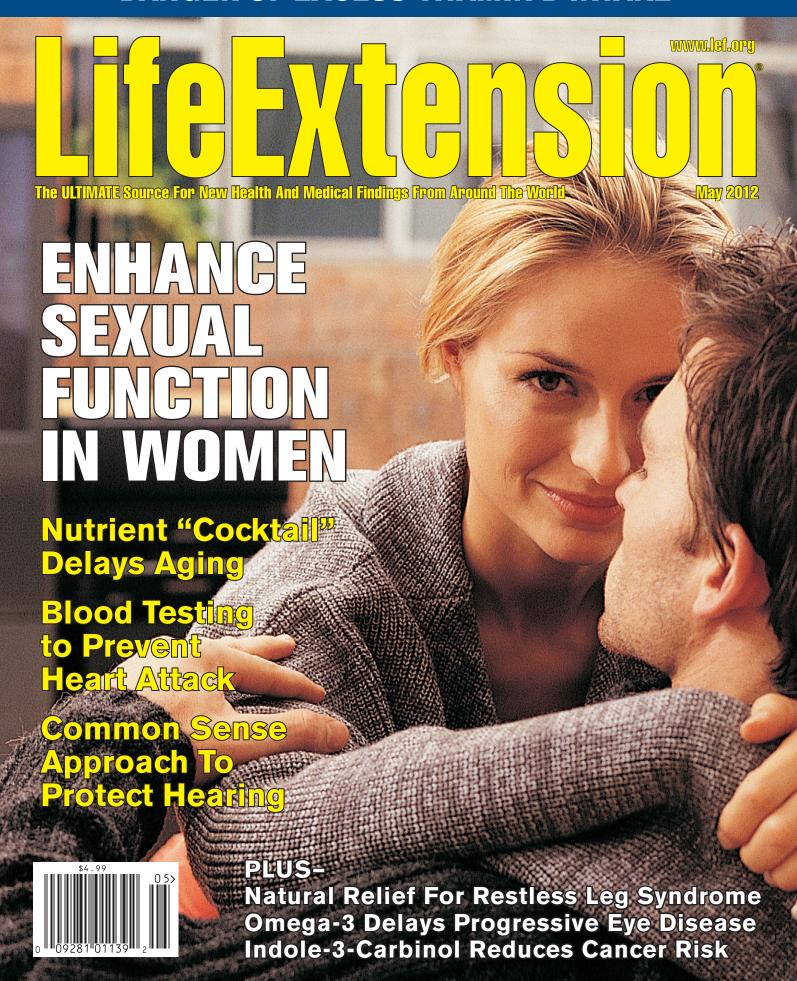
DANGER OF EXCESS VITAMIN D INTAKE



The Ultimate Two-Per-Day Formula

NOW IN CAPSULES OR TABLETS!

The following table compares the daily dosage of key nutrients included in both the Life Extension Two-Per-Day Formula and Centrum® Silver® Adults 50+ Daily Tablet:

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	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 mg	150 mcg
Chromium	200 mcg	45 mcg
Molybdenum	100 mcg	45 mcg
Magnesium	100 mg	50 mg
Manganese	2 mg	2.3 mg
lodine	150 mcg	150 mcg
Potassium	25 mg	80 mg
Vitamin A (as beta-carotene	e) 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)

Contains soybeans

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

Contains soybeans, rice, and corn.

To order Life Extension
Two-Per-Day Tablets or Two-Per-Day
Capsules, call 1-800-544-4440
or visit www.LifeExtension.com



For many years, Life Extension® members had to rely on commercial "one-a-day" supplements that provide very <u>low</u> potencies.

In response to requests for a science-based multi-nutrient, a special formula was compounded to provide the greatest potencies that can fit into two tablets. When 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 now available in tablet or capsule form.

The box on this page reveals how much more potent the **Two-Per-Day** formula is compared to the leading commercial multi-vitamin. Few consumers realize that commercial supplements often contain the cheapest form of nutrients that don't provide optimal benefits. For example, the 30 IU of <u>synthetic</u> vitamin E contained in Centrum® Silver® Adults 50+ may provide relatively little vitamin E to the bloodstream. The 100 IU of <u>natural</u> vitamin E contained in Two-Per-Day provides over **3 times** <u>more</u> vitamin E activity than does Centrum® Silver® Adults 50+.





Item # 01615

Item # 01614

Compared to Centrum^o Silver^o 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 <u>more</u> Vitamin B6
- 50 times more Vitamin B1
- 12 times more Vitamin B12
- More than <u>twice</u> as much niacin, zinc, and many other nutrients

Life Extension Two-Per-Day Vegetarian Tablets provide much higher potencies of key nutrients and represent a better value than many commercial brands. A bottle of 120 Life Extension Two-Per-Day <u>tablets</u> retails for \$20. If a member buys four bottles, the price is reduced to \$13.50 per bottle. (The retail price for 180 tablets of Centrum® Silver® Adults 50+ is around \$14.) (Item# 01615)

A bottle of 120 Life Extension Two-Per-Day <u>capsules</u> retails for \$22. If a member buys four bottles, the price is reduced to \$15. (Item # 01614)

LifeExtension°

Volume Eighteen / Number Five May 2012

REPORTS

38 COMMON SENSE STRATEGIES TO PRESERVE YOUR HEARING

Studies prove that daily noise from our environment can cause problems ranging from high blood pressure and elevated heart rate to tinnitus and hearing loss. Experts estimate that 30 million **Americans** are exposed to dangerous levels of noise each day. Fortunately, with proper ear protection, noise-induced problems can be prevented.



52 NUTRIENT "COCKTAIL" EXTENDS LIFE SPAN

In the quest to halt aging, an international team of researchers has formulated a 30-nutrient "cocktail" that acts along multiple pathways to inhibit five aging mechanisms. All of the nutrients used in the study are currently taken by health conscious humans, which is comforting considering the researchers documented increases in longevity and marked protection against pathological aging processes.



68 BLOOD TESTS THAT PREVENT HEART ATTACKS

According to researcher and cardiologist, Michael Ozner, MD, comprehensive blood testing is one of the most effective tools for preventing atherosclerosis, heart attack, and stroke. In this excerpt from his new book, Heart Attack Proof, Dr. Ozner explains which blood tests provide key preventive information and how to interpret these tests in order to avoid the risks of cardiovascular disease.



80 NATURAL RELIEF FOR RESTLESS LEG SYNDROME AND VARICOSE VEINS

Unsightly varicose veins are indicative of venous insufficiency. a serious circulatory problem where blood pools in the lower extremities. For years, *diosmin*, a natural extract of citrus rinds, has been used as a prescription drug in Europe. It is now available in the US as a dietary supplement for the relief of chronic venous insufficiency and the related restless leg syndrome.



REVERSING FEMALE SEXUAL DYSFUNCTION

Sexual dysfunction afflicts more than 43% of all women. While men have pharmaceutical opportunities to restore sexual function, women have largely been left out. Scientists have discovered specific botanical-based extracts that modulate the mechanisms behind female sexual dysfunction and menopausal symptoms.





7 NEW STUDY WARNS AGAINST EXCESSIVE VITAMIN D INTAKE

New research has corroborated the blood-level range of 25-hydroxyvitamin D that was long ago established as protective against degenerative diseases. But the same scientists also found that excessive vitamin D levels may increase the risk of atrial fibrillation. Blood testing is strongly advised to achieve optimal levels of this important vitamin.



17 IN THE NEWS

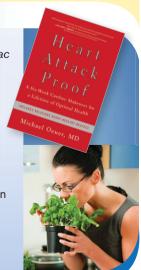
Omega-3, vitamin A slow the progression of devastating eye disease; shortened telomeres associated with greater risk of cardiovascular disease and early mortality; and more.

21 BOOK REVIEW

Heart Attack Proof: A Six-Week Cardiac Makeover for a Lifetime of Optimal Health, by Michael Ozner, MD, is a clinically proven program to lower and potentially eliminate your risk of lifethreatening cardiovascular disease. Find out new blood tests to reduce heart attack risk.



Rich in vitamin K, calcium, and antioxidants, the herb basil has been shown to protect DNA, lower blood pressure, and boost immunity.



LifeExtension®



Volume Eighteen / Number Five May 2012

PUBLISHER • LE Publications, Inc.

CONNECT WITH LIFE EXTENSION ON THE WEB!



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



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 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

Alexander Brookner • Sarah Clachar • Michael Downey D. Dye • William Gamonski • Susan Machado • Michael Ozner, MD

ADVERTISING

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

DIRECTOR OF 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. 18, No. 5 ©2012 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. USPS #95. 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, Ft. Lauderdale, Florida 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. Application to mail at 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. ISSN: 1524-198X. Agreement Num

THE NEXT **GENERATION OF PROSTATE** PROTECTION:

ULTRA NATURAL WITH APRÈSFLEX™ AND STANDARDIZED LIGNANS

Ultra Natural Prostate with AprèsFlex™ and Standardized Lignans softgels combines cutting-edge natural 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 prostatespecific 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, the price is reduced to \$26.25 per bottle. If a member buys 12 bottles, the price is reduced to \$24 per bottle.

Contains sovbeans and corn.

To order Ultra Natural Prostate Formula with AprèsFlex™, call 1-800-544-4440 or visit www.LifeExtension.com



The daily dose of two softgels of Ultra Natural Prostate Formula with AprèsFlex™ and Standardized Lignans Formula provides: **USPlus® Saw Palmetto** (CO, DeepExtract™) 320 mg (std to 85%-95% total fatty acids and sterols) Graminex® Flower Pollen Extract™ 252 mg AprèsFlex™ (Boswellia serrata) extract 70 mg Pumpkin seed oil (Cucurbita pepo) extract 200 mg (standardized to 85% total fatty acids) **Stinging nettle root extract** (*Urtica dioica*) 240 mg Pygeum extract 100 mg Lycopene 10 mg **Phytosterol complex** 678 mg (standardized to 26.6% free beta-sitosterol) Proprietary blend of HMRlignan™ 20.15 mg Norway Spruce and **ActiFlax™** Flax Lignan extracts 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.

LifeExtension®

MEDICAL ADVISORY BOARD

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

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

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.

John Crisler, DO, is an osteopathic physician and president of The All Things Male Center for Men's Health in Lansing, MI. Dr. Crisler is a distinguished leader in the field of anti-aging medicine.

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.

Dr. John DeLuca 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

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

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

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

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

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

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

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

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

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

Maurice D. Marholin, 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,

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

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.

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

R. Arnold Smith, MD, is a clinical radiation oncologist who specializes in using immunotherapy to enhance the safety and efficacy of conventional cancer therapies.

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.

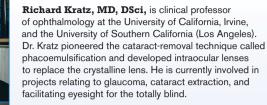
Eric R. Braverman, MD, is director of the Place for Achieving Total Health (PATH Medical and the PATH Foundation) in New York City. Dr. Braverman received his BA from Brandeis University Summa Cum Laude/ Phi Beta Kappa and his MD from New York University Medical School with honors. He is the author of 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).



Peter H. Langsjoen, MD, FACC, is a cardiologist specializing in congestive heart failure, primary and statininduced 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, 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.



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 <u>same</u> 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 plant 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, the price is reduced to just \$31 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

Contains yeast. 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.
- Endocrinology. 2008 Jan;149(1):84-92.
- Crit Care Med. 2004 Oct;32(10):2097-103. J Agric Food Chem. 1999 Apr;47(4):1416-21.
- 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.
- Nature. 2006 Nov 16;444(7117):337-42.
- Nature. 2004 Aug 5;430(7000):686-9. 10. Xenobiotica. 2000 Sep;30(9):857-66

Grape-Berry Actives, call 1-800-544-4440

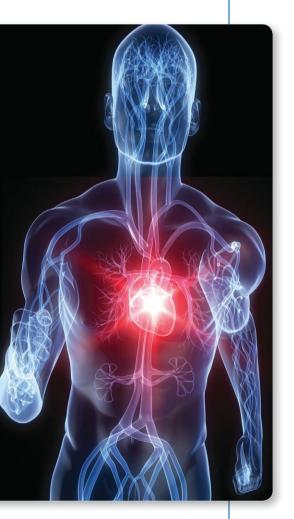
To order Optimized Resveratrol with Synergistic or visit www.LifeExtension.com

RESVERATROL ergistic Grape-Berry Actives 250 mg

New Study Warns Against <u>Excessive</u> Vitamin D Intake



BY WILLIAM FALOON



At the annual conference of the **American Heart Association** held near the end of 2011, a study was presented that measured **25-hydroxyvitamin D** blood levels in a large group of Americans.¹

The data corroborates previously published findings showing that people with *higher* vitamin D blood levels have <u>lower</u> risks of degenerative disease. For example, compared to people in the deficient range, those with <u>higher</u> blood levels of *25-hydroxy-vitamin D* had significantly <u>lower</u> risk of **heart failure**, **depression**, **coronary artery disease**, and **kidney failure**.

Those whose **25-hydroxyvitamin D** levels ranged **81–100 ng/mL** had a **36%** reduction in **hypertension** incidence when measured against the deficient group.

There was a **warning** issued, however, when blood **25-hydroxy-vitamin D** <u>exceeded</u> **100 ng/mL**. These individuals showed a **higher risk** of **atrial fibrillation**.

Even though the data presented at the **American Heart Association** conference is not yet published, we immediately sent an advisory to our members to ensure they maintain <u>sufficient</u> **25-hydroxyvitamin D** levels to protect their health, but not <u>exceed</u> upper limit levels long ago established by **Life Extension**® <u>and</u> other experts.

How This Study Compares to Life Extension's Protocol

In the January 2010 issue of Life Extension Magazine®, we reported startling findings that 85% of our members had less than optimal levels of vitamin D in their blood (as measured by 25-hydroxyvitamin D).

Based on a large volume of published data, we recommended that the optimal range of 25-hydroxyvitamin D to protect against disease is between 50-80 ng/mL. Yet the vast majority (85%) of our dedicated members were below 50 ng/mL.

As people age their skin converts less sunlight into vitamin D. For instance, a 70-year-old will make about 25% of the vitamin D that a 20-year-old will make

given equal exposure to sunlight.^{2,3} There are also *absorption* problems aging people encounter that usually requires they supplement with **5,000–7,000 IU** of vitamin D a day to get their 25-hvdroxvvitamin D level over 50 ng/mL.4

In the study presented at the American Heart Association conference, 25-hvdroxvvitamin **D** blood levels were measured in 132,000 patients. Out of this large group, a small number (291 or 0.22%) had 25-hydroxyvitamin D levels over 100 ng/mL. This level exceeds what Life Extension® (and most others) has long recommended.

Those whose 25-hvdroxvvitamin D level exceeded 100 ng/mL had an atrial fibrillation incidence 2.5 times greater than people in the safe ranges (below 100 ng/mL).



Atrial Fibrillation and Excess Vitamin D Status

As the population ages, an increasing percentage develops an irregular rhythm in the upper chambers of the heart called atrial fibrillation. It is the most common type of heart arrhythmia and approximately 5% of persons over 65 years of age are expected to be diagnosed with it.5

The 132,000 subjects in this vitamin D study were defined by the following categories:

Definition of Vitamin D Status	25-Hydroxy- vitamin D Levels
Low	Less than 20 ng/mL
Low-normal	Between 21-40 ng/mL
Normal	Between 41-80 ng/mL
High-normal	Between 81-100 ng/mL
Excess	More than 100 ng/mL

In patients with low, low-normal, normal, and high-normal levels of vitamin D, there was no increased risk of atrial fibrillation. Those with excess levels (above 100 ng/mL) of vitamin D had 2.5 times greater risk of atrial fibrillation compared to those with lower levels.

The authors of this study recommended that people have their **blood tested** to ensure they are taking the proper dose of vitamin D.

We at Life Extension long ago noted wide dose-response variability with vitamin D and recommended **25-hvdroxvvitamin D** blood tests to ensure our members are in the optimal range of between 50-80 ng/mL. Most members are surprised that even taking **5,000 IU** a day (or more) of supplemental vitamin D does not always get them above **50 ng/mL**. In rare instances, however, doses of less than **5,000 IU** result in blood levels greater than **100 ng/mL**.

These real world findings confirm the importance of checking one's vitamin D blood status after initiating a daily dose significantly higher than **2,000 IU** to establish how much vitamin D is individually needed to achieve optimal ranges (**50–80 ng/mL**) and not excess levels (over **100 ng/mL**).

Atrial Fibrillation May Not Have Been Caused By Vitamin D

It is interesting to note that in patients with excess amounts (greater than 100 ng/mL) of 25-hydroxyvitamin D, a significant increase in hypothyroidism (sluggish thyroid function) was noted by the researchers who presented at the American Heart Association conference.

While hyperthyroidism (overactive thyroid function) is a well-known contributing factor in atrial fibrillation, in fact hypothyroidism is an underappreciated cause of heart disease, high cholesterol, and atrial fibrillation.

The high prevalence of hypothyroidism in those with excess 25-hydroxyvitamin *D* represents an underappreciated risk factor for atrial fibrillation in this observational trial. In other words, it may have been hypothyroidism that caused the increased incidence of atrial fibrillation and not the vitamin D.⁸⁻¹⁰ We nonetheless continue to recommend that members keep 25-hydroxyvitamin *D* levels below 100 ng/mL.



Symptoms, Concerns, and Causes of Atrial Fibrillation

Atrial fibrillation is usually accompanied by symptoms related to a rapid heart rate. Rapid and irregular heart rates may be perceived as palpitations or exercise intolerance. Sometimes atrial fibrillation symptoms produce angina and shortness of breath (in response to strenuous activity) or edema. An electrocardiogram test can usually diagnose atrial fibrillation.

Some common (and often preventable) causes of atrial fibrillation are:6

- Hypertension (high blood pressure)
- · Coronary artery disease
- Mitral stenosis (rheumatic heart disease or mitral valve prolapse)
- Mitral regurgitation
- · Hypertrophic cardiomyopathy
- Pericarditis
- Previous heart surgery
- Excessive alcohol consumption ("binge drinking")
- Hyperthyroidism (excess thyroid hormone secretion)

The primary danger of atrial fibrillation is that it can cause an **abnormal blood clot** to form in the left atrial chamber that breaks away and travels up the carotid artery causing a stroke. Patients with atrial fibrillation are usually prescribed anti-arrhythmic and anti-coagulant drugs to reduce this risk.

Ideally, the underlying cause of atrial fibrillation is identified and corrected so the problem goes away. Some cases of atrial fibrillation resolve themselves and require no treatment, or the patient takes steps to correct lifestyle choices that bring on atrial fibrillation.

We would expect anyone who may have developed atrial fibrillation in response to excess blood levels of **25-hydroxyvitamin D** would be able to reverse the problem by lowering their vitamin D dose. Since vitamin D is fat-soluble, we would recommend that someone who had been taking **10,000 IU** a day of vitamin D and whose blood levels of **25-hydroxyvitamin D** are over **100 ng/mL** should reduce their dose to no more than **2,000 IU** a day for two-three months and then take another **25-hydroxyvitamin D** blood test. If **25-hydroxyvitamin D** levels drop below **50 ng/mL**, they may want to initiate supplementation with an additional **2,000** to **5,000 IU** a day and re-check their blood within the next three months.

Excess Vitamin D Intake Relatively Rare

Life Extension meticulously tracks its members' blood test results to look for trends that may indicate beneficial or detrimental events occurring in their bodies.

Before members started supplementing with higher doses of vitamin D, the majority (85%) had less than optimal levels, placing them at higher risk for contracting degenerative disease.

Since members have been taking higher vitamin D doses, this insufficiency has been largely corrected with relatively few results above 100 ng/mL, which can be easily reversed by reducing the daily dose of vitamin D.

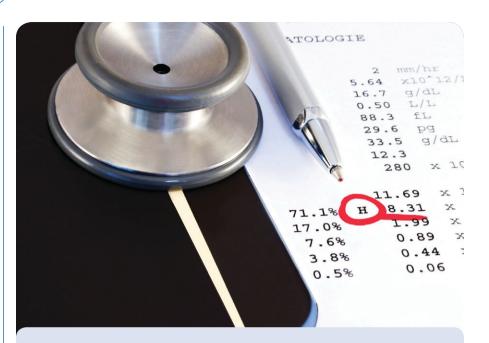
The more common challenge is someone taking **5,000 IU** (and higher) of vitamin D3 a day and still not being able to reach **50 ng/mL**.

Since even conventional medicine's upper limit reference range for 25-hydroxyvitamin D is 100 ng/mL, anyone who had their blood tested should have been able to adjust their vitamin D downward if their reading was above this level.

Do You Know What Your 25-hydroxyvitamin D Level Is?

If you've had your blood tested through Life Extension's convenient blood testing service and misplaced your results, just call us at **1-800-208-3444** and we will mail, email, or fax you a copy of your results.

If you are taking more than **2,000 IU** of supplemental vitamin D and have <u>never</u> had your blood tested for **25-hydroxyvitamin D**, we highly recommend it. The 25-hydroxyvitamin D test is



Critical Importance of Maintaining Optimal Vitamin D Status

No other nutrient, drug, or hormone has gained \underline{more} scientific credibility than $\pmb{vitamin}$ \pmb{D} .

<u>Insufficient</u> vitamin D is linked to virtually <u>every</u> age-related disorder including **cancer**, 11-20 **vascular disease**, 21-25 and **chronic inflammation**. 12,26-30 Adults (and children) with <u>higher</u> **vitamin** D levels contract substantially <u>fewer</u> cold, flu, and other **viral infections**. 31-33

Numerous biological mechanisms have been identified to explain <u>how</u> vitamin D protects against so many human ailments.³⁴⁻³⁸ Aging humans who fail to maintain optimal vitamin D status face increased risks of premature disability and death.

so important we now include it in our popular Male and Female Panels.

Based on the findings reported at the American Heart Association conference, we have further confirmation that the optimal ranges of 25-hydroxyvitamin D (50–80 ng/mL) are safe and significantly effective in protecting against common agerelated problems. There is now a basis (not yet published) to ensure that one does not exceed 100 ng/mL, which can be readily accomplished via low-cost blood testing.

Unique Blood Testing Services

No organization is more concerned about the health and longevity of its members than Life Extension. We have not heard of any other program that mines historical blood test data to notify individuals of new findings that can affect their health.

A benefit that many members may not realize is that our computer database readily enables us to go back and identify members whose results are in potentially unsafe ranges. So when

a new finding appears that we can corroborate, such as where safe **25-hydroxyvitamin D** levels should be; we can notify those who are above the range or below these ranges so they can take corrective actions.

Life Extension retains copies of its clients' previous blood tests dating back to March of **2008** so we can quickly send these reports via email or in paper form at no charge to you or your doctor. I think many of you have endured the bureaucracy that occurs whenever you have to interact with the medical establishment, as they erect barriers to the simplest patient request.

It is sometimes important to review previous blood test results in order for your doctor to identify trends that may indicate either a benign situation or one that requires medical attention. I recall sitting at lunch with a member who called his doctor and asked to obtain a copy of previous blood tests results. This member was told the cost would be \$250 and results would not be produced right away. I told this member he could call Life Extension anytime and obtain previous blood test results at no charge with a turnaround time of less than three days.

Sharply Discounted Blood Tests

In **1996**, we initiated a low-cost service whereby members could request their own blood tests.

A lot of people express surprise when their blood test results uncovers elevated glucose, triglycerides or the many other factors that predispose them to heart attack and stroke. These individuals often tell us "these blood markers never used to be this high." We try to respond diplomatically, but our stark message is

that "your blood has never been tested when you were this old."

The irrefutable fact is that younger individuals often have low levels of vascular disease markers (such as LDL, triglycerides, glucose, etc.), but these insidious killers creep up as one ages. When blood test results reveal disease markers to be out of balance, corrective actions can be taken before irreversible disease manifests.

Culprits that preclude Americans from having their blood properly tested are inconvenience, long waits at doctor's offices, physician ignorance about what tests to prescribe, and high costs.

Life Extension long ago solved these impediments by enabling members to order comprehensive blood tests directly, go to a drawing station in their area usually with no appointment required, and obtain the critical blood tests they need at a fraction of the price charged by commercial laboratories.

Once a year, the price of the comprehensive **Male** or **Female Blood Test Panel** is sharply **discounted** so that members can ascertain their disease risk status and initiate preemptive measures

before acute illness strikes.

The retail price for the many individual tests included Male or Female Blood Test Panels can be astoundingly high, but Life Extension members obtain them for only \$199 during the annual Blood Test Super Sale. This year we are including the 25-hydroxyvitamin D blood test in these comprehensive panels at no additional charge.

I encourage you to obtain your Male or Female Blood Test Panel soon. We send your requisition out immediately, but you can walk in for your blood draw at a time during normal business hours that is convenient to you. The next page describes the many unique tests that are included in Life Extension's comprehensive panels.

To order the **Male** or **Female Blood Test Panel** at these oncea-year **discounted** prices, call **1-800-208-3444** (24 hours/day).

For longer life,

William Faloon



References

- 1. Available at: http://circ.ahajournals.org/ cgi/content/meeting_abstract/ 124/21_MeetingAbstracts/ A14699?sid=d8af4ab7-eb16-4360-8e52-179868c1e439. Accessed November 21,
- 2. MacLaughlin J, Holick MF. Aging decreases the capacity of human skin to produce vitamin D3. J Clin Invest. 1985 Oct:76(4):1536-8.
- Holick MF. Sunlight and vitamin D for bone health and prevention of autoimmune diseases, cancers, and cardiovascular disease Am J Clin Nutr 2004;80:1678S-888
- Available at: http://www.merckmanuals. com/home/digestive_disorders/biology_ of the digestive system/effects of aging on_the_digestive_system.html. Accessed January 30, 2012.
- Available at: http://www.medscape.com/ viewarticle/465717. Accessed November 21. 2011.
- Available at: http://www.webmd.com/ heart-disease/atrial-fibrillation/ heart-disease-atrial-fibrillation-basics. Accessed November 21, 2011.
- 7. Available at: http://www.mayoclinic.org/ medical-edge-newspaper-2009/ july-03a.html. Accessed November 21,
- Tajiri J, Hamasaki S, Shimada T, Morita M, Higashi K, Ohishi S, et al. Masked thyroid dysfunction among elderly patients with atrial fibrillation. *Jpn Heart J*. 1986 Mar:27(2):183-90.
- 9. Barnes DJ, O'Connor JD, Bending JJ. Hypothyroidism in the elderly: clinical assessment versus routine screening. Br J Clin Pract. 1993 May-Jun;47(3):123-7.
- 10. Park YJ, Yoon JW, Kim KI, Lee YJ, Kim KW, Choi SH, et al. Subclinical hypothyroidism might increase the risk of transient atrial fibrillation after coronary artery bypass grafting. Ann Thorac Surg. 2009 Jun;87(6):1846-52.
- 11. Edlich R, Mason SS, Chase ME, Fisher AL, Gubler K, Long WB 3rd, et al. Scientific documentation of the relationship of vitamin D deficiency and the development of cancer. J Environ Pathol Toxicol Oncol. 2009 28(2):133-41.
- 12. Holick MF. Vitamin D: important for prevention of osteoporosis, cardiovascular heart disease, type 1 diabetes, autoimmune diseases, and some cancers. South Med J. 2005 Oct;98(10):1024-7.
- 13. Garland CF, Gorham ED, Mohr SB, Garland FC. Vitamin D for cancer prevention: global perspective. Ann Epidemiol. 2009 Jul;19(7):468-83.
- 14. Penna-Martinez M, Ramos-Lopez E, Stern J. Hinsch N. Hansmann ML. Selkinski I, et al. Vitamin D receptor polymorphisms in differentiated thyroid carcinoma. Thyroid. 2009 Jun;19(6): 623-8

- 15. Chiang KC, Chen TC. Vitamin D for the prevention and treatment of pancreatic cancer. World J Gastroenterol. 2009 Jul 21:15(27):3349-54.
- 16. Lipworth L, Rossi M, McLaughlin JK, et al. Dietary vitamin D and cancers of the oral cavity and esophagus. Ann Oncol. 2009 Sep:20(9):1576-81.
- 17. Crew KD, Gammon MD, Steck SE, et al. Association between plasma 25-hydroxyvitamin D and breast cancer risk. Cancer Prev Res (Phila). 2009 Jun:2(6):598-604.
- 18. Wesseling-Perry K, Salusky IB. Is replacement therapy with nutritional and active forms of vitamin D required in chronic kidney disease mineral and bone disorder? Curr Opin Nephrol Hypertens. 2009 Jul;18(4):308-14.
- 19. Giovannucci E, Liu Y, Rimm EB, et al. Prospective study of predictors of vitamin D status and cancer incidence and mortality in men. J Natl Cancer Inst. 2006 Apr 5.98(7):451-9
- 20. Wu K, Feskanich D, Fuchs CS, Willett WC, Hollis BW, Giovannucci EL, A nested case control study of plasma 25-hydroxyvitamin D concentrations and risk of colorectal cancer. J Natl Cancer Inst. 2007 Jul 18;99(14):1120-9
- 21. Gouni-Berthold I. Krone W. Berthold HK. Vitamin D and cardiovascular disease. Curr Vasc Pharmacol. 2009 Jul:7(3):414-22.
- 22. Szabó B, Merkely B, Takács I. The role of vitamin D in the development of cardiac failure. Orv Hetil. 2009 Jul 26;150(30):1397-402.
- 23. Giovannucci E, Liu Y, Hollis BW, Rimm EB. 25-hydroxyvitamin D and risk of myocardial infarction in men: a prospective study. Arch Intern Med. 2008 Jun 9;168(11):1174-80.
- 24. Dobnig H, Pilz S, Scharnagl H, Renner W, Seelhorst U, Wellnitz B, et al. Independent association of low serum 25-hydroxyvitamin d and 1.25-dihydroxyvitamin d levels with all-cause and cardiovascular mortality. Arch Intern Med. 2008 Jun 23 168(12):1340-9.
- 25. Martins D, Wolf M, Pan D, et al. Prevalence of cardiovascular risk factors and the serum levels of 25-hydroxyvitamin D in the United States: data from the Third National Health and Nutrition Examination Survey. Arch Intern Med. 2007 Jun 11:167(11):1159-65.
- 26. Suzuki Y, Ichiyama T, Ohsaki A, Hasegawa S, Shiraishi M, Furukawa S. Anti-inflammatory effect of 1alpha,25-dihydroxyvitamin D(3) in human coronary arterial endothelial cells: Implication for the treatment of Kawasaki disease. J Steroid Biochem Mol Biol. 2009 Jan;113(1-2):134-8.
- 27. Cutolo M, Otsa K, Laas K, et al. Circannual vitamin d serum levels and disease activity in rheumatoid arthritis: Northern versus Southern Europe. Clin Exp Rheumatol. 2006 Nov-Dec;24(6):702-4.

- 28. Dietrich T, Nunn M, Dawson-Hughes B, Bischoff-Ferrari HA. Association between serum concentrations of 25-hydroxyvitamin D and gingival inflammation. Am JClin Nutr. 2005 Sep 82(3):575-80.
- 29. Xia JB, Wang CZ, Ma JX, An XJ. Immunoregulatory role of 1,25-dihydroxyvitamin D(3)-treated dendritic cells in allergic airway inflammation. Zhonghua Yi Xue Za Zhi. 2009 Mar 3 89(8):514-8.
- 30. Mathieu C, Adorini L. The coming of age of 1,25-dihydroxyvitamin D(3) analogs as immunomodulatory agents. Trends Mol Med. 2002 Apr;8(4):174-9.
- 31. Ginde AA, Mansbach JM, Camargo CA Jr. Association between serum 25-hydroxyvitamin D level and upper respiratory tract infection in the Third National Health and Nutrition Examination Survey. Arch Intern Med. 2009 Feb 23;169(4):384-90.
- 32. Karatekin G, Kaya A, Saliho lu O, Balci H. Nuho lu A. Association of subclinical vitamin D deficiency in newborns with acute lower respiratory infection and their mothers. Eur J Clin Nutr. 2009 Apr:63(4):473-7.
- 33. Cannell JJ, Vieth R, Umhau JC, et al. Epidemic influenza and vitamin D. Epidemiol Infect. 2006 Dec;134(6):1129-40.
- 34. Alvarez-Díaz S, Valle N, García JM, et al. Cystatin D is a candidate tumor suppressor gene induced by vitamin D in human colon cancer cells. J Clin Invest. 2009 Aug;119(8):2343-58.
- 35. Lowe L. Hansen CM, Senaratne S. Colston KW. Mechanisms implicated in the growth regulatory effects of vitamin D compounds in breast cancer cells. Recent Results Cancer Res. 2003 164:99-110.
- 36. Moreno J, Krishnan AV, Peehl DM, Feldman D. Mechanisms of vitamin Dmediated growth inhibition in prostate cancer cells: inhibition of the prostaglandin pathway. Anticancer Res. 2006 Jul-Aug;26(4A):2525-30.
- 37. Lehmann B. The vitamin D3 pathway in human skin and its role for regulation of biological processes. Photochem Photobiol. 2005 Nov-Dec;81(6):1246-51.
- 38. Qiao G, Kong J, Uskokovic M, Li YC. Analogs of 1alpha,25-dihydroxyvitamin D(3) as novel inhibitors of renin biosynthesis. J Steroid Biochem Mol Biol. 2005 Jun;96(1):59-66.



MALE AND FEMALE BLOOD TEST PANELS

Unlike commercial blood tests that evaluate only a narrow range of risk factors, Life Extension's **Male** and **Female Blood Test Panels** measure a wide range of blood markers that predispose people to common age-related diseases. Just look at the **huge** number of parameters included in the **Male and Female Blood Test Panels**:

MALE PANEL

LIPID PROFILE

Total Cholesterol

LDL (low-density lipoprotein) calculated

HDL (high-density lipoprotein)

Triglycerides

CARDIAC MARKERS

C-Reactive Protein (high sensitivity) **Homocysteine**

HORMONES

DHEA-S

Free and Total Testosterone

Estradiol (an estrogen) **TSH** (thyroid function)

Vitamin D 25 hydroxy



METABOLIC PROFILE

Glucose

Kidney function tests: creatinine, BUN,

uric acid, BUN/creatinine ratio

Liver function tests: AST, ALT, LDH, GGT,

bilirubin, alkaline phosphatase

Blood minerals: calcium, potassium, phosphorus, sodium, chloride, iron **Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio

COMPLETE BLOOD COUNT (CBC)

Red Blood Cell count including: hemoglobin,

hematocrit, MCV, MCH, MCHC, RDW

White Blood Cell count including:

lymphocytes, monocytes, eosinophils,

neutrophils, basophils

Platelet count

CANCER MARKER

PSA (Prostate Specific Antigen)

FEMALE PANEL

LIPID PROFILE

Total Cholesterol

LDL (low-density lipoprotein) calculated

HDL (high-density lipoprotein)

Triglycerides

CARDIAC MARKERS

C-Reactive Protein (high sensitivity) **Homocysteine**

HORMONES

Progesterone

DHEA-S

Free and Total Testosterone

Estradiol (an estrogen)

TSH (thyroid function)

Vitamin D 25 hydroxy

NOW INCLUDES VITAMIN D

METABOLIC PROFILE

Glucose

Kidney function tests: creatinine, BUN,

uric acid, BUN/creatinine ratio

Liver function tests: AST, ALT, LDH, GGT,

bilirubin, alkaline phosphatase

Blood minerals: calcium, potassium, phosphorus, sodium, chloride, iron

Blood proteins: albumin, globulin, total protein, albumin/globulin ratio

COMPLETE BLOOD COUNT (CBC)

Red Blood Cell count including: hemoglobin,

hematocrit, MCV, MCH, MCHC, RDW

White Blood Cell count including:

lymphocytes, monocytes, eosinophils,

neutrophils, basophils

Platelet count

Non-member retail price: \$400 • Everyday member price: \$269

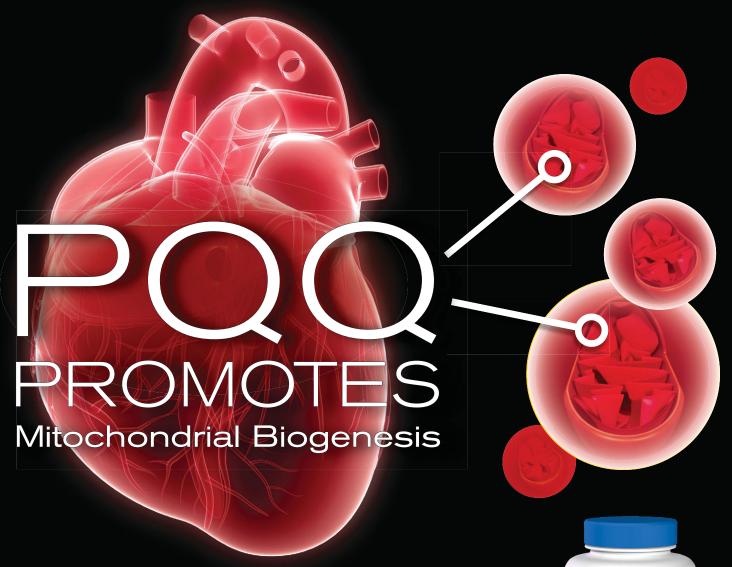
Blood Test Super Sale member price: \$199 • Enjoy these savings until June 4, 2012

To obtain these comprehensive Male or Female Panels at these low prices,

call 1-800-208-3444 to order your requisition forms.

Then—at your convenience—you can visit one of the blood-drawing facilities provided by LabCorp in your area. (Restrictions apply in NY, NJ, RI, MA)

If you plan to use the result of these blood tests to assist in a medically supervised weight loss program, consider ordering the Male or Female Weight Loss Panel for the blood test super sale member price of \$224.25 through June 4, 2012. These panels were designed to offer additional hormone testing for those desiring assistance with weight loss.



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.



Item #01500

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 <u>overall</u> health, especially as we age.⁸⁻¹⁴ Energy-intensive organs like the heart and brain are *dense* with mitochondria.

Until recently, the <u>only</u> 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.

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 mitochondria⁷—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.
- 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 <u>support</u> 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 <u>and</u> cognitive function—alone <u>and</u> 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 <u>natural</u> fermentation process. The result is the highest quality PQQ available on the market today called **BioPQQ™**.

A bottle containing **30 10 mg** vegetarian capsules of **PQQ Caps with BioPQQ**™ retails for \$24. If a member buys four bottles, the price is reduced to just **\$16.50** per bottle.

A 10 mg dose of **PQQ** is also included in the **Mitochondrial Energy Optimizer with BioPQQ™** and **Mitochondrial Basics with BioPQQ™** formulas.

Contains rice.



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

BioPQQ™ is a trademark of MGC (Japan).

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.
- Entrez Gene: PARGC1A peroxisome proliferatoractivated receptor gamma, coactivator 1 alpha [Homo sapiens] GenelD: 10891.
- 17. Cardiovasc Drugs Ther. 2004 Nov;18(6):421-31.
- 18. J Cardiovasc Pharmacol Ther. 2006 Jun;11(2):119-28.
- Biochem Biophys Res Commun. 2007 Nov 16;363(2):257-62.
- 20. FOOD Style. 2009;21:13(7)50-3. [Tokyo].

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

To order *Neuro-Mag*™ Life Extension **Magnesium L-Threonate** LifeExtension Neuro-mag Magnesium L-Threonate Neuro-Mag **Capsules or Powder** call 1-800-544-4440 or visit www.LifeExtension.com Item # 01603 Item # 01602

YOU MAY BE ONE OF THEM.

Optimal amounts of magnesium may now be obtained in a novel, highly absorbable form called **Neuro-Mag™ Magnesium L-**Threonate, 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, energy metabolism and mood, researchers are now focusing intensely on magnesium's benefits for cognitive function.2

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

Scientifically Advanced, Lab Tested

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, **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 highly absorbable brain health-supporting magnesium is also available in a good tasting powder mix called Neuro-Mag[™] Magnesium L-Threonate with Calcium and Vitamin D3 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.

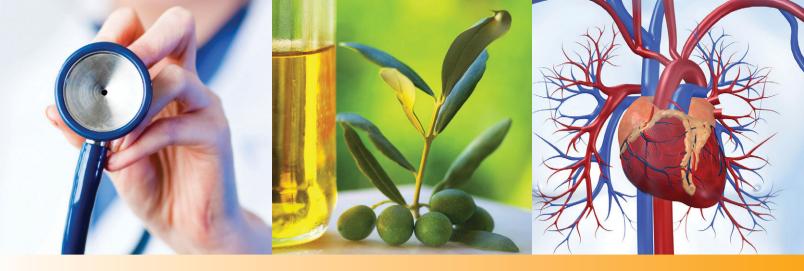
This offers maturing individuals an easy way to obtain these key nutrients in one simple formula.

A bottle containing 90 vegetarian capsules of Neuro-Mag™ Magnesium L-Threonate or <u>30</u> scoops of Neuro-Mag™ Magnesium L-Threonate with Calcium and Vitamin D3 Powder retails for \$40. If a member buys four bottles, the price is reduced to \$27 per bottle. Contains corn.

- References
 1. Available at: http://www.mit.edu/press/2010/ Available at: http://www.initedu/piess/20 magnesium-supplement.html. Accessed Sept 1, 2011. Neuron. 2010 Jan 28;65(2):165-77. Ann Pharmacother. 2002 Feb;36(2):255-60.

- Br J Sports Med. 2006 Sep;40(9):773-8. Congest Heart Fail. 2006 Jan-Feb;12(1):9-13. J Bone Miner Res. 1998 Apr;13(4):749-58. Clinica Chimica Acta. 2000;294:1-26. 8. Pharmacol Rep. 2008 Sept-Oct;60(5):588-9.

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



Omega-3, Vitamin A Slow the Progression of **Devastating Eye Disease**

An article published online in the Archives of Ophthalmology describes the discovery of Harvard researchers of a benefit for omega-3 fatty acids in combination with vitamin A for individuals with retinitis pigmentosa.*

Eliot L. Berson, MD, of Harvard Medical School and his associates analyzed data from 357 adults with retinitis pigmentosa who participated in one of three randomized clinical trials that were conducted from 1984 to 1991, 1996 to 2001 and 2003 to 2008. All subjects were receiving 15,000 international units vitamin A for four to six years. Dietary questionnaires completed upon enrollment and at yearly follow-up visits were analyzed for the intake of omega-3 fatty acids.

Among those whose intake of omega-3 fatty acids was classified as high, a 40% reduction in

the average yearly rate of decline of distance visual acuity was

> observed in comparison with those who consumed lower levels.

Editor's note: Retinitis pigmentosa is a disease that begins with night blindness in adolescence and progresses to side vision loss, tunnel vision, and eventual blindness in some men and women.

-D. Dye

Arch Opthalmol. 2012 Feb 13.

Shortened Telomeres Associated with Greater Risk of Cardiovascular Disease and Early Mortality

A recent issue of Arteriosclerosis, Thrombosis and Vascular Biology reports the finding of Danish researchers of a link between short telomeres and an increased risk of heart disease and early death.*

University of Copenhagen Clinical Professor of Genetic Epidemiology Borge Nordestgaard and his colleagues measured white blood cell telomere length in blood samples from 19,838 participants in the Copenhagen City Heart Study and the Copenhagen General Population Study. The subjects were followed for up to 19 years, during which time 2,038 cases of ischemic heart disease, 929 heart attacks, and 4,342 deaths occurred.

Telomere length was found to decrease with age in both men and women. Shortened telomeres were detected in 25% of the participants, and were associated with a 49% adjusted increase in heart attack risk, a 24% increased risk of heart disease, and a 25% greater risk of early mortality.

Editor's note: Telomeres cap and protect the ends of chromosomes and shorten with the passage of time, which makes them useful as a marker of cellular aging. While accelerated telomere shortening has been associated with obesity, smoking, and other factors; multivitamin use, exercise, and high levels of omega-3 fatty acids have been found to have a protective effect on their maintenance.

-D. Dve

* Arterioscler Thromb Vasc Biol. 2012 Mar;32:822-9.

Mechanism Found For DIM in Reducing Ovarian Cancer Cell Growth

In the journal *BMC Medicine*, researchers from Texas Tech University Health Sciences report the discovery of a mechanism for diindolylmethane (DIM), an active metabolite of indole-3-carbinol found in cruciferous vegetables, to induce programmed cell death (apoptosis) in cultured ovarian cancer cells.*

The current study explored the effects of DIM in several ovarian cancer lines. It was found that DIM induces apoptosis, and that it exerts its effects by blocking the production and activation of STAT3, a transcription factor that is associated with the growth and survival of cells which is over-expressed in cases of resistance to the chemotherapy cisplatin.

In further experimentation, the researchers pretreated ovarian cancer cells with DIM, followed by the administration of cisplatin for 24 hours. The combination resulted in a **50** to **70%** reduction in cell survival,

in contrast with a **28**% reduction in cells treated with cisplatin alone.

Editor's note: Furthermore, mice treated with DIM alone or DIM and cisplatin experienced retarded growth of implanted ovarian tumors compared to untreated mice or animals that received cisplatin alone.

—D. Dye

* *BMC Med.* 2012 Jan 26.

Flax Fiber Suppresses Appetite and Food Intake

An article published in the journal *Appetite* reports the finding of researchers from the University of Copenhagen of an appetite-suppressing effect for flaxseed in healthy young men and women.*

In a crossover study, 24 men and women underwent an overnight fast after which they were assigned to a drink containing 2.5 grams soluble flaxseed fibers or no fiber. Appetite was assessed every 30 minutes for two hours. A meal was then served to the participants and food consumption measured. A second crossover study involved 20 participants, and compared the effects of the same flax-containing drink to flax fiber tablets taken with the control beverage.

While the flax drink decreased hunger and food intake in comparison with the control beverage, no significant differences were observed between the effects of the flax drink and flax tablets. Calorie intake was **9**% less after consuming the flax drink in comparison with that of subjects who consumed the control beverage.

Editor's note: While a diet that contains foods that are naturally high in fiber may help control appetite, "The advantage of flaxseed fibers over other dietary fibers is that a dose of 2.5 grams is sufficient to impact appetite," the authors write. "This is a considerably smaller amount than in most other studies, which administered dietary fiber doses ranging from 5 to 12 grams."

—D. Dye

* Appetite. 2012 Jan 11.

Supplementing a Mediterranean Diet with Coenzyme Q10 Lowers Inflammation

A study described in the *Journals of Gerontology Series A* revealed that the addition of coenzyme Q10 (CoQ10) to a Mediterranean diet lowers a number of indicators of inflammation in older men and women.*

Spanish researchers enrolled ten men and ten women who were not being treated for inflammation or elevated lipids. The regimens consisted

> of a Mediterranean diet, a Mediterranean diet supplemented with 200 milligrams per day of coenzyme Q10, and a Western diet containing high amounts of saturated fat.

> Consumption of the Mediterranean diet was found to be associated with a reduction in the expression of a number of genes involved in the inflammatory process. The addition of coenzyme Q10 to the diet further reduced the expression of three significant genes.

Editor's note: Authors Jose Lopez-Miranda and colleagues write that, "In healthy humans, plasma oxidative damage may be partially prevented by CoQ10 supplementation, which has been replicated in other populations, like psoriasis or coronary heart disease patients."

-D. Dye

* J Gerontol A Biol Sci Med Sci. 2012 Jan;67(1):3-10.



Study to Analyze Benefits of Vitamin D, Omega-3 Fatty Acids in Older Men and Women

A study proposed by the University of Zurich will evaluate the effects of an exercise program and/or supplementation with omega-3 polyunsaturated fatty acids or vitamin D on the risk of age-related diseases, including arthritis, cardiovascular disease, dementia and osteoporosis, in a senior population.*

The DO-HEALTH trial will recruit over 2,000 men and women aged 70 and older residing in five European countries beginning in May of this year. Professor Heike Bischoff-Ferrari and her associates will assess the safety and efficacy of the regimens on the risk of age-related conditions as well as on the ability to perform activities of daily living. "DO-HEALTH hopes to provide definitive evidence that the three interventions, alone or combined, are able to reduce the number of fractures, the functional and cognitive decline, the risk of hypertension, and the risk of infections in the senior population," Dr. Bischoff-Ferrari stated.

Editor's note: "Various studies have shown that vitamin D and simple targeted exercise programs can significantly improve functional mobility and reduce falls and fractures in seniors, even by up to 30%," Dr. Bischoff-Ferrari noted.

—D. Dye

* Vitamin D3-Omega 3-Home Exercise-Healthy Aging and Longevity Trial (DO-HEALTH), Zurich, Switzerland.

Green Tea Helps Reduce the Risk of Disability in Older Individuals

A report published in the *American Journal of Clinical Nutrition* reveals an association between lower risk of incident functional disability, such as that caused by cognitive impairment, osteoporosis, and stroke, and increased intake of green tea in older men and women.*

The researchers analyzed data from 13,988 Japanese men and women aged 65 and older. Questionnaires completed upon enrollment were analyzed for the frequency of green, oolong, and black tea intake. Over a three year follow-up period, incident functional disability was documented in 1,316 men and women.

For subjects who consumed one to two cups green tea per day, the risk of becoming disabled was **10%** lower than those who reported drinking less than a cup per day. The probability of disability declined with greater green tea consumption to a **33%** lower risk for those whose intake was five cups per day or more.

Editor's note: Previous studies have uncovered associations between green tea consumption and a lower risk of stroke, dementia, fracture, and depression, all of which can contribute to disability. Green tea polyphenol intake has also been associated with improved leg strength, thereby reducing frailty, a major disability risk factor.



* Am J Clin Nutr. 2012 Jan 25.



Fasting Retards Tumor Growth

An article published in *Science Translational Medicine* reveals the discovery of a significant reduction in the growth of cancerous tumors subjected to short cycles of fasting. The regimen was found to improve the effect of chemotherapy but also worked well without drug treatment in cultured cancer cell lines and in mice.*

The researchers initially determined that glucose and growth factor restriction sensitized 15 of 17 cancer cell lines to chemotherapy drugs. In studies with live mice that received implanted human and animal cancer tumors, animals that had access to only water for 48 to 60 hours experienced benefits that, in some cases, were comparable to chemotherapy. However, the greatest benefits were observed in animals that underwent both chemotherapy and fasting. In two experiments with mice injected with neuroblastoma cells, approximately **25** and **42**% of fasted animals that received chemotherapy achieved long term survival, in contrast with zero chemotherapy-treated animals that consumed a normal diet.

Editor's note: The proposed mechanism behind the protective action of fasting centers around the allocation of cellular energy resources. In the fasting state when available energy nutrients are low, a normal cell utilizes available cellular energy towards its basic maintenance needs and away from reproductive and growth processes. Cancer cells lack this same capability because their oncogenes (often mutated genes that cause rapid replication of tumor cells) block this response and by allocating cellular energy towards replication, there is not enough left to support basic processes and the cell dies.

—D. Dye

* Sci Translat Med. 2012 Feb 8.



Greater Intake of Calcium, Vitamins Associated with Lower Colorectal Cancer Risk

A recent issue of *Anticancer Research* reports a lower risk for colorectal cancer in association with increased intake of calcium, vitamin C, vitamin D, riboflavin, and folate.*

Researchers matched 1,760 men and women with colorectal cancer with 2,481 control subjects. Questionnaire responses were used to quantify the intake of calcium, iron, folate, and vitamins A, B1, B2, B6, B12, C, D, and E from food and supplements.

The team observed diminishing odds of having colorectal cancer in association with increased intake of calcium, vitamin C, vitamin D, riboflavin, and folate from dietary and supplemental sources. Those whose intake of calcium from supplements and food was among the top one-fifth of participants had a 41% lower adjusted risk of colorectal cancer compared to those whose intake was among the lowest fifth, and for riboflavin, the risk was 39% lower for subjects in the highest fifth.

Editor's note: A reduction in risk was also observed for increased consumption of these nutrients when derived from food alone, although the decrease was not as great as that observed for food plus supplemental sources.

_D Dve

* Anticancer Res. 2012 Feb;32(2):687-96.

FDA Warns of Counterfeit Anti-Cancer Drug Avastin®

The FDA recently announced that a counterfeit version of the anti-cancer drug Avastin® may have been purchased and used in a number of medical facilities in the United States.* Nineteen medical practices known to have purchased unapproved cancer medications were contacted to warn them about use of the possible counterfeit drug. The fake version of Avastin® that is being peddled lacks the medicine's key ingredient, bevacizumab, which may endanger patients who take the drug believing it to be the real thing. Roche, who manufactures Avastin®, conducted laboratory tests confirming the presence of the counterfeit version.

"The counterfeit product is not safe or effective and should not be used," Roche member company Genentech said in a written statement. Genentech is responsible for marketing Avastin®. The unapproved cancer medications—potentially including the counterfeit version of Avastin®—were purchased from a foreign supplier known as Quality Specialty Products, which may also be known as Montana Health Care Solutions, according to the FDA. "It sounds like the key issue with that ... is that the counterfeit vials don't have Genentech labels on them," said Donald Harvey, president of the Hematology and Oncology Pharmacists Association.

—J. Finkel

* http://www.cnn.com/2012/02/15/health/fda-avastin-counterfeit/index.html. Accessed, February 21, 2012.

Brain Proteins May Be Key to Aging

Scientists at the Salk Institute for Biological Studies have reported in the journal *Science* that they have discovered that long-lived proteins (ELLPs) in the brains of rats can persist for more than one year—a result that suggests the proteins, also found in human brains, last an entire lifetime.*

"Most cells, but not neurons, combat functional deterioration of their protein components through the process of protein turnover, in which the potentially impaired parts of the proteins are replaced with new functional copies," said senior

author Martin Hetzer, of Salk's Molecular and Cell Biology Laboratory, in a statement. "Our results also suggest that nuclear pore deterioration might be a general aging mechanism leading to age-related defects in nuclear function, such as the loss of youthful gene expression programs."

The hope is that in addition to providing data on brain aging, the information gathered may give insight into the development of neurodegenerative diseases like Parkinson's and Alzheimer's.

-J. Finkel

http://www.sciencemag.org/content/early/2012/02/01/science.1217421. abstract?sid=e3d8c684-357d-460b-8454-8539c5b90a2d. Accessed February 21, 2012.

BOOK REVIEW

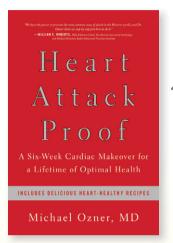
Heart Attack Proof: A Six-Week Cardiac Makeover for a Lifetime of Optimal Health by Michael Ozner, MD

It's no secret that heart disease is the number-one killer in the world. and in the United States cardiovascular disease deaths nearly outnumber deaths from all other causes combined. Heart Attack Proof: A Six-Week Cardiac Makeover for a Lifetime of Optimal Health, by Michael Ozner, MD, may be the lifeline that people with cardiac problems have been looking for. In Dr. Ozner's own words. "If we are smart and committed to change, in the majority of circumstances, we have the tools to prevent coronary heart disease...I'll guide you on a six-week journey through the

lifestyle and medical changes necessary to achieve optimum heart health. Each week we'll build on the previous week's tasks, until you've achieved a full cardiac makeover. Embracing these prevention principles and developing a heart disease prevention plan with your personal physician will allow you to take control of your health and begin your journey to becoming virtually Heart Attack Proof."

The book begins with one of the most important factors in alleviating cardiac risk: diet. In Week One, Dr. Ozner encourages people to "Take a Mediterranean Vacation...From Your Toxic American Diet." This involves taking an entire inventory of your diet, from what you buy at the grocery store, to what you eat in restaurants, to what you grab on the go. This helps establish a baseline for your diet. Once you've written everything down, the hard work begins: you have to revamp and replace all of the toxic, preservative-laden foods in your American diet with healthy, Mediterranean alternatives. Some suggestions include replacing sugary cereal with oatmeal, grilled salmon for grilled steak, and fresh fruit for cheesecake. The idea is to move you away from foods that may be causing your cardiac problems to foods that can help alleviate them. In week one, you'll also be nudged to quit smoking, get a thorough medical check-up, and to get a dental evaluation,

Week two is titled: "Get Fit for Life." As the phrase would indicate, this week is all about setting up a sound fitness plan to get your health back on



track. For added motivation, there are sections on 'exercise and heart attack,' 'exercise and hypertension,' and 'exercise and stroke' that will, in Dr. Ozner's own words, prove that, "Exercise is so powerful, it even helps people with existing heart disease, including those who have already had a heart attack." In short, exercise is medicine and Dr. Ozner provides ample reason for you to get up and get moving while offering a simple fitness plan and schedule for you to start with.

Weeks three and four deal with creating a stress free lifestyle and

achieving optimum nutrition. "Stress and anger increase the release of stress hormones, such as adrenaline and cortisol. These have the natural effects of increasing blood pressure, cholesterol, and blood sugar; causing the heartbeat to become rapid; and increasing the "stickiness" of our platelets, which raises the likelihood of a blood clot. How well you handle daily stress is key to keeping your stress hormones and stress response under control," Dr. Ozner says. Buttressing his stress relief program is an essential guide to eating well, with a basic primer on fat loss, fats, food, and how certain foods affect your body and heart. Sections on the dangers of high fructose corn syrup and the hazards of eating too much beef cannot be highlighted enough. And while it may seem obvious, Dr. Ozner's call to eat more whole grains and fresh fruit and vegetables is backed up with some interesting studies.

The book concludes with chapters that teach people how to read their most important heart numbers and an entire section on heart healthy supplements. While Life Extension® readers may be familiar with the heart healthy benefits of CoQ10 and vitamin D, there are new studies brought to light about those and other supplements that reinforce why taking vitamins and minerals are a vital component to any heart healthy plan.

To order a copy of *Heart Attack Proof*, call 1-800-544-4440 or visit www.LifeExtension.com Item#33842 • Retail price \$19.95 Member price \$14.96



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.

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

Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™



The retail price for 60 100 mg softgels of Super Ubiquinol CoO10 with **Enhanced Mitochondrial** Support™ is \$62. If a member buys four bottles, the price is reduced to \$42 per bottle. Item # 01426



The retail price for 100 50 mg softgels of Super **Ubiquinol CoO10 with Enhanced Mitochondrial** Support™ is \$58. If a member buys four bottles, the price is reduced to \$39.75 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, the price is reduced to \$42 per bottle. Item # 01431

Item # 01425

Item # 01431

PrimaVie® is a registered trademark of Natreon, Inc. Kaneka QH® is a registered trademark of Kaneka Corporation. To order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

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

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). 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.



When Life Extension® introduced standardized green tea extract in 1993, the supplement was very expensive. As more research was published about green tea's multifaceted benefits, more companies competed to make **higher-potency** extracts

The good news for consumers is that they can obtain high-potency standardized green tea extract capsules at a fraction of the

The Life Extension Foundation Buyers Club offers 98% green tea extracts in either a **lightly caffeinated** or **decaffeinated** form. These 98% extracts are standardized to provide high potencies of critical **EGCG**, the most important **polyphenol** found in green tea. Each capsule of Mega Green Tea Extract provides more polyphenols than are found in three cups of green tea.

These highly concentrated Mega Green **Tea Extract Caps** contain **725 mg** of either lightly caffeinated or decaffeinated 98%

standardized green tea extracts. The retail price for a **100 vegetarian** capsules bottle of

If a member buys four bottles of 725 mg **Mega Green Tea Extract** capsules, the price is reduced to \$19.88 per



Item # 00954

To order Mega Green Tea Extract, call 1-800-544-4440 or visit www.LifeExtension.com

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



Reversing Female SEXUAL DYSFUNCTION

Sexual dysfunction afflicts **43%** of women compared to **31%** of men.^{1,2} Yet the only sexual enhancement commercials you see on TV are those promoting drugs to treat male erectile dysfunction.

While prevalence of *female sexual dysfunction* increases with age,³ **40%** of affected women do not seek help from a physician.⁴ One reason is that no pharmaceutical has yet been approved for the treatment of female sexual dysfunction and doctors have no protocol (other than hormone replacement) for this condition.⁵

The exciting news is that recent discoveries have identified several new natural compounds that work together to halt the mechanisms behind female sexual dysfunction, as well as menopausal symptoms.

This article describes how these **botanical-based extracts** beneficially modulate <u>six</u> pathways that can lead to female sexual dysfunction. Just one of these extracts—taken alone—reduced sexual dysfunction for over 86% of the women enrolled in a double-blind, placebo-controlled study in just 40 days!

You will also learn how another *compound* made from several plants modulates hormonal activity behind the menopausal symptoms—which frequently trigger female sexual dysfunction. In a double-blind, placebo-controlled human study, this multi-extract blend <u>reduced</u> menopausal symptoms by an average of **62%** in **12 weeks!**⁷ >>



Preferring at times not to engage in sexual activity does not indicate a woman has female sexual dysfunction. Disinterest, or even occasional dysfunction, can be a normal response to a variety of life situations.

But when a woman is frustrated and depressed by a lack of normal sexual interest and function, it indicates disruption of one or more pathways in the body's overall physiological matrix—a condition that demands treatment.

Although the incidence of female sexual dysfunction increases with age,8 it is not an inevitable symptom of aging, and it can afflict women of any age.

One study warned that the increasing number of women with sexual dysfunction complaints indicates that "it is time for physicians to start to acknowledge women's sexuality with the same importance their patients do."4

Supporting the underlying physiological mechanisms is a vital step in preventing sexual dysfunction.

As you will learn, several **botanical extracts** have been studied—Cordvceps sinensis, maca, and a threeextract blend called *EstroG-100*TM—for their ability to complement each other and simultaneously modulate diverse biochemical pathways to provide a multifactorial treatment for this complex disorder.

How Female Sexual Dysfunction Develops

Female sexual dysfunction can be difficult to diagnose due to the complexities of the female sexual response. It manifests as one or more of a set of symptoms that can come and go: reduction of sex drive, aversion to sex, lack of arousal, vaginal dryness, pain during sex, and inability to feel pleasure or reach orgasm.

Symptoms of female sexual dysfunction may be triggered by physiological changes, especially those that affect the reproductive system such as premenstrual syndrome, pregnancy, postpartum, or menopause.9

Female sexual dysfunction is often the result of reduced levels of estrogen, testosterone, progesterone, serotonin, antioxidants, and nitric oxide; or increased levels of pro-inflammatory cytokines and monoamine oxidase.9

In the brain, increased levels of monoamine oxi**dase** destroy the pleasure chemical **dopamine**.

Menopausal transition is considered the most difficult time to remain sexually healthy and can be a frequent cause of reduced sexual interest or desire in women. Menopause involves symptoms such as hot flashes, night sweats, fatigue, anxiety, and memory loss—but the accompanying depression, vaginal dryness, and loss of libido can be elements of female sexual dysfunction.

Up until a decade ago, conventional medicine erroneously treated menopausal symptoms with unnatural-to-the-human-body hormones such as *conjugated* equine estrogen plus medroxyprogesterone acetate. All that changed with the publication of a landmark July 2002 study called the Women's Health Initiative

TABLE 1

Botanical Compound	Benefit in Reversing Female Sexual Dysfunction
Cordyceps (Cs-4)	Balance communication pathways between the brain and the body, optimize adrenal function, mediate inflammation, minimize oxidative stress, support energy production.
Maca	Support balanced brain chemistry (neurotransmitters), help the body better manage stress, optimize signals from the brain to the body.
Estro G-100™	Selectively reinforce appropriate hormonal response by amplifying/inhibiting estradiol action in tissues.

(WHI), which concluded that the benefits of treatment did not outweigh the 26% increased risk of breast cancer, the 29% increased risk of heart disease, and the 41% higher risk of stroke. 10-12

Female sexual dysfunction involves the disruption of multiple physiological mechanisms for which modern medicine has no consistently safe and effective treatment.

For this reason, mainstream physicians have been virtually helpless in the face of increasing numbers of women afflicted by female sexual dysfunction or menopause, or both—until now.

Targeting Multiple Pathways

To find an effective, non-pharmaceutical solution to the complexities of female sexual dysfunction, scientists screened numerous botanical sources. They discovered specific *botanical extracts* to address the multiple underlying causes of female sexual dysfunction. Research scientists narrowed down the search and found that the following botanicals were the most effective in treating female sexual dysfunction:

- 1. Cordyceps sinensis extract
- 2. Lepidium mevenii (maca) extract
- 3. *EstroG-100*TM three-extract blend

Cordyceps

An extract of *Cordyceps sinensis*—derived from the Cs-4 strain of this medicinal mushroom—was found to have the ability to modulate various physiological pathways that impact female sexual dysfunction. Its efficacy is believed to originate with its unique composition of pharmacologically active substances.

The Cordyceps sinensis extract works on the following *distinct pathways* to:

- Modulate the hypothalamus-pituitary axis (HPA), balancing levels of estrogen and testosterone as required.6
- Optimize adrenal function, promoting downstream flow of sex hormones.6,13
- Support mitochondrial function by increasing adenosine triphosphate (ATP) production, and with it, energy levels and sexual interest. 6,14,15
- Boost antioxidant action, inhibiting the destruction of nitric oxide, and allowing normal vaginal lubrication, and sexual function.^{6,16,17}
- Moderate inflammation by controlling levels of pro-inflammatory cytokines, thus blocking their dampening effect on sexual desire, and activity. 18,19

Keys to Reversing Female Sexual **Dysfunction**

- Modern medicine offers no effective treatment for female sexual dysfunction, which afflicts 43% of women, 1,2 As a result, 40% of these women do not even bother to consult a physician.4 and are in need of a safe and effective solution.
- Scientists working on what has been termed an "important public health concern" 1,2 have identified two botanical extracts-Cordyceps sinensis and maca-that work together to modulate six distinct pathways that can lead to female sexual dysfunction.
- Cordyceps was found in placebo-controlled studies to reduce sexual dysfunction for over 66% of women-in just 40 days!6
- A third multi-plant extract, EstroG-100™, addresses the imbalance in estrogenic activity that causes the many menopausal symptoms-which often trigger sexual dysfunction. In a placebo-controlled study, this blend reduced menopausal symptoms (and sexual dysfunction risk) by 62%-in only 12 weeks!26
- These three scientifically validated natural botanical compounds are now available to safely reverse female sexual dysfunction, and alleviate menopausal symptoms.



Scientists tested the Cs-4 strain of Cordyceps in a double-blind, placebo-controlled study involving 40 elderly patients suffering from sexual dysfunction. The test group took Cordvceps Cs-4 in dosages that translate to 375 mg of commercially prepared product, because it is formulated as an 8:1 extract. Over 86% of the women in the Cs-4 group significantly improved both hyposexuality signs and symptomsin only 40 days!6

And in a similar Cordyceps sinensis study of 189 subjects with decreased sex drive, this time including both women and men, improved symptoms were noted in over 66% of participants—again, in just 40 days!6

Maca

An extract of **Lepidium peruvianum**, a high-altitude root plant popularly known as *maca*, has been shown to regulate several key physiological pathways of female sexual dysfunction. Maca is believed to work primarily by providing the optimum balance of nutrients utilized by the body's neuroendocrine system.²⁰

Scientists discovered the significant *complementary* effects of maca extract, which has been cultivated for over 2,000 years. Maca is believed to influence three different mechanisms to:

- Modulate the hypothalamus-pituitary axis. 21-23
- Regulate adrenal gland function. 23,24
- Optimize levels of brain neurotransmitters, in turn reducing the risk of decreased libido, depression, and sexual dysfunction.^{23,25}

The benefits of maca were assessed in a randomized, double-blind, placebo-controlled, crossover study. Fourteen postmenopausal women were given each day either placebo or **powdered maca** that translates to 583 mg to 875 mg a day of product, because it is formulated as a 4-6:1 extract. Sexual problems were measured using subscales of the Greene Climacteric Scale, which provides a measure of menopausal symptoms.²⁵

The participants who took maca were found to score more than 34% lower (which by this measure means better) than the placebo subjects on a standard sexual dysfunction scale. This significant improvement was observed in just six weeks! Also, the maca subjects tested 30% lower on the psychological subscale of anxiety and depression symptoms, a substantial improvement for a period of just six weeks!23

Also, to determine maca's effect on sexual dysfunction in cases that had been specifically diagnosed to be caused by taking antidepressants known as SSRIs (selective serotonin reuptake inhibitors), scientists carried out a double-blind, randomized, pilot study on 20 subjects. Sexual dysfunction was found to be reduced in the group that received maca with mean scores decreased by 25.8%, and 29.4%, on two standard sexual dysfunction scales (the ASEX and the MGH-SFQ questionnaires, respectively). Libido also improved and no adverse side effects were found.25



EstroG-100™

The third new compound comprises three plant extracts that synergistically work to correct menopausal imbalance by an action believed to be a selective modulation of estrogen activity.

When integrated into a single formula known as *EstroG-100*™, this multi-compound extract supports balanced estrogenic activity, which in turn inhibits the many symptoms of menopause—including female sexual dysfunction.

Recognizing transitional menopause to be a contributing cause of female sexual dysfunction—scientists began screening a variety of promising plant extracts for potential effect, using a method known as a non-reproductive tract target tissue response (E-screen) test.

Three extracts were eventually pinpointed for their combined beneficial effects on both menopause and female sexual dysfunction: Phlomis umbrosa, Cynanchum wilfordii, and Angelica gigas Nakai (Korean Angelica). Each of these extracts have been used for over 400 years in Korean-Chinese folk medicine. Ultimately, a potent effect was found after these three plant extracts were hotwater-extracted and blended in correct proportions within a single formula, subsequently named $EstroG-100^{TM}$.

Researchers found that EstroG-100TM enhances hormonal function possibly by optimizing estrogenic activity in some target tissues related to menopausal symptoms.²⁶ Because EstroG-100TM has not been found to have an effect on follicle stimulating hormone, estradiol, or growth hormone levels,26 its substantial menopausal relief may stem from its ability to provide activity that is similar to the action of a "phyto-SERM," a plant-based *mimic* of the drug class known as selective estrogen receptor modulators, or SERMs. These are agents that—unlike distinct estrogen

agonists or estrogen antagonists, which either boost or block estrogen—selectively enhance estrogenic activity in some tissue while inhibiting estrogenic activity in other tissue. In this way, EstroG-100TM may work by *mimicking* the benefits of SERM drugs while producing none of the serious health risks of these pharmaceuticals. A randomized, double-blind, placebo-control study showed that EstroG-100TM substantially diminished menopausal symptoms and female sexual dysfunction risk.26

This study of the three-extract *EstroG-100*™ formula involved 64 women with moderate or severe menopausal symptoms. The test group was given $Estro G-100^{TM}$ in dosages of **257 mg** twice daily, a total of **514 mg a day**. All subjects were assessed using

> the Kupperman Menopausal Index, and special scores for vaginal dryness.



Research has shown that those experiencing female sexual dysfunction can benefit from naturally elevating their testosterone levels.

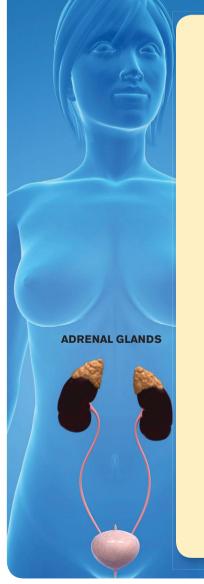
Slightly increasing testosterone levelswhich can decrease with age-restores libido, arousal response, and the relative frequency of sexual fantasy. In fact, low testosterone levels can be viewed as a contributing cause for female sexual dysfunction.

While expensive testosterone drug patches are available to women by prescription, natural approaches can raise testosterone levels safely and less expensively.

DHEA-dehydroepiandrosterone-is another hormone recognized by holistic practitioners as essential for optimal health in both men and women. Like testosterone, DHEA levels decline with age after peaking when a woman is in her twenties, increasing the risk of heart disease, cancer, osteoporosis-and female sexual dysfunction.

DHEA is released into the bloodstream by the adrenal glands and is a precursor to both testosterone and estrogen. Studies show that increasing levels of DHEA results in an increase in testosterone levels in females (but not males).

Rebalancing these hormonal levels is a key strategy in reversing female sexual dysfunction.

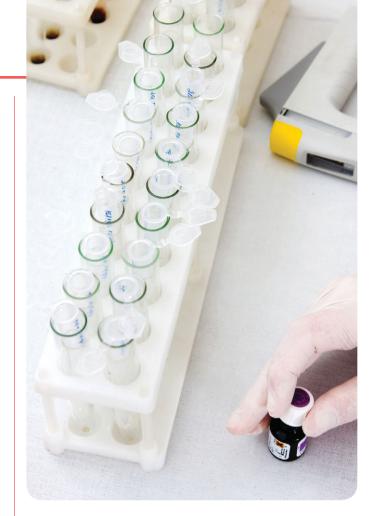


The mean Kupperman Menopausal Index score a measure of menopausal symptoms—was reduced by **62**% in the $EstroG-100^{TM}$ group, contrasted with a decrease of just 19% in the placebo group. The mean vaginal dryness score was decreased by 59% in the treatment group versus just 27% among the placebo subjects. The EstroG-100TM group experienced this substantial improvement in both sexual and menopausal symptoms within only 12 weeks, and experienced no accompanying weight gain or other negative effects.26

Diverse Mechanisms of Action

Scientific studies indicate that—when all of the botanical extracts described thus far combine—they modulate all of the following pathways involved in female sexual dysfunction.

- 1. The hypothalamus-pituitary axis (HPA) is crucial to proper sexual libido and function. The hypothalamus secretes substances that regulate the pituitary gland. The pituitary, in turn, secretes adrenocorticotropic hormone (ACTH), which regulates the *adrenal cortex*, and modulates production by the ovaries, of the key sex hormones estrogen and progesterone. Disturbances in these hormones are a common cause of female sexual dysfunction.
- 2. Adrenal glands produce important hormones that include estrogen, testosterone, progesterone, pregnenolone, aldosterone, DHEA, and adrenal androgens. When secretion of adrenal androgens or other hormones is decreased, this can cause depletion of downstream sex hormones. which in turn lowers sexual function and exacerbates menopausal transition.
- **3.** *Mitochondria* use *adenosine triphosphate* (ATP) to store, carry, and utilize energy. The biochemical reactions involved in muscle contractions depend on sufficient levels of ATP. Diminished levels of ATP can cause a form of immunological non-responsiveness sometimes associated with diminished interest in sex.
- **4.** Antioxidant activity, if deficient, can trigger female sexual dysfunction. Nitric oxide (NO) is a chemical messenger that dilates blood vessels, allowing blood to flow more quickly to various parts of the body, including the genital area. Nitric oxide is required for the ability to relax smooth muscles, for proper vaginal function, and for production of vaginal fluid. If antioxi-



dant function is compromised, free radicals can destroy nitric oxide or limit its activity. Also, the aging process itself is associated with reduced nitric acid production.²⁷ Antidepressants known as SSRIs, or selective serotonin reuptake inhibitors. can interfere with nitric oxide synthase. thus lowering nitric oxide production and blocking sexual arousal. SSRIs can also produce sexual anhedonia, an absence of any feeling of pleasure from sex, or even from orgasm.

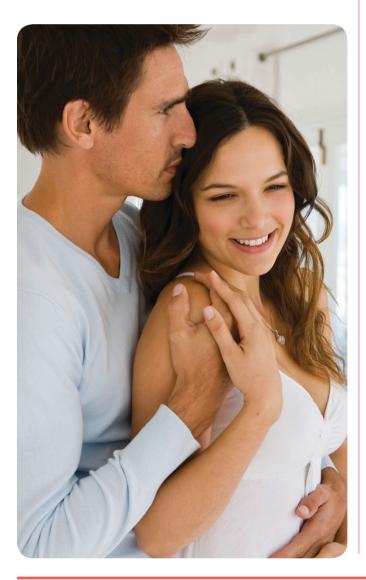
- **5.** *Inflammation* is linked to female sexual dysfunction. High levels of pro-inflammatory *cytokines* can inhibit sexual desire, attraction, and activity.²⁸
- **6.** <u>Brain neurotransmitters</u> play a key role in female sexual dysfunction, notably the compound monoamine oxidase (MAO). If MAO levels are not optimal, then depression and reduced libido can result.²⁹ When specifically asked about sexual side-effects, they were acknowledged by as many as 73% of clinical depression patients.³⁰ However, antidepressants known as *MAO-inhibitors* can compromise the MAO levels required for proper sexual function. Depletion of MAO levels is one of the links between smoking and sexual dysfunction. Conversely, too much MAO depletes dopamine,³¹ a vital neurotransmitter that enables us to experience pleasure.

7. *Menopause* involves a dramatic drop in estrogen. Often causing discomfort in itself, it also triggers sexual dysfunction in many women, 32 inhibiting libido, reducing vaginal blood flow, and causing vulvovaginal atrophy.33,34 This deterioration of urogenital tissue often causes vaginal dryness, irritation, itching, dyspareunia (pain during intercourse), vaginal bleeding with sex, and urinary infections. Serotonin levels decline along with estrogen, increasing the risk of depression and female sexual dysfunction.34

Summary

Female sexual dysfunction is an important public health concern afflicting 43% of women, 1,2 a statistic expected to explode in step with the aging population.8

Yet 40% of women suffering from female sexual dysfunction do not seek help from a physician.4



Recent scientific advances have identified two botanical based substances, Cordyceps and maca, that work together to modulate six distinct pathways that can lead to female sexual dysfunction. *Cordyceps*, taken by itself, was found in double-blind, placebocontrolled studies to reduce sexual dysfunction for over 66% of women—in only 40 days!6

A third extract, $EstroG-100^{TM}$, a multi-extract blend of compounds from three plants, balances estrogenic activity in body tissues, alleviating menopausal symptoms—which often trigger female sexual dysfunction. In a double-blind, placebo-controlled study, EstroG-100[™] reduced menopausal symptoms (and sexual dysfunction incidence) by 62% in just 12 weeks.26

While the medical establishment offers no effective treatment for the multiple mechanisms causing these conditions, natural botanical extracts can now safely reverse female sexual dysfunction, as well as menopausal symptoms.

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. Lewis RW, Fugl-Meyer KS, Corona G, et al. Definitions/ epidemiology/risk factors for sexual dysfunction. J Sex Med. 2010;7(4):1598-607.
- Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States. Prevalence and predictors. JAMA. 1999;281(6):537-44.
- Hisasue S. Kumamoto Y. Sato Y. et al. Prevalence of female sexual dysfunction symptoms and its relationship to quality of life: a Japanese female cohort study. Urology. 2005 Jan;65(1):143-8.
- 4. Berman L, Berman J, Felder S, et al. Seeking help for sexual function complaints: what gynecologists need to know about the female patient's experience. Fertil Steril. 2003 Mar;79(3):572-6.
- Jordan R, Hallam TJ, Molinoff P, Spana C. Developing treatments for female sexual dysfunction. Clin Pharmacol Ther. 2011;89(1):137-
- 6. Zhu J-S. Halpern GM. Jones K. The scientific rediscovery of an ancient Chinese herbal medicine: Cordyceps sinensis parti. J Alt Complement Med. 1998;4(3):289-303.
- 7. Chang A, Kwak B-Y, Yi K, Kim JS. The effect of herbal extract (EstroG-100) on pre-, peri- and post-menopausal women: a randomized double-blind, placebo-controlled study. Phtyother Res. 2011;doi:10.1002/ptr.3597.
- 8. Hiasue S, Kumamoto Y, Sato Y, et al. Prevalence of female sexual dysfunction symptoms and its relationship to quality of life: a Japanese female cohort study. Urology. 2005 Jan;65(1):143-8.
- Saks BR. Common issues in female sexual dysfunction. Psych Times. 2008 April;15;25(5).
- 10. 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;288(3):321-33.
- 11. Anderson GL, Limacher M, Assaf AR, et al. Effects of conjugated equine estrogen in postmenopausal women with hysterectomy: the Women's Health Initiative randomized controlled trial. JAMA. 2004;291(14):1701-12.

Simple Steps to Reverse Nine Causes of Female Sexual Dysfunction

It is difficult to pinpoint which of various factors are causing any particular case of female sexual dysfunction. Multiple mechanisms often work together to upset the body's normal balance of hormones, energy transport, neurotransmitters, and chemical messengers. Here we reveal the underlying causes of female sexual dysfunction and simple steps you can take to correct them.

Psychological issues can cause a disruption in levels and activity of various *neurotransmitters* that in turn affects *libido*, function, and pleasure. They can also result in depression, which often has a negative effect on sexual *libido* and function. Seeking treatment for emotional and psychological issues can clarify whether the origins of female sexual dysfunction are psychological or *physiological*. The plant extract commonly known as *maca*, promotes optimal levels of certain *brain neurotransmitters*, such as *monoamine oxidase* (MAO). Unbalanced levels of MAO can cause *depression* and trigger development of sexual dysfunction symptoms.

Pharmaceuticals can interfere with the body's biochemistry in ways that negatively affect circulation, respiration, *neurotransmitters*, or other physiological functioning. If female sexual dysfunction could be the result of your medications, work with your healthcare practitioner to try to find effective but safer alternatives for any *blood pressure medications*, *antihistamines*, or *psychotherapeutic drugs*. Also, avoid excess *stimulants*, over-consumption of alcohol, and narcotics. Smoking is commonly linked to sexual dysfunction.

Adrenocorticotropic hormone (ACTH) regulates the adrenal cortex and modulates the production of important sex hormones estrogen and progesterone, low levels of which can interfere with sexual libido and function. ACTH is secreted by the pituitary gland, which is regulated by substances produced by the hypothalamus gland. Botanical extracts Cordyceps sinensis and maca support the proper working of the hypothalamus-pituitary axis.

Sex hormones must be available for normal sexual health and function. The adrenal glands produce *testosterone*, *pregnenolone*, *aldosterone*, *DHEA*, *progesterone*, *estrogen*, and *adrenal androgens*. Underproduction causes downstream depletion of sex hormones, which can be a strong trigger for the symptoms of both female sexual dysfunction and menopausal transition. Botanical extracts *Cordyceps sinensis* and *maca* enhance adrenal performance and promote downstream availability of sex hormones.

Adenosine triphosphate (ATP) is utilized by the *mito-chondria*, tiny power plants within cells, to carry and utilize energy. Contractions of muscle depend on a sufficient supply of ATP, and low levels can drain sexual interest and function. Also, chronically depleted ATP levels can result in a condition known as *anergy*, a form of non-responsiveness of the immune system that is sometimes associated with a diminished sexual libido and attraction. *Cordyceps sinensis* is a natural botanical extract that targets female sexual dysfunction by promoting an increase in suboptimal ATP production via increased availability of *adenosine*.

Nitric oxide acts a chemical messenger that causes blood vessels to dilate, facilitating blood flow to the different areas of the body including the genital area. Nitric oxide is required for the proper vaginal function, production of *vaginal fluid*, and the ability to let smooth muscles relax. However, the action

of free radicals can destroy nitric oxide or constrain its activity. Antidepressants called SSRIs, or selective serotonin reuptake inhibitors, can interfere with nitric oxide synthetase, thus decreasing nitric oxide production and blocking sexual arousal. Possibly through their effect on nitric oxide, SSRIs can produce sexual anhedonia, an absence of any feeling of pleasure from sex, or even from orgasm. Also, production of nitric oxide is associated with aging. Studies indicate that Cordyceps sinensis boosts antioxidant activity and inhibits the destruction of nitric oxide, promoting the flow of blood that is central to sexual function and vaginal fluid production.

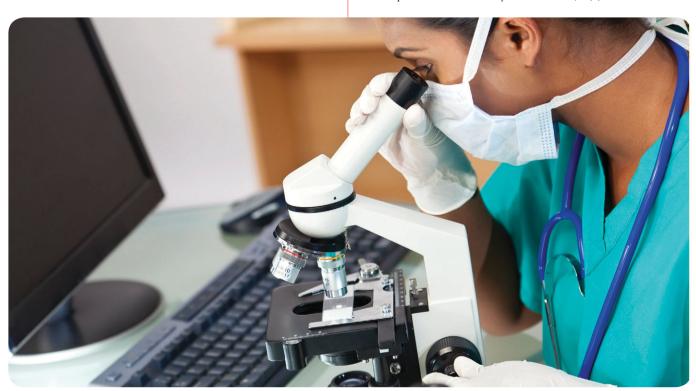
Pro-inflammatory cytokines have been shown in studies to decrease sexual desire, attraction, and activity. The botanical extract *Cordyceps sinensis* dampens the *inflammatory response* by inhibiting the production of *cytokines*.

Monoamine oxidase (MAO) and some other *brain neurotransmitters* play a complicated role in the development of female sexual dysfunction symptoms. If MAO levels are either too low or too high, this can cause diminished sexual *libido* and depression. Depression itself is a factor in triggering sexual dysfunction symptoms, and <u>70%</u> of depression patients acknowledge having sexual side effects. Antidepressant drugs also promote sexual dysfunction. One type of antidepressant known as an *MAO-inhibitor* is specifically designed to combat depression by inhibiting *monoamine oxidase*, which can cause female sexual dysfunction as a side effect of excess MAO inhibition. The ancient plant extract *maca* balances levels of *monoamine oxidase*, preventing the loss of *libido*, and potentially combating depression.

Estrogen levels fall during menopause, which most often results in menopausal symptoms such as night sweats, hot flashes, fatigue, insomnia, depression, and-in 55% of menopausal women-female sexual dysfunction. The reduction in estrogenic availability to certain tissues can cause reduced vaginal blood flow and vulvovaginal atrophy, which is a form of urogenital tissue deterioration. Vulvovaginal atrophy often causes vaginal dryness, irritation, itching, dyspareunia (pain during intercourse), vaginal bleeding with sex, and urinary infections. Serotonin levels dive along with estrogen levels, increasing the risk of depression and female sexual dysfunction. Pharmaceutical agents known as selective estrogen receptor modulators (SERMs) can modulate estrogen activity, selectively enhancing its action where needed in certain tissues, while beneficially inhibiting estrogenic activity in some other tissues. However, SERM drugs have side effects: leg cramps, hot flashes, and a two- to three-fold increase in the risk of venous thromboembolism, a potentially fatal blood clot. EstroG-100™ is a special blend of hot-water extracts of three different plants-Phlomis umbrosa, Cynanchum wilfordii, and Angelica gigas Nakai (Korean Angelica). EstroG-100™. It is suspected to act like a phyto-SERM. This means that its remarkable impact on menopausal symptoms may result from its selectively balancing estrogenic activity, enhancing estrogen among only some tissues-mimicking SERM drugs but without any of the adverse effects of these pharmaceuticals. Balanced estrogen activity often substantially alleviates menopausal symptoms including hot flashes, fatigues and depression, promotes vaginal blood flow, helps prevent vulvovaginal atrophy, supports vaginal fluid production, revives libido, and slashes the risk of menopause-related female sexual dysfunction.

- 12. Vassilopoulou-Sellin R. Breast cancer and hormonal replacement therapy. Ann N Y Acad Sci. 2003;997:341-50.
- 13. Wan F, Guo Y, Deng X. Sex hormone-like effects of JinShuiBao capsule: Pharmacological and clinical studies. Chinese Trad Pat Med. 1988;9:29-31.
- 14. Yang WZ, Deng Xa, Hu W. Treatment of sexual hypofunction with Cordyceps sinensis. Jiangxi Zhongviyao. 1985;5:46-7.
- 15. Manabe N, Sugimoto M, Azume Y, et al. 1996. Effects of the mycelial extract of cultured Cordyceps sinensis on in vivo hepatic energy metabolism in the mouse. Jpn J Pharmacol. 70:85-8.
- 16. Wan F, Guo Y, Deng X. Sex hormone-like effects of JinShuiBao capsule: Pharmacological and clinical studies. Chinese Trad Pat Med. 1988:9:29-31.
- 17. Wang Y, Wang M, Ling Y, Fan W, Wang Y, Yin H. Structural determination and antioxidant activity of a polysaccharide from the fruiting bodies of cultured Cordyceps sinensis. Am J Chin Med. 2009;37(5):977-89.
- 18. Liu Z, Li P, Zhao D, Tang H, Guo J. Anti-inflammation effects of cordyceps sinensis mycelium in focal cerebral ischemic injury rats. Inflammation. 34(6):639-44.
- 19. Liu P, Zhu J, Huang Y, Liu C. Influence of Cordyceps sinensis (Berk.) Sacc. and rat serum containing same medicine on IL-1, IFN, and TNF produced by rat Kupffer. China J Chin Materia Medica, 1996:21:367-9.
- 20. Piacente S, Carbone V, Plaza A, Zampelli A, Pizza C. Investigation of the tuber constituents of maca (Lepidium meyenii Walp.). J Agricul Food Chem. 2002;50(20):5621-5.
- 21. Gonzales GF, Córdova A, Vega K, Chung A, Villena A, Góñez C. Effect of Lepidium meyenii (Maca), a root with aphrodisiac and fertility-enhancing properties, on serum reproductive hormone levels in adult healthy men. J Endocrinol. 2003 Jan;176(1):163-8.
- 22. Bogani P, Simonini F, Iriti M, et al. Lepidium meyenii (Maca) does not exert direct androgenic activities. J Ethnopharmacol. 2006 Apr 6;104(3):415-7.
- 23. Brooks NA, Wilcox G, Walker KZ, Ashton JF, Cox MB, Stojanovska L. Beneficial effects of Lepidium meyenii (Maca) on psychological symptoms and measures of sexual dysfunction in postmenopausal women are not related to estrogen or androgen content. Menopause. 2008 Nov-Dec;15(6):1157-62.

- 24. Gonzales GF. Ethnobiology and ethnopharmacology of Lepidium meyenii (Maca), a plant from the Peruvian Highlands. Evid Based Complement Alternat Med. 2012;2012:193496. Epub 2011 Oct 2.
- 25. Dording CM, Fisher L, Papakostas G, et al. A double-blind, randomized, pilot dose-finding study of maca root (L. mevenii) for the management of SSRI-induced sexual dysfunction. CNS Neurosci Ther. 2008 Fall;14(3):182-91.
- 26. Chang A, Kwak B-Y, Yi K, Kim JS. The effect of herbal extract (EstroG-100) on pre-, peri- and post-menopausal women: a randomized double-blind, placebo-controlled study. Phtyother Res. 2011;doi:10.1002/ptr.3597.
- 27. Francesco Visioli, Tory M. Hagen. Antioxidants to enhance fertility: Role of eNOS and potential benefits. Pharmacol Res. 2011 November;64(5):431-7.
- 28. Avitsur R, Weidenfeld J, Yirmiya R. Cytokines inhibit sexual behavior in female rats: II. Prostaglandins mediate the suppressive effects of interleukin-1beta. Brain Behav Immun. 1999 Mar;13(1):33-45.
- 29. Meyer JH, Ginovart N, Boovariwala A, et al. Elevated monoamine oxidase a levels in the brain: an explanation for the monoamine imbalance of major depression. Arch Gen Psychiatry. 2006 November;63(11):1209-16.
- 30. Montejo AL, Llorca G, Izquierdo JA, Rico-Villademoros F. Incidence of sexual dysfunctions associated with antidepressant agents: a prospective multi-center study of 1022 outpatients. Spanish working group for the study of psychotropic-related Sexual Dysfunction. J Clin Psychiatry. 2001;62(Suppl 3):10-21.
- 31. Shih JC, Chen K, Ridd MJ. Monoamine oxidase: from genes to behavior. Annu Rev Neurosci. 1999;22:197-217.
- 32. Levine KB, Williams RE, Hartmann KE. Vulvovaginal atrophy is strongly associated with female sexual dysfunction among sexually active postmenopausal women. Menopause. 2008 Jul-Aug;15(4 Pt 1):661-6.
- 33. Simon JA. Identifying and treating sexual dysfunction in postmenopausal women: the role of estrogen. J Womens Health (Larchmt). 2011 Oct;20(10):1453-65.
- 34. Tan O, Bradshaw K, Carr BR. Management of vulvovaginal atrophy-related sexual dysfunction in postmenopausal women: an up-to-date review. Menopause. 2012 Jan;19(1):109-17.



SUPPORT ENDOTHELIAL HEALTH FOR MAXIMUM SEXXUAL PERFORMANCE

Overlooked in the effort to support **sexual function** in aging men is the health of the **vascular system**. Blood flow through the delicate lining of the arteries (the *endothelium*) is <u>essential</u> to sexual arousal, so it should come as no surprise that **endothelial function** is closely associated with male sexual capacity.¹

Life Extension® has discovered supportive clinical research for a scientifically validated, *natural* dietary supplement formula to promote **endothelial function** *and* **blood flow** to the place men need it most—for maximum performance.

The ingredients found in **Prelox® Natural Sex for Men®** have yielded compelling and highly satisfactory results in *five independent clinical studies.*²⁻⁶

Our analysis also confirms that unlike some performance enhancement supplements marketed as "natural," **Prelox**® **Natural Sex for Men**® is <u>not</u> adulterated with trace amounts of prescription drugs.

A Powerful Synergy to Support Sexual Health

The patented blend of the following *natural* ingredients positively affects the male physiology in <u>three ways</u>, to provide optimal support:

- 1. PYCNOGENOL® (standardized French maritime pine bark extract) activates endothelial nitric oxide synthase (eNO-S),⁷ the enzyme required to make nitric oxide. Nitric oxide (NO) relaxes the vessels that enable efficient blood flow —the key to healthy male sexual activity and overall vascular health. Pycnogenol® further amplifies this relaxing effect by extending the amount of time nitric oxide remains in the bloodstream.
- L-ARGININE is the biological precursor to nitric oxide synthesis in the endothelium.⁷ It interacts synergistically with Pycnogenol® to sustain nitric oxide levels sufficient for healthy sexual function.
- 3. ICARIIN—a natural plant extract used in traditional Chinese medicine—has been shown to deactivate the enzyme normally responsible for winding down male sexual response, further promoting sustained activity.⁸ Prelox[®] Natural Sex for Men[®] contains a standardized extract providing a proprietary form of pure, high-quality icariin.

The suggested dose of two Prelox® Natural Sex for Men® tablets each day provides:

Prelox® Proprietary Blend
L-Arginine HCI, Aspartic Acid, Pycnogenol®
Dried French Maritime Pine (Pinus pinaster) Extract (bark)

Icariin [Natural Sex® *Epimedium sagittatum* Extract (aerial parts)] **60 mg**

A 60-tablet bottle of Life Extension® Prelox® Natural Sex for Men® retails for \$52. If a member buys four bottles, the price is reduced to just \$36 per bottle. Contains corn.

References

- 1. Int J Impot Res 2008 Dec; Suppl 2:S9-14.
- 2. Int J Impot Res. 2008 Mar;20(2):173-80.
- 3. Phytother Res. 2009 Mar;23(3):297-302
- 4. J Sex Marital Ther. 2003 May;29(3):207-13. 5. European Bulletin of Drua Research.
- European Bulletin of Drug Research. 2005;13(1): 7–13.
- Akush Ginekol (Sofiia). 2007;46(5):7-12.
 Rohdewald P. Pycnogenol, French maritime pine bark extract. In: Coates P. ed. Encyclopedia of Dietary Supplements. New York; Marcel Dekker; 2004.
- 8. *Urology*. 2006 Dec;68(6):1350-4.



Item# 01373

Prelox® and Pycnogenol® are registered trademarks of Horphag Research Ltd. Prelox® is protected by U.S. patent #6,565,851B2. Pycnogenol® is protected by U.S. patents #5,720,956 and #6,372,266 and other international patents. Cannot be sold outside the USA.

To order Prelox® Natural Sex For Men®, call 1-800-544-4440 or visit www.LifeExtension.com

High Potency FAT-SOLUBLE NUTRIENTS in ONE Softgel

Most people don't get enough <u>oil-based</u> nutrients like **vitamin K**, **lycopene**, and **gamma tocopherol**. This problem is solved with a <u>one-per-day</u> softgel called Life Extension® **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.



- GAMMA TOCOPHEROL If one consumes only <u>alpha</u> tocopherol, the critically important <u>gamma</u> tocopherol is displaced from cells within the body. While <u>alpha</u> tocopherol vitamin E inhibits lipid peroxidation, the <u>gamma</u> tocopherol form quenches the dangerous <u>peroxynitrite</u> 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 <u>gamma</u> 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:

Item # 01680

Vitamin K2 (as menaquinone-7)	200 mcg	Chlorophyllin	100 mg
Vitamin K2 (as menaquinone-4)	1000 mcg	Sesame lignans	20 mg
Vitamin K1 (as phytonadione)	1000 mcg	Lycopene	10 mg
Mixed tocopherols	359 mg	Lutein	2 mg
(providing Gamma Tocopherol 230 mg)		Vitamin B12	300 mcg
Ginkgo extract	120 mg	Vitamin C	95 mg

A bottle of 60 **Super Booster** softgels retails for \$42. If a member buys four bottles, the price is reduced to just **\$28.50** per bottle.

The **Super Booster** saves consumers **huge dollars** by combining a wide variety of costly nutrients into <u>one</u> 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, corn and sesame.

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.

Vibrant Sexual Health For Women!

At any age, a woman's sexual function and libido depend on healthy biochemical pathways.

Roughly half of all women live without optimal sexual function and libido.¹ A woman's loss of sexual vitality is related to a number of key factors, including suboptimal levels of sex hormones, neurotransmitters, and nitric oxide; and increased levels of pro-inflammatory cytokines and monoamine oxidase.

Fortunately, researchers have created a state-of-the-art formulation of natural botanical extracts shown to modulate these underlying mechanisms.

Botanical Support for Women's Sexual Function

Advanced Natural Sex for Women®

introduces a unique phyto blend that targets and supports the mechanisms that promote healthy sexual function and libido*:

Cordyceps: Mushroom extract modulates the levels of sex hormones and promotes their downstream flow; boosts mitochondrial energy and sex interest by increasing adenosine triphosphate (ATP) production; supports vaginal lubrication and sexual function by

promoting nitric oxide; and inhibits pro-inflammatory cytokines that can dampen sexual desire. In placebo-controlled studies, scientists documented that Cordyceps <u>improved</u> sexual function and desire in **86%** of women—in **40 days**!²

Lepidium meyenii (Maca): Cultivated for over 2,000 years, this plant root extract has now been shown to modulate levels and flow of sex hormones; support adrenal function; and promote libido and sexual pleasure by helping to optimize brain neurotransmitters and monoamine oxidase (MAO) levels. Women who took Maca scored over 35% better than placebo subjects on a standard sexual function and libido scale after just 6 weeks!

Menopausal Relief and Enhanced Sexual Health

Menopausal transition is considered the most difficult time for a woman to remain sexually active. In addition to the hot flashes and fatigue, vaginal dryness and loss of libido often interfere with sexual function.

Advanced Natural Sex for Women® 50+ contains Cordyceps and Maca plus three herbal root extracts used for over 400 years in Korea to help inhibit symptoms of menopause:

- 1. Phlomis unbrosa
- 2. Cynanchum wilfordii
- 3. Angelica gigas

Scientists found that when these three natural botanicals are uniquely blended and then hot water extracted, they balance estrogenic activity in just those target tissues specifically related to menopausal symptoms. In a double-blind, placebo-controlled study, this special formulation (*EstroG-100*TM) helped inhibit menopausal symptoms by **62%** in just **12 weeks**!

The suggested two capsules a day of **Advanced Natural Sex for Women®** provide the following extracts:

Proprietary blend:

1075 mg

MacaPure® Maca (Lepidium meyenii) extract
Cordyceps Cs-4 (Paecilomyces hepiali) extract

A bottle of 60 vegetarian capsules of **Advanced Natural Sex for Women**® retails for \$42. If a member buys four bottles, the price is reduced to **\$28.50** per bottle.



Item # 01627

The suggested three capsules a day of *Advanced Natural Sex for Women® 50+* (sexual health and menopausal formula) provide the following extracts:

Proprietary Blend:

1590 mg

MacaPure® Maca (Lepidium meyenii) extract
EstroG-100™ (proprietary blend of Angelica gigas,
Phlomis umbrosa, Cynanchum wilfordii extracts)
Cordyceps Cs-4 (Paecilomyces hepiali) extract

A bottle of 90 vegetarian capsules of **Advanced Natural Sex for Women® 50+** retails for \$59. If a member buys four bottles, the price is reduced to **\$39.75** per bottle.

Life Extension For Longrer Life ADVANCED NATURAL SEX For Women* Enhances Libido* 50+ Outlany Supplement 60 Vopelaruin Capsules

Item # 01626

References

- 1. J Sex Med. 2010;7(4):1598-1607.
- 2. J Alt Complement Med. 1998;4(3):289-303.
- 3. Menopause. 2008 Nov-Dec;15(6):1157-62.
- 4. *Phytother Res.* 2011;doi:10.1002/ptr.3597.

MacaPure® is a registered trademark of Naturex, Inc.

To order Advanced Natural Sex for Women[®] or Advanced Natural Sex for Women[®] 50+, call 1-800-544-4440 or visit www.LifeExtension.com.

PREAMBLE

Just One Mistake Caused My Tinnitus

By William Faloon

So much of what we term "science" emanates from real-world experiences.

In my case, I was recently exposed to loud noise that resulted in me developing acute tinnitus that has not fully gone away. I am compelled to relate this incident to spare others the same fate.

About six months ago, a group of doctors were in South Florida attending a medical conference. I was invited to go out with them to dinner and they asked me afterwards to join them at a nightclub.

When we entered the nightclub, the music was rather subdued and I was able to engage in good scientific discussions with these doctors over drinks. As the night wore on the music was slowly "cranked up." We nonetheless continued our discussions by talking louder.

During the last hour, the music decibels increased so much that one of the doctors had to scream in my ear to be heard. If I had to do it over, I would have walked out.

The next day I woke up with severe tinnitus. When I did a Google search to see if one incident of loud noise could cause permanent ringing in the ears I was surprised as to how many people develop tinnitus because of <u>one</u> exposure to loud noise.

In my case, it was not just the doctor screaming in my ear over very loud music. When one ingests ethanol, the tiny bones in the ear lose their ability to close in response to loud sounds. Aging also plays a role in our vulnerability to ear damage caused by loud noises.

So because of this one confluence of mishaps, I am left with mild tinnitus. To sleep, I turn up my air purifier so it covers up the ringing. I do this sometimes in the daytime also. For the most part I just try to ignore it.

One major change I made is to carry ear plugs with me whenever I may be exposed to any kinds of excess noise. Putting in these ear plugs enables me to hear conversation, but drastically reduces the background noise that enters my ears.

So the take-home lesson I want to relay to Life Extension® members is:

- 1. As we age the delicate anatomical structures in our ears become increasingly vulnerable to loud noises.
- 2. Ethanol reduces our natural protective mechanism against damage caused by loud noise.
- 3. If one knows they are going to be exposed to loud noise, wear ear plugs designed for rock musicians who use them to protect against deafening loud music.
- Since we do not always know when we may be exposed to loud music, keep ear plugs in your car or another place that you can easily access.

The following article discusses partial solutions for mitigating tinnitus.

Strategies to Protect and Preserve Your Hearing

According to the Environmental Protection Agency, noise pollution "adversely affects the lives of millions of people." The EPA warns that health problems related to noise can include high blood pressure, sleep disruption, stress related illnesses along with countless other adverse health issues.² Noise Induced Hearing Loss (NIHL) is the most recognized damaging impact of loud noise. Part of the reason that noise pollution has not received the critical public attention of air or water pollution is because you cannot see it or taste it. Yet, if you are one of the 10 million American adults who experiences *noise-induced hearing loss*, or one of the 40 million with *chronic tinnitus* (ringing in the ears), you already understand the stressful impact of noise on your life.^{3,4} What most doctors and audiologists don't tell you is what you can do to help restore some of your lost function, and prevent further damage. In this article, we will provide specific steps you can take to shield yourself and your family from the growing dangers of chronic noise. >>



Long-Term Health Risks of Noise Pollution

Experts estimate that 30 million Americans are exposed to dangerous levels of noise each day.⁵

Chronic loss of hearing, especially in the higher frequencies where we perceive speech, is becoming increasingly common, with 10 million adults and 5.2 million children suffering from irreversible noise-induced hearing loss in the US alone. Frighteningly, people are developing measurable hearing loss at earlier and earlier ages. 6

Tinnitus, the most common auditory disorder, affected about *40 million people* in the US in 2010.³ *There's no medical cure for tinnitus*, and its incidence is rising, chiefly due to noise in the environment.³

While progressive hearing loss and tinnitus have obvious impact on your quality of life, there is now growing evidence that these problems can also trigger sleep disturbance, high blood pressure, elevated heart rate, and increased psychological and physiologic stress.^{4,7} Elevated levels of the dangerous stress hormone cortisol are found in people with hearing loss and tinnitus — and cortisol elevations lead to cardiovascular disease, diabetes, bone loss, and early death.⁴

Personal Listening Devices A Growing Threat

That iPod or other MP3 music player your grandchild is using could be posing a serious threat to hearing. Use of such personal listening devices has increased exponentially in the past decade, and the consequences are piling up. Consider these frightening statistics:

- Ninety percent of adolescents report listening to music through earphones on MP3 players.¹²
- It is estimated that 29% of those have exposure of greater than 90 dB for more than an hour per day, and 58% exceeded 85 dB, sufficient to cause hearing loss.^{12,13}
- High-frequency hearing loss doubled, to 19.2% from 10.1%, in the period 1985-2008.¹⁴
- Incidence of tinnitus in MP3 player users was 28%; in non-users it was just 8%.⁶⁹
- Use of MP3 players with headphones is significantly associated with abnormal hearing testing in high school students.¹⁵
- State hearing screens frequently omit the high-frequency testing needed to detect noise-induced hearing loss in teens.¹⁵

Scientists once thought that hearing loss and tinnitus were inevitable and irreversible consequences of aging itself. Not so, according to recent studies.⁸ The majority of hearing abnormalities in adults are now understood to be the result of two major kinds of noise: chronically elevated noise of the kind found

in many industrial settings, nightclubs, and rock concerts along with "impulse noise," or the sudden, sharp onslaught of a loud noise.

Ironically, it has been soldiers returning from recent wars who have advanced our scientific understanding of noise injury, especially those caused by impulse noise. 9,10 Their exposure to gunshots, blasts, and other explosions has triggered an outpouring of research on how sound energy damages hearing.

How Noise Harms Hearing

Your ear is a complex organ with a deceptively simple task: turning the *energy* from sound waves into nerve impulses that your brain can interpret. Here's what happens, in a nutshell: Sound waves, which transmit energy through the air, strike your eardrum, which vibrates very slightly as a result. Tiny bones in your middle ear, called ossicles, then amplify that slight movement by acting as little levers. The last part of that system of levers then pushes fairly strongly on a thin membrane, transmitting the vibrations to your spiral-shaped *cochlea*, or inner ear.

Your cochlea is filled with fluid and lined with specialized nerve cells called hair cells, which are sensitive to movement. When the fluid moves in response to pressure from the ossicles, hair cells generate minute electrical impulses. Those impulses then travel up your auditory nerve to the brain's sound-processing areas. From there, higher-functioning parts of your brain interpret the sounds and respond to them appropriately.

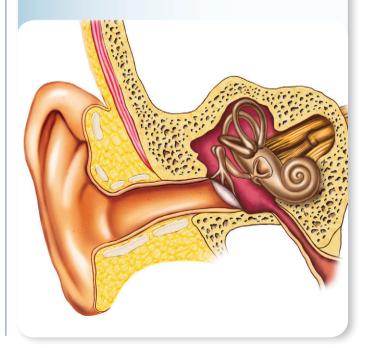
Most of the time, this system works flawlessly, but like any system with moving parts, there is gradual deterioration. The bulk of the damage caused by loud noises is done at the level of the hair cells.¹⁵ To transmit a loud sound accurately, those cells must generate a burst of metabolic activity, consuming energy and generating reactive oxygen and nitrogen species.^{8,9} They also release copious amounts of the excitatory neurotransmitter glutamate, which is intrinsically damaging over the long haul. 16,17

With each exposure to loud noise—whether continuous or sudden—your hair cells are literally working themselves to death. Free radicals and glutamate toxicity conspire to reduce blood flow to the cochlea, which produces additional oxidative stress, in the now-familiar cycle of tissue destruction. 16,18-23

Ultimately, hair cells die, and when you lose hair cells, you lose hearing.9,20 Scientists now understand that the typical "age-related" hearing loss is nothing more than a drawn-out version of the destruction wrought by sound energy, spread out over a lifetime.^{8,23}

Preserving Your Hearing

- Our noisy society threatens your hearing.
- Noise-induced hearing loss affects millions of Americans, and both continuous and sudden loud noises are to blame.
- Noise causes direct physical and biochemical damage to delicate structures in your inner ear, releasing a burst of oxidant molecules.
- Death of the sound-transducing hair cells of the inner ear is the result, producing either gradual or sudden loss of hearing.
- Tinnitus (ringing in the ears) is another common consequence of noise damage; it can cause anxiety, depression, and raise stress levels.
- Good, comfortable hearing protection is available at low-cost and should always be carried.
- Antioxidant nutrients such as magnesium, n-acetylcysteine, and others have proven effectiveness at preventing (and in some cases reversing) noise-induced hearing loss and tinnitus.



Sudden loud noise also known as *impulse noise* seems to produce *greater risk* of hearing loss than continuous noise. If you encounter a very loud sound, especially on a background of already loud noise, you may suffer from acoustic shock injury (ASI). Symptoms of this sudden loud noise can produce ear pain, tinnitus, hyper-acute hearing or phonophobia (apprehension of loud noises), vertigo, and numbness or burning sensations around the ear. Psychological reactions to acoustic shock injury can include emotional trauma, anxiety, and even depression.

Tinnitus is far and away the most common and irritating symptom that follows sudden noise exposure; **94**% of soldiers studied on a firing range reported experiencing tinnitus.¹⁰

Tinnitus has many causes, not all of which are well understood, and *no definitive cure*.^{3,25,26} Tinnitus results at least in part from the excitatory stimulus of *glutamate*, which leaves hair cells producing electrical signals long after the original stimulus has gone.^{27,28} It may also result from impaired inhibitory signals from deep brain areas that normally "*tune out*" abnormal impulses arising from damaged hair cells.^{3,26}

Finally, many people who suffer exposure to impulse noise are left with a condition called *tonic tensor tympani syndrome*, or TTTS.²⁴ This disconcerting syndrome is caused by excessive sensitivity to loud noises, leaving the eardrum in a constant state of alertness, ready to tense up in response to the next burst of sound. The result is ear pain, often with a fluttering sensation or sense of fullness in the ear.

With all of the threats to your hearing from our noisy world, what can you do to protect yourself? More than you might think. Good physical protection is important and readily attainable through the use of low-cost earplugs, and boosting your intake of certain antioxidants and minerals can markedly reduce both short and long-term damage to your hearing, as we are about to see.

Defend Your Ears Physically: The Role of Hearing Protectors

Physical ear protection has long been considered the "last line of defense" after noise reduction and regulations.^{29,30} But until recently, most studies focused on noise in the workplace, where the threats are predictable and the solutions largely controllable. Recent evidence suggests that noise in everyday environments, like busy streets or entertainment venues poses equally great hazards. Nightclubs, for example, often produce peak sound levels as high as 107 decibels (dBA), while the maximum safe industrial sound level

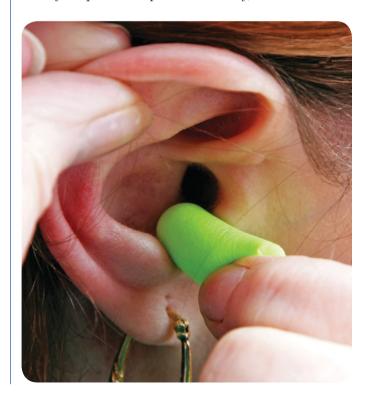
is considered to be 85 dBA, and for regular environmental exposure is 70 dBA.^{6,31-34} Urban dwellers may be exposed to *chronic* sound levels *above 74 dBA* simply during their daily activities, and *above 79 dBA* on public transit.^{6,31}

Even if you stay out of noisy clubs, your leisure activities may put you at risk for unacceptable sound levels. Using power tools, driving loud vehicles, and hunting or target shooting are all examples of common activities that generate continuous or impulse sound that can hurt your hearing.³⁶

Industrial workers often use "earmuff" type hearing protection, and some fields now even use advanced technologies like active noise reduction or noise cancellation, in which electronic circuits blunt the impact of noise. Such solutions are impractical for the average citizen, however.

The best hearing protection available to most of us is the simple earplug, which produces passive noise reduction just by blocking or dampening excessive sound energy before it lands on the eardrum. Experts believe that comfort should be the number one consideration, even above technical reduction of noise level. The argument, essentially, is that the "perfect" earplug that doesn't get worn is of little use compared to a comfortable one that will be worn regularly.³²

Another important feature of your hearing protection should be that it allows normal, natural communication. Too much sound reduction can reduce your ability to perceive speech naturally, or to hear and





respond to sounds that warn of hazards.³⁷ Excellent hearing protection is now available in the form of "social ear plugs" that allow you to reduce ambient noise levels while remaining attentive to the speech of those nearby.

When it comes to how much sound will be blocked, not all earplugs are the same. Like sun tan lotion with different SPFs, there are different protection factors for earplugs. This is known as the Noise Reduction Rating (NRR). The NRR is a rating system that has been set up by the Environmental Protection Agency (EPA) to represent how much noise the earplugs will block when worn properly. An important factor in determining a product's NRR is its attenuation. The opposite of amplification, attenuation is any reduction in signal strength. Attenuation for hearing protection devices is determined by a panel of human subjects over a range of frequencies. The average attenuation is then used in calculating the NRR. The higher the NRR the more noise the earplug will block out.

Rock musicians are constantly exposed to high decibel sound and now an entire generation is experiencing tinnitus or noise induced hearing loss. The most famous example is Pete Townsend of The Who. Because musicians have to hear what they are singing and what their band mates are playing they need a well designed ear plug that allows them to hear the high notes and low notes of the music yet protect them from destructive sound. Musician earplugs should have an NRR of at least 12.

Strikes Celebrities

What do Neil Young, Barbara Streisand, Steve Martin, and William Shatner have in common? They all suffer from noise-induced tinnitus and hearing loss.⁷¹ The difference? The singers got theirs from chronic high-level noise exposure during hundreds of loud concerts, while the actors can recall just one single loud gunshot or explosion (impulse noise). Such noise exposure seems to be an occupational hazard for those in the public eye; one website that tracks celebrities lists nearly 80 well-known individuals with hearing loss, tinnitus, or both.71

Choose your hearing protection, then, based on its comfort, its "social graces," and of course its cost. Comfortable, effective, musician-grade earplugs can be found for less than \$20 per pair from reputable manufacturers.

Defend Your Hearing With Supplements

Given the major role of oxidant stress in triggering noise-induced hearing loss, it's natural to ask if antioxidant supplements might alleviate the risk. Once again, we can thank our soldiers for a large part of the answer; studies show that antioxidants

Are You At Risk for Noise-Induced Hearing Damage?

In addition to protecting your hearing with comfortable earplugs and using appropriate supplements, you should periodically run through the following checklist to determine your current risk for hearing damage. A series of simple questions may indicate if an individual is at risk for hearing damage. If your answer to one or more of these questions is "yes," you are considered at risk for hearing loss and should seek a complete hearing evaluation by a qualified audiologist:7

- A. Do you notice ringing in your ears for hours or 24 hours after sound exposure?
- B. Do your ears sometimes feel full or stopped up?
- C. Do voices sound muffled after you have been around music for an extended time?
- D. Does music sound distorted toward the end of the day?
- E. Do you have difficulty listening to the radio or in noisy or group settings?

administered before sound exposure can mitigate hearing loss in combat situations.9 What follows is a summary of readily-available supplements that you should use on a daily basis to optimize your body's defenses against oxidant-mediated, noise-induced hearing loss.

Magnesium

Magnesium treatment has been repeatedly shown to reduce the incidence of both temporary and permanent noise-induced hearing loss.³⁸ Magnesium readily penetrates the cochlea from the blood.³⁹ It improves blood flow around the cochlea, and is a vital cofactor in the body's major antioxidant defense enzyme systems; it may have other mechanisms of action as well.39,40



Laboratory studies show dramatic reduction in noise-induced hearing loss when animals receive magnesium supplements prior to impulse noise such as gunshots.41,42 When human military recruits took **167 mg** of magnesium daily during a two-month basic training period, the rate of substantial hearing damage was half that of a control group of soldiers. 43 Recruits in this study were exposed to daily mean peak sound levels of 164 dBA, a very high value.

Similar results have been found in other studies in military settings, with magnesium supplements reducing both the frequency and the severity of significant hearing loss.44,45 Recruits with the highest blood magnesium levels had the least severe hearing damage, and effects were similar on both temporary and permanent hearing loss.

N-acetylcysteine (NAC) and Acetyl-L-Carnitine

N-acetylcysteine (NAC) is a potent antioxidant capable of repleting the body's own antioxidant defenses, and acetyl-L-carnitine is a well-known mitochondrial nutrient that supports cellular energy metabolism. Both nutrients are emerging as leading candidates for hearing protection both before and after exposure to loud noises.

Studies with NAC and acetyl-L-carnitine in combination demonstrate less hair cell loss, lower oxidant levels, and reduced temporary and permanent hearing loss in animals exposed to loud impulse noise. 46,47 The effect is so strong that the combination is still effective if used 1-4 hours after the noise exposure.⁴⁶

Multiple studies demonstrate powerful protection of hair cells and cochlear blood flow in animals treated with NAC alone, resulting in reduced permanent hearing loss, both prior to and following impulse noise. 48-50 Human studies using 1,200 mg of NAC daily for two weeks in military recruits exposed to impulse noise at

peak levels as high as 165 dB, and in civilian workers exposed to industrial noise at as high as 89 dB, have shown similar protection, with substantial reduction in hearing loss, especially in the higher frequencies where we perceive speech.51,52

Melatonin

Melatonin is an intriguing hormone naturally produced in the pineal gland. Its multiple effects tend to balance out disturbances in the biological environment, including oxidant stress.53 Melatonin also decreases activity of dopamine, an excitatory neurotransmitter.54

Studies with melatonin show potent effects at reducing cochlear damage and preventing hair cell loss in animals, with concomitant protection of hearing thresholds. Melatonin was more effective than either of two powerful steroid anti-inflammatory drugs, methylprednisolone or dexamethasone. 55,56

Melatonin may be uniquely effective in reducing both the perception of tinnitus, and the sleep disturbances tinnitus can produce.⁵³ At doses of **3 mg/dav**. human studies show a 40% reduction in tinnitus perception.⁵⁴ The same dose also improved sleep quality in a group of patients with chronic tinnitus.⁵⁷

Other Nutrients

A variety of other antioxidant vitamins and nutrients have shown promise in reducing noiseinduced hearing loss and/or the hair cell damage that produces it. Seventy-nine percent of patients with sudden hearing loss treated with vitamin E had significant hearing gain, compared with just 45% of those in a control group.58 Laboratory studies show less destruction in the cochleae of vitamin E-treated animals than in controls, with concomitant improvement in hearing. 59,60

Lipoic acid is an antioxidant nutrient with proven benefit against the oxidant stress induced by impulse noise and blast injury. 61,62 Animals treated with lipoic acid have substantially lower levels of oxidant molecules in blood and cochlea, and their hearing is protected significantly compared to untreated ones. 63,64

Studies have shown that serum levels of toxic homocysteine are elevated in humans with noiseinduced hearing loss or tinnitus, while levels of the anti-homocysteine nutrients folate and vitamin B12 are lowered. 65-67 Raising plasma B12 levels to slightly above normal range with oral cyanocobalamin supplements at 1,000 mcg/day resulted in significant improvement in hearing levels in human subjects, compared with placebo recipients.68

Summary

Noise-induced hearing loss and tinnitus are major public health problems, and their incidence is rapidly rising in our noise-saturated society. Noise causes dramatic physical changes in the delicate structures of your inner ear, changes driven by oxidant stress.

Previously thought to be irreversible, both noiseinduced hearing loss and tinnitus are now showing signs of vielding to prompt treatment with nutrients that can boost your antioxidant levels, including magnesium, N-acetylcysteine, acetyl-L-carnitine, and others.

Using a good, comfortable earplug can also reduce your exposure to hearing-threatening noises—keep a pair handy at all times. •

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

CoQ10 May Alleviate Chronic Tinnitus

Tinnitus can result from even a single exposure to a sudden loud noise. Tinnitus has many causes and few management options, but clinical trials have shown promise for one of the most vital nutrients in the body-CoQ10. A 16-week human clinical study evaluated the effects of CoQ10 levels on presentation of tinnitus revealing that for chronic tinnitus sufferers with low levels of CoQ10, raising blood levels of CoQ10 may help alleviate the expression of tinnitus.70



References

- Available at: http://www.epa.gov/air/noise.html. Accessed February 8, 2012
- Available at: http://www.nonoise.org/library/handbook/handbook. htm. Accessed February 8, 2012.
- Rauschecker JP, Leaver AM, Muhlau M. Tuning out the noise: limbic-auditory interactions in tinnitus. Neuron. 2010 Jun 24.66(6).819-26
- Seidman MD, Standring RT. Noise and quality of life. Int J Environ Res Public Health. 2010 Oct;7(10):3730-8.
- Available at: http://www.asha.org/careers/professions/hla.htm. Accessed February 8, 2012.
- Katbamna B. Flamme GA. Acquired hearing loss in adolescents. Pediatr Clin North Am. 2008 Dec;55(6):1391-402, x.
- Marsh JP, Jellicoe P, Black B, Monson RC, Clark TA. Noise levels in adult and pediatric orthopedic cast clinics. Am J Orthop (Belle Mead NJ). 2011 Jul;40(7):E122-4.
- Reiss M, Reiss G. Presbyacusis: pathogenesis and treatment. Med Monatsschr Pharm. 2009 Jun;32(6):221-5.
- Clifford RE, Rogers RA. Impulse noise: theoretical solutions to the quandary of cochlear protection. Ann Otol Rhinol Laryngol. 2009 Jun:118(6):417-27.
- 10. Moon IS, Park SY, Park HJ, Yang HS, Hong SJ, Lee WS. Clinical characteristics of acoustic trauma caused by gunshot noise in mass rifle drills without ear protection. J Occup Environ Hyg. 2011 Oct:8(10):618-23.
- 11. Vogel I, Brug J, Van der Ploeg CP, Raat H. Adolescents risky MP3player listening and its psychosocial correlates. Health Educ Res. 2011 Apr;26(2):254-64.
- 12. Levey S, Levey T, Fligor BJ. Noise exposure estimates of urban MP3 player users. J Speech Lang Hear Res. 2011 Feb;54(1):263-77.
- 13. Berg AL, Serpanos YC. High frequency hearing sensitivity in adolescent females of a lower socioeconomic status over a period of 24 years (1985-2008). J Adolesc Health. 2011 Feb;48(2):203-8.
- 14. Sekhar DL, Rhoades JA, Longenecker AL, et al. Improving detection of adolescent hearing loss. Arch Pediatr Adolesc Med. 2011 Dec;165(12):1094-100.
- 15. Zuo H, Cui B, She X, Wu M. Changes in Guinea pig cochlear hair cells after sound conditioning and noise exposure. J Occup Health. 2008:50(5):373-9.
- 16. Pujol R, Puel JL. Excitotoxicity, synaptic repair, and functional recovery in the mammalian cochlea: a review of recent findings. Ann N Y Acad Sci. 1999 Nov 28;884:249-54.
- 17. Mazurek B, Stover T, Haupt H, Gross J, Szczepek A. The role of $cochlear\ neurotransmitters\ in\ tinnitus.\ HNO.\ 2007\ Dec; 55(12): 964-71.$
- Heinrich UR, Selivanova O, Feltens R, Brieger J, Mann W. Endothelial nitric oxide synthase upregulation in the guinea pig organ of Corti after acute noise trauma. Brain Res. 2005 Jun 14:1047(1):85-96.
- 19. Fujioka M, Kanzaki S, Okano HJ, Masuda M, Ogawa K, Okano H. Proinflammatory cytokines expression in noise-induced damaged cochlea. J Neurosci Res. 2006 Mar;83(4):575-83.
- 20. Abi-Hachem RN, Zine A, Van De Water TR. The injured cochlea as a target for inflammatory processes, initiation of cell death pathways and application of related otoprotectives strategies. Recent Pat CNS Drug Discov. 2010 Jun;5(2):147-63.
- 21. Le Prell CG, Gagnon PM, Bennett DC, Ohlemiller KK. Nutrientenhanced diet reduces noise-induced damage to the inner ear and hearing loss. Transl Res. 2011 Jul;158(1):38-53.
- Le Prell CG, Hughes LF, Miller JM. Free radical scavengers vitamins A, C, and E plus magnesium reduce noise trauma. Free Radic Biol Med. 2007 May 1;42(9):1454-63.
- 23. Jamesdaniel S, Hu B, Kermany MH, et al. Noise induced changes in the expression of p38/MAPK signaling proteins in the sensory epithelium of the inner ear. J Proteomics. 2011 Dec 21;75(2):410-24.
- 24. Westcott M. Acoustic shock injury (ASI). Acta Otolaryngol Suppl. 2006 Dec (556):54-8.

- 25. Guitton MJ, Wang J, Puel JL. New pharmacological strategies to restore hearing and treat tinnitus. Acta Otolaryngol. 2004 May:124(4):411-5.
- 26. Nowotny M, Remus M, Kossl M, Gaese BH. Characterization of the perceived sound of trauma-induced tinnitus in gerbils. J Acoust Soc Am. 2011 Nov:130(5):2827.
- 27. Sahley TL, Nodar RH. A biochemical model of peripheral tinnitus. Hear Res. 2001 Feb;152(1-2):43-54.
- 28. Brozoski TJ, Wisner KW, Sybert LT, Bauer CA. Bilateral dorsal cochlear nucleus lesions prevent acoustic-trauma induced tinnitus in an animal model. J Assoc Res Otolaryngol. 2011 Oct 4.
- 29. Voix J, Hager LD. Individual fit testing of hearing protection devices. Int J Occup Saf Ergon. 2009;15(2):211-9.
- 30. Seixas NS, Neitzel R, Stover B, et al. A multi-component intervention to promote hearing protector use among construction workers. Int J Audiol. 2011 Mar;50 Suppl 1:S46-56.
- 31. Neitzel RL, Gershon RR, McAlexander TP, Magda LA, Pearson JM. Exposures to transit and other sources of noise among New York City residents. Environ Sci Technol. 2012 Jan 3;46(1):500-8.
- 32. Lusk SL. Noise exposures. Effects on hearing and prevention of noise induced hearing loss. AAOHN J. 1997 Aug;45(8):397-408; quiz 09-10.
- 33. Gunderson E, Moline J, Catalano P. Risks of developing noiseinduced hearing loss in employees of urban music clubs. Am J Ind Med. 1997 Jan; 31(1):75-9.
- 34. Williams W, Beach EF, Gilliver M. Clubbing: the cumulative effect of noise exposure from attendance at dance clubs and night clubs on whole-of-life noise exposure. Noise Health. 2010 Jul-Sep;12(48):155-8.
- 35. Orlando P, Perdelli F, Cristina ML, Piromalli W. Environmental and personal monitoring of exposure to urban noise and community response. Eur J Epidemiol. 1994 Oct;10(5):549-54.
- 36. Nondahl DM, Cruickshanks KJ, Dalton DS, et al. The use of hearing protection devices by older adults during recreational noise exposure. Noise Health. 2006 Oct-Dec;8(33):147-53.
- 37. Van Wijngaarden SJ, Rots G. Balancing speech intelligibility versus sound exposure in selection of personal hearing protection equipment for Chinook aircrews. Aviat Space Environ Med. 2001 Nov;72(11):1037-44.
- 38. Nageris BI, Ulanovski D, Attias J. Magnesium treatment for sudden hearing loss. Ann Otol Rhinol Laryngol. 2004 Aug:113(8):672-5
- 39. Sendowski I. Magnesium therapy in acoustic trauma. Magnes Res. 2006 Dec;19(4):244-54.
- 40. Tamir S, Adelman C, Weinberger JM, Sohmer H. Uniform comparison of several drugs which provide protection from noise induced hearing loss. J Occup Med Toxicol. 2010;5:26.
- 41. Yildirim C, Yagiz R, Uzun C, Tas A, Bulut E, Karasalihoglu A. The protective effect of oral magnesium supplement on noise-induced hearing loss. Kulak Burun Bogaz Ihtis Derg. 2006;16(1):29-36.
- 42. Abaamrane L, Raffin F, Gal M, Avan P, Sendowski I. Long-term administration of magnesium after acoustic trauma caused by gunshot noise in guinea pigs. Hear Res. 2009 Jan;247(2):137-45.
- 43. Joachims Z, Netzer A, Ising H, et al. Oral magnesium supplementation as prophylaxis for noise-induced hearing loss: results of a double blind field study. Schriftenr Ver Wasser Boden Lufthyg. 1993;88:503-16.
- 44. Attias J, Sapir S, Bresloff I, Reshef-Haran I, Ising H. Reduction in noise-induced temporary threshold shift in humans following oral magnesium intake. Clin Otolaryngol Allied Sci. 2004 Dec;29(6):635-41.
- 45. Attias J, Weisz G, Almog S, et al. Oral magnesium intake reduces permanent hearing loss induced by noise exposure. Am J Otolaryngol. 1994 Jan-Feb;15(1):26-32.
- 46. Coleman JK, Kopke RD, Liu J, et al. Pharmacological rescue of noise induced hearing loss using N-acetylcysteine and acetyl-Lcarnitine. Hear Res. 2007 Apr;226(1-2):104-13.
- 47. Kopke R, Bielefeld E, Liu J, et al. Prevention of impulse noiseinduced hearing loss with antioxidants. Acta Otolaryngol. 2005 Mar;125(3):235-43.

- 48. Bielefeld EC, Kopke RD, Jackson RL, Coleman JK, Liu J, Henderson D. Noise protection with N-acetyl-l-cysteine (NAC) using a variety of noise exposures, NAC doses, and routes of administration. Acta Otolaryngol. 2007 Sep;127(9):914-9.
- 49. Lorito G, Giordano P, Petruccelli J, Martini A, Hatzopoulos S. Different strategies in treating noiseinduced hearing loss with N-acetylcysteine. Med Sci Monit. 2008 Aug;14(8):BR159-64.
- 50. Fetoni AR, Ralli M, Sergi B, Parrilla C, Troiani D, Paludetti G. Protective effects of N-acetylcysteine on noise-induced hearing loss in guinea pigs. Acta Otorhinolaryngol Ital. 2009 Apr;29(2):70-5.
- 51. Lin CY, Wu JL, Shih TS, et al. N-Acetyl-cysteine against noiseinduced temporary threshold shift in male workers. Hear Res. 2010 Oct 1;269(1-2):42-7.
- 52. Lindblad AC, Rosenhall U, Olofsson A, Hagerman B. The efficacy of N-acetylcysteine to protect the human cochlea from subclinical hearing loss caused by impulse noise: A controlled trial. Noise Health. 2011 Nov-Dec;13(55):392-401.
- 53. Pirodda A, Raimondi MC, Ferri GG. Exploring the reasons why melatonin can improve tinnitus. Med Hypotheses. 2010 Aug:75(2):190-1.
- 54. Lopez-Gonzalez MA, Santiago AM, Esteban-Ortega F. Sulpiride and melatonin decrease tinnitus perception modulating the auditolimbic dopaminergic pathway. J Otolaryngol. 2007 Aug:36(4):213-9.
- 55. Karlidag T, Yalcin S, Ozturk A, et al. The role of free oxygen radicals in noise induced hearing loss: effects of melatonin and methylprednisolone. Auris Nasus Larynx. 2002 Apr;29(2):147-52.
- 56. Bas E, Martinez-Soriano F, Lainez JM, Marco J. An experimental comparative study of dexamethasone, melatonin and tacrolimus in noise-induced hearing loss. Acta Otolaryngol. 2009 Apr;129(4):385-9.
- 57. Hurtuk A, Dome C, Holloman CH, et al. Melatonin: can it stop the ringing? Ann Otol Rhinol Laryngol. 2011 Jul;120(7):433-40.
- 58. Joachims HZ, Segal J, Golz A, Netzer A, Goldenberg D. Antioxidants in treatment of idiopathic sudden hearing loss. Otol Neurotol. 2003 Jul;24(4):572-5.
- 59. Hou F, Wang S, Zhai S, Hu Y, Yang W, He L. Effects of alphatocopherol on noise-induced hearing loss in guinea pigs. Hear Res. 2003 May;179(1-2):1-8.

- 60. Hou FX, Wang S. Preventive effects of vitamin E on short-term noise-induced hearing loss in guinea pigs. Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi. 2005 Dec;23(6):408-10.
- 61. Armstrong KL, Cooper MF, Williams MT, Elsaved NM. Vitamin E and lipoic acid, but not vitamin C improve blood oxygenation after high-energy IMPULSE noise (BLAST) exposure. Biochem Biophys Res Commun. 1998 Dec 9;253(1):114-8.
- 62. Elsayed NM, Armstrong KL, William MT, Cooper MF. Antioxidant loading reduces oxidative stress induced by high-energy impulse noise (blast) exposure. Toxicology. 2000 Nov 30;155(1-3):91-9.
- 63. Diao MF, Liu HY, Zhang YM, Gao WY. Changes in antioxidant capacity of the guinea pig exposed to noise and the protective effect of alpha-lipoic acid against acoustic trauma. Sheng Li Xue Bao. 2003 Dec 25;55(6):672-6.
- 64. Pouvatos B, Gearhart C, Nelson-Miller A, Fulton S, Fechter LD. Lipoic acid and 6-formylpterin reduce potentiation of noise-induced hearing loss by carbon monoxide: preliminary investigation. J Rehabil Res Dev. 2008;45(7):1053-64.
- 65. Shemesh Z, Attias J, Ornan M, Shapira N, Shahar A. Vitamin B12 deficiency in patients with chronic-tinnitus and noise-induced hearing loss. Am J Otolaryngol. 1993 Mar-Apr;14(2):94-9.
- 66. Gok U, Halifeoglu I, Canatan H, Yildiz M, Gursu MF, Gur B. Comparative analysis of serum homocysteine, folic acid and Vitamin B12 levels in patients with noise-induced hearing loss. Auris Nasus Larynx. 2004 Mar;31(1):19-22.
- 67. Gok U, Halifeoglu I, Yildiz M. The levels of vitamins A, E, B12 and folic acid in noise-induced hearing loss. Kulak Burun Bogaz Ihtis Derg. 2004;12(3-4):60-4.
- 68. Quaranta A, Scaringi A, Bartoli R, Margarito MA, Quaranta N. The effects of 'supra-physiological' vitamin B12 administration on temporary threshold shift. Int J Audiol. 2004 Mar;43(3):162-5.
- 69. Figueiredo RR, de Azevedo AA, de Oliveira PM, Amorim SP, Rios AG, Baptista V. Incidence of tinnitus in mp3 player users. Braz J Otorhinolaryngol. 2011 Jun;77(3):293-8.
- 70. Khan M, Gross J, Haupt H, et al. A pilot clinical trial of the effects of coenzyme Q10 on chronic tinnitus aurium. Otolaryngol Head Neck Surg. 2007 Jan;136(1):72-7.
- 71. Available at: http://members.fortunecity.com/nrbq1/tinnitus.html. Accessed December 21, 2011.





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 <u>not</u> 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. It <u>also</u> 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 <u>one</u> **Krill Healthy Joint Formula** softgel daily supplies **353 mg** of this proprietary blend.

A bottle containing <u>30</u> softgels of **Krill Healthy Joint Formula** retails for \$32. If a member buys four bottles,

the price is reduced to **\$21.75** per bottle. Just <u>one</u> softgel a day of **Krill Healthy Joint Formula** duplicates successful human clinical trials.

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**



COMMON SENSE PROTECTION AGAINST TINNITUS AND HEARING LOSS

Most people assume that hearing loss is an inevitable consequence of aging. Surprisingly, scientific studies show that much hearing damage occurs from repeated exposure to the sounds of daily life.1

Experts estimate that 30 million Americans are exposed to dangerous levels of noise each day.2

HEARING LOSS FROM URBAN LIVING

The maximum safe sound level for regular environmental exposure is considered to be 70 decibels.3-6

Yet studies now show that urban dwellers can be exposed to chronic sound levels above 74 decibels in the course of their daily activities; public transit sound levels can exceed 79 decibels.3,7

Of equal concern is that the safe industrial sound level is considered to be a maximum of **85 decibels**. So just walking down the street, we're endangering our hearing from sounds that exceed levels deemed safe. They emanate from construction sites, passing vehicles, public transit, and of course, the music in stores and clubs.

THE SOLUTION? **HEAROS™ EAR PLUGS**.

EVERYDAY HEARING PROTECTION

What are social ear plugs? They are not ear plugs in the traditional sense, because they don't muffle and distort sound. Instead, social ear plugs are sound attenuators.

In other words, they let you hear the same high and low frequencies—they simply lower the overall volume for you.

This is the secret behind **Hearos™ Hi-Fidelity Ear Plugs**' ability to protect your hearing while allowing natural hearing and speech. You're able to "turn down" the volume around you, without impacting *how* you hear sounds or conversations with others.

Also, their ear plugs are made of a clear material that makes them *virtually invisible* to others—and they're ergonomically designed for all-day comfort!

Don't let the sounds of daily life ruin your hearing. Get social hearing protection now!

- Protection against hearing loss.
- Hear the same high and low frequencies—only the volume is reduced.
- · Ability to carry on normal conversation.
- Washable, reusable, and constructed for long-term use.

One container of **Hearos™** Hi-Fidelity Ear Plugs retails for \$14. Member price is reduced to \$10.50. Some people purchase more than one set to have them available in as many places as possible such

as one's car, suitcase, or different residences.



References

1. Med Monatsschr Pharm. 2009 Jun;32(6):221-5.

2. http://www.asha.org/careers/professions/hla.htm.

3. Environ Sci Technol. 2012, Jan 3:46(1):500-8. 4. AAOHN J. 1997 Aug;45(8):397-408; quiz 09-10. 5. Am J Ind Med. 1997 Jan;31(1):75-9.

6. Noise Health, 2010, Jul-Sep:12(48):155-8. 7. Eur J Epidemiol. 1994 Oct;10(5):549-54.

Brain degeneration affects all aging adults. Enhancing communication between neurons may hold the key to maintaining youthful cognition and memory.

Cognitex® **with NeuroProtection Complex** provides <u>nine</u> cutting-edge **brain boosting** ingredients in <u>one</u> exciting formula!

Uridine-5'-monophosphate (UMP) is a compound naturally found in the milk of nursing mothers and is essential to humans when their brains are the youngest. UMP also supports superior cognitive function in aging adults and is included in **Cognitex**[®].

To bolster UMP's impact on brain function, Cognitex® contains **Sharp-PS® GOLD** to promote normal neuronal cell membrane activities and structure. With this structure in place, **vinpocetine** enhances circulation and oxygenation of brain cells while **phospholipid-grape seed extract** improves blood vessel tone and elasticity, thus boosting oxygen flow to the brain.

Wild blueberry extract is included to protect against free-radical damage, and **pregnenolone** has shown beneficial properties as well.

In order to protect against inflammation to a healthy brain, a **proprietary NeuroProtection Complex Blend** contains standardized extracts of hops, ginger, and rosemary — all known to have anti-inflammatory capabilities.

With a healthy brain in place, the proper levels of *acetylcholine* are needed to enable brain neurons to communicate. To maintain these levels, Cognitex® includes **alpha-glyceryl phosphoryl choline** to boost acetylcholine and **Sensoril® ashwagandha extract** to inhibit an enzyme that degrades acetylcholine in the aging brain.

The retail price for 90 softgels of **Cognitex**® with NeuroProtection Complex (with or without pregnenolone) is \$74 (item # 00922) and \$72 (item # 00921), respectively. If a member orders four bottles of either version, the price per bottle is reduced to just \$49.95 and \$48, respectively.

To order Cognitex® with NeuroProtection Complex, call 1-800-544-4440 or visit www.LifeExtension.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.

Perluxan® is used with permission. Sensoril® is protected under US Patents Nos. 6,153,198 and 6,713,092, and is a registered trademark of Natreon, Inc. Sharp-PS® GOLD is a registered trademark of Enzymotec Ltd. US Patent No. 7,935,365

Contains fish (wild herring, blue whiting), soybeans





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, Life Extension® SUPER OMEGA-3 EPA/DHA is molecularly distilled. This proprietary technology ensures any pollutants are reduced to virtually undetectable 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 help 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 supplies the equivalent content of 6 ounces 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, the price is reduced to just \$21 per bottle. If 10 bottles are purchased, the cost is just \$18.68 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 antiplatelet 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 four softgels 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.

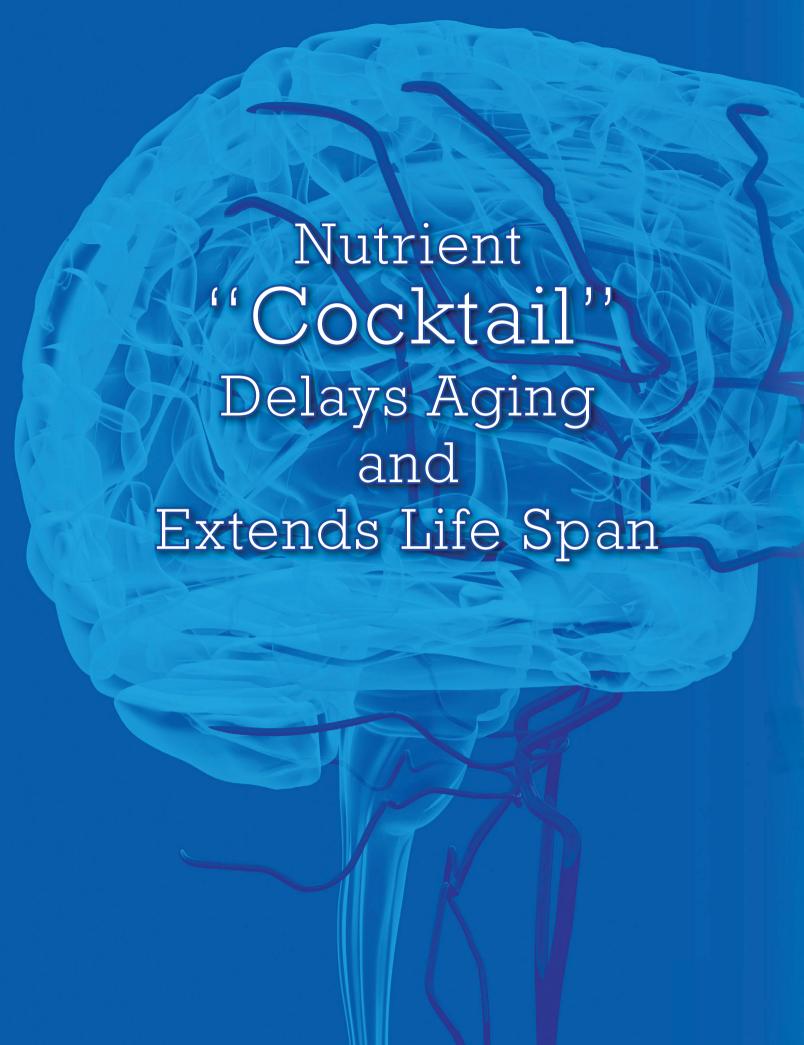
A bottle containing 240 half-size softgels of Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract retails for \$32. If a member buys four bottles, the price is reduced to just \$21 per bottle. If 10 bottles are purchased, the cost is just \$18.68 per bottle. (Item # 01619)

For those with sensitive stomachs, **Super Omega-3** is also available with enteric coating and retails for \$34. If a member buys four bottles, the price is reduced to \$23.25 per bottle. If 10 bottles are purchased, the cost is just \$21 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

- Public Health Nutr. 2006 Dec:9(8A):1136-40.
- Am J Prev Med. 2005 Nov;29(4):335-46
- 3. J Am Diet Assoc. 2005 Mar;105(3):428-40.
- Mini Rev Med Chem. 2004 Oct;4(8):859-71.
- Nurs Stand. 2004 Aug 11-17;18(48):38-42.
 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.



BY SUSAN MACHADO An international coalition of researchers has proved in the laboratory that a comprehensive "cocktail" of nutritional supplements significantly increased youthful life span.1 Since aging is a multifactorial process with overlapping causes, scientists formulated a 30-ingredient nutrient mixture with overlapping benefits designed to halt or slow the major causes of aging. The nutrient mixture, developed by a team of life scientists led by Dr. C. David Rollo of McMaster University in Canada, targets five key mechanisms of aging.¹⁻³ Researchers postulated that by slowing or reversing these five universal processes, they could slow or reverse the major factors of aging. While this research was initially conducted on animals, every one of the 30 nutrients is already in human use as a supplement. All have established records of safety and effectiveness at promoting health and preventing specific disease processes. Many of the nutrients are already known to improve cognition, enhance mobility, slow aging, or extend life spans. Others have clear-cut beneficial effects on one or more of five key aging mechanisms, adding value to the combination as a whole. The implications that this nutrient cocktail has on human longevity are profound. Let's look now at these five fundamental causes of aging to understand the multiple ways that this nutrient mixture attacks them. >>



Targeting Five Key Mechanisms of Aging

Dr. Rollo's researchers recognized that, while aging is a complex phenomenon, most of its manifestations could be traced to a relatively small number of basic processes. Among these, there are five that account for most of the tissue, organ, and system dysfunction that produces chronic disease and untimely death. These five are well known to Life Extension® members: oxidative stress, inflammation, mitochondrial dysfunction, insulin resistance, and integrity of membranes.¹⁻³

No single mechanism alone accounts for any one specific disease process. Instead, all five mechanisms interact with one another to produce both general aging and specific conditions that limit activity, cognitive function, and ultimately life span.

In developing a functional, multi-nutrient antiaging formula, Dr. Rollo's group targeted the five key mechanisms of aging.

The scientists recognized that these specific mechanisms accounted for the vast majority of age-related, longevity-impairing conditions. In this way, the researchers cast a wide net to encompass as many disease states of aging as they could. Additionally, they chose laboratory mice to study the impact of the nutrients on aging because of the animals' short normal life span. This would help the researchers learn the most in the least amount of time. A mouse is considered "old" by age 2 years, providing a convenient and realistic setting for the study of age-related conditions.³ A human study might have taken decades before they could draw meaningful conclusions.

Next, the researchers needed to establish markers of progressive aging. They wanted to know not only how long the animals lived, but also how well they functioned as they grew older. Most importantly, they needed measures that were equally applicable to both mice and to humans. Based on the work of others, Rollo's group decided that those criteria could be met by measuring how much the aging animals moved, and how their cognitive function changed with time.

Aging, Mobility, and Cognition

All animals, from worms to insects to humans, change in very similar fashions as they succumb to the five key mechanisms of aging. In particular, changes in mobility and cognition provide reliable ways to measure the impact of aging on an individual's function.

As they grow older, all animal species move about less and less each day, spending more and more time at rest or in sleep.³ Reduced mobility is an excellent marker of aging, because it is closely linked to overall metabolic rate, feeding, fat storage, brain neurotransmitter levels, mitochondrial function, and cardiovascular and skeletal muscle systems.³ And loss of mobility in humans is associated with muscle wasting, bone thinning, and other changes that increase the risk of other negative outcomes such as fractures, pneumonia, and skin infections.

Cognitive function also declines with age in all animal populations. Younger animals typically learn faster, requiring fewer repetitions to master a task. They can also bring up important memories faster and more accurately, allowing them to find food, escape threats, and protect other members of their species. Studies show that preserving cognitive function into older ages is associated with longer life spans.^{2,4}

Thus, by choosing to examine the animals' mobility and cognitive function, in addition to their longevity. Dr. Rollo's research group was able to measure how their mice were aging in ways that are likely to be applicable to humans as well.

Let's see how the mice did.

Results from Animal Studies

After devising their 30-ingredient nutrient cocktail based on the five key mechanisms of aging, Dr. Rollo's group soaked the mixture into small pieces of bagel, which they then fed to the mice; control mice were fed only the bagel bits without the supplement.¹⁻³

First, they determined the effect of the supplement on longevity. They used both normal mice and a special strain that demonstrates accelerated aging as a result of excessive sensitivity to all five aging mechanisms.^{1,5} Compared with control animals, the supplemented mice of the accelerated aging strain lived 28% longer. Supplemented normal mice survived 11% longer than their controls.1

Rollo's researchers then turned their attention to the animals' mobility as one measure of their general function with aging. They placed the mice in a system of transparent chambers, where they were given food, water, and an exercise wheel. Then they recorded the amount of time each animal spent moving about the enclosure over a 24-hour period.

Normal, unsupplemented mice showed a progressive decline in activity; by 24 months their mobility was roughly half that of younger normal animals. By 24 months of age, supplemented normal mice were moving roughly three hours more per day than were unsupplemented animals.3 No other treatment has ever been found that ameliorates declining mobility to this extent.3

Delay Aging and Extend Life Span

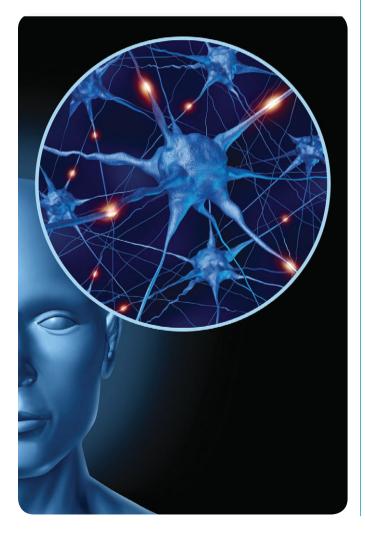
- Aging is a complex, multifactorial process. but five major mechanisms are now known to account entirely or in part for most human age-related diseases, and to contribute to the aging process itself.
- Scientists from Canada and China have devised a 30-nutrient supplement mixture designed to attack all five mechanisms of aging by multiple pathways.
- Tested in mice, the supplement mix extends life span by up to 28% while improving the aging animals' mobility and cognitive function.
- All 30 nutrients are known to be safe and effective in human beings.
- If this mixture, or one like it, has similar effectiveness in humans, one could expect an 80-year-old to add nearly 9 years of life, with youthful levels of activity and cognition.



Rollo's group also measured biochemical markers that might explain the differences in mobility between supplemented and unsupplemented animals. Supplemented older mice had:

- Increased activity of the neurotransmitter dopamine; decreased dopamine levels are associated with loss of movement in aging humans and in those with Parkinson's disease.3
- Increased measures of mitochondrial activity, suggesting that supplemented animals simply had more energy as they aged.³
- Decreased levels of protein carbonyls, altered molecules that reflect the impact of glycation and oxidation on cells and tissues.3

Taken together, the results of this study provided compelling evidence that the multi-nutrient mixture could slow down and perhaps even stop many agerelated changes that contribute to the dangerous loss of mobility so common in older individuals.



Rollo's next study investigated the effects of the nutrient mixture on the cognitive decline that also threatens both quantity and quality of life as we age. Just as in the previous study, the researchers provided the nutrient mixture soaked onto bagel pieces, giving control animals plain bagels.2 Next, they tested the mice on a "water maze" that required the animals to find and remember the location of a platform submerged just below the surface of a pool filled with water. This simple exercise, which tested the animals' learning skills as well as their memory, was repeated each day for five days.

As one might expect, on day 1 all of the mice had trouble finding the platform at first, taking an average of 81 seconds. By day 5, young mice had learned and remembered enough to find the platform 43% faster than on day 1. Older unsupplemented mice, however, showed no significant improvement in the time it took them to find the platform, indicating age-related impairments in learning and memory.

But with supplementation, old mice showed a level of learning almost identical to that of young mice; in fact on day 5 they took an average of 46% less time to find the platform than they did on day1. In other words, supplemented old mice showed the same ability to learn and remember new tasks as did young animals (See figure 1 on next page).

As with their previous study, Rollo's researchers also sought biochemical and structural explanations for the observed improvements in the supplemented animals' behavior. They found that:

- Brain mitochondrial activity fell steadily with age in the untreated mice, while supplemented animals showed a steady increase in this important measure of brain energy supply.²
- Mice with higher brain mitochondrial activity proved to be significantly better learners than those with lower mitochondrial activity.2
- Brain weights, which normally decrease with age, were higher in supplemented male mice by 7%, and in females by 11%, compared with brain weights of control animals.²

Together, Rollo's findings present a remarkable picture of our emerging ability to control not one, but five of the key pathways to an aging body and mind. In their papers, the researchers freely admit that they don't yet have precise knowledge of exactly how each nutrient is working in their experimental model. 1-3,5 But they recognize the great importance of addressing multiple aging pathways each through multiple mechanisms.

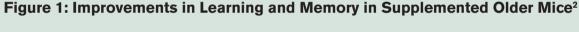
And there is no paucity of evidence that each of the 30 nutrients in the mixture has powerful, and often multiple, effects on the aging process, as shown in the next section.

Ingredients Synergize to Slow Aging, Enhance Cognition. **Boost Mobility**

Rollo's group of researchers chose nutrients with known abilities to attack five of the key mechanisms of aging. As shown in the Table of Ingredients, the majority of the ingredients have more than one mode of action on more than one of the major mechanisms of aging. This kind of multitargeted activity is a hallmark of nutritional supplements. The fact that the formula contains many multitargeted nutrients with overlapping mechanisms of action may underlie its dramatic effects. Such characteristics are typically lacking in prescription drugs, which generally target only one mechanism, and when they interact it is often in a negative, rather than a synergistic fashion.

The nutrient mixture's ingredients have individually been shown to have powerful disease-fighting, health-promoting effects. Those effects, like the ones demonstrated in Dr. Rollo's series of studies, promise not only to increase longevity, but also to promote healthy mobility and preserve youthful cognitive function. Here is a summary of the impact these effects have on real-life human aging:





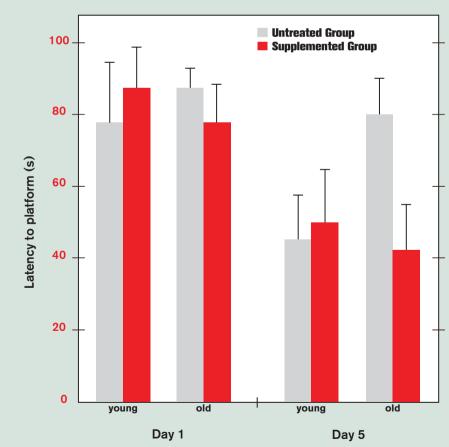


Figure 1:

Day 1 (left), both young and old mice took an average of about 81 seconds to find a submerged platform on the first day of the study, regardless of whether they were supplemented or not. Day 5 (right), young mice improved their speed for finding the platform by 43% compared to Day 1, in both supplemented and unsupplemented groups. Unsupplemented old mice, however, showed no improvement over their day 1 performance, while supplemented old mice performed as well as young animals.

TABLE OF NUTRIENT COCKTAIL INGREDIENTS

	Mechanisms of Aging Affected					
Nutrient	Oxidant Stress	Inflammation	Mitochondrial Function	Insulin Resistance	Membrane Integrity	
B Vitamins (Vitamins B1, B3 (niacin), B6, B12) and Folate	X ¹²⁴		X ⁷³	X ¹²⁵		
Vitamin C	X ⁷⁴					
Vitamin D		X ^{75,76}		X ^{77,78}		
Acetyl-L-carnitine	X ¹²⁶		X ⁴⁵⁻⁴⁷			
Alpha-lipoic acid	X128,130	X ¹²⁷	X ^{44,131}	X128-130		
Acetylsalicylic acid (aspirin)		X ⁷⁹				
Beta-carotene				X ⁸⁰	X ⁶⁵	
Bioflavonoids	X ¹³	X ⁸¹				
Chromium picolinate				X ^{49,82,83}		
Garlic	X ¹³²	X ⁸⁴		X ⁸⁵	X ^{64,86}	
Ginger root extract	X14,87	X14,58	X ¹³³	X57,88,89	X ¹³⁴	
Ginkgo biloba	X ⁹⁰⁻⁹²					
Ginseng	X ₉₃	X ⁵⁹	X ⁹⁴⁻⁹⁶	X ^{94,95}	X ⁹⁶	
Green tea extract	X ⁹⁷	X21,98,99		X ^{100,101}		
L-Glutathione	X ¹⁰²					
Magnesium	X ^{103,104}			X ¹⁰⁵⁻¹⁰⁷		
Manganese	X ¹⁰⁸			X ^{109,110}		
Melatonin	X ⁷	X ^{111,112}				
N-Acetyl cysteine	X ¹¹³					
Potassium	X ¹¹⁴			X ¹¹⁴		
Rutin	X ¹¹⁵	X ¹¹⁶				
Selenium	X ¹¹⁷	X ¹¹⁸	X ¹³⁵	X ^{51,52}	X ⁷⁰	
Vitamin E	X ^{74,119}					
Cod liver oil (omega-3)		X ¹²⁰			X ¹²¹	
Coenzyme Q10	X ¹³⁶	X ¹³⁷	X ⁴²			
Flax seed oil		X ¹²²			X ¹²³	

TABLE: A total of 30 nutrients provides comprehensive coverage of all five key aging mechanisms. Note that most nutrients have multiple functions, and that all five mechanisms are addressed by multiple nutrients.



Antioxidant nutrients protect brain cells, slow brain aging, and reduce memory impairment, while also lowering cardiovascular and metabolic disease risks, preventing cancer, and improving immune function.6-18

Ingredients with anti-inflammatory actions protect against neurodegenerative diseases, improve cardiovascular and endothelial function, prevent fatty liver disease, improve muscle function, and fight cancer. 14,19-33

The mitochondrial-enhancing nutrients improve energy availability in many tissues, preventing fatty liver disease, promoting weight loss and preventing obesity, improving cardiovascular and skeletal muscle function, improving cognition, and protecting brain cells from Parkinson's disease.34-47

Nutrients that overcome insulin resistance further aid in normalizing energy utilization, enhancing cognitive function, preventing metabolic syndrome from emerging, improving glucose and insulin responses during exercise, while of course lowering acute and chronic blood glucose, reducing hemoglobin A1C levels, and delaying complications of diabetes. 48-59

Finally, nutrients that preserve membrane integrity improve cell-to-cell signaling and protect cellular DNA, improving brain cell and muscle function, inducing cancer cell death, protecting against atherosclerosis and slowing progression of cardiovascular disease, enhancing muscle health, and protecting liver cells.34,60-72

As you can see, this is an exhaustive list of preventive actions, many of which overlap. That, of course, is one of the desirable features of this formulation: aging is a complex, multifactorial process with overlapping causes, so preventing it requires a multitargeted approach using overlapping mechanisms.

Summary

Growing scientific evidence connects most of the chronic diseases, and even longevity itself, with five key mechanisms of aging.

By devising a supplement formula comprised of multiple nutrients that attack these five mechanisms through multiple pathways, international researchers have significantly lengthened the life span of experimental animals. Just as importantly, the nutrient mixture markedly enhances animals' overall mobility and cognition, restoring function in those areas to youthful levels.

The marked benefits demonstrated in response to this 30-ingredient nutrient cocktail help explain why studies with single-agent compounds do not always produce meaningful longevity-enhancing results.

All of the individual nutrients in the mixture are known to be safe and effective in humans, though time will tell if the specific combination of all thirty will prove as effective in humans as it has in mice. The preponderance of the evidence, however, suggests it may live up to expectations. •

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

The 30 Nutrients Used in This Health and Longevity Study

Vitamin B1

Vitamin B3 (niacin)

Vitamin B6

Vitamin B12

Folate

Vitamin C

Vitamin D

Acetyl-L-carnitine

Alpha-lipoic acid

Acetylsalicylic acid (aspirin)

Beta-carotene

Bioflavonoids

Chromium picolinate

Garlic

Ginger root extract

Ginkgo biloba

Ginsena

Green tea extract

L-Glutathione

Magnesium

Manganese

Melatonin

N-Acetyl cysteine

Potassium

Rutin

Selenium

Vitamin E

Cod liver oil (omega-3)

Coenzyme Q10

Flax seed oil



References

- Lemon JA, Boreham DR, Rollo CD. A complex dietary supplement extends longevity of mice. J Gerontol A Biol Sci Med Sci. 2005
- Aksenov V, Long J, Liu J, et al. A complex dietary supplement augments spatial learning, brain mass, and mitochondrial electron transport chain activity in aging mice. Age (Dordr). 2011 Nov 27.
- Aksenov V, Long J, Lokuge S, Foster JA, Liu J, Rollo CD. Dietary amelioration of locomotor, neurotransmitter and mitochondrial aging. Exp Biol Med (Maywood). 2010 Jan;235(1):66-76.
- Barzilai N, Atzmon G, Derby CA, Bauman JM, Lipton RB. A genotype of exceptional longevity is associated with preservation of cognitive function. Neurology. 2006 Dec 26;67(12):2170-5.
- Lemon JA, Boreham DR, Rollo CD. A dietary supplement abolishes age-related cognitive decline in transgenic mice expressing elevated free radical processes. Exp Biol Med (Maywood). 2003 Jul;228(7):800-10.
- Khan MM, Ahmad A, Ishrat T, et al. Rutin protects the neural damage induced by transient focal ischemia in rats. Brain Res. 2009 Oct 6;1292:123-35.
- Dkhar P, Sharma R. Amelioration of age-dependent increase in protein carbonyls of cerebral hemispheres of mice by melatonin and ascorbic acid. Neurochem Int. 2011 Dec;59(7):996-1002.
- Sanchez-Sanchez AM, Martin V, Garcia-Santos G, et al. Intracellular redox state as determinant for melatonin antiproliferative vs cytotoxic effects in cancer cells. Free Radic Res. 2011 Nov;45(11-12):1333-41.
- Weinreb O, Mandel S, Amit T, Youdim MB. Neurological mechanisms of green tea polyphenols in Alzheimer's and Parkinson's diseases. J Nutr Biochem. 2004 Sep;15(9):506-16.
- 10. Mahady GB. Ginkgo biloba for the prevention and treatment of cardiovascular disease: a review of the literature. J Cardiovasc Nurs. 2002 Jul;16(4):21-32.
- 11. Ray T, Maity PC, Banerjee S, et al. Vitamin C prevents cigarette smoke induced atherosclerosis in guinea pig model. J Atheroscler Thromb. 2010 Aug 31;17(8):817-27.
- 12. Catalgol B, Ozer NK. Protective effects of vitamin E against hypercholesterolemia-induced age-related diseases. Genes Nutr. 2012 Jan;7(1):91-8.
- 13. Inami S, Takano M, Yamamoto M, et al. Tea catechin consumption reduces circulating oxidized low-density lipoprotein. Int Heart J. 2007 Nov;48(6):725-32.
- Sahebkar A. Potential efficacy of ginger as a natural supplement for nonalcoholic fatty liver disease. World J Gastroenterol. 2011 Jan 14;17(2):271-2.
- 15. Olatunji LA, Soladove AO. Effect of increased magnesium intake on plasma cholesterol, triglyceride and oxidative stress in alloxandiabetic rats. Afr J Med Med Sci. 2007 Jun;36(2):155-61.
- Son EW, Lee SR, Choi HS, et al. Effects of supplementation with higher levels of manganese and magnesium on immune function. Arch Pharm Res. 2007 Jun;30(6):743-9.
- 17. Hoffmann FW, Hashimoto AC, Shafer LA, Dow S, Berry MJ, Hoffmann PR. Dietary selenium modulates activation and differentiation of CD4+ T cells in mice through a mechanism involving cellular free thiols. J Nutr. 2010 Jun;140(6):1155-61.
- 18. Abete I, Goyenechea E, Zulet MA, Martinez JA. Obesity and metabolic syndrome: potential benefit from specific nutritional components. Nutr Metab Cardiovasc Dis. 2011 Sep;21 Suppl 2:B1-15.
- Panchal SK, Poudyal H, Arumugam TV, Brown L. Rutin attenuates metabolic changes, nonalcoholic steatohepatitis, and cardiovascular remodeling in high-carbohydrate, high-fat diet-fed rats. J Nutr. 2011 Jun;141(6):1062-9.
- Queen BL, Tollefsbol TO. Polyphenols and aging. Curr Aging Sci. 2010 Feb;3(1):34-42.
- Ahn HY, Kim CH. Epigallocatechin-3-gallate Regulates inducible nitric oxide synthase expression in human umbilical vein endothelial cells. Lab Anim Res. 2011 Jun;27(2):85-90.
- Babu PV, Liu D. Green tea catechins and cardiovascular health: an update. Curr Med Chem. 2008;15(18):1840-50.

- 23. Chiang KC, Yeh CN, Chen MF, Chen TC. Hepatocellular carcinoma and vitamin D: a review. J Gastroenterol Hepatol. 2011 Nov;26(11):1597-603.
- Prasad K. Flaxseed and cardiovascular health. J Cardiovasc Pharmacol. 2009 Nov;54(5):369-77.
- 25. 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.
- 26. Chen YH, Lin SJ, Chen YL, Liu PL, Chen JW. Anti-inflammatory effects of different drugs/agents with antioxidant property on endothelial expression of adhesion molecules. Cardiovasc Hematol Disord Drug Targets, 2006 Dec:6(4):279-304.
- 27. Janakiram NB, Rao CV. Role of lipoxins and resolvins as antiinflammatory and proresolving mediators in colon cancer. Curr Mol Med. 2009 Jun;9(5):565-79.
- Kannappan R, Gupta SC, Kim JH, Reuter S, Aggarwal BB. Neuroprotection by spice-derived nutraceuticals: you are what you eat! Mol Neurobiol. 2011 Oct;44(2):142-59.
- Colin-Gonzalez AL, Ortiz-Plata A, Villeda-Hernandez J, et al. Aged garlic extract attenuates cerebral damage and cyclooxygenase-2 induction after ischemia and reperfusion in rats. Plant Foods Hum Nutr. 2011 Nov;66(4):348-54.
- Williams MJ, Sutherland WH, McCormick MP, Yeoman DJ, de Jong SA. Aged garlic extract improves endothelial function in men with coronary artery disease. Phytother Res. 2005 Apr;19(4):314-9.
- 31. Singhal NK, Srivastava G, Agrawal S, Jain SK, Singh MP. Melatonin as a neuroprotective agent in the rodent models of Parkinson's disease: Is it all set to irrefutable clinical translation? Mol Neurobiol. 2011 Dec 24.
- Olcese JM, Cao C, Mori T, et al. Protection against cognitive deficits and markers of neurodegeneration by long-term oral administration of melatonin in a transgenic model of Alzheimer disease. J Pineal Res. 2009 Aug;47(1):82-96.
- Nair SM, Rahman RM, Clarkson AN, et al. Melatonin treatment following stroke induction modulates L-arginine metabolism. J Pineal Res. 2011 Oct;51(3):313-23.
- Cabral de Oliveira AC, Perez AC, Prieto JG, Duarte ID, Alvarez AI. Protection of Panax ginseng in injured muscles after eccentric exercise. J Ethnopharmacol. 2005 Feb 28:97(2):211-4.
- 35. Li XT, Chen R, Jin LM, Chen HY. Regulation on energy metabolism and protection on mitochondria of Panax ginseng polysaccharide. Am J Chin Med. 2009;37(6):1139-52.
- Zhao W, Zhang X, Wang W, Zhang L. Experimental study for the anti-fatigue effect of ginseng general ginsenosides P.E. in vivo. Wei Sheng Yan Jiu. 2009 Mar;38(2):184-7.
- 37. Wu Z, Luo JZ, Luo L. American ginseng modulates pancreatic beta cell activities. Chin Med. 2007 Oct 25;2:11.
- Naidu MU, Kumar KV, Mohan IK, Sundaram C, Singh S. Protective effect of Gingko biloba extract against doxorubicininduced cardiotoxicity in mice. Indian J Exp Biol. 2002 Aug:40(8):894-900.
- Mozet C, Martin R, Welt K, Fitzl G. Cardioprotective effect of EGb 761 on myocardial ultrastructure of young and old rat heart and antioxidant status during acute hypoxia. Aging Clin Exp Res. 2009 Feb:21(1):14-21
- 40. Muller WE, Chatterjee SS. Cognitive and other behavioral effects of EGb 761 in animal models. Pharmacopsychiatry. 2003 Jun;36 Suppl 1:S24-31.
- Fu X, Ji R, Dam J. Antifatigue effect of coenzyme Q10 in mice. J Med Food. 2010 Feb;13(1):211-5.
- 42. 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.
- Jia H, Liu Z, Li X, et al. Synergistic anti-Parkinsonism activity of high doses of B vitamins in a chronic cellular model. Neurobiol Aging. 2010 Apr;31(4):636-46.

- 44. Koh EH, Lee WJ, Lee SA, et al. Effects of alpha-lipoic Acid on body weight in obese subjects. Am J Med. 2011 Jan;124(1):85 e1-8.
- 45. Pesce V, Fracasso F, Cassano P, Lezza AM, Cantatore P, Gadaleta MN. Acetyl-L-carnitine supplementation to old rats partially reverts the age-related mitochondrial decay of soleus muscle by activating peroxisome proliferator-activated receptor gamma coactivator-1alpha-dependent mitochondrial biogenesis. Rejuvenation Res. 2010 Apr-Jun;13(2-3):148-51.
- 46. Zhang H. Jia H. Liu J. et al. Combined R-alpha-lipoic acid and acetyl-L-carnitine exerts efficient preventative effects in a cellular model of Parkinson's disease. J Cell Mol Med. 2010 Jan;14(1-2):215-25
- 47. Xia LJ, Folkers K. Improved methodology to assay carnitine and levels of free and total carnitine in human plasma. Biochem Biophys Res Commun. 1991 May 15;176(3):1617-23
- 48. Keszthelyi Z, Past T, Koltai K, Szabo L, Mozsik G. Chromium (III)-ion enhances the utilization of glucose in type-2 diabetes mellitus. Orv Hetil. 2003 Oct 19:144(42):2073-6.
- 49. Cefalu WT, Rood J, Pinsonat P, et al. Characterization of the metabolic and physiologic response to chromium supplementation in subjects with type 2 diabetes mellitus. Metabolism. 2010 May;59(5):755-62.
- 50. Krikorian R, Eliassen JC, Boespflug EL, Nash TA, Shidler MD. Improved cognitive-cerebral function in older adults with chromium supplementation. Nutr Neurosci. 2010 Jun;13(3):116-22.
- 51. Li YB, Han JY, Jiang W, Wang J. Selenium inhibits high glucoseinduced cyclooxygenase-2 and P-selectin expression in vascular endothelial cells. Mol Biol Rep. 2011 Apr;38(4):2301-6.
- 52. Iizuka Y, Ueda Y, Yagi Y, Sakurai E. Significant improvement of insulin resistance of GK rats by treatment with sodium selenate. Biol Trace Elem Res. 2010 Dec;138(1-3):265-71.
- Zulet MA, Puchau B, Hermsdorff HH, Navarro C, Martinez JA. Dietary selenium intake is negatively associated with serum sialic acid and metabolic syndrome features in healthy young adults. Nutr Res. 2009 Jan:29(1):41-8.
- 54. Guerrero-Romero F, Tamez-Perez HE, Gonzalez-Gonzalez G, et al. Oral magnesium supplementation improves insulin sensitivity in non-diabetic subjects with insulin resistance. A double-blind placebo-controlled randomized trial. Diabetes Metab. 2004 Jun: 30(3):253-8
- 55. Mooren FC, Kruger K, Volker K, Golf SW, Wadepuhl M, Kraus A. Oral magnesium supplementation reduces insulin resistance in non-diabetic subjects - a double-blind, placebo-controlled, randomized trial Diabetes Obes Metab 2011 Mar: 13(3):281-4
- 56. Teramoto T, Kawamori R, Miyazaki S, Teramukai S. Sodium intake in men and potassium intake in women determine the prevalence of metabolic syndrome in Japanese hypertensive patients: OMEGA Study. Hypertens Res. 2011 Aug;34(8):957-62.
- 57. Saraswat M, Suryanarayana P, Reddy PY, Patil MA, Balakrishna N, Reddy GB. Antiglycating potential of Zingiber officinalis and delay of diabetic cataract in rats. Mol Vis. 2010;16:1525-37.
- 58. Li XH, McGrath KC, Nammi S, Heather AK, Roufogalis BD. Attenuation of liver pro-inflammatory responses by zingiber officinale via inhibition of NF-kappa B activation in high-fat dietfed rats. Basic Clin Pharmacol Toxicol. 2011 Sep 8.
- 59. Jung HL, Kwak HE, Kim SS, et al. Effects of Panax ginseng supplementation on muscle damage and inflammation after uphill treadmill running in humans. Am J Chin Med. 2011;39(3):441-50.
- 60. Lee HU, Bae EA, Han MJ, Kim NJ, Kim DH. Hepatoprotective effect of ginsenoside Rb1 and compound K on tert-butyl hydroperoxide-induced liver injury. Liver Int. 2005 Oct;25(5):1069-73.
- 61. Hsu CC, Ho MC, Lin LC, Su B, Hsu MC. American ginseng supplementation attenuates creatine kinase level induced by submaximal exercise in human beings. World J Gastroenterol. 2005 Sep 14;11(34):5327-31.
- 62. Radad K, Moldzio R, Rausch WD. Ginsenosides and their CNS targets. CNS Neurosci Ther. 2011 Dec;17(6):761-8.
- Butt MS, Sultan MT, Iqbal J. Garlic: nature's protection against physiological threats. Crit Rev Food Sci Nutr. 2009 Jun;49(6):538-51.

- 64. Benavides GA, Squadrito GL, Mills RW, et al. Hydrogen sulfide mediates the vasoactivity of garlic. Proc Natl Acad Sci U S A. 2007 Nov 13:104(46):17977-82.
- Machefer G, Groussard C, Vincent S, et al. Multivitamin-mineral supplementation prevents lipid peroxidation during "the Marathon des Sables." J Am Coll Nutr. 2007 Apr;26(2):111-20.
- 66. Su KP. Biological mechanism of antidepressant effect of omega-3 fatty acids: how does fish oil act as a 'mind-body interface'? Neurosignals. 2009;17(2):144-52.
- 67. Chiu CC, Su KP, Cheng TC, et al. The effects of omega-3 fatty acids monotherapy in Alzheimer's disease and mild cognitive impairment: a preliminary randomized double-blind placebocontrolled study. Prog Neuropsychopharmacol Biol Psychiatry. 2008 Aug 1;32(6):1538-44.
- Fiaccavento R, Carotenuto F, Vecchini A, et al. An omega-3 fatty acid-enriched diet prevents skeletal muscle lesions in a hamster model of dystrophy. Am J Pathol. 2010 Nov;177(5):2176-84.
- Corsetto PA, Montorfano G, Zava S, et al. Effects of n-3 PUFAs on breast cancer cells through their incorporation in plasma membrane. Lipids Health Dis. 2011;10:73.
- 70. Micke O, Schomburg L, Buentzel J, Kisters K, Muecke R. Selenium in oncology: from chemistry to clinics. Molecules. 2009;14(10):3975-88.
- 71. Steinbrenner H, Bilgic E, Alili L, Sies H, Brenneisen P. Selenoprotein P protects endothelial cells from oxidative damage by stimulation of glutathione peroxidase expression and activity. Free Radic Res. 2006 Sep;40(9):936-43.
- 72. Soriano-Garcia M. Organoselenium compounds as potential therapeutic and chemopreventive agents: a review. Curr Med Chem. 2004 Jun:11(12):1657-69.
- 73. Ames BN. Delaying the mitochondrial decay of aging. Ann N Y Acad Sci. 2004 Jun;1019:406-11.
- Kayan M, Naziroglu M, Celik O, Yalman K, Koylu H. Vitamin C and E combination modulates oxidative stress induced by X-ray in blood of smoker and nonsmoker radiology technicians. Cell Biochem Funct. 2009 Oct;27(7):424-9.
- 75. Choi B, Lee ES, Sohn S. Vitamin D3 ameliorates herpes simplex virus-induced Behcet's disease-like inflammation in a mouse model through down-regulation of Toll-like receptors. Clin Exp Rheumatol. 2011 Jul-Aug;29(4 Suppl 67):S13-9.
- Adorini L, Penna G. Dendritic cell tolerogenicity: a key mechanism in immunomodulation by vitamin D receptor agonists. Hum Immunol. 2009 May;70(5):345-52.
- 77. Mitri J, Dawson-Hughes B, Hu FB, Pittas AG. Effects of vitamin D and calcium supplementation on pancreatic beta cell function, insulin sensitivity, and glycemia in adults at high risk of diabetes: the Calcium and Vitamin D for Diabetes Mellitus (CaDDM) randomized controlled trial. Am J Clin Nutr. 2011 Aug;94(2): 486-94.
- 78. Teegarden D, Donkin SS. Vitamin D: emerging new roles in insulin sensitivity. Nutr Res Rev. 2009 Jun;22(1):82-92.
- Jung KJ, Kim JY, Zou Y, Kim YJ, Yu BP, Chung HY. Effect of short-term, low dose aspirin supplementation on the activation of pro-inflammatory NF-kappaB in aged rats. Mech Ageing Dev. 2006 Mar;127(3):223-30.
- Kameji H, Mochizuki K, Miyoshi N, Goda T. beta-Carotene accumulation in 3T3-L1 adipocytes inhibits the elevation of reactive oxygen species and the suppression of genes related to insulin sensitivity induced by tumor necrosis factor-alpha. Nutrition. 2010 Nov-Dec;26(11-12):1151-6.
- 81. Salminen A, Kauppinen A, Kaarniranta K. Phytochemicals suppress nuclear factor-kappaB signaling: impact on health span and the aging process. Curr Opin Clin Nutr Metab Care. 2012 Jan:15(1):23-8.
- 82. Wang YQ, Dong Y, Yao MH. Chromium picolinate inhibits resistin secretion in insulin-resistant 3T3-L1 adipocytes via activation of amp-activated protein kinase. Clin Exp Pharmacol Physiol. 2009 Aug;36(8):843-9.
- Wang YQ, Yao MH. Effects of chromium picolinate on glucose uptake in insulin-resistant 3T3-L1 adipocytes involve activation of p38 MAPK. J Nutr Biochem. 2009 Dec;20(12):982-91.

- 84. Vazquez-Prieto MA, Rodriguez Lanzi C, Lembo C, Galmarini CR, Miatello RM. Garlic and onion attenuates vascular inflammation and oxidative stress in fructose-fed rats. J Nutr Metab. 2011;2011:475216.
- Liu CT, Hse H, Lii CK, Chen PS, Sheen LY. Effects of garlic oil and diallyl trisulfide on glycemic control in diabetic rats. Eur J Pharmacol. 2005 Jun 1;516(2):165-73.
- 86. Nahdi A, Hammami I, Kouidhi W, et al. Protective effects of crude garlic by reducing iron-mediated oxidative stress, proliferation and autophagy in rats. J Mol Histol. 2010 Oct;41(4-5):233-45.
- 87. Jagetia G, Baliga M, Venkatesh P. Ginger (Zingiber officinale Rosc.), a dietary supplement, protects mice against radiation-induced lethality: mechanism of action. Cancer Biother Radiopharm. 2004 Aug;19(4):422-35.
- 88. Rani MP, Padmakumari KP, Sankarikutty B, Cherian OL, Nisha VM, Raghu KG. Inhibitory potential of ginger extracts against enzymes linked to type 2 diabetes, inflammation and induced oxidative stress. Int J Food Sci Nutr. 2011 Mar;62(2):106-10.
- 89. Heimes K, Feistel B, Verspohl EJ. Impact of the 5-HT3 receptor channel system for insulin secretion and interaction of ginger extracts. Eur J Pharmacol. 2009 Dec 10;624(1-3):58-65.
- 90. Chan PC, Xia Q, Fu PP. Ginkgo biloba leave extract: biological, medicinal, and toxicological effects. J Environ Sci Health C Environ Carcinog Ecotoxicol Rev. 2007 Jul-Sep;25(3):211-44.
- 91. Boveris AD, Galleano M, Puntarulo S. In vivo supplementation with Ginkgo biloba protects membranes against lipid peroxidation. Phytother Res. 2007 Aug;21(8):735-40.
- 92. Yao P, Liu LG, Jia WB, et al. Effect of flavonoids of ginkgo biloba on anti-oxidizing system of mice after acute alcohol administration. Wei Sheng Yan Jiu. 2005 May;34(3):303-6.
- 93. Kim HG, Yoo SR, Park HJ, et al. Antioxidant effects of Panax ginseng C.A. Meyer in healthy subjects: a randomized, placebo-controlled clinical trial. Food Chem Toxicol. 2011 Sep;49(9):2229-35.
- Luo JZ, Luo L. Ginseng on hyperglycemia: effects and mechanisms. Evid Based Complement Alternat Med. 2009 Dec;6(4):423-7.
- 95. Luo JZ, Luo L. American ginseng stimulates insulin production and prevents apoptosis through regulation of uncoupling protein-2 in cultured beta cells. Evid Based Complement Alternat Med. 2006 Sep;3(3):365-72.
- 96. Voces J, Cabral de Oliveira AC, Prieto JG, et al. Ginseng administration protects skeletal muscle from oxidative stress induced by acute exercise in rats. Braz J Med Biol Res. 2004 Dec;37(12):1863-71.
- 97. Liu H, Guo Z, Xu L, Hsu S. Protective effect of green tea polyphenols on tributyltin-induced oxidative damage detected by in vivo and in vitro models. Environ Toxicol. 2008 Feb;23(1):77-83.
- 98. Tsai PY, Ka SM, Chang JM, et al. Epigallocatechin-3-gallate prevents lupus nephritis development in mice via enhancing the Nrf2 antioxidant pathway and inhibiting NLRP3 inflammasome activation. Free Radic Biol Med. 2011 Aug 1;51(3):744-54.
- Ellis LZ, Liu W, Luo Y, et al. Green tea polyphenol epigallocatechin-3-gallate suppresses melanoma growth by inhibiting inflammasome and IL-1beta secretion. Biochem Biophys Res Commun. 2011 Oct 28;414(3):551-6.
- 100. Serisier S, Leray V, Poudroux W, Magot T, Ouguerram K, Nguyen P. Effects of green tea on insulin sensitivity, lipid profile and expression of PPARalpha and PPARgamma and their target genes in obese dogs. Br J Nutr. 2008 Jun;99(6):1208-16.
- 101. Cao H, Hininger-Favier I, Kelly MA, et al. Green tea polyphenol extract regulates the expression of genes involved in glucose uptake and insulin signaling in rats fed a high fructose diet. J Agric Food Chem. 2007 Jul 25;55(15):6372-8.
- 102. Loguercio C, D'Argenio G, Delle Cave M, et al. Glutathione supplementation improves oxidative damage in experimental colitis. Dig Liver Dis. 2003 Sep;35(9):635-41.
- 103. Bede O, Nagy D, Suranyi A, Horvath I, Szlavik M, Gyurkovits K. Effects of magnesium supplementation on the glutathione redox system in atopic asthmatic children. Inflamm Res. 2008 Jun;57(6):279-86.
- 104. Hans CP, Chaudhary DP, Bansal DD. Effect of magnesium supplementation on oxidative stress in alloxanic diabetic rats. Magnes Res. 2003 Mar;16(1):13-9.

- 105. Guerrero-Romero F, Rodriguez-Moran M. Magnesium improves the beta-cell function to compensate variation of insulin sensitivity: double-blind, randomized clinical trial. Eur J Clin Invest. 2011 Apr;41(4):405-10.
- 106. Barbagallo M, Dominguez LJ. Magnesium metabolism in type 2 diabetes mellitus, metabolic syndrome and insulin resistance. Arch Biochem Biophys. 2007 Feb 1;458(1):40-7.
- 107. Takaya J, Higashino H, Kobayashi Y. Intracellular magnesium and insulin resistance. Magnes Res. 2004 Jun;17(2):126-36.
- 108. Tu HK, Pan KF, Zhang Y, et al. Manganese superoxide dismutase polymorphism and risk of gastric lesions, and its effects on chemoprevention in a Chinese population. Cancer Epidemiol Biomarkers Prev. 2010 Apr;19(4):1089-97.
- 109. Manolopoulos KN, Klotz LO, Korsten P, Bornstein SR, Barthel A. Linking Alzheimer's disease to insulin resistance: the FoxO response to oxidative stress. Mol Psychiatry. 2010 Nov;15(11): 1046-52.
- 110. Houstis N, Rosen ED, Lander ES. Reactive oxygen species have a causal role in multiple forms of insulin resistance. Nature. 2006 Apr 13;440(7086):944-8.
- 111. Ochoa JJ, Diaz-Castro J, Kajarabille N, et al. Melatonin supplementation ameliorates oxidative stress and inflammatory signaling induced by strenuous exercise in adult human males. J Pineal Res. 2011 Nov;51(4):373-80.
- 112. Perreau VM, Bondy SC, Cotman CW, Sharman KG, Sharman EH. Melatonin treatment in old mice enables a more youthful response to LPS in the brain. J Neuroimmunol. 2007 Jan;182 (1-2):22-31
- 113. Santra A, Chowdhury A, Ghatak S, Biswas A, Dhali GK. Arsenic induces apoptosis in mouse liver is mitochondria dependent and is abrogated by N-acetylcysteine. Toxicol Appl Pharmacol. 2007 Apr 15;220(2):146-55.
- 114. Ando K, Matsui H, Fujita M, Fujita T. Protective effect of dietary potassium against cardiovascular damage in salt-sensitive hypertension: possible role of its antioxidant action. Curr Vasc Pharmacol. 2010 Jan;8(1):59-63.
- 115. Ghiasi M, Heravi MM. Quantum mechanical study of antioxidative ability and antioxidative mechanism of rutin (vitamin P) in solution. Carbohydr Res. 2011 May 1;346(6):739-44.
- 116. Arjumand W, Seth A, Sultana S. Rutin attenuates cisplatin induced renal inflammation and apoptosis by reducing NFkappaB, TNFalpha and caspase-3 expression in wistar rats. Food Chem Toxicol. 2011 Sep;49(9):2013-21.
- 117. Brozmanova J, Manikova D, Vlckova V, Chovanec M. Selenium: a double-edged sword for defense and offence in cancer. Arch Toxicol. 2010 Dec;84(12):919-38.
- 118. Clarke C, Baghdadi H, Howie AF, Mason JI, Walker SW, Beckett GJ. Selenium supplementation attenuates procollagen-1 and interleukin-8 production in fat-loaded human C3A hepatoblastoma cells treated with TGFbeta1. Biochim Biophys Acta. 2010 Jun;1800(6):611-8.
- 119. Vina J, Lloret A, Giraldo E, Badia MC, Alonso MD. Antioxidant pathways in Alzheimer's disease: possibilities of intervention. Curr Pharm Des. 2011 Dec;17(35):3861-4.
- 120. McDaniel JC, Ahijevych K, Belury M. Effect of n-3 oral supplements on the n-6/n-3 ratio in young adults. West J Nurs Res. 2010 Feb;32(1):64-80.
- 121. Mabile L, Piolot A, Boulet L, et al. Moderate intake of n-3 fatty acids is associated with stable erythrocyte resistance to oxidative stress in hypertriglyceridemic subjects. Am J Clin Nutr. 2001 Oct;74(4):449-56.
- 122. Barcelo-Coblijn G, Murphy EJ, Othman R, Moghadasian MH, Kashour T, Friel JK. Flaxseed oil and fish-oil capsule consumption alters human red blood cell n-3 fatty acid composition: a multipledosing trial comparing 2 sources of n-3 fatty acid. Am J Clin Nutr. 2008 Sep;88(3):801-9.
- 123. Mourvaki E, Cardinali R, Dal Bosco A, Corazzi L, Castellini C. Effects of flaxseed dietary supplementation on sperm quality and on lipid composition of sperm subfractions and prostatic granules in rabbit. Theriogenology. 2010 Mar 15;73(5):629-37.

- 124. Bîcu M, Mo a M, Panduru NM, Gr un eanu C, Mo a E. Oxidative stress in diabetic kidney disease. Rom J Intern Med. 2010;48(4):307-12.
- 125. Gammon CS, von Hurst PR, Coad J, Kruger R, Stonehouse W. Vegetarianism, vitamin B12 status, and insulin resistance in a group of predominantly overweight/obese South Asian women. Nutrition. 2012 Jan;28(1):20-4.
- 126. Annadurai T, Vigneshwari S, Thirukumaran R, Thomas PA, Geraldine P. Acetyl-L-carnitine prevents carbon tetrachlorideinduced oxidative stress in various tissues of Wistar rats. J Physiol Biochem. 2011 Dec;67(4):519-30.
- 127. Maczurek A, Hager K, Kenklies M, et al. Lipoic acid as an antiinflammatory and neuroprotective treatment for Alzheimer's disease. Adv Drug Deliv Rev. 2008 Oct-Nov;60(13-14):1463-70.
- 128. Ansar H, Mazloom Z, Kazemi F, Hejazi N. Effect of alphalipoic acid on blood glucose, insulin resistance and glutathione peroxidase of type 2 diabetic patients. Saudi Med J. 2011 Jun;32(6):584-8.
- 129. Kamenova P. Improvement of insulin sensitivity in patients with type 2 diabetes mellitus after oral administration of alpha-lipoic acid. Hormones (Athens). 2006 Oct-Dec;5(4):251-8.
- 130. Evans JL, Goldfine ID. Alpha-lipoic acid: a multifunctional antioxidant that improves insulin sensitivity in patients with type 2 diabetes. Diabetes Technol Ther. 2000 Autumn;2(3):401-13.
- 131. Palacios HH, Yendluri BB, Parvathaneni K, et al. Mitochondrionspecific antioxidants as drug treatments for Alzheimer disease. CNS Neurol Disord Drug Targets. 2011 Mar;10(2):149-62.
- 132. Vazquez-Prieto MA, Rodriguez Lanzi C, Lembo C, Galmarini CR, Miatello RM. Garlic and onion attenuates vascular inflammation and oxidative stress in fructose-fed rats. J Nutr Metab. 2011:2011:475216.
- 133. Ramudu SK, Korivi M, Kesireddy N, et al. Nephro-protective effects of a ginger extract on cytosolic and mitochondrial enzymes against streptozotocin (STZ)-induced diabetic complications in rats. Chin J Physiol. 2011 Apr 30;54(2):79-86.
- 134. Chung WY, Yow CM, Benzie IF. Assessment of membrane protection by traditional Chinese medicines using a flow cytometric technique: preliminary findings. Redox Rep. 2003;8(1):31-3.
- 135. Taskin E, Dursun N. The protection of selenium on adriamycininduced mitochondrial damage in rat. Biol Trace Elem Res. 2012 Jan 12. Epub ahead of print.
- 136. Lee BJ, Huang YC, Chen SJ, Lin PT. Coenzyme Q10 supplementation reduces oxidative stress and increases antioxidant enzyme activity in patients with coronary artery disease. Nutrition. 2012 Mar;28(3):250-5.
- 137. Schmelzer C, Kubo H, Mori M, et al. Supplementation with the reduced form of Coenzyme Q10 decelerates phenotypic characteristics of senescence and induces a peroxisome proliferator-activated receptor-alpha gene expression signature in SAMP1 mice. Mol Nutr Food Res. 2010 Jun;54(6):805-15.





with Sendara®.

call 1-800-544-4440 or

visit www.LifeExtension.com

Complete Skin Protection

From Inside Out

Scientists are realizing that skin needs to be protected against external factors such as sunlight, and also against internal damage caused by emotional stress. This is because our emotions, particularly stressful ones, release a wave of stress hormones such as cortisol that prematurely age the skin.

Fortunately, emerging research suggests that a natural herb called ashwagandha can protect and enhance psychological health as seen in a recent human trial. In this study, just 125 mg of a patented ashwagandha extract once a day led to a 14.5% reduction in cortisol levels in 98 chronically stressed individuals. This dose also resulted in a 13.2% increase in levels of the anti-aging hormone DHEA, which helps maintain the youthfulness of skin cells. Overall, the ashwagandha-treated subjects experienced up to 62% relaxation support compared with virtually no change in the placebo group.

The impressive results from this trial have led to the incorporation of ashwagandha into a new skin-protection formula called Enhanced FernBlock® with Sendara®. As the name suggests, this formula also contains **FernBlock**®, the revolutionary oral supplement introduced by Life Extension® in July 2008 that helps protect the skin against damaging solar radiation.

FernBlock® is a natural extract derived from the fern plant **Polypodium leucotomos**. Extensive clinical studies document its ability to provide remarkable skin protection by inhibiting the absorption of harmful ultraviolet (UV) rays and quenching DNA-corrupting free radicals. FernBlock® also diminishes the consequences of excessive UV radiation by favorably altering a number of changes in skin cells that cause premature skin aging.

Enhanced FernBlock® with Sendara® is complemented with a powerful antioxidant called *Phyllanthus emblica*. This natural extract blocks a chemical reaction that generates several types of skin-damaging free radicals, thus shielding the skin against the destruction of collagen and other dermal matrix proteins. An in vitro study² using a patented extract of both ashwagandha and Phyllanthus emblica demonstrated an impressive 54% inhibition of collagen-degrading enzymes and an 86% inhibition of those that break down hyaluronic acid the skin's natural moisturizer.

The unique combination of natural ingredients in **Enhanced** FernBlock® with Sendara® has been scientifically proven to help skin look and

feel good from the inside out. This formula is designed to complement topical sunscreens for complete skin protection.

A bottle containing **30** vegetarian capsules of Enhanced FernBlock® with Sendara® retails for \$39. If a member buys four bottles, the cost is only \$26.25 per bottle.

Contains corn and rice.

References

- 1. JANA. 2008;11(1):50-6.
- 2. NutraGenesis LLC. Data on file. 2008.

Note: Use topical sunscreens whenever exposed to sunlight. This product is not a sunscreen.

Item #01311

Patent Pending Sendara® is a registered trademark of NutraGenesis LLC. FernBlock® is a registered trademark of Industrial Farmaceutica Cantabria, S.A.



including mitochondrial problems, glycation, and free-radical reactions. Life Extension® members have access to a state-ofthe-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 **mitochon**drial 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 proinflammatory cytokines, such as interleukin-1 and tumor necrosis factor**alpha**. Luteolin is a plant extract that has been shown to modulate these dangerous 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 prevents induction of DNA damage.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

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).

- **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

A bottle of Mitochondrial Energy Optimizer with BioPQQ™ containing **120 capsules** retails for \$94. If a member buys four bottles, the price is reduced to \$63 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

- l. Hormones (Athens). 2008 Apr-Jun;7(2):123-32. 2. Protein Pept Lett. 2008;15(4):385-91. 3. J Alzheimers Dis. 2007 May;11(2):229-40.
- Ann N Y Acad Sci. 2006 May; 1067:369-74
- .num Ir 1. Ratu S.I. 2006 May; 1067:369-74.

 5.6 Aligin Konwledge Environ. 2005 May 4;2005(18):pe12.

 .1 Biol Chem. 2010 Jan1;285:142-52.

 .1 Mind Edw. 2009; 14(3):268-77.

 Entree Gene. PRidick In peroxisione proliferator-activated receptor gamma, coactivator 1 alpha.

 Homo spalengi Genelli: 10891.

 Entree Gene. CREBBP CREB binding protein

- 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.

- 12. Mutz. 2006 Jun;136(6):1517-21.

 13. Biochem Pharmacol. 2005 Jan 15;69(2):241-8.

 14. Immunology. 2005 Jul;115(9):375-87.

 14. Immunology. 2005 Jul;115(9):375-87.

 16. Eur J Pharmacol. 2006 Jul 10;541(12):95-105.

 17. Mat Med. 2008 Jul;94(3):315-8.

 19. Biotheric. 2006 Jul;94(3):315-8.

 19. Biotheric. 2006 Jul;94(3):315-8.

 19. Biotheric. 2006 Jul;94(3):315-9.

 20. Biotheric Med Do Res Rev. 2008 Jul;14(2):371-7.

 21. Hind Rev. 2008 Jul;14(2):371-7. 21. I I inid Res. 2006 May:47(5):964-74
- 22. Biochem Biophys Acta. 2001 Feb.14;1535(2):110-9. 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 26. FASEB J. 1999 Feb;13(2):411-8



ArthroMax[™] Advanced with UC-II[®] and AprèsFlex[™]

Now with Dual-Action Support for Aging Joints!

As you grow older, age-related stiffness and discomfort in the joints becomes a fact of life. Activities once routine become a challenge as limited mobility hampers your every move.

You now have a more <u>potent</u> option to provide broad-spectrum support for aging joints.

ArthroMax[™] Advanced with UC-II° and Après-Flex[™] is a multi-nutrient formula based on the very latest data on natural support for joint health. The new ArthroMax[™] formula provides more joint support than ever before, enhanced with two innovative, clinically validated ingredients: AprèsFlex[™] and UC-II°.

Better Absorption for Optimum Benefit

AprèsFlex™ represents a quantum leap forward in the delivery to aging joints of **boswellia**, long prized for its ability to help with inflammatory issues. It is a superior inhibitor of the enzyme *5-lipoxygenase* or *5-LOX*.

Excess activity of 5-LOX results in the accumulation of *leukotriene B4*, a pro-inflammatory compound that affects aging joints. **Boswellia** has been shown to bind directly to the 5-LOX enzyme in our bodies, preventing it from facilitating production of pro-inflammatory leukotrienes.^{1,2}

AprèsFlex™ boswellia *absorbs* into the blood **52%** *better* than previously available forms of boswellia, for superior effectiveness.

ArthroMax™ Advanced with UC-II® and AprèsFlex™

In addition to AprèsFlex™, the new ArthroMax™ contains a novel standardized chicken cartilage: UC-II®.

New data show it helps with immune issues that can impact joint discomfort and ease of motion in aging individuals.

Two capsules of the new ArthroMax™

Advanced with UC-II® and AprèsFlex™ provide the following nutrients in one convenient, joint-protecting formula:

UC-II® standardized chicken cartilage	40 mg
Glucosamine sulfate 2KCI (from corn)	1500 mg
AprèsFlex™ (Boswellia serrata) extract	100 mg
Boron (calcium fructoborate as patented FruiteX B° OsteoBoron°)	1.5 mg



The retail price of a bottle of 60 capsules of ArthroMax™ Advanced with UC-II® and AprèsFlex™ is \$36. If a member buys four bottles, the price is reduced to \$24 per bottle.

Item # 01618

To order the new ArthroMax™
Advanced with UC-II® and AprèsFlex™ or
ArthroMax™ with Theaflavins and AprèsFlex™,

call 1-800-544-4440 or visit www.LifeExtension.com

Contains corn.

AprèsFlex™ is a trademark of Laila Nutraceuticals exclusively licensed to PL
Thomas—Laila Nutra LLC. International patents pending.
FruiteX B® and OsteoBoron® are registered trademarks of VDF FutureCeuticals, Inc.
U.S. Patent No. 5,962,049.

UC-II® is a registered trademark of InterHealth N.I. UC-II® brand undenatured type II collagen. U.S. Patents 5,645,851, 5,637,321, 5,529,786, 5,750,144, 7,083,820, EPO Patent EP1435906B1, U.S. and world-wide patents pending.

ArthroMax[™] with Theaflavins and AprèsFlex[™]

ArthroMax is also available with **Black Tea Theafla-vins** (without UC-II®) to protect against immune attack in the joints via a separate mechanism.

Inflammatory reactions are regulated by a series of "cytokines" produced in the body. Normal aging results in an unfavorable balance of these cytokines that contributes to persistent inflammatory conditions. Studies have shown that a special fraction found in black tea suppresses proinflammatory cytokines at the genomic level. Scientists have found that these compounds called theaflavins uniquely downregulate the expression of genes and cytokines associated with inflammatory conditions.

ArthroMax™ with Theaflavins formula provides these bioactive theaflavin fractions along with methylsulfonylmethane (MSM), which contains sulfur components that are critically important in maintaining comfortable joint function.* ArthroMax™ with Theaflavins also contains FruiteX B® OsteoBoron®, a patented form of boron that is identical to natural plant forms found in food. Considered more bioavailable than other forms of boron, FruiteX B® Osteo-Boron® also supports healthy bones and joints.*

AprèsFlex™ (Boswellia serrata) extract	100	mg
Glucosamine sulfate 2KCl (from corn)	2000	mg
Methylsulfonylmethane (MSM)	1000	mg
Black Tea (Camellia sinensis) (decaf.) extract	440	mg
Boron (calcium fructoborate as patented FruiteX B® OsteoBo		mg

The retail price of a bottle of 120 vegetarian capsules of **ArthroMax™** with **Theaflavins and AprèsFlex™** is \$44. If a member buys four bottles, the price is reduced to **\$30** per bottle.



References

- 1. Wien Med Wochenschr. 2002;152(15-16):373-8.
- 2. J Ethnopharmacol. 2006 Sep 19;107(2):249-53.

Item # 01617



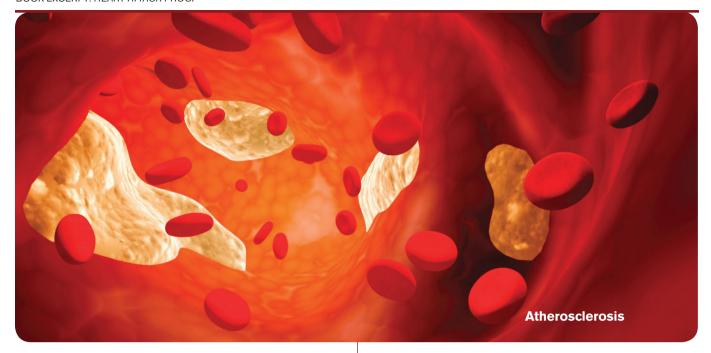
LifeExtension® BOOK EXCERPT

BLOOD TESTING That Can Save Your Life

BY MICHAEL OZNER, MD

In his new book, HEART ATTACK PROOF, cardiologist and researcher, Michael Ozner, MD, presents a proven program to help you avoid the devastation of heart disease. One critical component of his unique protocol is the use of specific blood tests to help you and your physician clearly assess your risk for heart attacks. From these tests, you can move yourself into the safety zone by incorporating lifestyle changes, high-level nutrients, and when necessary, pharmaceuticals to make yourself virtually heart attack proof. In this excerpt, Dr. Ozner explains why a blood test that utilizes an expanded cardiovascular risk profile can save your life.

Excerpted with permission from HEART ATTACK PROOF by Michael Ozner, MD, published by Benbella Books 2012.



Why It's Important to Get Cardiovascular Blood Tests

The best way to detect metabolic abnormalities, like elevated (bad) LDL cholesterol particles or increased vascular inflammation (which may be present even if vou feel well) is through a blood test. Detecting metabolic disorders is particularly important for uncovering hidden risk for heart attack, stroke, and vascular disease, thereby allowing physicians to individualize treatment programs that will lower patients' risk of disability and death from cardiovascular disease. Simply using a standard lipid or cholesterol profile (total cholesterol, [bad] LDL cholesterol, [good] HDL cholesterol, and triglycerides) uncovers 40 percent of heart attack risk*, whereas an expanded cardiovascular risk profile, with tests such as LDL particle number and hs-CRP, can uncover 90 percent of heart attack risk. Performing regular blood tests is also essential for effectively monitoring already diagnosed conditions and ensuring that medical treatment and lifestyle changes are working.

The cost of comprehensive blood tests has decreased significantly over the past several years. And compared to the cost of treating heart attack, stroke, or peripheral vascular disease—that is, compared to the potential cost of not knowing what's going on in your body and only being able to treat these conditions once they strike—it's a steal!

The best time to have a comprehensive laboratory evaluation is when you are feeling well. If you wait until a heart attack (or stroke) strikes, you've waited too long. One-third of men and women do not survive their first heart attack, and those who do have to undergo expensive interventional procedures and lengthy hospital stays that can cost between \$50,000 and \$100,000. Long-term care can be very expensive, and the loss of your future earning potential can be significant. Prevention of atherosclerosis and heart attack or stroke is one of the most cost-effective strategies available—not to mention the nonfinancial benefits of staying healthy and productive and enjoying life.

The Genesis of a Heart Attack

Having these tests done regularly is crucially important. The next step is to understand what all the numbers mean. To do so, we first need to take a step back and look at the development and progression of cardiovascular disease, and how metabolic abnormalities can lead to a heart attack.

A heart attack occurs when the blood supply to the heart is cut off. We used to think that heart attacks were caused by the buildup of cholesterol and fat that ultimately choked off the artery causing a heart attack; we now know that the culprit is not cholesterol itself but the particles that carry it.

* Editor's note: Life Extension's Male and Female Panels, which measure homocysteine, C-reactive protein, glucose, 25-hydroxyvitamin D, and hormones (in addition to total cholesterol, LDL, HDL and triglycerides) uncovers far more than 40% of heart attack risk.

There are two types of these particles, characterized by the protein on their surfaces. The first type contains an apoB protein on the surface, which means they have the potential to enter the artery wall and lead to atherosclerotic plague formation. Ninety percent of particles with apoB proteins are LDL particles. LDL particles are often referred to as "bad" particles. though they are not always bad. They play a beneficial role—they deliver cholesterol throughout the body where it is needed (cholesterol is an essential component of cell membranes, and is also necessary for the body to produce hormones such as cortisol, aldosterone, estrogen, and testosterone, as well as bile acids and vitamin D). But they also have the potential to enter the arterial wall and wreak havoc. The second type is HDL particles. These have a different protein on their surface called apoA1. HDL particles are often referred to as "good" cholesterol particles, because their job is to enter the arterial wall, remove cholesterol, and carry it to the liver for processing.

So, in short, LDL's job is to carry cholesterol to the areas of the body where it's needed, and HDL's job is to pick up excess cholesterol inside the artery wall from the places it isn't needed. All of this is necessary for proper functioning of the body. Problems arise when there is an excess number of LDL particles in the blood and these particles enter the artery wall. Once there, the particles can lead to the formation of atherosclerotic plaques, which are like pimples in the blood vessel wall. And just like pimples, these plaques can become inflamed and rupture.

The Formation of Atherosclerotic Plaques

Once inside the artery wall, cholesterol particles come into contact with something called *free radicals*. Free radical is the term used for any molecule with an uneven number of electrons. You may remember from chemistry class that molecules with uneven numbers of electrons don't like to stay that way. They'll do whatever they can to beg, borrow, or steal another electron so they can have an even number. This theft by free radicals is referred to as oxidation. When a free radical steals an electron from a cholesterol-carrying particle, the particle then becomes oxidized, and the body views it as a foreign invader. As a result, our natural defense system—inflammation—kicks in. Our immune system goes on the attack and sends white blood cells to the scene to engulf the oxidized cholesterol particles, and this leads to the formation of an atherosclerotic plaque.

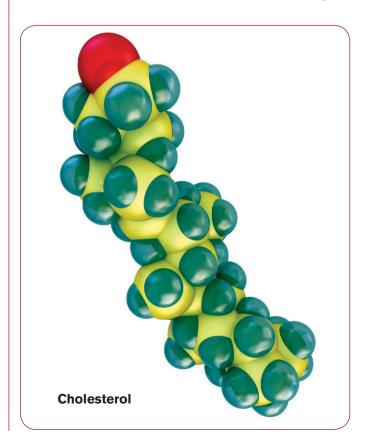
After engulfing the cholesterol particles, the white blood cells, called macrophages, begin to release proteinases, which are designed to break down the plaque's fibrous cap, ultimately leading the plaque to rupture. When blood comes into contact with tissue factor (a clot-promoting molecule) inside the plaque. it forms a clot at the rupture site. If that clot is large enough, it can completely block the artery, leading to a heart attack.

Reversing Heart Disease

There are a number of complex factors at work in causing a heart attack. The good news is, it's possible to not only halt the progression of atherosclerosis, but to actually reverse it. With the proper lifestyle and optimal medical therapy, it is possible to stabilize and even get rid of the atherosclerotic plaques that lead to heart attacks. Regression of atherosclerosis is an achievable goal.

Cholesterol

When I started my cardiology practice in 1979, a normal cholesterol level was up to 300 mg/dL! Today we know better. It is now recommended that your cholesterol level should remain under 200 mg/dL.



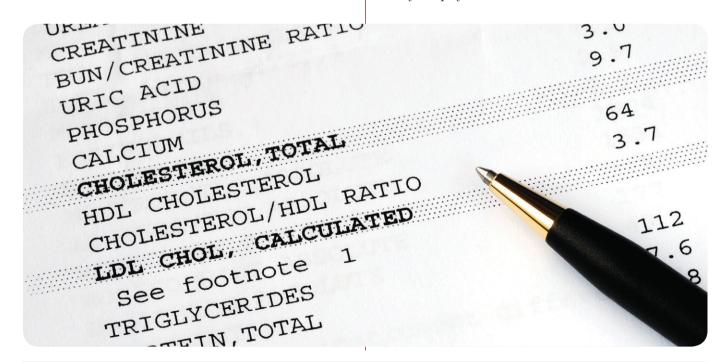
And thanks to research like the Framingham Study, we know the optimal total cholesterol is actually less than 150 mg/dL*. Yet the average total cholesterol for Americans is still greater than 200 mg/dL (208 mg/dL). Knowing your total cholesterol is an important part of understanding your risk for a heart attack. But it doesn't tell the whole story of what's happening inside your body.

Particle Number

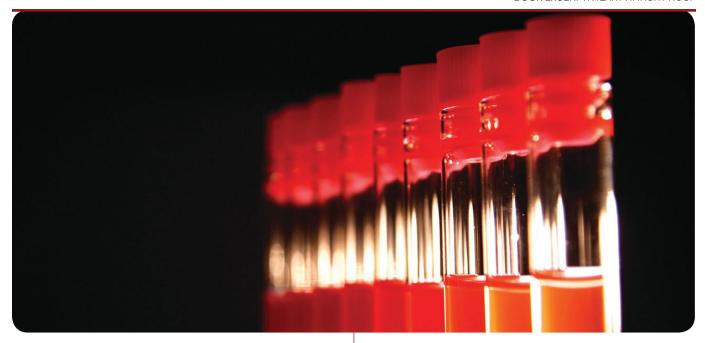
The next important factor in heart attack prevention—possibly the most important factor—is your particle number. Decreasing the number of (bad) LDL particles in your blood and increasing the number of (good) HDL particles is key.

Cholesterol is transported through the bloodstream by particles, and atherosclerotic plaques occur when LDL particles enter the artery wall, get retained, and become oxidized. You can think of the particles as cars and cholesterol molecules as passengers in the cars. Just as too many cars can cause a traffic jam, too many LDL particles can lead to a heart attack. It is the number of particles, not the amount of cholesterol in the particles, that is the problem.

Since the cholesterol content of LDL particles is variable, LDL particle number (LDL-P) is a better measure of future heart attack risk than LDL cholesterol (LDL-C). This explains how someone could have a heart attack despite having a "normal" cholesterol level; measuring cholesterol tells us the amount of cholesterol being carried but not the number of particles doing the carrying. An increased number of LDL particles, whether those particles are large or small, will increase the risk of a heart attack (studies have shown that an increased number of small particles raises heart attack risk sixfold, whereas an increased number of large particles raises risk twofold). The likelihood of LDL particles entering the arterial wall is largely a function of LDL particles' concentration in the bloodstream; fewer LDL particles means fewer LDL particles entering the artery wall. Men and women who are overweight or obese and who have insulin resistance, metabolic syndrome, or diabetes are more likely to have an increased number of small LDL particles, while individuals with familial hyperlipidemia. a genetic disorder, have an excess number of large LDL particles. The key for both groups is to lower the number of excess LDL particles through lifestyle intervention and medication. Unfortunately, many healthcare providers do not normally measure particle number in addition to cholesterol—even though clinical studies, have demonstrated that LDL particle number is a superior predictor of heart attack risk than the measurement of total cholesterol or LDL cholesterol. So be informed, and discuss particle number measurement with your physician.



^{*} Editor's note: Most anti-aging doctors don't want to push total cholesterol below 150 mg/dL. Life Extension's optimal range for total cholesterol is between 160-180 mg/dL.



Trialvcerides

The final factor to consider is triglycerides. Triglycerides are a type of fat that, if elevated, can increase cardiovascular risk by increasing the number of small dense LDL particles and decreasing the number of HDL particles. Elevated triglycerides can also lead to pancreatitis (inflammation of the pancreas).

The Optimal Lipid Profile

The chart below lists the recommended and optimal values for a standard lipid profile, including particle number (for apoB and LDL-P). To become Heart Attack Proof, you want your numbers to be as close to optimal as possible.

	Recommended	Optimal
Total cholesterol	< 200 mg/dL	< 150 mg/dL
LDL cholesterol	< 100 mg/dL	< 70 mg/dL
HDL cholesterol	> 40 mg/dL (for men) > 50 mg/dL (for women)	> 40 mg/dL (for men) > 50 mg/dL (for women)
Non-HDL cholesterol	< 130 mg/dL	< 100 mg/dL
Triglycerides	< 150 mg/dL	< 100 mg/dL
LDL-P	< 1000 nmol/L	< 700 nmol/L
ароВ	< 90 mg/dL	< 60 mg/dL

Building a Brick House

In order to have an atherosclerotic plaque, you must have atherogenic (mainly LDL) particles. Inflammation, oxidative stress, high blood pressure, diabetes, and other factors may all contribute to plaque development—but without sufficient LDL particles, you don't develop an atherosclerotic plaque. Not enough LDL particles—no atherosclerotic plaque.

Many physicians believe that LDL cholesterol needs to be lowered to optimal levels (less than 70 mg/ dL) only if you are at very high risk for coronary heart disease, or you actually have coronary heart disease or have suffered a heart attack. That line of reasoning has never made sense to me. Why wait until you've had a heart attack to lower your LDL cholesterol to optimal levels? Remember, half the men and women who suffer a heart attack have no prior warning, and many don't survive their first event. Why not be proactive and lower your total cholesterol, LDL cholesterol, non-HDL cholesterol, and LDL particle number to levels that slams the door shut on the possibility of a heart attack?

Inflammation

As you now know, inflammation is involved in all stages of coronary artery disease, from the formation of plaque in the artery wall, to the plaque's progression and rupture, to the clot that blocks blood flow to the heart muscle. The more pronounced your body's inflammatory response, the more likely your plaques

are to form, rupture, and lead to heart attacks or strokes. Chronic inflammation may also inhibit the release of nitric oxide, the chemical responsible for the dilation of blood vessels, which leads to narrowed arteries, decreased blood flow, and increased blood pressure—all of which make it easier for clots to block the flow of blood.

What is clear is that any inflammatory state that becomes chronic, even on a low-grade level, is hazardous to your health, and doing your best to reduce the cause of the inflammation is important to protecting vour heart—and vour life.

Testing for Inflammation

The two most commonly used biomarkers of vascular inflammation are hs-CRP and Lp-PLA2. There are many clinical trials around the world showing that hs-CRP is a better independent predictor of heart attack and stroke than Lp-PLA2, however Lp-PLA2 is a more specific biomarker of vascular inflammation than hs-CRP: it's more likely to be related to vascular inflammation as opposed to general inflammation such as arthritis. Nevertheless, the two blood tests are complementary, since both together are more predictive of a potential cardiovascular event than either test alone. In fact, elevated Lp-PLA2 tells us that the risk of stroke is increased fivefold, whereas elevated Lp-PLA2 and hs-CRP tells us that the risk is increased elevenfold!

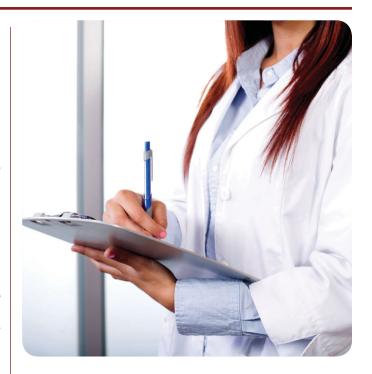
The chart below lists the recommended and optimal values for both hs-CRP and Lp-PLA2.

	Recommended	Optimal		
hs-CRP	< 2.0 mg/L	< 1.0 mg/L		
Lp-PLA2	< 200 ng/mL	< 200 ng/mL		

Omega-3 and Vitamin D



For now, suffice it to say that both omega 3 and vitamin D are essential for optimal cardiovascular health. Fortunately, omega-3 and vitamin D can be measured with a blood test, and replacement therapy is advised for those who are deficient.



For easy reference, I've included the most important test results, and their optimal results, below.

The Optimal Blood Test Profile					
LIPIDS					
Total cholesterol	< 150 mg/dL				
LDL cholesterol	< 70 mg/dL				
HDL cholesterol	> 40 mg/dL (men); > 50mg/dL (women)				
Non-HDL cholesterol	< 100 mg/dL				
Triglycerides	< 100 mg/dL				
LDL-P	< 700 nmol/L				
ароВ	< 60 mg/dL				
LP(a) mass	< 30 mg/dL				
INFLAMMATION	BIOMARKERS				
hs-CRP	< 1.0				
Lp-PLA2	< 200				
OTH	HER				
Blood pressure	< 120/80				
Fasting blood sugar	< 100 mg/dL*				
HbA1c	< 5.7%				
Hs-Omega-3-index	> 8.0%				
25-hydroxyvitamin D	>30*				

^{*} Editor's note: Life Extension recommends fasting glucose be kept under 86 mg/dL and suggests optimal range for **25-hydroxyvitamin D** is between **50-80 ng/mL** (based on Labcorp's testing method).

Now that you know what all these tests mean and why you need them, your assignment this week is to assess your own results. Is your LDL cholesterol too high? Do you have too many LDL particles? Do you need to boost your HDL cholesterol levels? How much vascular inflammation do you have? Do you tend to have high blood glucose? Is your blood pressure in the optimal range? Make sure to talk to your doctor about any abnormal lab values. •

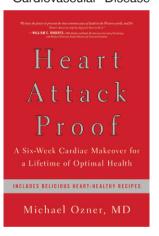


About the Author

Michael Ozner, MD, FACC, FAHA, is one of America's leading advocates for heart disease prevention. Dr. Ozner is a board-certified cardiologist, a Fellow of both the American College of Cardiology and the American Heart

Association, Medical Director of Wellness and Prevention at Baptist Health South Florida, and a well-known regional and national speaker in the field of preventive cardiology. He is symposium director for "Cardiovascular Disease

Prevention," an annual international meeting dedicated to the treatment and prevention of heart attack and stroke. He was the recipient of the 2008 American Heart Association Humanitarian Award and was elected one of the "Top Cardiologists in America" by the Consumer Council of America. Dr. Ozner is also the author of The Miami Mediterranean Diet and The Great American Heart Hoax.



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

Clinical Cancer Research. Mar. 2007;13:1611–1619.

COPD. April 2008;5(2):133-138.

Arthritis & Rheumatism. Aug. 2006;54(8):2393–2401.

Annual Noninvasive Electrocardiology. Apr. 2008;13(2):137-144.

Journal of Urology. July 2005;174(1):386–393.

Journal of American College of Cardiology, Nov. 2010;56(23):1803–1808.

The Enlightened Smoker's Guide to Quitting 1st ed.Dallas, TX: BenBella Books, 2008.

MolecularNutrition & Food Research. Mar. 2008.

Histol Histopathol.Mar. 2008;23(3):381-390.

Pharmacology, Biochemistry and Behavior. Nov. 2006;85(3):620-8.

The FASEB Journal. Mar. 2008;22(3):641-53.

American Journal of Clinical Nutrition. Feb. 2008;87(2):498S–503S. Arterioscleriosis, Thrombosis & Vascular Biology. Aug. 2005;25(8): 1665–1670.

Journal of Clinical Lipidology. Dec. 2007;1(6):583-592.

Arteriosclerosis, Thrombosis and Vascular Biology. Feb. 2008;28(2):272–277.

Clinical and Experimental Pharmacology and Physiology. Mar. 2008;35(3):342–348.

Journal of the American College of Nutrition. June 2004;23(3):197–204. Trends in Cardiovascular Medicine. Feb. 2008;18(2):52–56.

International Journal of Impotence Research. Nov.–Dec. 2007;19(6):564–567.

 ${\it Blood Cells, Molecules \& Diseases.} \\ {\it Mar.-April 2006; 36(2): 206-210.}$

Trends in Cardiovascular Medicine. Feb. 2008;18(2):39-44.

 ${\it Journal of Clinical Endocrinology \& Metabolism.~2010;} 95(9): E1-E8.$

Biochemical Pharmacology. Feb. 2008;75(4):787-809.

The FASEB Journal. Jan. 2008;22(1):41-46.

Circulation Research. 2008;102:589-596.

Mutation Research. Sept. 1992;275(3-6):257-266.

Available at: www.health.harvard.edu/newsweek/Glycemic_index_and_glycemic_load_for_100_foods.

htm. Accessed February 13, 2012.

Cellular & Molecular Life Sciences. Mar. 2008.

Critical Reviews in Food Science & Nutrition. 2006;46(2):185-196.

J Nat Prod. 2006 Mar. 69(3):443-9.

Annual Epidemiology. June 2007.

Brain, Behavior and Immunity. Aug. 2010;24(6):868-873.

New England Journal of Medicine. Feb. 2007;356:447-458.

Journal of Cardiovascular Pharmacology. Dec. 2007;50(6):609-620.

Cochrane Database System Review, Oct. 2004:(4):CD000165.

Journal of Agriculture and Food Chemistry. 2010;58(22):11673-11679.

Nutritional Review. Dec. 2007;65(12 Pt 2):S140-S146.

Circulation. Mar. 2002;105(9):1135-1143.

Clinical Chemistry. 2010;56:781-788.

Cardiovascular Research. April 1996;31(4):633-639.

Arterioscleriosis, Thrombosis, & Vascular Biology. Mar. 2008; 28(3):s5–10.

The FASEB Journal. April 2010; 24 Meeting Abstract Supplement, 1029.1.

Annual Review of Pharmacological Toxicology. 2007;47:629–656. Available at: www.nhlbi.nih.gov/about/ncep. Accessed February 13,2012. Journal of the American Medical Association. 2006;295(13):1556–1565. Journal of the America College of Cardiology. Jan. 2008;51(3):249–255.

Clinical Chemistry. Jan. 2008;54(1):24–38.

Antioxidants & Redox Signaling. Nov.2007;9(11):1941–1958.

Diabetes Care. Oct. 2010;33(10):2196–2201.

Journal of the American College of Nutrition. April 2007;26(2):170–181.

The Lancet. 2009;373(9670): 1175-1182.

Atherosclerosis. Feb. 2008.

Kidney International Supplement. Aug. 2007;(106):S17-S26.

Journal of Agricultural & Food Chemistry. Feb. 2008;56(4):1415–1422. American Journal of Epidemiology. Aug. 2010. Phytomedicine. Jan. 2008. Journal of the American Academy of Dermatology. Aug. 2007;57(2):247–

Diabetes Research and ClinicalPractice. Sept. 2007;77 Supplement 1:S65–S70.

International Journal of Cardiology. Jan. 2008.

Journal of the American Medical Association. July 2007;298(1):49–60.

Cancer Letters. Jan. 2007;245(1-2):232-241.

Current Allergyand Asthma Reports. 2009;9(4):327-333.

Journal of NutritionalBiochemistry. Sept. 2004;15(9):506-516.

Journal of Nutrition. Oct. 2006; 136(10):2512-25128.

Medical Hypotheses. April 2008.

Cellular Molecular Life Science. Feb. 2008;65(3):354-358.

Photodermatology, Photoimmunology, & Photomedicine.

Feb.2007;23(1):48-56.

Overlooked Benefits of Properly Formulated

Probiotics literally means "for life." Traditional diets comprising of foods containing probiotics (such as the **Mediterranean Diet**) have been shown to promote health and longevity.1

People take probiotics to facilitate intestinal health, but probiotics perform many more important functions. For example, researchers have discovered that probiotics inhibit *nuclear factor kappa B* (NFkB), which help suppress inflammation as well as positively modulate cellular signaling pathways.²

Furthermore, studies have shown that probiotics can influence youthful gene expression.³ Properly formulated probiotics provide biologically active materials that can positively influence many aspects of human health.4

The Importance of the **GI Tract on Immune Function**

A little known fact is that 70-80% of our immuno**globulin-producing cells reside in our gut** which is populated by nearly 100 trillion microorganisms, many of which are beneficial bacteria.3 These bacteria are considered a living part of the human organism.⁵

With age, we can experience a decline in vital probiotics and the strength of our immune system. Restoring the gut's friendly bacteria can stimulate and regulate healthy immune function.5

A Potent, Immune Enhancing **Strain of Bifidobacteria**

Researchers have shown that a unique well-studied strain of the bifidobacteria probiotic called **BB536**® increases the number of healthy bacteria in the colon.6 An in vivo study demonstrated a significant increase in longevity in mice supplemented with bifidobacteria.⁷ Long studied by Japanese scientists, BB536® was found to reduce production of inflammatory cytokines that often accompany seasonal symptom development.8

BB536[®] is a highly researched active probiotic. Each capsule provides 2,000,000,000 (two billion) colony forming units of viable healthy bacteria.

A bottle containing 60 capsules of Bifido GI Balance retails for \$20. If a member buys four bottles, the price is reduced to just \$13.50 per bottle.

Contains milk.

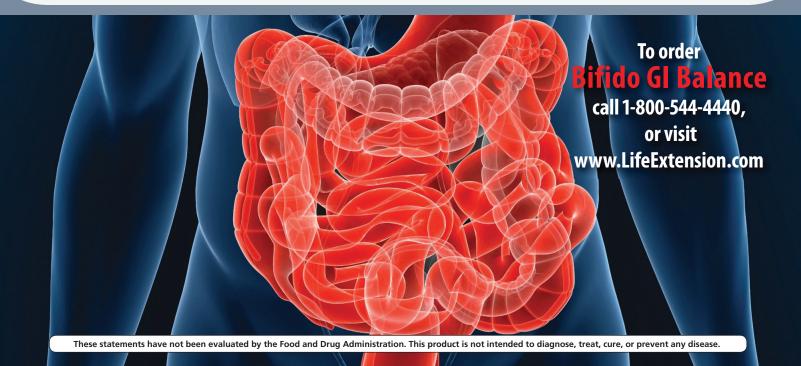
BB536° is a registered trademark of Morinaga Milk Industry Co., Ltd.



Item #01622

References

- 1. Rev Med Suisse, 2009 Mar 25:5(196):662-4.66.
- 2. Gut Microbes. 2010May-Jun 1(3):148-63
- 3. Immunobiology. 1992 Feb;184(2-3):157-79.
- 4. Int J Food Microbiol. 2012 Jan 16;152(3):189-205.
- 5. Curr Opin Biotechnol, 2011 Nov 30.
- 6. Lett Appl Microbiol. 2009 Dec;49(6):715-20.
- PLoS One. 2011;6(8):e23652.
- 8. J Investig Allergol Clin Immunol. 2006;16(2):86-93.



Aggressive **Blood Testing** to Assess **Vascular Disease** Risk

HEART STOPPING FACTS:

- Heart disease is the number one killer of humans.1
- By 2030, almost 23.6 million people will die from cardiovascular diseases, mainly from heart disease and stroke.²

The Male and Female Blood Test Panels that Life Extension® members have taken each year measure the most dangerous risk factors for heart disease and stroke.

Those with pre-existing arterial disease, or who are otherwise at increased risk because of family history or suffer disorders like metabolic syndrome, should consider more aggressive testing that can pinpoint hidden vascular blood markers.

Blood tests such as the **PLAC Test**® (Lp-PLA2) and **VAP Cholesterol Test** can provide you and your physician with a detailed analysis as to the inner workings of your cardiovascular system and ultimately the tools to reduce your risk for cardiovascular disease. These tests can be taken to help you make additional life-saving changes to prevent a catastrophic heart attack or stroke.



The PLAC® Test³

Contrary to its name, the PLAC Test® does not measure levels of plague in your arteries. Instead, the PLAC Test® measures the Lp-PLA enzyme, a biomarker for vascular inflammation that is largely produced by white blood cells inside the plaque. Lp-PLA, is involved in initiating the cascade of vascular inflammation that can lead to increased risk of both ischemic heart disease and ischemic stroke associated with atherosclerosis. If a PLAC Test® reveals vascular inflammation, steps should be initiated by supplementing with pomegranate, SOD (superoxide dismutase in gliadin complex), amla, and fish oil to maintain Lp-PLA, levels under 200 **ng/mL**. The PLAC Test® is available for just **\$93.75** during our Blood Test Super Sale.

RISK FACTORS FOUND BY VAP TESTING ⁴				
VALUES FROM VAP	THERAPEUTIC LIFESTYLE CHANGE	SUPPLEMENTS/ PRESCRIPTION DRUGS		
Elevated LDL	Exercise, Low fat diet	Amla, Red Yeast Rice, Niacin, Statin Drugs		
Elevated Lp(a)	a) No Effect Niacin, Fish Oil, Carniti			
Small Dense LDL	Decrease carbohydrate and sugar intake, Exercise	Fish Oil, Niacin, Statin Drugs, Fibrate Drugs		
Low HDL ₂	Aerobic exercise, Low carbohydrate diet	Amla, Fish Oil, Niacin, Fibrate Drugs		
Elevated IDL (intermediate density lipoprotein)	Low carbohydrate diet, Exercise	Fish Oil, Niacin, Statin Drugs, Fibrate Drugs		
Metabolic Syndrome	No sugar, Low fat diet, Exercise	Green Coffee Berry Extract, soluble fiber, Irvingia, Chromium, Fish oil, Niacin, R-lipoic Acid, Metformin, Acarbose		
ApoB100	Mediterranean diet, Exercise, Improve insulin sensitivity	Fish Oil, Niacin, Some Statins (e.g. simvastatin), Green Tea, Taurine		

VAP Cholesterol Test⁴

The VAP test is a comprehensive cholesterol panel that also includes predictors of metabolic syndrome. The VAP test uses an advanced technology that provides a more accurate assessment of your risk for developing serious cardiovascular and metabolic conditions by analyzing specific lipids in your blood. The VAP test is available for \$67.50 during the Blood Test Super Sale. The Blood Test Super Sale ends June 4, 2012.

References

- Available at: http://www.who.int/mediacentre/factsheets/fs310/en/index.html. Accessed March 9, 2012.
- Available at: http://www.who.int/mediacentre/factsheets/fs317/en/index.html. Accessed March 9, 2012.
- 3. Available at: http://www.plactest.com. Accessed March 9, 2012.
- 4. Available at: http://www.thevaptest.com. Accessed March 12, 2012.

To order your PLAC Test® or VAP Cholesterol Test call Life Extension at 1-800-544-4440 or visit www.LifeExtension.com

ESTABLISHED 1992, A4M REPRESENTS 24,000 PHYSICIANS AND SCIENTISTS FROM 110 COUNTRIES WORLDWIDE

NUS AS



ANNUAL WORLD CONGRESS ON ANTI-AGING & REGENERATIVE MEDICINE

MAY 17-19, 2012 ORLANDO, FL

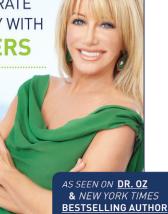
On May 17-19, 2012 the world's leading Experts will gather in Orlando, FL to convene for the largest and most influential academic conference and exhibition on Anti-Aging and Regenerative Medicine.

JOIN US AS WE CELEBRATE OUR **20**th ANNIVERSARY WITH

SUZANNE SOMERS

If you haven't heard her Inspirational story, this is your opportunity!

Listen to her thought-provoking lecture on aging and optimal health and her eye-opening approach to the benefits of BHRT, Anti-Aging Medicine, Stem-cell therapies, Chemo-free cancer cures. and the often-overlooked causes of Obesity.



Topics to be Presented:

- Applying Telomeres to the Patient
- Metabolic Syndrome
- How to Treat PMS and PCOS by **Balancing Hormones**
- Cognitive Function of Aging
- Sexual Health
- Nutritional IV Therapy
- HPA Axis Dysfunction
- Telomerase in Aging & Cancer
- Dermatology for the Anti-Aging Physician
- Stem Cells in Topical Cosmeceuticals

A4M EXECUTIVE OFFICERS







PECIAL SAVINGS FOR EARLY REGISTRATION

GENERAL SESSION REGISTRATION MAY 18-19

\$100 OFF REGISTRATION

ROBERT GOLDMAN, MD, PHD, DO, FAASP, CHAIRMAN OF THE BOARD, A4M







Flexibility Is the Key to Strong Bones

KOACT

Advanced Bone Strength

KoACT® helps increase bone density and flexibility for stronger and healthier bones."

Flexibility is essential to helping bones absorb impact. KoAct provides nutritional support for strong and healthy bones. KoACT is a calcium and collagen chelate which improves density and flexibility creating stronger bones.

KoAct helps maintain strong bones.

Increases Bone Density and Flexibility

Triple-Patented

University Clinical Study

Available in Bone Strength Formula with KoAct®

Item # 01211



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.



Reducing Dangerous Varicose Veins with Phlebotonics

BY SARAH CLACHAR

Unsightly and painful varicose veins, which often mar attractive legs, are more than a cosmetic nuisance. Worming over calves and the lower thigh, these swollen blood vessels hint at more serious circulatory problems.

Varicose veins are a visible sign of *chronic venous insufficiency* (CVI) which affects more women than men.

Chronic venous insufficiency is marked not only by varicose veins but also by painful ulcers, achy and heavy legs, tingling sensations, cramps, skin pigmentation, itchy and hot feet, and edema. Restless leg syndrome (RLS) also shows up as a secondary dysfunction associated with chronic venous disease. 4

Along with the aches and disfiguration, chronic venous disease also brings enormous expense. In the US alone, CVI is behind the loss of an approximately **2 million** working days and accounts for an estimated **\$3 billion** in health care costs.⁵

Surgery, vein stripping, and compression stockings or bandages have all been used with some degree of success to help with the *symptoms* of chronic venous disease. But nothing has come close to the inexpensive and effective treatment found in taking **600 mg** diosmin once a day.^{6,7}

Diosmin is prescribed as a standard pharmaceutical intervention in Europe for chronic venous disease as well as hemorrhoids. Identified in 1925, diosmin is derived from the flavonoid, **hesperidin**, found in citrus rinds.⁸

In 2009, *Life Extension Magazine*® reported that diosmin is the *only* oral therapy that has been shown to work for chronic venous disease.

Recent studies continue to strengthen the case for diosmin as a treatment for chronic venous disease. >>

An Alternative Treatment That Works

Surgical remedies are expensive. Compressive bandages are tedious to apply and change. Even worse, they can damage tissue around ulcers that are slowly trying to heal.

For these reasons, doctors are increasingly looking at **phlebotonics** as a proven effective and safe way to treat chronic venous insufficiency. 9-11 **Phlebotonics** are drugs or nutrients indicated for improving vein health.

Of the various **phlebotonics**, diosmin has been singled out as especially useful in countering chronic venous disease. The authors of one review of research published in the journal *Current Vascular* Pharmacology concluded that, "Although numerous pharmacological agents have been proposed and studied, [diosmin] has demonstrated the greatest clinical benefits in patients with venous disease."8

Diosmin reduces the sensation of pain, swelling, tension, and heaviness in the legs associated with chronic venous disease. 12-15 When it comes to strengthening the tone of distended, weak varicose veins, diosmin helps increase vascular tone at the peripheral sympathetic nerve terminals.¹⁶ In one study done on an isolated rat vein, diosmin increased the strength of contractions from 26.3% of the maximum response possible to 78.9%.17

Diosmin has also demonstrated the ability to reduce the size of "cankles," the lay term used to describe how calves and ankles start to merge into one swollen mass. 10,18

In 2010, a team of Czech researchers published the results from a 27-center study involving 215 patients. Within two months of starting a diosmin regimen, participants were pleasantly surprised to see their ankle and calf circumferences shrink by more than half a centimeter. Overall leg volume decreased by an average of **78 cubic centimeters**. ¹⁴

When asked about overall quality of life improvement and satisfaction with the treatment, 93.5% of participating physicians responded that they considered diosmin treatment to be good to excellent. When the patients were queried, 91% responded that they were satisfied or very satisfied and 82% decided to continue using the diosmin after the study finished.¹⁴ In addition to working alone, diosmin can also complement other treatments for chronic venous disease. Taken before and after varicose vein surgery, it can decrease the pain and subcutaneous bleeding associated with surgery. 13 It's also proven a useful aid to treating ulcers with compressive bandages.8

Restless Leg Syndrome and Diosmin

Few cures have emerged for the primary form of restless leg syndrome (RLS). RLS is characterized by an overwhelming urge to move one's legs due to uncomfortable sensations such as creeping, crawling, pulling, itching, tingling, burning, aching, or electric shock type pain. 19 Restless leg syndrome may be categorized as either primary which means that the cause is of unknown origin (idiopathic) or as secondary which means that the symptoms are due to some other condition such as chronic venous disease, nerve damage, pregnancy, anemia, and rheumatoid arthritis.¹⁹ Researchers have attributed it to being a sleep disorder, mood disorder, problem associated with kidney disease, and a central nervous system disorder. However, none of these hypothetical causes have led to much relief.⁵ On the contrary; many of the pharmacological treatments prescribed for restless leg syndrome have made the problem worse with the patient incurring additional side effects.²⁰

One form of restless leg syndrome seems to be a secondary development of venous diseases. In a 2007 study published in *Phlebology*, researchers found that 36% of patients suffering from chronic venous disease also had restless leg syndrome. In comparison, the control population only had 19% occurrence of restless leg syndrome. Interestingly, when the control participants who showed positive for restless leg syndrome were studied more closely, researchers discovered 91% of them had mild indications of venous problems.5



In contrast to the poor track record treatment for primary restless leg syndrome has, treating secondary restless leg syndrome offers much more promise. Data also shows that by alleviating the symptoms of chronic venous disease, secondary restless leg syndrome will be eliminated as well. 14,21 In one study, participants with restless leg syndrome who received medical treatment for chronic venous disease reported a 36% increase in quality of sleep and a 67% decrease in severity of symptoms. ²² In a 2010 study, not only did chronic venous disease sufferers experience relief from venous problems by using diosmin but researchers also documented a **60%** decline in restless leg syndrome.¹⁴

Pharmaceutical inhibitors of the enzyme, catechol-O-methyl transferase (COMT) have been used to help ease symptoms of restless leg syndrome.²³ But they can also have severe side effects. For example, the **COMT** inhibitor, tolcapone (Tasmar[®]), has been withdrawn from use in several countries (excluding the US) because it can increase liver problems by as much as 100%.24

Diosmin has been shown to effectively inhibit the enzyme **COMT**,25 but with few or no side effects.9 Diosmin enjoys an excellent record of safety and tolerability.9

Additionally, the symptoms of secondary restless leg syndrome—tingling and crawling sensations in the legs—may be caused by the flow of edema fluid in the legs when a patient reclines at night and elevates their legs. Researchers have observed that restless leg syndrome seems to cause the most discomfort and involuntary leg movement at night and wanes in the morning when the swelling has dissipated.²⁰ Because of this, diosmin's demonstrated role in relieving edema explains why it may help in relieving restless leg syndrome as well.

Diabetes and Diosmin

Research on rats has demonstrated that diosmin may help with the management of diabetes. In one study, 100 mg/kg body weight diosmin for 45 days reduced blood glucose levels and reduced hemoglobin glycolization.²⁶ The researchers also noted that diosmin worked in a dose dependent manner.

Diosmin and Brain Health

Preliminary studies indicate that diosmin may play a role in preventing neurological diseases like Alzheimer's and autism.

In a study conducted on mice, researchers found that orally-administered diosmin reduced the number of soluble and insoluble beta-amyloid plagues by 37



Diosmin: Head to Toe Benefits

- Varicose and spider veins are indications of deeper circulatory problems known as chronic venous insufficiency (CVI). Heredity and sex factor into developing CVI as well as extensive time spent sitting or standing.
- Diosmin has been used therapeutically for 30 years and considered by some experts to be the most effective therapy of CVI. It is prescribed in Europe as a treatment for CVI and hemorrhoids.
- Diosmin may also bring relief to people suffering from secondary Restless Leg Syndrome (RLS) caused by CVI.
- Some data indicates the possibility of dangerous interactions between blood thinners. like warfarin, and diosmin.
- Preliminary data shows that diosmin may provide answers for people struggling with diabetes, neurological problems like Alzheimer's, melanoma and colon cancer, lymphedema and chromosomal damage associated with radiation treatment and women's reproductive health problems.



and 46% respectively.²⁷ Diosmin along with another closely related compound, luteolin, may inhibit an enzyme implicated in the development of beta-amyloid plaques known as glycogen synthase kinase 3. and has been linked to several disorders of the central nervous system.27

Autism researchers have also observed that diosmin and luteolin seem to block the cytokine, Interleukin-6 (IL-6). IL-6 released during pregnancy has been linked to causing fetal brain development problems connected to autism. The researchers hope that this discovery may play an important role in the prevention of autism during pregnancy.²⁸

Diosmin as Part of Cancer Therapy and Recovery from Treatment

Diosmin may help on two fronts when it comes to treating cancer.

Diosmin itself may work synergistically with other treatments in directly fighting cancer. In vitro studies

What Causes Chronic Venous Insufficiency?

Each pump of the heart pushes the blood around the body. This pump works well for the outgoing blood coursing through the arteries. But by the time blood hits the return trip through the veins, much of the propulsion generated by the heart is gone. To add to the challenge, blood traveling up the legs to return to the heart has to fight gravity as well.

Your body has special mechanisms to aid in this fight. When you walk-with each step-the pressure on your foot and the contraction of your calf muscle pushes the blood upward. Additionally, each pump of your heart pushing blood outward also creates a small vacuum that pulls blood in.

With these three mechanisms, your body can move blood back to the heart. But they also depend heavily on a special feature in your physiology that keeps the blood from seeping back when the pressure is off.

Veins in the leg come equipped with flap-like, oneway valves. When the leg muscles relax after blood moves up through the vein, the flap closes off the vein below.

This helps reduce venous pressure in the lower legs. A normal healthy leg will start with about 90 mm Hg of venous pressure. With each step this pressure decreases to as low as 10 mm Hg.

However, without the valve system working, pressure doesn't dissipate. The blood seeps back down

the leg and builds up pressure in the lower veins, keeping a steady venous pressure of about 90 mm Hg.37

This increased pressure, in turn, weakens the valves farther down, adding to the problem. Engorged with blood, the veins' walls weaken, turning them into varicose and spider veins.

Eventually, blood seeps out through the weakened vein walls and pools in the calves. The build-up of lymph fluid and blood causes swelling and discoloration. In the worst cases, painful, stubborn ulcers develop.

Height,³⁸ heredity,³⁹ obesity,³⁸ and lifestyle all play a role in the risk for chronic venous insufficiency. Standing or sitting for long periods of time is associated with developing chronic venous insufficiency since it prevents the calf muscles from helping the blood return to the heart.40

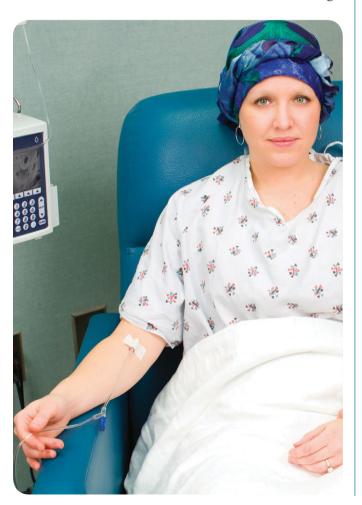
Sex may also be a risk factor although some data shows little difference between men and women in their risk for chronic venous insufficiency.41,42 However, there may be a twist to this. Women may develop chronic venous insufficiency as much as six years earlier than men on average. And this earlier development of chronic venous insufficiency may contribute to the greater severity in symptoms women experience.39

demonstrated that while the benefit did not come directly from diosmin, its metabolite diosmetin, effectively killed colon cancer cells and inhibited several breast cancer cell lines.²⁹ Diosmetin is produced by your body when it metabolizes diosmin.

Diosmin also seems to augment the effectiveness of *Interferon-alpha* (*IFN-alpha*) in the treatment of melanoma. *IFN-alpha* is one of the most effective treatments for skin cancer. But it's also very expensive with numerous side effects. However, when combined with diosmin, lower doses of *IFN-alpha* proved to be just as effective as the standard doses.³⁰

As an added benefit, diosmin may help counter the debilitating side effects of radiation treatment.

One small-scale human study shows diosmin may bring relief to breast cancer patients suffering from secondary swelling (*lymphodema*) caused by radiation treatment. In women suffering from severe lymphodema, diosmin increased lymphatic migration speed by six times greater than the control group.³¹ Similarly, one study on rats has shown a similar promise for helping people dealing with proctitis, a painful inflammation of the rectum often incurred through



radiation treatment. When diosmin was administered, the rats displayed less inflammation and glandular distortion than the controls showed.³²

Finally, diosmin has been shown to protect lymphocytes against genetic damage caused by radiation exposure. Human blood samples were exposed to 150 cGy of cobalt-60 gamma rays. Within an hour, the samples from people who took diosmin before the samples were taken showed **40**% less micronuclei than the control samples. The presence of micronuclei usually indicates some level of chromosomal damage.³³

Diosmin For Women's Health

A couple of studies conducted in the late 1990s demonstrated that diosmin relieved the symptoms of pre-menstrual syndrome.^{34,35} Very little research has been done to follow up on how diosmin may help women with reproductive health issues.

However, in 2008, a group of Bulgarian physicians reported that they rely on the anti-inflammatory properties of diosmin to help reduce uterine contractions in pregnant women at risk for premature delivery. The reporting physicians theorize that diosmin reduces the chance of preterm delivery by blocking the production of **prostaglandins** and **leukotrienes**, signal molecules associated with spurring contractions.³⁶

Summary

Sufferers of chronic venous insufficiency may find relief in the natural substance, diosmin.

Diosmin has been shown to improve the tone and health of veins, reduce swelling in the calves and ankles, reduce pain and fatigue in the legs, and even alleviate the symptoms of restless leg syndrome. Many health experts consider diosmin to be the only effective treatment for many of the symptoms associated with lower circulatory problems. In addition, preliminary research indicates diosmin may also help combat diabetes and certain cancers, reduce the risk of neurological diseases, help with women's reproductive health problems, and prevent swelling (*lymphodema*) and chromosomal damage associated with radiation treatment.

However, diosmin may be contraindicated if you are taking warfarin or other anticoagulants. If you take any blood thinning medication, please check with your physician before using diosmin.⁴³

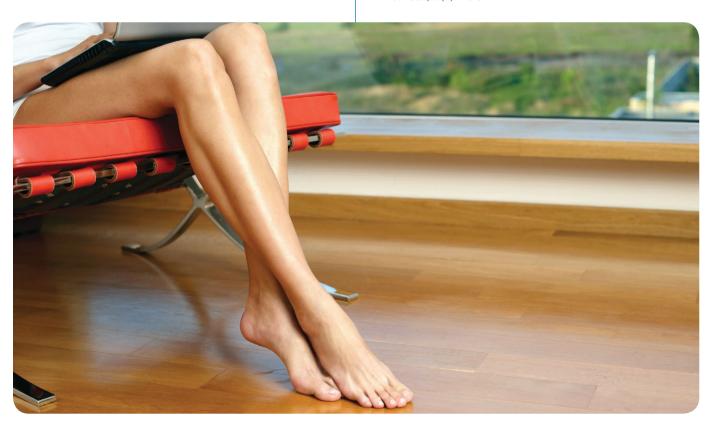
If you have any questions on the scientific content of this article, please call a Life Extension®

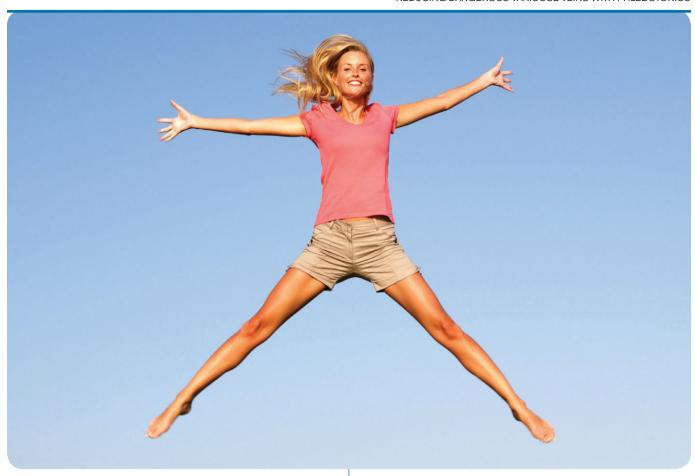
Health Advisor at 1-866-864-3027.

References

- Bergan JJ, Schmid-Schönbein GW, Smith PD, Nicolaides AN, Boisseau MR, Eklof B Chronic venous disease N Engl J Med. 2006:355:488-98.
- Available at: http://www.nlm.nih.gov/medlineplus/ency/ article/000203.htm. Accessed February 16, 2012.
- Kanter AH. The effect of sclerotherapy on restless legs syndrome. Dermatol Surg. 1995 Apr; 21:328-32.
- Available at http://morrisonvein.com/Files/RLS_Information.pdf. Accessed February 28, 2012.
- McDonagh, B, King T, Guptan RC. Restless legs syndrome in patients with chronic venous disorders: an untold story. Phlebology. 2007;22(4):156-63.
- Milic DJ. Prevalence and socioeconomic data in chronic venous disease: how useful are they in planning appropriate management? Medicographia. 2011;33:253-8.
- Carpentier PH, Mathieu M. Evaluation of clinical efficacy of a venotonic drug: Lessons of a therapeutic trial with hemisynthesis diosmin in "heavy legs syndrome." J Mal Vasc. 1998;23(2):106-12.
- 8.. Diosmin Monograph. Alt Medicine Review. 2004;9(3):308-11.
- Gohel MS, Davies AH. Pharmacological agents in the treatment of venous disease: an update of the available evidence. Curr Vasc Pharmacol. 2009 Jul;7(3):303-8.
- 10. Martinez, MJ, Bonfill, X, Moreno, RM, Vargas, E, Capella, D. Phlebotonics for venous insufficiency. Cochrane Database Syst Rev. 2005;(3):CD003229.
- 11. Ramelet AA, Boisseau MR, Allegra C et al. Veno-active drugs in the management of chronic venous disease. An international consensus statement: current medical position, prospective views and final resolution. Clin Hemorheol Microcirc. 2005;33(4):309-19.
- 12. Tsukanov luT, Tsukanov Alu. Results of administering Phlebodia 600 in fertile women with orthostasis-dependent phlebopathy. Angiol Sosud Khir. 2007;13(3):107-12.

- 13. Pokrovsky Av, Saveljev VS, Kirienko AI et al. Surgical correction of varicose vein disease under micronized diosmin protection (results of the Russian multicenter controlled trial DEFANS). Angiol Sosud Khir 2007;13(2):47-55.
- 14. Navratilova Z. Efficacy of a 6-month treatment with Daflon 500 mg* in patients with venous edema (Efficacy of Daflon 500 mg* in Edema Treatment. EDET). Phlebolymphology. 2010;17(3)137-42.
- 15. Maksimovi ZV, Maksimovi M, Jadranin D, Kuzmanovi I, Andonovi O. Medicamentous treatment of chronic venous insufficiency using semisynthetic diosmin--a prospective study. Acta Chir Iugosl. 2008;55(4):53-9.
- 16. Sher E, Codignola A, Biancardi E, Cova D, Clementi F. Amine uptake inhibition by diosmin and diosmetin in human neuronal and neuroendocrine cell lines. Pharmacol Res. 1992 Dec;26(4):395-
- 17. Savineau JP. Marthan R Diosmin-induced increase in sensitivity to Ca2+ of the smooth muscle contractile apparatus in the rat isolated femoral vein. Br J Pharmacol. 1994 Apr;111(4):978-80.
- 18. Tsukanov luT, Tsukanov Alu, Bazhenov VN. The effect of oral contraceptives on the orthostatic diameter of lower limb major veins and its correction. Angiol Sosud Khir. 2008;14(1):75-7.
- 19. Available at: http://www.nhlbi.nih.gov/health/health-topics/topics/ rls/. Accessed February 21, 2012.
- 20. Demanet E, Verstraeten, ME. The efficacy of diosmin in restless legs syndrome. Stragen corporation. Unpublished white paper. Stragen Pharma S.A. 2002: 5.
- 21. Trenkwalder C, Paulus W. Restless legs syndrome: pathophysiology, clinical presentation and management. Nat Rev Neurol. 2010;6(6):337-46.
- 22. Tison F, Crochard A, Leger D, Bouee S et al. Epidemiology of restless legs syndrome in French adults: A nationwide survey: The INSTANT Study. Neurology. 2005;65(2):239-46.
- 23. Allen RP, Connor JR, Hyland K, Earley CJ. Abnormally increased CSF 3-Ortho-methyldopa (3-OMD) in untreated restless legs syndrome (RLS) patients indicates more severe disease and possibly abnormally increased dopamine synthesis. Sleep Med. 2009 Jan;10(1):123-8.





- 24. Watkins P. COMT inhibitors and liver toxicity. Neurology. 2000;55(11 Suppl 4):S51-2; discussion S53-6.
- 25. Boudet, C, Peyrin L. Comparative effect of tropolone and diosmin on venous COMT and sympathetic activity in rat. Arch Int Pharmacodyn Ther. 1986 Oct;283(2):312-20.
- 26. Pari L, Srinivasan S, et al. Antihyperglycemic effect of diosmin on hepatic key enzymes of carbohydrate metabolism in streptozotocin-nicotinamide-induced diabetic rats. Biomed Pharmacother. 2010 Sep;64(7):477-81.
- 27. Rezai-Zadeh K, Shytle RD, Bai Y, Tian J. Hou H et al. Flavonoidmediated presenilin-1 phosphorylation reduces Azheimer's disease beta-amyloid production. J Cell Mol Med. 2009 March; 13(3):
- 28. Parker-Athill E, Luo D, Bailey A et al. Flavonoids, a prenatal prophylaxis via targeting JAK2/STAT3 signaling to oppose IL-6/ MIA associated autism. J Neuroimmunol. 2009 Dec 10;217 (1-2):20-7
- 29. Androutsopoulos VP, Mahale S, Arroo RR, Potter G. Anticancer effects of the flavonoid diosmetin on cell cycle progression and proliferation of MDA-MB 468 breast cancer cells due to CYP1 activation. Oncol Rep. 2009 Jun;21(6):1525-8.
- 30. Alvarez N, Vicente V, Martinez C. Synergistic effect of diosmin and interferon-alpha on metastatic pulmonary melanoma. Cancer Biother Radiopharm. 2009 Jun;24(3):347-52.
- 31. Pecking AP, Fevrier B, Wargon C, Pillion G. Efficacy of Daflon 500 mg in the treatment of lymphedema (secondary to conventional therapy of breast cancer). Angiology. 1997 Jan;48(1):93-8.
- 32. Sezer A, Usta U, Kocak Z, Yagci MA. The effect of a flavonoid fractions diosmin + hesperidin on radiation-induced acute proctitis in a rat model. J Cancer Res Ther. 2011 Apr-Jun;7(2):152-6.
- 33. Hosseinimehr SJ, Ahmadi A, Mahmoudzadeh A, Mohamadifar S. Radioprotective effects of Daflon against genotoxicity induced by gamma irradiation in human cultured lymphocytes. Environ Mol Mutagen. 2009 Dec;50(9):749-52.

- 34. Meggiorini ML, Cascialli GL, Luciani S, Nusiner MP, Pozzi V. Randomized study of the use of synthetic diosmin in premenstrual and vascular dysplastic mastodynia. Minerva Ginecol. 1990 Oct;42(10):421-5.
- 35. Serfaty D, Magneron AC. Premenstrual syndrome in France: epidemiology and therapeutic effectiveness of 1000 mg of micronized purified flavonoid fraction in 1473 gynecological patients. Contracept Fertil Sex. 1997 Jan;25(1):85-90.
- 36. Milchey N, Batashki I, Markova D, Dimitrova E. Using phlebodia in pregnant women during preterm delivery. Akush Ginekol (Sofiia). 2008;47(5):7-9.
- 37. Coleridge Smith PD. The microcirculation in venous hypertension. Vasc Med. 1997;2:203-13.
- 38. Svestkova S, Pospisilova A. Risk factors of chronic venous disease inception. Scripta Medica, BRNO. 2008;82(2):111-21.
- 39. Fiebig, A, Krusche, P, Wolf, A, Krawczak, M, Timm, B. Heritability of chronic venous disease. Human Genetics. doi: 10.1007/s00439-010-0812-9.
- 40. Sudoł-Szopi ska I, Bogdan A, Szopi ski T, Panorska AK, Kołodziejczak M. Prevalence of chronic venous disorders among employees working in prolonged sitting and standing postures. Int J Occup Saf Ergon. 2011;17(2):165-73.
- 41. Evans CJ, Fowkes FGR, Ruckley CV, Lee AJ. Prevalence of varicose veins and chronic venous insufficiency in men and women in the general population: Edinburgh Vein Study. J Epidemiol Community Health. 1999;53:149-53.
- 42. Brand FN, Dannenberg AL, Abbott RD, Kannel WB. The epidemiology of varicose veins: the Framingham Study. Am J Prev Med. 1988;4:96-101.
- 43. Kumar RM, Van Gompel JJ, Bower R, Rabinstein AA. Spontaneous intraventricular hemorrhage associated with prolonged diosmin therapy. Neurocrit Care. 2011 Jun;14(3):438-40.



Many of the validated benefits of the Mediterranean **diet** derive from heart-healthy compounds contained in the **olive fruit**, including the polyphenols **tyrosol** and hydroxytyrosol. 1-4

When it comes to olive's power to support blood pressure already within a healthy range, research shows the bioactive compound *oleuropein*⁵⁻⁸ is primarily responsible.

The problem is that optimal amounts of oleuropein are not found in the fruit. The highest concentrations of oleuropein are contained in the olive leaf 9-13—a part of the plant that is neither readily available nor commonly consumed.

Oleuropein normally degrades during standard food processing. For this reason, Life Extension® introduces Olive Leaf Vascular Support.

Olive Leaf Vascular Support consists of a patented, standardized oleuropein extract using a unique, gentle**processing** technique.

Researchers using 1,000 mg per day of this formulation in a double-blind, controlled clinical trial documented an average 11.5-point (mmHg) decline in systolic readings and 4.8-point drop in diastolic readings in just eight weeks.14

The suggested daily serving of two **500 mg** vegetarian capsules of Olive Leaf Vascular Support supplies optimal concentrations of this proprietary, highly stable oleuropein, for maximum benefit.

CAUTION: Consult your healthcare provider before taking this product if you are being prescribed anti-hypertensive medication.



A bottle containing 60 vegetarian capsules of Olive Leaf Vascular Support retails for \$22. If a member buys four bottles, the price is reduced to \$15 per bottle.

References

- 1. Anal Chim Acta. 2007 Feb 5;583(2):402-10.
- J Agric Food Chem. 2007 Sep 5;55(18):7609-14.
- Lipids. 2001 Nov;36(11):1195-202
- 4. Eur J Cancer. 2000 Jun;36(10):1235-47.
- 5. Phytother Res. 2008;22:1239-42
- 6. Benolea EFLA 943. Unpublished study. October 11, 2011.
- J Ethnopharmacol. 2008 Nov 22;120(2):233-40.
- 8. Int J Food Sci Nutr. 2005 Dec;56(8):613-20.
- 9. Handbuch Phytotherapie. Stuttgart, Germany: Wissenschaftliche Verlagsgesellschaft; 2003.
- 10. *J Pharm Belg*. 1996 Mar-Apr;51(2):69-71
- 11. Therapie. 1999 Nov-Dec;54(6):717-23.
- 12. Ann Pharm Fr. 2000 Jul;58(4):271-7.
- 13. Arznei-forschung. 1972 Sep;22(9):1476-86.14. Phytomedicine. 2011 Feb 15;18(4):251-8.

To order the new **Olive Leaf Vascular Support** call 1-800-544-4440 or visit www.LifeExtension.com

Discover the European "Secret" to Youthful, Healthy Legs

Combat Unsightly Veins with This High-Potency Extract

30 YEARS OF CLINICAL EVIDENCE BRINGS LONG-AWAITED RELIEF

It is estimated that *half* of all women in the United States will develop unsightly veins by age 50.1 While dermatologists often suggest surgery to correct this "age-related" issue, European women have enjoyed access to a **natural solution for 30** *years!*

Life Extension® offers American women the same extract without a prescription. No more compression bandages or stockings. Instead, experience the same beautifying effects European women have been raving about for three decades—naturally!

Derived from the <u>sweet orange</u>, **European Leg Solution featuring Certified Diosmin 95** contains a plant-based nutrient called *diosmin* and is available in a vegetarian tablet.

MICRONIZED FOR GREATER EFFECTIVENESS

In order to derive <u>any</u> significant benefit, bioactive diosmin extract **must** be able to reach veins directly.

Life Extension®'s proprietary extract undergoes a complex, highly refined process called **micronization**. It yields the only *form* of diosmin clinically proven to support healthy vascular function in the legs.^{1,2}

This scientifically controlled, multi-phase technique *radically reduces* the size of the standard diosmin particles contained in each <u>tablet</u>, from **100 microns** to less than **45 microns**. The result is an optimally bioavailable standardized extract. This ensures <u>rapid</u>, <u>efficient delivery</u> of diosmin to the bloodstream, enabling enhanced *penetration* of the delicate inner lining of the veins.

As with so many "age-related" conditions, inflammation³ is the chief culprit behind the presence of unsightly veins. <u>Inflammatory responses</u> are precipitated by the interaction between white blood cells and the endothelial lining.

Life Extension's European Leg Solution featuring Certified Diosmin 95 offers effective protection by disrupting this inflammatory response.

THE PREFERRED TREATMENT AMONG EUROPEAN WOMEN FOR BEAUTIFUL LEGS IS HERE

Life Extension's European Leg Solution featuring Certified Diosmin 95 provides the same pharmaceutical grade extract used by millions throughout Europe. The retail price for a bottle containing 30 600 mg vegetarian tablets is \$20. If a member buys four bottles, the cost is only \$13.50 per bottle.

Contains corn.

Caution

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

Six Ways Life Extension's European Leg Solution featuring Certified Diosmin 95 Works for You

- Maintains healthy blood flow through your capillaries—the most fragile of your blood vessels.
- Maintains tone and elasticity of your veins—the key to sustained vascular health.
- **3.** Eases the effects of circulating cytokines that promote inflammation.
- **4.** Safeguards collagen and elastin against oxidative damage.
- 5. Enjoys an outstanding safety record.
- Produces results in just 1–2 weeks, with a single 600 mg tablet taken each morning.²

*Product not for sale outside the United States.



lieExtension

ROPEAN LEG SOLUTI

To order European Leg Solution featuring Certified Diosmin 95, call 1-800-544-4440 or visit www.LifeExtension.com

References: 1. http://www.womenshealth.gov/faq/varicose-spider-veins.cfm. 2. Angiology. 2003 Jul-Aug;54 Suppl 1:S33-44.
3. Eur J Vasc Endovasc Surg 2004;28:484-93.

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.



Which VITAMIN D is Right for You?

Study after study confirms the vital importance of maintaining optimal levels of vitamin D for broad-spectrum health benefits. Research often indicates that a blood level of 50 ng/mL of 25-hydroxyvitamin D is ideal.

Because people have individual requirements, Life Extension® has created the largest selection of vitamin D supplements available to ensure that you achieve your vitamin D3 goals.

Keep in mind that you may already be getting 1,000-3,000 IU of vitamin D in your multi-nutrient formula.



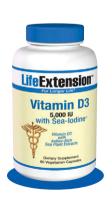
Vitamin D3 1,000 IU 250 capsules

Retail: \$12.50 Four-bottle

Member Price: \$8.44 ea.

Commercial companies offered only **400** IU vitamin D products when Life Extension long ago introduced this **1,000** IU version. For most people, this 1,000 IU potency is *insufficient* to attain optimal vitamin D blood levels. For smaller individuals who obtain **2,000-3,000** IU in their multinutrient formulas (and children), this potency of vitamin D may be suitable. Item # 00251

Please refer to website for allergen information.



Vitamin D3 5,000 IU with Sea-Iodine™* 60 vegetarian capsules

Retail: \$14
Four-bottle

Member Price: \$9.38 ea.

Most people do not ingest enough vitamin D <u>and</u> iodine, especially those seeking to reduce their salt intake. Combining **5,000** IU of **vitamin D3** and **1,000** mcg of **iodine** into <u>one</u> capsule makes taking these two nutrients economical and convenient.

Item # 01372

Please refer to website for allergen information.

To order any of these high-potency vitamin D3 supplements, call 1-800-544-4440 or visit www.LifeExtension.com

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



Vitamin D3 5,000 IU 60 capsules

Retail: \$11
Four-bottle

Member Price: \$7.43 ea.

For those obtaining **1,000-3,000** IU of vitamin D in their multi-nutrient formulas, this **5,000** IU potency is what most need to *achieve* optimal vitamin D blood levels.

Item # 00713

telli # 00713

Please refer to website for allergen information.



Vitamin D3 7,000 IU 60 capsules

Retail: \$14
Four-bottle

Member Price: \$9.45 ea.

Some individuals (such as those weighing more than 180 pounds) may require higher potencies of vitamin D. When combined with 1,000-3,000 IU obtained from multinutrient formulas, this 7,000 IU vitamin D3 capsule should enable these individuals to attain 25-hydroxyvitamin D blood levels above the desired range of 50 ng/mL.

Item # 01418

Please refer to website for allergen information.



Vitamin D3 Liquid Emulsion 2,000 IU 1 ounce

Retail: \$28 Four-bottle

Member Price: \$18.75 ea.

For those rare individuals who have difficulty absorbing enough vitamin D3 from powdered capsules, this liquid emulsion of vitamin D can be used.

Item # 00864

cal conditions (such as hyperparathyroidism or sarcoidosis), and those who use cardiac glycosides (digoxin) or thiazide diuretics should consult a physician before using supplemental vitamin D.

*If you have a thyroid condition or are taking antithyroid medications, do not use without consulting your healthcare practitioner.



BY WILLIAM GAMONSKI

BASIL

A Potent One-Two Punch of Robust Flavor and Medicinal Advantages

Derived from the Greek word meaning royal, 1 basil is a versatile herb that has lived up to its pedigree. With its wealth of nutrients, from hefty amounts of vitamin K and calcium, to its high antioxidant oils, basil offers an array of health-enhancing benefits ranging from protection against DNA damage to combating stress.1 In addition, the peppermint-like leaves of basil are loaded with beta-caryophyllene, an anti-inflammatory compound that may treat conditions such as arthritis and inflammatory bowel disease.² An abundance of evidence is emerging to support basil's reputation as an herbal remedy for

Basil offers an array of health-enhancing benefits ranging from protection against DNA damage to combating stress.

thousands of years, making this undervalued herb a formidable opponent against some of today's most prevalent health problems.

Basil's History

Indigenous to Asia and Africa, basil (Ocimum spp.) is part of the Lamiaceae mint family. It's grown in regions throughout the world, but primarily in France, Greece, Egypt, and United States. There are over 60 varieties of this potent herb, each differentiated by its leaf appearance and pungency. The most common form is sweet basil, which is most notably used in culinary practices. 1,3

DNA Protector

Among basil's most prized benefits is its ability to protect DNA, the storage form of genetic information. DNA is packaged in functional units called chromosomes. Chromosomes can be damaged by exposure to radiation, producing free radicals known as reactive oxygen species that alter the genetic material inside cells and cause DNA mutations that are linked to the growth of cancer.4

Two water-soluble *flavonoids*, orientin and vicenin, present in basil, might provide protection against radiation at the cellular level. In a study published in the iournal Radiation Research, mice received orientin or vicenin before being exposed to radiation in bone marrow cells. Scientists concluded that both flavonoids significantly reduced chromosomal damage. most likely because of their antioxidant properties.⁵

Antibacterial

Numerous studies have shown basil's potential to inhibit the growth of pathogenic bacteria. These antibacterial effects are attributed to the main constituents in basil's essential oils, including estragole, eugenol, rosmarinic acid, linalool, methylchavikol, and oleanolic acid.1 In a study done by Iranian scientists, basil's essential oils were shown in laboratory tests to be effective in retarding the growth of bacteria strains Staphylococcus aureus, Bacillus cereus and Escherichia coli.6

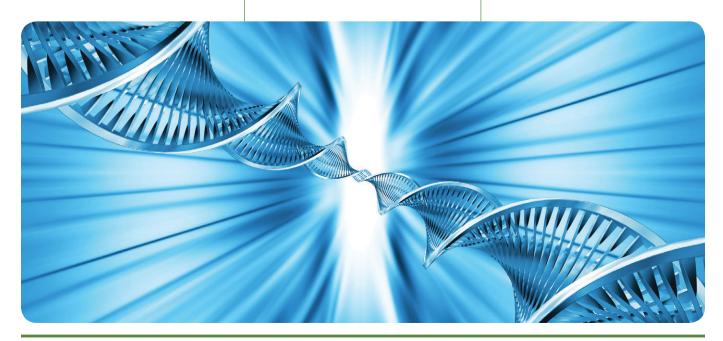
Furthermore, rosmarinic acid was shown to be effective in restrict-

SELECT THE RIGHT BASIL¹

- Choose fresh basil over the dried form for better flavor.
- 2. Pick fresh-looking, bright green fresh basil leaves.
- 3. Avoid fresh basil leaves with dark spots, cuts, tears, or vellowing.
- 4. Store fresh basil in the refrigerator or freezer.
- 5. When choosing dried basil, select the organic version and store in a cool and dry place for six months.

ing the growth of Pseudomonas aeruginosa, a bacterium associated with lung infections, according to a research study in the journal Plant Physiology and Biochemistry.7

Some species of bacteria have become resistant to multiple drugs such as antibiotics, making them more difficult to treat. Bulgarian researchers discovered that widespread drug resistant bacteria species Enterococcus, Pseudomonas, and Staphylococcus all were inhibited when exposed to basil's essential oils.8





Heart Boosting Benefits

Due to its high antioxidant content, researchers have expressed interest in basil's influence on heart health. In a recent study published in the journal Oxidative Medicine and Cellular Longevity, scientists divided rats into three groups: a high cholesterol diet with and without basil leaf extract for seven weeks, while a third control group received a normal diet only. The results showed that basil leaf extract prevented the development of high total cholesterol and LDL cholesterol in rats fed a high cholesterol diet.9 Researchers found that basil leaf extract increased the use of cholesterol for bile acid production, making it less likely to accumulate in the liver and cause high cholesterol.

A separate study suggests the herb can lower blood pressure, a powerful risk factor for cardiovascular disease and stroke. Chinese researchers discovered that hypertensive rats fed basil leaf extracts daily for four weeks reduced systolic blood pressure by 20 mmHg and diastolic blood pressure by 15 mmHg.10

As a rich source of both magnesium and beta-carotene, basil may support cardiovascular health. Increased dietary magnesium intake has been associated with lower levels of inflammation and endothelial dysfunction, according to a review published in the American Journal of Clinical Nutrition. 11

Researchers at the Netherlands National Institute for Public Health and the Environment (RIVM) assessed the relationship between carotenoids, tocopherols and vitamin C intake and heart disease deaths in elderly men, aged 65 or older, over a 15-year period. Taking into account confounding factors of age and smoking, scientists concluded that an increased intake of carotenoids reduced heart disease mortality by 20%.12

Stress, Anxiety, and Immune System

Although acute stress is a normal part of life, chronic stress and stress related disorders such as anxiety can initiate changes in immune response that over time lead to suppression of immune function.13

Basil has shown the ability to alleviate stress, according to a study published in the journal Evidence-Based Complementary and Alternative Medicine. Scientists examined the effects of basil extract on stress symptoms in 158 men and women. Patients received a placebo or 1,200 mg of basil extract per day for six weeks. At the end of the study, the treatment group showed a 39% decrease in

EASY TO MAKE TOMATO-BASIL SOUP21

Ingredients:

4 cups canned whole tomatoes, crushed Salt (pinch) 4 cups tomato juice 1/4 lb sweet unsalted butter 12 to 14 fresh basil leaves 1/4 teaspoon cracked black pepper 1 cup heavy cream

In saucepan, combine crushed tomatoes and tomato juice, letting it simmer for 30 minutes. Stir in fresh basil leaves and add cream and butter to the saucepan, while stirring, over low heat. Add in fresh basil leaves. Makes 8 servings.

Per serving: calories 242, protein 3g, fat 23g, carbohydrates 10g, cholesterol 71 mg, sodium 344 mg, fiber 2g

general stress symptoms, such as sleep problems, exhaustion, and forgetfulness, and an 87.5% reduction in stress related sexual problems.14

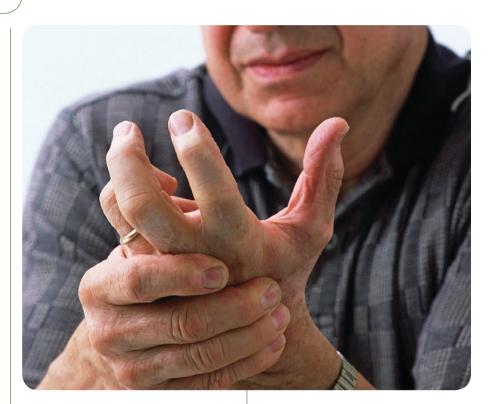
Another study conducted by Indian scientists revealed that 35 subjects with anxiety disorder taking 1,000 mg of basil leaf extract per day for 60 days reduced anxiety by 34.2% and stress by 27.5%.15 Basil leaf extract has a positive impact on the regulation of hypothalamo-hypophyseal-adrenocortical axis (HHA axis), a system that controls reactions to stress.

Basil may also modulate immunity directly. Researchers at All India Institute of Medical Sciences in New Delhi, India provided 22 men and women with either 300 **mg** of basil leaf extract or a placebo daily for four weeks. Participants who consumed the basil leaf extract had greater improvements in interleukin-4, T-helper cells and natural killers, all immunological parameters, compared to the group taking a placebo.16

Diabetes Management

At the core of any diabetes management plan is the regulation of blood sugar levels. In a 4-week study conducted by Azad University of Agriculture and Technology in Kanpur, India 40 patients with type 2 diabetes received a placebo or **2.5** g of a powdered dried basil leaf per day. At the end of the 4 weeks, the treated group recorded a 17.6% reduction in fasting blood glucose levels and a 7.3% decrease in postprandial blood glucose levels.17

It is believed that one possible mechanism for basil's blood glucose lowering effect is ursolic acid, which has been shown to act as an alpha-glucosidase inhibitor,



meaning it reduces the absorption of glucose in the small intestine and prevents a rise in blood sugar levels.18

Fight Arthritis With Flavor

While there are multiple compounds in basil's essential oils, eugenol shows the greatest potential for helping people with arthritis. It has demonstrated the greatest ability of all basil essential oil compounds to decrease the activity of cyclooxygenase (COX), an enzyme that increases the production of pro-inflammatory cells.19

A compelling study performed by the University of Science Malaysia in Kelantan, Malaysia sheds light on eugenol as an arthritis fighter. Researchers induced arthritis in the right paw and knee of rats, resulting in increased swelling. After 26 days taking ginger and eugenol oil, researchers observed significant decreases in both paw and knee joint swelling.²⁰

Summary

Although basil is primarily known as a flavor enhancer, mounting research indicates that adding this herb to your daily diet can provide anti-inflammatory, antibacterial, and anti-stress properties, making it a well-rounded fighter in the battle to improve overall health.

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. Available at: http://www.whfoods.com/ genpage.php?tname=foodspice&dbid=85. Accessed January 31, 2012.
- Gertsch J, Leonti M, Raduner S, et al. Beta-caryophyllene is a dietary cannabinoid. PNAS. 2008 June; 105(26): 9099-104
- Available at: http://www.ienica.net/marketdatasheets/essentialoilsmdssmall.pdf. Accessed January 31, 2012.

- Greenman C, Stephens P, Smith R, et al. Patterns of somatic mutation in human cancer genomes. Nature. 2007 Mar; 446(1732): 153-8.
- 5. Nayak V, Devi PU. Protection of mouse bone marrow against radiation-induced chromosome damage and stem cell death by the ocimum flavonoids orientin and vicenin. Radiat Res. 2005 Feb; 163(2):
- Moghaddam AMD, Shayegh J, Mikaili P, Sharaf JD. Antimicrobial activity of essential oil extract of Ocimum basilicum L. leaves on a variety of pathogenic bacteria. J Med Plant Res. 2011 Aug; 5(15):3453-6.
- Bais HP. Walker TS. Schweizer, Vivanco JM. Root specific elicitation and antimicrobial activity of rosmarinic acid in hairy root cultures of Ocimum basilicum. Plant Physiol Biochem. 2002 Apr; 40(11):983-95
- 8. Opalchenova G, Obreshkova D. Comparative studies on the activity of basilan essential oil from Ocimum basilicum L.-againist multidrug resistant clinical isolates of the genera Staphylococcus, Enterococcus and Pseudomonas by using different test methods. J Microbiol Methods. 2003 Jul; 54(1):105-10.
- Suanarunsawat T, Ayutthaya WD, Songsak T, Thirawarapan S, Poungshompoo

- S. Lipid-lowering and antioxidative activities of aqueous extracts of Ocimum sanctum L. leaves in rats fed with a highcholesterol diet. Oxid Med Cell Longev. 2011 Jul: 2011: 962025.
- 10. Umar A, Imam G, Yimin W, et al. Antihypertensive effects of Ocimum basilicum L. (OBL) on blood pressure in renovascular hypertensive rats. Hypertens Res. 2010 Jul; 33(7):727-30.
- 11. Bo S, Pisu E. Role of magnesium in cardiovascular disease prevention, insulin sensitivity and diabetes. Curr Opin Lipidol. 2008 Feb; 19(1):50-6.
- 12. Buijsse B, Feskens E, Kwape L, Kok FJ, Kromhout D. Both alpha-and beta-Carotene, but not tocopherols and vitamin C. are inversely related to 15-year cardiovascular mortality in Dutch elderly men. JNutr. 2008 Feb; 138(2):344-50.
- 13. Gouin JP, Hantsoo L, Kiecolt-Glaser JK. Chronic stress, immune dysregulation, and health among older results: a review. Am J of Lifestyle Med. 2011 Jan; 5(6): 476-85.
- 14. Saxena RC, Singh R, Kumar P, et al. Efficacy of an extract of Ocimum tenuiflorum (Ocibest) in the management of general stress: a double blind, placebocontrolled study. Evid Based Complement Alternat Med. 2011 Jul; 2012: 894509.
- 15. Bhattacharyya D, Sur TK, Jana U, Debnath PK. Controlled programmed trial

- of Ocimum sanctum leaf on generalized anxiety disorders. Nepal Med Coll J. 2008 Sept; 10(3):176-9.
- 16. Mondal S, Varma S, Bamola VD, et al. Double-blinded randomized controlled trial for immunomodulatory effects of Tulsi (Ocimum sanctum Linn.) leaf extract on healthy volunteers. J Ethnopharmacol. 2011 Jul; 136(3):452-6.
- 17. Agrawal P, Rai V, Singh RB. Randomized placebo-controlled, single blind trial of holy basil leaves in patients with noninsulin-dependent diabetes mellitus. Int J Clin Pharmacol Ther. 1996 Sept; 34(9):406-9
- 18. Benalla W, Bellahcen S, Bnouham M. Antidiabetic medicinal plants as a source of alpha glucosidase inhibitors. Curr Diabetes Rev. 2010 Jul; 6(4):247-54.
- 19. Kelm MA, Nair MG, Strasburg GM, Dewitt DL. Antioxidant and cyclooxygenase inhibitory phenolic compounds from Ocimum sanctum Linn. Phytomedicine. 2000 Mar; 7(1):7-13.
- 20. Sharma JN, Srivastava KC, Gan EK. Suppressive effects of eugenol and ginger oil on arthritic rats. Pharmacology. 1994 Nov; 49(5):314-8.
- 21. Available at: http://www.food.com/recipe/ la-madeleines-tomato-basil-soup-5368. Accessed February 6, 2012.





SAVE THE DATES!

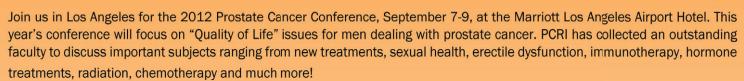
SEPTEMBER 7-9, 2012

MARRIOTT LOS ANGELES AIRPORT HOTEL, CALIFORNIA

Making a Positive Impact on Quality of Life

MODERATED BY: MARK MOYAD, MD

Register Early and Save! www.pcri.org or 310.743.2116



Conference Highlights

- Presentations on:
 - Active Surveillance
 - Treating High-Risk Prostate Cancer
 - Relapsed Prostate Cancer
 - Prostate Cancer that has Metastasized
 - New Treatments
 - Treatment-Related Side Effects
 - Issues of Intimacy
- Round-Table Discussions: watch and hear speakers' multi-disciplinary approach to actual clinical cases
- Opportunities to interact with speakers after their presentations

- Ask the Experts: question-and-answer sessions with participating faculty and other experts and conference attendees
- Exhibits from participating supporters and other members of the prostate cancer community
- Support group meetings will be held all throughout the conference courtesy of UsToo and Women Against Prostate Cancer
- Saturday Night Gala Dinner with Live Entertainment, and The Harry Pinchot and Catalyst Awards



Register now at PCRI.org

Conference Faculty Include: Duke Bahn, MD, John Blasko, MD, Lori Buckley, PsyD, Robert Dreicer, MD, Eugene Kwon, MD, Richard Lam, MD, Mark Moyad, MD, John Mulhall, MD, Charles Myers, MD, Mark Scholz, MD, Michael Steinberg, MD, & Stephen Strum, MD

Sponsorship Opportunities are available! Visit www.pcri.org or call 310.743.2116

ARESTATE CANCELLA

Produced By:

Helping Men Know Their Options



BIOMNCOLOGY



Targeting Cancer, Transforming Lives®











TRIPLE ACTION CRUCIFEROUS

Vegetable Extract with Apigenin



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 <u>one</u> capsule a day provides optimal potencies. Those weighing over 160 pounds should consider taking two capsules a day. A 60 capsule bottle of **Triple Action Cruciferous Vegetable**Extract retails for \$24. If a member buys four bottles, the price is reduced to only \$16.50 per bottle.





Item #01468

Item #01469

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

Broccoli Extract [standardized to 4% glucosinolates (16 mg)]	400 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

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, the price is reduced to only \$22.20 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 2004:28:77-9
- 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.
- Carcinogenesis. 1995 Sep;16(9):2057-62.
 I Clin Biochem Nutr. 2009 May:44(3):260-5
- J Clin Biochem Nutr. 2009 May;44(3):260-5.
 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

Milk thistle extract has long been thought of as one of nature's most potent weapons to support human health, but until recently, the technology hasn't been available to fully harness this plant's potential. Among the compounds waiting to be unlocked are a slew of nourishing antioxidants and flavonolignans valued for their role in ensuring healthy liver function.^{1*}

Life Extension® has uncovered an advanced extraction technology that has enabled scientists to isolate silymarin constituents and to test their efficacy against various cell lines. Among the compounds tested, silymarin constituents **isosilybin** A and B proved to be the most efficient in maintaining healthy cell division.²

Certified European Milk Thistle is the first milk thistle extract to contain standardized, high potencies of **silymarin**, **silibinins**, <u>and</u> **isosilybin A** and **B**—providing the <u>full spectrum</u> of milk thistle's liver <u>and</u> prostate protective compounds. Each capsule of this advanced formula provides:

Milk Thistle (Silybum marianum) Extract (seed)

[std. to 80% Silymarin (600 mg), 30% Silibinins (225 mg), and 8% Isosilybin A and Isosilybin B (60 mg)]

A 60 vegetarian capsule bottle of **Certified European Milk Thistle** retails for \$34. If a member buys four bottles, the cost is reduced to only **\$22.50** per bottle—**a savings of nearly one third!**

Compare the price of **Certified European Milk Thistle** to commercial silymarin supplements, and members will see that this new formula is available at one of the <u>lowest costs per milligram</u>— with standardized concentrations of **silibinins** and **isosilybin A** and **B** not found in other milk thistle extracts!

Contains rice.

Reference

1. Pak J Pharm Sci. 2008 Jul;21(3):249-54 2. Cancer Res. 2005 May 15;65(10):4448-57.





Item # 01522

To order **Certified European Milk Thistle**call **1-800-544-4440** or visit **www.LifeExtension.com**

Broad Spectrum Benefits of

APPLE POLYPHENOLS

The benefits of **plant polyphenols** are well known to health enthusiasts. These natural plant constituents block oxidative damage that leads to inflammation and accelerated biological aging of tissues.¹

Recent studies by three separate laboratories have concluded that polyphenols extracted from **apples** extend life span in laboratory models by up to **12%.**²

Unique Polyphenols

Apples, and especially their skin, are rich in an array of polyphenols. One particular major bioactive polyphenol, *phloridzin*, found in the skin of the apple, has been shown to act as a powerful agent against *glycation* and other destructive processes in the body. Phloridzin

also regulates *cell to cell signaling*³ and supports *healthy glucose levels* in those already within normal range by inhibiting the *glucose-6-phosphatase enzyme.*^{4,5}

Broad Spectrum Benefits

Apple polyphenols can slow triglyceride absorption from the intestine by blocking pancreatic lipase, an enzyme specifically required to break down triglyceride fats.⁶⁷

Additional research has shown that apple polyphenols can increase the protective antioxidant molecule *paraoxonase* by as much as **23%**, thereby inhibiting dangerous lipid peroxidation and reducing an inflammatory cascade.⁸

Along with phloridzin, apples contain **chlorogenic acid**. Chlorogenic acid supports *healthy glucose levels* in those already within normal range by inhibiting the *glucose-6-phosphatase enzyme*^{4,5} and by increasing some cellular mechanisms that are stimulated by insulin in liver cells.⁹

The Ultimate Form of Apple Polyphenols

AppleWise Polyphenol Extract is extracted from the highest quality organically grown apples. Each 600 mg vegetable capsule contains **300 mg** apple polyphenols.

A bottle containing **30 600 mg** vegetarian capsules of **AppleWise Polyphenol Extract** retails for \$21. If a member buys four bottles, the price is reduced to **\$14.25** per bottle. Item #01625.

Consumer note: Members taking supplements providing standardized pomegranate and coffee bean extracts, along with anti-glycating nutrients like carnosine, benfotiamine and pyridoxal-5-phosphate may be deriving similar benefits of apple polyphenols.



Item #01625

References

- 1. Curr Aging Sci. 2010 Feb;3(1):34-42.
- 2. Planta Med. 2011 Jan;77(2):122-7.
- 3. Free Radic Biol Med. 2008 Nov;45(9):1205-16.
- 4. J Agric Food Chem. 2010 April 14;58(7):4141-4.
- 5. *Ethnopharmacol*. 2010 Jul 6;130(10:93-7.
- 6. J Agric Food Chem. 2007 May 30;55(11):4604-9.
- 7. Planta Med. 2011 May;77(8):773-85.
- 8. Eur J Nutr. 2011 Feb;50(1):53-60.
- 9. J Nutr Biochem. 2006 Jan;17(1):63-71.

To order **AppleWise Polyphenol Extract** call **1-800-544-4440** or visit www.LifeExtension.com



Protect Skin Against Environmental Stress

Harsh environmental stressors such as UV rays, wind, and dryness can cause healthy skin to prematurely age, leading to wrinkles, fine lines, and other signs indicating a loss of youth. The ravages of weather, dehydration, and toxins in the air also weaken the skin's ability to act as a barrier against the outside world.

Scientists have long sought a solution to strengthen the skin from such onslaughts and may have found their answer in the Alpine rose, a highly resistant flower that thrives in some of the most difficult conditions on earth, high in the Swiss Alps and Pyrenees. There, the Alpine rose endures high altitudes, freezing temperatures, and dry air.

Plant Stem Cell Technology

These stressors would quickly destroy the plant if it weren't for its "resistance-charged" stem cells, which are scientifically classed as totipotent—meaning they are able to continuously regenerate cells throughout life, allowing these plants to live more than 100 years!1,2

The good news is that when scientists extracted cultured stem cells from the Alpine rose, they had the same protective effect on human skin as they did with the plant's own flowers!

Luminous Skin

Epidermal skin cells are responsible for skin cell replenishment—and as we age, our epidermal cells take 50% longer to be replaced.3 One scientific study showed that epidermal stem cells' ability to form colonies – a key measure of their vitality—increased by as much as 75% when treated with a 0.15% Alpine rose stem cell extract—indicating their potential for renewal. This means that skin treated with an extract of Alpine rose stem cells is better able to fend off environmental stress and support vibrant skin.

A 1 oz jar of Stem Cell Cream with Alpine Rose retails for \$66. If a member buys two jars, the cost is just \$43.50 each. Item#80143

References

- Nature. 2002 Feb 14;415(6873):751-4.
 Cell. 2005 Aug 26;122(4):499-504.
 J Gerontol. 1983 Mar;38(2):137-42.



Item #80143

To order Cosmesis® Stem Cell Cream with Alpine Rose, call 1-800-544-4440. or visit www.LifeExtension.com



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

Fortunately, **C3G** derived from **black currant** 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.

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** <u>and</u> **meso-zeaxanthin** to help maintain macular density.

Combat "Eye Fatigue"

Staring at a fixed-distance object such as a computer screen for a long period of time can cause the muscles that focus your eyes (called the ciliary body) to tire or go into spasm. This can result in physical symptoms such as head discomfort, sensitivity to glare, tiredness, soreness, dryness, and blurry vision.

Super Zeaxanthin contains a potent dose of *astaxanthin*, a carotenoid found in red algae. Studies show that taking astaxanthin

with other carotenoids protects against free radical—induced DNA damage, repairs UVA-irradiated cells, and inhibits inflammatory cell infiltration.³⁻⁶

Astaxanthin also helps support vascular health within the eye and improves visual acuity.⁵ Its fat-soluble nature offers protection to sensitive cells inside the eye.⁷

Comprehensive Ocular Protection in <u>One</u> Daily Capsule

The new **Super Zeaxanthin** formula provides natural plant extracts that have been shown to promote healthy eyesight. Just <u>one</u> softgel of **Super Zeaxanthin with Lutein**, **Meso-Zeaxanthin Plus Astaxanthin and C3G** provides:

OptiLut [®] , Lutein Plus [®] and MZ [®] 38 mg
Marigold (Tagetes erecta) Extract (flower) [free lutein equivalent 10 mg]
Zeaxanthin & Meso-zeaxanthin blend 3.75 mg
[micronized zeaxanthin, OptiLut ®, Lutein Plus ®
and MZ ® Marigold Extract (flower)]
Natural Astaxanthin 6 mg
(AstaREAL® and Zanthin® CO2 extracts of Haematococcus pluvialis algae)
C3G (Cyanidin-3-glucoside) 2.2 mg
[from European black currant (Ribes nigrum) extract (fruit)]

The retail price for a bottle containing 60 softgels of **Super Zeaxanthin** with Lutein, Meso-zeaxanthin Plus Astaxanthin and C3G is \$42. If a member buys four bottles, the price is reduced to just \$28.50 per bottle.

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

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.

AstaREAL® is a registered trademark of Fuji Chemical Industry Co., Ltd. Zanthin® is a registered trademark of Valensa International, Inc., used under license. U.S. Patent 5,527,533.

References

 Available at: http://www.aafp.org/afp/20000401/2159.html. Accessed August 10, 2010.

- 2. Alt Med Rev. 2000;5(6):553-62
- J Photochem Photobiol B. 2007 Jul 27;88(1):1-10.
 J Photochem Photobiol B. 2006 Dec 1;85(3):205-15.
- 5. *Ophthalmology*. 2008 Feb;115(2):324-33.e2.
- Invest Ophthalmol Vis Sci. 2008 Apr;49(4):1679-85.
 Biochimica et Biophysica Acta. 2001;1512:251-8.

Item # 01586

LifeExtension



For the past 30 years, the Life Extension Foundation® has stated that the most important step one can take to prevent disease cannot be found in a bottle of pills. The true cornerstone of any preventive health care program is annual blood screening. Proactive blood screening can help you greatly reduce your risk of disorders such as heart and kidney disease. stroke, liver conditions, anemia, and diabetes. Plus it's particularly valuable in helping you prevent and treat symptoms associated with hormone imbalance, such as fatigue, memory impairment, bone loss. weight gain, and depression. Blood testing remains one of the most important things you can do for yourself and your loved ones. More than any other measure, annual blood testing holds tremendous potential to protect both yourself and your loved ones.

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.lef.org/blood
- 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 mailed, emailed, or faxed 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.

ANNUAL

March 30-June 4, 2012 SUPER SALE

LIFE EXTENSION'S SUGGESTIONS FOR ANNUAL SCREENING (Member Prices*)

MEN'S ANNUAL BLOOD TESTING

MALE LIFE EXTENSION PANEL (LC322582) \$199 CBC/Chemistry Profile (description on next page) DHFA-S PSA (prostate-specific antigen) Homocysteine C-Reactive Protein (high-sensitivity) Free Testosterone IMPRÖVED Total Testosterone Estradiol TSH for thyroid function Vitamin D 25- hydroxy

MALE HORMONE ADD-ON PANEL* (LCADDM) \$116.25 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 information about a testosterone metabolite that can affect the prostate; and the hormone pregnenolone that acts as a precursor to all other hormones.

THYROID ADD-ON PANEL (LCTHYROID) Free T3 & Free T4.

OMEGA SCORE™** (LCOMEGA)

\$99 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.

COENZYME Q10[†] (LC120251) \$108.75

Research is revealing that maintaining higher blood levels of CoQ10 may offer greater health benefits. This test measures blood levels of CoQ10.

VAP™ TEST (LC804500)

The VAP cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. This test includes measurements of LDL particle size and lipoprotein subclasses.

FOOD SAFE ALLERGY TEST** (LCM73001) \$130.50

This test measures delayed (IgG) food allergies for 45 common foods.

WOMEN'S ANNIIAL BLOOD TESTING

FEMALE LIFE EXTENSION PANEL (LC322535) \$199 CBC/Chemistry Profile (description on next page) DHFA-S Estradiol Homocysteine C-Reactive Protein (high-sensitivity) Progesterone IMPRÖVED Free Testosterone Total Testosterone TSH for thyroid function

\$93.75

\$36

\$108.75

\$67.50

\$130.50

NEW

\$24.75

FEMALE HORMONE ADD-ON PANEL† (LCADDF) Pregnenolone and Total Estrogen 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 information about total estrogen status; and the hormone pregnenolone that acts as a precursor to all other hormones.

THYROID ADD-ON PANEL (LCTHYROID)

Free T3 & Free T4.

\$36

\$67.50

Vitamin D 25- hydroxy

OMEGA SCORE™** (LCOMEGA)

\$99 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.

COENZYME Q10* (LC120251)

Research is revealing that maintaining higher blood levels of CoQ10 may offer greater health benefits. This test measures blood levels of CoQ10.

VAP™ TEST (LC804500) (UPDATED)

The VAP cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. This test includes measurements of LDL particle size and lipoprotein subclasses.

FOOD SAFE ALLERGY TEST** (LCM73001) This test measures delayed (IgG) food allergies for 45 common foods.

BLOOD TEST SUPER SALE SPECIAL: Add a VITAMIN D test for only \$25 when purchasing the following panel:

• Male Weight Loss Panel (LCWLMCOMBO) • Female Weight Loss Panel (LCWLFCOMBO)

SUGGESTED ADDITIONS TO ANNUAL BLOOD TESTING

\$93.75

) FIBRINOGEN† (LC001610) \$23.25 High levels of this blood-clotting factor increase the risk of heart attack and stroke. CORTISOL (LC004051) \$29.25

This test is used to help assess adrenal function.

LP-PLA2 (PLAC TEST) (LC123240) 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.

HEAVY METALS PANEL (BLOOD) (LC100003)

\$149.25 This panel contains mercury, arsenic, and aluminum.

FERRITIN (LC004598) \$21 Used to evaluate iron stores in the body and to determine iron deficiency anemia.

HEMOGLOBIN A1C (LC001453) \$23.25 Used to assess long-term glucose control.

VITAMIN B12/FOLATE (LC000810) This test measures the amount of vitamin B12

and folic acid in the blood.

For non-member pricing call 1-800-208-3444. This test is packaged as a kit, requiring a finger stick performed at home.



\$26

OTHER POPULAR PANELS

CBC/CHEMISTRY PROFILE (LC381822)

Note: This CBC/Chemistry Profile is included in the Male and Female Life Extension panels. **Retest Profiles and Weight Loss Panels**

CARDIOVASCULAR RISK PROFILE

Total Cholesterol Cholesterol/HDL Ratio Estimated CHD Risk **HDL** Cholesterol LDL Cholesterol Glucose

Triglycerides

LIVER FUNCTION PANEL

AST (SGOT) Total Bilirubin ALT (SGPT) Alkaline phosphatase LDH

KIDNEY FUNCTION PANEL

RIJN/Creatinine Ratio RIIN

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 Platelet Count Eosinophils Basophils Hemoglobin Neutrophils (Absolute) Hematocrit Lymphs (Absolute) MCV Monocytes (Absolute) MCH Eos (Absolute) MCHC Baso (Absolute) Neutrophils

RDW

BLOOD MINERAL PANEL

Calcium Sodium Potassium Chloride Phosphorus

FEMALE WEIGHT LOSS PANEL (LCWLF)

CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, C-Reactive Protein (high-sensitivity), Progesterone, free and total Testosterone, TSH, SHBG, Free T3, Free T4, Insulin.

MALE WEIGHT LOSS PANEL (LCWLM)

\$224.25 CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, C-Reactive Protein (high-sensitivity), PSA, free and total Testosterone, TSH, SHBG, Free T3, Free T4, Insulin.

LIFE EXTENSION THYROID PANEL (LC304131)

TSH, T4, Free T3, Free T4.

NEW \$224.25

\$56.25

NEW

\$56.25

\$224.25

FEMALE COMPREHENSIVE HORMONE PANEL*

(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[†] NEW \$224.25 (LC100010) CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3. NEW

MALE BASIC HORMONE PANEL (LC100012)

DHEA-S, Estradiol, Total and Free Testosterone, PSA.

FEMALE BASIC HORMONE PANEL (LC100013)

DHEA-S, Estradiol, Total and Free Testosterone, Progesterone.

NEW PANELS

ENERGY PROFILE (LC100005)

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.

NEW

\$281.25

NEW

\$64.50

NEW

\$101.25

NEW

\$108.75

NEW

\$247.50

NEW

\$74.25

NEW

\$186.75

NEW

\$111.75

NEW

\$49.50

NEW

ANEMIA PANEL (LC100006)

CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.

INFLAMMATION PANEL (LC100007)

CBC/Chemistry Profile (see description above), C-Reactive Protein (high sensitivity), Sedimentation Rate, Rheumatoid (RA) Factor, Antinuclear Antibodies (ANA) Screen.

CARDIAC PLUS† (LC100008)

CBC/Chemistry profile (see description). Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Fibrinogen, Homocysteine.

VAP PLUS† (LC100009)

VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibringen, PLAC® Test (Lp-PLA2). Vitamin D 25-hydroxy.

THYROID ANTIBODY PROFILE (LC100004)

Thyroid Antithyroglobulin Antibody (ATA) and Thyroid Peroxidase Antibody (TPO).

CATECHOLAMINES, FRACTIONATED (LC084152)

Dopamine, epinephrine, norepinephrine.

NEW SINGLE TESTS

ASPIRINWORKSTM† (LC501620)

Taking aspirin to prevent heart attack? Is it working? This is a random urine test used to measure your resistance to aspirin.

SEROTONIN, WHOLE BLOOD (LC120089)

Measures serotonin blood levels.

BONE-SPECIFIC ALKALINE PHOSPHATASE (LC513002) \$149.25

A useful marker of active bone formation; used as an aid in the management of osteoporosis.

†Certain tests need to be shipped to the lab on dry ice for customers using a blood draw kit, and incur an additional \$35 charge. If you are going to LabCorp, this charge

does not apply.

For non-member prices call 1-800-208-3444

This is NOT a complete listing of LE blood test services. Call 1-800-208-3444 for additional information.

ORDER LIFESAVING 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

Life Extension Foundation Members only

MEMBER NO.

Male	Female		
Nama			

Name

Date of Birth (required)

Address

City

State

Phone

Credit Card No.

Expiration Date

Mail your order form to:

Zip

LifeExtension

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-Árginine 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-Giutamine Fowder
L-Lysine Capsules
L-Lysine Powder
L-Tyrosine Tablets
Mega L-Giutathione Capsules

N-Acetyl-L-Cysteine Capsules
Optimized Carnitine with GlycoCarn®

PharmaGABA

Super Carnosine Capsules

Taurine Capsules Tryptopure® Tryptophan (Optimized) Tryptopure® Plus

BONE & JOINT HEALTH

ArthroMax™ with Theaflavins and AprèsFlex™

ArthroMax™ Advanced with UC-II® and

AprèsFlex™

Bone-Up™

Bone Restore™

Bone Strength Formula w/KoAct™

Chondroitin Sulfate

Chondrox

Fast Acting Joint Formula
Glucosamine Chondroitin Capsules

BRAIN HEALTH

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate CDP Choline Capsules

Cognitex® with NeuroProtection Complex Cognitex® with Pregnenolone &

NeuroProtection Complex Cognitex® Basics

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

DIGESTIVEBifido GI Balance Bromelain Powder

Carnosoothe w/PicroProtect

Daily Ginger® Digest RC™

Enhanced Super Digestive Enzymes

Florastor Intact Digest

Life Flora™ Natural EsophaGuard

Pancreatin
Probiotic All-Flora®

Probiotic Anti-Aging Probiotic Cleanse™

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 and C3G

(Plus Astaxanthin also available)

Vision Optimizer

FIBER

AppleWise Polyphenol Apple Pectin Powder

Fiber Food

Hi-Lignan® Nutri-Flax®

TruFiber®

WellBetX PGX® Soluble Fiber Blend

Asian Cruciferous Vegetable Soup Cruciferous Vegetable 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)

Cho-Less™

D-Ribose Capsules

D-Ribose Powder

Endothelial Defense™ with

Full-Spectrum Pomegranate™

Fibrinogen Resist

Forskolin

Garlicforce™

Homocysteine Resist Krill Healthy Joint Formula Natural BP Management

Olive Leaf Vascular Support Peak ATP® with GlycoCarn®

Policosanol

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/PHYTO PRODUCTS

Artichoke Leaf Extract

Astaxanthin

Berry Complete

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 with Natural Vitamin E

Kvolic® 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 Juice Concentrate

Pomegranate Extract

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®

Advanced Natural Sex for Women®
Cordyceps CS-4
7-Keto® DHEA
DHEA
DHEA
DHEA Complete
GH Pituitary Support Day Formula
GH Pituitary Support Night Formula

Melatonin

Melatonin Timed Release

Natural Estrogen with Pomegranate Extract

Pregnenolone ProFem Cream

Pure IGF Super Miraforte with Standarized Lignans

IMMUNE ENHANCEMENT

Agave Digestive-Immune Support

AHCC® (Active Hexose Correlated Compound)

Aloe Vera Force™

Buffered Vitamin C Powder

Echinacea

Enhanced Life Extension Whey Protein

i26 Hyperimmune Egg Immune Protect with PARACTIN®

Lactoferrin

Lactolernin
Lifeshield® Immunity™
Maitake SX-Fraction
Norwegian Shark Liver Oil

Optimized Fucoidan w/Maritech® 926 Primal Defense™

ProBoost™ Thymic Protein A Pure Gar™

Sambu® Guard

Supercritical Oreganoforce™

Thymic Immune Factors Ultimate Flora Advanced Immunity

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 240

Emulsified Norwegian Cod Liver Oil Emulsified Super Twin EPA/DHA

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 Chewables Serraflazyme

SODzyme™ with GliSODin® and Wolfberry Super Omega-3 EPA/DHA with Sesame

Lignans & Olive Fruit Extract

Tart Cherry
Udo's Choice Oil Zyflamend Easy

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

Products

Chromium Ultra

Copper

Dr. Strum's Intensive Bone Formula

Floradix® Iron & Herbs
Floravital® Iron & Herbs

Iodoral

Iron Protein Plus

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 LifeShield® Breathe™

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

Bioactive Milk Peptides

Holy Basil LifeShield® Cordyceps

L-Theanine

5 HTP

Enhanced Natural Sleep® w/ Melatonin Enhanced Natural Sleep® w/o Melatonin

Natural Stress Relief
Optimized TryptoPure® Plus
Stabilium® 200

SAMe

St. John's Wort Extract
Tryptopure® L-Tryptophan

MOUTH CARE
Advanced Oral Hygiene
Mist Oral III™ with CoQ10
Mouthwash w/Pomegranate

Toothpaste

MULTIVITAMIN

Children's Formula Life Extension Mix

Comprehensive Nutrient Pack Life Extension Booster Life Extension Mix™ Capsules

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
Life Extension Two-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

Anti-Glycation Serum
Antioxidant Rejuvenating Foot Cream
Antioxidant Rejuvenating Foot Scrub
Antioxidant Rejuvenating Hand Cream
Antioxidant Rejuvenating Hand Scrub
Anti-Redness & Blemish Lotion
Corrective Clearing Mask
DermaWhey
DNA Repair Cream
Dual-Action MicroDermAbrasion
Flastin Collagen Body Firming Lotion

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 LifeShield® Reishi Melatonin Cream

Mild Facial Cleanser

NaPCA w/Aloe Vera Neck Rejuvenating Antioxidant Cream

New Face Solution

Peel Off Cleansing Mask

Pigment Correcting Cream

Pigment Correcting Cream
(Ultra) Rejuvenex®
Rejuvenex® Body Lotion
Rejuvenex® Factor
Rejuvenating Serum
Resveratrol Anti-Oxidant Serum
Skin Lightening Serum
Skin Restoring Ceramides w/Lipowheat™
Skin Stem Cell Serum
Stem Cell Cream w/Alpine Rose
Supercritical Omega 7™
Sun Protection Sprav

Sun Protection Spray
Total Sun Protection Cream

Ultra Rejuvenex®

Ultra RejuveNight® w/ Progesterone 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 K Healing Cream

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
Cleanse Smart
Green Coffee Extract CoffeeGenic™
(also w/Glucose control)

Coriolus Super Strength

CR Mimetic Longevity Formula Cinsulin® w/InSea²⁶

and Crominex® 3+

European Leg Solution Diosmin 95

Fem Dophilus

Femmenessence MacaPause®

Flush & Be Fit

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

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 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-lodine™

Vitamin K1

WEIGHT MANAGEMENT

7-Keto DHEA

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

DHEA® Complete Fucoxanthin Slim™

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

Udo's Choice Wholesome Fast Food Blend WellBetX PGX® Soluble Fiber Blend

Buyers Club Order Form To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Tota
	A				
00449	ACETYL-L-CARNITINE - 500 mg, 100 caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
00788	ACETYL-L-CARNITINE ARGINATE - 100 caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01308	ADVANCED LIPID CONTROL - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	ADVANCED ORAL HYGIENE - 60 veg. mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	AHCC - 500 mg, 30 caps	59.98	44.99		
	Buy 4 bottles, price each	53.33	40.00		
46925	ALLI® REFILL PACK - 120 caps	69.95	58.00		
01375	ALOE VERA FORCE™ - 60 veg. caps	34.95	26.21		\vdash
00457	ALPHA-LIPOIC ACID W/BIOTIN (SUPER) - 250 mg, 60 caps	37.00	27.75		
00401	Buy 4 bottles, price each	32.00	24.00		
01440	ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO - 100 caps	26.00	19.50		\vdash
01440	· · · · · · · · · · · · · · · · · · ·	23.00	17.25		
01510	Buy 4 bottles, price each	35.00	26.25		H
טוטוט	ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT - 60 veg. caps				
04.500	Buy 4 bottles, price each	32.00	24.00		L
01509	ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT & INTEGRA LEAN®(ADVANCED) - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
00105	APPLE PECTIN POWDER - 227 grams	14.75	11.06		
	Buy 4 bottles, price each	13.75	10.31		
01625	APPLEWISE POLYPHENOL EXTRACT - 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	ARGININE/ORNITHINE - 500/250, 100 caps	16.00	12.00		
	Buy 4 bottles, price each	14.50	10.88		
00038	ARGININE/ORNITHINE POWDER - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	(L)-ARGININE CAPS - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01025	(L)-ARGININE FREE-FORM POWDER - 100 grams	15.98	11.99		
	Buy 4 bottles, price each	14.31	10.73		
01617	ARTHROMAX™ w/THEAFLAVINS & APRESFLEX™ - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01618	ARTHROMAX™ ADVANCED w/UC-II® & APRESFLEX™ - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01404	ARTHRO-IMMUNE JOINT SUPPORT - 60 veg. caps	32.00	24.00		Г
	Buy 4 bottles, price each	28.00	21.00		
00919	ARTICHOKE LEAF EXTRACT - 500 mg, 180 veg. caps	28.00	21.00		Г
	Buy 4 bottles, price each	25.38	19.04		
08000	ASCORBIC ACID POWDER - 454 grams	38.00	28.50		Н
	Buy 4 bottles, price each	34.93	26.20		
00082	ASCORBYL PALMITATE - 500 mg, 100 caps	22.50	16.88		\vdash
	Buy 4 bottles, price each	20.00	15.00		
00888	ASHWAGANDHA EXTRACT (OPTIMIZED) – 60 veg. caps	10.00	7.50		\vdash
JJU000	Buy 4 bottles, price each	9.00	6.75		
	SUB-TOTAL OF COLUMN 1				_

No.		Retail Each	Member Each	Qty	Total
01066	ASPIRIN - 81 mg, 300 enteric coated tablets	\$6.00	\$4.50		
	Buy 4 bottles, price each	5.33	4.00		
00708	ASTAXANTHIN - 2 mg, 30 softgels	10.25	7.69		
	В	_			
00920	BENFOTIAMINE W/ THIAMINE - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	BENFOTIAMINE (MEGA) - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01206	BERRY COMPLETE - 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	18.67	14.00		
01406	BERRY COMPLETE w/RZD™ ACAI (ENHANCED) - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	BETA-CAROTENE - 25,000 IU, 100 softgels	11.25	8.44		
	Buy 4 bottles, price each	10.13	7.60		
00653	BETTERWOMAN® - 40 caps	40.00	30.00		
	Buy 4 bottles, price each	38.00	28.50		
01622	BIFIDO GI BALANCE - 60 caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	BILBERRY EXTRACT - 100 mg, 100 veg. caps	28.00	21.00		
0.0.0	Buy 4 bottles, price each	25.00	18.75		
01512	BIOACTIVE MILK PEPTIDES - 30 caps	18.00	13.50		
0.0.2	Buy 4 bottles, price each	16.00	12.00		
01006	BIOSIL™ - 5 mg, 30 veg. caps	18.95	15.16		
01007	BIOSILTM - 1 fl oz	29.99	23.99		
00102	BIOTIN - 600 mcg, 100 caps	7.50	5.63		
00102	Buy 4 bottles, price each	6.50	4.88		
00145	BIOTIN POWDER - 30 grams	12.50	9.38	\vdash	
00110	Buy 4 bottles, price each	11.00	8.25		
01008	BLAST™ - 600 grams of powder	26.95	20.21	\vdash	
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	22.50	16.88		
01211	Buy 4 bottles, price each	20.00	15.00		
01438	BLUEBERRY EXTRACT w/ POMEGRANATE - 60 veg. caps	30.00	22.50	\vdash	
01100	Buy 4 bottles, price each	27.00	20.25		
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) - 300 veg. caps	56.00	42.00	\vdash	
01000	Buy 4 bottles, price each	50.00	37.50		
01611	BONE RESTORE - 150 caps	22.50	16.88	\vdash	
01011	Buy 4 bottles, price each	19.50	14.63		
01211	BONE STRENGTH FORMULA w/KOACT® - 120 caps	42.00	31.50	\vdash	
01211	Buy 4 bottles, price each	38.00	28.50		
00313	BONE-UP® - 240 caps	24.95	18.71	\vdash	
00010	Buy 4 bottles, price each	22.50	16.88		
01379	BOOSTER - 60 softgels	48.00	36.00	\vdash	
01010	Buy 4 bottles, price each	44.00	33.00		
01680	BOOSTER W/ADVANCED K2 COMPLEX (SUPER) - 60 softgels	42.00	31.50	\vdash	
	Buy 4 bottles, price each	38.00	28.50		
00621	BORON - 3 mg, 100 caps	5.95	4.46	\vdash	
500L1	Buy 4 bottles, price each	5.25	3.94		
00202	BOSWELLA - 100 caps	38.00	28.50	\vdash	
JULUL	Buy 4 bottles, price each	30.00	22.50		
0025R	BOSWELLA TOPICAL CREAM - 4 OZ	15.00	11.25	\vdash	
00258	Buy 4 jars, price each	13.00	9.75		
			1.1.1		

No.		Retail Each	Member Each	Qty	Total
01253	BRANCHED CHAIN AMINO ACIDS - 90 veg. caps	\$19.50	\$14.63		
	Buy 4 bottles, price each	17.00	12.75		
00999	BREAST HEALTH FORMULA - 60 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	BRITE EYES III - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		
00136	BROMELAIN POWDER - 100 grams	21.00	15.75		
00100	Buy 4 bottles, price each	18.75	14.06		
01203	BROMELAIN (SPECIALLY-COATED) - 500 mg, 60 enteric coated tablets	21.00	15.75		
01200	Buy 4 bottles, price each	19.00	14.25		
00884	BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID - 60 softgels	44.00	33.00		
00004	Buy 4 bottles, price each	39.60	29.70		
	C	33.00	23.10		
01015	CALCIUM CITRATE w/VITAMIN D - 300 caps	\$24.00	\$18.00		
01013	· · · · · · · · · · · · · · · · · · ·	,			
00505	Buy 4 bottles, price each	21.25	15.94		
00535	CALCIUM D-GLUCARATE - 200 mg, 60 caps	18.00	13.50		
01.000	Buy 4 bottles, price each	15.00			
01693	CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC™ GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 414 grams powder	60.00	45.00		
	Buy 4 jars, price each	54.00	40.50		
	Buy 8 jars, price each	50.00	37.50		
01694	CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC*** GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 60 individual packs	64.00	48.00		
	Buy 4 boxes, price each	60.00	45.00		
	Buy 8 boxes, price each	56.00	42.00		
00118	CAPSULE FILLER MACHINE FOR "00" CAPSULES	18.95	14.21		
	Buy 4 machines, price each	18.25	13.69		
00613	CAPSULE FILLER MACHINE FOR "0" CAPSULES	18.95	14.21		
	Buy 4 machines, price each	18.25	13.69		
00916	CARNITINE w/GLYCOCARN® (OPTIMIZED) - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01041	L-CARNITINE - 500 mg, 30 caps	15.00	11.25		
	Buy 4 bottles, price each	13.20	9.90		
01258	CARNOSOOTHE w/PICROPROTECT™ - 60 veg. caps	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01287	CARNOSINE (SUPER) - 500 mg, 90 caps	66.00	49.50		
	Buy 4 bottles, price each	60.00	45.00		
01003	CAT MIX - 100 grams powder	15.00	11.25		
	Buy 4 bottles, price each	12.00	9.00		
00390	CDP CHOLINE CAPS - 250 mg, 60 caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
00998	CELL SENSOR-EMF DETECTION METER	39.95	29.95		
01370	CHILDREN'S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00550	CHLORELLA - 500 mg, 200 tablets	23.50	17.63		
	Buy 4 bottles, price each	21.00	15.75		
01571	CHLOROPHYLLIN w/ZINC - 100 mg, 100 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	20.00	15.00		
01359	CHO-LESS™ - 90 capsules	32.50	24.38		
00541	CHOLINE CHLORIDE - 16 oz liquid	14.95	11.21		
	Buy 4 bottles, price each	14.00	10.50		
00364	CHONDROITIN SULFATE CONCENTRATE - 400 mg, 60 tablets	19.95	14.96		
	Buy 4 bottles, price each	18.00	13.50		
01477	CHROMIUM ULTRA - 100 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	21.00	15.75		
	SUB-TOTAL OF COLUMN 3			_	

No.		Retail Each	Member Each	Qty	Total
01504	CHROMIUM W/CROMINEX® 3+ (OPTIMIZED) - 500 mcg, 60 veg. caps	\$9.00	\$6.75		
	Buy 4 bottles, price each	8.00	6.00		
00551	CILANTRO HERBAL EXTRACT - 1 OZ	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
01503	CINSULIN® W/INSEA2® AND CROMINEX® 3+- 90 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
00069	CITRUS BIOFLAVONOID - 100 caps	16.79	12.59		
	Buy 4 bottles, price each	15.56	11.67		
00818	CLA BLEND W/SESAME LIGNANS (SUPER) - 1000 mg, 120 softgels	36.00	27.00		
	Buy 4 bottles, price each	33.00	24.75		
	Buy 10 bottles, price each	26.33	19.75		
00819	CLA BLEND w/GUARANA & SESAME (SUPER)-1000 mg, 120 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.33	28.75		
01078	CLEANSE SMART - 60 caps	31.99	23.99		
0050	COD LIVER OIL (EMULSIFIED) - 12 fl oz (355 ml)	14.58	10.94		
	Buy 4 bottles, price each	12.27	9.20		
00293	COD LIVER OIL (EMULSIFIED) - 100 softgels (Emulsified)	10.97	8.23		
	Buy 4 bottles, price each	10.34	7.76		
00922	COGNITEX® w/PREGNENOLONE & NEUROPROTECTION COMPLEX - 90 softgels	74.00	55.50		
	•	66.60	40.05		
	Buy 4 bottles, price each	66.60	49.95 48.00		
20021	Buy 12 bottles, price each	64.00	10100		
00921	COGNITEX® w/o PREGNENOLONE w/NEUROPROTECTION COMPLEX - 90 softgels	72.00	54.00		
	Buy 4 bottles, price each	64.00	48.00		
	Buy 12 bottles, price each	62.00	46.50		
)1421	COGNITEX® BASICS - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
	Buy 12 bottles, price each	32.00	24.00		
0110	COMPLETE B-COMPLEX - 180 caps	21.50	16.13		
	Buy 4 bottles, price each	18.00	13.50		
1595	COMPREHENSIVE NUTRIENT PACK - 30-day supply	189.00	141.75		
71000	Buy 4 bottles, price each	171.00	128.25		
0119		9.91	7.43		
10119	COPPER CAPSULES - 2 mg, 100 caps		-		
	Buy 4 bottles, price each	8.96	6.72		
00949	COQ10 [™] w/ <i>d</i> -LIMONENE (SUPER ABSORBABLE) - 50 mg, 60 softgels	25.00	18.75		
	Buy 4 bottles, price each	22.00	16.50		
	Buy 10 bottles, price each	20.00	15.00		
00950	COQ10™ w/ d-LIMONENE (SUPER ABSORBABLE) - 100 mg, 100 softgels	66.00	49.50		
	Buy 4 bottles, price each	60.00	45.00		
	Buy 10 bottles, price each	56.00	42.00		
1226	COQ10 (SUPER UBIQUINOL) - 100 mg, 60 softgels	56.00	42.00		
	Buy 4 bottles, price each	52.00	39.00		
	Buy 10 bottles, price each	48.00	36.00		
1426	COQ10 W/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)-100 mg, 60 softgels	62.00	46.50		
	Buy 4 bottles, price each	56.00	42.00		
11/105	Buy 10 bottles, price each	52.00	39.00		
)1425	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)-50 mg, 100 softgels	58.00	43.50		
	Buy 4 bottles, price each	53.00	39.75		
	Buy 10 bottles, price each	50.00	37.50		
1427	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)-50 mg, 30 softgels	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
)1431	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		
	SUB-TOTAL OF COLUMN 4				

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Tota
	C CONTINUED				
01397	CORDYCEPS CS-4™ - 60 veg. caps	\$29.99	\$22.49		
01053	CORIOLUS SUPER STRENGTH - 600 mg, 150 veg. caps	99.95	74.96		
30140	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 0Z W/BLUEBERRY & POMEGRANATE EXTRACTS	33.00	24.75		
	Buy 2 bottles, price each	31.35	23.51		
80133	COSMESIS ANTIOXIDANT FACIAL MIST - 2 0Z	32.00	24.00		
	Buy 2 bottles, price each	30.40	22.80		
30127	COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 OZ	45.00	33.75		
	Buy 2 jars, price each	42.80	32.10		
30128	COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 OZ	59.00	44.25		
	Buy 2 jars, price each	51.92	38.94		
30117	COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz	64.00	48.00		\vdash
00111	Buy 2 jars, price each	57.49	43.12		
80121	COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 OZ	58.00	43.12		
JU 1 Z I	Buy 2 jars, price each	51.04	38.28		
80105	COSMESIS ANTI-REDNESS & BLEMISH LOTION - 1 oz	74.50		_	
00100		65.56	55.88 49.17		
00100	Buy 2 bottles, price each		_	_	_
80120	COSMESIS CORRECTIVE CLEARING MASK - 2 0Z	64.50	48.38		
001.41	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 0Z	74.95	56.21		
	Buy 2 bottles, price each	65.95	49.46		
80123	COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 0Z	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 0Z	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		
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		
80103	COSMESIS LIFTING & TIGHTENING COMPLEX - 1 OZ	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80135	COSMESIS MELATONIN CREAM - 1 OZ	33.00	24.75		
	Buy 2 jars, price each	27.10	20.33		
30114	COSMESIS MILD FACIAL CLEANSER - 8 02	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		
00166	Buy 2 jars, price each	56.32	42.24		
80111	COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz	74.00	55.50		_
וווטכ					
	Buy 2 bottles, price each	65.12	48.84		

		_			
No.		Retail Each	Member Each	Qty	Total
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		
00.00	Buy 2 bottles, price each	69.00	51.75		
80143	COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar	66.00	49.50		
00140	Buy 2 jars, price each	58.00	43.50		
80116		64.00	48.00		
00110	COSMESIS ULTRA LIP PLUMPER - 1/3 0Z				
00101	Buy 2 bottles, price each	56.32	42.24		
80101	COSMESIS ULTRA WRINKLE RELAXER - 1 0Z	89.95	67.46		
	Buy 2 bottles, price each	79.76	59.82		
80113	COSMESIS UNDER EYE REFINING SERUM - 1/2 0Z	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		
80102	COSMESIS VITAMIN K HEALING CREAM - 1 0Z	79.50	59.63		
00102	Buy 2 bottles, price each	69.96	52.47		
00862	* **	17.50	13.13		
00002	CRAN-MAX® - 500 mg, 60 veg. caps				
0.1101	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	29.00	21.75		
	Buy 4 bottles, price each	26.63	19.97		
01096	CREATINE WHEY GLUTAMINE POWDER - 1000 grams (vanilla)	50.00	37.50		
	Buy 4 bottles, price each	48.00	36.00		
01519	CRUCIFEROUS VEGETABLE SOUP - 32 oz. pouch	11.95	8.96		
	Buy 6 pouches, price each	11.25	8.44		
01520	(ASIAN) CRUCIFEROUS VEGETABLE SOUP - 32 oz. pouch	11.95	8.96		
	Buy 6 pouches, price each	11.25	8.44		
01429	CR MIMETIC LONGEVITY FORMULA - 60 veg. caps	39.00	29.25		
01120	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	H	
00407	CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25	Щ	
	D	1.	l .		
01376	DAILY GINGER® - 90 veg. caps	\$21.95	\$16.46		
01313	DERMAWHEY- 400 mg, 60 caps	65.00	48.75		
	Buy 4 bottles, price each	59.00	44.25		
00995	DHA 240 - 240 mg, 60 softgels	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
00658	7-KETO® DHEA METABOLITE - 25 mg, 100 caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01479	7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00607	DHEA - 25 mg, 100 tablets (dissolve in mouth)	14.00	10.50	Н	
20001	Buy 4 bottles, price each	11.75	8.81		
	504 1 500000, privo vaori	11.73	0.01		

1947 DHEA COMPLETE - 60 veg. caps S48.00 \$36.00 Buy 4 bottles, price each 43.20 32.40	No.		Retail Each	Member Each	Qty	Total
00335 DIREA - 25 mg, 100 caps 15.00 11.25 9.38 00454 DIREA - 15 mg, 100 caps 12.00 9.30 00484 DIREA - 15 mg, 100 caps 12.00 9.00 00882 DIREA - 15 mg, 60 caps 16.00 12.00 00883 DIREA - 100 mg, 60 caps 16.00 12.00 00883 DIREA - 100 mg, 60 caps 22.50 16.88 01935 DIGEST RC - 30 tablets 19.90 14.25 01368 DIGEST RC - 30 tablets 19.95 14.96 01272 DIGESTIVE ENZYMES (ERHANCED SUPER) - 100 veg. caps 18.95 14.25 01272 DIGESTIVE ENZYMES (ERHANCED SUPER) - 100 veg. caps 18.95 14.21 00349 DL-PHENYLALANINE CAPSULES - 500 mg, 100 caps 18.95 14.00 00370 DL-PHENYLALANINE CAPSULES - 500 mg, 100 caps 18.00 12.00 00427 DIMA BRITARITAR - 150 mg, 200 caps 14.00 10.50 7.88 00529 DIMG - 125 mg, 60 tablets 22.80 11.00 15.75 01570 DINA PROTECTION FORMU	01478	DHEA COMPLETE - 60 veg. caps	\$48.00	\$36.00		
Buy 4 bottles, price each 12.50 9.38		Buy 4 bottles, price each	43.20	32.40		
December	00335	DHEA - 25 mg, 100 caps	15.00	11.25		
Buy 4 bottles, price each 10.00 7.50		Buy 4 bottles, price each	12.50	9.38		
DIREA - 50 mg, 60 caps 16.00 12.00 10.50 10.00 10.50 10.00 10.50 10.00 10.50 10.00 10.50 10.00 10.50 10.00 10.50 10.00 10.50 10.00 10.50 10.00 10.50 10.00 10.50 10.	00454	DHEA - 15 mg, 100 caps	12.00	9.00		
Buy 4 bottles, price each 14.00 10.50 16.88 8 8 14.00 16.20 16.88 8 14.00 14.25 16.88 8 14.00 14.25 14.26 17.00 14.25 14.26 17.00 14.25 14.26 17.00 14.25 14.26 17.00 14.25 14.26 17.00 14.25 14.26 17.00 14.25 14.26 17.00 14.25 14.26 17.00 14.27 14.26 18.20		Buy 4 bottles, price each	10.00	7.50		
DIRAY 100 mg. 60 caps 22.50 16.88	00882	DHEA - 50 mg, 60 caps	16.00	12.00		
Buy 4 bottles, price each 19.00 14.25		Buy 4 bottles, price each	14.00	10.50		
1995 14.96	00883	DHEA - 100 mg, 60 caps	22.50	16.88		
Buy 4 boxes, price each 17.00 12.75		Buy 4 bottles, price each	19.00	14.25		
DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps 18.95 14.21	01358		19.95	14.96		
DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps 18.95 14.21		Buy 4 boxes, price each	17.00	12.75		
Buy 4 bottles, price each 00034 D.I-PHENYLALANINE CAPSULES - 500 mg, 100 caps 18.75 14.06 Buy 4 bottles, price each 10.00 00257 DMAE BITARTRATE - 150 mg, 200 caps 14.00 10.50 Buy 4 bottles, price each 10.50 7.88 Buy 4 bottles, price each 10.50 7.88 00059 DMG - 125 mg, 60 tablets Buy 4 boxes, price each 10.50 7.88 001570 DNAP PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each 10.50 15.75 Buy 4 bottles, price each 10.50 12.00 00544 DGG MIX - 100 grams powder Buy 4 bottles, price each 10.50 12.00 00321 DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each 10.00 00320 DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 10.00 00320 DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 10.50 18.50 Buy 4 bottles, price each 10.50 18.50 00240 DUAL-C - 90 caps Buy 4 bottles, price each 10.50 7.88 E E CHINACEA EXTRACT - 250 mg, 60 caps 11.00 9.00 10.13 ELASTIN & COLLAGER BODY FIRMING LOTION - 8 fl. oz. 10.1498 ENDATHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 settles by 4 bottles, price each 10.00 10	01272					
Discrimination Dis						
Buy 4 bottles, price each 00257 DMAE BITARTRATE - 150 mg, 200 caps Buy 4 bottles, price each 00258 DMG - 125 mg, 60 tablets Buy 4 boxes, price each 1050 DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each 1050 DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each 1050 DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each 1050 DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each 1050 DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each 1050 DNA PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each 1050 DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO - 8 ll. oz. 1050 DNA PROCTOR'S HAIR FORMULA SHAMPOO	00034	* **	_			
DMAE BITARTRATE - 150 mg, 200 caps 14.00 10.50	00004		-			
Buy 4 bottles, price each 10.50 7.88	NN257		_			
DMG - 125 mg, 60 tablets Buy 4 boxes, price each 21.00 15.75	JU2J1		1			
Buy 4 boxes, price each 21.00 15.75 DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each 32.00 24.00 DOG MIX - 100 grams powder Buy 4 bottles, price each 32.00 12.00 DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each 32.00 24.00 DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 22.00 16.50 DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 22.00 16.50 DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz Buy 4 jars, price each 38.95 29.21 DUAL-C - 90 caps Buy 4 bottles, price each 22.00 9.00 DUAL-C - 90 caps Buy 4 bottles, price each 23.00 9.00 DUAL-C - 90 caps Buy 4 bottles, price each 24.95 18.71 Buy 4 bottles, price each 25.00 9.00 DUAL-C - 90 caps Buy 4 bottles, price each 26.00 DUAL-C - 90 caps Buy 4 bottles, price each 27.00 DUAL-C - 90 caps Buy 4 bottles, price each 28.14.35 \$10.76 Buy 4 bottles, price each 29.01 DUAL-C - 90 caps Buy 4 bottles, price each 20.038 ECHINACEA EXTRACT - 250 mg, 60 caps Buy 4 bottles, price each 20.040 DUAL-C - 90 caps Buy 4 bottles, price each 20.05 Buy 4 bottles, price each 20.06 Buy 4 bottles, price each 20.07 Buy 4 bottles, price each 50.00 39.00 Buy 4 bottles, price each 80.00 10.00	በበበፍባ					
01570 NA PROTECTION FORMULA - 60 veg. caps 34.00 25.50 Buy 4 bottles, price each 32.00 24.00 00544 DOG MIX - 100 grams powder 19.50 14.63 Buy 4 bottles, price each 16.00 12.00 00321 DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz 39.95 29.96 Buy 4 bottles, price each 32.00 24.00 00320 DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz 24.95 18.71 Buy 4 bottles, price each 22.00 16.50 00889 DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz 39.95 29.96 Buy 4 jars, price each 38.95 29.21 000240 DUAL-C - 90 caps 12.00 9.00 Buy 4 bottles, price each 10.50 7.88 E ECHINACEA EXTRACT - 250 mg, 60 caps \$14.35 \$10.76 01321 ELASTIN & CALLAGEN BODY FIRMING LOTION - 8 fl. oz. 10.00 7.50 01498 EDTA - 500 mg, 60 caps 52.00 39.00 00997 ENDOTHELIAL DEFENSE™ W/FULL-SPECTRUM POMEGRANATE™ - 60 softgels 50	00009		_			
Buy 4 bottles, price each Buy 5 bottles, price each Buy 6 bottles, price each Buy 7 bottles, price each Buy 8 bottles, price each Buy 9 bottles, price each Buy 9 bottles, price	01570	· · · · · · · · · · · · · · · · · · ·	_			_
00544 DOG MIX - 100 grams powder 19.50 14.63 Buy 4 bottles, price each 16.00 12.00 00321 DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz 39.95 29.96 Buy 4 bottles, price each 32.00 24.00 00320 DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz 24.95 18.71 Buy 4 bottles, price each 22.00 16.50 00899 DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz 39.95 29.96 Buy 4 jars, price each 38.95 29.21 00240 DUAL-C - 90 caps 12.00 9.00 Buy 4 bottles, price each 10.50 7.88 E 00388 ECHINACEA EXTRACT - 250 mg, 60 caps \$14.35 \$10.76 Buy 4 bottles, price each 12.50 9.38 01321 ELASTIN & COLLAGEN BODY FIRMING LOTION - 8 fl. oz. 10.00 7.50 01498 ENDOTHELIAL DEFENSE™ WFULL-SPECTRUM POMEGRANATE™ - 60 softgels 56.00 42.00 Buy 4 bottles, price each 52.00 39.00 00062 EPA/DHA (MEGA) - 120 soft	01370					
Buy 4 bottles, price each DR. PROCTOR'S ADVANCED HAIR FORMULA − 2 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 jars, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 jars, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 jars, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA SHAMPOO − 8 oz Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps Buy 4 bottles, price each DR. PROCTOR'S HAIR FORMULA → 30 caps DR. PROCTOR'S	00544	* ***	_			
00321 DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz 39.95 29.96 Buy 4 bottles, price each 32.00 24.00 00320 DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz 24.95 18.71 Buy 4 bottles, price each 22.00 16.50 00899 DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz 39.95 29.96 Buy 4 jars, price each 38.95 29.21 00240 DUAL-C - 90 caps 12.00 9.00 Buy 4 bottles, price each 10.50 7.88 E ECHINACEA EXTRACT - 250 mg, 60 caps \$14.35 \$10.76 00388 ECHINACEA EXTRACT - 250 mg, 60 caps \$14.35 \$10.76 01395 EDTA - 500 mg, 60 caps \$14.35 \$10.76 01321 ELASTIN & COLLAGEN BODY FIRMING LOTION - 8 fl. oz. 10.00 7.50 01498 ENDOTHELIAL DEFENSE™ W/FULL-SPECTRUM POMEGRANATE™ - 60 softgels 56.00 42.00 00997 ENDOTHELIAL DEFENSE™ W/GLISODIN® - 60 veg. caps 52.00 39.00 00997 ENDOTHELIAL DEFENSE™ W/GLISODIN® - 60 veg. caps 18.00 13.50 <td>00544</td> <td></td> <td></td> <td></td> <td></td> <td></td>	00544					
Buy 4 bottles, price each 00320 DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each 00899 DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz 00899 DUAL-C - 90 caps Buy 4 jars, price each 00240 DUAL-C - 90 caps Buy 4 bottles, price each 00888 ECHINACEA EXTRACT - 250 mg, 60 caps Buy 4 bottles, price each 00388 ECHINACEA EXTRACT - 250 mg, 60 caps Buy 4 bottles, price each 00390 EDTA - 500 mg, 60 caps 00391 ELASTIN & COLLAGEN BODY FIRMING LOTION - 8 fl. oz. 00490 ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels 00997 ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps 00997 ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps 00997 EPA/DHA (MEGA) - 120 softgels 001040 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 001041 EVE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 001054 FACE MASTER® PLATINUM 00965 FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each 10096 FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each 10097 EMDOTHILIAL SPICE each 10098 Buy 4 bottles, price each 100997 EVE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 100990 Buy 4 bottles, price each 100990 EVE PRESSURE SUPPORT W/MIRTOGENOL® - 30 veg. caps 100990 Buy 4 bottles, price each 100990 EVERPOBLICE SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 100990 Buy 4 bottles, price each 100990 EVERPOBLICE SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 100990 Buy 4 bottles, price each 100990 Buy 4 bottles, pri	00001		_			
DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz Buy 4 jars, price each DUAL-C - 90 caps Buy 4 bottles, price each DUAL-C - 90 caps Buy 4 bottles, price each ECHINACEA EXTRACT - 250 mg, 60 caps Buy 4 bottles, price each ELASTIN & COLLAGEN BODY FIRMING LOTION - 8 fl. oz. D1498 ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels Buy 4 bottles, price each D10997 ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps Buy 4 bottles, price each D1042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs Buy 4 bottles, price each D1514 EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps Buy 4 bottles, price each D1514 FACE MASTER® PLATINUM S199.00 FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each S20.05 FEM DOPHILUS® - 60 caps S20.05 FEM DOPHILUS® - 30 caps S20.05 FEM DOPHILUS® - 60 caps S20.05 S20.05 S20.06 S20.07	00321		_			
Buy 4 bottles, price each DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz Buy 4 jars, price each DUAL-C - 90 caps Buy 4 bottles, price each DUAL-C - 90 caps Buy 4 bottles, price each ECHINACEA EXTRACT - 250 mg, 60 caps Buy 4 bottles, price each DUAL-C - 90 caps Buy 4 bottles, price each ECHINACEA EXTRACT - 250 mg, 60 caps Buy 4 bottles, price each DUAL-C - 90 caps Buy 4 bottles, price each DUAL-C - 90 caps Buy 4 bottles, price each DUAL-C - 90 caps Buy 4 bottles, price each DUAL-C - 90 caps Buy 4 bottles, price each DUAL-C - 90 caps Buy 4 bottles, price each Buy 4 bottles, price each DUAL-C - 90 caps Buy 4 bottl		* * * * * * * * * * * * * * * * * * * *	_		_	
DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz 39.95 29.96	00320			-		
Buy 4 jars, price each 00240 DUAL-C - 90 caps 12.00 9.00			_			
DUAL-C - 90 caps 12.00 9.00 Buy 4 bottles, price each 10.50 7.88 E 7.88 Buy 4 bottles, price each 12.50 9.38 01395 EDTA - 500 mg, 60 caps 9.98 7.49 01321 ELASTIN & COLLAGEN BODY FIRMING LOTION - 8 fl. oz. 10.00 7.50 01498 ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 soltgels 56.00 42.00 Buy 4 bottles, price each 52.00 39.00 000997 ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps 52.00 39.00 Buy 4 bottles, price each 46.00 34.50 000625 EPA/DHA (MEGA) - 120 softgels 19.95 14.96 Buy 4 bottles, price each 18.00 13.50 01042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 20.00 15.00 Buy 4 bottles, price each 18.00 13.50 01514 EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 38.00 28.50 Buy 4 bottles, price each 30.00 29.25 Buy 4 bottles, price each 30.00	00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 OZ	39.95			
Buy 4 bottles, price each 10.50 7.88		Buy 4 jars, price each	38.95	29.21		
E Comparison E	00240	DUAL-C - 90 caps	12.00	9.00		
### CHINACEA EXTRACT - 250 mg, 60 caps State			10.50	7.88		
Buy 4 bottles, price each 12.50 9.38 01395 EDTA - 500 mg, 60 caps 01321 ELASTIN & COLLAGEN BODY FIRMING LOTION - 8 fl. oz. 01498 ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels Buy 4 bottles, price each 00097 ENDOTHELIAL DEFENSE™ w/GLISODIN* - 60 veg. caps 52.00 39.00 Buy 4 bottles, price each 00625 EPA/DHA (MEGA) - 120 softgels Buy 4 bottles, price each 01042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 01054 EYE PRESSURE SUPPORT w/MIRTOGENOL* - 30 veg. caps 38.00 28.50 Buy 4 bottles, price each 18.00 13.50 19.95 14.96 19.95 14.96 19.95 14.96 19.95 14.96 19.95 14.96 19.95 14.96 19.90 15.00 19.90 15.00 19.90 15.00 19.90 19.90 29.50 F 101054 FACE MASTER* PLATINUM \$199.00 \$199.00 20053 FEM DOPHILUS* - 30 caps 19.96 29.25 Buy 4 bottles, price each 20055 FEM DOPHILUS* - 60 caps 19.96 29.96 101064 FEMBLOCK* w/SENDARA™ (ENHANCED) - 30 veg. caps 39.00 29.25 101311 FERNBLOCK* w/SENDARA™ (ENHANCED) - 30 veg. caps 39.00 29.25		E				
D1395 EDTA - 500 mg, 60 caps 9.98 7.49 D1321 ELASTIN & COLLAGEN BODY FIRMING LOTION - 8 fl. oz. 10.00 7.50 D1498 ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels 56.00 42.00 Buy 4 bottles, price each 52.00 39.00 D10997 ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps 52.00 39.00 Buy 4 bottles, price each 46.00 34.50 D1042 EPA/DHA (MEGA) - 120 softgels 19.95 14.96 Buy 4 bottles, price each 18.00 13.50 D1042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 20.00 15.00 Buy 4 bottles, price each 18.00 13.50 D1514 EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 38.00 28.50 Buy 4 bottles, price each 34.00 25.50 FE D10154 FACE MASTER® PLATINUM \$199.00 \$199.00 D1055 FAST-ACTING JOINT FORMULA - 30 caps 39.00 29.25 Buy 4 bottles, price each 36.00 27.00 D20053 FEM DOPHILUS® - 30 caps 39.95 29.96 D1064 FEMMENESSENCE MACAPAUSE® - 120 veg. caps 34.99 26.24 D1311 FERNBLOCK® w/SENDARA™ (ENHANCED) - 30 veg. caps 39.00 29.25 D1056 29.25 39.00 29.25 D1057 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1059 D1059 D1058 D1058 D1058 D1058 D1059 D1059 D1058 D1058 D1058 D1058 D1059 D1058 D1058 D1058 D1058 D1058 D1059 D1058 D1058 D1058 D1058 D1058 D1059 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058 D1058	00388	ECHINACEA EXTRACT - 250 mg, 60 caps	\$14.35	\$10.76		
01321 ELASTIN & COLLAGEN BODY FIRMING LOTION - 8 fl. oz. 10.00 7.50 01498 ENDOTHELIAL DEFENSE™ W/FULL-SPECTRUM POMEGRANATE™ - 60 softgels 56.00 42.00 Buy 4 bottles, price each 52.00 39.00 Buy 4 bottles, price each 46.00 34.50 00625 EPA/DHA (MEGA) - 120 softgels 19.95 14.96 Buy 4 bottles, price each 18.00 13.50 01042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 20.00 15.00 Buy 4 bottles, price each 18.00 13.50 01514 EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 38.00 28.50 Buy 4 bottles, price each 34.00 25.50 F **** **O1054 FACE MASTER® PLATINUM \$199.00 \$199.00 **** **O0065 FAST-ACTING JOINT FORMULA - 30 caps 39.00 29.25 **Buy 4 bottles, price each 36.00 27.00 **20053 FEM DOPHILUS® - 30 caps 25.95 19.46 **20055 FEM DOPHILUS® - 60 caps 39.95 29.96 **** **O1064		Buy 4 bottles, price each	12.50	9.38		
01498 ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels 56.00 42.00 Buy 4 bottles, price each 52.00 39.00 00997 ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps 52.00 39.00 Buy 4 bottles, price each 46.00 34.50 00625 EPA/DHA (MEGA) - 120 softgels 19.95 14.96 Buy 4 bottles, price each 18.00 13.50 01042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 20.00 15.00 Buy 4 bottles, price each 18.00 13.50 01514 EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 38.00 28.50 Buy 4 bottles, price each 34.00 25.50 F 101054 FACE MASTER® PLATINUM \$199.00 \$199.00 00965 FAST-ACTING JOINT FORMULA - 30 caps 39.00 29.25 Buy 4 bottles, price each 36.00 27.00 20053 FEM DOPHILUS® - 30 caps 25.95 19.46 20055 FEM DOPHILUS® - 60 caps 39.95 29.96 01064 FEMMENESSENCE MACAPAUSE® - 1	01395	EDTA - 500 mg, 60 caps	9.98	7.49		
Buy 4 bottles, price each 52.00 39.00 Buy 4 bottles, price each 60097 ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps Buy 4 bottles, price each 600625 EPA/DHA (MEGA) - 120 softgels 800 4 bottles, price each 600626 EVENT STEPPEN ST	01321	ELASTIN & COLLAGEN BODY FIRMING LOTION - 8 fl. oz.	10.00	7.50		
00997 ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps 52.00 39.00 Buy 4 bottles, price each 46.00 34.50 00625 EPA/DHA (MEGA) - 120 softgels 19.95 14.96 Buy 4 bottles, price each 18.00 13.50 01042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 20.00 15.00 Buy 4 bottles, price each 18.00 13.50 01514 EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 38.00 28.50 Buy 4 bottles, price each 34.00 25.50 F **TACTING JOINT FORMULA - 30 caps 39.00 29.25 Buy 4 bottles, price each 36.00 27.00 20053 FEM DOPHILUS® - 30 caps 35.00 27.00 20055 FEM DOPHILUS® - 60 caps 39.95 29.96 01064 Femmenessence Macapause® - 120 veg. caps 34.99 26.24 01311 FERBLOCK® w/SENDARA™ (ENHANCED) - 30 veg. caps 39.00 29.25	01498	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels	56.00	42.00		
Buy 4 bottles, price each 200625		Buy 4 bottles, price each	52.00	39.00		
00625 EPA/DHA (MEGA) - 120 softgels 19.95 14.96 Buy 4 bottles, price each 18.00 13.50 01042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 20.00 15.00 Buy 4 bottles, price each 18.00 13.50 01514 EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 38.00 28.50 Buy 4 bottles, price each 34.00 25.50 F 01054 FACE MASTER® PLATINUM \$199.00 \$199.00 00965 FAST-ACTING JOINT FORMULA - 30 caps 39.00 29.25 Buy 4 bottles, price each 36.00 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 39.00 29.25	00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps	52.00	39.00		
Buy 4 bottles, price each 18.00 13.50 101042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs Buy 4 bottles, price each 18.00 13.50 18.00 13.50 18.00 13.50 18.00 28.50 Buy 4 bottles, price each 34.00 25.50 F 101054 FACE MASTER® PLATINUM \$199.00 \$199.00 10965 FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each 36.00 27.00 20053 FEM DOPHILUS® - 30 caps 20055 FEM DOPHILUS® - 60 caps 19.96 101064 FEMMENESSENCE MACAPAUSE® - 120 veg. caps 39.00 29.25 101064 FENBLOCK® w/SENDARA™ (ENHANCED) - 30 veg. caps 39.00 29.25		Buy 4 bottles, price each	46.00	34.50		
01042 EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs 20.00 15.00 Buy 4 bottles, price each 18.00 13.50 01514 EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 38.00 28.50 Buy 4 bottles, price each 34.00 25.50 F 101054 FACE MASTER® PLATINUM \$199.00 \$199.00 00965 FAST-ACTING JOINT FORMULA - 30 caps 39.00 29.25 Buy 4 bottles, price each 36.00 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 39.00 29.25	00625	EPA/DHA (MEGA) - 120 softgels	19.95	14.96		
Buy 4 bottles, price each 18.00 13.50 15.14 EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps Buy 4 bottles, price each 34.00 25.50 F 101054 FACE MASTER® PLATINUM \$199.00 \$199.00 \$199.00 \$199.00 \$199.00 \$29.25 Buy 4 bottles, price each 36.00 27.00 20053 FEM DOPHILUS® - 30 caps 20055 FEM DOPHILUS® - 60 caps 39.95 29.96 101064 FEMMENESSENCE MACAPAUSE® - 120 veg. caps 39.00 29.25 118.00 128.50 129.00 129.00 130.00 148.00 1599.00 1599.00 1699.00 179		Buy 4 bottles, price each	18.00	13.50		
EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 38.00 28.50	01042	EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs	20.00	15.00		
EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps 38.00 28.50						
Buy 4 bottles, price each 34.00 25.50 F	01514					
The image			34.00			
Table Tab		7		-		
200965 FAST-ACTING JOINT FORMULA - 30 caps 39.00 29.25 Buy 4 bottles, price each 36.00 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 39.00 29.25	01054		\$199 በበ	\$199.00		
Buy 4 bottles, price each 36.00 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 FENBLOCK* w/SENDARA™ (ENHANCED) - 30 veg. caps 39.00 29.25						
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 39.00 29.25		· · · · · · · · · · · · · · · · · · ·	_			
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 39.00 29.25	20053					
01064 FEMMENESSENCE MACAPAUSE® - 120 veg. caps 34.99 26.24 01311 FERNBLOCK® w/sendara™ (ENHANCED) - 30 veg. caps 39.00 29.25		·				\vdash
01311 FERNBLOCK® w/SENDARA™ (ENHANCED) - 30 veg. caps 39.00 29.25		·	_			
			_			_
Buy 4 Doπies, price each 35.00 26.25	UI311					
SUB-TOTAL OF COLUMN 7			35.00	26.25		

No.		Retail Each	Member Each	Qty	Total
00229	FIBER FOOD CAPS - 200 caps	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
	Buy 10 bottles, price each	11.90	8.93		
00718	FIBRINOGEN RESIST™ - 30 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	44.00	33.00		
00873	FLAXSEED POWDER (HI-LIGNAN® NUTRI-FLAX®) - 16 oz powder	9.95	7.46		
)1384	FLORADIX® IRON & HERBS - 17 fl. oz	43.99	35.19		
)1200	FLORASTOR® - 250 mg, 50 caps	55.15	41.36		
1382	FLORAVITAL® IRON & HERBS - 17 fl. oz	43.99	35.19		
)1212	FLUSH + BE FIT - 2- week cleanse for women	29.99	22.49		\vdash
)1439	FOLATE (OPTIMIZED) (L-METHYLFOLATE) 1000 mcg - 100 veg. caps	28.00	21.00		\vdash
	Buy 4 bottles, price each	25.00	18.75		
0347	FOLIC ACID + B12 CAPSULES - 200 caps	10.50	7.88		\vdash
700-17	Buy 4 bottles, price each	9.50	7.13		
00300		15.00	11.25		\vdash
10300	FORSKOLIN - 10 mg, 60 caps	12.50			
11710	Buy 4 bottles, price each		9.38	_	\vdash
)1513	FUCOIDAN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	33.00	24.75	_	_
00993	FUCOXANTHIN-SLIM™ - 90 softgels	44.00	33.00		
	Buy 4 bottles, price each	39.00	29.25		
	G				
0127	GABA POWDER - 100 grams	\$23.75	\$17.81		
	Buy 4 bottles, price each	22.50	16.88		_
00559	GAMMA E TOCOPHEROL/TOCOTRIENOLS - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	37.00	27.75		_
00759	GAMMA E TOCOPHEROL W/SESAME LIGNANS - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
)1394	(OPTIMIZED) GARLIC - 200 veg. caps	24.95	18.71		
	Buy 4 bottles, price each	21.00	15.75		_
)1378	GARLIC FORCE™ - 30 softgels	34.95	26.21		_
00117	GELATIN CAPSULES - 1000 empty caps size "00"	19.00	14.25		
	Buy 4 bags, price each	18.00	13.50	_	_
01301	GH PITUITARY SUPPORT DAY FORMULA - 120 vegetarian tabs	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		_
01302	GH PITUITARY SUPPORT NIGHT FORMULA - 120 veg. caps	25.00	18.75		
	Buy 4 bottles, price each	22.50	16.88		_
)1228	GINGER FORCE - 60 softgels	29.95	22.46		_
00778	GINKGO BILOBA CERTIFIED EXTRACT™ - 120 mg, 365 caps	46.00	34.50		
	Buy 2 bottles, price each	43.50	32.63		_
00504	GINKGO EXTRACT (SUPER) - 120 mg, 100 caps	29.00	21.75		
	Buy 4 bottles, price each	26.50	19.88	_	_
01032	(PANAX RED) GINSENG - 60 veg. caps	29.99	22.49		
0756	GLA WITH SESAME LIGNANS (MEGA) - 60 softgels	19.50	14.63		
	Buy 4 bottles, price each	18.00	13.50	_	<u> </u>
00345	(L) GLUTAMINE CAPSULES - 500 mg, 100 caps	14.95	11.21		
	Buy 4 bottles, price each	13.50	10.13	_	<u> </u>
0141	(L)-GLUTAMINE POWDER - 100 grams	19.00	14.25		
	Buy 4 bottles, price each	16.88	12.66	_	<u> </u>
00522	GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	32.00	24.00	_	<u> </u>
0512	GLUCOFIT™ - 100 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		<u> </u>
0113	GLUTATHIONE, CYSTEINE & C - 750 mg, 100 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
0314	L-GLUTATHIONE (MEGA) - 250 mg, 60 caps	39.64	29.73		
	Buy 4 bottles, price each	35.68	26.76		
					1

Buyers Club Order Form To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
	G CONTINUED				
00795	GLYCINE - 1000 mg, 100 caps	\$12.00	\$9.00		
	Buy 4 bottles, price each	10.80	8.10		
00128	GLYCINE POWDER - 300 grams	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01091	GRAPE EXTRACT w/RESVERATROL (WHOLE) - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01411	GRAPE SEED EXTRACT w/RESVERATROL & PTEROSTILBENE - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01604	GREEN COFFEE EXTRACT COFFEEGENIC™ - 200 mg, 90 veg. caps	25.00	18.75		
	Buy 4 bottles, price each	22.00	16.50		
01620	GREEN COFFEE EXTRACT COFFEEGENIC™ - 400 mg, 90 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
01607	GREEN COFFEE EXTRACT COFFEEGENIC™ - 90 veg. caps w/GLUCOSE CONTROL COMPLEX	58.00	43.50		
	Buy 4 bottles, price each	52.00	39.00		
00953	GREEN TEA EXTRACT (MEGA) - lightly caffeinated - 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	26.50	19.88		
00954	GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	26.50	19.88		
01606	GREEN TEA W/COFFEEGENIC™ GREEN COFFEE EXTRACT (MEGA) 120 veg. caps, low caffeine	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
01605	GREEN TEA W/COFFEEGENIC™ GREEN COFFEE EXTRACT (MEGA) 120 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Н				
01074	5 HTP - 100 mg, 60 caps	\$27.95	\$20.96		
00010	HAIR CONDITIONER - 16 oz	6.00	4.50		
	Buy 4 bottles, price each	4.50	3.38		
00230	HCA - 90 caps	18.00	13.50		
	Buy 4 bottles, price each	15.50	11.63		
01629	HEAROS™ EAR PLUGS - 1 pack	14.00	10.50		
01393	HEPATOPRO - 900 mg, 60 softgels	50.00	37.50		
	Buy 4 bottles, price each	46.00	34.50		
01433	HOLY BASIL - 60 softgel caps	34.95	26.21		
01434	HOLY BASIL - 120 softgel caps	54.95	41.21		
01435	HOMOCYSTEINE RESIST - 100 caps	24.00	18.00		
	Buy 4 bottles, price each	21.60	16.20		
01527	HUPERZINE A - 200 mcg, 60 veg caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00661	HYDRODERM® - 1 oz	79.95	59.96		
	Buy 2 bottles, price each	65.33	49.00		
	1				
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	29.50	22.13		
	Buy 4 bottles, price each	26.55	19.91		
01049	INNERPOWER™ - 555 grams powder	42.00	31.50		
00155	INOSINE - 500 mg, 60 caps	22.95	17.21		
	Buy 4 bottles, price each	21.00	15.75		
00410	INOSITOL CAPSULES - 1000 mg, 360 caps	48.00	36.00		
	Buy 4 bottles, price each	43.75	32.81		
00108	INOSITOL POWDER - 100 grams	18.00	13.50		
	Buy 4 bottles, price each	16.88	12.66		
	SUB-TOTAL OF COLUMN 9				

No.		Retail Each	Member Each	Qty	Total
01021	INTACT DIGEST™ - 8 fl oz	\$35.00	\$26.25		
	Buy 4 bottles, price each	33.00	24.75		
01292	INTEGRA-LEAN® IRVINGIA - 150 mg, 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01002	IODORAL® - 180 tabs	50.00	37.50		
00563	IRON PROTEIN PLUS - 300 mg, 100 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01492	IRVINGIA W/PHASE 3™ - 120 veg. caps CALORIE CONTROL COMPLEX (OPTIMIZED)	56.00	42.00		
	Buy 4 bottles, price each	48.00	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		
01224	K w/ADVANCED K2 COMPLEX (SUPER) - 90 softgels	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01600	KRILL HEALTHY JOINT FORMULA - 30 softgels	32.00	24.00		
71000		29.00			
01050	Buy 4 bottles, price each		21.75	_	\vdash
01050	(NKO) KRILL OIL - 60 softgels	33.95	25.46	_	_
00316	KYOLIC® GARLIC FORMULA 102 - 200 caps	23.95	17.96		
	Buy 4 bottles, price each	20.50	15.38		
00214	KYOLIC® GARLIC FORMULA 105 - 200 caps	22.95	17.21		
	Buy 4 bottles, price each	18.25	13.69		
00789	KYOLIC® RESERVE - 600 mg, 120 caps	24.75	18.56		
	Buy 4 bottles, price each	21.45	16.09		
	L				
00513	LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps	\$40.00	\$30.00		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Buy 4 bottles, price each	36.00	27.00		
00017	LAVILIN UNDERARM DEODORANT - 12.5 grams cream	16.99	12.74		\vdash
30011	Buy 4 jars, price each	15.75	11.81		
00020	LECITHIN - 16 oz. granules	15.00	11.25		
0020	Buy 4 jars, price each	12.50	9.38		
)1655	LIFE EXTENSION MIX™ - 315 tablets	98.00	73.50	_	\vdash
11000		86.00	64.50		
	Buy 4 bottles, price each		52.13		
11057	Buy 10 bottles, price each	69.50		_	\vdash
01657	LIFE EXTENSION MIX™ W/EXTRA NIACIN - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
24.05.4	Buy 10 bottles, price each	69.50	52.13		\vdash
01654	LIFE EXTENSION MIX™ - 490 caps	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
24.050	Buy 10 bottles, price each	85.00	63.75	_	<u> </u>
01656	LIFE EXTENSION MIX™ POWDER - 14.81 oz	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		<u> </u>
01665	LIFE EXTENSION MIX™ - 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
)1667	LIFE EXTENSION MIX™ W/EXTRA NIACIN 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01664	LIFE EXTENSION MIX™ - 490 caps w/o copper	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
					ı

No.		Retail Each	Member Each	Qty	Total
01666	LIFE EXTENSION MIX™ POWDER - 14.81 oz w/o copper	\$98.00	\$73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
00263	LIFE FLORA™ - 300 mg, 120 caps	20.50	15.38		
	Buy 4 bottles, price each	18.75	14.06		
01377	LIFESHIELD® BREATHE™ - 60 veg. caps	34.95	26.21		
01349	LIFESHIELD® CORDYCEPS - 60 veg. caps	34.95	26.21		
01314	LIFESHIELD® IMMUNITY™ - 60 veg. caps	39.95	29.96		
01339	LIFESHIELD® REISHI™ - 60 veg. caps	34.95	26.21		
01608	LIVER EFFICIENCY FORMULA - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01227	LIVER FORCE - 30 veg. caps	34.95	26.21		
01639	5-LOX INHIBITOR W/APRESFLEX™ - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01013	L-LYSINE - 620 mg, 100 caps	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
00129	L-LYSINE POWDER - 300 grams	16.00	12.00		
	Buy 4 bottles, price each	13.75	10.31		
01470	LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE - 120 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
00455	LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels	35.00	26.25		
	Buy 4 bottles, price each	30.00	22.50		
	M				_
01369	MAGNESIUM CAPS - 500 mg, 100 veg. caps	\$10.00	\$7.50		Г
	Buy 4 bottles, price each	9.00	6.75		
00502	MAGNESIUM CITRATE - 160 mg, 100 caps	9.00	6.75		
	Buy 4 bottles, price each	7.50	5.63		
00704	MAITAKE™ SX-FRACTION - 90 veg. tablets	49.95	37.46		
00547	MELATONIN - 300 mcg, 100 caps	5.75	4.31		
00047	Buy 4 bottles, price each	5.00	3.75		
01000	• • • • • • • • • • • • • • • • • • • •				
01083	MELATONIN - 500 mcg, 200 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00329	MELATONIN - 1 mg, 60 caps	5.00	3.75		
	Buy 4 bottles, price each	4.63	3.47		
00330	MELATONIN - 3 mg, 60 caps	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01086	MELATONIN - 3 mg, 60 time-release veg. caps	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
00331	MELATONIN - 10 mg, 60 caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
00332	MELATONIN - 3 mg, 60 lozenges	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01087	MELATONIN TIME RELEASE - 300 mcg, 100 veg. caps	6.25	4.69		
	Buy 4 bottles, price each	5.63	4.22		
01088	MELATONIN TIME RELEASE - 750 mcg, 60 veg. caps	5.75	4.31		
	Buy 4 bottles, price each	5.00	3.75		
01009	MEMORY UPGRADE™ - 600 grams powder	26.95	20.21		
01536	METHYLCOBALAMIN - 1 mg, 60 lozenges (vanilla)	9.95	7.46		
	Buy 4 bottles, price each	8.00	6.00		
	SUB-TOTAL OF COLUMN 11				

No.		Retail Each	Member Each	Qty	Total
01537	METHYLCOBALAMIN - 5 mg, 60 lozenges (vanilla)	\$32.00	\$24.00		
	Buy 4 bottles, price each	25.00	18.75		
	Buy 10 bottles, price each	23.00	17.25		
00709	MIGRA-EEZE™ (BUTTERBUR) - 60 softgels	29.50	22.13		
	Buy 4 bottles, price each	26.33	19.75		
01522	MILK THISTLE (CERTIFIED EUROPEAN) - 750 mg, 60 veg. caps	34.00	25.50		\vdash
	Buy 4 bottles, price each	30.00	22.50		
01517	MILK THISTLE (CERTIFIED EUROPEAN) - 120 veg. caps	52.00	39.00		\vdash
	Buy 4 bottles, price each	48.00	36.00		
00623	MINERAL FORMULA FOR MEN - 100 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
	Buy 12 bottles, price each	10.83	8.13		
00624	MINERAL FORMULA FOR WOMEN - 100 caps	15.00	11.25		
J002 1	Buy 4 bottles, price each	12.50	9.38		
	Buy 12 bottles, price each	10.83	8.13		
)1315	MIRAFORTE w/STANDARDIZED LIGNANS (SUPER) - 120 caps	62.00	46.50		\vdash
31010	Buy 4 bottles, price each	56.00	42.00		
01569	MITOCHONDRIAL BASICS w/BIOPQQ™ - 30 caps	52.00	39.00		\vdash
71303	Buy 4 bottles, price each	46.00	34.50		
01568	MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ™ - 120 caps	94.00	70.50	_	\vdash
71300	Buy 4 bottles, price each	84.00	63.00		
00803	MIST ORAL III w/COQ10 - 2 fl oz	28.00	21.00		
00003		25.33	19.00		
00065	Buy 4 bottles, price each	28.00	21.00	_	\vdash
00000	MK-7 - 90 mcg, 60 softgels		18.75		
11070	Buy 4 bottles, price each	25.00		_	H
01279	MOUTHWASH W/POMEGRANATE - 16 oz	18.50	13.88		
20.454	Buy 4 bottles, price each	17.00	12.75	_	H
00451	MSM (METHYLSULFONYLMETHANE) - 1000 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	11.95	8.96		
	N				
00215	N-ACETYL-L-CYSTEINE - 600 mg, 60 caps	\$14.00	\$10.50		
	Buy 4 bottles, price each	13.50	10.13		
00168	NAPCA W/ALOE VERA - 8 fl oz	10.50	7.88		
	Buy 4 bottles, price each	9.61	7.21		
00066	NATTOKINASE - 60 softgels	24.98	18.74		
00891	NATURAL APPETITE CONTROL - 90 softgels	28.00	21.00		\vdash
	Buy 4 bottles, price each	25.20	18.90		
00984	NATURAL BP MANAGEMENT - 60 tablets	42.00	31.50		
JUJU4					
20010	Buy 4 bottles, price each	37.80	28.35		
00913	NATURAL ESOPHAGUARD - 10 softgels	19.95	14.96		
	Buy 2 boxes, price each	19.00	14.25		
00712	NATURAL ESTROGEN w/POMEGRANATE EXTRACT - 60 caplets	38.00	28.50		
	Buy 4 bottles, price each	33.00	24.75		
01221	NATURAL FEMALE SUPPORT - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01471	NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
00698	NATURAL RELIEF 1222™ - 2 0Z	28.00	21.00	\vdash	\vdash
.0000			18.75		
11607	Buy 4 tubes, price each	25.00		_	\vdash
01627	NATURAL SEX FOR WOMEN ® (ADVANCED) - 60 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
		- 1			

Buyers Club Order Form To order call: 1.954.766.8433 or 1.800.544.4440

		Retail Each	Member Each	Qty	Total
	N CONTINUED				
01626	NATURAL SEX FOR WOMEN * 50+ (ADVANCED) - 90 veg. caps	\$59.00	\$44.25		
	Buy 4 bottles, price each	53.00	39.75		
01084	NATURAL SLEEP® - 3 mg, 60 veg. caps	12.99	9.74		
	Buy 4 bottles, price each	10.00	7.50		
01507	NATURAL SLEEP® (ENHANCED) W/ MELATONIN - 30 caps	22.00	16.50		
0.00.	Buy 4 bottles, price each	20.00	15.00		
01511	· · · · · · · · · · · · · · · · · · ·				
01511	NATURAL SLEEP® (ENHANCED) W/O MELATONIN - 30 caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01085	NATURAL SLEEP MELATONIN® - 5 mg, 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00987	NATURAL STRESS RELIEF - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01603	NEURO-MAG™ MAGNESIUM L-THREONATE - 90 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01602	NEURO-MAG™ L-THREONATE W/CALCIUM & VITAMIN D 205 grams - Lemon flavor	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01076	NEW FACE SOLUTION - 1.7 oz bottle	54.00	40.50		
	Buy 4 bottles, price each	49.00	36.75		
00373	NO-FLUSH NIACIN - 800 mg, 100 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
01035	NUTRIM - 170 grams powder	25.95	19.46		
	0				
01623	OLIVE LEAF VASCULAR SUPPORT - 500 mg, 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01518	OMEGA-3 CHEWABLES - 60 softchews, 120 mg EPA/DHA	24.00	18.00		
	Buy 4 pouches, price each	22.00	16.50		
01483	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) – 60 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01482	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		
01484	OMEGA 3 EPA/DHA W/SESAME LIGNANS & -120 enteric coated softgels olive fruit extract (super)	34.00	25.50		
	Buy 4 bottles, price each	31.00	23.25		
	Buy 10 bottles, price each	28.00	21.00		
01619	OMEGA 3 EPA/DHA W/SESAME LIGNANS & - 240 softgels OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL)	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		L
01601	ONE-PER-DAY - 60 veg. tablets	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01328	ONLY TRACE MINERALS - 90 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
00915	OPTIZINC® - 30 mg, 90 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.00	3.75		
01070	ORGANIC TOTAL BODY CLEANSE™ - 14-day supply	34.99	26.24		
	P				
00107	PABA CAPS - 500 mg, 100 caps	\$15.42	\$11.57		
	Buy 4 bottles, price each	13.59	10.19		
00073	PANCREATIN - 500 mg, 50 caps	13.22	9.92		
00073	- -				
00073	Buy 4 bottles, price each	12.12	9.09		

No.		Retail Each	Member Each	Qty	Total
01323	PEAK ATP® WITH GLYCOCARN® - 60 veg. caps	\$59.00	\$44.25		
	Buy 4 bottles, price each	56.00	42.00		
00342	PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder	99.95	74.96		
	Buy 4 jars, price each	95.70	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	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
00368	PHOSPHATIDYLSERINE CAPS - 100 mg, 100 caps	54.00	40.50		
00000					
	Buy 4 bottles, price each	48.00	36.00		
00561	POLICOSANOL - 10 mg, 60 tablets	24.00	18.00		
	Buy 6 bottles, price each	18.00	13.50		
01423	POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels	24.00	18.00		
	Buy 4 bottles, price each	21.00	15.75		
00956	POMEGRANATE EXTRACT - 30 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.55	13.16		
00957	POMEGRANATE JUICE CONCENTRATE - 16 oz. liquid	25.95	19.46		
	Buy 4 bottles, price each	24.00	18.00		
00577	POTASSIUM IODIDE - 1 box, 14 tablets	6.95	5.21		
	Buy 4 boxes, price each	5.25	3.94		
01500	PQQ CAPS W/BIOPQQ™ - 10 mg, 30 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
00302	PREGNENOLONE - 50 mg, 100 caps	24.00	18.00		
	Buy 4 bottles, price each	19.00	14.25		
00700	PREGNENOLONE - 100 mg, 100 caps	26.00	19.50		
	Buy 4 bottles, price each	22.50	16.88		
*01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
00571	PRIMAL DEFENSE™ - 90 caplets	49.95	37.46		
	Buy 4 bottles, price each	48.50	36.38		
01329	PROBIOTIC ALL-FLORA® - 60 veg. caps	25.95	19.46		
01326	PROBIOTIC ANTI-AGING™ - 90 veg. caps	30.95	23.21		
01324	PROBIOTIC CLEANSE™ - 90 veg. caps	29.95	22.46		
01322	PROBIOTIC COLON™ - 90 veg. caps	30.95	23.21		
00525	PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets	59.95	44.96		
00869	PRO FEM CREAM - 2 fl oz (Progesterone Cream)	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01020	PROGREENS® - 15 stick pack	22.50	16.88		
01072	PRO-M INTERNAL DEODORIZER - 500 mg, 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01695	PROSTATE FORMULA W/APRESFLEX™ STAND. LIGNANS (ULTRA NAT) 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
	Buy 12 bottles, price each	32.00	24.00		
01092	PROTEIN - VANILLA - (Enhanced Life Extension) -1000 grams powder	50.00	37.50		
	Buy 4 bottles, price each	48.00	36.00		
01093	PROTEIN - CHOCOLATE - (Enhanced Life Extension) -1000 grams powder	50.00	37.50		
	Buy 4 bottles, price each	48.00	36.00		
01094	PROTEIN - NATURAL - (Enhanced Life Extension) -1000 grams powder	50.00	37.50		
	Buy 4 bottles, price each	48.00	36.00		
01095	PROTEIN - BERRY - (Enhanced Life Extension) -1000 grams powder	50.00	37.50		
	Buy 4 bottles, price each	48.00	36.00		
00290	PROTEIN - VANILLA - (Designer Whey) 2 lbs powder	42.49	31.87		
	Buy 4 bottles, price each	38.50	28.88		
00282	PROTEIN - CHOCOLATE - (Designer Whey) 2 lbs powder	42.49	31.87		
-0-02	Buy 4 bottles, price each	38.50	28.88		
	PROTEIN - NATURAL - (Designer Whey) 2 lbs powder	42.49	31.87		
00283					
00283	Buy 4 bottles, price each	38.50	28.88		

No.		Retail Each	Member Each	Qty	Total
01508	PTEROPURE™ - 50 mg Pterostilbene 60 veg. caps	\$32.00	\$24.00		
	Buy 4 bottles, price each	30.00	22.50		
01075	PURE PLANT PROTEIN - Natural Vanilla 450 grams powder	36.00	27.00		
	Buy 4 jars, price each	33.00	24.75		
01209	PUMPKIN SEED EXTRACT (WATER-SOLUBLE) - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01210	PUMPKIN SEED EXT w/SOY ISOFLAVONES (WATER-SOLUBLE)- 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00	_	
01031	PYCNOGENOL® - 60 veg. caps	89.95	67.46	_	
01217	PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
	O, R				
01309	QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps	\$18.00	\$13.50		
	Buy 4 bottles, price each	17.00	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	19.95	14.96		
	Buy 4 bottles, price each	18.67	14.00		
01448	REJUVENEX® BODY LOTION - 6 OZ	24.00	18.00		
	Buy 4 tubes, price each	19.80	14.85		
	Buy 8 tubes, price each	17.00	12.75		
00918	REJUVENEX® FACTOR - 1.7 oz airless pump	65.00	48.75		
00010	Buy 2 bottles, price each	60.00	45.00		
	Buy 4 bottles, price each	55.00	41.25		
	Buy 8 bottles, price each	49.91	37.43		
01220				H	
01220	REJUVENEX® (ULTRA) - 2 OZ	52.00	39.00		
	Buy 2 jars, price each	48.00	36.00		
	Buy 4 jars, price each	44.00	33.00		
	Buy 8 jars, price each	39.93	29.95	_	
00676	REJUVENIGHT® (ULTRA) - 2 oz	39.95	29.96		
	Buy 4 jars, price each	36.00	27.00	_	
00706	REJUVENIGHT® w/PROGESTERONE (ULTRA) - 2 OZ	42.00	31.50		
	Buy 4 jars, price each	38.00	28.50		
01413	RESVERATROL W/PTEROSTILBENE - 20 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	41.33	31.00		
00889	RHODIOLA EXTRACT - 250 mg, 60 veg. caps	11.75	8.81		
00000	Buy 4 bottles, price each	10.58	7.94		
00972	(D) RIBOSE POWDER - 150 grams	27.50	20.63		
00312	Buy 4 jars, price each	24.75	18.56		
01473	(D) RIBOSE TABLETS - 100 veg. tabs	32.00	24.00		
01473	Buy 4 bottles, price each	28.00	21.00		
01600	, ,,		_		
01609	RICH REWARDS BREAKFAST GROUND COFFEE - 12 oz. bag	13.00	9.75		
01610	RICH REWARDS DECAFFEINATED ROAST GROUND COFFEE -12 oz. bag		10.50		
01208	R-LIPOIC ACID (SUPER) - 300 mg, 60 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	45.00	33.75		
00070	RNA CAPSULES - 500 mg, 100 caps	17.95	13.46		
	Buy 4 bottles, price each	16.16	12.12		
00917	ROSMARINIC ACID EXTRACT - 60 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	53.00	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		
1432	SAFFRON w/SATIEREAL (OPTIMIZED) - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
0573	SAMBU® GUARD - 175 ml	17.79	14.23		
0358	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets	16.00	12.00		
	Buy 8 boxes, price each	14.00	10.50		
0453	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets	36.00	27.00		
0.00	Buy 4 bottles, price each	32.00	24.00		
0557	SAME (S-ADENOSYL-METHIONINE) – 400 mg, 20 enteric coated tablets	28.00	21.00		\vdash
0331		24.00	18.00		
4055	Buy 6 boxes, price each			_	H
1055	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets	66.00	49.50		
	Buy 4 bottles, price each	60.00	45.00		_
1043	SEA-IODINE™ - 1000 mcg, 60 veg. caps	8.00	6.00		
	Buy 4 bottles, price each	7.20	5.40		
0046	SELENIUM - 2 oz dropper bottle	9.95	7.46		
	Buy 4 bottles, price each	9.45	7.09		
0567	SE-METHYL L-SELENOCYSTEINE - 200 mcg, 100 caps	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
0318	SERRAFLAZYME - 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
0011	SHAMPOO - 16 fl oz	6.00	4.50		\vdash
10011	Buy 4 bottles, price each	4.75	3.56		
0004		-			
0284	SHARK LIVER OIL (NORWEGIAN) - 1000 mg, 30 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		L
0184	SILYMARIN - 100 mg, 50 caps	9.25	6.94		
	Buy 4 bottles, price each	8.25	6.19		
1502	SKIN RESTORING CERAMIDES w/LIPOWHEAT™ - 30 liquid caps	25.00	18.75		
	Buy 4 bottles, price each	23.00	17.25		
0961	SODZYME® w/GLISODIN® AND WOLFBERRY - 90 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
0657	SOLARSHIELD SUNGLASSES - 1 pair smoke color	12.99	9.74		
	Buy 2 pairs, price each	11.50	8.63		
1097	SOY EXTRACT (ULTRA) - 150 veg. caps	87.00	65.25		Н
	Buy 4 bottles, price each	78.00	58.50		
0286	SOY PROTEIN CONCENTRATE - 16 oz of powder	12.00	9.00		\vdash
0200	Buy 4 jars, price each		7.97		
4000		10.63			
1099	STABILIUM® 200 - 30 caps	30.00	22.50		
0432	STEVIA EXTRACT - 100 packets, 1 gram each	9.95	7.46		
	Buy 4 boxes, price each	9.00	6.75		
1396	ST. JOHN'S WORT EXTRACT - 300 mg, 60 veg. caps	10.98	8.24		
	Buy 4 bottles, price each	10.00	7.50		
0327	ST. JOHN'S WORT EXTRACT (PLANETARY) - 600 mg, 60 tablets	16.75	12.56		
	Buy 4 bottles, price each	13.85	10.39		
1476	STRONTIUM - 750 mg, 90 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
0971	SUN PROTECTION SPRAY W/BETA GLUCAN - SPF30 - 6 oz	14.95	11.21		Г
•	Buy 4 bottles, price each	13.50	10.13		
0747	SUNGLASSES (OVERXCAST POLARIZED) - gray color, large	27.00	20.25		\vdash
J1 71					
07.40	Buy 2 pairs, price each	21.00	15.75	\vdash	
0748	SUNGLASSES (OVERXCAST POLARIZED)- gray color, medium	27.00	20.25		
	Buy 2 pairs, price each	21.00	15.75		
		1			

Buyers Club Order Form To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Tota
	S CONTINUED				
00758	SUPER ABSORBABLE SOY ISOFLAVONES - 60 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		
01348	SUPERCRITICAL OREGANOFORCE™ - 30 softgels	34.95	26.21		
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		
01.101	Buy 12 bottles, price each	12.00	9.00		
00578	SUPER SELENIUM COMPLEX - 200 mcg, 100 caps	12.00	9.00		
00010	Buy 4 bottles, price each	10.00	7.50		
	Buy 12 bottles, price each	9.00	6.75		
00674	SYTRINOL™ - 60 softgels	32.00	24.00		
J0074	Buy 4 bottles, price each	28.00	21.00		
	T	20.00	21.00		
	•				
	TAL•SHI™ COSMETICS • For information please call 1-800-544-4440 or visit www.LifeExtension.com				
04000		Φ4.0.0Γ	Φ4.4.O4		
01062	TART CHERRY - 600 mg, 60 caps	\$18.95	\$14.21		
00199	TAURINE - 1000 mg, 50 caps	8.95	6.71		
20100	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	44.95	33.71		
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	29.95	22.46		
00866	TRYPTOPURE® L-TRYPTOPHAN - 500 mg, 90 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
01202	TRYPTOPURE® PLUS (OPTIMIZED) - 90 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01616	TWO-PER-DAY - 60 veg. tablets	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		

No.		Retail Each	Member Each	Qty	Total
01615	TWO-PER-DAY - 120 veg. tablets	\$20.00	\$15.00		
	Buy 4 bottles, price each	18.00	13.50		
01614	TWO-PER-DAY - 120 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
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		
00322	UDO'S CHOICE® WHOLESOME FAST FOOD - 16 oz bottle	27.99	22.39		
01061	ULTIMATE FLORA ADVANCED IMMUNITY PROBIOTICS - 30 caps	29.99	22.49		
	V				
00213	VANADYL SULFATE - 7.5 mg, 100 tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00252	VELVET DEER ANTLER - 250 mg, 30 caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
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		
000.2	Buy 4 bottles, price each	6.65	4.99		
00098	VITAMIN B5 - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
50000	Buy 4 bottles, price each	9.38	7.04		
00556	VITAMIN B6 - 250 mg, 100 caps	12.50	9.38		
00000	Buy 4 bottles, price each	11.00	8.25		
00361	VITAMIN B12 - 500 mcg, 100 lozenges	8.75	6.56		
J0301		7.25	5.44		
10027	Buy 4 bottles, price each VITAMIN C WITH DIHYDROQUERCETIN - 1000 mg, 250 tablets	25.50		_	
00927			19.13		
00004	Buy 4 bottles, price each	23.25	17.44	_	
00084	VITAMIN C (BUFFERED) POWDER - 454.6 grams	23.95	17.96		
20004	Buy 4 bottles, price each	22.00	16.50		
00864	VITAMIN D3 - 2000 IU, 1 fl oz	28.00	21.00		
2005 :	Buy 4 bottles, price each	25.00	18.75	_	
00251	VITAMIN D3 - 1000 IU, 250 caps	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		_
00713	VITAMIN D3 - 5000 IU, 60 caps	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43	_	
01418	VITAMIN D3 - 7000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
)1372	VITAMIN D3 w/SEA-IODINE™ - 5000 IU, 60 veg. caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
)1472	VITAMINS D AND K w/SEA-IODINE™ - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
	SUB-TOTAL OF COLUMN 18				

No.		Retail Each	Member Each	Qty	Total
00063	VITAMIN E (PURE NATURAL) - 400 IU, 100 caps	\$18.75	\$14.06		
	Buy 4 bottles, price each	17.25	12.94		
	Buy 10 bottles, price each	15.00	11.25		
01225	VITAMIN K2 (LOW-DOSE) - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
	Z				
01585	zeaxanthin w/lutein & meso-zeaxanthin and c3g (super) - 60 softgels	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
01586	ZEAXANTHIN W/LUTEIN & MESO-ZEAXANTHIN - 60 softgels PLUS ASTAXANTHIN AND C3G (SUPER)	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00061	ZINC LOZENGES - 75 lozenges	9.50	7.13		
	Buy 4 bottles, price each	6.75	5.06		
01051	ZYFLAMEND - 120 softgels	60.95	45.71		
01029	ZYFLAMEND EASYCAPS - 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!



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 30-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.

Life Extension EQUIDATION RILVERS CILIR INC.

ORDER SUBTOTALS

ONDEN OUDIOIALO		
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)		
Postage And Handling (Any size order, continental U.	S.)	\$5.50
C.O.D.s (Add \$7 for C.O.D. orders)		
UPS OVERNIGHT add \$16, UPS 2nd DAY AIR add \$7. For Puerto Rico, US Vii Shipping Alaska & Hawaii, add \$7. CANADA UPS EXPRESS Flat rate \$17.50, UK Flat rate ALL OTHER INTERNATIONAL AIR WILL BE ADDED.		
GRAND TOTAL (Must be in U.S. dollars)		

Buyers Club Order Form



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

Buyers Club Order Form

No.	LIFE EXTENSION MEDIA		Retail	Member Price	Qty	Total
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 Jeffry S. Life, MD, PhD	2011	\$26.00	\$19.50		
33832	YOUR BONES • by Lara Pizzorno, MA, LMT	2011	\$12.00	\$9.00		
33830	SEXY FOREVER: HOW TO FIGHT FAT AFTER FORTY • by Suzanne Somers	2011	\$25.99	\$19.49		
33829	THE IMMORTALITY EDGE • by Michael Fossel, MD, PhD, Greta Blackburn, David Woynarowski, MD	2011	\$25.95	\$18.17		
33827	FOREVER YOUNG ◆ by Nicholas Perricone, MD	2010	\$26.00	\$18.20		
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		
33820	YOUR BLOOD DOESN'T LIE! • by Sergey Dzugan, MD, PhD	2010	\$24.95	\$17.47		
33819	BRAIN SURGEON • by Keith Black, MD	2010	\$24.99	\$18.74		
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		
33813	TIMESHIP • by Stephen Valentine	2009	\$45.00	\$33.75		
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		
33810	THE ULTRAMIND SOLUTION • by Mark Hyman, MD	2009	\$27.50	\$19.25		
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	2000	\$24.95	\$15.75		
33600	DISEASE PREVENTION AND TREATMENT, EXPANDED FOURTH EDITION (hardcover)	2003	\$49.95	\$37.46		
33000	Price per book when 4 books purchased	2000	\$44.00	\$33.00		
33700	ENDING AGING • by Aubrey DeGrey with Michael Rae	2007	\$28.94	\$17.75		
33488	FEMALE AND FORGETFUL • by Elisa Lottor, PhD, ND, and Nancy P. Bruning	2007	\$18.99	\$17.73		
33696		2002	\$16.00			
	LIFE EXTENSION REVOLUTION • by Philip Lee Miller, MD (paperback)	1000		\$12.00		
33387	MAXIMIZE YOUR VITALITY & POTENCY • by Jonathan Wright, MD	1999	\$14.95	\$11.00		
33637	THE METABOLIC PLAN • by Stephen Cherniske, MS	0000	\$14.95	\$11.21		
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 Dzugan, MD, PhD	2006	\$24.00	\$15.60		
33026	MIND FOOD & SMART PILLS • by Ross Pelton, PhD	1989	\$13.95	\$11.95		
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 McGlothin and Meredith Averill	2001	\$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 L	JSD		
	(Add \$7 for C.O.D. • Add \$16.00 for UPS overnight • Add \$7.00 for UPS 2nd day air • Ir	ternational air mai	I costs will be a	dded.)		
	PRICES SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE NOTIFY THE LIFE EXTENSION FOUND				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/MASTERCA	ARD/AMEX/DISCOVER#	EXP. DATE	
SIGNATURE			
□ COD	UPS RED LABEL		UPS BLUE LABEL

IS IT LOW T?



PLEASE ANSWER YES OR NO	YES	NO
1. DO YOU HAVE A DECREASE IN LIBIDO (SEX DRIVE)?		
2. DO YOU HAVE A LACK OF ENERGY?		
3. DO YOU HAVE A DECREASE IN STRENGTH AND/OR ENDURANCE?		
4. HAVE YOU LOST HEIGHT?		
5. HAVE YOU NOTICED A DECREASED "ENJOYMENT OF LIFE?"		
6. ARE YOU SAD AND/OR GRUMPY?		
7. ARE YOUR ERECTIONS LESS STRONG?		
8. HAVE YOU NOTICED A RECENT DETERIORATION IN YOUR ABILITY TO PLAY SPORTS?		
9. ARE YOU FALLING ASLEEP AFTER DINNER?		
10. HAS THERE BEEN A RECENT DETERIORATION IN YOUR WORK PERFORMANCE?		

The above ADAM*questionnaire was developed by John E. Morley, M.B., B.Ch. It is to be used solely as a screening tool to assist a physician in diagnosing androgen (testosterone) deficiency. *Androgen Deficiency is the Aging Male. MAY HAVE SYMPTOMS ASSOCIATED WITH LOW TESTOSTERONE.

CALL AAG HEALTH 1.888.387.0999

TO DISCUSS TREATMENT OPTIONS

THE LEADING HORMONE REPLACEMENT SPECIALISTS IN THE NATION!



NOW OFFERING

STEM CELL AND PLATELET RICH PLASMA INJECTION THERAPY

OVER 20 LOCATIONS NATIONWIDE

The easiest fiber you can take.

TruFiber° replaces enzymes lost in cooking fruits and vegetables.





TruFiber® dissolves clear with no taste or grit.



TruFiber is a soluble fiber supplement designed to stimulate probiotic bacteria. Alone it can double the Bifidobacteria count in the colon. By adding four fiber-digesting enzymes (Fiberase®), your dietary fiber develops more prebiotic activity!

- One serving provides 14% of the daily value for fiber.
- TruFiber® dissolves fast and grit-free with NO taste.
- Studies show that taking the PHGG fiber in TruFiber® doubles probiotic Bifidobacteria in the colon.
- Clinical studies show PHGG fiber in TruFiber® (equivalent to 2 servings of TruFiber® daily for 2 weeks) helps maintain healthy bowel function.

Taking TruFiber® with the probiotic Theralac® is a powerful prebiotic + probiotic combination!



trufiber.net

TruFiber, 6.2 OZ Item# 01386 Retail price: \$29.95 MSRP Call for LEF Member Pricing Call *Life Extension*® now to order TruFiber® and feel the benefits for yourself.

800-544-4440



From the makers of **Theralac**® **theralac.com**



PROBIOTIC SUPPORT FOR EAR, NOSE, AND THROAT HEALTH*



Specifically Targets the Oral Cavity

Jarro-Dophilus® Oral Probiotic + Vitamin C contains oral probiotic organisms that are clinically-documented to maintain immune, throat, mouth, nose, and ear health.* It is available in easy-to-take lozenge and chewing gum forms, which provide 200 million organisms (per lozenge) or 100 million organisms (per gum) allowing maximum probiotic exposure in the oral cavity.

Jarro-Dophilus® Oral Probiotic Gum 8 pieces Pom-Berry Flavor Item # 01387 Retail price \$4.95 Life Extension member price \$3.71 Jarro-Dophilus® Oral Probiotic Lozenge 8 pieces Pom-Berry Flavor Item # 01388 Retail price \$4.95 Life Extension member price \$3.71

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

Jarrow FORMULAS

ARE YOU GETTING Curcumin's **BENEFITS?**

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 curcumi**noids** and **sesquiterpenoids** to attain peak concentrations.

Life Extension®'s Super Bio-**Curcumin**[®] derives from turmeric that is organic, 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 <u>twice</u> 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.

Unrivaled 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 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, the price is reduced to only \$26.25 per bottle. Contains rice.

LifeExtension

Item # 00407

References

- 1. Int J Pharmacol. 2009;5(6):333-45. 2. J Food Nutr Res. 2009;48(3):148-52.
- 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

How Much Curcumin Are You Absorbina?

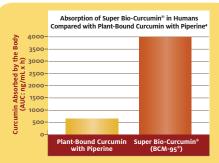


Chart 1. Super Bio-Curcumin® (BCM-95®) showed 6.3 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with plantbound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin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

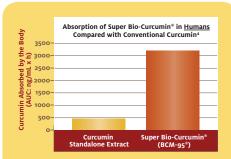


Chart 2. Super Bio-Curcumin® (BCM-95®) showed 6.9 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with conventional curcumin (as measured by the area under the curve [AUC] in a plot of blood levels against time. that is, the total amount of curcumin absorbed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

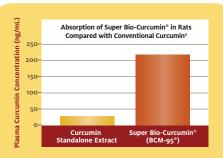


Chart 3. Bioavailability in rats fed with BCM-95® is 7.8 times higher than conventional curcumin.



WHAT'S INSIDE

Visit us at www.LifeExtension.com

LifeExtension° Magazine



7 AVOIDING EXCESSIVE VITAMIN D

New research has confirmed the disease preventing effects of **vitamin D**, but also showed that **excessive levels** may increase the risk of atrial fibrillation. Blood testing is strongly advised to achieve optimal levels of this protective nutrient.



38 COMMON SENSE PROTECTION AGAINST HEARING LOSS

Experts estimate that **30 million Americans** are exposed to dangerous levels of noise each day that can cause tinnitus and hearing loss. Fortunately, with common sense ear protection noise-induced problems can be prevented.



68 BLOOD TESTS THAT PREVENT HEART ATTACKS

Cardiologist Michael Ozner, MD, suggests blood testing as one of the most effective tools for preventing atherosclerosis, heart attack and stroke. In this excerpt from his new book, *Heart Attack Proof*, Dr. Ozner explains which blood tests provide key preventive information and how to avoid the risk of cardiovascular disease.



24 REVERSE FEMALE SEXUAL DYSFUNCTION

While men have pharmaceutical opportunities to restore sexual function, women have largely been left out. Scientists have discovered specific botanical-based extracts that modulate the mechanisms behind female sexual dysfunction and menopausal symptoms.



52 LONGEVITY NUTRIENT "COCKTAIL"

An international team of researchers has formulated a **30-nutrient** "cocktail" that inhibits *five* aging mechanisms. Studies using the "cocktail" have documented increases in longevity and marked protection against pathological aging processes.



80 NATURAL RELIEF FOR RESTLESS LEG SYNDROME

A natural extract of citrus rinds has been used as a prescription drug in Europe to treat varicose veins. It is now available in the US as a dietary supplement for the relief of chronic venous insufficiency and restless leg syndrome.