2012.
- Hyun DH, Mughal MR, Yang H, et al. The plasma membrane redox system is impaired by amyloid beta-peptide and in the hippocampus and cerebral cortex of 3xTgAD mice. *Exp Neurol*. 2010 Oct;225(2):423-9.
- Wadsworth TL, Bishop JA, Pappu AS, Woltjer RL, Quinn JF. Evaluation of coenzyme Q as an antioxidant strategy for Alzheimer's disease. *J Alzheimers Dis*. 2008 Jun;14(2):225-34.
- Choi H, Park HH, Koh SH, et al. Coenzyme Q10 protects against amyloid beta-induced neuronal cell death by inhibiting oxidative stress and activating the PI3K pathway. *Neurotoxicology*. 2012 Jan;33(1):85-90.
- Ono K, Hasegawa K, Naiki H, Yamada M. Preformed beta-amyloid fibrils are destabilized by coenzyme Q10 in vitro. *Biochem Biophys Res Commun*. 2005 Apr 29;330(1):111-6.
- Moreira PI, Santos MS, Sena C, Nunes E, Seica R, Oliveira CR. CoQ10 therapy attenuates amyloid beta-peptide toxicity in brain mitochondria isolated from aged diabetic rats. *Exp Neurol*. 2005 Nov;196(1):112-9.
- Yang X, Yang Y, Li G, Wang J, Yang ES. Coenzyme Q10 attenuates beta-amyloid pathology in the aged transgenic mice with Alzheimer presenilin 1 mutation. *J Mol Neurosci*. 2008 Feb;34(2):165-71.
- Yang X, Dai G, Li G, Yang ES. Coenzyme Q10 reduces beta-amyloid plaque in an APP/PS1 transgenic mouse model of Alzheimer's disease. *J Mol Neurosci*. 2010 May;41(1):110-3.
- Dumont M, Kipiani K, Yu F, et al. Coenzyme Q10 decreases amyloid pathology and improves behavior in a transgenic mouse model of Alzheimer's disease. *J Alzheimers Dis*. 2011;27(1):211-23.
- McDonald SR, Sohal RS, Forster MJ. Concurrent administration of coenzyme Q10 and alpha-tocopherol improves learning in aged mice. *Free Radic Biol Med*. 2005 Mar 15;38(6):729-36.
- Isobe C, Abe T, Terayama Y. Increase in the oxidized/total coenzyme Q-10 ratio in the cerebrospinal fluid of Alzheimer's disease patients. *Dement Geriatr Cogn Disord*. 2009;28(5):449-54.
- Chao J, Leung Y, Wang M, Chang RC. Nutraceuticals and their preventive or potential therapeutic value in Parkinson's disease. *Nutr Rev*. 2012 Jul;70(7):373-86.
- Muller T, Buttner T, Gholipour AF, Kuhn W. Coenzyme Q10 supplementation provides mild symptomatic benefit in patients with Parkinson's disease. *Neurosci Lett*. 2003 May 8;341(3):201-4.
- Kones R. Parkinson's disease: mitochondrial molecular pathology, inflammation, statins, and therapeutic neuroprotective nutrition. *Nutr Clin Pract*. 2010 Aug;25(4):371-89.
- Sutachan JJ, Casas Z, Albarracin SL, et al. Cellular and molecular mechanisms of antioxidants in Parkinson's disease. *Nutr Neurosci*. 2012 May;15(3):120-6.
- Binukumar BK, Gupta N, Bal A, Gill KD. Protection of dichlorvos induced oxidative stress and nigrostriatal neuronal death by chronic coenzyme Q10 pretreatment. *Toxicol Appl Pharmacol*. 2011 Oct 1;256(1):73-82.
- Shults CW, Flint Beal M, Song D, Fontaine D. Pilot trial of high dosages of coenzyme Q10 in patients with Parkinson's disease. *Exp Neurol*. 2004 Aug;188(2):491-4.
- Shults CW, Oakes D, Kieburtz K, et al. Effects of coenzyme Q10 in early Parkinson disease: evidence of slowing of the functional decline. *Arch Neurol*. 2002 Oct;59(10):1541-50.
- Liu J, Wang L, Zhan SY, Xia Y. Coenzyme Q10 for Parkinson's disease. *Cochrane Database Syst Rev*. 2011 (12):CD008150.
- Diamond S, Bigal ME, Silberstein S, Loder E, Reed M, Lipton RB. Patterns of diagnosis and acute and preventive treatment for migraine in the United States: results from the American Migraine Prevalence and Prevention study. *Headache*. 2007 Mar;47(3):355-63.
- Tepper SJ. A pivotal moment in 50 years of headache history: the first American Migraine Study. *Headache*. 2008 May;48(5):730-1; discussion 32.
- Hershey AD, Powers SW, Vockell AL, et al. Coenzyme Q10 deficiency and response to supplementation in pediatric and adolescent migraine. *Headache*. 2007 Jan;47(1):73-80.
- Sandor PS, Di Clemente L, Coppola G, et al. Efficacy of coenzyme Q10 in migraine prophylaxis: a randomized controlled trial. *Neurology*. 2005 Feb 22;64(4):713-5.

43. Slater SK, Nelson TD, Kabbouche MA, et al. A randomized, double-blinded, placebo-controlled, crossover, add-on study of CoEnzyme Q10 in the prevention of pediatric and adolescent migraine. *Cephalalgia*. 2011 Jun;31(8):897-905.
44. Pringsheim T, Davenport W, Mackie G, et al. Canadian Headache Society guideline for migraine prophylaxis. *Can J Neurol Sci*. 2012 Mar;39(2 Suppl 2):S1-59.
45. Maes M, Galecki P, Chang YS, Berk M. A review on the oxidative and nitrosative stress (O&NS) pathways in major depression and their possible contribution to the (neuro)degenerative processes in that illness. *Prog Neuropsychopharmacol Biol Psychiatry*. 2011 Apr 29;35(3):676-92.
46. Nierenberg AA, Kansky C, Brennan BP, Shelton RC, Perlis R, Iosifescu DV. Mitochondrial modulators for bipolar disorder: A pathophysiologically informed paradigm for new drug development. *Aust N Z J Psychiatry*. 2012 Jun 18.
47. Imagawa M. Low erythrocyte coenzyme Q10 level in schizophrenic patients. *Jpn J Psychiatry Neurol*. 1989 Jun;43(2):143-5.
48. Maes M, Mihaylova I, Kubera M, Uytterhoeven M, Vrydags N, Bosmans E. Lower plasma Coenzyme Q10 in depression: a marker for treatment resistance and chronic fatigue in depression and a risk factor to cardiovascular disorder in that illness. *Neuro Endocrinol Lett*. 2009;30(4):462-9.
49. Anderson GA, Maes M, Berk M. Schizophrenia is primed for an increased expression of depression through activation of immuno-inflammatory, oxidative and nitrosative stress, and tryptophan catabolite pathways. *Prog Neuropsychopharmacol Biol Psychiatry*. 2012 Aug 22.
50. Leonard B, Maes M. Mechanistic explanations how cell-mediated immune activation, inflammation and oxidative and nitrosative stress pathways and their sequels and concomitants play a role in the pathophysiology of unipolar depression. *Neurosci Biobehav Rev*. 2012 Feb;36(2):764-85.
51. Forester BP, Zuo CS, Ravichandran C, et al. Coenzyme Q10 effects on creatine kinase activity and mood in geriatric bipolar depression. *J Geriatr Psychiatry Neurol*. 2012 Mar;25(1):43-50.
52. Moreno-Fernandez AM, Cordero MD, Garrido-Maraver J, et al. Oral treatment with amitriptyline induces coenzyme Q deficiency and oxidative stress in psychiatric patients. *J Psychiatr Res*. 2012 Mar;46(3):341-5.
53. Available at: http://www.epa.gov/airnow/workshop_teachers/lung_capacity.pdf. Accessed October 8, 2012.
54. Wada H, Hagiwara S, Saitoh E, et al. Increased oxidative stress in patients with chronic obstructive pulmonary disease (COPD) as measured by redox status of plasma coenzyme Q10. *Pathophysiology*. 2006 Feb 21;13(1):29-33.
55. Tanrikulu AC, Abakay A, Evliyaoglu O, Palanci Y. Coenzyme Q10, copper, zinc, and lipid peroxidation levels in serum of patients with chronic obstructive pulmonary disease. *Biol Trace Elem Res*. 2011 Nov;143(2):659-67.
56. Gazdik F, Gvozdjakova A, Nadvornikova R, et al. Decreased levels of coenzyme Q(10) in patients with bronchial asthma. *Allergy*. 2002 Sep;57(9):811-4.
57. Gazdik F, Gvozdjakova A, Horvathova M, et al. Levels of coenzyme Q10 in asthmatics. *Bratisl Lek Listy*. 2002;103(10):353-6.
58. Gvozdjakova A, Kucharska J, Bartkovjakova M, Gazdikova K, Gazdik FE. Coenzyme Q10 supplementation reduces corticosteroids dosage in patients with bronchial asthma. *Biofactors*. 2005;25(1-4):235-40.
59. Fujimoto S, Kurihara N, Hirata K, Takeda T. Effects of coenzyme Q10 administration on pulmonary function and exercise performance in patients with chronic lung diseases. *Clin Invest*. 1993;71(8 Suppl):S162-6.
60. Lim SC, Tan HH, Goh SK, et al. Oxidative burden in prediabetic and diabetic individuals: evidence from plasma coenzyme Q(10). *Diabet Med*. 2006 Dec;23(12):1344-9.
61. Kunitomo M, Yamaguchi Y, Kagota S, Otsubo K. Beneficial effect of coenzyme Q10 on increased oxidative and nitrosative stress and inflammation and individual metabolic components developing in a rat model of metabolic syndrome. *J Pharmacol Sci*. 2008 Jun;107(2):128-37.
62. El-ghoroury EA, Raslan HM, Badawy EA, et al. Malondialdehyde and coenzyme Q10 in platelets and serum in type 2 diabetes mellitus: correlation with glycemic control. *Blood Coagul Fibrinolysis*. 2009 Jun;20(4):248-51.
63. Gvozdjakova A, Kucharska J, Tkacov M, Singh RB, Hlavata A. Ratio of lipid parameters to coenzyme Q10 could be used as biomarker of the development of early complications of obesity in children. *Bratisl Lek Listy*. 2012;113(1):21-5.
64. Ayaz M, Tuncer S, Okudan N, Gokbel H. Coenzyme Q(10) and alpha-lipoic acid supplementation in diabetic rats: conduction velocity distributions. *Methods Find Exp Clin Pharmacol*. 2008 Jun;30(5):367-74.
65. Yubero-Serrano EM, Delgado-Casado N, Delgado-Lista J, et al. Postprandial antioxidant effect of the Mediterranean diet supplemented with coenzyme Q10 in elderly men and women. *Age (Dordr)*. 2011 Dec;33(4):579-90.
66. Mezawa M, Takemoto M, Onishi S, et al. The reduced form of coenzyme Q10 improves glycemic control in patients with type 2 diabetes: An open label pilot study. *Biofactors*. 2012 Aug 8.
67. Hodgson JM, Watts GF, Playford DA, Burke V, Croft KD. Coenzyme Q10 improves blood pressure and glycaemic control: a controlled trial in subjects with type 2 diabetes. *Eur J Clin Nutr*. 2002 Nov;56(11):1137-42.
68. Sena CM, Nunes E, Gomes A, et al. Supplementation of coenzyme Q10 and alpha-tocopherol lowers glycated hemoglobin level and lipid peroxidation in pancreas of diabetic rats. *Nutr Res*. 2008 Feb;28(2):113-21.
69. Huynh K, Kiriazis H, Du XJ, et al. Coenzyme Q10 attenuates diastolic dysfunction, cardiomyocyte hypertrophy and cardiac fibrosis in the db/db mouse model of type 2 diabetes. *Diabetologia*. 2012 May;55(5):1544-53.
70. Hamilton SJ, Chew GT, Watts GF. Coenzyme Q10 improves endothelial dysfunction in statin-treated type 2 diabetic patients. *Diabetes Care*. 2009 May;32(5):810-2.
71. Persson MF, Franzen S, Catrina SB, et al. Coenzyme Q10 prevents GDP-sensitive mitochondrial uncoupling, glomerular hyperfiltration and proteinuria in kidneys from db/db mice as a model of type 2 diabetes. *Diabetologia*. 2012 May;55(5):1535-43.
72. Sourris KC, Harcourt BE, Tang PH, et al. Ubiquinone (coenzyme Q10) prevents renal mitochondrial dysfunction in an experimental model of type 2 diabetes. *Free Radic Biol Med*. 2012 Feb 1;52(3):716-23.
73. Silver MA, Langsjoen PH, Szabo S, Patil H, Zelinger A. Effect of atorvastatin on left ventricular diastolic function and ability of coenzyme Q10 to reverse that dysfunction. *Am J Cardiol*. 2004 Nov 15;94(10):1306-10.
74. Dai YL, Luk TH, Yiu KH, et al. Reversal of mitochondrial dysfunction by coenzyme Q10 supplement improves endothelial function in patients with ischaemic left ventricular systolic dysfunction: a randomized controlled trial. *Atherosclerosis*. 2011 Jun;216(2):395-401.
75. Mikhin VP, Kharchenko AV, Rosliakova EA, Cherniatina MA. Application of coenzyme Q(10) in combination therapy of arterial hypertension. *Kardiologiya*. 2011;51(6):26-31.
76. Alehagen U, Johansson P, Bjornstedt M, Rosen A, Dahlstrom U. Cardiovascular mortality and N-terminal-proBNP reduced after combined selenium and coenzyme Q10 supplementation: A 5-year prospective randomized double-blind placebo-controlled trial among elderly Swedish citizens. *Int J Cardiol*. 2012 May 22.
77. Larijani VN, Ahmadi N, Zeb I, Khan F, Flores F, Budoff M. Beneficial effects of aged garlic extract and coenzyme Q10 on vascular elasticity and endothelial function: The FAITH randomized clinical trial. *Nutrition*. 2012 Aug 1.
78. Zeb I, Ahmadi N, Nasir K, et al. Aged garlic extract and coenzyme Q10 have favorable effect on inflammatory markers and coronary atherosclerosis progression: A randomized clinical trial. *J Cardiovasc Dis Res*. 2012 Jul;3(3):185-90.
79. Martin SB, Cenini G, Barone E, et al. Coenzyme Q10 and cognition in atorvastatin treated dogs. *Neurosci Lett*. 2011 Aug 26;501(2):92-5.

Super Potent Multi-Nutrient Formula

Compare CENTRUM® to TWO-PER-DAY:

Sample Ingredient Comparison	LIFE EXTENSION® TWO-PER-DAY	Centrum® Silver® Adults 50+
Vitamin C	500 mg	60 mg
Vitamin D	2,000 IU	500 IU
Vitamin B1	75 mg	1.5 mg
Vitamin B2	50 mg	1.7 mg
Vitamin B6	75 mg	3 mg
Vitamin B12 (as methylcobalamin)	300 mcg	25 mcg
Niacin (as niacinamide)	50 mg	20 mg
Pantothenic acid	100 mg	10 mg
Vitamin E	100 IU (natural)	50 IU (synthetic)
Natural Folate	400 mcg	400 mcg (synthetic)
Zinc	30 mg	11 mg
Selenium	200 mcg	55 mcg
Lutein	5,000 mcg	250 mcg
Lycopene	2,000 mcg	300 mcg
Biotin	300 mcg	30 mcg
Boron	3,000 mcg	150 mcg
Chromium	200 mcg	45 mcg
Molybdenum	100 mcg	45 mcg
Magnesium	100 mg	50 mg
Manganese	2 mg	2.3 mg
Iodine	150 mcg	150 mcg
Potassium	25 mg	80 mg
Vitamin A (as beta-carotene)	4,500 IU	1,000 IU
Vitamin A (preformed)	500 IU	1,500 IU
Choline (as bitartrate)	20 mg	(none)
Inositol	50 mg	(none)
PABA	30 mg	(none)
Calcium	12 mg	220 mg
Alpha Lipoic Acid	125 mg	(none)

Commercial "one-a-day" supplements provide very low potencies.

The box to the left reveals how much more potent **Two-Per-Day** is compared to the leading commercial multi-vitamin.

Compared to conventional "one-a-day" products, **Life Extension® Two-Per-Day** contains up to **50 times more** potency! This **Two-Per-Day** formula is available in tablet or capsule form.

Commercial supplements often contain the cheapest form of nutrients that don't provide optimal benefits. For example, the 50 IU of synthetic vitamin E contained in **Centrum® Silver® Adults 50+** may provide relatively little vitamin E to the bloodstream compared to the 100 IU of natural vitamin in **Two-Per-Day**.

Two-Per-Day provides the three most effective forms of **selenium** which are sodium selenite, L-selenomethionine, and Se-methyl L-selenocysteine.



Item # 01714
Capsules



Item # 01715
Tablets

Compared to Centrum® Silver® Adults 50+, Two-Per-Day Tablets or Capsules provide about:

- 4 times more Vitamin D
- 8 times more Vitamin C
- 2 times more Vitamin E
- 10 times more Biotin
- 20 times more Boron
- 4 times more Selenium
- 25 times more Vitamin B6
- 50 times more Vitamin B1
- 12 times more Vitamin B12
- More than twice as much niacin, zinc, and many other nutrients

A bottle containing 120 tablets of **Two-Per-Day Tablets** retails for \$20. If a member buys four bottles during **Super Sale**, the price is reduced to **\$12.15** per bottle. (Item #01715) A bottle containing 120 capsules of **Two-Per-Day Capsules** retails for \$22. If a member buys four bottles during **Super Sale**, the price is reduced to **\$13.50** per bottle. (Item #01714)

Each bottle of **Two-Per-Day** lasts **60 days**, so members can obtain the benefits of this high-potency formula for as little as **\$6.07 per month** during **Super Sale**.

Contains soybeans. Due to the source of the kelp, this product may contain fish and shellfish.

To order Life Extension Two-Per-Day Tablets or Two-Per-Day Capsules, 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.



Ratings based on results of the 2012 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com.



Enhanced Night Vision!

EYE PROTECTION FORMULA

Maintain Macular Density

The **macular pigment** is composed of lutein, zeaxanthin, and meso-zeaxanthin. The *density* of the macula is essential to proper vision. Macular density declines naturally over time.

Eating lots of lutein- and zeaxanthin-containing vegetables can help maintain the structural integrity of the macula. However, since **meso-zeaxanthin** is not part of the typical diet, it cannot be easily replaced. Young people convert lutein into meso-zeaxanthin inside their macula. Some aging people, however, lose their ability to convert lutein into **meso-zeaxanthin**.

The **Super Zeaxanthin** formula provides **zeaxanthin, lutein and meso-zeaxanthin** to help maintain macular density.

Falling down is responsible for 70% of accidental deaths in older people.¹ Poor lighting conditions are often the culprit.

Fortunately, **C3G** derived from **black currant extract** supports eyesight in **dark** conditions by promoting the healthy function of delicate structures within the retina that support **night vision**.²

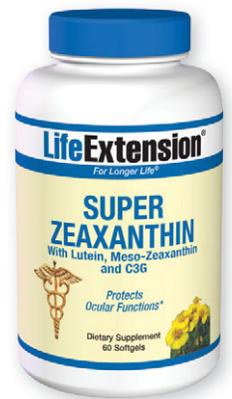
Super Zeaxanthin contains a potent dose of **C3G** to nourish cells throughout the body.

Comprehensive Ocular Protection in One Daily Softgel

The **Super Zeaxanthin** formula provides ingredients that have been shown to promote healthy eyesight. Just one softgel of **Super Zeaxanthin with Lutein, Meso-Zeaxanthin and C3G** provides:

OptiLut[®], Lutein Plus[®] and MZ[®]	38 mg
Marigold (<i>Tagetes erecta</i>) extract (flower) [free lutein equivalent 10 mg]	
Zeaxanthin & Meso-zeaxanthin blend	3.75 mg
[Paprika (<i>capsicum annum</i>) extract (fruit), OptiLut[®], Lutein Plus[®] and MZ[®] Marigold Extract (flower)]	
C3G (Cyanidin-3-glucoside)	2.2 mg
[from European black currant (<i>Ribes nigrum</i>) extract (fruit)]	

The retail price for a bottle containing 60 softgels of **Super Zeaxanthin with Lutein, Meso-Zeaxanthin and C3G** is \$22. If a member buys four bottles during **Super Sale**, the price is reduced to **\$13.37** per bottle.



Item # 01685

References

1. Available at: <http://www.aafp.org/afp/20000401/2159.html>. Accessed August 10, 2010.
2. *Alt Med Rev.* 2000;5(6):553-62.

OptiLut[®] is a registered trademark of NutriScience Innovations, LLC. LuteinPlus[®] and MZ[®] are registered trademarks of Nutriproducts Ltd., 7 Marfleet, CB22 5LA, UK, licensed under US Patents 6,218,436 & 6,329,432.

To order **Super Zeaxanthin with Lutein, Meso-Zeaxanthin and C3G**, call **1-800-544-4440** or visit www.LifeExtension.com

Restore Cellular Energy with...

NEXT-GENERATION CoQ10

Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

Since Life Extension® introduced CoQ10 in 1983, our scientists have continued to develop increased potency and absorbability.

Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ contains PrimaVie® shilajit that **doubles** levels of CoQ10 in the mitochondria.¹

Combining CoQ10 and shilajit produced a **56%** increase in energy production in the **brain**, and in muscle there was a **144%** increase in energy production.²

The primary reason people take CoQ10 supplements is to help **restore** youthful energy levels.

Shilajit boosts CoQ10's beneficial effects by stabilizing CoQ10 in the superior **ubiquinol** form, which *prolongs* its action at the cellular level.^{3,4} Additionally, **shilajit** facilitates the more efficient *delivery* of CoQ10 into the mitochondria, which results in enhanced cellular energy.⁵⁻⁹

Shilajit helps the mitochondria convert fats and sugars into the body's main source of energy, ATP (adenosine triphosphate).⁵⁻⁹

Combining **ubiquinol CoQ10** with **shilajit** generates a powerful **synergy** that supports more youthful cellular energy production than CoQ10 alone.^{2,4,5}



The retail price for 60 100 mg softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is \$62. If a member buys four bottles during **Super Sale**, the price is reduced to **\$37.80** per bottle.

Item # 01426



The retail price for 100 50 mg softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is \$58. If a member buys four bottles during **Super Sale**, the price is reduced to **\$35.78** per bottle.

Item # 01425



The retail price for 30 200 mg softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is \$62. If a member buys four bottles during **Super Sale**, the price is reduced to **\$37.80** per bottle.

Item # 01431

To order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ call 1-800-544-4440 or visit www.LifeExtension.com

References

1. Systemic CoQ level in animals: Part II. Unpublished study. Natreon, Inc.; 2007.
2. Pharmacologyonline. 2009;1:817-25.
3. Pharmacologyonline. 2009;2:690-8.
4. Electronic Journal of Biotechnology. 2008 Jul 15;11(3).
5. Ghosal S. Shilajit in Perspective. Alpha Science International Limited; 2006.
6. Sci Total Environ. 1987 Apr;62:347-54.
7. Environ Sci Technol. 2002 Jul 15;36(14):3170-5.
8. Environ Sci Technol. 2002 May 1;36(9):1939-46.
9. Environ Sci Technol. 2009 Feb 1;43(3):878-83.

PrimaVie® is a registered trademark of Natreon, Inc. Kaneka QH® is a registered trademark of Kaneka Corporation.



Rated based on results of the 2012 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.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.

Comprehensive Pomegranate Protection!

FULL-SPECTRUM POMEGRANATE™ FORMULA

Few nutritional sources have gained as much scientific validation as **pomegranate**.¹

The vast majority of research has focused on extracts from the *fruit*. Only recently have scientists identified the synergistic action of compounds specific to other parts of the pomegranate—most notably its **seeds** and **flowers**.

The Next-Generation Pomegranate Formula

Life Extension® offers an advanced, cutting-edge pomegranate formula that brings together novel phytonutrients for the first time in a unique, high-potency blend.

Full-Spectrum Pomegranate™ combines standardized extracts from the **whole fruit and flower**, along with pomegranate **seed oil**, to support system-wide health. In addition to the highly absorbable antioxidant powerhouses found in pomegranate fruit,²⁻⁴ **Full-Spectrum Pomegranate™** augments these polyphenols with newly discovered biologically *active* compounds from other parts of the pomegranate plant.

These little-known nutrients include: **punicanolic acid**, a member of the **triterpene** family of essential oils that provides cellular support to help with inflammation,⁵ and **pomegranate**, to combat age-related metabolic changes.⁶

This superior formula supplies the **complete** nutritional profile of the pomegranate plant. Just one softgel of **Full-Spectrum Pomegranate™** provides polyphenols equivalent to 12.3 ounces of pomegranate juice concentrate (or 30 pomegranates) *plus* a proprietary blend of **seed oil** and **flower extract**.

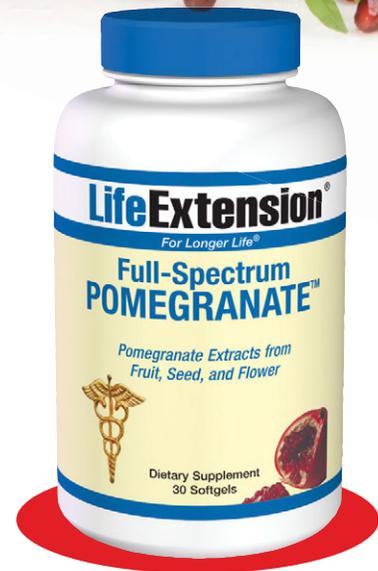
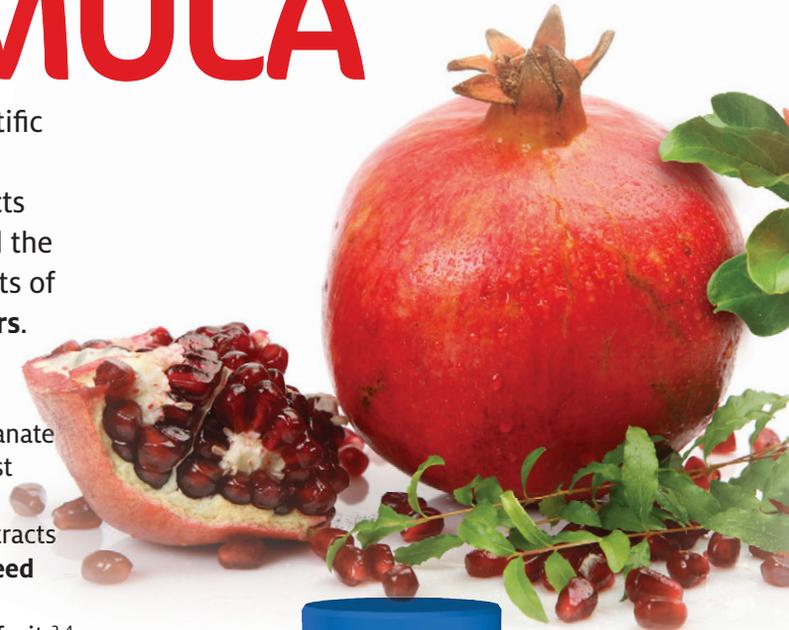
One softgel of **Full-Spectrum Pomegranate™** contains:

POMELLA® Pomegranate	400 mg
<i>(Punica granatum)</i> Extract (fruit) [std. to 30% punicalagins (120 mg)]	
PomComplete™ Pomegranate	137.5 mg
<i>(Punica granatum)</i> Blend [flower extract and seed oil (standardized to 22% (30 mg) punicic acid)]	

Full-Spectrum Pomegranate™

A bottle containing 30 softgels of **Full-Spectrum Pomegranate™** retails for \$24. If a member buys four bottles during **Super Sale**, the price is reduced to **\$14.18** per bottle. **Item # 01423**

Contains soybeans.



Item # 01423

To order **Full-Spectrum Pomegranate™**,
call **1-800-544-4440**
or visit www.LifeExtension.com

References:

1. *J Ethnopharmacol.* 2007 Jan 19;109(2):177-206.
2. *Eur J Nutr.* 2003 Jan;42(1):18-28.
3. *J Inflamm (Lond).* 2009;6:1.
4. *Altern Med Rev.* 2008 Jun;13(2):128-44.
5. *Chem Pharm Bull (Tokyo).* 2008 Nov;56(11):1628-31.
6. *Fitoterapia.* 2006 Dec;77(7-8):534-7.

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



NEXT-GENERATION FORMULA

5-LOX Inhibitor

with AprèsFlex™

Ultimate Protection for Systemic Cellular Inflammation

Excess levels of the enzyme **5-lipoxygenase** or **5-LOX** set in motion inflammatory responses that have been linked to common degenerative effects in aging individuals.¹⁻⁵

Normal aging results in higher-than-desired levels of 5-LOX.

The typical American diet adds to the danger. Foods rich in **omega-6 fatty acids** like red meat, poultry, and eggs, along with high-glycemic carbohydrates, trigger overproduction of **arachidonic acid**. In response to high levels of **arachidonic acid**, the body produces the **5-LOX** enzyme.

5-LOX breaks down **arachidonic acid** to pro-inflammatory compounds like leukotriene **B4**,⁶ a molecule that attacks joints, arterial walls, and other tissues. **5-LOX** itself facilitates undesirable cell division changes.

The good news is that extract of the Indian plant **Boswellia serrata** has been shown to *neutralize* 5-LOX.

Higher Absorbable Boswellia

Used for centuries to help with inflammatory issues, boswellia acts as a natural **5-LOX inhibitor**, intervening at the cellular level to block its unwanted effects.

Confirmatory data reveal that a compound contained in boswellia called **AKBA** (3-O-acetyl-11-keto- β -boswellic acid)^{7,8} is the key to its beneficial action.

The problem is that boswellia is not readily absorbed into the blood.⁹

For this reason, a patent-pending, *standardized* form of boswellia called **AprèsFlex™** has been introduced that absorbs into the blood **52%** more than previously available boswellia extracts.⁹

Each 100 mg vegetarian capsule of **5-LOX Inhibitor with AprèsFlex™** is standardized to provide 20% of active **AKBA** from boswellia. Most people need only one capsule a day.

A bottle containing **60 100 mg** vegetarian capsules of **5-LOX Inhibitor with AprèsFlex™** retails for \$22. If a member buys four bottles during **Super Sale**, the price is reduced to **\$13.50** per bottle.



Item # 01639

To order

5-LOX Inhibitor with AprèsFlex™
call **1-800-544-4440**
or visit **www.LifeExtension.com**

References

1. *Neurobiol Aging*. 2007 Sep;28(9):1457-62.
2. *Cardiovasc Psychiatry Neurol*. 2009;2009:174657.
3. *Free Radic Biol Med*. 2009 Jul 1;47(1):62-71.
4. *Rejuvenation Res*. 2009 Feb;12(1):15-24.
5. Available at: <http://www.cdc.gov/nchs/fastats/lcod.htm>. Accessed July 29, 2011.
6. *Curr Opin Investig Drugs*. 2009 Nov;10(11):1163-72.
7. *Wien Med Wochenschr*. 2002;152(15-16):373-8.
8. *J Ethnopharmacol*. 2006 Sep 19;107(2):249-53.
9. *Mol Cell Biochem*. 2011 Aug;354(1-2):189-97.

*It should be noted that although Life Extension's previous 5-LOXIN® formulation contained at least a 30% concentration of AKBA, the new AprèsFlex™ formula delivers more AKBA into the bloodstream, offering greater efficacy at a 20% concentration. AprèsFlex™ has been added to the new ArthroMax™ and Ultra Natural Prostate Formulas.

AprèsFlex™ is a trademark of Laila Nutraceuticals exclusively licensed to PLThomas-Laila Nutra LLC. International patents pending.

Ellison Medical Foundation Colloquium on Aging

Preamble By William Faloon

A few months ago, a researcher/writer whose website often comes near the top of **Google** searches on **anti-aging** called me and suggested a way he could contribute to **Life Extension Foundation®**'s mission.

I immediately said, "You're hired to do what you have been doing your entire life for free. You will travel virtually every week to cover scientific conferences related to aging and report findings in articles for **Life Extension Magazine®**."

For those who don't know, **conferences** are often where new discoveries are first announced prior to publication. Life Extension® used to cover these conferences more, but a dearth of available personnel to evaluate complex scientific discoveries and translate them into practical information for Life Extension members has resulted in many conferences being overlooked. That's all about to change.

Ben Best has been a pharmacist, computer programmer, university instructor, company president, and most importantly an immortalist who has dedicated his life to identifying proven methods to extend the healthy human life span. I met Ben Best at a scientific conference in the early 1990s and seem to run into him at most conferences I have attended since then.

I'm honored that Ben Best has come to work full time for the Life Extension Foundation® and will be regularly reporting on discoveries he learns at conferences that are of particular interest to our membership. Welcome aboard, Ben!



BY BEN BEST

The Ellison Medical Foundation is the largest private funder of research on aging and the second overall funder—second only to the federal government's National Institute on Aging.

Since its inception in 1998, Ellison's Medical Foundation has provided more than **\$300 million** to fund basic biomedical research on aging, life span, and age-related diseases and disabilities—including telomeres, longevity genes, DNA and mitochondrial damage, Alzheimer's disease, neural development, degeneration, and cognitive decline, and more.

The Ellison Medical Foundation's approach is different, innovative, and bold. As the late Nobel



laureate Dr. Joshua Lederberg once described the Ellison Foundation, “Our job is to fund the new, the unconventional, and to take chances that others won’t. Our only criterion will be the best science and the best of scientists.”

That’s why every year, the Ellison Medical Foundation awards a total of \$40 million in four-year grants to 25 New Scholars and 25 Senior Scholars for basic research on the biology of aging. At the end of the four years, the scholars present their findings at the Colloquium for New and Senior Scholars.

Below is a sampling of discoveries presented at this year’s colloquium. Although they are quite technical

in nature, the potential impact they could have on the future of anti-aging research and healthy human life span makes them an important part of Life Extension’s mission to provide readers with the very latest scientific information.

All of the research was done on model organisms, which means we don’t yet know how these studies will translate into humans. However, using these model organisms, these scientists are paving the way for the future of anti-aging and longevity research—and could very well hold the key to future life-changing discoveries. >

The Discovery: Nicotinamide Mononucleotide, a Potential Treatment for Adult-onset Diabetes

It is believed that calorie restriction has the potential to extend life span. One way in which this takes place is by enhancing the activity of the brain hormone *orexin*. This can be especially beneficial in those with type II diabetes, since *orexin* improves insulin sensitivity and helps prevent an increase in body fat.¹ However, in order for calorie restriction to have these beneficial effects on type II diabetics, two additional factors must be in place.

At this year's **Ellison Medical Foundation Colloquium on the Biology of Aging**, Dr. Shin-ichiro Imai demonstrated that the protein *sirtuin* is required in order for calorie restriction to enhance the activity of *orexin*. But *sirtuin* alone is not enough. In order for any of these beneficial processes to take place, the coenzyme *NAD+* must also be present.

The problem is that cellular *NAD+* declines with both aging and a high fat diet. The good news is that Dr. Imai found that feeding mice nicotinamide mononucleotide (NMN)—the precursor to *NAD+*—promoted *NAD+* synthesis. This suggests that NMN could be a potential treatment for type II diabetes.²

Dr. Imai is hopeful that sirtuins will prove to be of value against diseases associated with human aging—particularly type II diabetes.^{3,4}

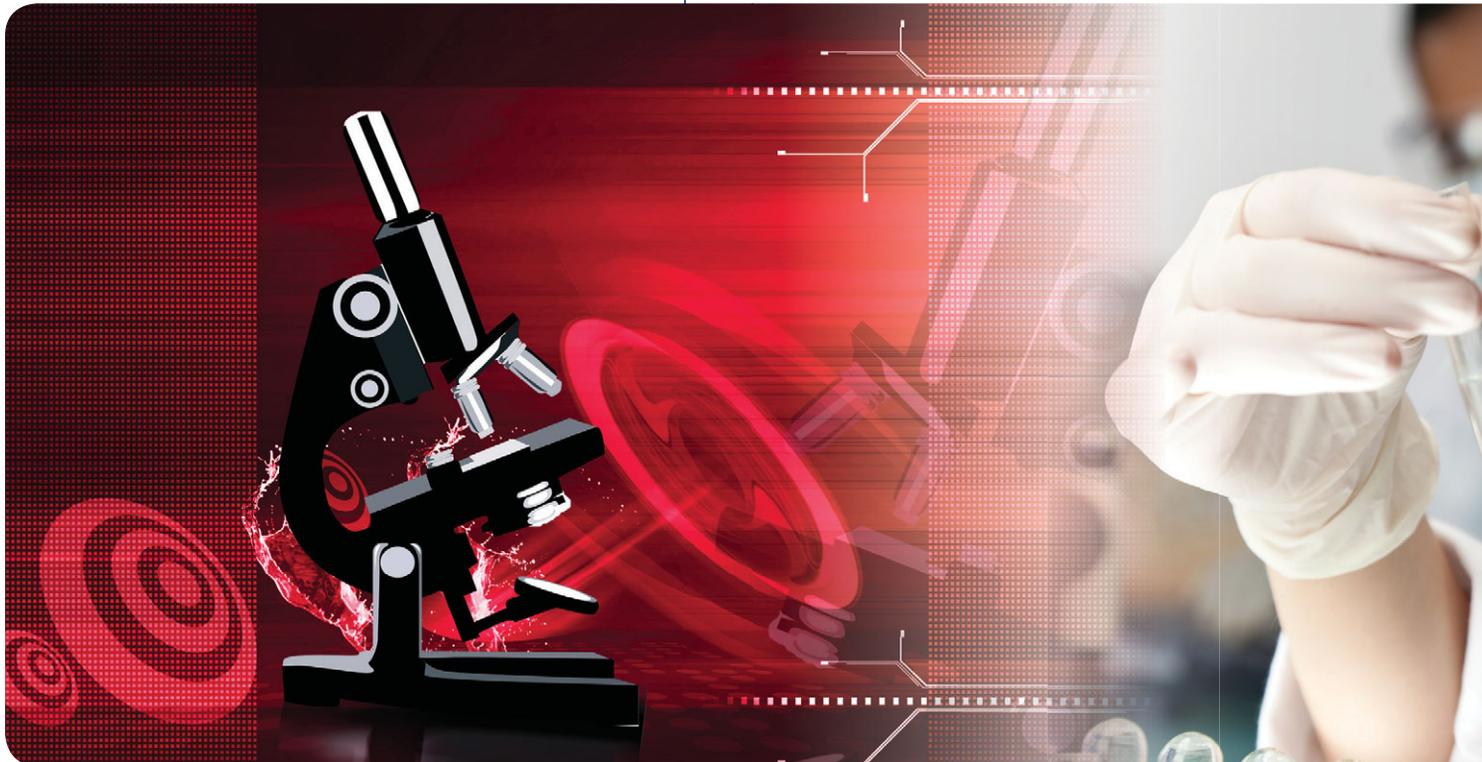
The Discovery: Resveratrol Can Help Increase Life Span By Relieving Endoplasmic Reticulum Stress, An Underlying Factor in Age-Associated Diseases

Dr. Matt Kaeberlein was a 2008 New Scholar reporting on his four-year grant work at the 2012 Colloquium. Like Dr. Imai, Dr. Kaeberlein was a pioneer in discovering the life-extending effects of **sirtuins** in yeast.⁵

Dr. Kaeberlein has recently been studying the relationship between aging and endoplasmic reticulum stress. The **endoplasmic reticulum** (ER) is a collection of membranes within cells where proteins are created and folded. Chaperone molecules assist with the folding process. Folding of proteins is important because if proteins are not folded into the right shape, they may not function properly. Too many mis-folded proteins in the endoplasmic reticulum results in a phenomenon described as endoplasmic reticulum stress, or “ER stress.”

Unrelieved ER stress can lead to massive cell death, and is believed to be an underlying factor in many diseases associated with aging, including atherosclerosis, diabetes, and neurodegenerative disease.⁶

It is possible that **resveratrol** can help increase life span by helping the body protect against ER stress. When cells are subject to ER stress, they try to rectify the problem by increasing the number of chaperone



molecules and by increasing the size of the endoplasmic reticulum.⁷ Resveratrol has been shown to extend the life span of nematode worms by helping promote this ER stress protection response.⁸

New Scholar, Dr. Hyung Don Ryoo, also studied the effect of ER stress on longevity—except he used fruit fly retinas. Dr. Ryoo demonstrated that in addition to increasing chaperone molecules and increasing endoplasmic reticulum volume, cells could also relieve ER stress by inducing increased degradation of the misfolded proteins.⁹ Dr. Ryoo showed that unrelieved ER stress can lead to cell death by a particular cell-signaling pathway.¹⁰

The Discovery: Innate Immunity is Regulated by a Protein That Controls Gene Expression

A weakened immune system in the elderly plays a significant role in their susceptibility to infection—and in many cases leads to death. A person between 50 and 64 years old is nearly **10 times more** likely to die from influenza than a person in the 5-49 age group. A person over 65 years old is more than **10 times more** likely to die from an influenza-associated death as a person in the 50-64 age group.¹¹

At the **Colloquium**, New Scholar Dr. Dennis Kim reported on his studies of the decline in innate immunity with age in nematode worms. Kim showed



The Basics of Anti-Aging Research

Most of the Ellison Scholars do their research on model organisms to discover aging processes that could be present in humans. For basic aging research, much of the work is done with Brewer's yeast, nematode worms (*C. elegans*, a tiny worm the size of a comma), fruit flies (*Drosophila*), and several species of rodents (mice and rats). The short life span of the model organisms (a few days for yeast, a few weeks for nematodes and fruit flies, and a few years for mice and rats) makes them ideal for life span studies.

Yeast is a convenient model for the cell biology of aging because it consists of only one cell. *C. elegans* nematode worms also make convenient models because the development of all 959 cells (including 302 neurons) of the adult worm have been mapped thoroughly.

Using these models, researchers have discovered that sirtuin proteins (proteins that can silence genes) have the ability to extend life span in yeast.⁵ Later, **resveratrol** (which is a sirtuin activator) was shown to extend life span in fruit flies and nematode worms.¹⁸ More recently another sirtuin activator extended the life span of obese mice reducing inflammation and increasing insulin sensitivity.¹⁹

The discoveries made with model organisms could lead to benefits for the health and longevity of humans.





that as nematodes age, they become increasingly vulnerable to death by bacteria.

He found that innate immunity is regulated by **PMK-1** (a protein that controls gene expression¹²), and he identified genes that PMK-1 regulates.¹³ Kim discovered that by an age of 15 days, nematodes have less than **16%** of the PMK-1 protein seen in the larval stage, and that genes regulated by PMK-1 show sharply reduced expression with aging as well.¹⁴

When I asked Kim what causes the decline in PMK-1 protein with age, he replied that this essential question remains to be answered. If there is a human equivalent to PMK-1, and if the cause of PMK-1 decline is discovered, Kim's research could lead to ways to reduce the vulnerability of elderly humans to infectious diseases.

The Discovery: "Jumping Genes" Can Contribute to Cancer and Aging

Nobel laureate Dr. Barbara McClintock won her prize in Physiology or Medicine for her discovery of transposable elements ("jumping genes"), DNA sequences that can change position within the genome of a single cell. At least 25 human genetic diseases have been attributed to "jumping genes."¹⁵

New Scholar Dr. Victoria Belancio demonstrated that genomic instability due to "jumping genes" can contribute to cancer as well as aging.^{16,17}

Life Extension® Supports Ongoing Anti-Aging Research

The Life Extension Foundation® is evaluating the anti-aging research projects that are coming to the end of their four-year Larry Ellison grants to see which ones can be extended with new funding from Life Extension®. ●

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

References

1. Funato H, Tsai AL, Willie JT, et al. Enhanced orexin receptor-2 signaling prevents diet-induced obesity and improves leptin sensitivity. *Cell Metab.* 2009 Jan 7;9(1):64-76.
2. Yoshino J, Mills KF, Yoon MJ, Imai S. Nicotinamide mononucleotide, a key NAD(+) intermediate, treats the pathophysiology of diet- and age-induced diabetes in mice. *Cell Metab.* 2011 Oct 5;14(4):528-36.
3. Imai S, Guarente L. Ten years of NAD-dependent SIR2 family deacetylases: implications for metabolic diseases. *Trends Pharmacol Sci.* 2010 May;31(5):212-20.
4. Imai S. Dissecting systemic control of metabolism and aging in the NAD World: the importance of SIRT1 and NAMPT-mediated NAD biosynthesis. *FEBS Lett.* 2011 Jun 6;585(11):1657-62.
5. Kaerberlein M, McVey M, Guarente L. The SIR2/3/4 complex and SIR2 alone promote longevity in *Saccharomyces cerevisiae* by two different mechanisms. *Genes Dev.* 1999 Oct 1;13(19):2570-80.
6. Tabas I, Ron D. Integrating the mechanisms of apoptosis induced by endoplasmic reticulum stress. *Nat Cell Biol.* 2011 Mar;13(3):184-90.
7. Walter P, Ron D. The unfolded protein response: from stress pathway to homeostatic regulation. *Science.* 2011 Nov 25;334(6059):1081-6.
8. Viswanathan M, Kim SK, Berdichevsky A, Guarente L. A role for SIR-2.1 regulation of ER stress response genes in determining *C. elegans* life span. *Dev Cell.* 2005 Nov;9(5):605-15.
9. Kang MJ, Ryoo HD. Suppression of retinal degeneration in *Drosophila* by stimulation of ER-associated degradation. *Proc Natl Acad Sci U S A.* 2009 Oct 6;106(40):17043-8.
10. Kang MJ, Chung J, Ryoo HD. CDK5 and MEKK1 mediate pro-apoptotic signaling following endoplasmic reticulum stress in an autosomal dominant retinitis pigmentosa model. *Nat Cell Biol.* 2012 Mar 4;14(4):409-15.
11. Thompson WW, Shay DK, Weintraub E, et al. Mortality associated with influenza and respiratory syncytial virus in the United States. *JAMA.* 2003 Jan 8;289(2):179-86.
12. Kim DH, Feinbaum R, Allosing G, et al. A conserved p38 MAP kinase pathway in *Caenorhabditis elegans* innate immunity. *Science.* 2002 Jul 26;297(5581):623-6.
13. Troemel ER, Chu SW, Reinke V, Lee SS, Ausubel FM, Kim DH. p38 MAPK regulates expression of immune response genes and contributes to longevity in *C. elegans*. *PLoS Genet.* 2006 Nov 10;2(11):e183.
14. Youngman MJ, Rogers ZN, Kim DH. A decline in p38 MAPK signaling underlies immunosenescence in *Caenorhabditis elegans*. *PLoS Genet.* 2011 May;7(5):e1002082.
15. Hedges DJ, Deininger PL. Inviting instability: Transposable elements, double-strand breaks, and the maintenance of genome integrity. *Mutat Res.* 2007 Mar 1;616(1-2):46-59.
16. Belancio VP, Roy-Engel AM, Pochampally RR, Deininger P. Somatic expression of LINE-1 elements in human tissues. *Nucleic Acids Res.* 2010 Jul;38(12):3909-22.
17. Belancio VP, Roy-Engel AM, Deininger PL. All y'all need to know 'bout retroelements in cancer. *Semin Cancer Biol.* 2010 Aug;20(4):200-10.
18. Wood JG, Rogina B, Lavu S, et al. Sirtuin activators mimic caloric restriction and delay ageing in metazoans. *Nature.* 2004 Aug 5;430(7000):686-9.
19. Minor RK, Baur JA, Gomes AP, et al. SIRT1720 improves survival and healthspan of obese mice. *Sci Rep.* 2011;1:70.

The 4th American Academy of Anti-Aging Medicine Conference

My interest in life extensionists in far-off lands was a major motivation for me to attend the **American Academy of Anti-Aging Medicine** conference in Thailand. Despite its name, the American Academy of Anti-Aging Medicine (A4M) has done an impressive job of organizing anti-aging conferences all over the world.

Life extension is nothing new to Asia, of course. While ancient Western alchemists were trying to turn lead into gold, Eastern alchemists were searching for the elixir of immortality. Even today, the wish for a long life is still more frequently heard in Asia than in the West.

Although a variety of topics were covered at the conference—including both cosmetic rejuvenation and health and wellness—the most notable topics that stood out were those involving the role hormones play in the aging process.

The Importance of Hormones in the Anti-Aging Equation

There is no more obvious example of the failure of conventional medicine than in the use of hormone replacement for post-menopausal women. Conventional medicine uses FDA-approved Premarin® (pregnant mare's urine) as estrogen, and Provera® (a synthetic version of progesterin) as progesterone for hormone replacement therapy (HRT). But just because it's FDA approved doesn't make it safe—and the Women's Health Initiative study proved that.

The Women's Health Initiative study, which only used Premarin® and Provera® in post-menopausal women, was so devastating that it had to be halted early due to evidence of increased breast cancer, cardiovascular disease, and stroke in the Premarin®-Provera® group.¹

Although many in conventional medicine regard this failure of FDA-approved drugs as proof that *any* hormone replacement in post-menopausal women is dangerous, that's the equivalent of throwing the proverbial baby out with the bathwater. Hormone replacement therapy can have dramatic health and

life-extending benefits for women, provided the hormones used are *bioidentical*—or those that are chemically identical to those that naturally occur in the human body. (An important note: natural human estrogen consists of estradiol, estrone, and estriol, with estriol being a much weaker estrogen than estradiol or estrone. Bioidentical hormone replacement is often not bioidentical in the sense that a greater than natural percentage of estriol has been used to avoid the cancer-promoting effects of estradiol.)

A4M presenter Dr. Kent Holtorf wrote an extensive review in the journal *Postgraduate Medicine*² demonstrating that hormones bioidentical to natural human estrogens and progesterone do not have the risks associated with their horse-urine or synthetic counterparts.

Dr. Holtorf is not surprised at all by the negative results of the Women's Health Initiative, especially given the evidence that Provera® negates the cardio-protective effects of estrogen, in contrast to progesterone, which boosts those effects.² Estriol, on the other hand, selectively binds estrogen receptors that inhibit cell proliferation, potentially preventing breast cancer. (Ironically, the FDA opposes the use of estriol.)



Conventional medicine mistakenly equates Provera® with human progesterone and Premarin® with human estrogens on grounds that no clinical trials have directly compared bioidentical sex hormones with nonbioidentical sex hormones. Dr. Holtorf has replied that “evidence-based medicine does not mean that data should be ignored until a randomized trial of a particular size and duration is completed” noting that estriol has been used for decades without reported safety concerns and that Premarin® contains the non-human estrogen equilin sulfate, which promotes cancer.²

An Alternative to Bioidentical Hormones

It’s possible to achieve some of the effects of bio-identical hormones without taking hormone replacement therapy, as Dr. Sanford Swartz pointed out during his talk at the A4M conference. Dr. Swartz, who has been living in Thailand for 20 years, is enthusiastic about *Pueraria mirifica*, a plant that grows exclusively in Thailand. *Pueraria mirifica* contains the plant estrogen *miroestrol*, which has similar effects to estriol.

Although *miroestrol* is not bioidentical to any human estrogen, it could still provide many beneficial effects for women. And since many women in Thailand take *Pueraria mirifica* daily, it could be one of the reasons why the incidence of breast cancer in Northern Thailand (particularly the Nakhon Phanom

province along the Laotian border) is among the lowest in the world...less than **10%** of that in the United States.^{3,4} *Pueraria mirifica* has been shown to reverse vaginal atrophy in postmenopausal women.³ The Thai equivalent of the FDA has approved *Pueraria mirifica* as a treatment for menopause.

Before searching for *Pueraria* supplements online, you should be aware that cheaper and less effective (if not harmful) variants of *Pueraria* (such as *Pueraria candolleii*) are being shipped out of Thailand and marketed as if they were *Pueraria mirifica*.

Hormones and Men

Hormone replacement therapy is not just for women. Holtorf also supports testosterone replacement in men, referring to evidence that testosterone has declined substantially in all American men in recent decades.⁶ Some would argue that supplemental testosterone increases the risk of prostate cancer, but Holtorf argued that no well-designed study has proven that the risk of prostate cancer increases with testosterone replacement.⁷ He suggested that testosterone receptors become less sensitive with age, and that using **50%** above youthful levels of testosterone might be required in order to achieve appropriate testosterone levels.

Exercise plays an important role in hormone levels as well. Dr. Tanjung Subrata presented the results



of his literature reviews and clinical practice on the effects of exercise on testosterone levels at the A4M conference. He noted that growth hormone and sex hormones decline with age, and that exercise can increase insulin sensitivity while raising levels of growth hormone and testosterone.^{8,9} Six to eight weeks of acute resistance exercise increases testosterone in both men and women.⁹ However, more than 60 minutes of endurance (aerobic) exercise has been shown to *reduce* testosterone.¹⁰ In order to maximize testosterone blood levels, Subrata recommends endurance exercise duration of 30-60 minutes, with 24-48 hours between exercise sessions.

[An Overlooked Cause of Hormone Deficiency](#)

Dr. Marc Gordon said that many people suffer from hormone deficiency not only because of aging, but also as a result of a traumatic brain injury. He said that he had an “epiphany” upon reading a 2004 article associating low growth hormone with boxing.¹¹ Because the pituitary gland in the brain is the “master gland” regulating other hormones, brain trauma has been linked to hypopituitarism (underfunctioning of the pituitary gland) which reduces the secretion of a number of hormones.^{12,13,14} Gordon said that head injury victims are often treated with antidepressants when what they really need is hormone replacement.¹⁵ Listing the symptoms of traumatic brain injury, he said that the

most common complaint is chronic fatigue, followed by excessive sleepiness. This could be an important factor in the treatment of those with traumatic brain injuries. (*Life Extension Magazine*[®] did an extensive report on Dr. Gordon’s traumatic brain injury treatment program utilizing hormones in the January 2012 issue.)

[NINE ADDITIONAL ANTI-AGING TOPICS COVERED AT THE A4M CONFERENCE](#)

[Skin Cells Promote Self-Renewal](#)

In 2003, Dr. Christoph Ganss founded the world’s first tissue bank for stem cells of the skin (called TICEBA). His motto for TICEBA is “back up your life,” because of the variety of stem cells that can be found in skin.¹⁶ Ganss said that **2-5%** of cells in the skin meet the criteria for mesenchymal stem cells. Mesenchymal stem cells have a great capacity for self-renewal, can differentiate into bone, cartilage, or fat and can be used for type II diabetes, cardiac regeneration, multiple sclerosis, and many other conditions.

[Growth Factors Reverse Recent Hair Loss](#)

The presentation by Dr. Ahmed Al-Qahtani was one of the few sessions I attended in the esthetics/cosmetics series. When he said that **50%** of people experience hair loss by age 50, he was including the effects of menopause in women with male pattern baldness. In his practice, he has made use of the recent discovery of the potential for growth factors to induce hair regrowth.¹⁷ Growth factors are more effective for reversing recent hair loss (where follicles have become dormant) than for frank baldness. It’s important to note that although the effects of growth factors are noticeable, they are far less dramatic than what is seen for hair transplants.

[Personalized Cancer Treatment Clinic](#)

Dr. Greg Burzynski is board certified in internal medicine, and works in a personalized cancer treatment clinic in Texas the Burzynski Clinic, founded by his father, Stanislaw Burzynski. The clinic analyzes the cancer genome of patients and currently uses “antineoplastons” (anti-cancer agents not currently approved by the FDA) that target numerous cancer genes.¹⁸ The clinic uses acupuncture for the pain, anxiety, and depression associated with cancer. The patients receive curcumin and fish oil supplements. When I asked him why he does not analyze

the genome of his patients as well as their cancer cells, he told me that it is mainly a matter of keeping the cost affordable, but he acknowledged that doing so could be useful.

The World's Best Medical Spas

Eric Light was founder and first president of the International Medical Spa Association. Unlike other spas, medical spas are more concerned with health and therapy rather than beauty and pampering. He said that **72%** of people surveyed would rather feel healthy on the inside than look good on the outside and this percentage increases with age. Noting that Thailand is a popular destination for “medical tourists” seeking treatments that are not available or are too expensive in their native country (Bangkok Hospital has a Japanese wing), he identified Thailand’s Kamalaya (www.kamalaya.com) as one of the best medical spas anywhere.

Three Bridges to Longevity

In the spirit of the book *Fantastic Voyage: Live Long Enough to Live Forever*, which he co-authored with Ray Kurzweil, Dr. Terry Grossman provided an update for an article he had published in 2005,¹⁹ which identified three bridges to longevity. In Bridge One (best current medicine) he gave examples of the increasing availability of portable medical devices, noting that portable ultrasound devices (Vscan) are replacing stethoscopes. He said that Bridge Two would anticipate rather than treat disease, but he identified stem cells as the key Bridge Two technology, “bio-printing of organs” in particular. Bridge Three (nanotechnology) is more in the future, and he believes it will be possible for humans to replace and rewrite their genetic code.

Myostatin Blockers Reduce Frailty in Elderly

Dr. Richard DeAndrea said that the placenta is the most versatile of organs. His company MFIII (of which he is Medical Director) produces placenta supplements by a process that involves no heat, no drying, fat removal, and enzyme treatment. These are usually animal placentas, but human placenta products can be made available for a higher price. MFIII also sells a myostatin blocker. Myostatin is a cytokine that inhibits muscle formation and promotes fat formation. Blocking myostatin could reduce the effects of sarcopenia, a condition associated with frailty in the elderly.²⁰ DeAndrea said myostatin blockers build muscle better than anabolic steroids and, unlike

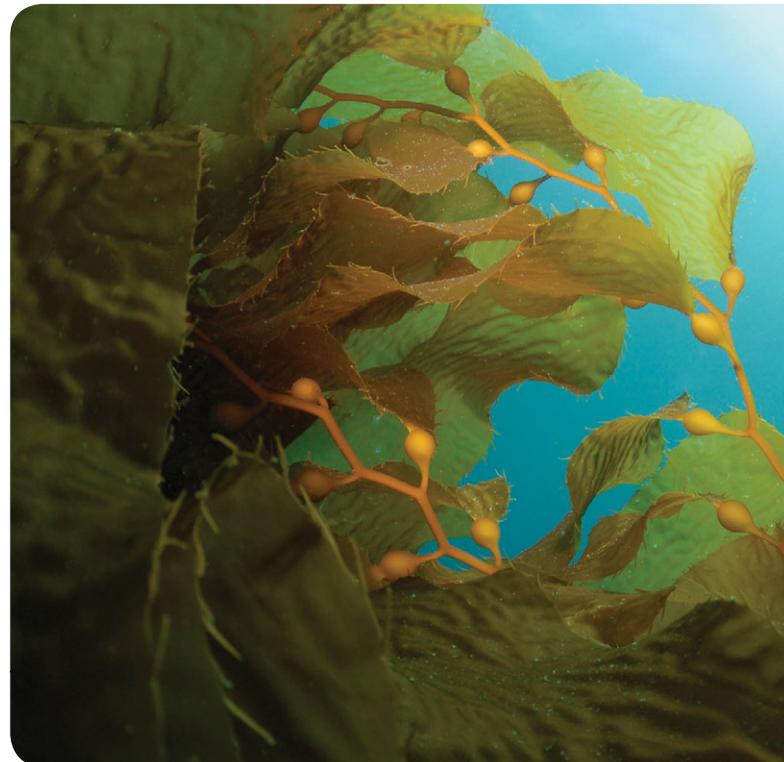
steroids, cannot be detected in athlete testing. He told me that he has moved to Thailand and is moving his family to Thailand including his parents because Thailand provides more medical freedom and has more sound monetary policies than the United States.

Flavonoids Increase Life Span

Dr. Cimen Karasu is the head of the Department of Medical Informatics in the Faculty of Medicine at Gazi University in Turkey. She has authored more than a hundred papers appearing in peer-reviewed journals. Dr. Karasu’s talk was largely a review of the damaging effects of free radicals and advanced glycation end-products (AGEs). She noted that flavonoids have been shown to increase the life span of nematode worms.²¹ She reviewed the benefits of a number of natural polyphenols, including quercetin and pomegranate extracts.^{22,23} She is starting a company in Turkey which will market a formulation based on olive leaf polyphenols.^{24,25}

Algae's Health Benefits

Doctor Randall Merchant is a Professor of Anatomy and Neurobiology in Virginia. He spoke about the benefits of *Chlorella*, a unicellular green algae that has the highest chlorophyll content of any known



organism. *Chlorella* has been shown to protect against DNA damage and telomere shortening due to free radicals,²⁶ to boost the immune system,²⁷ and to protect against environmental dioxin toxins.²⁸

Mushrooms Enhance Immunity

Dr. Jennifer Wan is an Associate Professor at the University of Hong Kong. She spoke of the benefits of the mushroom *Phellinus spp*, which can stimulate cell-mediated immunity,^{29,30,31} can protect against free radicals,^{32,33} and is effective against a number of inflammatory agents.³⁴ She noted the long and distinguished history of the use of mushroom in traditional Chinese and Korean medicine.

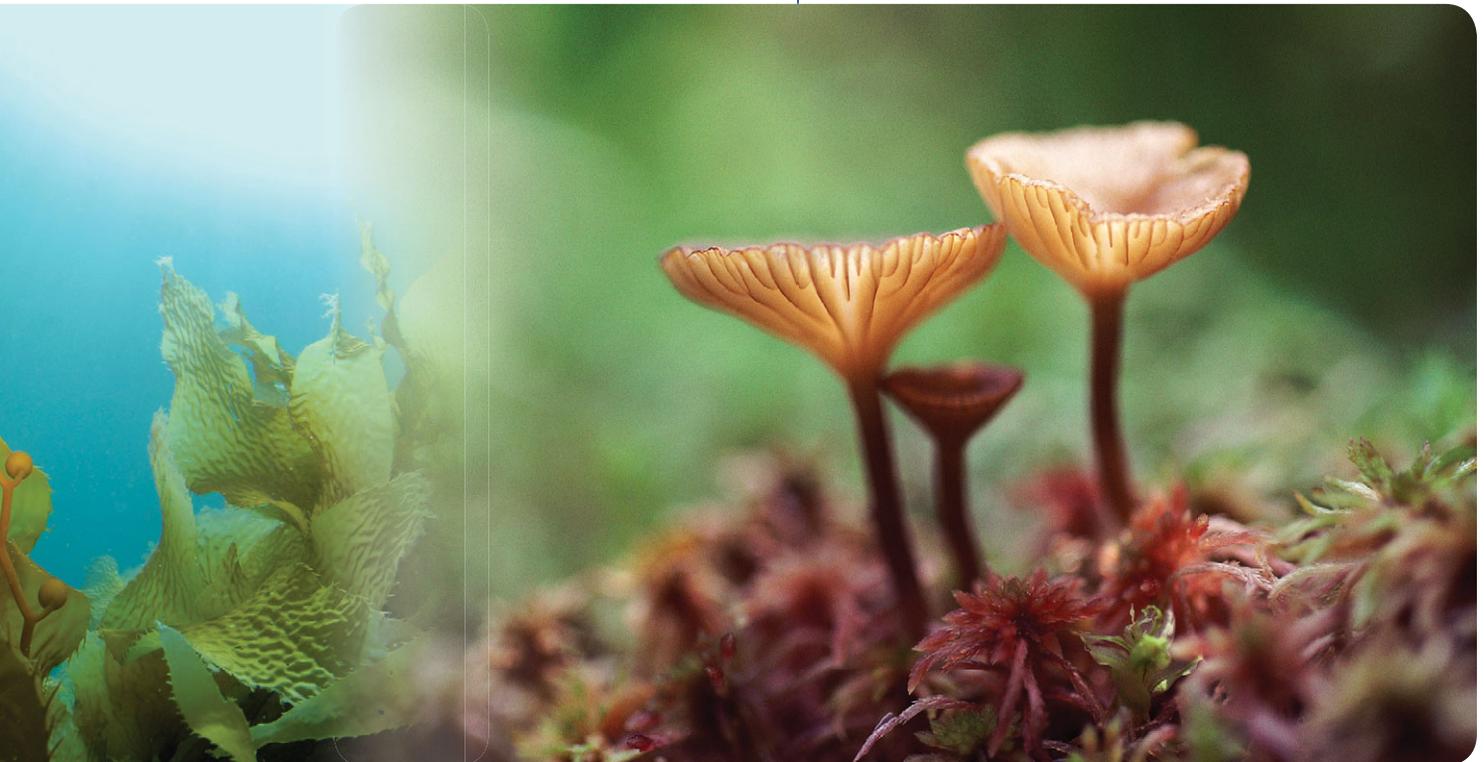
Summary

Although the FDA views anti-aging medicine as an endeavor without scientific merit, the A4M conferences represent a broad tent of scientific quality. Although the Thailand A4M conference has been the largest A4M conference in Asia, the first A4M conference in Shanghai, China, scheduled for the following is expected to attract three times as many participants. The excitement that A4M is generating in Asia is very encouraging for the future of anti-aging medicine. ●

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

References

1. Rossouw JE, Anderson GL, Prentice RL, et al. Risks and benefits of estrogen plus progestin in healthy postmenopausal women: principal results from the Women's Health Initiative randomized controlled trial. *JAMA*. 2002 Jul 17;288(3):321-33.
2. Holtorf K. The bioidentical hormone debate: are bioidentical hormones (estradiol, estriol, and progesterone) safer or more efficacious than commonly used synthetic versions in hormone replacement therapy? *Postgrad Med*. 2009 Jan;121(1):73-85.
3. Available at: <http://report.nih.gov/nihfactsheets/ViewFactSheet.aspx?csid=73>. Accessed October 10, 2012.
4. Available at: http://www.nci.go.th/File_download/Cancer%20In%20Thailand%20IV/C-II-13.PDF. Accessed October 10, 2012.
5. Manonai J, Chittacharoen A, Theppisai U, Theppisai H. Effect of *Pueraria mirifica* on vaginal health. *Menopause*. 2007 Sep-Oct;14(5):919-24.
6. Travison TG, Araujo AB, O'Donnell AB, Kupelian V, McKinlay JB. A population-level decline in serum testosterone levels in American men. *J Clin Endocrinol Metab*. 2007 Jan;92(1):196-202.
7. Morgentaler A. Testosterone replacement therapy and prostate cancer. *Urol Clin North Am*. 2007 Nov;34(4):555-63, vii.
8. Kessler HS, Sisson SB, Short KR. The potential for high-intensity interval training to reduce cardiometabolic disease risk. *Sports Med*. 2012 Jun 1;42(6):489-509.
9. Kraemer WJ, Staron RS, Hagerman FC, et al. The effects of short-term resistance training on endocrine function in men and women. *Eur J Appl Physiol Occup Physiol*. 1998 Jun;78(1):69-76.
10. Tremblay MS, Copeland JL, Van Helder W. Influence of exercise duration on post-exercise steroid hormone responses in trained males. *Eur J Appl Physiol*. 2005 Aug;94(5-6):505-13.



11. Kelestimur F, Tanriverdi F, Atmaca H, Unluhizarci K, Selcuklu A, Casanueva FF. Boxing as a sport activity associated with isolated GH deficiency. *J Endocrinol Invest.* 2004 Dec;27(11):RC28-32.
12. Bondanelli M, Ambrosio MR, Zatelli MC, De Marinis L, degli Uberti EC. Hypopituitarism after traumatic brain injury. *Eur J Endocrinol.* 2005 May;152(5):679-91.
13. Schneider HJ, Schneider M, Saller B, Petersenn S, Uhr M, Husemann B, von Rosen F, Stalla GK. Prevalence of anterior pituitary insufficiency 3 and 12 months after traumatic brain injury. *Eur J Endocrinol.* 2006 Feb;154(2):259-65.
14. Estes SM, Urban RJ. Hormonal replacement in patients with brain injury-induced hypopituitarism: who, when and how to treat? *Pituitary.* 2005;8(3-4):267-70.
15. Koponen S, Taiminen T, Portin R, Himanen L, Isoniemi H, Heinonen H, Hinkka S, Tenovuuo O. Axis I and II psychiatric disorders after traumatic brain injury: a 30-year follow-up study. *Am J Psychiatry.* 2002 Aug;159(8):1315-21.
16. Liang L, Bickenbach JR. Somatic epidermal stem cells can produce multiple cell lineages during development. *Stem Cells.* 2002;20(1):21-31.
17. Park BS, Kim WS, Choi JS, et al. Hair growth stimulated by conditioned medium of adipose-derived stem cells is enhanced by hypoxia: evidence of increased growth factor secretion. *Biomed Res.* 2010 Feb;31(1):27-34.
18. Burzynski SR. Gene silencing--a new theory of aging. *Med Hypotheses.* 2003 Apr;60(4):578-83.
19. Grossman T. Latest advances in antiaging medicine. *Keio J Med.* 2005 Jun;54(2):85-94.
20. Haidet AM, Rizo L, Handy C, et al. Long-term enhancement of skeletal muscle mass and strength by single gene administration of myostatin inhibitors. *Proc Natl Acad Sci U S A.* 2008 Mar 18;105(11):4318-22.
21. Grünz G, Haas K, Soukup S, et al. Structural features and bioavailability of four flavonoids and their implications for lifespan-extending and antioxidant actions in *C. elegans*. *Mech Ageing Dev.* 2012 Jan;133(1):1-10.
22. Stefek M, Karasu C. Eye lens in aging and diabetes: effect of quercetin. *Rejuvenation Res.* 2011 Oct;14(5):525-34.
23. Karasu C, Cumaoglu A, Gürpınar AR, et al. Aldose reductase inhibitory activity and antioxidant capacity of pomegranate extracts. *Interdiscip Toxicol.* 2012 Mar;5(1):15-20.
24. Cumaoglu A, Rackova L, Stefek M, Kartal M, Maechler P, Karasu C. Effects of olive leaf polyphenols against H₂O₂ toxicity in insulin secreting-cells. *Acta Biochim Pol.* 2011;58(1):45-50.
25. Cumao lu A, Ari N, Kartal M, Karasu Ç. Polyphenolic extracts from *Olea europea* L. protect against cytokine-induced -cell damage through maintenance of redox homeostasis. *Rejuvenation Res.* 2011 Jun;14(3):325-34.
26. Makpol S, Yaacob N, Zainuddin A, Yusof YA, Ngah WZ. *Chlorella vulgaris* modulates hydrogen peroxide-induced DNA damage and telomere shortening of human fibroblasts derived from different aged individuals. *Afr J Tradit Complement Altern Med.* 2009 Jul 3;6(4):560-72.
27. Kwak JH, Baek SH, Woo Y, et al. Beneficial immunostimulatory effect of short-term chlorella supplementation: enhancement of natural killer cell activity and early inflammatory response (Randomized, double-blinded, placebo-controlled trial). *Nutr J.* 2012 Jul 31;11(1):53.
28. Takekoshi H, Suzuki G, Chubachi H, Nakano M. Effect of *Chlorella pyrenoidosa* on fecal excretion and liver accumulation of polychlorinated dibenzo-p-dioxin in mice. *Chemosphere.* 2005 Apr;59(2):297-304.
29. Park SK, Kim GY, Lim JY, Kwak JY, Bae YS, Lee JD, Oh YH, Ahn SC, Park YM. Acidic polysaccharides isolated from *Phellinus linteus* induce phenotypic and functional maturation of murine dendritic cells. *Biochem Biophys Res Commun.* 2003 Dec 12;312(2):449-58.
30. Kim GY, Oh WK, Shin BC, Shin YI, Park YC, Ahn SC, Lee JD, Bae YS, Kwak JY, Park YM. Proteoglycan isolated from *Phellinus linteus* inhibits tumor growth through mechanisms leading to an activation of CD11c+CD8+ DC and type I helper T cell-dominant immune state. *FEBS Lett.* 2004 Oct 22;576(3):391-400.
31. Chang ZQ, Oh BC, Lee SP, Rhee MH, Park SC. Comparative immunomodulating activities of polysaccharides isolated from *Phellinus* spp. on cell-mediated immunity. *Phytother Res.* 2008 Oct;22(10):1396-9.
32. Ayala-Zavala JF, Silva-Espinoza BA, Cruz-Valenzuela MR, et al. Antioxidant and antifungal potential of methanol extracts of *Phellinus* spp. from Sonora, Mexico. *Rev Iberoam Micol.* 2012 Jul-Sep;29(3):132-8.
33. Chen W, Feng L, Huang Z, Su H. Hispidin produced from *Phellinus linteus* protects against peroxynitrite-mediated DNA damage and hydroxyl radical generation. *Chem Biol Interact.* 2012 Jul 20.
34. Huang GJ, Huang SS, Deng JS. Anti-inflammatory activities of inotilone from *Phellinus linteus* through the inhibition of MMP-9, NF- κ B, and MAPK activation in vitro and in vivo. *PLoS One.* 2012;7(5):e35922.



Top Off Your TESTOSTERONE *Naturally*

Low Testosterone Levels May Lead to:
Reduced Sex Drive • Less Energy
Cloudy Thinking • Weight Gain
Cardiovascular Issues

Maintaining healthy testosterone levels is one of the most important steps you can take to regain your health and improve your performance. With research showing that by the time a man is 60 years old, he may produce 60% less testosterone than he did in his 20s, the time is now to add Life Extension®'s Super MiraForte with Standardized Lignans to your supplement regimen.



Each daily dose of Super MiraForte with Standardized Lignans contains the following testosterone supporting ingredients:

1500 mg	Chrysin
15 mg	Bioperine®
850 mg	Muirapuama
282 mg	Nettle root
15 mg	Chelated elemental zinc
320 mg	Maca
33.4 mg	HMRLignan™
	Norway Spruce lignan extract



Item # 01698

The retail price for a bottle of 120 capsules of **Super MiraForte with Standardized Lignans** is \$62. If a member buys four bottles during **Super Sale**, the price is reduced to \$37.80 per bottle.

To order Super MiraForte with Standardized Lignans call 1-800-544-4440 or visit www.LifeExtension.com

Super Health. Super Libido.
Super MiraForte.

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

Contains corn. Bioperine® is a registered trademark of Sabinsa Corp. HMRLignan™ is a registered trademark used under sublicense from Linnea S.A.

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

THE UPGRADED LIFE EXTENSION MIX™

Scientists have identified multiple mechanisms by which **green tea** extract helps protect against LDL oxidation, neuronal oxidation, and a host of other structural and functional age-related changes. LIFE EXTENSION MIX™ provides more green tea extract than found in commercial formulations.

Broccoli is one of the vegetables best documented to protect healthy DNA. The broccoli concentrate in LIFE EXTENSION MIX™ is standardized to provide **sulforaphane** and other **glucosinolates**, compounds responsible for broccoli's protective benefits.

Olive polyphenols help protect against LDL oxidation, quench free radicals, and stabilize cell membranes. LIFE EXTENSION MIX™ contains an olive extract standardized to provide the best-documented polyphenol called **hydroxytyrosol**.

Luteolin is a flavonoid found in **parsley, artichoke, basil, celery**, and other foods. It has shown the ability to help protect against DNA oxidative damage. When measured against 27 other citrus flavonoids, **luteolin** proved one of the most beneficial at maintaining healthy DNA. **Luteolin** also suppresses excess levels of **interleukin-6** and **interleukin-1b**. LIFE EXTENSION MIX™ contains a standardized dose of **8 mcg** of luteolin.

Lycopene is the red carotenoid in **tomatoes** that supports a healthy prostate and helps promote healthy lipid profiles for those already within a normal range.

Lutein is found in **spinach** and **collard greens** and has been shown to help maintain **eye macula pigment** structure.

D-glucarate is found in **grapefruit, apples, oranges, broccoli**, and **Brussels sprouts**. D-glucarate supports a detoxification process that helps to remove DNA toxins.

Pomegranate may be the most effective plant to help maintain optimal endothelial function. This pomegranate extract is standardized to provide the punicalagins and other polyphenols found in up to 2.6 ounces of pomegranate juice.

Sesame lignans increase tissue levels of **vitamin E**, including **gamma tocopherol**, and inhibit the formation of an inflammatory precursor called arachidonic acid.

Wild blueberry extract, standardized to help maintain optimal neuronal function.

Pterostilbene is a compound naturally found in blueberries and grapes that has been shown to have beneficial, anti-aging effects on gene expression and to promote healthy cognitive function.

Cyanidin-3-Glucoside is a berry compound that promotes healthy function of the retina to help support night vision.

Pyridoxal 5'-phosphate helps protect against glycation reactions, a toxic process in which sugars bind to lipids and proteins to form non-functional structures in the body.



315 tablets
Item #01755



490 capsules
Item #01754



14.81 oz powder
Item #01756

9 tablets, 14 capsules, or three scoops of powder provide:

Vegetable-Fruit Complex

Green tea extract (<i>decaf.</i>) (45% EGCG)	325 mg
Broccoli sprout concentrate (providing sulforaphane, glucosinolates, D-3T, and PEITC)	525 mg
Olive juice extract (providing polyphenols, hydroxytyrosol, oleuropein)	12.5 mg
Grapeseed proanthocyanidin extract (Leucoselect®)	25 mg
Grape (<i>vitis vinifera</i>) extract (BioVin®)	25 mg
Luteolin (Pureolin™ and SMART™)	8 mg
Lycopene (natural tomato extract) (Tomat-O-Red®)	3 mg
Lutein (marigold extract) (465 mcg <i>trans</i> -zeaxanthin)	15 mg
Maqui Berry (<i>Aristotelia chilensis</i>) anthocyanin extract	100 mg
Milk thistle extract (85% <i>silymarin</i>)	100 mg
Bromelain (from pineapple)	15 mg
Calcium D-Glucarate	200 mg
Citrus Bioflavonoids (50% <i>hesperidin</i>)	200 mg
Acerola extract 4:1	300 mg
Bilberry extract (MirtoSelect®)	30 mg
Pomegranate extract (30% punicalagins) (POMELLA®)	85 mg
Sesame seed lignan extract	10 mg
Berry-fruit blend (HiActives®) (blackberry, blueberry, cranberry, elderberry, persimmon, prune, and cherry)	200 mg
Wild Blueberry (<i>Vaccinium angustifolium</i>) anthocyanin extract (fruit)	150 mg
<i>trans</i> -Pterostilbene (from pTeroPure™)	0.5 mg
Cyanidin-3-Glucoside (C3G) (from blackcurrant extract)	1.25 mg
Tart Cherry (<i>Prunus cerasus</i>) proanthocyanidin extract	85 mg

Water-Soluble Vitamins and Enzymatic Activators

Vitamin C	2000 mg
<i>as: ascorbic acid, calcium, magnesium & niacinamide ascorbates, ascorbyl palmitate, acerola extract</i>	
Natural Folate (from lemon extract)	400 mcg
Biotin	3,000 mcg
Trimethylglycine (TMG) (from sugar beets)	100 mg
Vitamin B1 (thiamine HCl)	125 mg
Vitamin B2 (riboflavin)	50 mg
Supplying: Riboflavin 5'-phosphate	2 mg
Vitamin B3 (niacinamide and niacinamide ascorbate)	117 mg
Vitamin B3 (niacin)	73 mg
Vitamin B5 (D-calcium pantothenate)	600 mg
Pantethine	5 mg
Vitamin B6 (pyridoxine HCl)	5 mg
Pyridoxal 5'-phosphate (vitamin B6)	100 mg
Vitamin B12 (hydroxocobalamin acetate)	600 mcg

The Most Complete Multivitamin Available Today

Published scientific studies document that people who eat the **most fruits and vegetables** have much lower incidences of health problems. Few people, however, consistently eat enough plant foods to protect against common age-related decline,^{1,3} and commercial multivitamins do not provide all of the vital plant components needed to maintain good health. **Life Extension Mix** provides a broad array of **vegetable/fruit extracts**.

Life Extension Mix™ now contains the **sodium selenite** form of selenium in addition to **L-selenomethionine** and **Se-methyl-L-selenocysteine**.

Fat-Soluble Vitamins

Vitamin A (90% Betatene® beta-carotene + 10% acetate)	5,000 IU
Vitamin D3 (cholecalciferol)	2,000 IU
Vitamin C (as calcium ascorbate, ascorbic acid, ascorbyl palmitate, magnesium ascorbate, niacinamide ascorbate, acerola extract)	2,000 mg
Ascorbyl palmitate (fat-soluble vitamin C)	250 mg
Vitamin E (natural D-alpha tocopheryl succinate and D-alpha tocopherol)	100 IU
Natural mixed tocopherols (providing gamma, delta, alpha, and beta tocopherols)	60 mg

Amino Acid Complex

N-acetyl-L-cysteine	600 mg
Taurine	200 mg

Mineral Complex

Selenium (from Se-methyl L-selenocysteine)	100 mcg
Selenium (from L-selenomethionine—SelenoPure™)	50 mcg
Selenium (from sodium selenite)	50 mcg
Zinc (monomethionine) (OptiZinc®)	20 mg
Zinc (succinate)	15 mg
Boron (as boron citrate/aspartate/glycinate)	3 mg
Calcium	218 mg
Copper (as copper glycinate chelate TRAACS®)	1 mg
Chromium (as Crominex® 3+ chromium stabilized with Capros® and PrimaVie® Shilajit)	500 mcg
Potassium chloride (37.4 mg elemental)	71.3 mg
Molybdenum (sodium molybdate)	125 mcg
Manganese (gluconate)	1 mg
Iodine (potassium iodide)	150 mcg
Magnesium oxide (335.96 mg elemental)	560 mg
Magnesium citrate (35.28 mg elemental)	261.3 mg
Magnesium glycinate (11.74 mg elemental)	100 mg
Magnesium taurinate (7.83 mg elemental)	100 mg
Magnesium arginate (5.87 mg elemental)	100 mg
Magnesium ascorbate (3.40 mg elemental)	58.1 mg

Cholinergic Complex

Choline (from bitartrate)	120 mg
Phosphatidylcholine (from soy)	150 mg
Inositol	250 mg

Each one of these selenium compounds provides unique biological benefits. The **new Life Extension Mix™** also provides a small amount of **gamma tocopherol** (40 mg) as a part of **natural mixed tocopherols** which includes natural vitamin E. Most members take an additional **200 mg of gamma tocopherol** in other supplements. During **Super Sale**, the full daily dose of Life Extension Mix™ can be obtained for as little as **\$1.34** per day.

Vitamin D3 helps maintain healthy bone density and DNA. There is five times more vitamin D in LIFE EXTENSION MIX™ compared to conventional multivitamins.

The **new Life Extension Mix™** utilizes **natural mixed tocopherols** that provide natural vitamin E from alpha tocopherol and a small amount of gamma tocopherol (40 mg). Compared to synthetic vitamin E, the natural form is far more **bioavailable** to the body.

N-acetyl-L-cysteine suppresses free radicals inside the cell and maintains healthy glutathione levels. **Taurine** may protect against free radicals between cells and supports eye health.

Life Extension Mix™ contains the **sodium selenite**, **selenomethionine**, and **Se-methyl L-selenocysteine** forms of selenium. Some scientific evidence suggests that consumption of **selenium** may reduce the risk of certain forms of cancer; however, the FDA has determined that this evidence is limited and not conclusive.

Zinc is often poorly absorbed, but LIFE EXTENSION MIX™ provides two of the most bioavailable forms of zinc.

Boron is not only needed to maintain healthy bone density but may also help promote healthy prostate cell function.

LIFE EXTENSION MIX™ provides a high amount of an optimal form of **chromium** to help maintain arterial wall structure and already normal glucose levels.

Magnesium helps protect arteries and heart valves, and supports heart and brain cells. LIFE EXTENSION MIX™ provides high potencies of six different forms of magnesium to fully saturate the body with this life-saving mineral.

Maintaining high levels of **acetylcholine** in the brain helps support cognitive function and memory.

Contains soybeans.

1) Betatene® is a registered trademark of Cognis Nutrition and Health. 2) The use of Calcium D-Glucarate is licensed from Applied Food Sciences, LLC under U.S. Patent No. 5,561,160. 3) OptiZinc® is a registered trademark of InterHealth Nutritionals, Inc. 4) SelenoPure™ is a trademark of Nutrition 21. 5) Crominex® 3+, Capros® and PrimaVie® are registered trademarks of Natreen, Inc. 6) Leucoslect® is a registered trademark of Indena S.p.A. 7) BioVin® is a registered trademark of Cyvex Nutrition. 8) Pureolin™ and SMART™ are trademarks of Pharma Science Nutrients, Inc., and is used here under license. All rights reserved worldwide. 9) Tomat-O-Red® is a registered trademark of Lycopodium LTD. 10) POMELLA® Extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Sciences, Inc. 11) pTeroPure™ is a trademark of ChromaDex, Inc. 12) MirtoSelect® is a registered trademark of Indena, S.p.A., Milan, Italy. 13) HiActives® is a registered trademark of VDF FutureCeuticals, Inc. 14) TRAACS® is a registered trademark of Albion Laboratories, Inc.

CAUTION: Some people choose a high-niacin version of Life Extension Mix that provides 862 mg in the daily dose, of which 345 mg is the form of niacin that can cause temporary flushing, itching or gastric disturbances. Liver function testing is recommended when niacin is taken in excess of 500 mg daily. Those with gout or liver diseases should avoid taking high doses of niacin. Consult with your doctor before using this product if you are taking anticoagulant medications. Individuals consuming more than 2,000 IU/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxyvitamin D measurement. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

References

1. *Stroke*. 2004 Sep;35(9):2014-9.
2. *Mutant Res*. 1999 Jul 16;428(1-2):329-38.
3. *J Am Diet Assoc*. 1996 Oct;96(10):1027-39.

To order call toll-free
1-800-544-4440 or visit
www.LifeExtension.com

THE NEXT GENERATION OF PROSTATE PROTECTION:

ULTRA NATURAL PROSTATE WITH APRÈSFLEX™ AND STANDARDIZED LIGNANS



Ultra Natural Prostate with AprèsFlex™ and Standardized Lignans softgels combines cutting-edge ingredients that have been scientifically substantiated to protect the prostate gland and maintain its healthy function.*

The latest addition to this formula is **AprèsFlex™**, an extract of *Boswellia serrata* that has been shown in studies to have **two times the bioavailability** of the leading boswellia extract. AprèsFlex™ inhibits the dangerous enzyme *5-lipoxygenase*. Boron is included because of studies showing it may help slow elevation of prostate-specific antigen (PSA).

The formula provides **saw palmetto extract** and **Graminex® Flower Pollen Extract™** to interfere with DHT activity and help regulate inflammatory reactions in the prostate.* **Lycopene** is a carotenoid that is included in the formula to help maintain healthy DNA gene function in prostate cells.

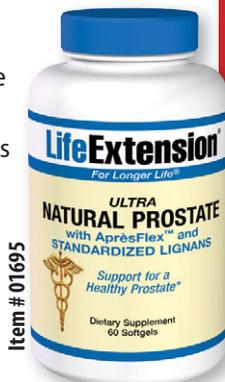
In order to boost its anti-estrogen capabilities, **Ultra Natural Prostate Formula** incorporates **HMRLignan™**, derived from Norway spruce, **flax lignans**, and **nettle root extract**.

Since normal aging can lead to potentially unsafe levels of prostaglandins in the prostate, **Pygeum africanum** extract is included to help suppress prostaglandins and thereby promote prostate comfort.* **Beta-sitosterol** has been added because it is the most biologically active component of *pygeum* and enhances its protective effects.

The retail price for one bottle of **Ultra Natural Prostate Formula with AprèsFlex™ and Standardized Lignans** is \$38. If a member buys four bottles during **Super Sale**, the price is reduced to **\$23.63** per bottle. If a member buys 12 bottles during **Super Sale**, the price is reduced to **\$21.60** per bottle.

Contains soybeans and corn.

To order Ultra Natural Prostate Formula with AprèsFlex™, call 1-800-544-4440 or visit www.LifeExtension.com



Item # 01695

The daily dose of two softgels of **Ultra Natural Prostate Formula with AprèsFlex™ and Standardized Lignans Formula** provides:

USPlus® Saw Palmetto (CO₂ DeepExtract™) (std to 85%-95% total fatty acids and sterols)	320 mg
Graminex® Flower Pollen Extract™	252 mg
AprèsFlex™ (Boswellia serrata) extract	70 mg
Pumpkin seed oil (Cucurbita pepo) extract (standardized to 85% total fatty acids)	200 mg
Stinging nettle root extract (Urtica dioica)	240 mg
Pygeum extract	100 mg
Lycopene	10 mg
Phytosterol complex (standardized to 26.6% free beta-sitosterol)	678 mg
Proprietary blend of HMRLignan™ Norway Spruce and ActiFlax™ Flax Lignan extracts	20.15 mg
Boron	3 mg

AprèsFlex™ is a trademark of Laila Nutraceuticals exclusively licensed to PL Thomas—Laila Nutra LLC. International patents pending. ActiFlax™ is a trademark of Pharma Science Nutrients, Inc., all rights reserved. HMRLignan™ is a trademark used under sublicense from Linnea S.A. USPlus® and DeepExtract™ are trademarks of Valensa International and are used under license. US Patents 6,319,524 & 6,669,968. Not available for export.

* 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.



WELLNESS PROFILE

BY JON FINKEL

Chef Sal's

Amazing Journey to Raw Alkaline Cuisine

When you stop and think about it, since consuming nutritious food is an important part of any longevity program, a chef who understands the value of a diet geared towards anti-aging could be just as valuable as a nutritionist. In the case of Chef Salomon Montezinos, what you have is a man who is passionate about not only food, but how it is prepared and how it can nourish the human body.

In Chef Sal's own words that begin his book, *Discovering Raw Alkaline Cuisine*, he states: "I am a chef. It is my passion...it is what I love. I am not a doctor, a dietician, a nutritionist, or a scientist. I am a human being that has experienced the results on my body of a variety of different foods over my lifetime."

And the experience Chef Sal is referring to isn't just in his own kitchen; he has put his culinary expertise to work in some of the most highly rated and extravagant restaurants in the world, including Switzerland's St. Moritz Palace Restaurant, Lausanne's Beau Rivage, Bern's Palace Hotel, and the Hotel Gutsch in Lucerne. While his early exploits preparing food took place in such culinary-rich countries like France, Holland, and Switzerland, he also spent time in Spain, Israel, Singapore, Indonesia, and Malaysia. >



Arrival in the United States

When Chef Sal finally made it to the United States in 1970, he had a palate filled with world experience that he was ready to share with Americans. In almost no time, he opened up a restaurant in Philadelphia, Pennsylvania called *Déjà vu* that was named one of the finest French Restaurants in the US by *Bon Appétit Magazine*. The success of the restaurant was not just a local affair and it was not fleeting. The restaurant was a focal point of Philly cuisine for a long time.

“*Déjà vu* was the focus of our lives at that time. I cooked, oversaw the staff, and ran the day-to-day function of the restaurant. One night, Francis Ford Coppola came in for dinner and offered me a bit part in his latest upcoming movie, *The Godfather III*, but I turned him down because I said I was too busy!” Chef Sal says. “I can laugh now, but that’s a tough memory to digest. However, I still do have the page he signed in the guest book that night, declaring *Déjà vu* ‘the finest restaurant in the world!’”

After so many years of success in Philadelphia, Chef Sal and his wife decided that they needed a change of pace, so they sold their house and their restaurant and moved to Palm Beach, Florida.

Taking Florida by Storm

Within a short time of the move to Florida, Chef Sal was involved in three restaurants; the first two were given his last name, Montezinos, and were located in Orlando and Palm Beach. The third restaurant was called *Angelique* and was located in Boca Raton. All three

restaurants garnered rave reviews, but *Angelique* was proclaimed one of the best restaurants in America by *Esquire Magazine*.

“In these restaurants, I expanded and refocused my repertoire of menu items to concentrate on the seafood and organic fresh fruits and vegetables that are abundant in the tropical environment that exists in The Sunshine State,” he says. “Just smelling and eating those foods gave me a feeling of happiness.”

Eventually, running three restaurants started to wear on Chef Sal and his wife and daughter, so he made a drastic choice to give up the life of a hands-on owner/chef/restaurateur and become an executive chef in some well-known restaurants. He did this for a little while, but found it unsatisfying, so he took an offer with another company to be the corporate executive chef for three restaurants in Florida, Chicago, and Hawaii. This proved to be a bet-

ter fit, but not a lasting one, as an offer to move back to Philadelphia and become the executive chef at a first-class hotel/condominium in Rittenhouse Square proved too good to turn down.

The move back to Philadelphia seemed to be perfect, as Chef Sal enjoyed running the restaurant and he and his wife lived close to their daughter who was going to college in New York. Then, as happens in all of our lives at some point, tragedy struck. Chef Sal’s beloved wife, Susan, was diagnosed with pancreatic cancer and passed away in May of 2000.

Overcoming A Horrible Tragedy

“I was devastated,” Chef Sal says. “And I knew that I had no idea how to get beyond the grief and sadness that I woke up with and went to bed with every single day.”





By keeping his wife's positive attitude in his heart and by following the courage she had nurtured in him to follow his dreams, he slowly worked his way through the grieving process. One of the ways he did this was to get to know himself again, and by his own admission, he began to take better care of his body.

"I began exercising, running, working out at the gym, eating a healthy diet, learning about the effects of foods, minerals, enzymes, vitamins, and positive thoughts on the body," he says.

After a year of self-reflection and grieving, Chef Sal met Judy Castille, who would become his second wife 18 months later.

Moving On and Finding a New Passion

Along with improving his health and well being, Chef Sal began to encounter people who would spark his interest in raw cuisine and the alkaline diet.

"I met a woman named Debra Van Schaardenberg who is extremely knowledgeable about the effects of certain diets and how one's blood reacts to those foods," he says. "During the course of the time I spent developing healthy,

raw, alkaline-based recipes, I would discuss these dishes with Debra."

But why the focus on raw alkaline-based recipes? Chef Sal explains the benefits in laymen's terms perfectly in his new book:

Many diets that you may be familiar with are either alkaline or acid based, but are not necessarily referred to that way. They have names like Atkins, Zone, and Stillman and they focus on high protein/low carbohydrates, high carbohydrates/low fat and various combinations thereof. Most of these diets are followed by people in an effort to lose weight. Weight might be the least of what is lost by adhering to an all-or-nothing diet: important minerals and vitamins essential to our bodies are lost as well.

There is a consensus that a raw, alkaline-based diet can help you lose weight. Naturally, ceasing to eat foods that are high in sugar, flour, and fat only stands to reason that you most likely would lose weight. Using this diet to simply lose weight is not its purpose; however if you choose to eat this way to achieve a weight goal, you will also receive many other – perhaps unexpected benefits.

It is important to understand how the combination of alkaline

and acid forming foods works within our bodies to achieve and sustain normal pH levels. The foods we eat will leave behind either an alkaline or an acid ash once the food has been metabolized.

That ash has a direct effect on the pH levels in your body. pH refers to power of Hydrogen, meaning the concentration of hydrogen ions present in a substance. The neutral pH level is 7; water for instance has a pH level of 7. The pH levels in foods above 7 are alkaline forming foods; conversely, the pH levels in food below 7 are acid forming.

The Benefits of a Raw Alkaline Diet

Chef Sal explains that if there is too much alkaline ash in our bodies that makes our pH levels rise, we can end up with a condition known as alkalosis. If we have too much acid ash in our bodies, which makes our pH levels plummet, we can end up with acidosis.

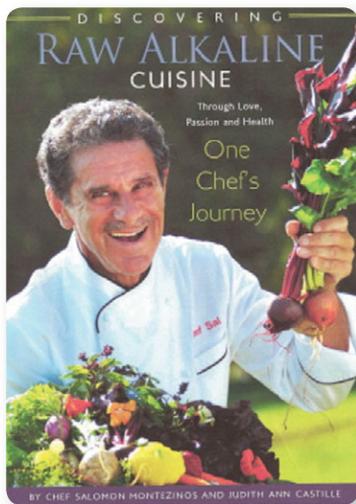
Each of these conditions has strong negative symptoms and side effects that can lead to a host of illnesses. The beauty of the raw alkaline diet is that parasites, mold, yeast, and most harmful

bacteria cannot survive in an alkaline environment.

“I have come to appreciate the feeling of extreme well being when I ingest a diet of raw, alkaline forming foods. I have also been a Life Extension® member for over 20 years. I take CoQ10, Green Coffee Extract, and Alpha Lipoic Acid. I am 74-years-old now and when I combine my diet regimen and supplements with my exercise routine, I feel better than I ever have my whole life. It’s all natural and it’s what works best for me,” Chef Sal says.

By following a raw-alkaline diet and making some of the delicious recipes in Chef Sal’s new book, this eating plan might work best for you as well! ●

For more information on Chef Sal or his new book, visit www.evolvewithflavor.com.



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

Pumpkin Mousse

INGREDIENTS:

1 ¾ cup pumpkin, pared, diced
 ½ ripe banana
 ½ cup prepared Irish moss gel
 ½ cup coconut milk
 ¼ cup coconut water
 ½ tbsp. coconut butter
 ½ cup almond milk
 2 tbsp. coconut palm sugar
 1 ½ tsp. cinnamon powder
 Sea salt



PREPARATION INSTRUCTIONS:

- Prepare Irish moss to package instructions to yield ½ cup gel, usually soaked overnight.
- Flavor diced pumpkin with small amount of coconut butter, palm sugar, nutmeg, and cinnamon (measured ingredients listed above are for main recipe).
- Place flavored pumpkin pieces on Teflex sheet and dehydrate for 2 hours at 105 degrees.
- Place all ingredients, including pumpkin, into blender and blend until smooth. Pour into glass bowl and cover; place in refrigerator to set.
- To serve, put mousse into martini glasses and top with candied pecans.

Note: To make a parfait, layer pumpkin mousse with vanilla ice cream, crushed candied pecans, and top with one candied pecan half.

Green Smoothie



INGREDIENTS:

1 bunch arugula
 4 Gala apples
 ½ lime with peel
 ½ banana, peeled
 2 cups water
 1 tsp. cinnamon
 16 frozen white grapes
 1 tsp. of raw ginger, peeled
 1/8 tsp. cayenne pepper

PREPARATION INSTRUCTIONS:

- Place all ingredients in blender.
- Blend on high speed until thoroughly mixed and obtaining desired consistency.
- Dilute with more water if necessary.

ANTI-AGING EFFECTS OF PYCNOGENOL®

Life Extension® **Pycnogenol**® French Maritime Pine Bark Extract is a natural botanical extract containing procyanidins, bioflavonoids, and other health-giving molecules that synergistically support the body's natural defenses against 5 major processes that characterize premature aging. Its effectiveness is backed by 40 years of study.

Life Extension® **Pycnogenol**® French Maritime Pine Bark Extract is designed to counteract premature-aging-related changes by providing support for the following mechanisms:

MEMBRANE FUNCTION: *Pycnogenol*® promotes the integrity and normal characteristics of cell membranes.¹⁻⁴

DNA FUNCTION: *Pycnogenol*® helps support normal DNA function through antioxidant activity and possibly other mechanisms.⁵⁻⁸

EASE INFLAMMATION: *Pycnogenol*® helps ease inflammation by normal modulation of inflammatory cytokine molecules.⁹⁻¹³

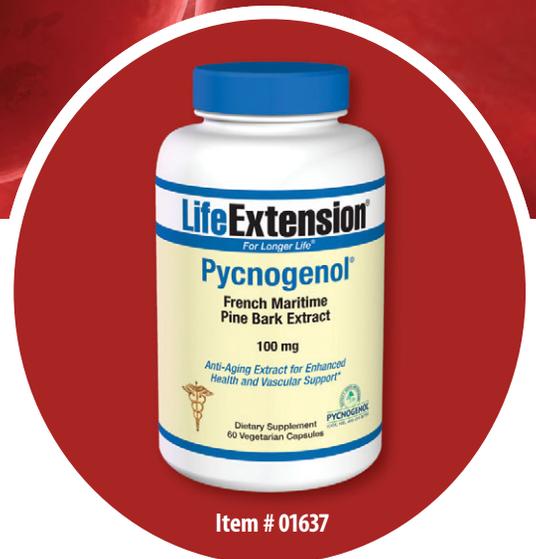
OXIDATIVE STRESS: *Pycnogenol*® supports the normal functioning of healthy antioxidant systems to help suppress free radicals and protect DNA.¹⁴⁻¹⁹

GLYCATION: *Pycnogenol*® supports cellular metabolism of sugar, healthy fasting, and post-meal blood sugar levels already within normal range, and normal sugar absorption in the intestine.²⁰⁻²⁵

Unlike other forms of pine bark extract, **Pycnogenol**® is a superior patented and standardized ingredient that has undergone extensive human clinical research to substantiate its numerous anti-aging properties. A bottle of **Life Extension® Pycnogenol® French Maritime Pine Bark Extract** containing 60 vegetarian capsules retails for \$64. If a member buys four bottles during **Super Sale**, the price is reduced to **\$40.50** per bottle. The dose for most people is one capsule daily, so each bottle lasts **two months**.

Each capsule of Life Extension® **Pycnogenol**® French Maritime Pine Bark Extract provides:

Pycnogenol ® dried French Maritime pine (<i>Pinus pinaster</i>) extract (bark)[std. to 65% procyanidins (65 mg)]	100 mg
Vitamin C (as ascorbyl palmitate)	4 mg



Item # 01637

References

1. *Gen Physiol Biophys*. 2004 Mar;23(1):39-51.
2. *Phytother Res*. 2008 Mar;22(3):384-8.
3. *Biol Pharm Bull*. 2000 Jun;23(6):735-7.
4. *Phytother Res*. 2004 Mar;18(3):244-6.
5. *Fitoterapia*. 2010 Oct;81(7):724-36.
6. *Drug Dev Ind Pharm*. 1998 Feb;24(2):139-44.
7. *Free Radic Res*. 2006 Sep;40(9):1003-10.
8. *Phytother Res*. 2005 Mar;19(3):262.
9. *Photochem Photobiol*. 2004 Feb;79(2):193-8.
10. *Free Radic Biol Med*. 2012 Feb 15;52(4):765-74.
11. *Inflamm (Lond)*. 2006;3:1.
12. *Phytomedicine*. 2009 Dec;16(12):1101-4.
13. *Food Chem Toxicol*. 2011 Sep;49(9):2196-201.
14. *Int J Clin Pharmacol Ther*. 2002 Apr;40(4):158-68.
15. *J Psychopharmacol*. 2008 Jul;22(5):553-62.
16. *Redox Rep*. 2008;13(6):271-6.
17. *Lipids*. 2002 Oct;37(10):931-4.
18. *Redox Rep*. 2006;11(4):163-72.
19. *Drug Dev Ind Pharm*. 1998 Feb;24(2):139-44.
20. *Nutr Res*. 2008 May;28(5):315-20.
21. *Phytother Res*. 2010 Aug;24(8):1242-9.
22. *Life Sci*. 2004 Oct 8;75(21):2505-13.
23. *Chem Biol Interact*. 2010 Jul 30;186(2):219-27.
24. *Diabetes Care*. 2004 Mar;27(3):839.
25. *Res Pharm Sci*. 2011 Jan;6(1):1-11.

Pycnogenol® is a registered trademark of Horphag Research Ltd. Use of this product may be protected by one or more U.S. patents and other international patents. Supported by over 40 years of research.

To order **Pycnogenol**® French Maritime Pine Bark Extract, call 1-800-544-4440 or visit www.LifeExtension.com

VITAMIN C TO THE MAX

Vitamin C's popularity is undeniable—and so are its benefits! It has been over 80 years since this critical vitamin was isolated, and its importance in our diet cannot be overstated. However, since humans don't manufacture **vitamin C** internally, it must be obtained through dietary sources or supplements.

This can be problematic because **vitamin C** is a *water-soluble* nutrient that is quickly oxidized and released by the body, which means that for those seeking vitamin C's optimal health benefits, they have to consume the vitamin several times a day.¹

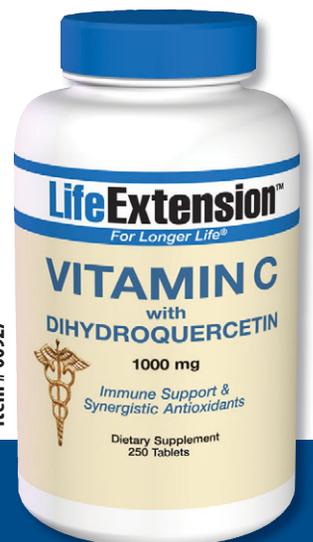
Fortunately, a *flavonoid* antioxidant known as *dihydroquercetin* functions as a **vitamin C** "supercharger." Studies demonstrate that *dihydroquercetin* acts to inhibit the oxidation of **vitamin C**, thereby helping to maintain its concentration and to recycle **vitamin C** throughout the body.^{2,3} This synergistic relationship between *dihydroquercetin* and **vitamin C** greatly enhances the efficacy of both molecules in the body's organs and tissues.

Vitamin C with Dihydroquercetin was formulated for those seeking to obtain optimal efficacy and antioxidant protection from their vitamin C supplement. The suggested daily dose of one tablet of this formula supplies **1,000 mg** of **vitamin C** (as ascorbic acid), along with **10 mg** of *dihydroquercetin-3-rhamnoside*, a highly bioavailable form of dihydroquercetin derived from grape leaf extract.

A bottle containing 250 tablets of **Vitamin C with Dihydroquercetin** retails for \$25.50. If a member buys four bottles during **Super Sale**, the price is reduced to **\$15.69 per bottle**.

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.



To order **VITAMIN C with Dihydroquercetin**, call 1-800-544-4440 or visit www.LifeExtension.com



SUPER FOODS

BY WILLIAM GAMONSKI

Cauliflower

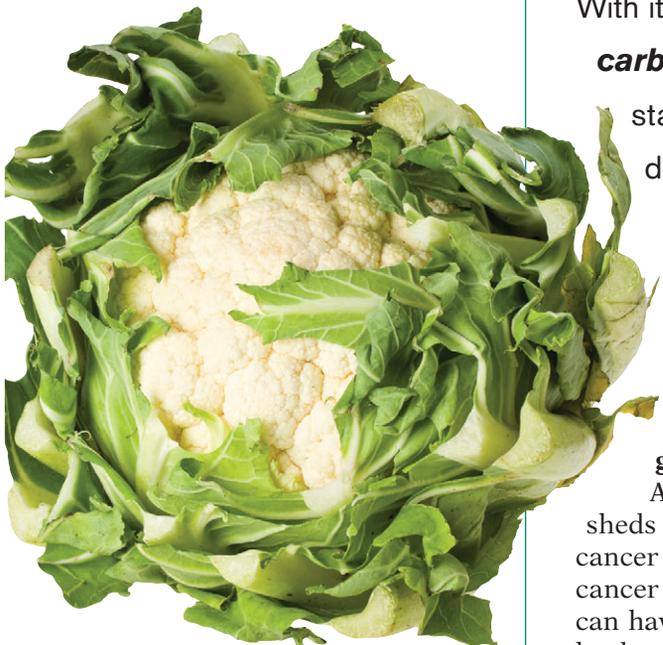
The Head of the Cruciferous Vegetable Family

While broccoli is the most well-known member of the cruciferous vegetable family, evidence is showing that cauliflower has important broad-spectrum health benefits as well. With its bioactive compounds, **glucosinolates**, and **indole-3-carbinol**,¹ cauliflower shows great promise in providing substantial protection against cardiovascular disease, cancer, diabetes, and rheumatoid arthritis.

Cancer Protection

Phytochemicals are plant compounds that exhibit potent anti-inflammatory, antioxidant, and anti-proliferative properties, making them ideal cancer fighters.² Cauliflower contains a high concentration of a class of phytochemicals known as **glucosinolates**, which are metabolized into **isothiocyanates**.¹

A recent study published in the *Journal of Medicinal Chemistry* sheds light on how *isothiocyanates* in cauliflower exert their anti-cancer activity.³ Normal cells contain *gene p53*, which help suppress cancer cell growth. However, if a mutation in *gene p53* occurs, it can have the opposite effect which allows abnormal cell division that leads to the formation of cancer. Researchers have discovered that



isothiocyanates effectively bind to this defective protein and remove it from the cell, thereby restoring the normal function of *gene p53* in blocking cancer cell growth.³

Other research shows that the isothiocyanate **sulforaphane** combats cancer through different mechanisms. It significantly induces *Phase II liver enzymes*, which detoxify and neutralize cancer-causing agents.⁴ Additionally, sulforaphane also works by inhibiting a group of enzymes that alter gene expression and produce proteins involved in cancer initiation.⁵

These multiple modes of action help explain the strong protective effect of cauliflower consumption against various forms of cancer. In one such study reported in the *Journal of the National Cancer Institute*, consuming more than one serving of cauliflower a day produced a **61%** reduction in lung cancer risk.⁶ Another study showed that just one serving of cauliflower a week was associated with a **27%** lower risk of bladder cancer.⁷

Italian scientists compared cruciferous vegetable intake, including cauliflower, among individuals with and without several common cancers. The results revealed that those who ate cruciferous vegetables at least once a week slashed their risk of oral, colorectal, and breast cancers by **17%**, as well as esophagus and kidney cancers by **28%** and **32%**, respectively.⁸

Improving Cardiovascular Health

In a study published in the *American Journal of Clinical Nutrition*, a high intake of cruciferous vegetables like cauliflower reduced the risk of dying from cardiovascular disease by **31%**.¹ A growing body of evidence indicates



that several diverse compounds in cauliflower might be responsible for this cardioprotective effect.⁹

While the content of cholesterol in LDL particles has been the standard for assessing cardiovascular risk, research indicates that the number of LDL particles is a stronger predictor for developing atherosclerosis and future vascular events including heart attack and stroke.¹⁰ Since each LDL particle contains one apolipoprotein (apoB), apoB provides a direct count of the number of LDL particles in circulation. Therefore, reducing apoB leads to a lower LDL particle number and reduced heart disease risk.¹⁰

Scientists at the University of Hawaii at Manoa investigated the impact of indole-3-carbinol (I3C), a compound found in large amounts in cauliflower, on apoB secretion in cultured liver cells.¹¹ After exposing the liver cells to I3C, they observed a **56%** reduction in apoB secretion that resulted from a decline in the creation of triglycerides and cholesterol esters in the cells, thereby improving heart health.

Cauliflower-rich I3C has also demonstrated the ability to improve platelet function. In a study published in *Phytotherapy*

Research, indole-3-carbinol was shown to significantly inhibit platelet aggregation (stickiness) that can induce a blood clot and cause heart attack or stroke.¹²

Another cardiovascular benefit of cauliflower relates to its high fiber content, which might have a protective effect against high levels of C-reactive protein, an inflammatory marker associated with predicting cardiovascular disease risk. Researchers examined the relationship between dietary fiber intake and C-reactive protein levels in more than 3,900 men and women aged 20 and older. After adjusting for confounding factors such as age, gender, physical activity and BMI, those with the highest fiber intake had a **51%** lower risk for elevated C-reactive protein levels compared with those with the lowest intakes.¹³

Furthermore, cauliflower is an excellent source of folate and vitamin B6 that might lessen the likelihood of a heart attack. In a study comparing the intake of both vitamins in 507 first-time heart attack patients with 478 controls, researchers concluded those who consumed the highest intake of folate and vitamin B6 reduced their heart attack risk by **44%** and **66%**.¹⁴



Selecting and Storing Cauliflower¹

- Cauliflower is freshest during the growing season from December through March.
- Pick cauliflower that has a full, creamy white head and tight bud clusters.
- Avoid cauliflower with the appearance of small brown spots.
- Place uncooked cauliflower with stem side down in plastic bag and store in refrigerator for up to a week.

Defending Against Diabetes

In recent years, scientists have begun to unravel the role of inflammation in the onset of type II diabetes. They have discovered that chronic inflammation induces insulin resistance, which in turn disrupts normal glucose tolerance and eventually leads to the development of type II diabetes.¹⁵ Strong evidence indicates that eating vitamin C rich foods like cauliflower can help modulate inflammation and reduce the risk for the disease. In one study, English researchers found a strong

association between blood levels of vitamin C and diabetes risk, with the highest plasma levels of the vitamin reducing diabetes risk by a remarkable **62% in over 21,800 men and women aged 40 to 75 over a 12-year period.**¹⁶

As a rich source of potassium, cauliflower might help regulate glucose metabolism. Potassium is required by the beta cells in the pancreas to “sense” elevated blood sugar levels and respond appropriately by secreting the hormone insulin. However, in people with low levels of potassium, beta cells have decreased sensitivity to increased blood glucose levels and as a result reduce insulin output.¹⁷ Over time, this impairs glucose tolerance and increases diabetes risk. This was supported in a study published in the journal *Archives of*

Internal Medicine in which people with low potassium blood levels had a **64% greater risk for type II diabetes.**¹⁸

Rheumatoid Arthritis Prevention

Regular consumption of cauliflower might decrease the risk of rheumatoid arthritis, an autoimmune inflammatory disease that targets and damages joints in the body. In research published in the *American Journal of Epidemiology*, greater than three servings of cauliflower a month was linked to a **17% lower risk** of the condition after controlling for confounding factors including smoking, age, tea consumption, and total calorie intake.¹⁹



Summary

Cauliflower contains a wealth of fiber and choline, along with powerful phytochemical compounds indole-3-carbinol and isothiocyanates. These health promoting nutrients make incorporating cauliflower into your daily diet a smart strategy to protect against heart disease, cancer, diabetes, and rheumatoid arthritis. ●

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

References

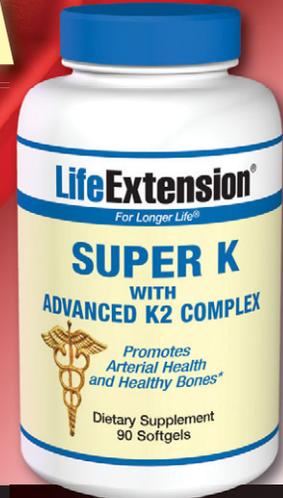
- Available at: <http://www.whfoods.com/genpage.php?tname=foodspice&dbid=13> Accessed October 18, 2012.
- Lee JH, Khor TO, Shu L, Su ZY, Fuentes F, Kong AN. Dietary phytochemicals and cancer prevention: Nrf2 signaling, epigenetics, and cell death mechanisms in blocking cancer initiation and progression. *Pharmacol Ther.* 2012 Oct 3. [Epub ahead of print]
- Wang X, Di Pasqua AJ, Govind S, et al. Selective depletion of mutant p53 by cancer hemopreventive isothiocyanates and their structure-activity relationships. *J Med Chem.* 2011 Jan;54(3):809-16.
- Brooks JD, Paton VG, Vidanes G. Potent induction of phase 2 enzymes in human prostate cancer cells by sulforaphane. *Cancer Epidemiol Biomarkers Prev.* 2001 Sept;10(9):949-54.
- Clarke JD, Hsu A, Yu Z, Dashwood RH, Ho E. Differential effects of sulforaphane on histone deacetylases, cell cycle arrest and apoptosis in normal prostate cells versus hyperplastic and cancerous prostate cells. *Mol Nutr Food Res.* 2011 Jul;55(7):999-1009.
- Feskanich D, Ziegler RG, Michaud DS, et al. Prospective study of fruit and vegetable consumption and risk of lung cancer among men and women. *J Natl Cancer Inst.* 2000; 92(22):1812-23.
- Michaud DS, Spiegelman D, Clinton SK, et al. Fruit and vegetable intake and incidence of bladder cancer in a male prospective cohort. *J Natl Cancer Inst.* 1999;91(7):605-13.
- Bosetti C, Filomeno M, Riso P, et al. Cruciferous vegetables and cancer risk in a network of case-control studies. *Annals of Oncology.* 2011 Dec;23:2198-203.
- Zhang X, Shu XO, Xiang YB, et al. Cruciferous vegetable consumption is associated with a reduced risk of total and cardiovascular disease mortality. *Am J Clin Nutr.* 2011 Jul;94(1):240-6.
- Barter PJ, Ballantyne CM, Carmena R, et al. Apo B versus cholesterol in estimating cardiovascular disease risk and guiding therapy: report of the thirty person/ten-country panel. *J Intern Med.* 2006 Mar;259(3):247-58.
- Maiyoh GK, Kuh JE, Casaschi A, Theriault AG. Cruciferous indole-3-carbinol inhibits apolipoprotein B secretion in HepG2 cells. *J Nutr.* 2007 Oct;137(10):2185-9.
- Park MK, Rhee YH, Lee HJ, et al. Antiplatelet and antithrombotic activity of indole-3-carbinol in vitro and in vivo. *Phytotherapy Res.* 2008 Jan;22(1):58-64.
- Ajani UA, Ford ES, Mokdad AH. Dietary fiber and C-reactive protein: findings from national health and nutrition examination survey data. *J Nutr.* 2004 May;134(5):1181-5.
- Tavani A, Pelucchi C, Parpinel M, Negri E, La Vecchia C. Folate and vitamin B(6) and risk of acute myocardial infarction in Italy. *Eur J Clin Nutr.* 2004 Sept;58(9):1266-72.
- Shoelson SE, Lee J, Goldfine AB. Inflammation and insulin resistance. *J Clin Invest.* 2006;116(7):1793-801.
- Harding AH, Wareham NJ, Bingham SA, et al. Plasma vitamin C level, fruit and vegetable consumption, and the onset type 2 diabetes mellitus: the European prospective investigation of cancer—Norfolk prospective study. *Arch Intern Med.* 2008 Jul;168(14):1493-9.
- Chatterjee R, Yeh HC, Edelman D, Brancati F. Potassium and risk of type 2 diabetes. *Expert Rev Endocrinol Metab.* 2011 Sept;6(5):665-72.
- Chatterjee R, Yeh HC, Shafi T, et al. Serum and dietary potassium and risk of incident type 2 diabetes mellitus: the atherosclerosis risk in communities (ARIC) study. *Arch Intern Med.* 2010 Oct;170(19):1745-51.
- Cerhan JR, Saag KG, Merlino LA, Mikuls TR, Criswell LA. Antioxidant micronutrients and risk of rheumatoid arthritis in a cohort in older women. *Am J Epidemiol.* 2003 Feb;157(4):345-54.
- Available at: <http://nutritiondata.self.com/facts/vegetables-and-vegetable-products/2390/2> Accessed October 20, 2012.



Raw Cauliflower Nutritional Facts, One Cup²⁰

Nutrients	Amount	DV(%)
Vitamin C	46.4 mg	77%
Vitamin K	16.0 mcg	20%
Folate	57.0 mcg	14%
Vitamin B6	0.2 mg	11%
Fiber	2.5 g	10%
Potassium	303.0 mg	9%
Manganese	0.2 mg	8%
Vitamin B5	0.7 mg	7%

COMPREHENSIVE VITAMIN K FORMULA



Item # 01724

Super K formula provides in just one daily softgel:

Vitamin K2 (MK-7)	200 mcg
Vitamin K2 (MK-4)	1000 mcg
Vitamin K1	1000 mcg

There are **three forms** of **vitamin K** that the human body can utilize to promote **arterial health** and **bone support**.¹⁻⁸

Life Extension®'s Super K with Advanced K2 Complex provides the *dynamic trio* of vitamin K forms in **one softgel**, including **vitamin K1**, **vitamin K2 (MK-4)**, and **vitamin K2 (MK-7)**.

VITAMIN K1 is the form of vitamin K that is found in green vegetables. **K1** is tightly bound to plant fiber, so only a fraction is *absorbed* into the bloodstream. Supplementation ensures ample **K1** blood levels.

VITAMIN K2 is usually found in meats, dairy, and egg yolks. Since you may be avoiding these foods for health reasons, ingesting a **K2** supplement is *essential*. **MK-4** is the most *rapidly absorbed* form of **K2**, and **MK-7** boasts a very *long half-life* in the body, making both forms the *perfect complement* to any **vitamin K** regimen.⁹

**To order
Super K with Advanced K2 Complex
or Super Booster, call 1-800-544-4440 or
visit www.LifeExtension.com**

Each bottle of **Super K** lasts **90 days**, so members pay as little as **\$6.08 a month** for this high-potency blend of all three active forms of vitamin K. The retail price for a bottle containing **90 softgels** is \$30. If a member buys four bottles during **Super Sale**, the price is reduced to **\$18.23 per bottle**.

(The same **Super K** formula consisting of Vitamin K1, K2 (MK-4) and K2 (MK-7) can be found in the **Life Extension® Super Booster**. If you take the **Super Booster**, you do not need additional **Super K with Advanced K2 Complex softgels**.)

Warning to Coumadin® (warfarin) Drug Users

Patients prescribed vitamin K-antagonist anti-coagulant prescription drugs like warfarin should consult their physician before taking vitamin K supplements like Super K and Super Booster. There is evidence, however, that users of drugs like warfarin could benefit from a consistent low dose of supplemental vitamin K. Ask your doctor if you can take a low dose (45 mcg a day) of vitamin K2 in the long-acting MK-7 form for the purpose of stabilizing your INR levels and also protecting your body against long-term vitamin K deficit. Do not initiate any form of vitamin K supplementation without full cooperation of your treating doctor, as your doctor may need to increase your dose of warfarin to compensate for the vitamin K you supplement with. Life Extension provides several forms of low-dose vitamin K for physician consideration.

References

1. *Vitam Horm.* 2008;78:393-416.
2. *Nutrition.* 2006 Jul-Aug;22(7-8):845-52.
3. *Calcif Tissue Int.* 1996 Nov;59(5):352-6.
4. *Z Kardiol.* 2001;90 Suppl 3:57-63.
5. *Atherosclerosis.* 2008 Jul 19.
6. *J Bone Miner Metab.* 2008;26(3):260-4.
7. *Am J Clin Nutr.* 2008 Apr;87(4):985-92.
8. *J Biol Regul Homeost Agents.* 2008 Jan-Mar;22(1):35-44.
9. *Blood.* 2007 Apr 15;109(8):3279-83.



Blood testing provides the ultimate information regarding correctable risk factors that may predispose you to disorders such as cancer, diabetes, cardiovascular disease, and more. Information about general health and nutritional status can also be gained through standard blood analysis. Standing behind the belief that blood testing is an essential component of any program designed to attain optimal health and longevity, *Life Extension*[®] offers this innovative and convenient service at a very affordable price. Not only is comprehensive blood testing an important step in safeguarding your health, it is a simple process from virtually anywhere in the United States.

Five Easy Steps:

1. Call 1-800-208-3444 to discuss and place your order with one of our knowledgeable health advisors. (This order form can also be faxed to 1-866-728-1050 or mailed). Online orders can also be placed at www.lifeextension.com.
2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit; whichever is applicable (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be sent directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable health advisors by calling 1-800-226-2370; or review the results with your personal physician.

It's that simple! Don't delay—call today!

For Our Local Members:

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.

Blood Testing The Ultimate Information

MOST POPULAR PANELS

Life Extension Member Pricing

- COMPREHENSIVE PANELS**

MALE LIFE EXTENSION PANEL (LC322582) \$269

CBC/Chemistry Profile DHEA-S
Homocysteine TSH for thyroid function
Free Testosterone Total Testosterone
Estradiol Vitamin D 25- hydroxy
PSA (prostate-specific antigen)
C-Reactive Protein (high-sensitivity)
- FEMALE LIFE EXTENSION PANEL (LC322535) \$269**

CBC/Chemistry Profile DHEA-S
Estradiol Homocysteine
Progesterone TSH for thyroid function
Free Testosterone Total Testosterone
C-Reactive Protein Vitamin D 25- hydroxy
(high sensitivity)
- MALE WEIGHT LOSS PANEL (LCWLM) \$299**

CBC/Chemistry Profile DHEA-S
Insulin PSA
Free Testosterone (prostate-specific antigen)
Estradiol Total Testosterone
Free T3 TSH
C-Reactive Protein Free T4
(high sensitivity) SHBG
- FEMALE WEIGHT LOSS PANEL (LCWLF) \$299**

CBC/Chemistry Profile DHEA-S
Progesterone Insulin
Free Testosterone Total Testosterone
Estradiol TSH
Free T3 Free T4
C-Reactive Protein SHBG
(high sensitivity)
- MALE HORMONE ADD-ON PANEL (LCADDM)* \$155**
Pregnenolone and Dihydrotestosterone (DHT)
To provide an even more in-depth analysis of a man's hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.
- FEMALE HORMONE ADD-ON PANEL (LCADD)* \$125**
Pregnenolone and Total Estrogens
To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.
- LIFE EXTENSION THYROID PANEL (LC304131) \$75**
TSH, T4, Free T3, Free T4.
- FEMALE COMPREHENSIVE HORMONE PANEL* \$299**
(LC100011) CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.
- MALE COMPREHENSIVE HORMONE PANEL* \$299**
(LC100010) CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.
- THE CBC/CHEMISTRY PROFILE (LC381822) \$35**
OVER 40 PARAMETERS TESTED
CARDIOVASCULAR RISK PROFILE
Total Cholesterol Cholesterol/HDL Ratio
HDL Cholesterol Estimated CHD Risk
LDL Cholesterol Glucose
Triglycerides Iron
LIVER FUNCTION PANEL
AST (SGOT) Total Bilirubin
ALT (SGPT) Alkaline Phosphatase
LDH
KIDNEY FUNCTION PANEL
BUN BUN/Creatinine Ratio
Creatinine Uric Acid
BLOOD PROTEIN LEVELS
Total Protein Globulin
Albumin Albumin/Globulin Ratio
BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE
Red Blood Cell Count Monocytes
White Blood Cell Count Lymphocytes
Eosinophils Platelet Count
Basophils Hemoglobin
Polys (Absolute) Hematocrit
Lymphs (Absolute) MCV
Monocytes (Absolute) MCH
Eos (Absolute) MCHC
Baso (Absolute) Polynucleated Cells
RDW
BLOOD MINERAL PANEL
Calcium Sodium
Potassium Chloride
Phosphorus Iron

NOTE: CBC/Chemistry profile is included in the Male and Female Life Extension panels and Weight Loss Panels.
- GENERAL HEALTH**

HEMOGLOBIN A1C (HBA1C) (LC001453) \$31
Hemoglobin A1C evaluates long-term blood sugar control. Serum glucose sometimes reacts with important proteins in the body rendering them nonfunctional. Since this process, known as glycation is one of the leading theories of aging, Life Extension[®] believes everyone should check their A1C level.
- VITAMIN D (25OH) (LC081950) \$47**
This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.
- FOOD SAFE ALLERGY TEST** (LCM73001) \$198**
This test measures delayed (IgG) food allergies for 95 common foods.
- ASPIRINWORKS™* (LC501620) \$149**
Taking aspirin to prevent heart attack? Is it working? This is a random urine test used to measure your resistance to aspirin.
- OMEGA SCORE™*** (LCOMEGA) \$131.25**
Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.
- COQ10* (COENZYME Q10) (LC120251) \$145**
This test is used to check the blood level of CoQ10 and will enable more precise dosing for anyone seeking to achieve and maintain high levels of this critical antioxidant.

* 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, requiring a finger stick performed at home.



Other Popular Panels Life Extension Member Pricing

ENERGY PROFILE (LC100005) **\$375**
CBC/Chemistry Profile (see description), Epstein-Barr Virus antibodies (IgG and IgM), Cytomegalovirus Antibodies (IgG and IgM), Ferritin, Total and Free Testosterone, DHEA-S, Free T3, Free T4, Cortisol, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Insulin.

ANEMIA PANEL (LC100006) **\$86**
CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.

INFLAMMATION PANEL (LC100007) **\$135**
CBC/Chemistry Profile (see description above), C-Reactive Protein (high sensitivity), Sedimentation Rate, Rheumatoid (RA) Factor, Antinuclear Antibodies (ANA) Screen.

THYROID ANTIBODY PROFILE (LC100004) **\$99**
Thyroid Antithyroglobulin Antibody (ATA) and Thyroid Peroxidase Antibody (TPO).

Popular Single Tests

HORMONES
 CORTISOL (LC004051) **\$39**
This test is to measure adrenal function.

DHEA-SULFATE (LC004020) **\$61**
This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.

DIHYDROTESTOSTERONE (DHT)* (LC500142) **\$99**
Measures serum concentrations of DHT.

ESTRADIOL (LC004515) **\$33**
For men and women. Determines the proper amount in the body.

INSULIN FASTING (LC004333) **\$42**
Can predict those at risk of diabetes, obesity, and heart and other diseases.

PREGNENOLONE* (LC140707) **\$116**
Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.

PROGESTERONE (LC004317) **\$55**
Primarily for women. Determines the proper amount in the body.

SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016) **\$33**
This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.

SOMATOMEDIN C (IGF-1) (LC010363) **\$75**
Indicates growth hormone secretion levels. Low levels have been associated with atherosclerosis as well as all-cause mortality.

Blood tests available only in the continental United States. Not available in Maryland.

For non-member prices call 1-800-208-3444

CARDIAC RISK Lp-PLA2 (PLAC TEST)* (LC123240) **\$125**
This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.

C-REACTIVE PROTEIN (HIGH-SENSITIVITY) (LC120766) **\$42**
Measures inflammation factors in arteries. Recent studies indicate that C-reactive protein may be the most accurate risk factor for predicting heart attack and stroke.

CARDIAC PLUS* (LC100008) **\$145**
CBC/Chemistry profile (see description), Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Fibrinogen, Homocysteine.

VAP PLUS* (LC100009) **\$330**
VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy.

FIBRINOGEN* (LC001610) **\$31**
High levels of this blood-clotting factor increase the risk of heart attack and stroke.

HOMOCYSTEINE (LC706994) **\$64**
Can indicate if you are likely to have a heart attack or stroke. Even if you take folic acid, you still may have dangerously high levels of this artery-clotting metabolic debris that can be lowered with high doses of TMG, vitamin B6, and vitamin B12.

VAP™ TEST* (LC804500) **\$90**
The VAP cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.

MALE HEALTH
 PSA (PROSTATE-SPECIFIC ANTIGEN) (LC010322) **\$31**
Can provide an early warning sign for prostate disorders and possible cancer.

FREE-PSA (INCLUDES TOTAL PSA)* (LC480780) **\$61**
Recommended to determine if an elevated PSA is indicative of prostate cancer.

BONE HEALTH
 OSTEOCALCIN* (LC010249) **\$91**
Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis.

DPD CROSS LINK URINE TEST (LC511105) **\$79**
The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis.

This is NOT a complete listing of LE blood test services. Call 1-800-208-3444 for additional information.

ORDER LIFE-SAVING BLOOD TESTS FROM VIRTUALLY ANYWHERE IN THE US!

TERMS AND CONDITIONS

This blood test service is for informational purposes only and no specific medical advice will be provided. National Diagnostics, Inc., and the Life Extension Foundation 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 the Life Extension Foundation® 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. I have read the above Terms and Conditions and understand and agree to them.

Signature of Life Extension Member

X

Life Extension Foundation Members only

MEMBER NO.

Male

Female

Name

Date of Birth (required) / /

Address

City

State

Zip

Phone

Credit Card No.

Expiration Date /

Mail your order form to:

LifeExtension
NATIONAL DIAGNOSTICS, INC.

3600 West Commercial Boulevard
Fort Lauderdale, FL 33309

Phone your order to: 1-800-208-3444

Fax your order to: 1-866-728-1050

PRODUCTS

AMINO ACIDS

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
Branched Chain Amino Acids
D, L-Phenylalanine Capsules
GABA Powder
Glycine Capsules
Glycine Powder
L-Arginine Capsules
L-Arginine Free Base Powder
Arginine/L-Ornithine Capsules
L-Carnitine Capsules
L-Glutathione, L-Cysteine & C
L-Glutamine Capsules
L-Glutamine Powder
L-Lysine Capsules
L-Lysine Powder
L-Tyrosine Tablets
Mega L-Glutathione Capsules
N-Acetyl-L-Cysteine Capsules
Optimized Carnitine with GlycoCarn®
PharmaGABA
Super Carnosine Capsules
Taurine Capsules

BONE & JOINT HEALTH

ArthroMax™ with Theaflavins and AprèsFlex™
ArthroMax™ Advanced with UC-II® and
AprèsFlex™
Bone-Up™
Bone Restore
Bone Restore w/Vitamin K2
Bone Strength Formula w/KoAct™
Chondroitin Sulfate
Chondrox
Fast Acting Joint Formula
Glucosamine Chondroitin Capsules

BRAIN HEALTH

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
CDF Choline Capsules
Cognitex® with NeuroProtection Complex
Cognitex® with Pregnenolone &
NeuroProtection Complex
Cognitex® Basics
DMAE
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin with B5 and BHA
Lecithin Granules
Methylcobalamin Lozenges
Neuro-Mag™ Magnesium L-Threonate
Optimized Ashwagandha Extract
Phosphatidylserine Capsules
Rhodiola Extract
Super Ginkgo Extract
Vinpocetine

DIGESTIVE

Bifido GI Balance
Bromelain Powder
Carnosoothe w/PicroProtect
Digest RC™
Enhanced Super Digestive Enzymes
Extraordinary Enzymes
Life Flora™
Natural EsophaGuard
Pancreatin
Probiotic All-Flora®
Probiotic Anti-Aging
Probiotic Colon™
Regimint
Theralac Probiotics

DURK AND SANDY PRODUCTS

Blast™
Dual-C
Inner Power™
Memory Upgrade™

EYE CARE

Bilberry Extract
Blackcurrant Freeze Dried Extract
Brite Eyes III
Eye Pressure Support with Mirtogenol®
Overxcast Polarized Sunglasses
Solarshield Sunglasses
Super Zeaxanthin with Lutein &
Meso-Zeaxanthin Plus Astaxanthin

Super Zeaxanthin with Lutein &
Meso-Zeaxanthin and C3G
Vision Optimizer

FIBER

AppleWise Polyphenol
Fiber Food
Hi-Lignan® Nutri-Flax®
TruFiber®
WellBetX PGX® Soluble Fiber Blend

FOOD

Rich Rewards Spicy Cruciferous Vegetable Soup
Rich Rewards Cruciferous Vegetable Soup
Rich Rewards Lentil Soup
Rich Rewards Coffee

HAIR CARE

Dr. Proctor's Advanced Hair Formula
Dr. Proctor's Shampoo
Life Extension Shampoo and Conditioner
Super-Absorbable Tocotrienols

HEART HEALTH

AppleWise Polyphenol
Advanced Lipid Control
Aspirin (Enteric Coated)
Cardio Peak™ w/Standardized Hawthorn and Arjuna
Cho-Less™
D-Ribose Capsules
D-Ribose Powder
Endothelial Defense™ with
Full-Spectrum Pomegranate™
Fibrinogen Resist
Forskolin
Homocysteine Resist
Krill Healthy Joint Formula
Natural BP Management
Olive Leaf Vascular Support
Peak ATP® with GlycoCarn®
PhosphoOmega®
Policosanol
Pycnogenol® French Maritime Pine Bark Extract
Red Yeast Rice
Super Absorbable CoQ10™ with *d*-Limonene
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with Enhanced
Mitochondrial™ Support
Sytrinol™
Theaflavin Standardized Extract
TMG Powder
TMG Tablets

HERBAL/PHTO PRODUCTS

Artichoke Leaf Extract
Astaxanthin
Berry Complete
Blueberry Extract
Blueberry Extract w/Pomegranate
Butterbur Extract w/Standardized
Rosmarinic Acid
Calcium D-Glucarate
Cilantro Herbal Extract
Citrus Bioflavonoid
Enhanced Berry Complete with RZD™ Acai
Floradix® Iron & Herbs
Floravital® Iron & Herbs
Full-Spectrum Pomegranate™
Grapeseed Extract with Resveratrol &
Pterostilbene
Huperzine A
Kyolic® Garlic Formula 105
Kyolic® Reserve
Mega Green Tea Extract
Mega Green Tea Extract (Decaffeinated)
(also w/ CoffeeGenic™ Green Coffee Extract)
Mega Lycopene Extract
Nutrim
Optimized Ashwagandha Extract
Optimized Garlic
Pomegranate Extract
Pomegranate Juice Concentrate
ProGreens®
Pure-Gar™
Pycnogenol
Optimized Quercetin
Resveratrol with Synergistic Grape-Berry Actives
Rhodiola Extract

Rosmarinic Acid Extract
Silymarin
SODzyme™ with GliSODin®
Stevia Extract
Super Bio-Curcumin®
Super Ginkgo Extract
Triple Action Cruciferous Vegetable Extract
Venotone
Whole Grape Extract

HORMONES

Advanced Natural Sex for Women® 50+
Cordyceps CS-4
7-Keto® DHEA
DHEA
DHEA Complete
GH Pituitary Support Day Formula
GH Pituitary Support Night Formula
Melatonin
Melatonin Timed Release
Natural Estrogen with Pomegranate Extract
Pregnenolone
ProgestaCare for Women
Pure IGF
Super Miraforte with Standardized Lignans

IMMUNE ENHANCEMENT

AHCC® (Active Hexose Correlated Compound)
Black Cumin Seed Oil
Black Cumin Seed Oil w/Bio-Curcumin®
Buffered Vitamin C Powder
Echinacea
Enhanced Life Extension Whey Protein
i26 Hyperimmune Egg
Immune Protect with PARACTIN®
Lactoferrin
Maitake SX-Fraction
Norwegian Shark Liver Oil
Optimized Fucoidan w/Maritech® 926
Primal Defense™
ProBoost™ Thymic Protein A
Pure Gar™
Reishi Extract Mushroom Complex
Sambu® Guard
Thymic Immune Factors
Vitamin C with Dihydroquercetin
Zinc Lozenges with Vitamin C

INFLAMMATORY REACTIONS

Arthro-Immune Joint Support
ArthroMax™ with Theaflavins
Boswella
Boswella™ Topical Cream
Bromelain (Specially-coated)
DHA (Vegetarian Sourced)
Emulsified Norwegian Cod Liver Oil
Emulsified Super Twin EPA/DHA
Fast Acting Joint Formula
Ginger Force
Krill Oil
5-LOX Inhibitor w/AprèsFlex™
Mega EPA/DHA
Mega GLA with Sesame Lignans
MSM
Natural Relief 1222™ Cream
Omega-3 Whirl
Serrafazyme
SODzyme™ with GliSODin® and Wolfberry
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Tart Cherry
Udo's Choice Oil
Zyflamend® Tiny Caps®

LIVER HEALTH

Branch Chain Amino Acids
N-Acetyl Cysteine
Liver Force
Liver Efficiency Formula
Certified European Milk Thistle
Hepatopro
SAME
Silymarin

MINERALS

Biosil
Bone Restore
Bone Strength Formula w/KoAct®
Bone-Up™
Boron Capsules

Calcium Citrate with D3
Chromium Ultra
Copper
Dr. Strum's Intensive Bone Formula
Floradix® Iron & Herbs
Floravital® Iron & Herbs
Iodoral
Iron Protein Plus
Magnesium
Magnesium Citrate
Mineral Formula for Men
Mineral Formula for Women
Only Trace Minerals
Optimized Chromium w/Crominex® 3+
OptiZinc
Sea-Iodine™
Selenium
Se-Methyl L-Selenocysteine
Strontium
Vanadyl Sulfate
Zinc/Vitamin C Lozenges

MISCELLANEOUS

Blender
Blood Pressure Monitor Arm Cuff Medium
Cell Sensor Gauss Meter™
CR Way Edition Advanced Dietary Software
Empty Gelatin Capsules
The Capsule Filler Machine

MITOCHONDRIAL SUPPORT

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
Mitochondrial Basics w/BioPQQ™
Mitochondrial Energy Optimizer w/BioPQQ™
Optimized Carnitine with GlycoCarn®
Super Absorbable CoQ10™ with d-Limonene
Super Alpha Lipoic Acid with Biotin
Super R-Lipoic Acid
Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

MOOD RELIEF

Adrenal Energy Formula™
Bioactive Milk Peptides
L-Theanine
5 HTP
Enhanced Natural Sleep® w/ Melatonin
Enhanced Natural Sleep® w/o Melatonin
Natural Stress Relief
Stabilium® 200
SAmE
St. John's Wort Extract

MOUTH CARE

Advanced Oral Hygiene
Mist Oral III™ with CoQ10
Mouthwash w/Pomegranate
Toothpaste

MULTIVITAMIN

Children's Formula Life Extension Mix
Life Extension Booster
Life Extension Mix™ Capsules
Life Extension Mix™ Powder
Life Extension Mix™ Tablets
Life Extension Mix™ w/o Copper Capsules
Life Extension Mix™ w/o Copper Tablets
Life Extension Mix™ w/Extra Niacin
Life Extension Mix™ w/Extra Niacin w/o Copper
Life Extension Mix™ w/Stevia Powder
Life Extension Mix™ w/Stevia w/o Copper Powder
Life Extension One-Per-Day
Life Extension Two-Per-Day
Super Booster Softgels w/Advanced K2 Complex

PET CARE

Cat Mix
Dog Mix

PROSTATE & URINARY HEALTH

BetterWOMAN®
Optimized Cran-Max® with UTIRose™
5-LOXIN®
(Water-Soluble) Pumpkin Seed Extract
Super Saw Palmetto with Beta-Sitosterol
Super Saw Palmetto/Nettle Root Formula w/Beta-Sitosterol
Ultra Natural Prostate Formula

SKIN CARE

Advanced Under Eye Serum with Stem Cells
Amber Self MicroDermAbrasion
Anti-Aging Mask
Anti-Glycation Serum
Antioxidant Rejuvenating Foot Cream
Antioxidant Rejuvenating Foot Scrub
Antioxidant Rejuvenating Hand Cream
Antioxidant Rejuvenating Hand Scrub
Anti-Redness & Blemish Lotion
Bio-Collagen w/Patented UC-II®
Bioflavonoid Cream
Broccoli Sprout
Corrective Clearing Mask
DermaWhey
DNA Repair Cream
Dual-Action MicroDermAbrasion
Elastin Collagen Body Firming Lotion
Essential Plant Lipids Reparative Serum
Face Master® Platinum
Face Rejuvenating Antioxidant Cream
Enhanced FernBlock® with Sendara®
Fine Line-Less
Hair Suppress Formula
Healing Formula All-in-One Cream
Healing Mask
Hyaluronic Facial Moisturizer
Hydrating Anti-oxidant Face Mist
Hydroderm®
Lavilin Underarm Deodorant
Lifting & Tightening Complex
Lycopene Cream
Melatonin Cream
Mild Facial Cleanser
Neck Rejuvenating Antioxidant Cream
Peel Off Cleansing Mask
Pigment Correcting Cream
(Ultra) Rejuvenex®
Rejuvenex® Body Lotion
Rejuvenex® Factor
Rejuvenex® Factor Firming Serum
Rejuvenating Serum
Resveratrol Anti-Oxidant Serum
Skin Lightening Serum
Skin Restoring Phytoceramides w/Lipowheat™
Skin Stem Cell Serum
Stem Cell Cream w/Alpine Rose
Supercritical Omega 7™
Total Sun Protection Cream
Ultra Rejuvenex®
Ultra RejuveNight® w/o Progesterone
Ultra Lip Plumper
Ultra Wrinkle Relaxer
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Serum
Vitamin D Lotion
Vitamin E-ssential Cream
Vitamin K Healing Cream

SOY

Natural Estrogen w/Pomegranate
Soy Protein Concentrate
Super Absorbable Soy Isoflavones
Ultra Soy Extract

SPECIAL PURPOSE FORMULA

Anti-Alcohol Antioxidants w/HepatoProtection Complex
Benfotiamine w/Thiamine
Breast Health Formula
Butterbur Extract w/Standardized Rosmarinic Acid
Chlorella
Chlorophyllin w/Zinc
Green Coffee Extract CoffeeGenic™ (also w/Glucose control)
Coriolus Super Strength
CR Mimetic Longevity Formula
Cinsulin® w/InSea2® and Crominex® 3+
EDTA
European Leg Solution Diosmin 95
Fem Dophilus
Femmenessence MacaPause®
GlucoFit™
Hearos™ Ear Plugs
Ideal Bowel Support 299

Maitake SX-Fraction™
Migra-eeze™
Natural Female Support
Organic Total Body Cleanse
Pecta-Sol®
Potassium Iodide
PQQ Caps with BioPQQ™
PteroPure™
Prelox® Natural Sex for Men®
Pyridoxal 5' - Phosphate
Rosmarinic Acid Extract
Ultra Natural Prostate w/AprèsFlex™ and Standardized Lignans

SPORTS PERFORMANCE

Creatine Capsules
Creatine Powder
Enhanced Life Extension Protein
DMG (N, N-dimethylglycine)
Inosine
L-Glutamine Capsules
L-Glutamine Powder

VITAMINS

Ascorbic Acid Powder
Ascorbyl Palmitate Capsules
B1
B2
B12
Beta-Carotene
Biotin Capsules
Biotin Powder
Buffered Vitamin C Powder
Complete B Complex
Folic Acid + B12
Gamma E Tocopherol w/Sesame Lignans
Gamma E Tocopherol/Tocotrienols
Inositol Capsules
Inositol Powder
Mega Lycopene Extract
Methylcobalamin
MK-7
No-Flush Niacin
Optimized Folate
PABA Capsules
Super Ascorbate C Capsules
Super Ascorbate C Powder
Super K w/Advanced K2 Complex
Supercritical Omega 7™
Tocotrienols w/Sesame Lignans
Vitamin A Nutrisorb
Vitamin B3 (Niacin) Capsules
Vitamin B6
Vitamin B12 Tablets
Vitamin C
Vitamin D
Vitamin D3
Vitamin D3 w/Sea-Iodine™
Vitamins D and K w/Sea-Iodine™
Vitamin E
Vitamin K1

WEIGHT MANAGEMENT

Alli® Refill Pack
Advanced Anti-Adipocyte Formula w/AdipoStat & Integra Lean®
Anti-Adipocyte Formula w/AdipoStat
Calorie Control Weight Management™ Formula w/CoffeeGenic™ Green Coffee Extract
CoffeeGenic™ Weight Management™ with Green Coffee Extract
7-Keto DHEA
DHEA® Complete
Fucoxanthin Slim™
HCA
Integra-Lean® Irvingia
LuraLean® Caps Special Propolmannan Particle Size
Optimized Irvingia w/Phase 3™ Calorie Control Complex
Optimized Saffron with Satiereal®
Natural Appetite Control
Natural Glucose Absorption Control
Stevia Liquid Extract
Super CLA Blend w/Guarana and Sesame Lignans
Super CLA Blend w/Sesame Lignans
WellBetX PGX® Soluble Fiber Blend

Buyers Club Order Form

SUPER SALE SAVINGS ON ALL PRODUCTS
To order call: 1-954-766-8433 or 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
A					
00449	ACETYL-L-CARNITINE - 500 mg, 100 caps Buy 4 bottles, price each	\$34.00 30.00	\$25.50 22.50		
01525	ACETYL-L-CARNITINE ARGINATE - 100 veg. caps Buy 4 bottles, price each	59.00 50.99	44.25 38.24		
01628	ADRENAL ENERGY FORMULA™ - 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01308	ADVANCED LIPID CONTROL - 60 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01521	ADVANCED ORAL HYGIENE - 60 veg. mint lozenges Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00681	AHCC - 500 mg, 30 caps Buy 4 bottles, price each	59.98 53.33	44.99 40.00		
*46925	ALLI® REFILL PACK - 120 caps	69.95	58.00		
00457	ALPHA-LIPOIC ACID w/BIOTIN (SUPER) - 250 mg, 60 caps Buy 4 bottles, price each	37.00 32.00	27.75 24.00		
01440	ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO - 100 caps Buy 4 bottles, price each	26.00 23.00	19.50 17.25		
01510	ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT - 60 veg. caps Buy 4 bottles, price each	35.00 32.00	26.25 24.00		
01509	ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT & INTEGRA LEAN®(ADVANCED) - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01625	APPLEWISE POLYPHENOL EXTRACT - 600 mg, 30 veg. caps Buy 4 bottles, price each	21.00 19.00	15.75 14.25		
01039	ARGININE/ORNITHINE - 500/250, 100 caps Buy 4 bottles, price each	16.00 14.50	12.00 10.88		
00038	ARGININE/ORNITHINE POWDER - 150 grams Buy 4 bottles, price each	22.95 19.00	17.21 14.25		
01624	(L)-ARGININE CAPS - 700 mg, 200 veg. caps Buy 4 bottles, price each	26.50 23.25	19.88 17.44		
01025	(L)-ARGININE FREE-FORM POWDER - 100 grams Buy 4 bottles, price each	15.98 14.31	11.99 10.73		
01617	ARTHROMAX™ w/THEAFLAVINS & APRESFLEX™ - 120 veg. caps Buy 4 bottles, price each	44.00 40.00	33.00 30.00		
01618	ARTHROMAX™ ADVANCED w/UC-II® & APRESFLEX™ - 60 caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01404	ARTHRO-IMMUNE JOINT SUPPORT - 60 veg. caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
00919	ARTICHOKE LEAF EXTRACT - 500 mg, 180 veg. caps Buy 4 bottles, price each	28.00 25.38	21.00 19.04		
00080	ASCORBIC ACID POWDER - 454 grams Buy 4 bottles, price each	38.00 34.93	28.50 26.20		
00082	ASCORBYL PALMITATE - 500 mg, 100 caps Buy 4 bottles, price each	22.50 20.00	16.88 15.00		
00888	ASHWAGANDHA EXTRACT (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	10.00 9.00	7.50 6.75		
01066	ASPIRIN - 81 mg, 300 enteric coated tablets Buy 4 bottles, price each	6.00 5.33	4.50 4.00		
00708	ASTAXANTHIN - 2 mg, 30 softgels	10.25	7.69		

SUB-TOTAL OF COLUMN 1

No.		Retail Each	Member Each	Qty	Total
B					
00920	BENFOTIAMINE w/ THIAMINE - 100 mg, 120 veg. caps Buy 4 bottles, price each	\$19.95 18.60	\$14.96 13.95		
00925	BENFOTIAMINE (MEGA) - 250 mg, 120 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01206	BERRY COMPLETE - 30 veg. caps Buy 4 bottles, price each	21.00 18.67	15.75 14.00		
01406	BERRY COMPLETE w/RZD™ ACAI (ENHANCED) - 60 veg. caps Buy 4 bottles, price each	29.00 26.00	21.75 19.50		
00664	BETA-CAROTENE - 25,000 IU, 100 softgels Buy 4 bottles, price each	11.25 10.13	8.44 7.60		
00653	BETTERWOMAN® - 40 caps Buy 4 bottles, price each	40.00 38.00	30.00 28.50		
01622	BIFIDO GI BALANCE - 60 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01073	BILBERRY EXTRACT - 100 mg, 100 veg. caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
01512	BIOACTIVE MILK PEPTIDES - 30 caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01631	BIO-COLLAGEN w/PATENTED UC-II® - 60 caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
*01006	BIOSIL™ - 5 mg, 30 veg. caps	18.95	15.16		
*01007	BIOSIL™ - 1 fl oz	29.99	23.99		
00102	BIOTIN - 600 mcg, 100 caps Buy 4 bottles, price each	7.50 6.50	5.63 4.88		
00145	BIOTIN POWDER - 30 grams Buy 4 bottles, price each	12.50 11.00	9.38 8.25		
01709	BLACK CUMIN SEED OIL - 60 softgels Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
01710	BLACK CUMIN SEED OIL w/BIO-CURCUMIN® - 60 softgels Buy 4 bottles, price each	32.00 30.00	24.00 22.50		
01008	BLAST™ - 600 grams of powder	26.95	20.21		
51526	BLENDER - 28 oz bottle	8.99	6.74		
70000	BLOOD PRESSURE MONITOR - ARM CUFF (medium)	99.95	64.97		
70004	BLOOD PRESSURE MONITOR - WRIST (travel size)	69.95	52.46		
01214	BLUEBERRY EXTRACT - 60 veg. caps Buy 4 bottles, price each	22.50 20.00	16.88 15.00		
01438	BLUEBERRY EXTRACT w/ POMEGRANATE - 60 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) - 300 veg. caps Buy 4 bottles, price each	56.00 50.00	42.00 37.50		
01611	BONE RESTORE - 150 caps Buy 4 bottles, price each	22.50 19.50	16.88 14.63		
01711	BONE RESTORE w/VITAMIN K2 - 150 caps Buy 4 bottles, price each	26.00 23.00	19.50 17.25		
01211	BONE STRENGTH FORMULA w/KOACT® - 120 caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
00313	BONE-UP® - 240 caps Buy 4 bottles, price each	24.95 22.50	18.71 16.88		
01379	BOOSTER - 60 softgels Buy 4 bottles, price each	48.00 44.00	36.00 33.00		
01680	BOOSTER w/ADVANCED K2 COMPLEX (SUPER) - 60 softgels Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
00621	BORON - 3 mg, 100 caps Buy 4 bottles, price each	5.95 5.25	4.46 3.94		

SUB-TOTAL OF COLUMN 2

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

OFFER ENDS JANUARY 31, 2013
To order online visit www.LifeExtension.com/SuperSale

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
00202	BOSWELLA - 100 caps Buy 4 bottles, price each	\$38.00 30.00	\$28.50 22.50		
00258	BOSWELLA TOPICAL CREAM - 4 oz Buy 4 jars, price each	15.00 13.00	11.25 9.75		
01253	BRANCHED CHAIN AMINO ACIDS - 90 veg. caps Buy 4 bottles, price each	19.50 17.00	14.63 12.75		
00999	BREAST HEALTH FORMULA - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
00893	BRITE EYES III - 2 vials, 5 ml each Buy 4 boxes, price each	34.00 32.00	25.50 24.00		
00136	BROMELAIN POWDER - 100 grams Buy 4 bottles, price each	21.00 18.75	15.75 14.06		
01203	BROMELAIN (SPECIALLY-COATED) - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	21.00 19.00	15.75 14.25		
00884	BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
C					
01015	CALCIUM CITRATE w/VITAMIN D - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
01651	CALCIUM D-GLUCARATE - 200 mg, 60 veg caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
01693	CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC™ GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 414 grams powder Buy 4 jars, price each Buy 8 jars, price each	60.00 54.00 50.00	45.00 40.50 37.50		
01694	CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC™ GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 60 individual packs Buy 4 boxes, price each Buy 8 boxes, price each	64.00 60.00 56.00	48.00 45.00 42.00		
00118	CAPSULE FILLER MACHINE FOR "00" CAPSULES Buy 4 machines, price each	18.95 18.25	14.21 13.69		
00613	CAPSULE FILLER MACHINE FOR "0" CAPSULES Buy 4 machines, price each	18.95 18.25	14.21 13.69		
01700	CARDIO PEAK™ w/STANDARDIZED HAWTHORN & ARJUNA - 120 veg. caps Buy 4 machines, price each	36.00 32.00	27.00 24.00		
00916	CARNITINE w/GLYCOCARN® (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01532	L-CARNITINE - 500 mg, 30 veg. caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01258	CARNOSOOTHE w/PICROPROTECT™ - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01687	CARNOSINE (SUPER) - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	CAT MIX - 100 grams powder Buy 4 jars, price each	15.00 12.00	11.25 9.00		
00390	CDP CHOLINE CAPS - 250 mg, 60 caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
00998	CELL SENSOR-EMF DETECTION METER	39.95	29.95		
01370	CHILDREN'S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00550	CHLORELLA - 500 mg, 200 tablets Buy 4 bottles, price each	23.50 21.00	17.63 15.75		
01571	CHLOROPHYLLIN w/ZINC - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	CHO-LESS™ - 90 capsules	32.50	24.38		

SUB-TOTAL OF COLUMN 3

No.		Retail Each	Member Each	Qty	Total
00541	CHOLINE CHLORIDE - 16 oz liquid Buy 4 bottles, price each	\$12.95 12.17	\$9.71 9.13		
00364	CHONDROITIN SULFATE CONCENTRATE - 400 mg, 60 tablets Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01477	CHROMIUM ULTRA - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	CHROMIUM W/CROMINEX® 3+ (OPTIMIZED) - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
00551	CILANTRO HERBAL EXTRACT - 1 oz Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01503	CINSULIN® W/INSEA™ AND CROMINEX® 3+ - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00069	CITRUS BIOFLAVONOID - 100 caps Buy 4 bottles, price each	17.63 16.40	13.22 12.30		
00818	CLA BLEND W/SESAME LIGNANS (SUPER) - 1000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	CLA BLEND w/GUARANA & SESAME (SUPER) -1000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
00050	COD LIVER OIL (EMULSIFIED) - 12 fl oz (355 ml) Buy 4 bottles, price each	15.59 13.10	11.69 9.83		
00293	COD LIVER OIL (EMULSIFIED) - 100 softgels (Emulsified) Buy 4 bottles, price each	10.97 10.34	8.23 7.76		
01707	COFFEEGENIC™ WEIGHT MANAGEMENT™ w/GREEN COFFEE EXTRACT - 90 veg. caps Buy 4 bottles, price each	48.00 42.00	36.00 31.50		
01697	COGNITEX® w/PREGNENOLONE & NEUROPROTECTION COMPLEX - 90 softgels Buy 4 bottles, price each Buy 12 bottles, price each	74.00 66.60 64.00	55.50 49.95 48.00		
01696	COGNITEX® w/o PREGNENOLONE w/NEUROPROTECTION COMPLEX - 90 softgels Buy 4 bottles, price each Buy 12 bottles, price each	72.00 64.00 62.00	54.00 48.00 46.50		
01421	COGNITEX® BASICS - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
00110	COMPLETE B-COMPLEX - 180 caps Buy 4 bottles, price each	21.50 18.00	16.13 13.50		
00119	COPPER CAPSULES - 2 mg, 100 caps Buy 4 bottles, price each	9.91 8.96	7.43 6.72		
00949	COQ10™ w/ #LIMONENE (SUPER ABSORBABLE) - 50 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	25.00 22.00 20.00	18.75 16.50 15.00		
00950	COQ10™ w/ #LIMONENE (SUPER ABSORBABLE) - 100 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	66.00 60.00 56.00	49.50 45.00 42.00		
01226	COQ10 (SUPER UBIQUINOL) - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	56.00 52.00 48.00	42.00 39.00 36.00		
01426	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
01425	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 53.00 50.00	43.50 39.75 37.50		
01427	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 30 softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		

SUB-TOTAL OF COLUMN 4

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

JANUARY 2013

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

Buyers Club Order Form

SUPER SALE SAVINGS ON ALL PRODUCTS
To order call: 1-954-766-8433 or 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
C CONTINUED					
01431	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)-200 mg, 30 softgels	\$62.00	\$46.50		
	Buy 4 bottles, price each	56.00	42.00		
	Buy 10 bottles, price each	52.00	39.00		
01397	CORDYCEPS CS-4™ - 60 veg. caps	29.99	22.49		
01053	CORIOLUS SUPER STRENGTH - 600 mg, 150 veg. caps	99.95	74.96		
80140	COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - .33 oz	49.00	36.75		
	Buy 2 bottles, price each	42.00	31.50		
80139	COSMESIS AMBER SELF MICRODERMABRASION - 2 oz	49.00	36.75		
	Buy 2 jars, price each	42.00	31.50		
80118	COSMESIS ANTI-AGING MASK - 2 oz	72.00	54.00		
	Buy 2 bottles, price each	63.36	47.52		
80134	COSMESIS ANTI-GLYCATION SERUM - 1 oz W/BLEUBERRY & POMEGRANATE EXTRACTS	33.00	24.75		
	Buy 2 bottles, price each	31.35	23.51		
80133	COSMESIS ANTIOXIDANT FACIAL MIST - 2 oz	32.00	24.00		
	Buy 2 bottles, price each	30.40	22.80		
80127	COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz	45.00	33.75		
	Buy 2 jars, price each	42.80	32.10		
80128	COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz	59.00	44.25		
	Buy 2 jars, price each	51.92	38.94		
80117	COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz	64.00	48.00		
	Buy 2 jars, price each	57.49	43.12		
80121	COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz	58.00	43.50		
	Buy 2 jars, price each	51.04	38.28		
80105	COSMESIS ANTI-REDNESS & BLEMISH LOTION - 1 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80147	COSMESIS BIOFLAVONOID CREAM - 1 oz jar	46.00	34.50		
	Buy 2 jars, price each	39.00	29.25		
80144	COSMESIS BROCCOLI SPROUT CREAM - 1 oz	46.00	34.50		
	Buy 2 jars, price each	39.00	29.25		
80120	COSMESIS CORRECTIVE CLEARING MASK - 2 oz	64.50	48.38		
	Buy 2 jars, price each	56.76	42.57		
80141	COSMESIS DNA REPAIR CREAM - 1 oz jar	49.00	36.75		
	Buy 2 jars, price each	42.00	31.50		
80108	COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz	74.95	56.21		
	Buy 2 bottles, price each	65.95	49.46		
80123	COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz	69.50	52.13		
	Buy 2 jars, price each	61.16	45.87		
80107	COSMESIS FINE LINE-LESS - 1 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80131	COSMESIS HAIR SUPPRESS FORMULA - 4 oz	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80137	COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz	53.00	39.75		
	Buy 2 jars, price each	45.43	34.07		
80115	COSMESIS HEALING MASK - 2 oz	64.50	48.38		
	Buy 2 bottles, price each	56.76	42.57		
80102	COSMESIS HEALING VITAMIN K CREAM - 1 oz	79.50	59.63		
	Buy 2 bottles, price each	69.96	52.47		
80109	COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80110	COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80138	COSMESIS HYDRATING ANTI-OXIDANT FACE MIST - 4 oz	39.95	29.96		
	Buy 2 bottles, price each	38.00	28.50		

SUB-TOTAL OF COLUMN 5

No.		Retail Each	Member Each	Qty	Total
80103	COSMESIS LIFTING & TIGHTENING COMPLEX - 1 oz	\$74.50	\$55.88		
	Buy 2 tubes, price each	65.56	49.17		
80146	COSMESIS LYCOPENE CREAM - 1 oz jar	28.00	21.00		
	Buy 2 jars, price each	25.40	19.05		
80135	COSMESIS MELATONIN CREAM - 1 oz	33.00	24.75		
	Buy 2 jars, price each	27.10	20.33		
80114	COSMESIS MILD FACIAL CLEANSER - 8 oz	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80122	COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz	64.00	48.00		
	Buy 2 jars, price each	56.32	42.24		
80111	COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz	74.00	55.50		
	Buy 2 bottles, price each	65.12	48.84		
80106	COSMESIS REJUVENATING SERUM - 1 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80142	COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz	46.00	34.50		
	Buy 2 bottles, price each	39.00	29.25		
80112	COSMESIS SKIN LIGHTENING SERUM - 1/2 oz	85.00	63.75		
	Buy 2 bottles, price each	74.80	56.10		
80130	COSMESIS SKIN STEM CELL SERUM - 1 oz	74.00	55.50		
	Buy 2 bottles, price each	69.00	51.75		
80143	COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar	66.00	49.50		
	Buy 2 jars, price each	58.00	43.50		
80116	COSMESIS ULTRA LIP PLUMPER - 1/3 oz	64.00	48.00		
	Buy 2 bottles, price each	56.32	42.24		
80101	COSMESIS ULTRA WRINKLE RELAXER - 1 oz	89.95	67.46		
	Buy 2 bottles, price each	79.76	59.82		
80113	COSMESIS UNDER EYE REFINING SERUM - 1/2 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80104	COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80129	COSMESIS VITAMIN C SERUM - 1 oz	85.00	63.75		
	Buy 2 bottles, price each	74.80	56.10		
80136	COSMESIS VITAMIN D LOTION - 4 oz	36.00	27.00		
	Buy 2 bottles, price each	33.66	25.25		
80145	COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz	28.00	21.00		
	Buy 2 jars, price each	26.00	19.50		
00862	CRAN-MAX® - 500 mg, 60 veg. caps	17.50	13.13		
	Buy 4 bottles, price each	15.00	11.25		
01424	CRAN-MAX® with UTIROSE™ (OPTIMIZED) - 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00609	CREATINE CAPSULES - 120 caps	10.95	8.21		
	Buy 4 bottles, price each	9.25	6.94		
00610	CREATINE POWDER - 500 grams	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01646	CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla)	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01429	CR MIMETIC LONGEVITY FORMULA - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
*33840	CRWAY GREAT GLUCOSE CONTROL CD	98.00	82.00		
**CRWAY	CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE	195.00	195.00		
00407	CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		

SUB-TOTAL OF COLUMN 6

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

OFFER ENDS JANUARY 31, 2013
To order online visit www.LifeExtension.com/SuperSale

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
D					
01313	DERMAWHEY - 400 mg, 60 caps Buy 4 bottles, price each	\$65.00 59.00	\$48.75 44.25		
00658	7-KETO® DHEA METABOLITE - 25 mg, 100 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01479	7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01640	DHA (VEGETARIAN SOURCED) - 200 mg, 30 veg. softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00607	DHEA - 25 mg, 100 tablets (dissolve in mouth) Buy 4 bottles, price each	14.00 11.75	10.50 8.81		
01478	DHEA COMPLETE - 60 veg. caps Buy 4 bottles, price each	48.00 43.20	36.00 32.40		
00335	DHEA - 25 mg, 100 caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00454	DHEA - 15 mg, 100 caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
00882	DHEA - 50 mg, 60 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
00883	DHEA - 100 mg, 60 caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01358	DIGEST RC - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
01671	D,L-PHENYLALANINE CAPSULES - 500 mg, 100 veg. caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
00257	DMAE BITARTRATE - 150 mg, 200 caps Buy 4 bottles, price each	14.00 10.50	10.50 7.88		
00059	DMG - 125 mg, 60 tablets Buy 4 boxes, price each	22.80 21.00	17.10 15.75		
01570	DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
00544	DOG MIX - 100 grams powder Buy 4 jars, price each	19.50 16.00	14.63 12.00		
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
00240	DUAL-C - 90 caps Buy 4 bottles, price each	12.00 10.50	9.00 7.88		
E					
01528	ECHINACEA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01395	EDTA - 500 mg, 60 caps	9.98	7.49		
01321	ELASTIN & COLLAGEN BODY FIRING LOTION - 8 fl. oz.	10.00	7.50		
01498	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels Buy 4 bottles, price each	56.00 52.00	42.00 39.00		
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
00625	EPA/DHA (MEGA) - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01706	EXTRAORDINARY ENZYMES - 60 caps Buy 4 bottles, price each	26.00 24.00	19.50 18.00		

SUB-TOTAL OF COLUMN 7

No.		Retail Each	Member Each	Qty	Total
01514	EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps Buy 4 bottles, price each	\$38.00 34.00	\$28.50 25.50		
F					
01054	FACE MASTER® PLATINUM	\$199.00	\$199.00		
00965	FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
20053	FEM DOPHILUS® - 30 caps	25.95	19.46		
20055	FEM DOPHILUS® - 60 caps	39.95	29.96		
01064	FEMMENESSENCE MACAPAUSE® - 120 veg. caps	34.99	26.24		
01311	FERNBLOCK® w/SENDARA®(ENHANCED) - 30 veg. caps Buy 4 bottles, price each	39.00 35.00	29.25 26.25		
00229	FIBER FOOD CAPS - 200 caps Buy 4 bottles, price each Buy 10 bottles, price each	15.00 12.50 11.90	11.25 9.38 8.93		
00718	FIBRINOGEN RESIST™ - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
00873	FLAXSEED POWDER (HI-LIGNAN® NUTRI-FLAX®) - 16 oz powder	9.95	7.46		
01384	FLORADIX® IRON & HERBS - 17 fl. oz	43.99	35.19		
01382	FLORAVITAL® IRON & HERBS - 17 fl. oz	43.99	35.19		
01439	FOLATE (OPTIMIZED) (L-METHYLFOLATE) 1000 mcg - 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01641	FOLIC ACID + B12 CAPSULES - 200 veg. caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
00300	FORSKOLIN - 10 mg, 60 caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
01513	FUCOIDAN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
00993	FUCOXANTHIN-SLIM™ - 90 softgels Buy 4 bottles, price each	44.00 39.00	33.00 29.25		
G					
00127	GABA POWDER - 100 grams Buy 4 bottles, price each	\$23.75 22.50	\$17.81 16.88		
00559	GAMMA E TOCOPHEROL/TOCOTRIENOLS - 60 softgels Buy 4 bottles, price each	42.00 37.00	31.50 27.75		
00759	GAMMA E TOCOPHEROL w/SESAME LIGNANS - 60 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01394	(OPTIMIZED) GARLIC - 200 veg. caps Buy 4 bottles, price each	24.95 21.00	18.71 15.75		
00117	GELATIN CAPSULES - 1000 empty caps size "00" Buy 4 bags, price each	19.00 18.00	14.25 13.50		
01301	GH PITUITARY SUPPORT DAY FORMULA - 120 vegetarian tabs Buy 4 bottles, price each	48.00 44.00	36.00 33.00		
01302	GH PITUITARY SUPPORT NIGHT FORMULA - 120 veg. caps Buy 4 bottles, price each	25.00 22.50	18.75 16.88		
01228	GINGER FORCE - 60 softgels	29.95	22.46		
00778	GINKGO BILOBA CERTIFIED EXTRACT™ - 120 mg, 365 caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
00504	GINKGO EXTRACT (SUPER) - 120 mg, 100 caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
01032	(PANAX RED) GINSENG - 60 veg. caps	29.99	22.49		
00756	GLA WITH SESAME LIGNANS (MEGA) - 60 softgels Buy 4 bottles, price each	19.50 18.00	14.63 13.50		
00345	(L) GLUTAMINE CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00141	(L)-GLUTAMINE POWDER - 100 grams Buy 4 bottles, price each	22.00 20.00	16.50 15.00		

SUB-TOTAL OF COLUMN 8

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

JANUARY 2013

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

Buyers Club Order Form

SUPER SALE SAVINGS ON ALL PRODUCTS
To order call: 1-954-766-8433 or 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
00522	GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps Buy 4 bottles, price each	\$38.00 32.00	\$28.50 24.00		
00512	GLUCOFIT™ - 100 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00113	GLUTATHIONE, CYSTEINE & C - 750 mg, 100 caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00314	L-GLUTATHIONE (MEGA) - 250 mg, 60 caps Buy 4 bottles, price each	39.64 35.68	29.73 26.76		
00795	GLYCINE - 1000 mg, 100 caps Buy 4 bottles, price each	12.00 10.80	9.00 8.10		
00128	GLYCINE POWDER - 300 grams Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01091	GRAPE EXTRACT w/RESVERATROL (WHOLE) - 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01411	GRAPE SEED EXTRACT w/RESVERATROL & PTEROSTILBENE - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01604	GREEN COFFEE EXTRACT COFFEEGENIC™ - 200 mg, 90 veg. caps Buy 4 bottles, price each	25.00 22.00	18.75 16.50		
01620	GREEN COFFEE EXTRACT COFFEEGENIC™ - 400 mg, 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00953	GREEN TEA EXTRACT (MEGA) - lightly caffeinated - 100 veg. caps Buy 4 bottles, price each	28.00 26.50	21.00 19.88		
00954	GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps Buy 4 bottles, price each	28.00 26.50	21.00 19.88		

H

01074	5 HTP - 100 mg, 60 caps	\$27.95	\$20.96		
00010	HAIR CONDITIONER - 16 oz Buy 4 bottles, price each	6.00 4.50	4.50 3.38		
00230	HCA - 90 caps Buy 4 bottles, price each	18.00 15.50	13.50 11.63		
01629	HEAROS™ EAR PLUGS - 1 pack - regular size	14.00	10.50		
01635	HEAROS™ EAR PLUGS - 1 pack - small size	14.00	10.50		
01393	HEPATOPRO - 900 mg, 60 softgels Buy 4 bottles, price each	50.00 46.00	37.50 34.50		
01435	HOMOCYSTEINE RESIST - 100 caps Buy 4 bottles, price each	24.00 21.60	18.00 16.20		
01527	HUPERZINE A - 200 mcg, 60 veg caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00661	HYDRODERM® - 1 oz Buy 2 bottles, price each	79.95 65.33	59.96 49.00		

I

*01060	i26® HYPERIMMUNE EGG - 140 grams powder	\$49.99	\$42.00		
*01319	i26® HYPERIMMUNE EGG - 135 capsules	31.99	25.59		
*01318	i26® HYPERIMMUNE EGG CHEWABLES - (vanilla) 45 tablets	31.99	25.59		
01065	IDEAL BOWEL SUPPORT 299V - 30 veg. caps	21.95	16.46		
00955	IMMUNE PROTECT W/PARACTIN® - 30 veg. caps Buy 4 bottles, price each	29.50 26.55	22.13 19.91		
01049	INNERPOWER™ - 555 grams powder	42.00	31.50		
00155	INOSINE - 500 mg, 60 caps Buy 4 bottles, price each	22.95 21.00	17.21 15.75		
00410	INOSITOL CAPSULES - 1000 mg, 360 veg. caps Buy 4 bottles, price each	48.00 43.75	36.00 32.81		
00108	INOSITOL POWDER - 100 grams Buy 4 bottles, price each	18.00 16.88	13.50 12.66		

SUB-TOTAL OF COLUMN 9

No.		Retail Each	Member Each	Qty	Total
01292	INTEGRA-LEAN® IRVINGIA - 150 mg, 60 veg. caps Buy 4 bottles, price each	\$28.00 24.00	\$21.00 18.00		
01002	IODORAL® - 180 tabs	50.00	37.50		
01677	IRON PROTEIN PLUS - 300 mg, 100 veg. caps Buy 4 bottles, price each	28.00 26.00	21.00 19.50		
01492	IRVINGIA W/PHASE 3™ - 120 veg. caps CALORIE CONTROL COMPLEX (OPTIMIZED) Buy 4 bottles, price each	56.00 48.00	42.00 36.00		

J, K

00056	JARRO-DOPHILUS EPS™ - 60 veg. caps	\$21.95	\$16.46		
01387	JARRO-DOPHILUS ORAL PROBIOTIC GUM - Pom-Berry flavor, 8 pieces	4.95	3.71		
01388	JARRO-DOPHILUS ORAL PROBIOTIC LOZENGE - Pom-Berry flavor, 8 pieces	4.95	3.71		
01724	K w/ADVANCED K2 COMPLEX (SUPER) - 90 softgels Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01600	KRILL HEALTHY JOINT FORMULA - 30 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01050	(NKO) KRILL OIL - 60 softgels	33.95	25.46		
00316	KYOLIC® GARLIC FORMULA 102 - 200 caps Buy 4 bottles, price each	23.95 20.50	17.96 15.38		
00214	KYOLIC® GARLIC FORMULA 105 - 200 caps Buy 4 bottles, price each	22.95 18.25	17.21 13.69		
00789	KYOLIC® RESERVE - 600 mg, 120 caps Buy 4 bottles, price each	24.75 21.45	18.56 16.09		

L

01681	LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 veg. caps Buy 4 bottles, price each	\$48.00 44.00	\$36.00 33.00		
00017	LAVILIN UNDERARM DEODORANT - 12.5 grams cream Buy 4 jars, price each	16.99 15.75	12.74 11.81		
00020	LECITHIN - 16 oz. granules Buy 4 jars, price each	15.00 12.50	11.25 9.38		
01755	LIFE EXTENSION MIX™ - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01757	LIFE EXTENSION MIX™ W/EXTRA NIACIN - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01754	LIFE EXTENSION MIX™ - 490 caps Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01756	LIFE EXTENSION MIX™ POWDER - 14.81 oz Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
01765	LIFE EXTENSION MIX™ - 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01767	LIFE EXTENSION MIX™ W/EXTRA NIACIN 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01764	LIFE EXTENSION MIX™ - 490 caps w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01766	LIFE EXTENSION MIX™ POWDER - 14.81 oz w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		

SUB-TOTAL OF COLUMN 10

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

OFFER ENDS JANUARY 31, 2013
To order online visit www.LifeExtension.com/SuperSale

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
00263	LIFE FLORA™ - 300 mg, 120 caps Buy 4 bottles, price each	\$20.50 18.75	\$15.38 14.06		
01608	LIVER EFFICIENCY FORMULA - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01227	LIVER FORCE - 60 veg. caps	34.95	26.21		
01639	5-LOX INHIBITOR W/APRESFLEX™ - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01678	L-LYSINE - 620 mg, 100 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
00129	L-LYSINE POWDER - 300 grams Buy 4 bottles, price each	16.00 13.75	12.00 10.31		
01470	LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE - 120 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00455	LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels Buy 4 bottles, price each	35.00 30.00	26.25 22.50		
M					
01369	MAGNESIUM CAPS - 500 mg, 100 veg. caps Buy 4 bottles, price each	\$10.00 9.00	\$7.50 6.75		
01682	MAGNESIUM CITRATE - 160 mg, 100 veg. caps Buy 4 bottles, price each	9.00 7.50	6.75 5.63		
00704	MAITAKE™ SX-FRACTION - 90 veg. tablets	49.95	37.46		
00547	MELATONIN - 300 mcg, 100 caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		
01083	MELATONIN - 500 mcg, 200 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00329	MELATONIN - 1 mg, 60 caps Buy 4 bottles, price each	5.00 4.63	3.75 3.47		
00330	MELATONIN - 3 mg, 60 caps Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01086	MELATONIN - 3 mg, 60 time-release veg. caps Buy 4 bottles, price each	10.50 9.38	7.88 7.04		
00331	MELATONIN - 10 mg, 60 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00332	MELATONIN - 3 mg, 60 lozenges Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01087	MELATONIN TIME RELEASE - 300 mcg, 100 veg. caps Buy 4 bottles, price each	6.25 5.63	4.69 4.22		
01088	MELATONIN TIME RELEASE - 750 mcg, 60 veg. caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		
01009	MEMORY UPGRADE™ - 600 grams powder	26.95	20.21		
01536	METHYLCOBALAMIN - 1 mg, 60 lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
01537	METHYLCOBALAMIN - 5 mg, 60 lozenges (vanilla) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 25.00 23.00	24.00 18.75 17.25		
00709	MIGRA-EZZE™ (BUTTERBUR) - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		
01522	MILK THISTLE (CERTIFIED EUROPEAN) - 750 mg, 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
01517	MILK THISTLE (CERTIFIED EUROPEAN) - 120 veg. caps Buy 4 bottles, price each	52.00 48.00	39.00 36.00		

SUB-TOTAL OF COLUMN 11

No.		Retail Each	Member Each	Qty	Total
01673	MINERAL FORMULA FOR MEN - 100 veg. caps Buy 4 bottles, price each Buy 12 bottles, price each	\$15.00 12.50 10.83	\$11.25 9.38 8.13		
01539	MINERAL FORMULA FOR WOMEN - 100 veg. caps Buy 4 bottles, price each Buy 12 bottles, price each	15.00 12.50 10.83	11.25 9.38 8.13		
01698	MIRAFORTE w/STANDARDIZED LIGNANS (SUPER) - 120 caps Buy 4 bottles, price each	62.00 56.00	46.50 42.00		
01569	MITOCHONDRIAL BASICS w/BIOPQQ™ - 30 caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
01568	MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ™ - 120 caps Buy 4 bottles, price each	94.00 84.00	70.50 63.00		
00803	MIST ORAL III w/COQ10 - 2 fl oz Buy 4 bottles, price each	28.00 25.33	21.00 19.00		
00065	MK-7 - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01279	MOUTHWASH W/POMEGRANATE - 16 oz Buy 4 bottles, price each	18.50 17.00	13.88 12.75		
00451	MSM (METHYLSULFONYLMETHANE) - 1000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		
N					
01534	N-ACETYL-L-CYSTEINE - 600 mg, 60 veg. caps Buy 4 bottles, price each	\$14.00 13.50	\$10.50 10.13		
00066	NATOKINASE - 60 softgels	25.50	19.13		
00891	NATURAL APPETITE CONTROL - 90 softgels Buy 4 bottles, price each	28.00 25.20	21.00 18.90		
00984	NATURAL BP MANAGEMENT - 60 tablets Buy 4 bottles, price each	42.00 37.80	31.50 28.35		
00913	NATURAL ESOPHAGUARD - 10 softgels Buy 2 boxes, price each	19.95 19.00	14.96 14.25		
00712	NATURAL ESTROGEN w/POMEGRANATE EXTRACT - 60 caplets Buy 4 bottles, price each	38.00 33.00	28.50 24.75		
01221	NATURAL FEMALE SUPPORT - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
00698	NATURAL RELIEF 1222™ - 2 oz Buy 4 tubes, price each	28.00 25.00	21.00 18.75		
01626	NATURAL SEX FOR WOMEN® 50+ (ADVANCED) - 90 veg. caps Buy 4 bottles, price each	59.00 45.33	44.25 34.00		
01084	NATURAL SLEEP® - 3 mg, 60 veg. caps Buy 4 bottles, price each	12.99 10.00	9.74 7.50		
01507	NATURAL SLEEP® (ENHANCED) W/ MELATONIN - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	NATURAL SLEEP® (ENHANCED) W/O MELATONIN - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01085	NATURAL SLEEP MELATONIN® - 5 mg, 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00987	NATURAL STRESS RELIEF - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		

SUB-TOTAL OF COLUMN 12

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

JANUARY 2013

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

Buyers Club Order Form

SUPER SALE SAVINGS ON ALL PRODUCTS
To order call: 1-954-766-8433 or 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
N CONTINUED					
01603	NEURO-MAG™ MAGNESIUM L-THREONATE - 90 veg. caps Buy 4 bottles, price each	\$40.00 36.00	\$30.00 27.00		
01602	NEURO-MAG™ L-THREONATE W/CALCIUM & VITAMIN D 205 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00373	NO-FLUSH NIACIN - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01035	NUTRIM - 225 grams powder	25.95	19.46		
O					
01623	OLIVE LEAF VASCULAR SUPPORT - 500 mg, 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01483	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01482	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 24.90	24.00 21.00 18.68		
01484	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	34.00 31.00 28.00	25.50 23.25 21.00		
01619	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 24.90	24.00 21.00 18.68		
01632	OMEGA-3 LEMON WHIRL - 16 oz bottle Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01633	OMEGA-3 TROPICAL WHIRL - 16 oz bottle Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01701	ONE-PER-DAY - 60 tablets Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01328	ONLY TRACE MINERALS - 90 caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
00915	OPTIZINC® - 30 mg, 90 veg. caps Buy 4 bottles, price each	5.95 5.00	4.46 3.75		
01070	ORGANIC TOTAL BODY CLEANSE™ - 14-day supply	34.99	26.24		
P					
00107	PABA CAPS - 500 mg, 100 caps Buy 4 bottles, price each	\$15.42 13.59	\$11.57 10.19		
00073	PANCREATIN - 500 mg, 50 caps Buy 4 bottles, price each	13.22 12.12	9.92 9.09		
01323	PEAK ATP® WITH GLYCOCARIN® - 60 veg. caps Buy 4 bottles, price each	59.00 56.00	44.25 42.00		
00342	PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder Buy 4 jars, price each	99.95 95.70	74.96 71.78		
01080	PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps	69.95	52.46		
00673	PGX™ SOLUBLE FIBER BLEND (WELLBETX®) -180 caps	34.95	26.21		
00865	PHARMAGABA™ - 60 chewable tablets Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
00368	PHOSPHATIDYLSERINE CAPS - 100 mg, 100 caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
01390	PHOSPHOMEGA® - 60 softgels	39.95	26.96		

SUB-TOTAL OF COLUMN 13

No.		Retail Each	Member Each	Qty	Total
00561	POLICOSANOL - 10 mg, 60 tablets Buy 6 bottles, price each	\$24.00 18.00	\$18.00 13.50		
01423	POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
00956	POMEGRANATE EXTRACT - 30 veg. caps Buy 4 bottles, price each	19.50 17.55	14.63 13.16		
00957	POMEGRANATE JUICE CONCENTRATE - 16 oz. liquid Buy 4 bottles, price each	25.95 24.00	19.46 18.00		
00577	POTASSIUM IODIDE - 1 box, 14 tablets Buy 4 boxes, price each	6.95 5.25	5.21 3.94		
01500	PQQ CAPS W/BIOPQQ™ - 10 mg, 30 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01647	PQQ CAPS W/BIOPQQ™ - 20 mg, 30 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00302	PREGNENOLONE - 50 mg, 100 caps Buy 4 bottles, price each	26.00 22.00	19.50 16.50		
00700	PREGNENOLONE - 100 mg, 100 caps Buy 4 bottles, price each	26.00 22.50	19.50 16.88		
***01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
00571	PRIMAL DEFENSE™ - 90 caplets Buy 4 bottles, price each	49.95 48.50	37.46 36.38		
01329	PROBIOTIC ALL-FLORA® - 60 veg. caps	25.95	19.46		
01326	PROBIOTIC ANTI-AGING™ - 90 veg. caps	30.95	23.21		
01322	PROBIOTIC COLON™ - 90 veg. caps	30.95	23.21		
00525	PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets	59.95	44.96		
01441	PROGESTACARE FOR WOMEN - 4 oz cream	34.95	26.21		
01020	PROGREENS® - 15 stick pack	22.50	16.88		
01072	PRO-M INTERNAL DEODORIZER - 500 mg, 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01695	PROSTATE FORMULA W/APRESFLEX™ STAND. LIGNANS (ULTRA NAT) 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
01642	PROTEIN - VANILLA - (Enhanced Life Extension) -1 lb. powder Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01643	PROTEIN - CHOCOLATE - (Enhanced Life Extension) -1 lb. powder Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01644	PROTEIN - NATURAL - (Enhanced Life Extension) -1 lb. powder Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01645	PROTEIN - BERRY - (Enhanced Life Extension) -1 lb. powder Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01508	PTEROPURE™ - 50 mg Pterostilbene 60 veg. caps Buy 4 bottles, price each	32.00 30.00	24.00 22.50		
01075	PURE PLANT PROTEIN - Natural Vanilla 450 grams powder Buy 4 jars, price each	36.00 33.00	27.00 24.75		
01209	PUMPKIN SEED EXTRACT (WATER-SOLUBLE) - 60 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01210	PUMPKIN SEED EXT W/SOY ISOFLAVONES (WATER-SOLUBLE) - 60 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01637	PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT -100 mg, 60 veg. caps Buy 4 bottles, price each	64.00 60.00	48.00 45.00		
01217	PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 19.80	16.50 14.85		

SUB-TOTAL OF COLUMN 14

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

OFFER ENDS JANUARY 31, 2013
To order online visit www.LifeExtension.com/SuperSale

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
Q, R					
01309	QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$18.00 17.00	\$13.50 12.75		
01030	RED YEAST RICE (Bluebonnet)- 600 mg, 60 veg. caps	17.50	13.13		
00979	RED YEAST RICE (Nature's Plus)- 600 mg, 60 veg. caps	23.95	17.96		
00060	RED YEAST RICE EXTENDED RELEASE - 30 veg. tablets	21.50	16.13		
00605	REGIMINT - 60 enteric-coated caps Buy 4 bottles, price each	19.95 18.67	14.96 14.00		
01708	REISHI EXTRACT MUSHROOM COMPLEX - 60 veg. caps Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01448	REJUVENEX® BODY LOTION - 6 oz Buy 4 tubes, price each Buy 8 tubes, price each	24.00 19.80 17.00	18.00 14.85 12.75		
00918	REJUVENEX® FACTOR - 1.7 oz airless pump Buy 2 bottles, price each Buy 4 bottles, price each Buy 8 bottles, price each	65.00 60.00 55.00 49.91	48.75 45.00 41.25 37.43		
01621	REJUVENEX® FACTOR FIRING SERUM - 1.7 oz Buy 2 bottles, price each Buy 6 bottles, price each	65.00 50.66 38.52	48.75 38.00 28.89		
01220	REJUVENEX® (ULTRA) - 2 oz Buy 2 jars, price each Buy 4 jars, price each Buy 8 jars, price each	52.00 48.00 44.00 39.93	39.00 36.00 33.00 29.95		
00676	REJUVENIGHT® (ULTRA) - 2 oz Buy 4 jars, price each	39.95 36.00	29.96 27.00		
01413	RESVERATROL W/PTEROSTILBENE - 20 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps Buy 4 bottles, price each	46.00 41.33	34.50 31.00		
00889	RHODIOLA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	11.75 10.58	8.81 7.94		
00972	(D) RIBOSE POWDER - 150 grams Buy 4 jars, price each	27.50 24.75	20.63 18.56		
01473	(D) RIBOSE TABLETS - 100 veg. tabs Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01609	RICH REWARDS™ BREAKFAST GROUND COFFEE - 12 oz. bag	13.00	9.75		
01610	RICH REWARDS™ DECAFFEINATED ROAST GROUND COFFEE - 12 oz. bag	14.00	10.50		
01530	RICH REWARDS™ CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01531	RICH REWARDS™ (SPICY) CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01705	RICH REWARDS™ LENTIL VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01208	R-LIPOIC ACID (SUPER) - 300 mg, 60 veg. caps Buy 4 bottles, price each	49.00 45.00	36.75 33.75		
00070	RNA CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	17.95 16.16	13.46 12.12		
00917	ROSMARINIC ACID EXTRACT - 60 veg. caps Buy 4 bottles, price each	59.00 53.00	44.25 39.75		

SUB-TOTAL OF COLUMN 15

No.		Retail Each	Member Each	Qty	Total
S					
01067	SACCHAROMYCES BOULARDII+ MOS - 90 veg. caps	\$21.95	\$16.46		
01432	SAFFRON w/SATIEREAL (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
*00573	SAMBU® GUARD - 175 ml	17.79	14.23		
00358	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets Buy 8 boxes, price each	16.00 14.00	12.00 10.50		
00453	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00557	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets Buy 6 boxes, price each	28.00 24.00	21.00 18.00		
01055	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01543	SEA-IODINE™ - 1000 mcg, 60 caps Buy 4 bottles, price each	8.00 7.20	6.00 5.40		
00046	SELENIUM - 2 oz dropper bottle Buy 4 bottles, price each	9.95 9.45	7.46 7.09		
01679	SE-METHYL L-SELENOCYSTEINE - 200 mcg, 100 veg. caps Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00318	SERRAFLAZYME - 100 tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00011	SHAMPOO - 16 fl oz Buy 4 bottles, price each	6.00 4.75	4.50 3.56		
00284	SHARK LIVER OIL (NORWEGIAN) - 1000 mg, 30 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01684	SILYMARIN - 100 mg, 50 veg. caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01502	SKIN RESTORING PHYTCERAMIDES w/LIPOHEAT™ - 30 liquid caps Buy 4 bottles, price each	25.00 23.00	18.75 17.25		
00961	SODZYME® w/GLISODIN® AND WOLFBERRY - 90 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00657	SOLARSHIELD SUNGLASSES - 1 pair smoke color Buy 2 pairs, price each	12.99 11.50	9.74 8.63		
01097	SOY EXTRACT (ULTRA) - 150 veg. caps Buy 4 bottles, price each	87.00 78.00	65.25 58.50		
00286	SOY PROTEIN CONCENTRATE - 16 oz of powder Buy 4 jars, price each	16.00 14.00	12.00 10.50		
01099	STABILIMUM® 200 - 30 caps	30.00	22.50		
00432	STEVIA EXTRACT - 100 packets, 1 gram each Buy 4 boxes, price each	9.95 9.00	7.46 6.75		
01396	ST. JOHN'S WORT EXTRACT - 300 mg, 60 veg. caps Buy 4 bottles, price each	10.98 10.00	8.24 7.50		
00327	ST. JOHN'S WORT EXTRACT (PLANETARY) - 600 mg, 60 tablets Buy 4 bottles, price each	16.75 13.85	12.56 10.39		
01476	STRONTIUM - 750 mg, 90 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00747	SUNGLASSES (OVERCAST POLARIZED) - gray color, large Buy 2 pairs, price each	27.00 21.00	20.25 15.75		
00748	SUNGLASSES (OVERCAST POLARIZED) - gray color, medium Buy 2 pairs, price each	27.00 21.00	20.25 15.75		

SUB-TOTAL OF COLUMN 16

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

JANUARY 2013

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

Buyers Club Order Form

SUPER SALE SAVINGS ON ALL PRODUCTS
To order call: 1-954-766-8433 or 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
S CONTINUED					
01649	SUPER ABSORBABLE SOY ISOFLAVONES - 60 veg. caps	\$28.00	\$21.00		
	Buy 4 bottles, price each	25.00	18.75		
01381	SUPERCritical OMEGA 7™ - 60 softgels caps	56.95	42.71		
01408	SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
	Buy 12 bottles, price each	24.00	18.00		
01407	SUPER SAW PALMETTO W/BETA-SITOSTEROL - 30 softgels	15.00	11.25		
	Buy 12 bottles, price each	12.00	9.00		
01778	SUPER SELENIUM COMPLEX - 200 mcg, 100 veg. caps	14.00	10.50		
	Buy 4 bottles, price each	12.00	9.00		
	Buy 12 bottles, price each	11.00	8.25		
00674	SYTRINOL™ - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
T					
TAL-SHI™ COSMETICS • For information please call 1-800-544-4440 or visit www.LifeExtension.com					
01062	TART CHERRY - 600 mg, 60 caps	\$18.95	\$14.21		
00199	TAURINE - 1000 mg, 50 caps	8.95	6.71		
	Buy 4 bottles, price each	8.00	6.00		
00133	TAURINE POWDER - 300 grams	20.00	15.00		
	Buy 4 bottles, price each	16.88	12.66		
01304	THEAFLAVIN STANDARDIZED EXTRACT - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00555	(L) THEANINE - 100 mg, 60 caps	24.00	18.00		
	Buy 4 bottles, price each	20.50	15.38		
01038	THERALAC PROBIOTICS - 30 caps	47.95	35.96		
00224	THYMIC IMMUNE FACTORS - 100 caps	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
00668	THYROID FORMULA™ (METABOLIC ADVANTAGE) - 100 caps	21.95	16.46		
00349	TMG POWDER - 50 grams	14.00	10.50		
	Buy 4 bottles, price each	11.00	8.25		
00359	TMG - 500 mg, 180 tablets	18.00	13.50		
	Buy 4 bottles, price each	15.50	11.63		
00781	TOCOTRIENOLS WITH SESAME LIGNANS - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	36.00	27.00		
01400	TOCOTRIENOLS (SUPER-ABSORBABLE) - 60 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01278	TOOTHPASTE - 4 oz (Mint)	9.50	7.13		
	Buy 4 tubes, price each	8.67	6.50		
01274	TOTAL SUN PROTECTION CREAM W/BETA GLUCAN - 4 oz	28.00	21.00		
	Buy 4 tubes, price each	25.20	18.90		
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL -60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.60	22.20		
01386	TRUFIBER® - 180 grams	32.95	24.71		
01389	TRUFLOA PROBIOTICS & ENZYMES - 32 veg. caps	42.95	32.21		
01716	TWO-PER-DAY - 60 tablets	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01715	TWO-PER-DAY - 120 tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01714	TWO-PER-DAY - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		

SUB-TOTAL OF COLUMN 17

No.		Retail Each	Member Each	Qty	Total
00326	L-TYROSINE - 500 mg, 100 tablets	\$12.98	\$9.74		
	Buy 4 bottles, price each	11.81	8.86		
U					
* 00310	UDO'S OIL 3-6-9 BLEND - 17 fl oz	\$27.79	\$22.23		
* 00311	UDO'S 3-6-9 OIL BLEND - 180 caps	34.79	27.83		
V					
00213	VANADYL SULFATE - 7.5 mg, 100 tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00408	VENOTONE - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	VINPOCETINE - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
01033	VISION OPTIMIZER - 90 caps	29.95	22.46		
01219	VITAMIN A NUTRISORB - 0.6 fl oz	27.00	20.25		
00091	VITAMIN B1 CAPS - 500 mg, 100 caps	18.73	14.05		
	Buy 4 bottles, price each	17.00	12.75		
00093	VITAMIN B2 CAPS - 100 mg, 100 caps	14.32	10.74		
	Buy 4 bottles, price each	13.00	9.75		
00096	VITAMIN B3 NIACIN - 1000 mg, 100 caps	12.75	9.56		
	Buy 4 bottles, price each	12.00	9.00		
00372	VITAMIN B3 NIACIN - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	VITAMIN B5 - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
00556	VITAMIN B6 - 250 mg, 100 caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	VITAMIN B12 - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	VITAMIN C w/ DIHYDROQUERCETIN - 1000 mg, 60 tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	VITAMIN C w/ DIHYDROQUERCETIN - 1000 mg, 250 tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	VITAMIN C (BUFFERED) POWDER - 454.6 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
00864	VITAMIN D3 - 2000 IU, 1 fl oz	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01751	VITAMIN D3 - 1000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	VITAMIN D3 - 5000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	VITAMIN D3 - 7000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01573	VITAMIN D3 w/SEA-IODINE™ - 5000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
01572	VITAMINS D AND K w/SEA-IODINE™ - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01663	VITAMIN E (PURE NATURAL) - 400 IU, 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	26.00	19.50		
01225	VITAMIN K2 (LOW-DOSE) - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		

SUB-TOTAL OF COLUMN 18

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

OFFER ENDS JANUARY 31, 2013
To order online visit www.LifeExtension.com/SuperSale

No.		Retail Each	Member Each	Qty	Total
Z					
01686	ZEAXANTHIN w/LUTEIN & MESO-ZEAXANTHIN PLUS ASTAXANTHIN (SUPER) - 60 softgels	\$44.00	\$33.00		
	Buy 4 bottles, price each	40.00	30.00		
01685	ZEAXANTHIN w/LUTEIN & MESO-ZEAXANTHIN AND C3G (SUPER) - 60 softgels	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
00061	ZINC LOZENGES - 75 lozenges	9.50	7.13		
	Buy 4 bottles, price each	6.75	5.06		
01051	ZYFLAMEND® WHOLE BODY - 120 softgels	60.95	45.71		
01029	ZYFLAMEND® TINY CAPS® - 180 softgels	31.95	23.96		

SUB-TOTAL OF COLUMN 19

* These products are not 25% off retail price.

**Not eligible for member discount or member renewal product credit.

***Due to license restrictions, this product is not for sale to customers outside of the USA.

*Member pricing not valid on this item.

GIVE THE GIFT of HEALTH, with a LIFE EXTENSION GIFT CARD!



GIVE THE LIFE-ENHANCING BENEFITS OF LIFE EXTENSION® WITH A GIFT OF \$10, \$25, \$50 OR \$100

To order a Life Extension Gift Card for someone special, call 1-800-544-4440.



HOW TO JOIN THE LIFE EXTENSION FOUNDATION®

As a member of the Life Extension Foundation®, you have the opportunity to participate in a great scientific endeavor. We are the world's premier organization dedicated to stopping and reversing aging.

Our 32-year track record shows that we have been five to ten years ahead of conventional and alternative medicine in making new life-saving therapies available to our members.

When you join the Life Extension Foundation®, we update you on the latest published medical research by sending you FREE books. Our most impressive publication is the 1,666-page *Disease Prevention and Treatment* protocol book that contains novel therapies to treat 133 common diseases of aging. *Disease Prevention and Treatment* is the only book that combines conventional and alternative therapies in order to implement a treatment regimen for fighting the multiple processes involved in degenerative disease.

Each month, Life Extension Foundation® members receive a magazine packed with the latest medical findings from around the world. Members also can call a toll-free phone number to talk to our knowledgeable health advisors about their health issues.

If your number one priority is good health and a long life, please join our not-for-profit organization.

Four Easy Ways to Join

1. Call toll-free **1-800-544-4440**
2. Go to **www.lef.org**
3. Fax back to **1-866-728-1050**
4. Mail to: Life Extension Foundation® • PO Box 407198 Ft. Lauderdale, FL 33340-7198 • Local Number: **954-766-8433**

MEMBERSHIP APPLICATION

I want to contribute to your research efforts to extend the healthy human life span. Enclosed is my first year's membership donation of \$75 to join the most elite group of longevity enthusiasts in the world. (Canadians add \$7, all others outside the U.S. add \$35) Item code: MEMB1. Call for multiple year membership rates.

Name _____

Address _____

City _____ ST _____ ZIP _____

Email _____ Phone _____

Check enclosed (payable to Life Extension Foundation®)

Charge my cc: _____

Card # _____ Exp. _____

ORDER SUBTOTALS

SUB-TOTAL COLUMN 1	
SUB-TOTAL COLUMN 2	
SUB-TOTAL COLUMN 3	
SUB-TOTAL COLUMN 4	
SUB-TOTAL COLUMN 5	
SUB-TOTAL COLUMN 6	
SUB-TOTAL COLUMN 7	
SUB-TOTAL COLUMN 8	
SUB-TOTAL COLUMN 9	
SUB-TOTAL COLUMN 10	
SUB-TOTAL COLUMN 11	
SUB-TOTAL COLUMN 12	
SUB-TOTAL COLUMN 13	
SUB-TOTAL COLUMN 14	
SUB-TOTAL COLUMN 15	
SUB-TOTAL COLUMN 16	
SUB-TOTAL COLUMN 17	
SUB-TOTAL COLUMN 18	
SUB-TOTAL COLUMN 19	

ORDER TOTALS

Sub-Total A (Sub-total of Columns 1 through 19)

**SUPER SALE DEDUCT 10% (Subtotal x 10%)
Ends 01/31/13**

Postage And Handling (Any size order, continental U.S.) **\$5.50**

C.O.D.s (Add \$7 for C.O.D. orders)

Shipping UPS OVERNIGHT add \$16, UPS 2nd DAY AIR add \$7. For Puerto Rico, US Virgin Islands, Alaska & Hawaii, add \$7. CANADA UPS EXPRESS Flat rate \$17.50, UK Flat rate \$25 USD. ALL OTHER INTERNATIONAL AIR WILL BE ADDED.

GRAND TOTAL (Must be in U.S. dollars)



PLEASE MAIL TO:

Life Extension Foundation® Buyers Club, Inc.
P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198
Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050
Local Number: 954-766-8433

ORDER ONLINE AT: www.LifeExtension.com

LIFE EXTENSION FOUNDATION® MEMBERS ONLY

MEMBER NO.

PRINT MEMBERSHIP NO. FOR MEMBER DISCOUNT

NOT A MEMBER? JOIN TODAY!

I want to join the Life Extension Foundation®.
Enclosed is \$75 for annual membership. (Canadians add \$7.00, all others outside the U.S. add \$35.00). Send me: *Disease Prevention & Treatment Protocol Book*

CHECK HERE FOR C.O.D. ORDERS

CHECK HERE FOR UPS BLUE LABEL (2ND DAY)

CHECK HERE FOR UPS RED LABEL (OVERNIGHT)

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 THE LIFE EXTENSION FOUNDATION® OF ANY ADDRESS CHANGE

OFFER ENDS JANUARY 31, 2013
 To order online visit www.LifeExtension.com/SuperSale

Buyers Club Order Form

No.	LIFE EXTENSION MEDIA		Retail	Member Price	Qty	Total
33853	SMART, STRONG AND SEXY AT 100 • by David Kekich	2012	\$17.95	\$13.46		
33852	THE MAGIC OF CHOLESTEROL NUMBERS • by Dr. Sergey Dzigan	2012	\$29.95	\$22.46		
33848	YOUR BEST INVESTMENT SECRETS TO A HEALTHY BODY AND MIND • by Edwin Lee, MD	2012	\$24.95	\$18.71		
33847	THE FATIGUE SOLUTION • by Dr. Eva Cwynar	2012	\$24.95	\$18.71		
33844	ABUNDANCE: THE FUTURE IS BETTER THAN YOU THINK • by Steven Kotler and Petere Diamandis	2012	\$26.99	\$20.24		
33843	BOMBSHELL • by Suzanne Somers	2012	\$26.00	\$19.50		
33845	DRUG MUGGERS • by R.Ph. Susy Cohen	2012	\$21.99	\$16.49		
33842	HEART ATTACK PROOF • by Michael Ozner, MD	2012	\$19.95	\$14.96		
33835	PHARMOCRACY • by William Faloon	2011	\$24.00	\$9.60		
	Buy 4 books, price each			\$8.00		
33839	THE GOLDEN RATIO LIFESTYLE DIET • by Robert Friedman, MD, and Matthew Cross	2012	\$19.95	\$14.96		
33838	YOUR GUIDE TO HEALTHY SKIN THE NATURAL WAY • by Gary Goldfaden, MD	2012	\$26.00	\$15.00		
33837	WHEAT BELLY • by William Davis, MD	2011	\$25.99	\$19.49		
33833	THE LIFE PLAN • by Jeffrey S. Life, MD, PhD	2011	\$26.00	\$19.50		
33832	YOUR BONES • by Lara Pizzorno, MA, LMT	2011	\$12.00	\$9.00		
33829	THE IMMORTALITY EDGE • by Michael Fossel, MD, PhD, Greta Blackburn, David Woyrnarowski, MD	2011	\$25.95	\$18.17		
33825	THE EMPOWERED PATIENT • by Elizabeth Cohen	2010	\$15.00	\$10.50		
33824	VITAMIN D SOLUTION • by Michael F. Holick, PhD, MD	2010	\$25.95	\$18.17		
33822	BREAKTHROUGH: EIGHT STEPS TO WELLNESS • by Suzanne Somers (paperback)	2010	\$15.00	\$10.50		
33836	WEIGHT LOSS GUIDE • by Steven V. Joyal, MD and William Faloon (hardcover) (3rd Edition)	2010	\$29.95	\$8.99		
33816	FDA: FAILURE, DECEPTION, ABUSE • by Life Extension Foundation	2010	\$20.00	\$15.00		
33818	STAY YOUNG & SEXY WITH BIO-IDENTICAL HORMONE REPLACEMENT • by Jonathan Wright, MD	2010	\$19.95	\$14.96		
33815	KNOCKOUT • by Suzanne Somers	2009	\$25.99	\$17.00		
33814	CHEATING DEATH • by Sanjay Gupta, MD	2009	\$24.99	\$17.49		
33812	LIFE OVER CANCER • by Keith Block, MD (hardcover)	2009	\$25.00	\$17.50		
33811	THE GREAT AMERICAN HEART HOAX • by Michael Ozner, MD, FACC, FAHA	2009	\$24.95	\$17.47		
33809	TESTOSTERONE FOR LIFE • by Abraham Morgentaler, MD	2008	\$16.95	\$11.87		
33808	BREAKTHROUGH: EIGHT STEPS TO WELLNESS • by Suzanne Somers	2008	\$25.95	\$18.17		
33599	YOUNGER YOU • by Eric Braverman, MD	—	\$24.95	\$15.75		
33600	DISEASE PREVENTION AND TREATMENT, EXPANDED FOURTH EDITION (hardcover)	2003	\$49.95	\$37.46		
	Price per book when 4 books purchased	—	\$44.00	\$33.00		
33696	LIFE EXTENSION REVOLUTION • by Philip Lee Miller, MD (paperback)	—	\$16.00	\$12.00		
33805	MIAMI MEDITERRANEAN DIET WITH 300 RECIPES • by Michael D. Ozner, MD, FACC, FAHA (hardcover)	2008	\$24.95	\$16.25		
33906	THE MIGRAINE CURE • by Sergey Dzigan, MD, PhD	2006	\$24.00	\$15.60		
33680	PRESCRIPTION FOR DISASTER DVD • by Gary Null	2005	\$18.00	\$12.00		
33670	A PRIMER ON PROSTATE CANCER (2nd edition) • by Stephen B. Strum, MD, and Donna Pogliano	2005	\$28.95	\$21.71		
33262	SAVE YOUR SIGHT • by Marc Rose, MD/Michael Rose, MD	—	\$13.99	\$8.35		
33806	THE CR WAY • by Paul McGlothlin and Meredith Averill		\$15.95	\$11.25		
33828	THE SEXY YEARS • by Suzanne Somers (paperback)	2004	\$15.00	\$10.50		
33695	WE BECOME SILENT • DVD by Kevin Miller	—	\$24.98	\$18.74		
33803	WHAT YOUR DOCTOR MAY NOT TELL YOU ABOUT DIABETES • by Steven V. Joyal, MD	2008	\$14.99	\$10.49		
33703	JOHN ABDO'S NO EXCUSES WORKOUT DVD	2008	\$13.30	\$9.98		
33804	YOU: STAYING YOUNG: THE OWNER'S MANUAL FOR EXTENDING YOUR WARRANTY • by Mehmet Oz, MD	2008	\$26.00	\$18.20		
Sub-Total (U.S. Dollars)						
Shipping only \$5.50 U.S. • \$17.50 Canada • \$12.50 Hawaii, Alaska, U.S. Virgin Islands, Puerto Rico • UK Flat rate \$25 USD						
(Add \$7 for C.O.D. • Add \$16.00 for UPS overnight • Add \$7.00 for UPS 2nd day air • International air mail costs will be added.)						
PRICES SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE NOTIFY THE LIFE EXTENSION FOUNDATION® OF ANY ADDRESS CHANGE						TOTAL

PLEASE MAIL TO: Life Extension Foundation Buyers Club, Inc.

P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198

Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050 • Local Number: 954-766-8433

Other International Shipping Restrictions May Apply. Please visit

www.lef.org/vitamins-supplements/shipping/shipping-information.htm for details.

LIFE EXTENSION FOUNDATION® MEMBERS ONLY

MEMBER NO.

PRINT MEMBERSHIP NO. FOR MEMBER DISCOUNT

NOT A MEMBER? JOIN TODAY!

I want to join the Life Extension Foundation®.

Enclosed is \$75 for annual membership. (Canadians add \$7.00, all others outside the U.S. add \$35.00). Send me: *Disease Prevention & Treatment Protocol Book*

NAME	E-MAIL
ADDRESS	
CITY/STATE/ZIP-POSTAL CODE	COUNTRY
PHONE	FAX
VISA/MASTERCARD/AMEX/DISCOVER #	EXP. DATE
SIGNATURE	
<input type="checkbox"/> COD	<input type="checkbox"/> UPS RED LABEL
	<input type="checkbox"/> UPS BLUE LABEL

NEW

Rich Rewards™

**Lentil
Vegetable
Soup**

One Smart Bowl of Soup™

A delicious vegetarian soup suitable for vegans

Only Healthy Ingredients

Processed food companies sell vegetable soups so cheaply because they load them with *high-glycemic* carbohydrates (rice, potatoes, pasta) that cost virtually nothing. They then add inexpensive ingredients like corn, sugar, and sometimes omega-6 fats (like cottonseed oil). So for less than \$2, you get a relatively high-carb-calorie soup that provides virtually no health benefits. **Life Extension®** has formulated a **lentil vegetable soup** suitable for vegans that contains only garden-fresh ingredients, including lentils, mushrooms, tomatoes, carrots, **extra-virgin olive oil**, and a host of other beneficial **plant foods**.

Each serving of **Rich Rewards Lentil Vegetable soup** contains only **120 calories** of the best-documented foods to maintain your precious health. You can consume the entire contents or use a smaller portion of the soup as part of a meal for you (or several people).

The entire container supplies about **3.5 servings** of these lentils, mushrooms, and vegetables—with none of the **glucose-spiking** fillers found in commercial soups.

Rich Rewards Lentil Vegetable Soup is packaged in a re-closable bottle free of **BPA**. While the **FDA** says the BPA lining in most cans is safe, we at Life Extension have always used BPA-free containers.

The retail price for a **3.5 serving bottle** of **Rich Rewards Lentil Vegetable soup** is \$13. The member price during **Super Sale** is **\$8.78**.



Item # 01705

Lentil Vegetable Soup

Nutrition Facts

Serving Size 1 cup (245g)
Servings Per Container about 3.5

Amount Per Serving		Calories from Fat 40	
		% Daily Value *	
Total Fat	4.5g	7%	
Saturated Fat	0g	0%	
Trans Fat	0g		
Cholesterol	0mg	0%	
Sodium	35mg	1%	
Total Carbohydrate	17g	6%	
Dietary Fiber	5g	20%	
Sugars	7g		
Protein	5g		

Vitamin A 40% • Vitamin C 40%
Calcium 4% • Iron 15%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Ingredients: Water, Diced Tomatoes in Juice (tomatoes, tomato juice, citric acid, calcium chloride), Lentils, Tomato Paste, Celery, Onion, Mushroom, Carrot, Extra Virgin Olive Oil, Garlic, Parsley, Black Pepper, Sage, Basil, Thyme.

Cruciferous Vegetable Soups

You can also order soups that contain vegetables like **broccoli**, **cauliflower**, and **asparagus** in **extra-virgin olive oil** with only **60-70 calories** per serving at the same price as the new **Lentil Vegetable Soup**.

Cruciferous Vegetable

Retail Price \$11.95

Super Sale

Member Price \$8.07

#01530

Spicy Cruciferous Vegetable

Retail Price \$11.95

Super Sale

Member Price \$8.07

#01531



Souper tasty. Souper Satisfying.

You know you don't eat enough veggies. So **Life Extension®** cooked up a convenient, tasty way to spoon-feed you these souper foods. Unlike many canned soups, **Rich Rewards™ Lentil Vegetable Soup** is contained in a convenient resealable package that is free of BPA.

This soup provides unique garden-fresh ingredients, such as lentils, mushrooms, tomatoes, carrots, and other beneficial plant foods plus heart-healthy extra virgin olive oil.

One Smart Bowl of Soup

Contains about 3.5 servings of healthy lentils, mushrooms, and vegetables per bottle

Only 120 calories per serving

No added starches or sugars!

Excellent source of lentils, mushrooms, and fiber

Contains 4.5 grams of total fat per serving

0g *trans* fat. No saturated fat or cholesterol

To order your fresh supply of Rich Rewards Lentil Vegetable soup, call 1-800-544-4440 or visit www.lef.org/soup

KRILL HEALTHY JOINT FORMULA

TARGETED SUPPORT
FOR OPTIMAL JOINT
FUNCTION AND MOBILITY



Maintaining healthy, flexible joints is essential to quality of life. Joint stiffness and discomfort can stand in the way of performing even simple everyday tasks.

Most people do not obtain critical nutrients shown to support youthful joint function and mobility.

To meet this urgent need, **Life Extension**[®] introduced **Krill Healthy Joint Formula**, a patent-pending blend of deep-sea **whole krill oil** sourced in Antarctica, combined with **hyaluronic acid** and **astaxanthin**.

In a recent clinical trial involving over 100 maturing individuals, a **55% reduction** in joint discomfort was observed in less than three months, with **63%** of participants maintaining ease of motion.¹

THREE SYNERGISTIC COMPOUNDS FOR SUPERIOR BENEFIT

The data reveals that the fatty acids found in krill oil are particularly effective for joint health.² These unique fatty acids have been shown to *specifically target joint tissue*.^{2,3}

Hyaluronic acid occurs naturally in the joints,⁴ where it acts to lubricate and cushion against repeated physical impacts.⁵ Because it forms a major component of cartilage and soft tissue,⁴ it is widely used to promote joint health.⁴⁻⁸

The difficulty has been that hyaluronic acid is a large molecule not well absorbed by the body. When combined with krill oil, it has been shown to reach significantly *higher* levels in the bloodstream than in standalone form.⁸

Krill oil is a natural source of the antioxidant carotenoid **astaxanthin**. Astaxanthin works in multiple ways, including suppression of free radical activity and enhanced mitochondrial function.⁹ It also maintains krill oil's molecular stability.

Most commercially available krill oils do not contain significant amounts of astaxanthin because it is nearly eliminated during processing. **Krill Healthy Joint Formula** is *fortified* with astaxanthin, for maximum stability and superior benefit.

JUST ONE SOFTGEL DAILY

The suggested daily serving of one **Krill Healthy Joint Formula** softgel daily supplies **353 mg** of this proprietary blend.

A bottle containing **30** softgels of **Krill Healthy Joint Formula** retails for \$32. If a member buys four bottles during **Super Sale**, the price is reduced to **\$19.58** per bottle. Just one softgel a day of **Krill Healthy Joint Formula** duplicates a successful human clinical trial.

References

1. Valensa. (Data on File.) 2011.
2. *Altern Med Rev.* 2010 Apr;15(1):84-6.
3. *J Am Coll Nutr.* 2007 Feb;26(1):39-48.
4. *Curr Med Chem.* 2009;16(14):1718-45.
5. *Curr Rheumatol Rep.* 2003 Feb;5(1):7-14.
6. *Nutr J.* 2008;7:3.
7. *Am J Phys Med Rehabil.* 2005 Apr;84(4):278-83; quiz 84, 93.
8. *World J Gastroenterol.* 2007 Feb 14;13(6):945-9.
9. *J Nutr Biochem.* 2010 May;21(5):381-9.

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

Contains crustacean shellfish (krill).

Licensed from Valensa International.

Zanthin[®] is a registered trademark of Valensa International, Inc.



Item # 01600

To order **Krill Healthy Joint Formula**
call 1-800-544-4440 or visit www.LifeExtension.com

PURE, HEART HEALTHY

Super Omega-3

EPA/DHA



Item # 01482

There's no debating the power of **omega-3** fatty acids. From support for **heart health** and **brain function** to help with **inflammation**, their broad-spectrum benefits have been firmly established in a wealth of studies.¹⁻⁹

To ensure the purest, most stable, and easy-to-tolerate fish oil supplement, **SUPER OMEGA-3 EPA/DHA** is *molecularly distilled*. This proprietary technology ensures any environmental pollutants are reduced to extremely low levels. The result? Our fish oil enjoys a **5-star rating** for **purity, quality, and concentration** from the **International Fish Oil Standards program (IFOS)**—the highest possible ranking from the world's premier testing laboratory.

Sesame Lignans and Standardized Olive Fruit Extract for Enhanced Benefits

Fish oils (and other fatty acids) have a tendency to **oxidize**, rendering them nutritionally inferior. Scientific studies show that when added to fish oil, **sesame lignans** safeguard against oxidation and direct fatty acids toward pathways that help with inflammatory reactions.¹⁰

To further emulate the benefits of a **Mediterranean diet**, **Super Omega-3** delivers standardized, high-potency **olive fruit extract**. Research shows that **fish oil** combined with **olive oil** helps with inflammation **better** than fish oil alone.¹¹

Olive also contains the compounds **hydroxytyrosol, tyrosol, and oleuropein**. Together these nutrients counter the action of free radicals, delay aging in specialized skin cells, prevent undesirable LDL oxidation, and help maintain normal platelet activation.¹²⁻¹⁵

Super Omega-3 (4 regular size softgels) supplies the equivalent content of **6 tablespoons of extra virgin olive oil**. Take **two** softgels twice daily with meals.

A bottle containing 120 softgels of **Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract** retails for \$32. If a member buys four bottles during **Super Sale**, the price is reduced to **\$18.90** per bottle. If **10 bottles** are purchased during **Super Sale**, the cost is **\$16.81** per bottle. (Item # 01482)



Ratings based on results of the 2012 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com.

CAUTION: If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product. Contains fish (anchovy, mackerel), sesame, and corn.

Supportive but not conclusive evidence shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease. IFOS™ certification mark is a registered trademark of Nutrasource Diagnostics, Inc. These products have been tested to the quality and purity standards of the IFOS™ program conducted at Nutrasource Diagnostics, Inc.

Just one serving of SUPER OMEGA-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract provide:

EPA Pure+™ Extract (eicosapentaenoic acid)	1400 mg
DHA Pure+™ Extract (docosahexaenoic acid)	1000 mg
Olive Fruit Extract [std. to 6.5% polyphenols (39 mg), 1.73% hydroxytyrosol/tyrosol (10.4 mg), 0.5% verbascoside/oleuropein (3 mg)]	600 mg
Sesame Seed Lignan Extract	20 mg

A SMALLER SOFTGEL for easier swallowing!

Some members have requested we make **Super Omega-3** available in a smaller capsule for easier swallowing. We have accomplished this by making **half-size** softgels available.

A bottle containing 240 half-size softgels of **Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract** retails for \$32. If a member buys four bottles during **Super Sale**, the price is reduced to **\$18.90** per bottle. If **10 bottles** are purchased during **Super Sale**, the cost is **\$16.81** per bottle. (Item # 01619)

For those with sensitive stomachs, **Super Omega-3** is also available with **enteric coating** and retails for **\$34**. If a member buys four bottles during **Super Sale**, the price is reduced to **\$20.93** per bottle. If **10 bottles** are purchased during **Super Sale**, the cost is **\$18.90** per bottle. (Item # 01484)

To order the most advanced fish oil supplement, Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract (with or without enteric coating), call 1-800-544-4440 or visit www.LifeExtension.com

References

1. *Public Health Nutr.* 2006 Dec;9(8A):1136-40.
2. *Am J Prev Med.* 2005 Nov;29(4):335-46.
3. *J Am Diet Assoc.* 2005 Mar;105(3):428-40.
4. *Mini Rev Med Chem.* 2004 Oct;4(8):859-71.
5. *Nurs Stand.* 2004 Aug 11-17;18(48):38-42.
6. *Cleve Clin J Med.* 2004 Mar;71(3):208-10, 212, 215-8 passim.
7. *J Nutr Health Aging.* 2001;5(3):144-9.
8. *Inflamm Res.* 2001 Feb;50(2):102-6.
9. *Arch Intern Med.* 2000 Mar 27;160(6):837-42.
10. *Biochem Biophys Acta.* 2004 Jun 1;1682(1-3):80-91.
11. *Nutrition.* 2005 Feb;21(2):131-6.
12. *Anal Chim Acta.* 2007 Feb 5;583(2):402-10.
13. *J Agric Food Chem.* 2007 Sep 5;55(18):7609-14.
14. *Lipids.* 2001 Nov;36(11):1195-202.
15. *Eur J Cancer.* 2000 Jun;36(10):1235-47.

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 ARE YOU COOKING YOURSELF TO DEATH?

Foods cooked at **high temperature** accelerate premature aging, causing weight gain, diabetes, and cancer. Learn how to protect your cells against dangerous foods and avoid cooking yourself to death.



28 FIGHT AFTER-MEAL DIGESTIVE DISCOMFORTS

Enzyme supplements contain **amylases** that break down starches that contribute to deadly after-meal **glucose spikes**. Taking the proper **digestive enzymes** can protect against gastro-intestinal distress, while helping to defend against blood sugar surges.



40 SAFELY MODULATE INFLAMMATION

Scientists have discovered a natural way to **modulate** inflammatory responses to improve **immune surveillance** while reducing markers of **chronic inflammation**.



52 CERAMIDES NOURISH SKIN MATRIX

Youthful skin is rich in **ceramides** that moisturize the skin matrix keeping it firm and supple. Clinical studies document the ability of **ceramides**, when orally ingested, to nourish aging skin from within to avoid dryness and wrinkles.



62 CoQ10: A LONGEVITY FACTOR

CoQ10 is best known for heart and brain health. New laboratory studies demonstrate that CoQ10 can extend life span by boosting **mitochondrial** efficiency, suggesting important longevity benefits for aging humans.



97 SUPER FOODS

Cauliflower contains unique bioactive compounds that offer strong protection against cancer, diabetes, rheumatoid arthritis, and cardiovascular disease.