REMARKABLE CELL RENEWAL BENEFITS OF PQQ

Why Ceramides Protect More Than Just the Skin

Broad-Spectrum Defense with Novel Berry Extract

Take Control of Your Blood Sugar Level

Suzanne Somers “Sexy Forever”
The annual **SUPER SALE** enables members to obtain premium grade supplements at prices substantially below what commercial companies charge.

When members buy products from the **Life Extension Foundation Buyers Club**, they know that the quality of the products are backed by the organization’s commitment to achieving an indefinitely extended life span. What follows are a few examples of the savings members enjoy during the **SUPER SALE**.

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Retail</th>
<th>Member SUPER SALE Discount Price Per Bottle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super Omega-3 EPA/DHA with Sesame Lignans &amp; Olive Fruit Extract</td>
<td>$32</td>
<td>$16.81 (ten-bottle purchase)</td>
</tr>
<tr>
<td>Super-refined EPA/DHA fish oil plus sesame lignans and potent olive fruit extract to provide critical omega-3 fatty acids and essential components of the Mediterranean diet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PQQ Caps with BioPQQ™, 10 mg, 30 vegetarian capsules, Item # 01500</td>
<td>$24</td>
<td>$14.85 (four-bottle purchase)</td>
</tr>
<tr>
<td>Promotes mitochondrial biogenesis (generation of new mitochondria)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™, 100 mg, 60 softgels, Item # 01426</td>
<td>$62</td>
<td>$35.10 (ten-bottle purchase)</td>
</tr>
<tr>
<td>The superior ubiquinol form of CoQ10 plus an organic compound (shilajit) shown to double mitochondrial CoQ10 levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calorie Control Weight Management Formula*, 402 grams of powder, Item # 01493</td>
<td>$56</td>
<td>$29.70 (eight-bottle purchase)</td>
</tr>
<tr>
<td>Four potent ingredients to impede glucose-lipid absorption and combat age-associated weight gain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Super Bio-Curcumin®, 60 vegetarian capsules, Item # 00407</td>
<td>$35</td>
<td>$21.60 (four-bottle purchase)</td>
</tr>
<tr>
<td>Super-absorbable formulation promotes healthy lipid &amp; joint function, and healthy DNA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultra Natural Prostate Formula, 60 softgels, Item # 01495</td>
<td>$38</td>
<td>$21.60 (twelve-bottle purchase)</td>
</tr>
<tr>
<td>Most comprehensive formula to support normal urinary flow and help support healthy prostate function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G, 60 softgels, Item # 01586</td>
<td>$42</td>
<td>$25.65 (four-bottle purchase)</td>
</tr>
<tr>
<td>Supports night vision and macular density</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Extension Mix™, 315 tablets, Item # 01555</td>
<td>$98</td>
<td>$46.91 (ten-bottle purchase)</td>
</tr>
<tr>
<td>High-potency multi-nutrient formula now with C3G, natural folate, and Crominex® 3+ at no extra cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Super Booster Softgels with Advanced K2 Complex</td>
<td>$42</td>
<td>$25.65 (four-bottle purchase)</td>
</tr>
<tr>
<td>60 softgels, Item # 01380</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A convenient one-per-day capsule that includes optimal potencies of gamma-tocopherol, sesame lignans, lycopene, lutein, ginkgo, selenium, and both forms of vitamin K2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

The **SUPER SALE** extends to January 31, 2011. Members traditionally take advantage of the **SUPER SALE** to stock up on a year’s supply of their favorite supplements. To place your order, **call 1-800-544-4440** or visit [www.lef.org](http://www.lef.org) (**SUPER SALE** pricing available only to members in the US, Canada, and England.)
17 IN THE NEWS
Cinnamon extracts lower diabetes and cardiac risk factors; curcumin prevents liver damage; and more.

26 REMARKABLE ANTI-AGING POWER OF CERAMIDES
Molecules called ceramides are essential to preserving young-looking skin. It’s the reason why cosmetic companies invest millions to perfect topical ceramide formulas. New research reveals the power of oral ceramides to combat a range of age-related diseases. Find out how they can improve your cholesterol levels, enhance glucose control—even combat colon cancer.

40 BROAD-SPECTRUM DEFENSE OF BERRY EXTRACT
Experimental models show that bolstering free radical defense nearly doubles life span in some species. Compounds found in dark-colored berries rank among the most powerful of free radical fighters in humans. Scientific interest has increasingly focused on C3G (cyanidin-3-glucoside), a berry extract that can enhance night vision and fight cancer, heart disease, and metabolic disorders.

52 GENERATE FRESH MITOCHONDRIA WITH THE “OTHER” CoQ10
Researchers have found 50% more mitochondrial damage in the brain cells of humans over 70 compared to middle-aged individuals. The exciting news is that the coenzyme PQQ may combat this and other debilitating effects of age-related mitochondrial decline through mitochondrial biogenesis: the spontaneous growth of new mitochondria.

66 TAKE CONTROL OF YOUR BLOOD SUGAR LEVELS
Scientists have known for more than 50 years that chromium insufficiency directly contributes to high blood sugar. Life Extension® members now know that even slightly elevated glucose inflicts lethal, systemic damage. The good news is a cutting-edge chromium complex has been identified that works in synergy with a set of proprietary nutrients to slash your blood sugar levels.

78 BOOK EXCERPT: SUZANNE SOMERS’S SEXY FOREVER
Life Extension® has published solid scientific data showing that age-related diseases can be postponed or prevented altogether. Celebrity Life Extension® member Suzanne Somers’s new book, Sexy Forever, examines seven key nutrients everyone should take to safely induce long-term weight loss.

7 ON THE COVER
URGENT NEED TO RENEW MITOCHONDRIA
Over 350 studies published last year alone underscore what Life Extension® has emphasized for nearly four decades: age-related mitochondrial dysfunction plays a central role in virtually all killer diseases of aging. Specific nutrients Life Extension® members take, like CoQ10, lipoic acid, and carnitine, promote the health and function of existing mitochondria. Just as critical is the need for every aging person to generate more mitochondria in order to protect against degenerative decline. In a historic scientific breakthrough, a natural coenzyme called PQQ (pyrroloquinoline quinone) has been shown to trigger the formation of new mitochondria in aging cells!
Life Extension

Volume Seventeen / Number Two  February 2011

PUBLISHER • LE Publications, Inc.

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CONTRIBUTORS
Alonzo Brody • Rona Cherry • D. Dye • Robert Haas, MS
Perry Marcone • Kirk Stokkel

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

DIRECTOR OF BUSINESS DEVELOPMENT
Ron Antrasian • rantrasian@lifeextension.com • 781-271-0089

CIRCULATION & DISTRIBUTION
Life Extension • 1100 West Commercial Blvd., Ft. Lauderdale, FL 33309
Editorial offices: 954-766-8433 • fax: 954-491-5306
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EDITORIAL

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Super Omega-3 EPA/DHA

Fish Oil Blend with Sesame Lignans and a MORE Concentrated Olive Fruit Extract

A Comprehensive Fatty Acid Formula

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, easy-to-tolerate fish oil supplement, Life Extension® SUPER OMEGA-3 EPA/DHA is molecularly distilled. This patented process 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 rating 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 towards 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 when combined with olive oil, fish oil supplements 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 during Super Sale, the price is reduced to just $18.90 per bottle. If 10 bottles are purchased, the cost is just $16.81 per bottle. Item #01482

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

For those with sensitive stomachs, Super Omega-3 is also available with enteric coating and retails for $34. If a member buys four bottles during Super Sale, the price is reduced to $20.93 per bottle. If 10 bottles are purchased, the cost is just $18.90 per bottle. Item #01484

To order the most advanced fish oil supplement, Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract (with or without enteric coating), call 1-800-544-4440 or visit www.LifeExtension.com

CAUTION: If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product. Contains fish (anchovy, mackerel), soybeans, and sesame.

References:
13. Lipids. 2007 Sep;42(9):789-94.

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

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

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 for his new advanced testosterone replacement therapy protocols that have changed the way physicians all over the world treat their patients.

William Davis, MD, is medical director of Milwaukee Heart Scan and developer of the web-based initiative Track Your Plaque, the only heart disease prevention program that uses the new CT heart scans to detect, track, and control coronary plaque.

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.

Sergey A. Dzuzgan, MD, PhD, was formerly chief of cardiovascular surgery at the Donets Regional Medical Center in Donetsk, Ukraine. Dr. Dzuzgan’s current primary interests are anti-aging and biological therapy for cancer, cholesterol, and hormonal disorders.

Patrick M. Fratellone, MD, is the founder and executive medical director of Fratellone Associates. He completed his Internal Medicine and Cardiology Fellowship at Lenox Hill Hospital in New York in 1994, before becoming the Medical Director for the Atkins Center for Complementary Medicine. He completed his Integrative Medicine Fellowship at the University of Arizona in 2005 under the directorship of Andrew Weil, MD. He is also an author and radio host.

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. He is a three-time chairman of the Executive Committee of the PanAmerican Health Organization in Washington, DC.

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. He is the author of The Ghen and Rains Guide to Compounding Pharmaceuticals and The Advanced Guide to Longevity Medicine.

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. He specializes in natural approaches to aging and rejuvenation of the skin.

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. His interests include the prevention of cardiovascular and metabolic diseases and the relationship between nutrition, inflammation, oxidative stress, aging, and degenerative diseases.

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.

Philip Lee Miller, MD, is founder and medical director of the Los Gatos Longevity Institute in Los Gatos, CA. His practice is dedicated to anti-aging medicine, focusing on bioidentical natural hormone replacement, nutritional medicine, complex lipid disorders, and stress management. He is a diplomate of the American Board on Anti-Aging Medicine.

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. Dr. Morrow is an accomplished clinician, medical researcher, author, and lecturer.

Herbert Pardell, DO, FAAIM, practices internal medicine at the Merced Hills Medical Center in Hollywood, FL, and specializes in anti-aging, chelation, hormone replacement, and complementary medicine. He is a medical director of the Life Extension Foundation.

Lambert Titus K. Parker, MD, practices internal medicine at the Integrative Longevity Institute of Virginia in Virginia Beach, VA.

Ross Pelton, RPh, PhD, CCN, is director of nutrition and anti-aging research for Intramedicine, Inc. He has authored six books and teaches continuing education courses for health professionals on a wide variety of health topics.

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. He has written 15 books on health, including Beating Cancer with Nutrition.

Allan Rashford, MD graduated the University of Iowa Medical School and did his internship, residency and fellowship in pulmonary medicine in New York City. Upon completing medical training, he became Chief of Medicine at St. Francis Hospital in South Carolina, and 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, is a board-certified ophthalmologist with the Rose Eye Medical Group in Los Angeles, CA. Dr. Rose is an internationally recognized clinician, researcher, lecturer, and educator in preventive and anti-aging medicine.

Ron 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/Aesthetic Medicine Initiative for HFHS.

Ronald L. Shuler, BS, DDS, CCN, LN, is involved in research on anti-aging, chelation therapy, and natural hormone replacement therapy.

Herbert R. Slavin, MD, medical director of the Institute of Advanced Medicine in Laurdeneri, 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 specializing in the treatment of prostate cancer. 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, and a board member of the Vitamin C Foundation and the American Preventive Medical Association, among many other groups.
Richard Kratz, MD, DSci, is clinical professor of ophthalmology at the University of California, Irvine, and the University of Southern California (Los Angeles). Dr. Kratz pioneered the cataract-removal technique called phacoemulsification and developed intracocular lenses to replace the crystalline lens. He is currently involved in projects relating to glaucoma, cataract extraction, and facilitating eyesight for the totally blind.

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

Ralph W. Moss, PhD, is the author of books such as Antioxidants Against Cancer, Cancer Therapy, Questing for 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.

Orn 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 neurological 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 anti-cancer 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 (2008) and Younger Thinner You (2009) and of 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 since 10 years. He has a private practice in Bad Reichenhall, Germany and is prostate cancer consultant at the Urologische Klinik Castrignius, Planeegg, Munich. In his integrative approach to prostate cancer he is working together with an international network of experts to improve treatment outcome for prostate cancer patients with 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 ground-breaking hypothermia, cryotherapy, 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).
World’s Most Advanced RESVERATROL Formula

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

Since then, we have gone to extraordinary lengths to identify 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.

For example, initial research funded by Life Extension showed that a combination of low-dose resveratrol plus grape seed extract induced many of the favorable gene expression changes observed in calorie-restricted animals.

We have since uncovered compelling evidence that certain compounds found in berries, such as pterostilbene and fisetin, also 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, 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 during Super Sale, the price is reduced to just $27.90 per bottle. The suggested dose of one capsule a day provides:

References

To order Optimized Resveratrol, call 1-800-544-4440 or visit www.LifeExtension.com

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

BY WILLIAM FALOON

If you enter “mitochondria and aging” into the US Library of Medicine website, you’ll find over 351 scientific studies published in 2010.

The consensus among researchers is that mitochondrial dysfunction plays a central role in the development of virtually all age-related diseases.1

Go back nearly four decades, however, and very little about mitochondria appeared in medical journals. When Life Extension® first introduced methods to enhance mitochondrial function, few physicians understood our rationale.

Today’s scientific data make it loud and clear that every aging person should take personal responsibility to ensure optimal mitochondrial function and structure. The good news is that nutrients used by Life Extension members to enhance mitochondrial performance have more scientific substantiation than ever.

While compounds like coenzyme Q10,2-6 carnitine,7-9 and lipoic acid10-14 support mitochondrial function, it is critical that new mitochondria are generated if we are to protect against age-related decline.

Mitochondrial biogenesis is the process of creating new mitochondria within cells. Our mitochondria can be regenerated in response to intense aerobic exercise,15 calorie restriction,16 and taking certain medications like metformin.17

In 2010, researchers at the University of California at Davis released a peer-reviewed publication showing that a natural compound called PQQ (pyrroloquinoline quinone) promotes the formation of new mitochondria within cells.18

For the first time, humans are empowered with a natural agent to reverse the deadly decline in functional mitochondria that underlies degenerative disease and premature aging.
Healthy Mitochondria Essential for the Brain

About 95% of cellular energy is produced from structures in the cell called mitochondria. Unlike other cell components, mitochondria are able to divide within healthy cells.

Mitochondria are required for cellular energy production. Impaired mitochondrial metabolism is now recognized as an underlying factor of many diseases.

The initial interest in taking nutrients like L-carnitine and CoQ10 was to boost mitochondrial function in heart muscle cells. Overlooked was the large amount of energy required by neurons (brain cells) to carry out their specialized functions.

Studies published in 2010 (and earlier) corroborate the role of abnormal mitochondria dynamics with neuronal cell death and the onset of Alzheimer’s, Parkinson’s, Huntington’s and other neurodegenerative disorders.

If you live to 80 years, there is a 30% chance you will develop Alzheimer’s dementia. Scientists have identified specific pathologic mechanisms that reveal the role of mitochondrial dysfunction in the initiation and progression of this hideous disease. These findings resulted in the authors of a 2010 report concluding:

“We suggest that mitochondrial protection and subsequent reduction of oxidative stress are important targets for prevention and long-term treatment of early stages of Alzheimer’s disease.”

Mitochondria Dysfunction and Heart Failure

Damage to the mitochondria of endothelial cells is an underlying cause of atherosclerosis. Traditional risk factors for arterial disease such as smoking, obesity, high blood sugar, high cholesterol and high triglycerides are all linked to mitochondrial injury.

When a person suffers persistent coronary artery blockage, a severe weakening of cardiac muscle can occur that results in congestive heart failure.

A study published in 2010 looked at left ventricular heart muscle tissue in patients with end-stage heart failure and normal hearts. Compared to normal hearts, mitochondrial DNA was decreased by 40% in failing hearts. This was accompanied by reductions of 25-80% in mitochondrial DNA-encoded proteins of failing hearts. The doctors who conducted this study concluded:

“Mitochondrial biogenesis is severely impaired as evidenced by reduced mitochondrial DNA replication and depletion of mitochondrial DNA in the human failing heart...suggesting novel mechanisms for mitochondrial dysfunction in heart failure.”

Nutrients that enhance mitochondrial function (like coenzyme Q10 and L-carnitine) improve clinical and symptomatic indicators of congestive heart failure.

The ability of PQQ to promote mitochondrial biogenesis (formation of healthy new mitochondria) could lead to even greater improvements in cardiac output.

Dysfunctional Mitochondria Contribute to Human Cancers

In humans, it takes more than 20 years from exposure to a carcinogen before a solid tumor develops. Research published in 2010 explains the many intimate ways that dysfunctional mitochondria contribute to the development of cancer and its metastasis.
Cancer is fundamentally connected to mitochondrial dysfunction. A decline in mitochondrial energy production with aging is associated with the generation of increased free radicals, which cause mitochondrial mutations.56 These mutations interfere with a normal cell-removal process known as apoptosis.57

A critical factor in protecting against cancer is the ability to eliminate damaged cells through apoptosis. Researchers are focusing on the huge energy-dependent processes required to eradicate faulty or abnormally growing cells. It turns out that dysfunctional mitochondria deny cells the ability to go through normal apoptotic removal processes, thus sowing the seeds for cancer initiation and progression.

In addition, mitochondria are the source for several apoptotic proteins58 that activate cell death in the quest to eliminate damaged cells.59,60

Mitochondrial dysfunction that occurs with aging plays a major influence on carcinogenesis.61 One recent study shows that mitochondrial dysfunction predicts progression of prostate cancer in patients treated with surgery.48

Exciting research findings indicate the potential of reversing mitochondrial senescence in non-tumor cells using mitochondrial-targeted antioxidants.62-69 The benefit is that restored healthy cells are less susceptible to tumor initiation, while cancer cells that have evolved are better controlled by tumor suppressor genes activated by functional mitochondrial cell-signaling.70-72

Mitochondria Insufficiency Promotes Type 2 Diabetes

Type 2 diabetes is often caused by overeating, but some people lose the ability to control glucose because of hereditary factors or physical inactivity.

A study looked at young, lean, sedentary children with insulin resistance whose parents had developed type 2 diabetes. Compared to similar children of non-diabetic parents, muscle biopsies showed that mitochondrial density was reduced by 38% in the offspring of diabetic parents.73

This study also showed that these insulin-resistant children exhibited increased amounts of fat content in their muscles, which also contributes to insulin resistance. These findings support the concept that hereditary mitochondrial dysfunction contributes to the development of insulin resistance and subsequent type 2 diabetes.

The encouraging aspect to this study is that those genetically predisposed to type 2 diabetes may be able to avert this calamity through either rigorous physical exercise and/or supplementation with PQQ, both of which have been shown to promote mitochondrial biogenesis.15,16 (Note that certain anti-diabetic drugs like metformin and thiazolidinediones also induce mitochondrial biogenesis through additional mechanisms.)17,74,76

Stem Cells Require Healthy Mitochondria

Our bodies possess remarkable ability for sustained tissue renewal throughout our lifetimes. This continuous self-renewal process is dependent on reservoirs of somatic stem cells.

A report published in 2010 describes how intact mitochondrial function is crucial for maintenance of stem cells. In response to mitochondrial impairment, there is an increase in damaging free radicals accompanied by stem cell compromise.77

Researchers have discovered that stem cell populations do not necessarily decline with advancing age, but instead lose their restorative potential.78 This functional stem cell decline is accompanied by organ malfunction and increased incidence of disease.

Mitochondrial dysfunction thus underlies a degenerative cycle that
robs aging humans of the renewal benefits of their own stem cells.

The integration of mitochondria into the core “axis of aging” has led researchers to propose that improvements in mitochondrial health (along with other cellular modulations) could yield advanced therapeutic strategies designed to rejuvenate tissues of the aged.

How Mitochondrial Structure Deteriotaes

Altered (glycated) proteins can bind to mitochondria and compromise their function. The accumulation of dysfunctional mitochondria results in a vicious cycle whereby increased oxidative and glycation reactions disable more mitochondria, eventually leading to a cell’s demise. The mitochondria in cells of elderly people are mostly dysfunctional, whereas young individuals have virtually no mitochondrial damage.

A fascinating report published in 2010 describes the lethal cascade that occurs as inactive mitochondria accumulate in cells and how carnosine, acetyl-L-carnitine, and resveratrol can protect against these longevity-shortening molecular interplays.

The Mitochondria and Human Health Span

The aging of the American society is upon us with an accelerated impact on healthcare expenditures. Conventional medicine can affix band-aids to age-related disease, but fails to correct the major underlying cause of mitochondrial dysfunction and the severe shortage of healthy mitochondria within the cell.

A search of scientific articles using the terms “mitochondria and aging” going back to the year 1980 reveals the exponential increase in our understanding of the role this cell organelle plays in sustaining healthy life span.

The box below shows how many published papers discuss “mitochondria and aging” in the early 1980s compared to the last two years:

<table>
<thead>
<tr>
<th>Year</th>
<th>Papers</th>
</tr>
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<tbody>
<tr>
<td>1980</td>
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</tr>
<tr>
<td>1980</td>
<td>438</td>
</tr>
<tr>
<td>2010</td>
<td>351</td>
</tr>
</tbody>
</table>

This is when coenzyme Q10 was introduced to Americans.

Life Extension members should be comforted in knowing that their use of nutrients to maintain mitochondrial integrity is being increasingly vindicated in the peer-reviewed scientific literature.

Mitochondrial biogenesis

is a term used to describe the beneficial creation of new mitochondria. With the discovery of the unique properties by which PQQ promotes mitochondrial biogenesis, a missing link to the puzzle of degenerative aging has been uncovered. PQQ is available without the requirement of a prescription.

Life Extension Has No “Exit” Strategy

I hope you appreciate that as we move into our fourth decade, Life Extension has not changed its scientific mission or total service commitment to members.

The founders remain as dedicated today as they were in the 1970s to discovering validated scientific methods to forestall and reverse biological aging. While we use the year 1980 as our official starting date, the Life Extension Foundation received its tax-exempt status in 1978, and I set up the first Life Extension laboratory in 1977.

Contrast this to companies that buy and sell themselves over and over, with new owners seeking to extract every nickel of profit at the expense of product quality and customer service.

When you phone Life Extension, you never get a recording unless all of our representatives are busy assisting other members. We promise to not greet you with an automated menu that forces you to listen to endless taped messages and push many buttons before getting to talk to a live person.
We are sometimes approached by Wall Street investors who ask, “What is your exit strategy?” What they mean is when do you plan to “cash out” (by selling the organization to profit-hungry investors) and retire. My response is always the same: “When we achieve biological immortality, I may consider taking some time off.”

I can assure you there will never be an “exit” from our quest to achieve indefinite longevity.

Advanced Nutrient Formulas at Year’s Lowest Prices

Life Extension members take advantage of the annual Super Sale to acquire our most up-to-date nutrient formulations at extra discounted prices.

Virtually every year, we upgrade our formulas to provide even more effective health-sustaining nutrients.

Last year we introduced a ubiquinol CoQ10 product that provides significantly higher CoQ10 levels within the cell’s mitochondria. This year we introduce PQQ to promote the formation of new mitochondria. PQQ is available as a standalone product, or as a component of two novel mitochondrial support formulations.

In this month’s issue, you’ll learn about effective methods to maintain, protect, and improve vital mitochondrial function. The good news is that most of you have been taking proven mitochondrial-protecting nutrients for many years or decades. Members now have access to a compound (PQQ) that has been shown to induce formation of new mitochondria.

Every time you purchase a Life Extension product, you contribute to research aimed at extending healthy human life span. The Life Extension Foundation continues to fund a record number of scientific projects, while battling incompetent bureaucrats who seek to suffocate medical innovation.

During the traditional winter Super Sale, all Life Extension formulas are discounted so that members can obtain up-to-date versions at the lowest prices of the year. Until January 31, 2011, members take advantage of Super Sale discounts to stock up on the world’s most cutting-edge life-extending formulas.

For longer life,

William Faloon

References


The reason for many circulatory problems is the breakdown of endothelial function and structure.

Today, there are nutrients that have been clinically shown to help maintain healthy endothelial function and arterial circulation. **Endothelial Defense™ with GliSODin®** provides potent nutrients to support endothelial health: standardized pomegranate and an orally active form of superoxide dismutase.

While both of these components have been clinically shown to help with blood flow and age-related changes in endothelial function, Life Extension® has made the best endothelial product on the market even more powerful by adding **Full-Spectrum Pomegranate.**

**Next-Generation Pomegranate Power**

The unique blend of **pomegranate flower extract** and **seed oil** in **Endothelial Defense** contains potent polyphenols that provide support for youthful **lipid** and **glucose** metabolism, natural **immunity**, and help with **inflammatory factors.**

A bottle containing 60 softgels of **Endothelial Defense™ with Full-Spectrum Pomegranate™** retails for $56. If a member buys four bottles during **Super Sale**, the price is reduced to just $35.10 per bottle.

**The daily serving of 2 softgels of Endothelial Defense™ contains:**

- **Superoxide Dismutase/Gliadin Complex** (GliSODin®) [SOD (Superoxide Dismutase) Enzyme Activity = 500 IU]  500 mg
- **POMELLA® Pomegranate** ([Punica granatum] Extract (fruit) [std. to 30% punicalagins (120 mg)])  400 mg
- **Pomegranate** ([Punica granatum] 5:1 Extract (fruit))  100 mg
- **PomComplete™ Pomegranate** ([Punica granatum] Blend [flower extract and seed oil (standardized to 22% (30 mg) punicic acid)])  137.5 mg

**References**


Contains soybeans and wheat. Contains gluten.

**To Order Endothelial Defense™ with Full-Spectrum Pomegranate™,**
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)
Feeble bones severely hamper quality of life and put aging humans at risk for injury due to possible breaks or fractures. While most Life Extension® members take certain supplements to address this issue, we have combined critical bone boosting nutrients into one superior calcium formula called Bone Restore.

Bone Restore contains a broad spectrum of nourishment to support bone health. The formula includes highly absorbable forms of bone fortifying calcium, and a potent, bioavailable form of boron, along with vitamin D3, magnesium, zinc, manganese, and silicon.

Bone Restore comes in fast-release capsules, making the minerals and other nutrients immediately available for absorption.

The retail price for 150 capsules of Bone Restore is $22.50. If a member buys four bottles during Super Sale, the price is reduced to just $13.16 per bottle.

To order Bone Restore, call 1-800-544-4440 or visit www.LifeExtension.com

Just five capsules of Bone Restore provide:

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly-Absorbable Calcium</td>
<td>1,200 mg</td>
</tr>
<tr>
<td>(from dicalcium malate, bis-glycinate, and fructoborate)</td>
<td></td>
</tr>
<tr>
<td>Vitamin D3</td>
<td>1,000 IU</td>
</tr>
<tr>
<td>Magnesium</td>
<td>340 mg</td>
</tr>
<tr>
<td>Boron</td>
<td>3 mg</td>
</tr>
<tr>
<td>(calcium fructoborate as patented FruiteX B® OsteoBoron®)</td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>2 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>1 mg</td>
</tr>
<tr>
<td>Silicon</td>
<td>5 mg</td>
</tr>
</tbody>
</table>

Contains corn.

FruiteX B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc., U.S. Patent No. 5,962,049.

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.
Mitochondrial Basics with BioPQQ™

Energy to burn. It’s more than just a phrase. It’s the key to a healthy life span.

Behind every process your body needs to survive and thrive are the cellular energy generators known as mitochondria. Their function is so crucial that a growing number of scientists now believe mitochondrial longevity may determine overall longevity in aging humans.³ That’s why Life Extension® has remained at the forefront in identifying innovative compounds that specifically support mitochondrial health.

In addition to the more comprehensive Mitochondrial Energy Optimizer with BioPQQ™ and standalone PQP products, we now offer a one capsule per day formula for individuals seeking a simplified, low-cost option called Mitochondrial Basics with BioPQQ™.

The reason? We want all members to have access to targeted nutrients required to support mitochondrial function and the generation of healthy new mitochondria.

Three Premium Compounds in One Low-Cost Formula

The new Mitochondrial Basics brings together cutting-edge mitochondrial energizers, including the most exciting nutrient to emerge in recent years called pyroloquinoline quinone or PQP. The three ingredients in value-priced Mitochondrial Basics are:

1. PQP. This breakthrough micronutrient has recently been shown to trigger mitochondrial biogenesis—the growth of new mitochondria in aging cells! PQP also activates genes involved in protecting the delicate structures within the mitochondria.⁷⁻¹⁰

2. R-lipoic acid. The detrimental effects of free radicals comprise one of the chief obstacles to optimal mitochondrial energy production. Published studies confirm R-lipoic acid’s power to promote mitochondrial bioenergetics while simultaneously blunting free radical activity.¹¹⁻¹⁴ Mitochondrial Basics contains the superior Bio-Enhanced® R-lipoic acid and is in a proprietary microencapsulated form for better absorption.

3. Acetyl-L-carnitine arginate. Fats are shuttled into the mitochondria for metabolic combustion by the amino acid carnitine. The acetylated form of carnitine helps to facilitate more efficient utilization of fats than carnitine alone.

Life Extension® members continue to enjoy access to a full range of targeted supplements clinically shown to optimize energy production in the mitochondria. Just one capsule a day of Mitochondrial Basics supplies:

A bottle containing 30 capsules of Mitochondrial Basics with BioPQQ™ retails for $52. If a member buys four bottles during Super Sale, the price is reduced to just $31.05 per bottle.

PQQ can also be obtained as a low-cost standalone or in the Mitochondrial Energy Optimizer formula, both that will be described later in this issue.

To order new Mitochondrial Basics with BioPQQ™
call 1-800-544-4440 or visit www.LifeExtension.com

BioPQQ™ is a trademark of MGC (Japan). Bio-Enhanced® is a registered trademark of Gerovive Research, Inc. ArginoCarn® is a registered trademark of Sigma-tau Health Sciences, Inc. and is protected by US patents 6,365,622, US 6,703,042, and EP 1202956.

References
8. Entrez Gene: PARG1A peroxisome proliferator-activated receptor gamma, coactivator 1 alpha [ Homo sapiens ]

Contains soybeans and rice.

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

Magnesium Protects Women Against Sudden Cardiac Death

Greater dietary intake of magnesium and higher plasma magnesium levels are associated with a reduced risk of sudden cardiac death in women, according to a study published in the American Journal of Clinical Nutrition.* Long known for its anti-arrhythmic properties in cellular and experimental models, magnesium’s relation to sudden cardiac death has been unclear.

Scientists examined dietary intake data collected from more than 88,000 women enrolled in the Nurses’ Health Study. During 26 years of follow-up, 505 cases of sudden cardiac death occurred. In a case-control analysis, the scientists compared plasma magnesium levels between 99 sudden cardiac death cases and 291 control patients.

Higher dietary intake of magnesium and higher plasma magnesium levels were associated with lower risks of sudden cardiac death.

These findings suggest that increasing magnesium intake and plasma levels may protect women against sudden cardiac death by preventing abnormal heart rhythms.

—E. Wagner, ND


Higher Vitamin D Levels Associated with Lower Risk of Bladder Cancer

An article published in the journal Cancer Research reveals an association between higher levels of serum vitamin D and a lower risk of bladder cancer in men.*

The study involved 500 participants in the Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study of Finnish male smokers conducted to determine the effects of alpha-tocopherol and beta-carotene supplementation on cancer risk.

The researchers compared 250 subjects who were diagnosed with bladder cancer through April 2005 with an equal number of participants who did not have the disease. Men whose vitamin D level was less than 25 nanomoles per liter experienced a 73% greater adjusted risk of the disease than those whose levels were at least 50 nanomoles per liter.

“These findings are consistent with previous cell culture, in vivo, and genetic evidence suggesting that greater exposure to vitamin D could have a role in protecting against bladder cancer,” Alison M. Mondul and coauthors write.

Editor’s note: The finding adds another cancer to the list of those for which vitamin D appears to have a protective benefit.

—D. Dye

IN THE NEWS

Kidney-Cooling Device Could Save Lives

A recent article in the San Antonio Business Journal describes a device being developed by a team of researchers in San Antonio that utilizes cutting-edge technology to cool the kidney to aid in surgery. The device is being developed by South Texas Technology Management, which is in charge of taking the medical inventions developed at the University of Texas Health and Science Center at San Antonio and commercializing them.

Between 20,000 and 30,000 partial nephrectomy (kidney) surgeries are performed a year in the United States. A typical nephrectomy with a cancerous growth involves clamping off blood flow to the organ, which gives surgeons roughly 15 minutes to perform the operation before kidney failure is likely. Because of this enormous time constraint, many doctors will choose to simply remove the kidney instead.

The new device may double the amount of time a surgeon has to work with. The device cools the kidney by laproscopically inserting tubes that wrap around the kidney and pump cold fluid to lower the temperature of the organ.

“We think this device will encourage more doctors to offer this type of surgery rather than removing the entire kidney,” Dr. Dipen Parekh, a surgeon and associate professor of urology at the Health Science Center, says.

—J. Finkel


Olive Oil Protects Liver from Oxidative Stress

Researchers writing in BioMed Central’s open access journal Nutrition and Metabolism discovered that when rats were exposed to a moderately toxic herbicide, ingestion of olive oil partially protected them against liver damage.* The herbicide is known to deplete antioxidants and cause oxidative stress.

The experiments were carried out on a group of 80 rats by Mohamed Hammami and his teams from the University of Monastir, Tunisia, and King Saud University, Riyadh, Saudi Arabia. The researchers divided the rats into a control group, an olive oil group, and 6 groups that were exposed to the herbicide ‘2,4-Dichlorophenoxyacetic acid’ with or without either whole olive oil, or one of two oil extracts—the hydrophilic fraction or the lipophilic fraction.

The results were interesting. Every rat given the herbicide showed signs of significant liver damage, but the rats that ingested extra virgin olive oil and hydrophilic fraction showed a significant increase in antioxidant enzyme activity and a decrease in markers of liver damage. —J. Finkel


Leukemia Patients with Insufficient Vitamin D Levels Face Earlier Mortality Risk

A report published in the journal Blood reveals an increased risk of rapid disease progression and earlier mortality in chronic lymphocytic leukemia (CLL) patients who had insufficient vitamin D levels.*

Tait Shanafelt, MD, and his colleagues evaluated the blood of 390 newly diagnosed chronic lymphocytic leukemia patients for plasma 25-hydroxyvitamin D. After a median follow-up of three years, an association was observed between decreasing vitamin D levels and shorter intervals between diagnosis and cancer progression, as well as reduced survival. Participants whose vitamin D levels were insufficient had a 66% greater risk of disease progression necessitating chemotherapy and more than double the risk of dying than those with sufficient levels.

“Vitamin D insufficiency is associated with inferior time to treatment and overall survival in CLL patients,” the authors conclude. “Whether normalizing vitamin D levels in deficient CLL patients would improve outcome merits clinical testing.”

Editor’s note: “It is simple for patients to have their vitamin D levels checked by their physicians with a blood test,” Dr. Shanafelt remarked. “And if they are deficient, vitamin D supplements are widely available and have minimal side effects.” —D. Dye

Greater Flavonoid Intake Linked with Lower Cancer Risk

In a study reported in a recent issue of Nutrition and Cancer, researchers in Milan uncovered an association between a lower risk of several types of cancer and an increased intake of flavonoids and proanthocyanidins. Carlo La Vecchia of the Università degli Studi di Milano and colleagues evaluated data in a network of case-control studies conducted at multiple Italian centers since the early 1990s. The studies included a total of 9,622 cases of cancer and 16,050 controls. The participants’ diets were analyzed for 6 classes of flavonoids, including isoflavones, anthocyanidins, flavanols, flavanones, flavones and flavonols, and 6 classes of proanthocyanidins.

“The findings from this large network of Italian case-control studies have provided support for an apparent protective role of flavanones on upper aerodigestive tract cancers; flavonols, anthocyanidins, and proanthocyanidins on colorectal cancer; flavonols and flavones on breast cancer; isoflavones on ovarian cancer; and flavonols on renal cancer,” the authors conclude.

Editor’s note: These polyphenolic compounds are found in fruit, vegetables, and plant-sourced beverages, and may be responsible for the protective effects observed for plant foods against a number of chronic diseases.

—D. Dye


Cardiac Fat Oxidation Aided by Olive Oil Compounds

A team of researchers from Sao Paulo State University, Brazil, recently published a study in Nutrition Journal that tested the effectiveness of olive oil and its minor constituents as important dietary therapeutic interventions in preventive medicine in regards to obesity-induced cardiac metabolic changes.

The study involved two groups of rats receiving hypercaloric-chow. Halfway through the study, each group was divided into subgroups, with one group receiving standard food and saline, another group receiving standard food and olive oil, a third group receiving standard food and oleuropein, a fourth group receiving standard food and cafeic acid, and several more groups involving rats receiving some combination of hypercaloric food, olive oil, oleuropein, and cafeic acid.

The results were conclusive, as the study demonstrated for the first time that olive-oil, oleuropein, and cafeic-acid enhanced fat-oxidation and optimized cardiac energy metabolism in obesity conditions. Olive oil and its phenolic compounds improved myocardial oxidative stress in standard-fed conditions.

—J. Finkel


Curcumin Could Prevent Liver Damage

A new study performed at Saint Louis University suggests that curcumin may have some promise in preventing or treating liver damage from an advanced form of a condition known as fatty liver disease. Curcumin is contained in the plant turmeric, which has been used by the Chinese for thousands of years and is the chemical that gives curry its spicy nature.

“The findings from this large network of Italian case-control studies have provided support for an apparent protective role of flavanones on upper aerodigestive tract cancers; flavonols, anthocyanidins, and proanthocyanidins on colorectal cancer; flavonols and flavones on breast cancer; isoflavones on ovarian cancer; and flavonols on renal cancer,” the authors conclude.

While research in an animal model and human clinical trials are needed, our study suggests that curcumin may be an effective therapy to treat and prevent liver fibrosis, which is associated with NASH,” said Anping Chen, PhD, director of research in the pathology department of Saint Louis University.

Fish Oils May Help Fight Diabetes

A recent study published in the *Journal of Nutritional Biochemistry* points to the use of fish oils as a weapon in the fight against diabetes.* Specifically, fish oils activate the transcription factor PPAR-gamma, which increases the regulation of adipocytes and helps to maintain glucose homeostasis.

The mice in the study that were fed the diabetes drug rosiglitazone, brand name Avandia®, had a significantly lower feed intake but showed no major effect on body weight or fat pad weight. The mice fed fish oil did not significantly decrease feed intake, but they did show significantly decreased body and fat pad weight.

These results suggest that there was increased glucose utilization and, therefore, a reduced blood glucose concentration in the transgenic mice. Also, the plasma adiponectin was elevated by fish oil treatment, suggesting a role of adiponectin in mediating the polyunsaturated fatty acids (PUFA) effect. These results suggest that PUFA may serve as a natural regulator of glucose uptake in vivo and these effects are mainly through PPAR-gamma function.

—J. Finkel


Cinnamon Extracts Could Help Reduce Diabetes and Heart Disease Risk Factors

According to new studies led by US Department of Agriculture (USDA) chemist Richard Anderson, a water-soluble extract of cinnamon could help reduce risk factors long associated with diabetes and heart disease.* Cinnamon extract has antioxidant compounds, which may be what is responsible for this data.

The study involved twenty-two obese participants with impaired glucose values, or “prediabetes.” Prediabetes occurs when cells show resistance to the higher-than-normal levels of insulin produced by the pancreas. The members of the study were divided into two random groups and either given a placebo or 250 milligrams of dried, water-soluble cinnamon extract twice daily with their diets. The results were measured through blood samples that were collected at the beginning of the study, after six weeks, and after 12 weeks. The study showed that water-soluble cinnamon extract improved several antioxidant variables by as much as 13% to 23%. These numbers led to decreases in fasting glucose.

—J. Finkel


DHA Improves Stroke Recovery

An article in *Translational Stroke Research* reports a neuroprotective effect for DHA given after ischemic stroke.* Dr. Nicolas Bazan and his associates induced stroke in rats by occluding the middle cerebral artery. In a preliminary experiment, the animals received DHA intravenously following cerebral artery occlusion. A second experiment involved the administration of DHA post-stroke and the assessment of brain damage by MRI. In a third experiment, rats were given DHA or saline after stroke onset, after which their brains were examined for NPD1, a substance for which DHA is a precursor that has cell-protective effects.

The first experiment found a reduction in neurologic deficits in rats that received DHA compared with controls, even when DHA was administered 5 hours after the onset of stroke. In the study involving MRI, DHA treatment was associated with smaller infarcts. The third experiment revealed increased NPD1 synthesis in the DHA treated group.

Editor’s note: The findings identify a possible treatment for strokes and quantify the time limit of DHA’s effectiveness.

—D. Dye

Clinical Study Enrollment for Alzheimer’s Disease Patients

The Life Extension Foundation® is sponsoring a study to be conducted in South Florida. The objective is to measure the effects of weekly injections of a study medication plus nutritional supplements that may help suppress the inflammatory factor implicated in the neuronal degeneration of Alzheimer’s disease.

Twenty million Americans alive today are destined to contract Alzheimer’s disease, an affliction that robs us of memory, intelligence, and eventually our most rudimentary cognitive abilities. The few drugs approved to treat Alzheimer’s symptoms produce only modest, short-term effects and some patients cannot tolerate them at all.

This study requires weekly visits and runs approximately 17 weeks. You will receive blood tests, evaluations, and blood pressure checks as well as study medication and supplements at no cost to you.

We are seeking adults between the ages of 60-85 who have a diagnosis of Alzheimer’s disease.

**SO HOW DO I LEARN MORE ABOUT THIS STUDY?**

If you or a person you know with mild or moderate Alzheimer’s disease desires to participate in this new clinical study, or would like to receive more information, please call 1-866-517-4536 or e-mail LEClinicalResearch@LifeExtension.com or you may pre-register at www.lef.org/ClinicalResearch.

All costs associated with this study are being funded by the Life Extension Foundation®. This study is enrolling now!

Register now or call toll-free 1-866-517-4536 for more information.
SUPER BOOSTER

with the most effective form of Vitamin K2, Gamma Tocopherol, Ginkgo, and much more!

Despite abundant scientific validation, many people still do not take vital nutrients because they don't want to swallow so many pills. This problem has been solved with a one-per-day softgel that includes multiple health-promoting nutrients in just one supplement.

The Life Extension® Super Booster contains critical oil-based nutrients that cannot be incorporated into dry-powder based formulas like the Life Extension Mix™.

The Super Booster provides the most effective form of vitamin K, known as menaquinone-7, along with other forms of this critical nutrient. Just one Super Booster softgel provides:

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

• **Sesame Lignans** Sesame lignans augment the antioxidant effects of both alpha- and gamma-tocopherol. In a human study conducted at Life Extension, gamma tocopherol plus sesame lignans was 25% more effective in suppressing measurements of free-radical damage than gamma tocopherol and tocotrienols.

• **Vitamin K2** Vitamin K1 from dietary plant sources is poorly absorbed and only a small fraction gets into the bloodstream. Vitamin K2 is absorbed much more efficiently.

Scientific studies show 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 to keep calcium in the bone and out of the arteries.

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

• **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.

• **Chlorophyllin** Scientific studies indicate that chlorophyllin may protect against environmentally induced damage to DNA.

• **Selenium** Some scientific evidence suggests that consumption of selenium may reduce the risk of certain forms of cancer. However, the FDA has determined that this evidence is limited and not conclusive. Selenium’s effects in boosting glutathione are well-established.

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

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

Contains soybeans 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. Individuals with in-born errors of copper metabolism (e.g., Wilson’s disease) should avoid daily, chronic use of this product.

Lyc-O-Mato® is a registered trademark of Cytoflor Natural Products Limited.

Just one softgel of Super Booster supplies:

- Gamma tocopherol 230 mg
- Ginkgo extract 120 mg
- Chlorophyllin 100 mg
- Vitamin K2 (as menaquinone-7) 100 mcg
- Vitamin K2 (as menaquinone-4) 1000 mcg
- Vitamin K1 (as phytonadione) 1000 mcg
- Sesame lignans 20 mg
- Lycopene 10 mg
- Lutein 2 mg
- Selenium (as Se-Methyl L-Seconocyteine) 67 mcg
- Selenium (as L-Seconomethionine) 67 mcg
- Selenium (as Sodium selenite) 67 mcg
- Vitamin B12 300 mcg
- Vitamin C 90 mg
- Ascorbyl palmitate 50 mg
- Zinc 10 mg
- Mixed tocopherols 359 mg

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Dedicated research and development has produced a form of R-lipoic acid that is being hailed as the “next-generation” antioxidant powerhouse.

Life Extension’s Super R-Lipoic Acid has demonstrated superior bioavailability, stability, and potency for a variety of health benefits. This breakthrough converts the biologically active “R” form of lipoic acid to sodium-R-lipoic acid, which in a recent human study achieved 10–30 times higher peak blood levels than pure R-lipoic acid.1

Not only does this lipoic acid formulation reach higher peak blood levels,2 it also achieves them sooner, up to 12 times faster than R-lipoic acid, ensuring rapid uptake from the plasma into the tissues.1 A recent study showed that oral ingestion of Super R-Lipoic Acid reached peak plasma concentrations within just 10–20 minutes of supplementation.2

What’s more, unlike other forms of lipoic acid, Super R-Lipoic Acid is more stable in the body. The increased stability of this enhanced formulation is the reason for its greater absorption and bioavailability compared with R-lipoic acid.

POWERFUL ANTIOXIDANT PROTECTION

The superior antioxidant effects of R-lipoic acid are already well known for supporting healthy mitochondrial function. Super R-Lipoic Acid provides more potent benefits for preserving youthful cellular energy levels.

A bottle of Super R-Lipoic Acid containing 60 vegetarian capsules retails for $49. If a member buys four bottles during Super Sale, the cost is only $30.38 per bottle. Each capsule contains 300 mg of stabilized, Bio-Enhanced Na-RALA sodium R-Lipoate supplying 210 mg of R-lipoic acid. Contains rice.

To order Super R-Lipoic Acid, call 1-800-544-4440 or visit www.LifeExtension.com

References:
Bio-Enhanced® is a registered trademark of GeroNova Research, Inc.
Top Off Your TESTOSTERONE Naturally

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

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

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

- 1500 mg Chrysin
- 15 mg Bioperine®
- 850 mg Muira puama
- 282 mg Nettle root
- 50 mg Ginger root
- 15 mg Chelated elemental zinc
- 320 mg Maca
- 33.4 mg HMRlignan™ Norway Spruce lignan extract

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


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

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

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

Which VITAMIN D is Right for You?

### Vitamin D3 1,000 IU
- 250 capsules
- Retail: $12.50
- Super Sale Four-bottle Member Price: $7.59

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 multi-nutrient 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
- 60 capsules
- Retail: $11
- Super Sale Four-bottle Member Price: $6.68

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*

Please refer to website for allergen information.

### Vitamin D3 Liquid Emulsion 2,000 IU
- 1 ounce
- Retail: $28
- Super Sale Four-bottle Member Price: $16.88

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*

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

### 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 hyperparathyroidism (high calcium levels). People with kidney disease, certain medical 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.

To order any of these high-potency vitamin D3 supplements, call 1-800-544-4440 or visit www.LifeExtension.com
The Systemic Anti-Aging Effects of Ceramides
Practically every major skin care company has invested massive amounts of research money in perfecting unique molecules called ceramides to help revive and hydrate aging skin.

In one recent groundbreaking study, 200 mg per day of orally ingested ceramides derived from wheat completely restored hydration in 95% of participants suffering from dry, flaky, itchy skin.¹

A growing number of published studies indicate that as we age, ingestion of ceramides could also provide essential protection against various age-related diseases.

In this article, you will discover how ceramides are not only an indispensible compound to fight skin aging but also how they act to combat cancer, high cholesterol, and insulin resistance. > >
Ceramides: Benefits Beyond Beauty

Ceramides are simple fat-soluble constituents of living cells. They naturally occur in plant and animal sources and concentrate in cell membranes. Available in Japan as a functional food that fortifies and hydrates the skin internally, cutting-edge research now reveals that ceramides confer vital benefits in three critical areas:

1. Favorably altered blood lipid profiles, including lower total cholesterol and increased beneficial HDL.
2. Enhanced insulin sensitivity.
3. Colon cancer defense.

Cholesterol Control

Short- and long-term preclinical models reveal that ceramides can lower triglycerides in the blood and reduce levels of oxidized cholesterol in the liver. Collectively, these findings suggest that ceramides should be considered functional lipids.

In one short-term animal study, investigators fed animals a purified diet containing ceramides for just two weeks. As a result, scientists saw a significant drop in serum triglyceride levels. Since the concentration of liver triglycerides was not affected, study investigators hypothesized that dietary ceramides may modify the secretion of triglycerides from the liver and intestine and beneficially influence the activities of enzymes that break down cholesterol and fats in the liver and other tissues.

Enhanced Insulin Sensitivity

Chronic consumption of high-energy diets leads to obesity and consequently to insulin resistance. This in turn results in the deadly metabolic syndrome and may speed onset of other metabolic-related disorders, including non-alcoholic fatty liver disease.

Although metabolic syndrome can be managed by lifestyle improvements, including low-glycemic meals and exercise, most people need additional support. Recent research suggests that increased ceramide intake can help prevent insulin resistance and reduce your risk of obesity.

Results of a recent animal model showed that dietary ceramides induced normalization of adiponectin signaling followed by promotion of insulin sensitivity as plasma insulin levels decreased. (Adiponectin is a hormone that aids in glucose breakdown and governs the amount of energy stored as fat in the body.)

Researchers fed experimentally obese rats two diets: one that contained pure ceramides of animal origin and another that contained pure ceramides of plant origin. After 45 days, both diets led to significant reductions in hepatic lipid and plasma non-HDL cholesterol. Importantly, both diets decreased plasma insulin levels, while only the plant ceramide-supplemented diet increased the plasma adiponectin level.

In a separate long-term animal study, diets supplemented with either ceramides plus soybean oil or 5% soybean oil were fed to rats through two generations. Total cholesterol in the ceramide-supplemented group decreased by about 30%.

In mice fed a Western-type diet, dietary ceramides reduced plasma cholesterol and triglycerides by 57% and 58%, respectively. Just as important, ceramides decreased the absorption of dietary cholesterol by 50% and free fatty acids by 40%. In addition, the livers of supplemented mice contained 61% less oxidized cholesterol and 56% less triglycerides than livers of control mice.

Concentrations of the amyloid protein in the blood, a marker of liver inflammation, and alanine aminotransferase, an enzyme elevated in damaged livers, decreased by 74% and 79%, respectively, in the ceramide-supplemented mice. Thus, oral intake of ceramides was shown to lower plasma cholesterol and triglycerides and to protect the liver from fat- and cholesterol-induced fatty-liver disease.

One study found that treating certain cultured cell lines with ceramides significantly increased their ability to clear out or “efflux” cholesterol. This could have implications for cholesterol removal from arterial plaque.

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Study investigators concluded that dietary ceramides, regardless of origin and chemical composition, might prevent fatty liver and high cholesterol through improvement of adiponectin signaling and consequent improvement in insulin sensitivity.  

**Colon Cancer Prevention**

To examine the potential anti-cancer effects of ceramide-based supplements, investigators fed mice ceramides before and after experimentally induced tumor initiation. The result? **Drastically reduced colon tumor formation** in both groups, which suggests that ceramides are as effective in preventing tumor formation as they are in inhibiting further growth of tumors already present in the colon.  

Numerous studies have shown that feeding dietary ceramides to laboratory animals inhibits colon carcinogenesis. Oral ceramides appear to favorably affect changes in cell proliferation and cell death that are important events in early colon carcinogenesis.  

While ceramides have been proposed as a messenger for cellular processes as diverse as differentiation, proliferation, senescence, and cell cycle arrest, a number of studies have focused on their role in apoptosis (programmed cell death) in cancer cells.  

Another possible mechanism of action of ceramides in suppressing colon cancer development is that they bypass a signaling defect that is required for cancer development. Indirect evidence suggests that ceramides can inhibit colon cancer in humans and have been shown to induce apoptosis in a human cancer cell line. Feeding ceramides to mice has also been shown to reduce the number of colon tumors.  

In another study, animals fed a known carcinogen and then given a ceramide-based lipid compound experienced a 70% reduction in the number of aberrant crypt foci. Research has established that a percentage of these abnormal tube-like structures eventually develop into full-blown cancer. These findings demonstrate that oral ingestion of ceramides can halt colon cancer development before it takes hold.

**Oral Ceramides: Molecular Skin Regenerators**

During the early 1990s, major cosmetic companies formulated and marketed ceramide-based topical skin-care products for treating fine lines, wrinkles, and dryness. Due to their moisture-retaining properties, ceramides were eventually added to foundation makeup and lipsticks to help moisturize and protect skin.  

**System-Wide Benefits of Ceramides**

- Known for their ability to support aging skin, a growing body of scientific research reveals that ceramides—a family of lipid molecules naturally occurring in cell membranes—represent a new class of functional lipids.  
- They have recently been shown to influence cell growth, differentiation, and death.  
- Orally ingested ceramides are proving to be powerful new weapons against several age-related pathologies, including high cholesterol, insulin resistance, and colorectal cancer.  
- Numerous studies have shown that oral supplementation with ceramides can lower LDL and triglyceride levels, raise beneficial HDL, and enhance insulin sensitivity.  
- A growing body of research shows that ingesting ceramides can protect against the formation of pre-cancerous and cancerous growths in the colon.  
- A proprietary, non-GMO oral ceramide formula also produced dramatic improvements in the hydration, elasticity, and health of dry, flaky, itchy skin, with complete elimination of dryness reported by 95% of study subjects.  
- Ceramides also effectively combat bacterial infection of the skin, dermatitis, and eczema.
skin exposed to sun, wind, environmental chemicals, and the ravages of aging.

While Western cosmetic companies were focusing on topical ceramide products, Japanese nutraceutical firms began employing a more innovative approach to ceramide therapy—oral delivery of ceramides in capsules, functional foods, and beverages.

Oral ceramide supplements received Japanese government approval for general use in 2000, although Japanese women had been ingesting concentrated ceramides in Konjac tuber, a centuries-old staple of the Asian diet.22

Orally ingested ceramides have been shown to directly replace the ceramides lost through normal cell shedding, skin damage, and aging. Oral ceramides have been shown to specifically target the stratum corneum layer of the epidermis with “smart bomb” accuracy. This targeted moisturizing effect results from post-prandial (after-meal) ceramides being carried directly to the stratum corneum via the blood. Recent research suggests this internal delivery method improves the functionality of ingested ceramides and produces results not seen in cosmetic topical applications.23

Why Your Aging Skin Needs Additional Ceramides

More than just a cosmetic problem, skin aging exposes you to significant health risks from infectious microorganisms, UV radiation, defective permeability to topical drugs, and increased susceptibility to contact dermatitis from environmental chemicals. You also need your skin to be at its functional best in order to properly regulate body temperature, synthesize optimal amounts of vitamin D, and provide critical sensory input from the environment. The problem is that it is virtually impossible to obtain ceramides in sufficient quantity and concentration to get the full range of benefits from dietary sources alone.

Both in vitro24,25 and in vivo1,26 studies demonstrate that the moisture content of the stratum corneum in aging humans is decreased.27 In maturing individuals, the stratum corneum is also susceptible to inflammation and infection. Research shows that aging skin also suffers from reduced structural integrity due to the lower lipid content—mostly a lower proportion of ceramides.25,27,28

Studies confirm the decline of the ceramide content in aging human skin,29 possibly due to a decline in enzyme activity that helps to deliver ceramides in usable form to the skin.30 When aging skin’s ability to make ceramides diminishes, as it inevitably does, increased ceramide intake becomes essential. Increased ceramide intake is required to reverse an increased susceptibility to environmental assaults (e.g., decreased humidity, solvents, and detergents) and a diminished capacity to recover from environmental insults.31

Studies show that drug permeability in the aged human stratum corneum is significantly altered. Specifically, the ability of aging skin to absorb lipid-soluble topical applications (including drugs) is greatly diminished.32 Maintaining an optimal concentration of ceramides in the stratum corneum is thus indispensable for supporting not only healthy skin structure, but also for maintaining healthy skin function and optimal responsiveness to delivery of topical drugs.

Skin Health: Clinical Studies

A double-blind placebo-controlled study was conducted at Osaka City University to evaluate the effects of 6 weeks of treatment with oral ceramide supplements in 33 patients (6 men and 27 women) suffering from chronically dry, rough skin. The test supplement was given in the form of soft capsules containing
40 mg per day of rice bran–derived ceramides. Study investigators concluded that oral delivery of natural, plant-based ceramides was safe and was directly delivered to the stratum corneum:

“Experiments have shown that after oral administration plant-based ceramides are absorbed unchanged in the small intestine…. The substance is then transported by the capillaries into the horny layer and the keratin intercellular spaces. The supplements containing rice ceramides as used in this study, in contrast to the ceramide substances distributed in animal brains, provide superior supplementation that can be expected to be both safe and effective for oral administration.”

In another clinical study, a proprietary, ceramide-rich lipid formula made from non-GMO wheat showed exceptional promise in rehydrating even chronically dry, thin, itchy skin. At the end of a 4-week, placebo-controlled pilot study to determine the formula’s tolerability and clinical efficacy, 65% of participants treated with 80 mg per day of a proprietary wheat ceramide formula experienced an increase in skin moisture compared with only 45% of the placebo group. Because it takes about 4 weeks—the entire length of the pilot study—for newly formed skin cells to migrate to the stratum corneum, improvements observed in this short time period were deemed very promising by study investigators.

A 90-day follow-up study tracked subjects who were recruited because of chronically dry skin, including those suffering from chronic itching. The study consisted of subjective evaluation by the participants as well as objective dermatological measurements of skin roughness, itching, flaking and hydration, determined by a test of electrical impedance and by laboratory tissue analysis. Active treatment consisted of 200 mg per day of the wheat ceramide formula vs. placebo. By the end of the study, participants treated with the ceramide-rich wheat extract experienced significant softening of their skin.

Electrical assessment of skin hydration showed improvement in 95% of the treatment group compared with no statistically significant change in the placebo group. All participants who had previously experienced chronic itching reported sharply decreased itch or complete elimination of the complaint at the study’s conclusion. Dermatological evaluation revealed a significant reduction of squames (flaking patches of skin) in the treatment group compared with the placebo group. When subsets of participants from both the active treatment and placebo groups were further examined, levels of protective lipids increased in leg tissue samples in the treatment group while no statistically significant change in levels of protective lipids was noted in the placebo group.

A recent double-blind, randomized, placebo-controlled study was carried out on 51 women aged 20-63 years with dry to very dry skin who received either 350 mg of a proprietary wheat-derived ceramide extract or placebo for 3 months. Evaluation of skin hydration on legs, arms, and face, assessed at baseline and at the study’s end, was performed using dermatological scores (dryness, roughness, reddening), skin hydration measurement, and self-assessment scores. Skin dryness and redness was reduced in the treatment group, whereas it increased in the placebo group. Dermatological evaluation showed a significant reduction in squames in the treatment group compared with the placebo group. Skin dryness and redness was reduced in the treatment group.
which also noted improvement in overall skin hydration. Study investigators concluded that the wheat-ceramide extract capsules were well tolerated by study participants.

**Blocking Bacterial Infection**

The skin surface represents our primary barrier to the external environment, and as such, it is our *first line of defense* against microbial infection. Lipids at the skin’s surface, including ceramides, comprise a major part of an antimicrobial barrier. When this barrier becomes compromised, as it inevitably does with age, numerous health conditions can arise.

In *atopic dermatitis*, for example, ceramide concentrations in the *stratum corneum* are diminished.34 Individuals with atopic dermatitis generally have higher concentrations of bacteria, especially *Staphylococcus aureus*, on the skin surface.35

A recent study confirmed that increased colonization by the bacteria *Staphylococcus aureus* in atopic dermatitis is correlated with the reduction in ceramides.36 Frequently present on the skin surface, *Staphylococcus aureus* has significant potential for causing infections if the skin barrier function is disrupted or if the surface environment is otherwise altered.37-39

*S. pyogenes* is another common cause of potentially serious skin infections, including *erysipelas* and *cellulitis*, which are characterized by the spread of the bacteria into the deep layers of the skin.40

**Relief from Dermatitis and Eczema**

*Atopic dermatitis*, like other inflammatory skin conditions, is an immunologic-related condition. Accordingly, topical corticosteroids and other immunosuppressive agents are mainstays of therapy, but the risk of toxicity from these agents is significant, particularly in children. One study designed to investigate the pathogenesis of allergic contact dermatitis and other inflammatory skin conditions found that repairing the breakdown in the ceramide barrier while continuing topical medications could alleviate childhood atopic dermatitis.42

In the quest to find safer therapies for contact dermatitis, investigators treated 580 consecutive patients suffering from contact or irritant dermatitis with a

**What are Ceramides?**

Found in plant and animal sources, and also synthesized by the body, ceramides form an essential component of human skin.46 The 6 forms of ceramides commonly found in skin are formed via a biosynthetic reaction in the top layer of the skin, the epidermis. All 4 layers of the epidermis contain ceramides, and they play a critical role in skin health by creating a barrier that reduces infection and helps to retain the skin’s moisture.22

All humans require the *permeability barrier* that skin provides, and this barrier is localized to the top layer of the skin called the *stratum corneum*, where extracellular matrix lipids inhibit loss of water.47 Over a period of 4 weeks, new cells created at the deepest epidermal layer migrate upwards to form the *stratum corneum*. By the time skin cells reach the skin’s surface, most are technically dead. They become cornified (“horn-like”), transforming into protein-rich blocks tightly bound together by a layer of cement composed of various lipids, about 35-40% of which are ceramides.48

The primary function of the epidermis is to generate a relatively impermeable layer to protect living creatures from dehydration and environmental stress. Ceramides play a critical role in the barrier function and in the retention of water by the *stratum corneum*. A reduction in the amount of ceramides in the epidermal layers results in dry skin and dermatitis, and is a *major cause of wrinkles*.22 Studies have shown that optimal amounts of ceramides in relation to other lipids in the top layer of the skin are required to maintain healthy skin.49 The *stratum corneum* keeps the rate of water loss to the environment to a minimum.

Interestingly, nicotinamide (*vitamin B3*) applied to the skin has been shown to increase the biosynthesis of ceramides in the *stratum corneum* and improve the epidermal permeability barrier.50

The beneficial properties of ceramides aren’t limited to skin cells. They’re found throughout the body, where they regulate cell proliferation, function, and development across a range of physiological systems. For example, ceramides play important roles as signaling molecules involved in such vital cellular functions as apoptosis,51,52 cell growth,53 and differentiation.54,55
skin lipid mixture containing ceramides alone or in combination with topical corticosteroids until abatement for 8 weeks. Statistically significant improvement was seen in both treatment groups at weeks 4 and 8 as compared to baseline. Individuals who used ceramides in combination with topical corticosteroids experienced greater relief, compared with those who used topical corticosteroids alone.43

Another study evaluated the use of topical (synthetic skin lipids) and natural ceramides to treat detergent-induced dermatitis. Study results showed that although the concomitant use of both products afforded protection of healthy human skin against detergent-induced dermatitis, slightly better results were obtained with a mixture of natural ceramides than with synthetic skin lipids. Investigators believe that skin lipid supplementation using oral ceramide extracts is effective in ameliorating detergent-induced dermatitis because of their structural resemblance to the lipids in the stratum corneum.44

Ceramide therapy has also proven to be effective in combating the itching and inflammation caused by eczema. In addition, ceramide treatment has been shown to normalize skin surface lipids and reduce symptoms in patients afflicted with this condition.45

Summary

Known for their ability to support aging skin, a growing body of scientific research reveals that ceramides—a family of lipid molecules naturally occurring in your skin—represent a new class of functional lipids. They have recently been shown to exert profound control over cell growth, differentiation, and death. Orally ingested ceramides are proving to be powerful new weapons against several age-related pathologies, including high cholesterol, insulin resistance, and colorectal cancer development.

Numerous studies have shown that oral supplementation with ceramides can lower LDL and triglyceride levels, raise beneficial HDL, enhance insulin sensitivity, and thwart formation of pre-cancerous and cancerous growths in the colon.

A proprietary, non-GMO oral ceramide formula has also yielded dramatic improvements in the hydration, elasticity, and youthful appearance of dry, flaky, itchy skin, with complete elimination of dryness reported by 95% of study subjects. •

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


22. Available at: www.fda.gov/ohrms/dockets/dockets/95s0316/95s-0316.pdf.


Caution: Cognitex is also available without pregnenolone for those with existing steroid hormone-sensitive cancer.

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.

Contains fish (wild herring, blue whiting), soybeans, and rice.

To order Cognitex, call 1-800-544-4440 or visit www.LifeExtension.com

Think Better WITH COGNITEX

It starts with forgetting where you put your car keys. Then you can’t remember a loved one’s birthday. A few years later it takes a moment to recall an old friend’s name. Sadly, brain degeneration affects all aging adults, however, enhanced communication between neurons may hold the key to maintaining youthful cognition and memory.

Cognitex with Pregnenolone & NeuroProtection Complex provides 9 cutting-edge brain boosting supplements in one exciting formula!

We all strive for a youthful brain, but the key to brain power may come from uridine-5’-monophosphate (UMP), a compound that is naturally found in the milk of nursing mothers and is essential to humans when their brains are the youngest — as infants. More importantly, UMP supports superior cognitive function in aging adults.

In order to bolster this improved 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 has been added to protect against free-radical damage and pregnenolone may have 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 (A-GPC) 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 or without pregnenolone) is $74 (item #00922) and $72 (item #00921), respectively. If a member orders four bottles of either version during Super Sale, the price per bottle is reduced to just $44.96 and $43.20, respectively.

To order Cognitex, call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
Life Extension® first introduced SAMe in 1997. Since then, researchers continue to discover impressive benefits of this versatile nutrient. Largely known for its effects on optimal mood, SAMe has also shown benefits for the liver, brain, and joints.

A recent study conducted at Harvard Medical School and Massachusetts General Hospital cited the impressive benefits of SAMe for mood elevation.1 A report published in Germany indicates that SAMe may help maintain healthy neurological function.* The impressive results showed that:

- SAMe increased glutathione levels by 50% and glutathione enzyme activity by 115%.2
- SAMe decreased a measurement of free radical activity by 46%.2
- SAMe inhibited lipid peroxidation by 55% in culture.2

In addition to these findings, SAMe also improves brain cell methylation, thereby facilitating youthful DNA enzymatic actions (which may help account for SAMe’s mood elevating properties). These enzymatic reactions are required for the healthy conversion of neurotransmitters such as serotonin and dopamine.

It is important to note that not all SAMe is the same. The higher-quality SAMe is standardized for the active SS isomer. The less potent SAMe, on the other hand, predominantly contains the inactive RS isomer.

Life Extension only sells the higher-grade and more potent SS isomer. The good news is that SAMe prices continue to plummet. Compared to when SAMe was first introduced to the United States in 1997, Life Extension members can now obtain it for 78% less. On an inflation-adjusted basis, the savings are even greater.

A box of 20 400 mg SAMe tablets retails for $32. When a member buys six boxes during Super Sale, the price is reduced to only $16.88 a box—a savings of 40%!

(SAMe is also available in bottles containing 50 400 mg tablets. Retail price is $72. If a member buys four bottles during Super Sale, the price is reduced to $44.55 per bottle.)

References

To order your supply of premium-grade SAMe, call 1-800-544-4440 or visit www.LifeExtension.com

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
The Moisturizing Pill the Japanese Have Enjoyed for a Decade!

Lipowheat™ ceramides have been available to Japanese women as a functional food since 2000. The hydrating action of Lipowheat™ ceramides have proven effective in clinical trials. To take one example, after just three months ingesting 200 mg per day of Lipowheat™, a group of people suffering from dry, flaking skin reported dramatic improvement in the look and feel of their skin. These results were verified by electrochemical analysis showing that 95% of participants exhibited improved skin hydration. Even better, all subjects who at the onset of the study experienced chronic itching reported sharply decreased itching or complete elimination of the problem by the end of the study!

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

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

Contains wheat. Contains rice and trace amounts of gluten.

Lipowheat™ is a trademark of LAVIPHARM Group of Companies.

References
Discount Prices For Premium-Quality Products

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

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

Here are some examples of **savings** members enjoy during the annual **SUPER SALE**:

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Our Low Retail Price</th>
<th>SUPER SALE Member-Volume Discount Price Per Bottle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Super Omega-3 EPA/DHA with Sesame Lignans &amp; Olive Fruit Extract</strong> 120 softgels, Item # 01482</td>
<td>$32</td>
<td>$16.81 (ten-bottle purchase)</td>
</tr>
<tr>
<td>Super-refined EPA/DHA fish oil plus sesame lignans and potent olive fruit extract to provide critical omega-3 fatty acids and essential components of the Mediterranean diet.</td>
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<tr>
<td><strong>Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™</strong> 100 mg, 60 softgels, Item # 01426</td>
<td>$62</td>
<td>$35.10 (ten-bottle purchase)</td>
</tr>
<tr>
<td>The superior ubiquinol form of CoQ10 plus an organic compound (shilajit) shown to double mitochondrial CoQ10 levels.</td>
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</tr>
<tr>
<td><strong>Life Extension Mix™</strong>, 315 tablets, Item # 01555</td>
<td>$98</td>
<td>$46.91 (ten-bottle purchase)</td>
</tr>
<tr>
<td>High-potency multi-nutrient formula now with C3G, natural folate, and Crominex® 3+ at no extra cost.</td>
<td></td>
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<tr>
<td><strong>Optimized Resveratrol with Synergistic Grape-Berry Actives</strong> 250 mg, 60 vegetarian capsules, Item # 01430</td>
<td>$46</td>
<td>$27.90 (four-bottle purchase)</td>
</tr>
<tr>
<td>High potency trans-resveratrol with quercetin, plus pterostilbene and fisetin to support DNA “longevity genes.”</td>
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<tr>
<td><strong>Ultra Natural Prostate Formula</strong>, 60 softgels, Item # 01495</td>
<td>$38</td>
<td>$21.60 (twelve-bottle purchase)</td>
</tr>
<tr>
<td>Most comprehensive formula to support normal urinary flow and help support healthy prostate function.</td>
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</tr>
<tr>
<td><strong>Calorie Control Weight Management Formula</strong>* 402 grams of powder, Item # 01493</td>
<td>$56</td>
<td>$29.70 (eight-jar purchase)</td>
</tr>
<tr>
<td>Four potent ingredients to impede glucose-lipid absorption and combat age-associated weight gain.</td>
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<tr>
<td><strong>ArthroMax™ with Theaflavins</strong>, 120 vegetarian capsules, Item # 01303</td>
<td>$44</td>
<td>$27 (four-bottle purchase)</td>
</tr>
<tr>
<td>Joint support formula with theaflavins from black tea.</td>
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<tr>
<td><strong>PQQ Caps with BioPQQ™</strong>, 10 mg, 30 vegetarian capsules, Item # 01500</td>
<td>$24</td>
<td>$14.85 (four-bottle purchase)</td>
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<tr>
<td>Promotes mitochondrial biogenesis (generation of new mitochondria).</td>
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<tr>
<td><strong>DHEA (Dehydroepiandrosterone)</strong>, 25 mg, 100 capsules, Item # 00335</td>
<td>$15</td>
<td>$8.44 (four-bottle purchase)</td>
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<tr>
<td>A hormone that declines with aging, benefits overall health.</td>
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<tr>
<td><strong>Mitochondrial Energy Optimizer with BioPQQ™</strong>, 120 capsules, Item # 01568</td>
<td>$94</td>
<td>$56.70 (four-bottle purchase)</td>
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<tr>
<td>To maintain healthy cellular function, protein structural integrity, and mitochondrial biogenesis.</td>
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<tr>
<td><strong>SAME</strong>, 400 mg, 20 tablets, Item # 00557</td>
<td>$32</td>
<td>$16.88 (six-box purchase)</td>
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<tr>
<td>S-adenosylmethionine from Europe in double-strength potency for mood elevation.</td>
<td></td>
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</tr>
<tr>
<td><strong>Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G</strong>, 60 softgels, Item # 01586</td>
<td>$42</td>
<td>$25.65 (four-bottle purchase)</td>
</tr>
<tr>
<td>Supports night vision and macular density.</td>
<td></td>
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</tbody>
</table>

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

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

**To order call toll-free 1-800-544-4440**
<table>
<thead>
<tr>
<th>Product Description</th>
<th>Our LowRetail Price</th>
<th>SUPER SALEMember-Volume Discount Price Per Bottle</th>
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</thead>
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<tr>
<td><strong>Vitamin D3 with Sea-Iodine™</strong>, 5000 IU, 60 vegetarian capsules, Item # 01372</td>
<td>$14</td>
<td>$8.44 (four-bottle purchase)</td>
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<tr>
<td>High-potency vitamin D to assure adequate intake of this essential nutrient plus 1000 mcg of Sea-Iodine™</td>
<td></td>
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<tr>
<td><strong>Super R-Lipoic Acid</strong>, 300 mg, 60 vegetarian capsules, Item # 01208</td>
<td>$49</td>
<td>$30.38 (four-bottle purchase)</td>
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<tr>
<td>Superior efficacy compared to alpha-lipoic acid—supplies 210 mg of stabilized B-lipoic acid</td>
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<tr>
<td><strong>Optimized TryptoPure® Plus</strong>, 90 vegetarian capsules, Item # 01202</td>
<td>$40</td>
<td>$24.30 (four-bottle purchase)</td>
</tr>
<tr>
<td>For natural support of healthy serotonin levels in the brain, includes co-factors that protect tryptophan from degrading in the bloodstream before it crosses the blood-brain barrier</td>
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<tr>
<td><strong>Cognitex with NeuroProtection Complex</strong></td>
<td>$74</td>
<td>$43.20 (twelve-bottle purchase)</td>
</tr>
<tr>
<td>90 softgels, Item # 00922</td>
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<tr>
<td>Optimal support for the brain, includes glyceryl-phosphoryl-choline, vinpocetine, phosphatidylserine, Sharp-PS GOLD PS-DHA, uridine, and others</td>
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</tr>
<tr>
<td><strong>Optimized Irvingia with Phase 3™ Calorie Control Complex</strong>*</td>
<td>$64</td>
<td>$40.50 (four-bottle purchase)</td>
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<tr>
<td>120 vegetarian capsules, Item # 01492</td>
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<tr>
<td>Combats age-related fat accumulation via eight distinct mechanisms</td>
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<tr>
<td><strong>Acetyl-L-Carnitine Arginate</strong>, 100 capsules, Item # 00788</td>
<td>$59</td>
<td>$34.42 (four-bottle purchase)</td>
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<tr>
<td>Patented form of carnitine to support healthy neurite growth for optimal brain health</td>
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<tr>
<td><strong>Triple Action Cruciferous Vegetable Extract</strong></td>
<td>$24</td>
<td>$14.85 (four-bottle purchase)</td>
</tr>
<tr>
<td>60 vegetarian capsules, Item # 01468</td>
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<tr>
<td>Comprehensive cruciferous plant extract formulation, with apigenin, for optimal cellular health</td>
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<tr>
<td><strong>Prelox® Natural Sex for Men®, 60 tablets, Item # 01373</strong></td>
<td>$50</td>
<td>$30.38 (four-bottle purchase)</td>
</tr>
<tr>
<td>Supports healthy endothelial function and blood flow for maximum male performance</td>
<td></td>
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<tr>
<td><strong>Bone Restore, 150 capsules, Item # 00811</strong></td>
<td>$22.50</td>
<td>$13.16 (four-bottle purchase)</td>
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<tr>
<td>High-potency bone protection formula with FruiteX B® OsteoBoron®</td>
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<tr>
<td><strong>Mitochondrial Basics with BioPQQ™</strong>, 30 capsules, Item # 01569</td>
<td>$52</td>
<td>$31.05 (four-bottle purchase)</td>
</tr>
<tr>
<td>Promotes mitochondrial biogenesis and mitochondrial function</td>
<td></td>
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<tr>
<td><strong>CinSulin® with InSea2™ and Crominex®3+</strong></td>
<td>$38</td>
<td>$22.95 (four-bottle purchase)</td>
</tr>
<tr>
<td>90 vegetarian capsules, Item # 01503</td>
<td></td>
<td></td>
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<tr>
<td>Promotes healthy blood glucose levels</td>
<td></td>
<td></td>
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<tr>
<td><strong>Super MiraForte with Standardized Lignans, 120 capsules, Item # 01315</strong></td>
<td>$62</td>
<td>$37.80 (four-bottle purchase)</td>
</tr>
<tr>
<td>Supports healthy testosterone levels in men</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Natural Stress Relief, 30 vegetarian capsules, Item # 00987</strong></td>
<td>$28</td>
<td>$16.20 (four-bottle purchase)</td>
</tr>
<tr>
<td>With lemon balm extract to reduce anxiety and sleeplessness, and pure L-theanine to promote relaxation without drowsiness</td>
<td></td>
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<tr>
<td><strong>Gamma E Tocopherol with Sesame Lignans, 60 softgels, Item # 00759</strong></td>
<td>$32</td>
<td>$19.58 (four-bottle purchase)</td>
</tr>
<tr>
<td>Provides the critical gamma tocopherol form of vitamin E plus sesame lignans to enhance the free radical scavenging benefits of alpha and gamma tocopherol</td>
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<tr>
<td><strong>Super Bio-Curcumin® 60 vegetarian capsules, Item # 00407</strong></td>
<td>$35</td>
<td>$21.60 (four-bottle purchase)</td>
</tr>
<tr>
<td>Super-absorbable formulation promotes healthy lipid &amp; joint function, and healthy DNA</td>
<td></td>
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</tr>
<tr>
<td><strong>Super Booster Softgels with Advanced K2 Complex 60 softgels, Item # 01380</strong></td>
<td>$42</td>
<td>$25.65 (four-bottle purchase)</td>
</tr>
<tr>
<td>A convenient one-per-day capsule that includes optimal potencies of gamma-tocopherol, sesame lignans, lycopene, lutein, ginkgo, selenium and both forms of vitamin K2</td>
<td></td>
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</tr>
<tr>
<td><strong>Skin Restoring Ceramides with Lipowheat™</strong></td>
<td>$25</td>
<td>$15.53 (four-bottle purchase)</td>
</tr>
<tr>
<td>30 liquid capsules, Item # 01502</td>
<td></td>
<td></td>
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<tr>
<td>Rehydrates aged skin</td>
<td></td>
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</tbody>
</table>

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

**Order online at** [www.LifeExtension.com/SuperSale](http://www.LifeExtension.com/SuperSale)
System-wide free radical damage to healthy cells is an age accelerator. In experimental models, when genes are inserted that boost internal defenses against free radicals, life span can be extended by nearly 100%.1-3

The good news is that natural compounds found in certain plants (polyphenols) can exert similar effects in aging humans. They have been shown to favorably modulate gene expression that blunts free radical injury at the molecular level.

Among the most powerful of these are anthocyanins.

Anthocyanins are pigmentary compounds that lend fruits like grapes, blueberries, and black currants their dark color.

Scientists are increasingly focusing on the benefits of one anthocyanin in particular: cyanidin-3-glucoside or C3G.1 Scores of studies in the past two years have established its potent combination of antioxidant, anti-inflammatory, DNA-protective, and gene-regulating effects.

In this article, you will learn how C3G’s multimodal mechanisms reduce free radical activity. You will find the latest research on its ability to combat numerous age-related conditions, including cancer, heart disease, and metabolic syndrome. You will also discover its newly identified, singular power to enhance night vision. > >
An Exceptional Multitargeted Nutrient

Plants are relentlessly exposed to ultraviolet sunrays. To survive this daily onslaught, certain plants produce compounds that specifically reduce free radical damage. These compounds are known as polyphenols, a large class of biologically active molecules.\(^6\)

Polyphenols are chemicals that, by their intrinsic structure, diminish the effects of free radicals on surrounding tissue.\(^5,7\)

The anthocyanin class of polyphenols is especially effective in blunting this form of damage. And C3G is the most common of the anthocyanins found in dark fruits—which come from plants that thrive best in direct sunlight, where free radicals are generated in abundance.\(^8,9\)

It’s no accident, then, that C3G has recently been shown to provide animal and human tissues optimal defense from free radical attack, both by preventing their formation and by scavenging those already formed.\(^7,9,12\)

What has researchers so interested in C3G, however, is that it also protects from the “downstream” consequences of free radicals at the genetic level.

Perhaps the most subtle and intriguing effect of C3G on human tissue is its ability to directly influence gene expression.\(^13\) While we carry genes for every protein and structure in our bodies, only a few of those thousands of genes are active at any given moment. C3G selectively upregulates genes that confer protection on aging tissues, while downregulating those that cause damage (such as pro-inflammatory cytokines).\(^14,15\)

C3G is well-absorbed from the intestinal tract in both animals and humans, and it readily reaches therapeutic levels in the bloodstream.\(^16,17\)

Anti-Cancer Power

High intake of fruits and vegetables is associated with protection from most forms of cancer. One unique mechanism is attributed to the polyphenols in the anthocyanin family.\(^7\) These brightly colored molecules, including C3G, afford protection against most of the events in the cascade of cancer formation.\(^18,19\)

Antioxidant activity supplied by anthocyanins, including C3G, protects DNA from the damage that can initiate cancers.\(^20\) Activation of so-called oncogenes (genes that induce cancer-cell reproduction) is another early step in cancer development. C3G potently inhibits a common oncogene called ras in human cells transplanted into rats.\(^21\)

Suppression of the inflammatory “master switch” that links inflammation to cancer causation (NF-kB) can prevent many of the “second hits” that promote cancer development.\(^22,23\) C3G potently inhibits NF-kB in many tumor types.\(^7,24\)

Once a cancer gets started, it can invade local tissue and/or metastasize into other areas of the body. C3G and other anthocyanins can prevent expression of the proteins that cancer cells produce to help them invade.\(^25,26\)

The body’s own natural defense against cancer is programmed cell death (apoptosis). Anthocyanins such as C3G can upregulate so-called “suicide pathways” that trigger apoptosis in cancer cells, while sparing normal tissue.\(^21,27-31\) This can be a key fact that can delay or even eliminate tumor growth.

Tumor cells, like all mammalian cells, go through a cycle of changes as they replicate. Anthocyanins can block the cell cycle, causing what amounts to a microscopic traffic jam and preventing cancer cells from proliferating in a coordinated fashion.\(^32\)

C3G has also been shown to take the “bite” out of cancer cells. Scientists tell us that cancer cells exist in a state known as “undifferentiated.” That means that they don’t form cohesive and functional structures
such as a lung or a liver. C3G has been found to induce normal differentiation of certain cancers, particularly dangerous melanoma cells. When cancer cells differentiate, their potential to cause damage is gravely impaired.

By all of these different mechanisms, C3G has been shown to impair cancer cell growth, development, and spread in a variety of human cancers in laboratory and animal studies. C3G shows promise in mitigating breast, colon, lung, esophageal, and skin cancers.7,8,24,34,35

**System-Wide Cardiovascular Defense**

Cardiovascular disease continues to be the leading cause of preventable death in older adults. C3G offers protection at several vital levels in the chain of events leading to heart attacks and stroke.

Anthocyanins such as C3G inhibit nitrogen free radicals that trigger endothelial dysfunction.36,37 At the same time, C3G promotes healthy endothelial cells, where it contributes to vascular integrity and the ability to respond to blood pressure changes.38

C3G helps reduce cholesterol levels in laboratory studies, thus lowering the risk of lipid oxidation, which triggers inflammation and atherosclerosis.39 Antioxidant benefits of C3G and other anthocyanins help prevent that lipid oxidation, while also preventing the inflammation itself.40 Once atherosclerotic plaques form, C3G can stabilize them and reduce the risk that they’ll rupture and cause a catastrophic heart attack or stroke.41 Remarkably, C3G also inhibits the blood pressure-boosting hormone called angiotensin-converting enzyme (ACE), which may help keep blood pressure under control.42

**Combating Diabesity and the Metabolic Syndrome**

The combination of obesity and diabetes has been referred to as “diabesity,” and is widely recognized as a precursor to metabolic syndrome.43 Scientists have convincingly demonstrated that C3G suppresses body weight gain in animals given a high fat diet.44 Astonishingly, the supplementation also completely normalized blood sugar and insulin elevations, and blocked elevation of the fat-associated cytokine leptin. These researchers also showed that C3G enhances secretion of beneficial cytokines such as adiponectin, which can help prevent progression to diabetes.45 These effects are produced by beneficial changes in expression of hundreds of genes.15
C3G also lowers blood sugar and enhances insulin sensitivity by downregulating a fat-related cytokine that contributes to insulin resistance.14

An astonishing and yet-to-be fully explored benefit of the anthocyanins is their ability to inhibit intestinal enzymes that break down starch for absorption. By blocking those enzymes, calories contained in starch remain in the intestinal tract and can’t contribute to weight gain. C3G and others in its family offer potent suppression of intestinal alpha-glucosidase and pancreatic alpha-amylase, two enzymes that can cause excess glucose absorption to occur.46-48

**C3G Restores Night Vision**

The ability to see well in low-light conditions deteriorates rapidly with age, placing maturing individuals in greater danger of accidental falls, car accidents, and other preventable, injurious hazards. A primary cause of this so-called “night blindness” is light damage and oxidative stress in the retina. The retina is constantly exposed to highly focused beams of light, which include dangerous ultraviolet radiation. C3G plays a unique role in protecting retinal tissue from damage. It works by multiple mechanisms at several sites in the retina. Most importantly, C3G stimulates regeneration of the retinal pigment called rhodopsin.56 Rhodopsin is vital to vision in dim light. When depleted, rhodopsin takes longer to return to its normal, light-sensitive state. C3G increases the restoration of rhodopsin levels.57,58

C3G also serves to protect retinal cells against the harmful oxidation that is triggered by light.59 It accomplishes this by reducing the accumulation of a fluorescent pigment called A2E that amasses with age and interferes with normal retinal function. C3G’s ability to quench oxygen free radicals is credited with this effect.59

Retinal cells are nerve cells that are capable of transmitting electrical signals. C3G and other cyanidin components of berries have neuroprotective effects on retinal cells.60

**Summary**

Plant-based nutrients known as anthocyanins and their major component, C3G, afford aging humans multimodal protection against a broad spectrum of degenerative diseases. C3G offers comprehensive antioxidant protection, powerful control of inflammation at multiple levels, marked reduction in DNA damage, and beneficial regulatory effects on hundreds of vital genes. It confers real-world protection against age-related conditions ranging from night blindness to cardiovascular disease, cancer, diabetes, and obesity.
**Why Humans Suffer Night Blindness**

At any age, under specific conditions, humans can be easily blinded, either by extremely bright light or total darkness. This is why law enforcement officers will often shine a floodlight on individuals they wish to apprehend at night. It overwhelms the eyes’ ability to make out any distinct image. This phenomenon touches specifically upon the danger of night blindness in aging humans.

Humans did not evolve the ability to see well in darkness. Aging is directly linked with a progressive and inevitable decline in your ability to see in dim-light conditions. The reason for this lies in the underlying mechanism of a highly reactive molecular compound unique to retinal tissue called rhodopsin.

**Rhodopsin** concentrates in the rod cells of the retina, which extend into the brain’s visual centers. Rod cells specifically enable perception of the contrast between light and dark (as opposed to the cone cells, which govern the perception of color).

When light strikes rhodopsin, it immediately breaks down into two distinct compounds: the protein opsin and the carotenoid pigment retinal. These two compounds generate electrochemical impulses that register in the brain as light or dark.

The problem lies in the amount of time it takes for rhodopsin to reconstitute in the eye and restore your ability to see in dark conditions. Depending on your age and nutritional profile, it can take tens of minutes for the component molecules retinal and opsin to recombine into rhodopsin to restore your night vision.

This interval of time poses the greatest risk of nightfalls, accidents, and other hazards, as your ability to perceive light and dark is almost entirely impaired. Picture the amount of time it takes for you to make out images clearly after moving from a brightly lit room to one that is almost completely dark. Or the amount of time your eyes require to see clearly again after having been blinded by a white light.

During this period, humans are virtually blind, unable to distinguish even the nearest objects with any clarity. As you grow older, this interval of blindness increases dramatically.

C3G promotes the regeneration of rhodopsin, thus helping to improve vision in dark conditions.

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**References**


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

**Brite Eyes** by Life Extension® provides a powerful dose of two well-established lubricants in every drop, soothing eye discomfort without irritation.

Hydroxyethylcellulose and glycerin are FDA-approved for ophthalmic use and are uniquely preserved with potent antioxidants and anti-glycating agents.

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

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

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

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

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

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Each box of **Brite Eyes III** contains two individual vials that provide 5 mL each. The reason for putting **Brite Eyes** into individual vials is to reduce the risk of bacterial contamination. Having small vials also makes it convenient for consumers to keep **Brite Eyes** readily accessible at home, the office, in one’s purse or pocket, and other places where access to a soothing eye drop is needed.
**C3G is now in your EYE PROTECTION FORMULA**

Most Life Extension members take a supplement containing zeaxanthin, lutein, meso-zeaxanthin, and astaxanthin to protect their vision. With new findings that C3G (cyanidin-3-glucoside) can enhance night vision, it makes sense to add this unique berry extract to the Super Zeaxanthin formula. This enables members to obtain the optimal amount of C3G without having to swallow another capsule.

**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 macula. However, since meso-zeaxanthin is not part of the typical diet, it cannot be easily replaced. Young people convert lutein into meso-zeaxanthin inside their macula. Some aging people, however, lose their ability to convert lutein into meso-zeaxanthin.

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

**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.

Astaxanthin also helps support vascular health within the eye and improves visual acuity. Its fat-soluble nature offers protection to sensitive cells inside the eye.

**Enhanced Night Vision!**

Falling down is responsible for 70% of accidental deaths in older people. 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.

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

**Comprehensive Ocular Protection in One Daily Capsule**

The new Super Zeaxanthin formula provides natural plant extracts that have been shown to promote healthy eyesight. Just one 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)
- **Natural Astaxanthin** ....................................... 6 mg
  - (Zanthin® CO2 extract 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 during Super Sale, the price is reduced to just $25.65 per bottle. Contains soybeans.

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

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References


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

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

**Olive polyphenols** help protect against LDL oxidation, quench free radicals, and stabilize cell membranes. LIFE EXTENSION MIX™ contains a potent olive extract that provides the best-documented polyphenol called **hydroxytyrosol** in an amount equivalent to drinking one ounce of virgin olive oil a day.

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

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

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

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

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

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

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

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

**Cyanidin-3-Glucoside** is a berry compound that promotes healthy function of the retina to help support night vision.

**Pyridoxal 5’-phosphate** helps protect against glycation reactions, a toxic process in which sugars bind to lipids and proteins to form non-functional structures in the body.

**Vegetable-Fruit Complex**
- **Green tea extract** (decaf.) (98% polyphenols/45% EGCg) ........ 325 mg
- **Broccoli sprout concentrate** ........................................... 525 mg
- **Olive juice extract** (providing hydroxytyrosol, oleuropein).... 12.5 mg
- **Grapeseed extract** (Leucoselect®) .................................. 25 mg
- **Grape** (vitis vinifera) extract (BioVIn®) .......................... 25 mg (37.5% proanthocyanidins)
- **Milk thistle extract** (85% silymarin) ............................... 100 mg
- **Calcium D-Glucarate** ..................................................... 200 mg
- **Citrus Bioflavonoids** ................................................... 200 mg (Standardized to 50% Hesperidin (100mg))
- **Acerola extract 4:1** ..................................................... 300 mg
- **Bilberry** (36% total anthocyanins) ................................. 30 mg
- **Pomegranate (30% punicalagins)** (POMELLA®) ............ 85 mg
- **Sesame seed lignan extract** ........................................... 10 mg
- **Berry-fruit blend** (blackberry, blueberry, cranberry, elderberry, persimmon, plum, and cherry) ......... 200 mg
- **Wild Blueberry** (Vaccinium austrosilvum) ...................... 150 mg
- **Cyani3-D-Glucoside** .................................................. 1.25 mg

**Water-Soluble Vitamins and Enzymatic Activators**
- **Vitamin C**................................................................. 2000 mg
  as: ascorbic acid, calcium, magnesium & nicamidase ascorbates, ascorbyl palmitate, acerola extract
- **Natural Folate** (from lemon extract) ......................... 400 mcg
- **Biotin** .................................................................. 3000 mcg
- **Trimethylglycine** (TMG) ............................................ 100 mg
- **Vitamin B1 (thiamine HCl)** ....................................... 125 mg
- **Vitamin B2 (riboflavin)** .......................................... 50 mg
- **Vitamin B3 (niacinamide and niacinamide ascorbate) .... 117 mg
- **Vitamin B5 (D-calcium pantothenate) ......................... 600 mg
- **Pantethine** .............................................................. 5 mg
- **Vitamin B6 (pyridoxine HCl) ...................................... 5 mg
- **Pyridoxal 5’-phosphate (vitamin B6) ......................... 100 mg
- **Vitamin B12 (cyanocobalamin) ................................. 252 mcg
- **Vitamin B12 (hydroxyocobalamin) ....................... 252 mcg
- **Vitamin B12 (ion exchange resin) ......................... 96 mcg
- **PABA (para-aminobenzoic acid) ............................. 200 mg

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The Most Complete Multivitamin Available Today — Now with C3G!

Published scientific studies document that people who eat the most fruits and vegetables have much lower incidences of health problems. Few people, however, consistently eat enough plant foods to protect against common age-related decline,1,2 and commercial multivitamins do not provide all of the vital plant components needed to maintain good health.

**Fat-Soluble Vitamins**

Vitamin A (as 90% Betatene® *D. salina* natural beta-carotene and 10% acetate) .............................................................. 5000 IU
Vitamin D3 (cholecalciferol) .................................................................. 2000 IU
Ascorbyl palmitate (fat-soluble vitamin C) ........................................... 250 mg
Vitamin E (natural d-alpha tocopheryl succinate) ................................. 400 IU

**Amino Acid Complex**

N-acetyl-L-cysteine ............................................................................. 600 mg
Taurine .................................................................................................... 200 mg

**Mineral Complex**

Selenium (from Se-methyl L-selenocysteine) ....................................... 100 mcg
Selenium (from L-selenomethionine—SelenoPure™) ......................... 50 mcg
Selenium (from sodium selenide) ....................................................... 50 mcg
Zinc (monomethionine) (OptiZinc®) .................................................. 20 mg
Zinc (succinate) ..................................................................................... 15 mg
Boron (as boron citrate/aspartate/glycinate) ....................................... 3 mg
Calcium .................................................................................................. 218 mg
Copper (as copper bisglycinate chelate) .............................................. 1 mg
Chromium ............................................................................................ 500 mcg
(as Crominex® 3+ chromium stabilized with Capros® and PrimaVie® Shilajit)
Potassium chloride (37.4 mg elemental) ............................................. 71.3 mg
Molybdenum (sodium molybdate) ...................................................... 125 mcg
Manganese (gluconate) ....................................................................... 1 mg
Iodine (potassium iodide) .................................................................... 150 mcg
Magnesium oxide (335.96 mg elemental) .......................................... 560 mg
Magnesium citrate (35.28 mg elemental) ........................................... 261.3 mg
Magnesium glycinate (11.74 mg elemental) ....................................... 100 mg
Magnesium taurinate (7.83 mg elemental) ......................................... 100 mg
Magnesium arginate (5.87 mg elemental) .......................................... 100 mg
Magnesium ascorbate (3.40 mg elemental) ....................................... 58.1 mg

**Cholinergic Complex**

Choline (from bitartrate) ..................................................................... 120 mg
Phosphatidylcholine (from soy) ............................................................ 150 mg
Inositol .................................................................................................. 250 mg

Life Extension Mix™ has been upgraded to include cyanidin-3-glucoside or C3G, a compound found naturally in black currant that has been shown to promote the healthy function of delicate structures in the retina that help support night vision. The new Life Extension Mix™ now contains natural food-based folate and Crominex® 3+, which helps maintain healthy blood sugar levels in those already within normal range. During Super Sale, the full daily dose of Life Extension Mix™ can be obtained for as little as $1.34 per day.

**Vitamin D3** helps maintain healthy bone density and DNA. There is five times more vitamin D in LIFE EXTENSION MIX™ compared to conventional multivitamins.

**LIFE EXTENSION MIX™** contains only the expensive dry powder form of vitamin E. This natural form of vitamin E (succinate) has been shown to promote healthy DNA better than other forms.

**N-acetyl-L-cysteine** suppresses free radicals inside the cells and maintains healthy glutathione levels. Taurine may protect against free radicals between cells and supports eye health.

Some scientific evidence suggests that consumption of selenium may reduce the risk of certain forms of cancer; however, the FDA has determined that this evidence is limited and not conclusive.

**Zinc** is often poorly absorbed, but LIFE EXTENSION MIX™ provides two of the most bioavailable forms of zinc.

**Boron** is not only needed to maintain healthy bone density but may also help promote healthy prostate cell development.

**LIFE EXTENSION MIX™** provides a high amount of chromium to help maintain arterial wall structure and already normal glucose levels.

We have upgraded our chromium-containing products with Crominex® 3+, a highly stable and biologically active form of chromium blended with Capros® and PrimaVie®.

**Magnesium** helps protect arteries and heart valves, and supports heart and brain cells. LIFE EXTENSION MIX™ provides high potencies of six different forms of magnesium to fully saturate the body with this lifesaving mineral.

Maintaining high levels of acetylcholine in the brain helps support cognitive function and memory.

**CAUTION:** The high-niacin version of Life Extension Mix provides 862 mg in the daily dose, of which 345 mg is the form of niacin that can cause temporary flushing, itching or gastric disturbances. Liver function testing is recommended when niacin is taken in excess of 500 mg daily. Those with gout or liver diseases should avoid taking high doses of niacin. Consult with your doctor before using this product if you are taking anticoagulant medications. Individuals consuming more than 2,000 IU/day of vitamin D (from diet and supplements) should obtain a serum 25-hydroxyvitamin D measurement. Vitamin D supplementation is not recommended for individuals with hypercalcemia (high blood calcium levels).

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To order call toll-free 1-800-544-4440 or visit www.LifeExtension.com

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References:
Generate Fresh Mitochondria with PQQ

Scientists Discover the “Other CoQ10”

In 1983, Life Extension® introduced a relatively little-known compound called coenzyme Q10. Our review of the literature back then had unearthed data confirming its power to boost the health and energy output of the mitochondria.

Today, scientists recognize mitochondrial dysfunction as a key biomarker of aging.1-6 To take one instance, researchers have recorded evidence of 50% more mitochondrial damage in the brain cells of humans over 70 compared to middle-aged individuals.7 Mitochondrial dysfunction and death are now definitively linked to the development of virtually all killer diseases of aging, from Alzheimer’s and type 2 diabetes to heart failure.8-11

The good news is that mitochondrial dysfunction can be reversed.12 The scientific literature is now filled with studies documenting the therapeutic power of CoQ10 to thwart degenerative disease by boosting mitochondrial health and bioenergetic (energy-producing) capacity.13-16

The latest advance in the area of mitochondrial bioenergetics is the coenzyme pyrroloquinoline quinone or PQQ.

PQQ’s critical role across a range of biological functions has only gradually emerged. Like CoQ10, it is a micronutrient whose antioxidant capacity provides extraordinary defense against mitochondrial decay.

But the most exciting revelation on PQQ emerged early in 2010, when researchers found it not only protected mitochondria from oxidative damage—it stimulated growth of fresh mitochondria!17

In this article, you will learn of this novel coenzyme’s ability to combat mitochondrial dysfunction. You will find out how it protects the brain, heart, and muscles against degenerative disease. You will also discover its potential to reverse cellular aging by activating genes that induce mitochondrial biogenesis—the spontaneous formation of new mitochondria in aging cells! > >
POQ: A Breakthrough in Cellular Anti-Aging

POQ is ubiquitous in the natural world. Its presence in *interstellar stardust* has led some experts to hypothesize a pivotal role for POQ in the evolution of life on Earth. It has been found in all plant species tested to date. Neither humans nor the bacteria that colonize the human digestive tract have demonstrated the ability to synthesize it. This has led researchers to classify POQ as an essential micronutrient.

POQ’s potential to stimulate mitochondrial biogenesis was foreshadowed by repeated early findings indicating its central role in growth and development across multiple forms of life.

It has been shown to be a potent growth factor in plants, bacteria, and higher organisms. Preclinical studies reveal that when deprived of dietary POQ, animals exhibit stunted growth, compromised immunity, impaired reproductive capability, and most importantly, fewer mitochondria in their tissue. Rates of conception, the number of offspring, and survival rates in juvenile animals are also significantly reduced in the absence of POQ. Introducing POQ back into the diet reverses these effects, restoring systemic function while simultaneously increasing mitochondrial number and energetic efficiency.

Optimal Mitochondrial Defense

As the primary engines of almost all bioenergy production, the mitochondria rank among the physiological structures most vulnerable to destruction from oxidative damage. POQ’s formidable free radical–scavenging capacity furnishes the mitochondria with superior antioxidant protection.

At the core of this capacity is an extraordinary molecular stability. As a bioactive coenzyme, POQ actively participates in the energy transfer within the mitochondria that supplies the body with most of its bioenergy (like CoQ10).

Unlike other antioxidant compounds, POQ’s exceptional stability allows it to carry out thousands of electron transfers without undergoing molecular breakdown. It has been proven especially effective in neutralizing the ubiquitous superoxide and hydroxyl radicals. According to the most recent research, “POQ is 30 to 5,000 times more efficient in sustaining redox cycling (mitochondrial energy production) . . . than other common [antioxidant compounds], e.g. ascorbic acid.” A consistent finding in the scientific literature is that nutrients like POQ provide more wide-ranging benefits than conventional antioxidants the general public relies on.
Anti-Aging Armor for the Most Energy-Intensive Organs

POQ’s dual capacity as a cell signaling modulator and a superior antioxidant renders it optimally effective in combating degenerative disease and age-related declines in the body’s most energetic organs: the heart and brain.

The revelation of its ability to favorably affect system-wide cell development, metabolism, and mitochondrial biogenesis affords an explanation for a wealth of data on its neuroprotective and cardioprotective benefits.

Neuroprotection

POQ has been shown to optimize health and function of the entire central nervous system. It reverses cognitive impairment caused by chronic oxidative stress in pre-clinical models, improving performance on memory tests.32 It has also been shown to safeguard the “Parkinson’s disease gene,” DJ-1, from self-oxidation—an early step in the onset of disease.33

Reactive nitrogen species (RNS), like reactive oxygen species, impose severe stresses on damaged neurons.34 They arise spontaneously following stroke and spinal cord injuries and have been shown to account for a substantial proportion of subsequent long-term neurological damage. POQ suppresses RNS in experimentally induced strokes.35 It also provides additional protection by blocking gene expression of inducible nitric oxide synthase (iNOS), a major source of RNS, following spinal cord injury.36

POQ powerfully protects brain cells against oxidative damage following ischemia-reperfusion injury—the inflammation and oxidative damage that result from the sudden return of blood and nutrients to tissues deprived of them by stroke.37 Given immediately before induction of stroke in animal models, POQ significantly reduces the size of the damaged brain area.38

POQ also interacts in a beneficial manner with our brain’s neurotransmitter systems. In particular, POQ protects neurons by modifying the important NMDA receptor site.39,40 NMDA is a powerful mediator of “excitotoxicity,” a response to long-term overstimulation of neurons that is associated with many neurodegenerative diseases and seizures.41-43 POQ also protects against neurotoxicity induced by other toxins, including mercury.44,45

A mounting body of evidence points to POQ as a potent intervention in Alzheimer’s disease and Parkinson’s disease. Both are triggered by accumulation of abnormal proteins that initiate a cascade of oxidative events resulting in brain cell death. POQ prevents development of a protein (alpha-synuclein)
associated with Parkinson’s disease. It also protects nerve cells from the oxidizing ravages of the amyloid-beta protein linked with Alzheimer’s disease. A 2010 study revealed that PQQ could prevent formation of amyloid beta molecular structures.

PQQ has also been shown to protect memory and cognition in both aging animals and humans. It stimulates production and release of nerve growth factor in cells that support neurons in the brain. This may partially explain why PQQ supplementation of aging rats resulted in marked improvement of their memory function.

In humans, supplementation with 20 mg per day of PQQ resulted in improvements on tests of higher cognitive function in a group of middle-aged and elderly people. These effects were significantly amplified when the subjects also took 300 mg per day of CoQ10.

Mitochondrial Function and Longevity: The Definitive Link

In cell biology, mitochondria are unique among other cellular components in one vital aspect: they possess their own primitive DNA, distinct from the DNA housed within the cell nucleus that you normally think of as the building block of all living organisms.

Mitochondrial DNA closely resembles bacterial DNA, the result of an evolutionary legacy. Biologists believe that at one time our mitochondria existed as separate, highly energetic organisms. Our primordial ancestor cells aggressively engulfed and incorporated these “proto-mitochondria” into their own internal structure. This furnished our cellular progenitors with two powerful evolutionary advantages: it harnessed the ability of proto-mitochondria to produce vast quantities of energy from oxygen—and served to boost cellular longevity.

This simple fact has profound implications for the science of anti-aging.

Why? You already know that cells in your body have the capacity to divide and replicate themselves owing to the presence of nuclear DNA. If mitochondria possess their own DNA, it follows that they should also have the ability to replicate themselves and increase their number within a single human cell.

This turns out to be the case: human cells may house anywhere from 2 to 2,500 mitochondria depending on tissue type, nutrition, antioxidant status, and other factors. Put differently, one cell may contain over 1,000 times more mitochondria than another.

The more high-functioning mitochondria in your body, the greater your overall health and longevity. This is no longer a matter of conjecture. A growing number of cell biologists now espouse the theory that mitochondrial number and function determine human longevity.

The problem is that the scientifically validated methods available to spontaneously increase the number of new mitochondria in our aging bodies are exceedingly difficult. To date, the only known ways to reliably stimulate mitochondrial biogenesis—sustained calorie restriction or strenuous physical activity—are far too rigorous and impractical for most aging individuals.

A nutrient with the power to safely trigger mitochondrial biogenesis would naturally mark an extraordinary advance in the quest to halt and reverse cellular aging.

PQQ has emerged as that nutrient.
Why Your Mitochondria Are Highly Exposed to Lethal Mutation

Cell aging occurs as each cell’s ability to reproduce itself inexorably declines. This decline is in turn associated with the gradual degradation and destruction of the DNA complex.

Overlooked in this process is the equally important role of the mitochondria’s robust ability to reproduce as you age.

Just as degradation of the cellular DNA complex ultimately leads to senescence and death, degradation of the mitochondrial DNA complex leads to the death of the mitochondria and the ultimate extinction of the cell—and the “host” organism.

This death spiral of genetic degradation is accelerated in the mitochondria by the very physiological function they must perform. As the nuclear generators responsible for almost all bioenergetic production, mitochondria are the site of enormous oxidative activity. A nearly incalculable number of electrons are constantly flowing within the mitochondria, throwing off an equally enormous number of free radicals. This makes them highly vulnerable to biochemical insults.

There is an additional threat, as scientists have discovered over the past several decades: relative to nuclear DNA, mitochondrial DNA possesses few defenses against free radical damage. 

Cellular DNA is protected by numerous “guardian” proteins (histones and repair enzymes) that act to blunt the impact of free radicals. No such repair systems exist to protect mitochondrial DNA.62,63

Cellular DNA also enjoys superior structural defenses. It is housed within a protective double-membrane that separates it from the rest of the cell. This double-membrane is complemented by a dense matrix of filament proteins called the nuclear lamina, a kind of hard shell casing to further buffer DNA from external impacts.

By comparison, mitochondrial DNA is left almost entirely exposed: it attaches directly to the inner membrane where the mitochondria’s electrochemical furnace rages continuously, generating an enormous volume of toxic reactive oxygen species.

Accordingly, mitochondrial DNA mutates at a much higher rate than cellular DNA.64 When you consider that the mitochondria supply at least 95% of the energy required for all physiological processes in your body, the need to maintain the integrity of mitochondrial DNA takes on even greater urgency. All aging humans should take every step to safeguard the genes that regulate healthy mitochondrial proliferation from lethal mutation. This is supported by an abundance of scientific studies linking genetic mutation within the mitochondria to human aging.65-67

PQQ’s extraordinary antioxidant capacity represents a powerful new intervention that may effectively reinforce the mitochondria’s limited defenses.

Cardioprotection

As with stroke, damage in heart attack is inflicted via ischemia-reperfusion injury. Supplementation with PQQ reduces the size of damaged areas in animal models of acute heart attack (myocardial infarction).52 This occurs whether the supplement is given before or after the ischemic event itself.

To further investigate this potential, researchers at the VA Medical Center at UC-San Francisco compared PQQ with metoprolol, a beta blocker that is standard post-MI clinical treatment. Given alone, both treatments reduced the damaged areas’ size and protected against heart muscle dysfunction. When they were given together, the left ventricle’s pumping pressure was enhanced. The combination also increased mitochondrial energy-producing functions—but the effect was small compared with PQQ alone! And only PQQ favorably reduced lipid peroxidation. The remarkable conclusion: “PQQ is superior to metoprolol in protecting mitochondria from ischemia/reperfusion oxidative damage.”53

Subsequent research from the same team has demonstrated that PQQ helps heart muscle cells resist acute oxidative stress. The mechanism? Preserving and enhancing mitochondrial function.

Summary

Mitochondrial dysfunction has been definitively linked to virtually all killer diseases of aging, from Alzheimer’s disease and type 2 diabetes to heart failure.

Researchers have recorded evidence of greater mitochondrial damage in the brain cells of humans over 70 compared to those in their early 40s. The health and function of these cellular energy generators is now considered so vital that many scientists believe mitochondrial longevity determines overall longevity in aging humans.

In a revolutionary advance, an essential coenzyme called pyrroloquinoline quinone or PQQ has been
shown to induce mitochondrial biogenesis—the growth of new mitochondria in aging cells!

While CoQ10 optimizes mitochondrial function, PQQ activates genes that govern mitochondrial reproduction, protection, and repair. PQQ also affords potent cardioprotection and optimal defense against neuronal degeneration. Published studies show that 20 mg of PQQ plus 300 mg of CoQ10 may reverse age-related cognitive decline in aging humans.

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


PQQ Activates Signaling Molecules

A team of researchers at the University of California decided to analyze PQQ’s influence over cell signaling pathways involved in the generation of new mitochondria.17

Their work, published in 2010, led to several extraordinary discoveries.

They found that PQQ’s critical role in growth and development stems from its unique ability to activate cell signaling pathways directly involved in cellular energy metabolism, development, and function. Cells undergo spontaneous mitochondrial biogenesis through the effects of three signaling molecules activated by PQQ:

- PQQ activates expression of PCG-1α (peroxisome proliferator-activated receptor gamma coactivator 1-alpha). PCG-1α is a “master regulator” that mobilizes your cells’ response to various external triggers. It directly stimulates genes that enhance mitochondrial and cellular respiration, growth, and reproduction. Its capacity to upregulate cellular metabolism at the genetic level favorably affects blood pressure, cholesterol and triglyceride breakdown, and the onset of obesity.26
- PQQ triggers a signaling protein known as CREB (cAMP-response element-binding protein). CREB plays a pivotal role in embryonic development and growth. It also beneficially interacts with histones, molecular compounds shown to protect and repair cellular DNA.27 CREB also stimulates the growth of new mitochondria.
- PQQ regulates a recently discovered cell signaling protein called DJ-1. As with PCG-1α and CREB, DJ-1 is intrinsically involved in cell function and survival. It has been shown to prevent cell death by combating intensive antioxidant stress28,29 and is of particular importance to brain health and function. DJ-1 damage and mutation have been conclusively linked to the onset of Parkinson’s disease and other neurological disorders.

These findings shed light on the results of prior studies where a PQQ deficiency in juvenile mice, for example, resulted in elevated plasma glucose concentrations, a 20-30% reduction in the number of mitochondria in the liver, and consequent impairment in oxygen metabolism.25 These are hallmark indicators of mitochondrial dysfunction. Additional animal models also suggested significant alterations in mitochondrial numbers.26 Taken together, these results confirm PQQ’s power to significantly boost mitochondrial number and function—the key to cellular anti-aging and longevity.


It's hard to find a natural antidote to today's overstressed world. The encouraging news is that **lemon balm** (*Melissa officinalis*), a plant native to the Mediterranean region, has been *clinically proven* to help with **anxiety** and **sleeplessness**. What's more, lemon balm produces these calming effects while also enhancing memory and attention!¹

**Cyracos®** lemon balm extract is prepared from special lemon balm chosen for its high concentrations of **hydroxycinnamic** and **rosmarinic acids**. These active lemon balm constituents appear to enhance mood by modulating specific nicotinic and muscarinic receptors in the cerebral cortex of the brain.

Aside from relieving everyday stress and sleep problems, the anxiety-relieving properties of this plant extract may also offer smokers relief from the mental stress of quitting, aid in leveling mood swings, and help reduce the emotional hunger associated with dieting (or calorie restriction).

**RELAXATION-PROMOTING EFFECTS OF L-THEANINE**

The Japanese have long known that **L-theanine**, an amino acid derived from green tea, is a natural relaxant that diminishes stress—without drowsiness, impaired thought, or other side effects.

*L-theanine* produces calming effects in the brain in ways that have been compared to meditation, massage, and aromatherapy. L-theanine induces relaxation without causing drowsiness. In fact, studies show that **L-theanine enhances the brain's ability to concentrate, learn, and remember**. Unlike caffeine, L-theanine increases GABA (gamma-aminobutyric acid), an inhibitory neurotransmitter that not only induces relaxation but also produces a sense of well-being. L-theanine may normalize levels of dopamine, a critical brain hormone that is depleted by various stress factors.

**A HOST OF HEALTH-ENHANCING BENEFITS**

Research shows that L-theanine has numerous health-enhancing effects, including protecting cognitive function.* In studies of neurons in cell culture, L-theanine significantly reversed glutamate-induced toxicity, a major cause of normal brain aging.³

Based on an enormous amount of published data showing the multiple beneficial effects of lemon balm extract and L-theanine, Life Extension® has combined these potent, but safe nutrients into a proprietary formula called **Natural Stress Relief**. Each capsule of Natural Stress Relief provides:

- **300 mg of Cyracos® lemon balm extract**
- **200 mg of Suntheanine® L-Theanine**

Note that the amount of L-theanine in this product is double that of most L-theanine stand-alone supplements. The reason for this potency increase is reports of greater benefit when at least **200 mg of L-theanine** are taken.

The retail price of a 30-count bottle of Natural Stress Relief is $28. If a member buys four bottles during **Super Sale**, the price of this potent stress-relieving formula is reduced to just **$16.20** per bottle.

**BEWARE OF IMITATIONS** The L-theanine used in the new Natural Stress Relief is Suntheanine®, the only pure form of L-theanine available worldwide and the only form protected by 40 internationally recognized patents and scientifically proven in clinical studies to be safe and efficacious. Independent laboratory analysis has verified that certain other products on the market claiming to contain “L-theanine” are only half L-theanine, the other half being a different form of theanine known as “D-theanine,” which has not been scientifically evaluated in published studies. Suntheanine® is a registered trademark of Taiyo International, Inc. Use of Suntheanine® is protected by US Trademark Registration No. 2,548,957. Cyracos® is a registered trademark of Naturex, Inc.

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

**NEXT GENERATION CoQ10**

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

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

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

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

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

Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

Combining ubiquinol CoQ10 with shilajit generates a powerful synergy that supports more youthful cellular energy production than CoQ10 alone.2,3,5

References:

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

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<td>The retail price for 30 200-mg softgels is $62. If a member buys four bottles during Super Sale, the price is reduced to $37.80 per bottle. Item #01431</td>
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To order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
To order Mitochondrial Energy Optimizer, call 1-800-544-4440 or visit www.LifeExtension.com
Back in the early 1980s, Life Extension® was the first to introduce CoQ10 as a proven method to enhance mitochondrial energy production.

CoQ10 has since gained universal scientific recognition for its role in supporting cellular performance throughout the body.¹⁵

Today, a major advance in combating cellular aging called PQQ (pyrroloquinoline quinone) is being launched. In an unprecedented breakthrough, researchers have discovered that PQQ supports mitochondrial biogenesis—the spontaneous growth of new mitochondria in aging cells!⁷

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

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

PQQ offers a viable alternative.
The Ultimate Cell Rejuvenator
The enormous amount of energy generated within the mitochondria exposes them to constant free radical attack. The resulting mitochondrial decay is a hallmark of aging. PQQ protects and augments delicate mitochondrial structures to promote youthful cellular function in three distinct ways:

- **Antioxidant power.** Like CoQ10, PQQ is a highly potent antioxidant. Its extraordinary molecular stability enables it to facilitate thousands of biochemical reactions in the mitochondria without breaking down, for maximum antioxidant and bioenergetic support.15

- **Favorably modulates gene expression.** PQQ activates genes that promote formation of new mitochondria— 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.36

- **Mitochondrial defense.** Mitochondria possess their own DNA, distinct from the DNA contained in the nucleus. Unfortunately, compared to nuclear DNA, mitochondrial DNA is relatively unprotected. PQQ’s antioxidant potency and favorable gene expression profile act to support mitochondrial defense.

**Vital Protection for the Aging Heart and Brain**

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

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

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

**References**


**To order new 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)
Over fifty years ago scientists conclusively established that low levels of chromium directly contribute to high blood sugar and pre-diabetic complications.¹

Yet today, anywhere between 25-50% of the American population suffers from chromium deficiency.² This is likely the result of modern commercial farming methods that have depleted the soil of valuable chromium and industrial food processing that depletes natural chromium from whole foods. Compounding the danger is the reality that your body’s capacity to absorb chromium declines with age.

These alarming facts highlight a widespread, stealth threat that rampant nutritional insufficiencies may be undermining even the best efforts to optimize blood glucose levels.

As Life Extension® members are well aware, excess glucose not only increases degenerative disease risk, but also adversely impacts longevity genes required for extended life span.

In published studies, chromium deficiency has been shown to induce early-stage diabetic complications and hasten the onset of full-blown diabetes.³⁻⁵

The encouraging news is that a targeted set of novel nutritional compounds has been identified that optimizes your body’s ability to keep a tight rein on glucose levels.

In this article, you will learn of a cutting-edge chromium complex that enhances your body’s ability to utilize glucose as you age. You will also discover the proven power of additional nutrients to protect against the system-wide damage inflicted by surplus glucose. > >
Chromium: The Master Blood Sugar Regulator

Studies on chromium have consistently demonstrated improvement in blood sugar levels, insulin sensitivity, and lipid profiles. More recent research reveals how it works: chromium favorably modulates your cells’ internal communication centers (intracellular signaling systems) to effectively lower blood glucose.

Every cell in your body uses an internal communication system that must function properly in order to establish and maintain optimal blood glucose absorption and metabolism. Such intracellular signaling is especially critical to cells’ ability to detect and respond to elevated glucose levels.

When cells detect these elevations, an array of biomolecular processes is set in motion that will determine how well they will manage the increased sugar burden. Chromium is now recognized to be vital to this process, enabling cellular uptake and breakdown of blood sugar—and effectively lowering glucose levels in the blood.

The clinical literature is rich with data supporting chromium’s singular ability to lower blood sugar levels and increase insulin sensitivity.

In a 2009 study, diabetic patients given chromium experienced reductions in their total insulin requirements, along with reductions in fasting and afternoon glucose levels. Recent studies show that supplementation with chromium and biotin can improve glycemic control in overweight to obese diabetic patients when taken along with their regular medication.

Chromium also exerts its positive effects on blood sugar selectively—which means it does not induce dangerously low blood sugar levels like some drugs, but rather kicks into gear only when blood sugar levels become too high.

Scientists recognize that control of blood sugar in the immediate period following a meal (the postprandial period) is perhaps more important than at any other time. This is the interval when blood sugar can dangerously spike in the body, inflicting low-level, cumulative damage to multiple physiological systems over time. Chromium has been shown to dramatically reduce total exposure to glucose during the postprandial period in most subjects.

Chromium’s multitargeted actions not only keep sugar levels low, they also prevent the formation of advanced glycation end products, or AGEs. Most notably, chromium helps bring down levels of hemoglobin A1c, the advanced glycation end product associated with long-term exposure to elevated sugar concentrations.

These benefits are accompanied by healthy reductions in abnormal lipid levels and increases in artery-cleansing high-density lipoprotein (HDL) in the blood. The combination of chromium and biotin has also been shown to favorably affect a biomarker called the atherogenic index: the ratio of triglycerides to HDL that is associated with increased cardiovascular risk.

How Chromium Lowers Blood Sugar Levels: GLUT4

Chromium, like most metals in our bodies, binds to a specific protein “carrier” molecule. Just as the hemoglobin molecule in red blood cells binds to iron, the chromodulin molecule binds to chromium ions.

In the presence of insulin, the chromodulin molecule changes shape and location in the cell, triggering activation of a vital glucose transporter molecule called GLUT4. GLUT4 is found most abundantly in skeletal muscle and fat tissue, where most glucose metabolism takes place in the body.

Once activated by chromium, GLUT4 shifts its location from deep within the cell’s internal matrix to a position on the cell membrane. GLUT4 then allows glucose to flow from high concentrations in the blood to lower concentrations in the cell, allowing the cell to safely metabolize sugar while lowering sugar levels in the blood at the same time.

One of the earliest events in the onset of type 2 diabetes is now known to be inhibition of glucose transport by the GLUT4 complex—so scientists are keenly interested in novel approaches to reactivating GLUT4’s ability to transport glucose effectively.

Chromium directly increases production of GLUT4 transporter molecules themselves, adding a second important mechanism of action that is independent of insulin (a vital effect in insulin-resistant tissue). Chromium regulates the genes for several intracellular signaling molecules, including GLUT4. That effect increases the amount of GLUT4 available for moving glucose out of circulation. Exciting recent studies reveal that chromium also activates an entirely different signaling system called p38 MAPK that contributes to increased glucose uptake independent of the GLUT4 system.
The improvement in insulin signaling by chromium is also associated with decreased production of specific pro-inflammatory cytokines. These cell-signaling molecules play a mutually reinforcing role in prolonging and worsening impaired glucose control.11,20

**Potent Organic Blood Sugar Stabilizers: Amla and Shilajit**

Chromium is a highly reactive metal ion, requiring balance through additional organic materials in order to stabilize and enhance its effects. Two traditional remedies for obesity and its consequences have more recently been shown to synergistically enhance chromium’s beneficial action.

The herb *amla* (Indian gooseberry) directly impacts a host of biochemical and gene-regulating processes that positively influence factors related to high blood sugar and metabolic syndrome. Traditional preparations containing amla have long been known to lower blood sugar in diabetic animals and humans, but until recently the mechanisms were unclear.33,34 We now know that amla extracts are powerful antioxidants.35,36 They inhibit digestive enzymes that would otherwise convert starch to sugar, helping to reduce blood sugar loads following a meal.35 In preclinical models, an herbal combination containing amla reduces lipid peroxidation, the free radical damage to cell membranes that plays a critical role in *atherosclerosis* and the development of *insulin resistance*.37

Amla extract also shields tissues from damage inflicted by excess glucose at multiple levels and it prevents production of sugar alcohols that wreak havoc on the vulnerable ocular (eye) structures and other tissues in diabetics.38,39 Amla extracts are showing additional promise in preventing the metabolic syndrome in animal models.40 Additional balance is provided by *shilajit*, a complex mixture of organic and inorganic compounds rich in *fulvic acid*. Studies have shown that shilajit has remarkable effects on the ways in which our mitochondria utilize energy from sugar and fats.41

Fulvic acid acts as a molecular “chaperone,” shuttling electrons efficiently along their pathways within mitochondria.42-44 This enhances the efficiency of mitochondrial respiration and speeds blood sugar metabolism.45

The compound of chromium plus amla and shilajit thus acts to optimize the way your body takes up and distributes glucose between and within cells, assuring rapid removal of glucose from the bloodstream and efficient utilization of glucose within cells.

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**Nutritionally Targeted Glucose Control**

- Up to 50% of the American population is deficient in chromium, one of the principal nutrients the body needs to control blood sugar levels.
- A novel chromium complex has been identified that optimizes your body’s ability to break down and convert blood sugar into energy at the cellular level.
- The organic compounds *amla* (Indian gooseberry) and *shilajit* work synergistically to enhance chromium’s glucose-lowering effects.
- Amla shields cells from damage inflicted by high blood sugar, while shilajit boosts efficient cellular metabolism of glucose.
- Cinnamon polyphenols activate cells’ glucose detection systems, enabling them to act more quickly to counter high blood sugar.
- Cinnamon also induces the feeling of being full (satiety) to prevent overconsumption and the after-meal spikes in blood sugar and insulin that result.
- Extracts of brown seaweed help prevent glucose elevations by blocking digestive enzymes and limiting glucose absorption from the intestine.
Blocking Carbohydrate Breakdown with Seaweed Extracts

A complementary strategy in the battle against elevated glucose is to limit the amount of glucose the body has to process. Many doctors counsel their patients to reduce their total carbohydrate intake, but this strategy provides only partial protection for most people. Another approach is to blunt the conversion of starches into their component sugars in the gastrointestinal tract. This can be accomplished safely and effectively by introducing natural enzyme inhibitors that halt carbohydrate metabolism in the gut. The most attractive targets are the sugar-producing alpha-amylase and alpha-glucosidase enzymes.

Extracts from a variety of seaweeds have inhibitory effects on these enzymes. Animal studies have revealed that inhibiting these enzymes lowers blood sugar levels. Not only are the polyphenols found in these seaweeds powerful tools in reducing elevated glucose, they are also potent antioxidants.

These seaweed extracts stimulate differentiation of fat cells, preventing them from replicating and reducing the release of harmful fat-related cytokines. They achieve this effect in part through their upregulation of the important PPAR metabolic sensing system and also through increased expression of the GLUT4 glucose transporter.

Cinnamon: A Clinically Documented Glucose Fighter

Cinnamon’s traditional uses have been related to obesity and to the conditions we now recognize as diabetes and the metabolic syndrome. The polyphenols in water-soluble cinnamon extracts act on multiple targets to enhance insulin sensitivity, lower blood sugar, and limit damage by advanced glycation end products. Collectively, these effects contribute to reduction in the risks for the metabolic syndrome.

Cinnamon polyphenols are powerful antioxidants that exert direct protective effects on cells and tissues. In recent years, we’ve learned that cinnamon also potently increases the number and activity of glucose transport complexes that enable cells to take up glucose in the presence of insulin. PPARs represent another mechanism by which cells recognize increased glucose concentrations and act to lower them. Increased PPAR activity contributes to improved insulin sensitivity.

In human studies, cinnamon supplementation lowers blood sugar and increases insulin sensitivity. It blunts the spike in glucose levels following ingestion of a sugar-rich meal, and at the same time lowers insulin spikes.
Cinnamon also helps to increase *satiety*, the feeling of being full that prevents us from eating more than we should.  

Cinnamon has also been shown to lower blood pressure, enhancing its anti-metabolic syndrome effects. The combination of reduced blood sugar, reduced blood pressure, and improved body composition promises tremendous health benefits in adults with early metabolic syndrome but without signs of diabetes.  

These effects powerfully lower the body’s total exposure to excess glucose. But cinnamon *also* acts to prevent glucose-induced tissue damage, reducing protein glycation and preventing the cumulative effects of AGEs. Cinnamon supplements have shown promise, for example, in reducing diabetic neuropathy, the painful and debilitating nerve injury that results from glycation of neural proteins. And cinnamon’s polyphenols have anti-inflammatory, antimicrobial, antitumor, cholesterol-lowering, and immunomodulatory effects that contribute to our overall disease risk reduction. Specifically, cinnamon extracts have been shown to reduce levels of the fat tissue-derived inflammatory cytokines that increase our risk of cardiovascular disease.  

**Summary**  

Up to 50% of the American population is deficient in chromium, one of the principal nutrients the body needs to control blood sugar levels. A novel chromium complex has been identified that optimizes your body’s ability to break down and convert blood sugar into energy *at the cellular level*. 

The organic compounds *amla* (Indian gooseberry) and *shilajit* work synergistically to enhance chromium’s glucose-lowering effects. Amla shields cells from damage inflicted by high blood sugar, while shilajit boosts efficient cellular metabolism of glucose.  

In human studies, cinnamon supplementation lowers blood sugar and increases insulin sensitivity.  

Cinnamon polyphenols activate cells’ glucose detection systems, enabling them to act more quickly to counter high blood sugar. Cinnamon also induces the feeling of being full (satiety) to prevent overconsumption and the after-meal spikes in blood sugar and
insulin that result. Extracts of brown seaweed help prevent glucose elevations by blocking digestive enzymes and limiting glucose absorption from the intestine.

Taken together, these nutrients provide aging individuals with potent natural mechanisms to suppress fasting blood glucose levels to optimal ranges (below 86 mg/dL) while blunting dangerous after-meal glucose spikes.

References


22. Jain SK, Rains JL, Coad JL. High glucose and ketosis (acetocacetate) increases, and chromium niacinate decreases, IL-6, IL-8, and MCP-1 secretion and oxidative stress in U937 monocytes. Antioxid Redox Signal. 2007 Oct;9(10):1581-90.


Turns out, the advice you got as a child to “eat your greens” could pay major dividends as an adult. Scientists have recently identified extracts from green vegetables like broccoli, cabbage, and Brussels sprouts that help maintain healthy hormone levels. Having optimal hormone levels is essential to any anti-aging strategy. In addition, many of these extracts contain glucosinolates, isothiocyanates, carnosic acid, and carnosol – bioactive compounds that have a wide variety of favorable effects on estrogen metabolism and cell division.1-4

**Triple Action Cruciferous Vegetable Extract with Apigenin** combines a broccoli Super Concentrate with watercress, Indole-3-Carbinol (I3C), rosemary extract, cat’s claw extract, cabbage extract, DIM, and apigenin, a powerful plant flavonoid found in plants such as parsley and celery, to form the most comprehensive cruciferous vegetable supplement available.5

For those who don’t have the time to consume each of the above vegetables each and every day, **Triple Action Cruciferous Vegetable Extract with Apigenin** is the perfect solution to making sure your body gets the important extracts it needs from these crucial food sources. For those weighing less than 160 pounds, just one vegetarian capsule a day provides optimal potencies. Those weighing over 160 pounds should consider taking two capsules a day. A 60-vegetarian capsule bottle of **Triple Action Cruciferous Vegetable Extract** retails for $24. If a member buys four bottles during Super Sale, the price is reduced to only $14.85 per bottle.

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

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
According to the *Proceedings of the National Academy of Sciences*, alpha tocopherol (regular vitamin E) displaces critically important gamma tocopherol in the cells.\(^1\) While alpha tocopherol inhibits free-radical production, gamma tocopherol is required to trap and neutralize existing free radicals.\(^2\)

Four prestigious scientific journals have highlighted gamma tocopherol as one of the most critically important forms of vitamin E for those seeking optimal health benefits.\(^2\)

Most commercial vitamin E supplements contain little, if any, gamma tocopherol. They instead rely on alpha tocopherol as the primary ingredient. However, it is gamma tocopherol (not the alpha form) that quenches peroxynitrite, the free radical that plays a major role in the development of age-related decline.\(^2,3\)

**SESAME LIGNANS: The Natural Vitamin E Booster**

Life Extension\(^*\) has uncovered research suggesting that adding sesame lignans to gamma tocopherol may significantly enhance its beneficial effects. Sesame and its lignans have been shown to boost antioxidant levels and help maintain already-normal blood pressure.\(^*\)

In a human study that combined gamma tocopherol with sesame lignans, gamma tocopherol/sesame was 25% more effective than gamma tocopherol/tocotrienols in suppressing tissue measurements for free-radical and inflammatory damage.\(^4,5\) Since tocotrienols are considered nature’s most potent antioxidants, the fact that low-cost gamma tocopherol with sesame is more effective is a remarkable finding.

Life Extension fortified the popular **Gamma E Tocopherol** supplement with standardized sesame lignans. Consumers obtain superior benefits at a much lower cost.

**WORLD’S MOST COMPREHENSIVE VITAMIN E FORMULA!**

The Gamma E Tocopherol formula provides potent doses of critically important gamma vitamin E along with sesame lignans to augment its antioxidant effects. The retail price for 60 softgels of **Gamma E Tocopherol with Sesame Lignans** is $32. If a member buys four bottles during **Super Sale**, the price is reduced to only $19.58 per bottle.

* 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.
Cutting-Edge Support for Healthy Glucose Metabolism

Dietary carbohydrates are nearly impossible to avoid in today’s “grab-and-go” world. The result? Countless aging Americans find themselves under constant assault from excess glucose calories. Even health-conscious, active people can experience higher-than-desired blood sugar levels as they age. Life Extension® now offers an enhanced, all-natural, multipronged approach called CinSulin® with InSea™ and Crominex® 3+.

An Extract Clinically Validated by the USDA!

Excitement has been building among scientists around the world over the clinically proven power of a novel form of cinnamon to support healthy glucose metabolism. Scientists at the US Department of Agriculture have been quietly studying it for more than a decade. Government experts have been amazed by compelling in vitro results documenting its ability to induce a twenty-fold increase in sugar metabolism.

Studies in humans have proven just as impressive. In a recent double-blind, placebo-controlled clinical trial, a group of maturing individuals (average age 61) taking 500 mg per day of the cinnamon extract contained in the new CinSulin® formula experienced an average decline of 12 mg/dL in fasting blood glucose after only two months. This novel cinnamon extract also produced a significant decrease in after-meal glucose spikes (an average of 32 mg/dL) after ingestion of 75 g of carbohydrates!

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
An objective of those who practice calorie restriction is to maintain fasting glucose levels around 80 mg/dL of blood and after-meal glucose spikes to no greater than 40 mg/dL. CinSulin® may help more longevity enthusiasts accomplish their glucose control objective.

Combined with CinSulin® and InSea™, the result is an unrivalled formula that affords optimal support for healthy glucose metabolism in aging individuals. The suggested serving of 1 vegetarian capsule of CinSulin® with InSea™ and Crominex® 3+ taken 20-30 minutes before three meals of the day supplies:

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A bottle containing 90 vegetarian capsules of CinSulin® with InSea™ and Crominex® 3+ retails for $38. If a member buys four bottles during Super Sale, the price is reduced to just $22.95 per bottle.

To order CinSulin® with InSea™ and Crominex® 3+ or Optimized Chromium with Crominex® 3+, call 1-800-544-4440 or visit www.LifeExtension.com

References
5. J Metab. Submitted for publication.
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What will it take for the public to understand that the diseases of aging can be postponed or prevented altogether?

For 31 years, we at Life Extension® have published solid scientific data documenting that healthy lifestyle choices can slash disease risk.

Yet as we begin year 2011, two-thirds of Americans are overweight or obese. Their youth is being robbed by an epidemic of metabolic syndrome and diabetes that sharply increases incidences of cancer, vascular occlusion, arthritis, dementia, and virtually every other age-related disorder.

Membership in the Life Extension Foundation is at an all-time high, but we reach only a minute fraction of the American population. The vast majority of individuals today wallow in a state of ignorance about what they should be doing to protect their vital health.

While we at Life Extension can point to our extensive track record of scientific achievements, the public remains largely unimpressed. When a famous celebrity, however, appears on national television to espouse many of these same anti-aging strategies, the average person stops to notice.

There is something in the human psyche that prompts people to emulate what celebrities do - whether it’s good or bad.

In the case of Suzanne Somers, she has turned her life around by removing toxic compounds from her environment, eating organic foods, meticulously keeping her hormones in natural balance, having her blood regularly tested, and taking the appropriate supplements.

Suzanne is by no means the only prominent personality doing this. After all, Hollywood has long emphasized youthful appearances - and those involved in show business are perhaps the earliest examples of humans taking aggressive steps to thwart degenerative changes both inward and outward.

What differentiates Suzanne from our many other celebrity members is that she shouts from the rooftops the many virtues she has attained by following a meticulous science-based youth restoration program.

In her latest book titled Sexy Forever, Suzanne reveals to the public much of the data that Life Extension members view as commonsense approaches to protect against age-related illness.

What impresses us is the ability of Suzanne Somers to appear in the national media and enlighten the world as to how humans can successfully intervene into pathological aging processes. By lifting the veil of scientific ignorance, Suzanne can singlehandedly educate the public about proven methods to avoid diseases that needlessly cripple and kill millions of Americans each year.

The following is an excerpt from the chapter titled Supplement to Speed Weight Loss in Sexy Forever.
Carnitine

This supplement helps fat transport in the mitochondria, where it has a chance to be burned. Carnitine is mostly found in red meat, which many people avoid, and it is also synthesized in the body, but sometimes not enough to support optimal fat burning. A urine test can tell us if we need to supplement. Typical doses are 500 to 1,000 mg/day. It may be especially helpful when taken an hour or two prior to exercise.

Lipoic Acid

This plays a role in blood glucose control. If you have elevated or highly fluctuating glucose levels (such as in hypoglycemia) you may consider supplementing with 100 to 1,200 mg (based on a doctor’s or nutritionist’s evaluation). The bottom line is that lipoic acid will help you burn glucose more efficiently, and in that sense it helps with weight control.

CoQ10

There is a blood test for coenzyme Q10 that tells us if we need to supplement. If you take a statin or red yeast rice, the body’s production of CoQ10 is impaired, so you need to supplement even more. CoQ10 is a key factor in energy production and helps us burn fats and carbs more efficiently. In fact, it was shown to help normalize elevated blood glucose in some cases. It also supports heart health and protects the brain. Typical doses are 30 to 100 mg.
Most people are not aware that correcting nutritional deficiencies with a good multivitamin/multimineral and omega-3 supplement will make them much more efficient at burning fat, sugar, and carbohydrates and will also reduce cravings. Blood and urine testing can help a physician analyze each person's needs for supplementation. At the very minimum you want to take a basic multivitamin/multimineral in a formula that has good absorbable ingredients and no unwanted contaminants. You also want the nutrients to be in a form that they occur in nature if they are available—for example, natural folate (not folic acid), natural mixed tocopherols for vitamin E (not just alpha-tocopherol), natural mixed carotenoids (not just beta-carotene), natural vitamin B12 (methylcobalamin or adenosylcobalamin, not cyanocobalamin or hydroxycobalamin), and chelated minerals.

Most people need to supplement with omega-3 fats because their diets provide an excess of omega-6 fats (from cooking oils and animal fats), and it's important to choose fish oil, flaxseed oil, or algae (for vegetarians) that are clean of environmental contaminants (mercury, PCBs) and oxidized fats. Frankly, it is a good idea to ask for a certificate of analysis from the manufacturer for everything you take.

Extracts from green tea were shown in studies to help boost weight loss. It probably does this through a few complementary actions: it boosts the metabolic rate (an increase of 4 percent per twenty-four hours when taking an extract of 370 mg EGCG per day) and it keeps adrenaline elevated longer than normal (which helps fat release from body stores and may reduce hunger). More sustained adrenaline levels may help a person feel more energetic, and he or she may be more likely to exercise or do something physical. For a person with excess adrenaline production (or who has a difficult time breaking it down, such as those with COMT mutations) green tea may increase adrenaline levels to an unhealthy range. On the other hand, for people who are tired all the time because their adrenal glands do not produce adequate amounts of adrenaline, green tea may be helpful. You can drink it or take extracts that contain the equivalent of 2 to 3 cups of green tea in a pill (for example 500 mg EGCG).

Also, keep in mind that the body needs tyrosine (an amino acid found in proteins) to make adrenaline. Supplementing with tyrosine (1 to 2 g/day) may boost production of adrenaline and work synergistically with green tea. Too much adrenaline at night is not good, so it's important to make sure that supplements are not affecting your sleep quality. Poor sleep leads to weight gain and health problems, and this effect can be increased by the addition of coffee.

Fiber is important, so try to get 35 to 50 g of fiber daily from both soluble and insoluble forms (read the label, it will tell you). Variety is important with fiber, and avoiding the artificial colors and sweeteners added to most commercial brands is also important. Fiber will keep you full longer and help you eat less. It slows down the absorption of sugar, thus reducing insulin production in response to meals. Keep in mind that insulin influences the fat cells to reduce the release of their fat content and also slows down certain fat-burning enzymes. This is not because insulin is an evil hormone but because it is supposed to signal that the body has plenty of glucose, telling it: “Burn the glucose first and save the fat from body storage for later.” So you see, if you eat excess carbohydrates and sugar all day long, you impair your ability to tap into your fat stores.

Fiber also reduces fat and cholesterol and sugar absorption, and it may lower blood levels of cholesterol and triglycerides. Fiber helps detoxify, supports regular bowel movements, and reduces risks of many cancers. I cannot speak enough about the fiber benefits for weight control and health.
**Suzanne Somers**: I have been looking for supplements from nature that can speed up and enhance your ability to lose weight. With the help of top bio-scientists, I’ve discovered a supplement that does just that. This is a science-based product and when I read about the incredible results, all from natural ingredients, I knew I had to make the results available to everyone.

**The Sexy Forever Weight Loss Formula includes:**
1. LuraLean®
2. Phaseolus vulgaris
3. Irvingia
4. Green tea phytosome

**LuraLean®**

This ingredient helps control the absorption of some calories if taken before the two heaviest meals of the day. By maintaining its viscous structure throughout the digestive tract, LuraLean® is able to stop the absorption of ingested fats and carbohydrates. LuraLean® is a fiber composed of specially processed glucomannan—a water-soluble polysaccharide derived from a tuberous plant that grows only in the remote mountains of northern Japan.

This translates into weight reduction. One clinical study showed that without any dietary changes (participants ate and drank whatever they wanted), those taking LuraLean® lost 5.5 pounds after eight weeks compared to a 1.5-pound weight gain in the placebo group. In a similar study, those taking LuraLean® (twice a day before breakfast and dinner) lost 7.04 pounds compared to a gain of almost 1 pound in the placebo arm of the study. These studies showed substantial reductions in blood triglycerides, cholesterol, and LDL (bad cholesterol) levels in the LuraLean® groups compared to increases in these dangerous blood fats in the placebo arms.

Looking at the blood test results of typical healthy twenty-one-year-olds, scientists noticed that they had very low levels of blood glucose, cholesterol, and triglycerides. Even if people do not change their diet, by the time they reach age fifty their blood glucose, triglycerides, and cholesterol are usually much higher. Fifty-year-olds typically weigh more than when they were twenty-one, especially in the abdominal region of their bodies. There are correlations between blood glucose and triglyceride levels and unwanted weight gain.

To put it simply, the same calories a twenty-one-year-old can safely ingest become increasingly toxic as we age. This is because aging causes us to lose the metabolic capacity to utilize ingested calories in efficient energy-expending ways. Not only do these calories induce body fat storage, but they also increase vascular disease risks. That is why taking LuraLean® before the two heaviest meals of the day is so important. It helps impede absorption of excess sugars and fats in your diet, while helping to reduce the amount of food you consume with each meal.

**Phaseolus Vulgaris**

Researchers at the UCLA School of Medicine have successfully used extracts from the white kidney bean (*Phaseolus vulgaris*) to target alpha amylase. A study was done where thirty obese adults took either a placebo or the *Phaseolus vulgaris* extract. After eight weeks, those taking the white bean extract lost 3.8 pounds in weight, and more important, 1.5 inches of abdominal fat. The group taking the *Phaseolus vulgaris* also had a three-fold reduction in triglyceride levels compared with the placebo group, which helps corroborate the role of weight loss and simultaneous reduction in artery-clogging triglyceride levels.

Another more impressive study of *Phaseolus vulgaris* showed that those who consumed the most carbohydrates lost the most weight. In this study, subjects who supplemented with *Phaseolus vulgaris* and
consumed the highest levels of dietary starch lost 8.7 pounds compared with only 1.7 pounds in the control group over four weeks. Even more impressive was the 3.3 inches of belly fat lost in the *Phaseolus vulgaris* group versus only 1.3 inches in the controls. In a double-blind study on sixty overweight volunteers, half the study participants received *Phaseolus vulgaris* while the other half were given a placebo. Both groups were placed on a 2,000–2,200-calorie diet. After only thirty days, those taking *Phaseolus vulgaris* lost 6.5 pounds of weight and 1.2 inches in waist size compared with 0.8 pounds and 0.2 inches in the placebo group.

As we age, it becomes increasingly difficult to keep belly fat off. At the same time, we are challenged to keep blood glucose levels in optimal ranges. The exploding rates of type 2 diabetes and obesity are a testament to the dual problem of weight gain caused by the absorption of too many calories from simple carbohydrates.

**Irvingia**

Irvingia is a West African plant extract (from *Irvingia gabonensis*) that has been shown to help support leptin sensitivity in overweight people. Fat cells (called adipocytes) secrete leptin, a hormone that tells your brain you’ve eaten enough. Leptin also helps with the breakdown of stored (triglyceride) fat in our fat cells. Overweight people have higher blood levels of leptin, indicating that their cells have become resistant to leptin. In a published study, irvingia demonstrated beneficial effects on leptin blood levels, followed by a weight loss of over 20 pounds on average in ten weeks and an average reduction in waist circumference of about 6 inches. Study subjects taking irvingia reported consuming fewer calories, which makes sense, based on the enhanced leptin sensitivity brought about by this plant extract. Irvingia also has alpha-amylase-inhibiting properties similar to *Phaseolus vulgaris*. Inhibiting amylase helps slow the rate of carbohydrate absorption, reducing the caloric impact of starchy and sugary foods.

Large meals overload the bloodstream with calories and later cause a rebound increase in appetite when blood sugar levels plummet in response to excess release of insulin. One way of stopping this after-meal glucose-insulin rebound is to take nutrients that neutralize the carbohydrate-degrading enzyme alpha-amylase before meals.

Scientific data suggests that irvingia also helps support healthy adiponectin levels. Adiponectin is a hormone that helps maintain the insulin sensitivity of our energy-producing cells. Large fat cells found in overweight people produce less adiponectin. This means that these individuals need to be concerned about maintaining enough adiponectin to support insulin sensitivity, something that we lose during normal aging.

Most people don’t know this, but the majority of body fat consists of triglycerides that are stored in our fat cells. A reason that weight loss and triglyceride reduction go hand in hand is that triglycerides make up the bulk of our fat storage. We get triglycerides directly from the fat we eat, and also from the conversion of excess glucose in our blood to triglycerides stored in our fat cells. In the latter instance,
glucose is converted to triglycerides by an enzyme called glycerol-3-phosphate dehydrogenase. Irvingia inhibits glycerol-3-phosphate dehydrogenase, reducing the amount of ingested sugars that are converted to body fat.

**Green Tea Phytosome**

We all know about the great benefits of green tea. Aging robs us of the ability to efficiently burn fat as energy. Instead we store fat in our adipocytes (fat cells). The components responsible for green tea’s weight loss benefits are polyphenol compounds that increase metabolic energy expenditure and hence calorie burning. The problem is getting enough of green tea’s polyphenols absorbed into the blood. But a group of Italian researchers created a proprietary green tea phytosome that increased the polyphenols’ ability to be absorbed into the bloodstream. In a human clinical trial using this green tea phytosome, the weight loss effects were substantial. This study involved one hundred overweight subjects, half of whom received the green tea phytosome. Both groups were placed on reduced-calorie diets (approximately 1,850 calories/day for men and 1,350 calories/day for women).

After ninety days on the reduced-calorie diet, the control group lost 9.9 pounds. The group taking the green tea phytosome, on the other hand, lost a whopping 30.1 pounds—more than triple the weight loss of the control group! There was a 10 percent reduction in the green tea phytosome group’s belly size compared with a 5 percent reduction in the control group. Male participants did even better in this category, showing a 14 percent reduction in waist circumference compared with a 7 percent reduction in the control group.

What’s so interesting about this study is that it shows that people can lose considerable weight (9.9 pounds) by eating fewer calories. Yet when this green tea phytosome was added, the total amount of weight lost tripled (to 30.1 pounds) while twice as much belly fat disappeared. Scientists attribute these remarkable benefits to the ability of green tea to boost resting metabolic rates and reduce the absorption of dietary fats, which makes this green tea phytosome an ideal nutrient to take before heavy meals.

If you are going to turn your life around by eliminating toxic foods, adding these four supplements can boost your ability to lose weight more quickly and safely, with no drugs or stimulants.

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

Cover price $25.99 • Member price $19.49 Item#33830

For further information on *Sexy Forever*’s online companion, visit www.SexyForeverPlan.com

Excerpt from *Sexy Forever* by Suzanne Somers. Published by Crown, Copyright 2010 Suzanne Somers®.
Take a Bite Out of your Appetite

People who struggle with weight loss often point to several “Achilles’ heels” that sabotaged their efforts to keep off the pounds: eating between meals, grazing at night, and a constant desire to snack, are among the most common.

The fantastic news is that a proprietary extract of saffron, called Satiereal®, is clinically proven to deal with nearly all of the above issues. In fact, women involved in Satiereal® studies experienced the following amazing results:

- 100% reduction in the desire to snack
- 50% fewer instances of eating between meals
- Less hunger
- Moderate weight loss
- More energy
- Better mood

Say goodbye to “kitchen raids” and say hello to “weight control” with Optimized Saffron with Satiereal®.

A bottle containing 60 vegetarian capsules of Optimized Saffron with Satiereal® retails for $36. If a member buys four bottles during Super Sale, the cost is just $21.60 per bottle.

References

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
It’s a scientific fact. Nearly 80% of highly motivated people fail to achieve long-lasting, meaningful weight loss with diet and lifestyle modifications alone. Yet many FDA-approved weight loss drugs have been linked to serious side effects.

That’s why the Calorie Control Weight Management Formula was designed.

Clinical studies validate that when overweight humans take just some of the natural ingredients in this formula combined with reduced calorie intake, there is a significant loss of body fat compared to diet alone. Calorie Control Weight Management Formula can thus give you the winning edge when following a calorie-modulated weight loss program.

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.
Comprehensive Calorie Management

The **Calorie Control Weight Management Formula** is designed to be taken before the two heaviest daily meals to help neutralize the unwanted effects of caloric excess. Each scoop of this good-tasting powdered drink mix contains:

1. **LuraLean** proprietary fiber that swells in the stomach after ingestion with water to help reduce calorie consumption. **LuraLean** binds to **bile acids** in the small intestine and helps transport them out of the body. These bile acids otherwise facilitate the digestion and assimilation of **dietary fat** into the bloodstream. **LuraLean** also slows the rapid emptying of ingested food into the small intestine, thereby reducing the surge of **glucose** entering the bloodstream. **LuraLean** works better than other fibers because its own enzymes have been removed, thus sparing it from degradation in the digestive tract. This enables **LuraLean** to form a stable **viscous barrier** to help impede calorie absorption and maintain its sponge-like activity throughout the digestive tract. In placebo-controlled studies, **LuraLean** has induced weight loss along with significant reductions in fasting lipid and post-meal glucose/insulin levels.

2. **White kidney bean extract** inhibits the **amylase** enzyme in the digestive tract. **Amylase** breaks down carbohydrates that are then absorbed into the bloodstream as glucose. **White kidney bean extract** has produced weight loss and abdominal fat reductions, along with significant reductions of triglycerides, in placebo-controlled trials.

3. **Irvingia gabonensis** favorably regulates **leptin** to decrease appetite and facilitate triglyceride removal from adipocytes; inhibits **glycerol-3-phosphate dehydrogenase** to reduce the conversion of glucose into glycerol in adipocytes; and upregulates **adiponectin** to facilitate insulin sensitivity. Irvingia has demonstrated favorable weight loss results in placebo-controlled trials.

4. A proprietary **green tea phytosome** that absorbs much better into the bloodstream to boost resting **metabolic rate**. In a controlled clinical study, this green tea phytosome induced **30.1 pounds** of weight loss on average in 90 days when combined with a reduced calorie diet.

Importance of Taking Calorie Control Weight Management Formula Before Heavy Meals

Once we accept the fact that weight loss requires more than diet and exercise alone, it becomes easy to understand the importance of taking the **Calorie Control Weight Management** formula before the two heaviest meals of the day. Each scoop provides:

- **Propolmannan (LuraLean®)** 2,000 mg
- **White Kidney Bean (Phaseolus)** 445 mg
- **Irvingia gabonensis** 150 mg
- **Green Tea Phytosome** 150 mg

The retail price for a one-month (60-serving) supply of **Calorie Control Weight Management** is $56. If a member buys four bottles during **Super Sale**, the price is reduced to **$32.40**. If eight bottles are purchased, the member price is slashed to only **$29.70** per bottle. This is the lowest price the proprietary ingredients contained in this good-tasting powder formula have ever sold for!

Contains soybeans and tree nuts.

Contains corn.

**References**


To order Calorie Control Weight Management Formula today, call 1-800-544-4440 or visit www.LifeExtension.com/calcontrol

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
As we age, destructive glycation processes run rampant throughout our bodies. Glycation involves a reaction of proteins with sugars that creates a variety of aging conditions ranging from wrinkled skin to cell structure damage. Studies have shown that carnosine can inhibit glycation, while guarding the nervous system against toxic heavy metals.

A new laboratory study corroborates earlier research showing that carnosine can extend life span*.

Life Extension®’s Super Carnosine Caps provide 500 mg of L-carnosine per capsule—a dose 10 times more potent than most commercial brands. Super Carnosine Caps also contain luteolin and benfotiamine (lipid-soluble vitamin B1) to provide multifaceted protection against glycation and its deadly consequences.

The recommended daily dose of two capsules provides:

- L-Carnosine: 1000 mg
- Benfotiamine: 100 mg
- Thiamine HCL: 100 mg
- Luteolin: 8 mg

The retail price for a bottle of 90 500 mg Super Carnosine Caps is $66. If a member buys four bottles during Super Sale, the price is reduced to just $40.50 per bottle.

Item # 01287

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


Note: Those who take the Mitochondrial Energy Optimizer are already consuming 1,000 mg of L-carnosine, along with benfotiamine.

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.
JUDY COLLINS:
LIVING AN ATHLETE’S LIFESTYLE

More than 40 years have passed since singer/songwriter Judy Collins rose to fame in the coffeehouses of Greenwich Village alongside folk activists Bob Dylan, Joan Baez, and Pete Seeger. Since then, the two-time Grammy Award winner best known for her rendition of Joni Mitchell’s “Both Sides Now” has recorded more than 40 albums, written nine books including a novel, and received an Academy Award nomination for co-directing “Antonia: A Portrait of a Woman.”

Age has definitely not affected her energy or enthusiasm, and Collins, who turned 71 on May 1 last year, shows no signs of slowing down. This June, she wrapped up a six-week run at New York’s Café Carlyle, released a new CD called “Paradise” from her own recording company, Wildflower Records, and published her first-ever children’s book titled Over the Rainbow. She still performs frequently, is working on a new book, and plans to do more song writing.

She uses glucosamine sulfate with MSM for her arthritis, which she says is under control, and ginkgo for her memory.
WELLNESS PROFILE

PRIVATE STRUGGLES

Collins, who released her first album in 1961 at age 22, credits her lengthy career, wondrously intact soprano voice, and energy to rigorous self-discipline. “My lifestyle is more and more like an athlete’s,” she said in an interview with Life Extension recently. “I take lots of vitamins, exercise, meditate, pray, and read on a regular basis. It’s what I have to do in order to sing, perform (she does about 100 shows a year), do my traveling, my writing, and the other work I do when I’m not on the road.”

Although her lovely voice radiates a sweet serenity, her private life has been full of trauma and heartbreak—a suicide attempt at 14, years of drug abuse and alcoholism (she’s been sober for 30 years), tuberculosis, hepatitis, divorce from her college sweetheart, bulimia, and bouts of depression and panic attacks.

The toughest hurdle came in 1992 with the suicide of her 33-year old son and only child, Clark Taylor, who had been struggling with some of Collins’s same problems including substance abuse and depression. “I was beyond devastation,” she told me, as we sat in her sprawling, four-bedroom New York apartment filled with family photos and paintings by friends, family, and Collins herself. “I wanted to die.”

However, after years of therapy, meditation, and the support of her second husband, industrial designer Louis Nelson (whom she married in 1996 after 18 years together), she began to find her way out of the darkness. She has since become a mental-health advocate and speaks regularly about suicide and suicide prevention to survivor groups and mental health organizations.

NUTRITIONAL DISCIPLINE

“The voice is the only muscle in the body that does not deteriorate on its own unless it’s abused,” she says. “If you scream and laugh and drink and smoke and stay up all night and sing incorrectly, it’s going to go. But if you don’t, you can sing until you fall over. I have to do the things that work for me and do them with determination.”

Collins is particularly disciplined about her diet, almost as if she’s in training. “I only eat what I’m supposed to be eating. Protein, vegetables, salad, and fruit, and that’s it,” she says. “I eat the whole, raw or cooked vegetables. I keep it pretty basic.” She also does not eat sugar or grains and will not use flour of any kind except soy flour.

Collins has worked with New York internal medicine specialist Dr. Richard Ash for many years and is an outspoken advocate of vitamins and other nutritional supplements. “We have a lot of things in our atmosphere that are attacking us all the time so we have to build up from within,” she says. “You’ve got to get the body to heal itself. So I pay attention.”

To that end, she takes some 46 vitamins and other supplements a day, divided into morning and evening batches. Among them are quercetin, a potent antioxidant and anti-inflammatory that has a powerful effect on a variety of disease processes including asthma. “It’s very important for the allergies I had,” Collins explains. “I had a really extreme confrontation with asthma nearly 20 years ago. It was so bad I was losing my voice.”

She also takes “tons” of vitamin C a day—up to 4,000 mg daily—and also does a vitamin C flush, which involves taking buffered vitamin C powder in high doses until it has the same cleansing effect as a colonic. “I do this once every six weeks,” she says. “It doesn’t have the invasive nature of a colonic and you feel such a lift from all that vitamin C running around in your body.”

A strong believer in alternative medicine, Collins says acupuncture
WELLNESS PROFILE

AVID EXERCISER

As someone who has fought depression all her life, Collins is an avid exerciser (she loves to ski) and relies on vigorous exercise to boost her endorphins. Over the years, she’s tried all different types of exercise ranging from the Royal Canadian Air Force exercises to yoga, aerobics, and swimming. Today, Collins exercises at home to get the endorphins going rather than go to a gym. She has a treadmill and stationary bike in her bedroom and spends 40 to 50 minutes a day exercising while watching television.

SEEKING PEACE

Somewhere in her day, Collins finds time for meditation. She says she started meditating in her twenties, following the gurus of the times such as the Maharishi or Krishnamurti. She also went to seeks peace.

Judy Collins’s Supplement List

- Quercetin
- Vitamin B complex
- Vitamin C
- Vitamin D3
- Glucosamine Sulfate
- Coenzyme Q10
- Cranberry extract
- Acidophilus
- Calcium
- Magnesium
- Iron
- Zinc
- Ginkgo
- Omega-3
- Multivitamin

...cured her of cystitis more than 30 years ago, and she takes a couple of cranberry pills every day to prevent the problem from recurring. She uses glucosamine sulfate with MSM for her arthritis, which she says is under control, and ginkgo for her memory. “I do the A, B, C, D vitamins, the complexes, coenzyme Q10. I keep my vitamin balance up.”

Collins also goes for acupuncture once a month and has regular massages. Indeed, for the first year after her son died, she had a massage every day. “The massage helped me get back into my body and out of my grieving head,” she has written.
yoga classes in New York. “I knew in my heart I had to find a way into a steady practice of meditation,” she says.

In her forties, she was introduced to Self-Realization Fellowship (SRF), a meditation form that includes deep breathing and yoga, by Dr. Antonia Brico, with whom she had studied classical piano from the ages of 9 to 15. Dr. Brico, who as the first woman to conduct the New York Philharmonic became the subject of a film that Collins made in 1974, told her about Paramahansa Yogananda, SRF’s founder. Soon Collins became a student of his practice of meditation. “I’m very into SRF,” Collins says. “I try for twice a day.” Collins says that meditation not only calms her, but helps her focus. “It provides an emotional stability for me that I really need,” she says.

**WHAT’S AHEAD**

Retirement doesn’t seem to be an option for Collins. She talked excitedly about upcoming concerts and performances in Europe, with “lots of press,” including the United Kingdom’s Glastonbury Festival (“It’s sort of like their Woodstock—you know, 100,000 people in the mud”). After concerts in England, she would do a show in Paris, before returning to the US to do concerts throughout the nation, including one with Crosby, Stills and Nash and Richie Havens at AARP’s National Event & Expo this fall in Florida. “I also plan to work on my new book (a memoir) and dig back into my songwriting,” she said. “Exciting things are in front of me.”

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.
There are three forms of vitamin K that the human body can utilize to promote arterial health and bone support. Life Extension’s Super K with Advanced K2 Complex provides the dynamic trio of vitamin K forms in one softgel, including vitamin K1, vitamin K2 (MK-4), and vitamin K2 (MK-7).

Vitamin K1 is the form of vitamin K that is found in green vegetables. K1 is tightly bound to plant fiber, so only a fraction is absorbed into the bloodstream. Supplementation ensures ample K1 blood levels.

Vitamin K2 is usually found in meats, dairy, and egg yolks. Since you may be avoiding these foods for health reasons, ingesting a K2 supplement is essential. MK-4 is the most rapidly absorbed form of K2 and MK-7 boasts a very long half-life in the body, making both forms the perfect complement to any vitamin K regimen.

The retail price for a bottle containing 90 softgels (three-month supply) is $26. If a member buys four bottles during Super Sale, the price is reduced to just $15.53 per bottle.

Super K formula provides in just one daily softgel:

| Vitamin K1 | 1000 mcg |
| Vitamin K2 (MK-4) | 1000 mcg |
| Vitamin K2 (MK-7) | 100 mcg |

The same Super K formula consisting of Vitamin K1, K2 (MK-4) and K2 (MK-7) can be found in the Life Extension Super Booster. If you take the Super Booster, you do not need additional Super K softgels.

Contains tree nuts (coconut).

Warning to Coumadin (warfarin) Drug Users
Patients prescribed vitamin K-antagonist anti-coagulant prescription drugs like warfarin should consult their physician before taking vitamin K supplements like Super K and Super Booster. There is evidence, however, that users of drugs like warfarin could benefit from a consistent low dose of supplemental vitamin K. Ask your doctor if you can take a low dose (45 mcg a day) of vitamin K2 in the long-acting MK-7 form for the purpose of stabilizing your INR levels and also protecting your body against long-term vitamin K deficit. Do not initiate any form of vitamin K supplementation without full cooperation of your treating doctor, as your doctor may need to increase your dose of warfarin to compensate for the vitamin K you supplement with.

Life Extension provides several forms of low-dose vitamin K for physician consideration.

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Blood testing provides the ultimate information regarding correctable risk factors that may predispose you to disorders such as cancer, diabetes, cardiovascular disease, and more. Information about general health and nutritional status can also be gained through standard blood analysis. Standing behind the belief that blood testing is an essential component of any program designed to attain optimal health and longevity, Life Extension® offers this innovative and convenient service at a very affordable price. Not only is comprehensive blood testing an important step in safeguarding your health, it is a simple process from virtually anywhere in the United States.

Five Easy Steps:
1. Call 1-800-208-3444 to discuss and place your order with one of our knowledgeable health advisors. (This order form can also be faxed to 1-866-728-1050 or mailed). Online orders can also be placed at www.lifextension.com.
2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit; whichever is applicable (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be mailed directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable health advisors by calling 1-800-208-2370; 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 1100 West Commercial Blvd, Ft. Lauderdale, FL, 33309. We’re located at Commercial Blvd and Powerline Road, just west of I-95. For more information or directions call 954-766-8144.

Most Popular Panels

**SUPER SALE SPECIALS:** Two Tests under $100 everyone should have!

**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.

**C0010® (COENZYME Q10) (LC12051)** $75 This test is used to check the blood level of CoQ10 and will enable more precise dosing for anyone seeking to achieve and maintain high levels of this critical antioxidant.

**COMPREHENSIVE PANELS**

**MALE WEIGHT LOSS PANEL (LCWLM)** $299

- CBC/Chemistry Profile DHEA-S
- Insulin PSA (prostate-specific antigen)
- Free Testosterone Total Testosterone Estradiol
- Free T3 Free T4 C-Reactive Protein (high sensitivity)

**FEMALE WEIGHT LOSS PANEL (LCWLF)** $299

- CBC/Chemistry Profile DHEA-S
- Progesterone Insulin
- Free Testosterone Total Testosterone Estradiol
- Free T3 Free T4 C-Reactive Protein (high sensitivity)

**MALE LIFE EXTENSION PANEL (LC322582)** $269

- CBC/Chemistry Profile DHEA-S
- Homocysteine TSH for thyroid function Free Testosterone Total Testosterone Estradiol
- PSA (prostate-specific antigen) C-Reactive Protein (high-sensitivity)

**MALE HORMONE ADD-ON PANEL (LCADD)** $155

- Pregnenolone and Dihydrotestosterone (DHT)
- Estradiol
- Progesterone TSH for thyroid function Free Testosterone Total Testosterone
- PSA (prostate-specific antigen) C-Reactive Protein (high-sensitivity)

**FEMALE HORMONE ADD-ON PANEL (LCADDF)** $125

- Pregnenolone and Total Estrogens
- Estradiol
- Progesterone TSH for thyroid function Free Testosterone Total Testosterone
- C-Reactive Protein (high-sensitivity)

**LIFE EXTENSION THYROID PANEL (LC304131)** $75

- TSH, Free T3, Free T4.

**MALE HORMONE RE-TEST PROFILE (LCRTM)** $275

- CBC/Chemistry Profile DHEA-S, Dihydrotestosterone (DHT), Estradiol, PSA, Pregnenolone, Total and Free Testosterone, and TSH. Continued monitoring of hormone levels is necessary for men seeking to maintain optimal blood level values.

**FEMALE HORMONE RE-TEST PROFILE (LCRTF)** $250

- CBC/Chemistry Profile DHEA-S, Total Estrogen, Pregnenolone, Total and Free Testosterone, Progesterone, and TSH. Continued monitoring of hormone levels is necessary for women seeking to maintain optimal blood level values.

**THE CBC/CHEMISTRY PROFILE (LC381822)** $35

- OVER 40 PARAMETERS TESTED

**CARDIOVASCULAR RISK PROFILE**

- Total Cholesterol Cholesterol/HDL Ratio
- HDL Cholesterol Estimated CHD Risk
- LDL Cholesterol Glucose
- Triglycerides Iron

**LIVER FUNCTION PANEL**

- AST (SGOT) Total Bilirubin
- ALT (SGPT) Alkaline Phosphatase
- LDH

**KIDNEY FUNCTION PANEL**

- BUN/Creatinine Ratio
- Creatinine Uric Acid

**BLOOD PROTEIN LEVELS**

- Total Protein Albumin
- Albumin/Globulin Ratio

**BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE**

- Red Blood Cell Count Monocytes
- White Blood Cell Count Lymphocytes
- Eosinophils Platelet Count
- Basophils Hemoglobin
- Polys (Absolute) Hematocrit
- Lymphs (Absolute) MCV
- Monocytes (Absolute) MCH
- Eos (Absolute) MCHC
- Baso (Absolute) Polymonucleated Cells
- RDW

**BLOOD MINERAL PANEL**

- Calcium Sodium
- Potassium Chloride
- Phosphorus Iron

**NOTE:** CBC/Chemistry profile is included in the Male and Female Life Extension panels and Weight Loss Panels.

**GENERAL HEALTH**

**HEMOGLOBIN A1C (HBA1C) (LC001453)** $31

Hemoglobin A1C evaluates long-term blood sugar control. Serum glucose sometimes reacts with important proteins in the body rendering them nonfunctional. Since this process, known as glycation is one of the leading theories of aging, Life Extension® believes everyone should check their A1C level.

**VITAMIN D (25OH) (LC081950)** $47

This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.

**FOOD SAFE ALLERGY TEST (LCM3001)** $174

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

**CYTOKINE PANEL (LCGTY)** $399

Includes TNF-alpha, IL-6, IL-1 beta and IL-8. Cytokines are proteins that modulate the inflammatory response. This panel is used to identify elevated levels of specific cytokines.

* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit and will incur an additional $35 charge. If the customer is having blood drawn at a LabCorp facility, this extra charge does not apply.

** This test is packaged as a kit, requiring a finger stick performed at home.
## Most Popular Single Tests

**Hormones**

- **CORTISOL** (£CO04051)
  - Test to measure adrenal function.
  - Price: £39

- **ADRENOCORTICOTROPIC HORMONE (ACTH)** (£CO04440)
  - A pituitary function test useful in evaluating adrenocortical dysfunction.
  - Price: £115

- **DHEA-SULFATE** (£CO04697)
  - Test shows if you are taking the proper amount of DHEA. It normally costs £100 or more at commercial laboratories.
  - Price: £61

- **DIHYDROTESTOSTERONE (DHT)** (£CO500142)
  - Measures serum concentrations of DHT.
  - Price: £99

- **ESTRADIOL** (£CO04515)
  - For men and women. Determines the proper amount in the body.
  - Price: £33

- **INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN 3 (IGF3)** (£CO140152)
  - Elevated levels in hypertensive individuals have been associated with a nine-fold increase of carotid atherosclerosis.
  - Price: £47

- **INSULIN FASTING** (£CO04333)
  - Can predict those at risk of diabetes, obesity, and heart and other diseases.
  - Price: £42

- **PREGNENOLONE** (£CO140707)
  - Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.
  - Price: £116

- **PROGESTERONE** (£CO04317)
  - Primarily for women. Determines the proper amount in the body.
  - Price: £55

- **SEX HORMONE BINDING GLOBULIN (SHBG)** (£CO082016)
  - This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.
  - Price: £33

- **SOMATOMEDIN C (IGF-1)** (£CO10363)
  - Indicates growth hormone secretion levels. Low levels have been associated with osteoporosis as well as all-cause mortality.
  - Price: £75

- **TOTAL AND FREE TESTOSTERONE** (£CO140103)
  - Determines whether testosterone replacement should be considered as a therapy for depression, abdominal obesity, low energy, poor mental performance, or loss of libido.
  - Price: £99

- **URINARY 2/16 ESTROGEN METABOLITE RATIO** (£CO73000)
  - This ratio is relevant as a risk factor for estrogen-sensitive diseases including breast and cervical cancers, osteoporosis, and recurrent respiratory papillomatosis.
  - Price: £128

**Cardiac Risk**

- **Lp-PLA2 (PLAC TEST)** (£CO141275)
  - 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.
  - Price: £125

- **C-REAFTIVE PROTEIN (HIGH-SENSITIVITY)** (£CO120766)
  - Measures inflammation factors in arteries. Recent studies indicate that C-reactive protein may be the most accurate risk factor for predicting heart attack and stroke.
  - Price: £42

- **APOLIPROTEIN ASSESSMENT (APO A1 + APO B + RATIO)** (£CO216010)
  - This ratio correlates with risk of coronary artery disease and is useful in the presence of borderline elevations of cholesterol.
  - Price: £55

- **FIBRINOGEN** (£CO01610)
  - High levels of this blood-clotting factor increase the risk of heart attack and stroke.
  - Price: £31

- **VAP TEST** (£CO804500)
  - The VAP cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.
  - Price: £90

**Male Health**

- **PSA (PROSTATE-SPECIFIC ANTIGEN)** (£CO10322)
  - Can provide an early warning sign for prostate disorders and possible cancer.
  - Price: £31

- **FREE-PSA (INCLUDES TOTAL PSA)** (£CO480780)
  - Recommended to determine if an elevated PSA is indicative of prostate cancer.
  - Price: £61

**Bone Health**

- **OSTEOCALCIN** (£CO10249)
  - Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis.
  - Price: £91

- **DPD CROSS LINK URINE TEST** (£CO51105)
  - The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis.
  - Price: £79

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**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

---

**Mail your order form to:**

Life Extension

1100 West Commercial Blvd.,

Ft. Lauderdale, FL 33309

Phone your order to: 1-800-208-3444

Fax your order to: 1-866-728-1050

ORDER LIFE-SAVING BLOOD TESTS FROM VIRTUALLY ANYWHERE IN THE US!
# Products

## Amino Acids
- Acetyl-L-Carnitine
- Acetyl-L-Carnitine-Arginine
- Branched Chain Amino Acids
- D, L-Phenylalanine Capsules
- GABA Powder
- Glycine Capsules
- Glycine Powder
- Arginine Capsules
- L-Arginine Free Base Powder
- Arginine/L-Ornithine Capsules
- L-Carnitine Capsules
- L-Cysteine Capsules
- L-Glutathione, L-Cysteine & C
- L-Glutamine Capsules
- L-Glutamine Powder
- L-Lysine Capsules
- L-Lysine Powder
- Taurine Capsules
- Tryptopure® Tryptophan
- Taurine Capsules
- Acetyl-L-Carnitine
- Acetyl-L-Carnitine-Arginate
- Optimized Carnitine with GlycoCarn®
- PharmaGABA
- Super Carnosine Capsules
- Taurine Capsules
- Tryptopure® Tryptophan (Optimized)

## Bone & Joint Health
- ArthroMax™ with Theaflavins
- Bone-Up™
- Bone Restore™
- Bone Strength Formula w/KoAct™
- Chondroitin Sulfate
- Chondrox
- Fast Acting Joint Formula
- Glucosamine Chondroitin Capsules
- L-Leucine Powder
- Methionine Tablets
- Mega L-Glutathione Capsules
- N-Acetyl Cysteine Capsules
- Optimized Carnitine with GlycoCarn®
- Optimized Ashwagandha Extract
- Super Carnosine Capsules
- Taurine Capsules
- Tryptopure® Tryptophan

## Brain Health
- Acetyl-L-Carnitine
- Acetyl-L-Carnitine-Ariginine
- CDP Choline Capsules
- Cognitex with NeuroProtection Complex
- Cognitex with Pregnenolone & NeuroProtection Complex
- Cognitex Basics
- DMAE
- DMAE-Ginkgo
- Ginkgo Biloba Certifi ed Extract™
- Huperzine A
- Lecithin with B5 and BHA
- Lecithin Granules
- Methylcobalamin Lozenges
- Optimized Ashwagandha Extract
- Phosphatidylserine Capsules
- Rhodiola Extract
- Super Ginkgo Extract
- Vinpocetine

## Digestive
- Agave Digestive-Immune Support
- Bromelain Powder
- Carnosoothe w/PicroProtect
- Digest RC™
- Enhanced Super Digestive Enzymes (also available with Probiotics)
- Florastor
- Intact Digest
- Life Flora™
- Natural Esophaguard
- N-Zimes™
- Pancreatin
- Primal Defense
- Regimax™
- Saccharomyces Boulardii+mos

## Durk and Sandy Products
- Blast™
- Dual-C
- Inner Power™
- Memory Upgrade

## Eye Care
- Bilberry Extract
- Blackcurrant Freeze Dried Extract
- Brite Eyes Ill
- Overcast Polarized Sunglasses
- Solarshield Sunglasses
- Super Zexazanthin with Lutein & Meso-Zeaxanthin and C3G (Plus Astaxanthin also available)

## Fiber
- Apple Pectin Powder
- Fiber Food
- Hi-Lignan® Nutri-Flax®
- SlimStyles® PGX
- WellBetX PGX® Soluble Fiber Blend
- Asian Cruciferous Vegetable Soup
- Cruciferous Vegetable Soup

## Hair Care
- Dr. Proctor’s Advanced Hair Formula
- Dr. Proctor’s Shampoo
- Life Extension Shampoo and Conditioner
- Super-Absorbable Tocotrienols

## Heart Health
- Advanced Lipid Control
- Cho-Less
- D-Ribose Capsules
- D-Ribose Powder
- Endothelial Defense™ with Full-Spectrum Pomegranate™
- Fibrinogen Resist
- Forskolin
- Homocysteine Resist
- Low Dose Aspirin (Enteric Coated)
- Natural BP Management
- 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
- Blackcurrant Juice Concentrate
- 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 Grapeseed Extract with Resveratrol & Pterostilbene
- Huperzine A with Natural Vitamin E
- Kyolic® Garlic Formula 105
- Kyolic® Reserve
- Lycopene
- Mega Green Tea Extract
- Mega Green Tea Extract (Decaffeinated)
- Mega Lycopene
- Mega Silymarin with Isosylimin B
- Nutrim
- Optimized Ashwagandha Extract
- Pomegranate Extract (Full-Spectrum) Pomegranate™
- Pomegranate Juice Concentrate
- ProGreens®
- Pure-Gas™
- Pycnogenol
- Optimized Quercetin
- Resveratrol with Synergistic Grape-Berry Actives

## Hormones
- 7-Keto® DHEA
- DHEA
- DHEA Complete
- GH Pliituary Support Day Formula
- GH Pliituary Support Night Formula
- Melatonin
- Melatonin Timed Release
- Natural Estrogen with Pomegranate Extract
- ProFem Cream
- Pure IGF
- Super Miraforte with Standardized Lignans

## Immune Enhancement
- Agave Digestive-Immune Support
- AFICC™ (Active Hexose Correlated Compound)
- Buffered Vitamin C Powder
- Echinacines
- Enhanced Life Extension Whey Protein
- 26 Hyperimmune Egg
- Immune Protect with PARACTIN®
- Lactoferrin
- Lifeshield® Immunity™
- Maitake SX-Fraction
- Norwegian Shark Liver Oil
- Primal Defense™
- ProBoost™ Thymic Protein A
- Pure Gar™
- Sambu® Guard
- Theracel Capsules
- Thymic Immune Factors
- Ultimate Flora Advanced Immunity
- Vitamin C with Dihydroquercetin
- Zinc Lozenges with Vitamin C

## Inflammatory Reactions
- Arthro-Inmune Joint Support
- ArthroMax™ with Theaflavins
- Barlean’s Kids DHA
- Boswellia
- Boswellia™ Topical Cream
- Bromelain (Specially-coated)
- Coromega Kids Brain and Body (DHA)
- DHA 240
- Emulsified Norwegian Cod Liver Oil
- Emulsified Super Twin EPA/DHA
- Fast Acting Joint Formula
- 5-LOXIN®
- Mega EPA/DHA
- Mega GLA with Sesame Lignans
- MSM
- Natural Relief 1222™ Cream
- PhosphOmega™ Krill Oil
- Serrafazeyme
- SO-Dyzyme™ with GliSODin® and Wolfberry
- Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
- Tart Cherry
- Udo’s Choice Oil
- Zyfl amend Easy

## Liver Health
- Branch Chain Amino Acids
- N-Acetyl Cysteine
- Optimized Milk Thistle (Silymarin)
- PhosChol (Nutrausal)
- SAMe
- Silymarin

## Minerals
- Biosil
- Bone Restore
- Bone Strength Formula w/KoAct™
- Bone-Up™

## Rhodiola Extract
- Rosmarinic Acid Extract
- Silymarin
- SODzyme™ with GliSODin®
- Stevia Extract
- Super Bio-Curcumin®
- Super Curcumin with Bioperine®
- Super Ginkgo Extract
- Triple Action Cruciferous Vegetable Extract
- Venotone
- Whole Grape Extract
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- **Tryptopure™ L-Tryptophan**
- **Mitochondrial™ Support**
- **The Pill Cutter and Grinder**
- **The Capsule Filler Machine**
- **Advanced Dietary Software**
- **Advanced Oral Hygiene**
- **Acetyl-L-Carnitine**
- **Zinc/Vitamin C Lozenges**
- **Vanadyl Sulfate**
- **Vital Greens Mix**
- **OptiZinc**
- **Optimized Cran-Max® with UTIRose™**
- **Optimized T-Carnitine-Arginate**
- **Optimized Chromium w/Crominex® 3+**
- **Only Trace Minerals**
- **Cell Sensor Gauss Meter™**
- **Children’s Formula Life Extension Mix**
- **Optimized Formula Life Extension Mix**
- **Healthy Stress Relief**
- **Optimized TrypotPure™ Plus**
- **SAMe**
- **St. John’s Wort Extract**
- **Tryptophan**
- **MOUTH CARE**
- **Advanced Oral Hygiene**
- **Dr. Tung’s Tongue Cleaner**
- **Life Extension Mouthwash w/Pomegranate**
- **Life Extension Toothpaste**
- **MistOral III™ with CoQ10**
- **MULTIVITAMIN**
- **Children’s Formula Life Extension Mix**
- **Comprehensive Nutrient Pack**
- **Life Extension Booster**
- **Life Extension Mix™ Capsules**
- **Life Extension Mix™ Powder**
- **Life Extension Mix™ Tablets**
- **Life Extension Mix™ w/ Copper Capsules**
- **Life Extension Mix™ w/ Copper Tablets**
- **Life Extension Mix™ w/Extra Niacin**
- **Life Extension Mix™ w/Extra Niacin w/Copper**
- **Life Extension Mix™ w/Stevia w/Copper Powder**
- **Life Extension One-Per-Day**
- **Life Extension Two-Per-Day**
- **Super Booster Softgels w/Advanced K2 Complex**
- **Vital Greens Mix**
- **PET CARE**
- **Life Extension Cat Mix**
- **Life Extension 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**
- **Anti-Aging Mask**
- **Anti-Glycation Serum**
- **Antioxidant Rejuvenating Foot Cream**
- **Antioxidant Rejuvenating Foot Scrub**
- **Antioxidant Rejuvenating Hand Cream**
- **Antioxidant Rejuvenating Hand Scrub**
- **Anti-Redness & Blemish Lotion**
- **Cellulite Suppress™ Formula**
- **Corrective Clearing Mask**
- **Derma Whey**
- **Dual-Action MicroDem Abrasion**
- **Essential Plant Lipids Reparative Serum**
- **Face Master® Platinum**
- **Face Rejuvenating Antioxidant Cream Enhanced**
- **FernBlock® with Sendara™**
- **Fine Line-Less Hair Suppression Formula**
- **Hair Loss Support**
- **Helicase Hair Care System**
- **Lavendar Underarm Deodorant**
- **Life Extension Sun Protection Spray**
- **Lifting & Tightening Complex**
- **Melatonin Cream**
- **Mild Facial Cleanser**
- **NapCRA w/Aloe Vera**
- **Neck Rejuvenating Antioxidant Cream**
- **New Facial Solution**
- **Peel Off Cleansing Mask**
- **Wrinkle Relaxant**
- **Under Eye Cream**
- **Vitamin C Serum**
- **Vitamin D Lotion**
- **Vitamin K Healing Cream**
- **Soy**
- **Natural Estrogen w/Pomegranate**
- **Power Soy Powder**
- **Soy Protein Concentrate**
- **Super Absorbable Soy Isoflavones**
- **Ultra Soy Extract**
- **Anti-Antioxidant Antioxidants w/HepatoProtection Complex**
- **Benfotiamine w/Thiamine**
- **Breast Health Formula**
- **Butterbur Extract w/Standardized Rosmarinic Acid**
- **Chlorella**
- **Chlorophyllin w/Zinc**
- **Curious Versicolor Super Strength**
- **Derma-Vit™**
- **Cisunlin w/InSea2™ and Crominex® 3+ EDITA**
- **Diosmin 95 Sem Dophilus**
- **Echinacea**
- **GlucoFit™**
- **Gluconeal®**
- **HCA**
- **IntegraLean® Irvingia**
- **LunaLean® Caps Special Propolmannan**
- **Particle Size**
- **Optimized Irvingia w/Phase 3° Calorie Control Complex**
- **Optimized Saffron with Satiareal® Life Mix**
- **Optimized Formula Life Extension Mix**
- **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**
- **WellBeX PGX® Soluble Fiber Blend**

**VITAMINS**
- **Ascorbic Acid Powder**
- **Ascorbyl Palmitate Capsules**
- **B1**
- **B3**
- **B12**
- **Beta-Carotene**
- **Biotin Capsules**
- **Biotin Powder**
- **Buffered Vitamin C Powder**
- **Complete B Complex**
- **Essential Fat Soluble Nutrient**
- **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**
- **Tocotrienols w/Sesame Lignans**
- **Tocotrienols w/Sesame Lignans (Interplexus) Vitamin A Nutrisorb**
- **Vitamin B3 (Niacin) Capsules**
- **Vitamin B6**
- **Vitamin B12 Tablets**
- **Vitamin C**
- **Vitamin D**
- **Vitamin D3**
- **Vitamin D3 w/Sea-Iodine™**
- **Vitamins D and K w/Sea-Iodine™**
- **Vitamin E**
- **Vitamin K1**

**WEIGHT MANAGEMENT**
- **All® Refill Pack**
- **Belly Slim & Tone**
- **Calorie Control Weight Management Formula**
- **7-Keto DHEA**
- **DHEA Complete**
- **Fucosaxanthin Slim™**
- **HCA**
- **IntegraLean® Irvingia**
- **LunaLean® Caps Special Propolmannan**
- **Particle Size**
- **Optimized Irvingia w/Phase 3° Calorie Control Complex**
- **Optimized Saffron with Satiareal® Life Mix**
- **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**
- **WellBeX PGX® Soluble Fiber Blend**
# Buyers Club Order Form

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* These products are not 25% off retail price.

**SUB-TOTAL OF COLUMN 1**

FEBRUARY 2011

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**SUPER SALE SAVINGS ON ALL PRODUCTS**

To order call: 1-954-766-8433 or 1-800-544-4440

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

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**SUB-TOTAL OF COLUMN 2**

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## Buyers Club Order Form

### No. | Retail | Member | Qty | Total
--- | --- | --- | --- | ---
00999 | BREESE HEALTH FORMULA - 60 veg. caps | $34.00 | $25.20 |
00999 | BREESE HEALTH FORMULA - 4 bottles of 60 veg. caps | $120.00 | $90.00 |
00939 | BREESE EYES III - 2 vials, 5 ml each | $34.00 | $25.50 |
00939 | BREESE EYES III - 4 boxes | $128.00 | $96.00 |
00136 | BROMELAIN POWDER - 100 grams of powder | $21.00 | $15.75 |
00136 | BROMELAIN POWDER - 4 bottles of powder | $75.00 | $56.25 |
01203 | (SPECIALY COATED) BROMELAIN - 500 mg, 60 enteric coated tablets | $21.00 | $15.75 |
01203 | (SPECIALY COATED) BROMELAIN - 4 bottles of 60 tablets | $76.00 | $57.00 |
00884 | BUTTERBUR EXTRACT w/ STANDARDIZED ROSMARINIC ACID - 60 softgels | $44.00 | $33.00 |
00884 | BUTTERBUR EXTRACT w/ STANDARDIZED ROSMARINIC ACID - 4 bottles of 60 softgels | $158.40 | $118.80 |
01015 | CALCIUM CITRATE - 300 caps | $24.00 | $18.00 |
01015 | CALCIUM CITRATE - 4 bottles of 300 caps | $85.00 | $63.75 |
00635 | CALCIUM D-GLUCARATE - 200 mg, 60 caps | $18.00 | $13.50 |
00635 | CALCIUM D-GLUCARATE - 4 bottles of 60 caps | $60.00 | $45.00 |
01493 | CALORINE CONTROL WEIGHT MANAGEMENT FORMULA BLUEBERRY-POMEGRANATE FLAVOR - 402 grams powder | $56.00 | $42.00 |
01493 | CALORINE CONTROL WEIGHT MANAGEMENT FORMULA BLUEBERRY-POMEGRANATE FLAVOR - 4 bottles of 402 grams powder | $192.00 | $144.00 |
01493 | CALORINE CONTROL WEIGHT MANAGEMENT FORMULA BLUEBERRY-POMEGRANATE FLAVOR - 4 bottles of 402 grams powder | $352.00 | $264.00 |
00118 | CAPSULE FILLING MACHINE FOR "0" CAPSULES | $17.95 | $13.46 |
00613 | CAPSULE FILLING MACHINE FOR "00" CAPSULES - 4 machines | $69.00 | $51.75 |
00916 | (OPTIMIZE) CAROTINIC w/GLYCOCARN® - 60 veg. caps | $29.00 | $21.75 |
00916 | (OPTIMIZE) CAROTINIC w/GLYCOCARN® - 4 bottles of 60 veg. caps | $104.40 | $78.30 |
01041 | L-CARNITINE CAPSULES - 500 mg, 30 caps | $15.00 | $11.25 |
01041 | L-CARNITINE CAPSULES - 4 bottles of 30 caps | $52.80 | $39.60 |
01258 | CARSONDOSE w/ P3 100% PROTECT™ - 60 veg. caps | $29.95 | $22.46 |
01258 | CARSONDOSE w/ P3 100% PROTECT™ - 4 bottles of 60 veg. caps | $108.00 | $81.00 |
01287 | (SUPER) CAROSINISE CAPS - 500 mg, 90 caps | $66.00 | $49.50 |
01287 | (SUPER) CAROSINISE CAPS - 4 bottles of 90 caps | $240.00 | $180.00 |
01011 | CELLULAR SUPPRESS® FORMULA - 6 fl. oz 150 mg, 30 caps | $58.00 | $43.50 |
01011 | CELLULAR SUPPRESS® FORMULA - 4 box, 60 caps | $208.00 | $156.00 |
00390 | CDP CHOLINE CAPS - 250 mg, 60 caps | $36.00 | $27.00 |
00390 | CDP CHOLINE CAPS - 4 bottles of 60 caps | $136.00 | $102.00 |
00998 | CELL SENSOR/EMF DETECTION/MEASUREMENT METER | $39.95 | $29.95 |
01378 | CHILDREN’S FORMULA MIX - 100 chewable tablets | $18.00 | $13.50 |
00550 | CHDRELLA - 500 mg, 200 tablets | $23.50 | $17.63 |
00550 | CHDRELLA - 4 bottles of 200 tablets | $84.00 | $63.00 |
01548 | CHOLPHYLIN w/ZINC - 100 softgels | $24.00 | $18.00 |
01548 | CHOLPHYLIN w/ZINC - 4 bottles of 100 softgels | $80.00 | $60.00 |
01359 | CHOL-LESS - 90 capsules | $32.50 | $24.38 |
00541 | CHOLINE CHOLINE - 16 oz liquid | $14.95 | $11.21 |
00364 | CHONEROTIN SULFATE CONCENTRATE - 400 mg, 60 tablets | $19.95 | $14.96 |
01218 | CHONEROTIN SULFATE CONCENTRATE - 4 bottles of 60 tablets | $72.00 | $54.00 |
01504 | (OPTIMIZE) CHROMIUM w/ CRONEX® 3+ - 500 mg, 60 veg. caps | $9.00 | $6.75 |
01504 | (OPTIMIZE) CHROMIUM w/ CRONEX® 3+ - 4 bottles of 60 veg. caps | $32.00 | $24.00 |
00551 | CLANTRO HERBAL EXTRACT - 1 oz | $12.00 | $9.00 |
00551 | CLANTRO HERBAL EXTRACT - 4 bottles of 1 oz | $44.00 | $33.00 |

*Not for sale to wholesalers or retail stores.*

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**SUB-TOTAL OF COLUMN 3**

| Life Extension Members receive 25% off the retail price of all products | **Deduce an additional 10% on all products during Super Sale**
---

**SUB-TOTAL OF COLUMN 4**

**February 2011**

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**Offer Ends January 31, 2011**

To order online visit www.lifeextension.com/SuperSale
### Buyers Club Order Form

#### No.  
**Retail**  
**Member**  
**Price**  
**Qty**  
**Total**  

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<td>80116</td>
<td>COSMESIS ANTI-AGING MASK  - 2 oz bottle</td>
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<td>COSMESIS ANTI-AGING MASK  - 2-2 oz bottles</td>
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<td>COSMESIS ANTI-OXIDANT FACIAL MIST  - 2 oz bottle</td>
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<td>COSMESIS ANTI-OXIDANT REJUVENATING FOOT CREAM  - 2 oz jar</td>
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<td>COSMESIS ANTI-OXIDANT REJUVENATING FOOT SCRUB  - 2 oz jar</td>
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<td>COSMESIS ANTI-OXIDANT REJUVENATING HAND CREAM  - 2 oz jar</td>
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<td>COSMESIS ANTI-OXIDANT REJUVENATING HAND SCRUB  - 2 oz jar</td>
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<td>COSMESIS ANTI-REDNESS &amp; BLEMISH LOTION  - 1 oz</td>
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<td>COSMESIS CORRECTIVE CLEANING MASK  - 2 oz jar</td>
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<td>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM  - 1 oz</td>
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<td>COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM  - 2 oz jar</td>
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<td>COSMESIS FINE LINE-LESS  - 1 oz</td>
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<td>COSMESIS HAIR SUPPRESS FORMULA  - 4 oz bottle</td>
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<td>COSMESIS HYALURONIC FACIAL MOISTURIZER  - 1 oz</td>
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<td>COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER  - 1 oz</td>
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<td>COSMESIS LIFTING &amp; TIGHTENING COMPLEX  - 1 oz</td>
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<td>COSMESIS MELALUTDOWN CREAM  - 1 oz jar</td>
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<td>COSMESIS MILD FACIAL CLEANSER - 6 oz</td>
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<td>COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM  - 2 oz jar</td>
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<td>COSMESIS PEEL OFF CLEANSING MASK  - 2 oz bottle</td>
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<td>COSMESIS PREP CORRECTING CREAM  - 1/2 oz</td>
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<td>COSMESIS REJUVENATING SERUM  - 1 oz</td>
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<td>COSMESIS SKIN LIGHTENING SERUM  - 1/2 oz</td>
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**SUB-TOTAL OF COLUMN 5**

**FEBRUARY 2011**

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**SUPER SALE SAVINGS ON ALL PRODUCTS**

**To order call: 1-954-766-8433 or 1-800-544-4440**

---

**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

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**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

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**SUB-TOTAL OF COLUMN 6**

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* Not eligible for member discount or member renewal product credit.
FEBRUARY 2011

LEMFEB11p.indd   101 LEMFEB11p.indd   101 12/15/10   1:33 PM

**01042**

FEBRUARY 2011
LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

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<td>DHEA - 4 bottles of 60 caps</td>
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<td>DHEA - 50 mg, 60 caps</td>
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<td>DHEA - 4 bottles of 60 caps</td>
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<td>DHEA - 100 mg, 60 caps</td>
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<td>(ENHANCED SUPER) DIGESTIVE ENZYMES - 4 bottles of 100 veg caps</td>
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<td>DIM - 125 mg dimethylglycine, 60 tablets</td>
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<td>DNA PROTECTION FORMULA - 60 veg caps</td>
<td>38.00</td>
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<td>DR. PROCTOR’S ADVANCED HAIR FORMULA - 2 oz</td>
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<td>DR. PROCTOR’S HAIR FORMULA SHAMPOO - 8 oz bottle</td>
<td>24.95</td>
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<td>00376</td>
<td>DR. TUNG’S TONGUE CLEANER</td>
<td>8.54</td>
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<td>00869</td>
<td>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 net oz</td>
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<td>DUAL-C - 90 caps</td>
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<td>ECHINACEA - 250 mg, 60 caps</td>
<td>$14.35</td>
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<td>EVIDA - 500 mg, 100 caps</td>
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<td>00348</td>
<td>(ENLARGED SUPER TWIN) EPA/DHA - 12 fl. oz</td>
<td>22.45</td>
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<td>01498</td>
<td>ENDOTHELIAL DEFENSE™ - w/ FULL SPECTRUM POMEGRANATE™ - 60 softgels</td>
<td>56.00</td>
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<td>(REME) EPA/DHA - 120 softgels</td>
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<td>ESSENTIAL FAT-SOLUBLE NUTRIENTS - 30 softgels</td>
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<td>01054</td>
<td>FACE MASTER® PLATINUM</td>
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<td>0065</td>
<td>FAST-ACTING FORMULA - 30 caps</td>
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<td>20053</td>
<td>FEM DOPHILUS® - 30 caps</td>
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<td>20055</td>
<td>FEM DOPHILUS® - 60 caps</td>
<td>35.95</td>
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**SUB-TOTAL OF COLUMN 7**

Life Extension members receive 25% off the retail price of all products

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

<table>
<thead>
<tr>
<th>No.</th>
<th>Retail No.</th>
<th>Retail</th>
<th>Qty</th>
<th>Total</th>
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<td>01064</td>
<td>FEMMENESSENCE MACAPAUSE® - 120 veg caps</td>
<td>$34.99</td>
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<td>01111</td>
<td>(ENHANCED) FERNBLOCK® with SENDARA® - 30 veg caps</td>
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<td>00229</td>
<td>FIBER FOOD CAPS - 200 caps</td>
<td>15.00</td>
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<td>00228</td>
<td>FIBER FOOD CAPS - 10 bottles of powder</td>
<td>50.00</td>
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<td>01718</td>
<td>FIBRINOGEN RESIST FORMULA (NATTOKINASE) - 30 veg caps</td>
<td>48.00</td>
<td>36.75</td>
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<tr>
<td>00873</td>
<td>FLAXSEED POWDER (HI-LIGAND NUTRI-FLAX) - 16 oz powder</td>
<td>9.95</td>
<td>7.46</td>
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<tr>
<td>01200</td>
<td>FLDRASTOR® - 250 mg, 50 caps</td>
<td>55.15</td>
<td>41.36</td>
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<td>01312</td>
<td>(OPTIMIZED) FOLATE (6-METHYLTHYMOXANTHINE) - 100 veg caps</td>
<td>28.00</td>
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<td>00347</td>
<td>FOLIC ACID + B12 CAPSULES - 200 caps</td>
<td>10.50</td>
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<td>00300</td>
<td>FORSKOLIN - 10 mg, 60 caps of elemental forskolin</td>
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<td>00993</td>
<td>FUCOXANTHIN-SLIM™ - 4 bottles of 90 softgels</td>
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<td>00317</td>
<td>GABA POWDER - 100 grams of powder</td>
<td>237.25</td>
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<td>GAMMA E TOCOPHEROL/TOCOTRIENOLS - 60 softgels</td>
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<td>GAMMA E TOCOPHEROL, W/ SESAME LIGNANS - 60 softgels</td>
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<td>GELATIN CAPSULES - Set of 1000 empty caps size “00”</td>
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<td>01301</td>
<td>GH PITUITARY SUPPORT DAY FORMULA - 120 vegetarian tabs</td>
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<td>GH PITUITARY SUPPORT NIGHT FORMULA - 4 bottles of 120 veg caps</td>
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<td>00778</td>
<td>GINKGO BILOBA CERTIFIED EXTRACT - 120 mg, 365 caps</td>
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<td>00777</td>
<td>GINKGO BILOBA CERTIFIED EXTRACT - 100 caps of 2 bottles of 365 caps</td>
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<td>00504</td>
<td>(SUPER) GINKGO EXTRACT - 120 mg, 100 caps</td>
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<td>PANAX RED Ginseng - 60 veg caps</td>
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<td>00756</td>
<td>(REGA) GLA WITH SESAME LIGNANS - 60 softgels</td>
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<td>00345</td>
<td>(L) GLUTAMINE CAPSULES - 500 mg, 100 caps</td>
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<td>00141</td>
<td>(L) GLUTAMINE CAPSULES - 100 caps of powder</td>
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<td>00522</td>
<td>GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps</td>
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<td>00512</td>
<td>GLUCODY™ (COSOLIC ACID) - 100 softgels</td>
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<td>00113</td>
<td>GLUTATHIONE, C &amp; CYSTEINE - 750 mg, 100 caps</td>
<td>18.00</td>
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<tr>
<td>00113</td>
<td>GLUTATHIONE, C &amp; CYSTEINE - 4 bottles of 100 caps</td>
<td>64.00</td>
<td>48.00</td>
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</table>

**SUB-TOTAL OF COLUMN 8**

* Due to license restrictions, this product is not for sale to wholesalers outside of the United States.
** Can only be sold in the United States.
† Member pricing not valid on this item.

Offer ends January 31, 2011

To order online visit www.lifeextension.com/SuperSale
## Buyers Club Order Form

<table>
<thead>
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<th>No.</th>
<th>G</th>
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<th>Retail Price</th>
<th>Qty</th>
<th>Total</th>
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<td>(MEGA) L-GLUTATHIONE - 250 mg, 60 caps</td>
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<td>01091</td>
<td>(WHOLE) GRAPE EXTRACT w/RESVERATROL - 60 veg. caps</td>
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<td>GRAPE SEED EXTRACT w/RESVERATROL &amp; PTEROSTILBENE - 100 mg, 60 veg. caps</td>
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<td>00953</td>
<td>(MEGA) GREEN TEA EXTRACT - lightly caffeinated - 100 veg. caps</td>
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<td>00954</td>
<td>(MEGA) GREEN TEA EXTRACT - 4 bottles of 100 veg. caps</td>
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<td>HOMOCYSTEINE RESIST - 100 caps</td>
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<td>00967</td>
<td>NOODA GORDONII - 60 caps</td>
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<td>HUPERZINE A w/NATURAL VITAMIN E - 50 mcg, 60 caps</td>
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<td>HYDRODERM® - 1 oz bottle</td>
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<td>S HTP - 100 mg, 60 caps</td>
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<td>HCA - 90 caps</td>
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<td>HOMOCYSTEINE RESIST - 4 bottles of 100 caps</td>
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<td>NOODA GORDONII - 60 caps</td>
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<td>HUPERZINE A w/NATURAL VITAMIN E - 4 bottles of 60 caps</td>
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<td>HYDRODERM® - 2 - 1 oz bottles</td>
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<td>98.00</td>
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## SUPER SALE SAVINGS ON ALL PRODUCTS

To order call: 1-954-766-8433 or 1-800-544-4440

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<td>JARRO DOPHIUS EPS® - 60 veg. caps</td>
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<td>01224</td>
<td>(SUPER) K WITH ADVANCED K2 COMPLEX - 90 softgels</td>
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<td>NKO KRILL OIL - 60 softgels</td>
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<td>KYUCOR RESERVE - 600 mg, 120 caps</td>
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<td>LACTOFERRIN (APOLACTOFERRIN) CAPS - 300 mg, 60 caps</td>
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<td>LAVINLEUM DERMADROANT - 12.5 grams of cream</td>
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<td>LIFE EXTENSION CAT MIX - 100 grams of powder</td>
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<td>LIFE EXTENSION LECITHIN GRANULES - 4 jars</td>
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<td>LIFE EXTENSION MIX® w/EXTRA NIACIN - 10 bottles of 315 tablets</td>
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<td>LIFE EXTENSION MIX® w/EXTRA NIACIN - 4 bottles of 315 tablets w/o copper</td>
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<tr>
<td>01567</td>
<td>LIFE EXTENSION MIX® w/EXTRA NIACIN - 10 bottles of 315 tablets w/o copper</td>
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<tr>
<td>01564</td>
<td>LIFE EXTENSION MIX® POWDER - 4 bottles of 490 caps without copper</td>
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<tr>
<td>01564</td>
<td>LIFE EXTENSION MIX® POWDER - 10 bottles of 490 caps without copper</td>
<td>850.00</td>
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<tr>
<td>01566</td>
<td>LIFE EXTENSION MIX® POWDER - 14.81 oz of powder without copper</td>
<td>98.00</td>
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<tr>
<td>01566</td>
<td>LIFE EXTENSION MIX® POWDER - 4 bottles of powder without copper</td>
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<tr>
<td>01566</td>
<td>LIFE EXTENSION MIX® POWDER - 10 bottles of powder without copper</td>
<td>720.00</td>
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</tbody>
</table>

**FEBRUARY 2011**

**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**
## Buyers Club Order Form

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
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**SUB-TOTAL OF COLUMN 11**

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

**SUB-TOTAL OF COLUMN 12**

FEBRUARY 2011
### Buyers Club Order Form

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**SUB-TOTAL OF COLUMN 13**

**SUB-TOTAL OF COLUMN 14**

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**SUPER SALE SAVINGS ON ALL PRODUCTS**

To order call: 1-954-766-8433 or 1-800-544-4440

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

---

**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

---

*Product cannot be sold outside the USA.*
**Life Extension Members Receive 25% Off the Retail Price of All Products

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<td>RED YEAST RICE (Nature's Plus) - 600 mg, 60 veg. caps</td>
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<td>RHODIOLA EXTRACT - 250 mg, 60 veg. caps</td>
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**Sub-Total of Column 15**

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<td>00657</td>
<td>SOLARSHIELD SUNGGLASSES - 1 pair smoke color</td>
<td>$12.99</td>
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<tr>
<td>01397</td>
<td>ULTRA SOY EXTRACT - 150 veg. caps</td>
<td>$87.00</td>
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<tr>
<td>00286</td>
<td>SOY PROTEIN POWDER (concentrated soy protein) - 16 oz of powder</td>
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<td>01099</td>
<td>STABILUMIN® - 200 caps</td>
<td>$30.00</td>
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<tr>
<td>00432</td>
<td>STEVIA EXTRACT - 100 packets, 1 gram each</td>
<td>$9.55</td>
<td>$7.16</td>
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<tr>
<td>00351</td>
<td>ST. JOHN'S WORT EXTRACT - 300 mg, 60 caps</td>
<td>$10.99</td>
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<td>00327</td>
<td>ST. JOHN'S WORT EXTRACT (PLANETARY) - 600 mg, 60 tablets</td>
<td>$16.75</td>
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<td>01476</td>
<td>STROUPNASIA - 750 mg, 90 veg. caps</td>
<td>$20.00</td>
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<td>00971</td>
<td>SUN PROTECTION SPRAY W/BETA GLUCAN - SPF30 - 6 oz bottle</td>
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<tr>
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<td>OVERCAST POLARIZED SUNGLASSES - gray, large</td>
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<td>00748</td>
<td>OVERCAST POLARIZED SUNGLASSES - gray, medium</td>
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<td>00758</td>
<td>SUPER ABSORBABLE SOY ISOFAVONES - 60 caps</td>
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<td>01408</td>
<td>SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL 60 softgels</td>
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<tr>
<td>00567</td>
<td>SE-METHYSELENOCYTEINE - 200 mcg, 100 caps</td>
<td>$12.00</td>
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**Sub-Total of Column 16**

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<td>00572</td>
<td>RESVIRAC® - 300 mg, 60 veg. caps</td>
<td>$72.00</td>
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<td>SAMBO GUARD - 175 ml</td>
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<td>00358</td>
<td>SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets</td>
<td>$17.00</td>
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<tr>
<td>00358</td>
<td>SAME (S-ADENOSYL-METHIONINE) - 8 boxes of 20 enteric coated tablets</td>
<td>$120.00</td>
<td>$90.00</td>
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**These products are not 25% off retail price.**

**Offer Ends January 31, 2011**

To order online visit www.lifeextension.com/SuperSale

**FEBRUARY 2011**
# Buyers Club Order Form

## SUPER SALE SAVINGS ON ALL PRODUCTS

To order call: 1-954-766-8433 or 1-800-544-4440

<table>
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<th>No.</th>
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<th>V</th>
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<td>00213</td>
<td>VANADYL SULFATE</td>
<td>7.5 mg, 100 tablets</td>
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<td>00252</td>
<td>VELVET DEER ANTLER</td>
<td>250 mg, 30 caps</td>
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<td>00252</td>
<td>VELVET DEER ANTLER</td>
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<td>00408</td>
<td>VENOTONE</td>
<td>60 caps</td>
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<tr>
<td>00408</td>
<td>VENOTONE</td>
<td>4 bottles of 60 caps</td>
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<tr>
<td>00427</td>
<td>VINPOCETINE</td>
<td>5 mg, 100 tablets</td>
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<tr>
<td>00427</td>
<td>VINPOCETINE</td>
<td>4 bottles of 100 tablets</td>
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<tr>
<td>01033</td>
<td>VISION OPTIMIZER</td>
<td>90 caps</td>
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<tr>
<td>01986</td>
<td>VITAL GREENS MIX</td>
<td>319.5 grams of powder</td>
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<tr>
<td>01986</td>
<td>VITAL GREENS MIX</td>
<td>4 jars of powder</td>
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<tr>
<td>0219</td>
<td>(INTERLEXUS) VITAMIN A NUTRISORB</td>
<td>10,000 IU 0.6 fl. oz</td>
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<tr>
<td>00691</td>
<td>VITAMIN B1 CAPS</td>
<td>500 mg, 100 caps</td>
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<td>00691</td>
<td>VITAMIN B1 CAPS</td>
<td>4 bottles of 100 caps</td>
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<tr>
<td>00939</td>
<td>VITAMIN B2 CAPS</td>
<td>100 mg, 100 caps</td>
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<td>00939</td>
<td>VITAMIN B2 CAPS</td>
<td>4 bottles of 100 caps</td>
</tr>
<tr>
<td>00984</td>
<td>VITAMIN B3 (NIACIN)</td>
<td>1000 mg, 100 caps</td>
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<td>VITAMIN B3 (NIACIN)</td>
<td>4 bottles of 100 caps</td>
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<td>00372</td>
<td>VITAMIN B3 (NIACIN)</td>
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<td>VITAMIN B3 (NIACIN)</td>
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<td>VITAMIN B5 CAPS</td>
<td>500 mg, 100 caps (Panthenolic Acid)</td>
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<td>VITAMIN B5 CAPS</td>
<td>4 bottles of 100 caps</td>
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<td>00556</td>
<td>VITAMIN B6 CAPS</td>
<td>250 mg, 100 caps</td>
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<td>VITAMIN B6 CAPS</td>
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<td>00381</td>
<td>VITAMIN B12 TABLETS</td>
<td>500 mcg, 100 dissolve-in-mouth tablets</td>
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<td>00381</td>
<td>VITAMIN B12 TABLETS</td>
<td>4 bottles of 100 dissolve-in-mouth tablets</td>
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<tr>
<td>00927</td>
<td>VITAMIN C WITH DIHYDROQUERCETIN</td>
<td>1000 mg, 250 tablets</td>
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<td>00927</td>
<td>VITAMIN C WITH DIHYDROQUERCETIN</td>
<td>4 bottles of 250 tablets</td>
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<tr>
<td>00084</td>
<td>(BUFFERED) VITAMIN C POWDER</td>
<td>454.6 grams of powder</td>
</tr>
<tr>
<td>00084</td>
<td>(BUFFERED) VITAMIN C POWDER</td>
<td>4 bottles of powder</td>
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<tr>
<td>00864</td>
<td>VITAMIN D - 2000 IU, 1 fl oz</td>
<td><strong>28.00</strong></td>
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<tr>
<td>00864</td>
<td>VITAMIN D - 4 bottles of 1 fl oz</td>
<td><strong>100.00</strong></td>
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<tr>
<td>00251</td>
<td>VITAMIN D3 CAPS</td>
<td>1000 IU, 250 caps</td>
</tr>
<tr>
<td>00251</td>
<td>VITAMIN D3 CAPS</td>
<td>4 bottles of 250 caps</td>
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<tr>
<td>00713</td>
<td>VITAMIN D3 CAPS</td>
<td>5000 IU, 60 caps</td>
</tr>
<tr>
<td>00713</td>
<td>VITAMIN D3 CAPS</td>
<td>4 bottles of 60 caps</td>
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<tr>
<td>0418</td>
<td>VITAMIN D3 CAPS</td>
<td>7000 IU, 60 caps</td>
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<td>0418</td>
<td>VITAMIN D3 CAPS</td>
<td>4 bottles of 60 caps</td>
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<tr>
<td>01372</td>
<td>VITAMIN D3 w/SEA-IODINE</td>
<td>5000 IU, 60 veg. caps</td>
</tr>
<tr>
<td>01372</td>
<td>VITAMIN D3 w/SEA-IODINE</td>
<td>4 bottles of 60 veg. caps</td>
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<tr>
<td>01472</td>
<td>VITAMINS D AND K w/SEA-IODINE</td>
<td><strong>60</strong></td>
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<tr>
<td>00663</td>
<td>VITAMIN E CAPS (NATURAL)</td>
<td>400 IU, 100 caps</td>
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<tr>
<td>00663</td>
<td>VITAMIN E CAPS (NATURAL)</td>
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<tr>
<td>00663</td>
<td>VITAMIN E CAPS (NATURAL)</td>
<td>10 bottles of 100 caps</td>
</tr>
</tbody>
</table>

* These products are not 25% off retail price.
** Due to license restrictions, this product is not for sale to Canada.

---

**FEBRUARY 2011**

**SUB-TOTAL OF COLUMN 17**

**SUB-TOTAL OF COLUMN 18**

**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

---

*This page contains a detailed list of supplements and their respective prices, along with special sale offers and discounts. It is provided for the purpose of ordering products from Life Extension.*
DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

OFFER ENDS JANUARY 31, 2011
To order online visit www.lifeextension.com/SuperSale

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Retail Price</th>
<th>Member Price</th>
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<th>Total</th>
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<td>01225</td>
<td>(LOW-DOSE) VITAMIN K2 (MK-7) - 45 mcg, 90 softgels</td>
<td>$18.00</td>
<td>$13.50</td>
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<tr>
<td></td>
<td>(LOW-DOSE) VITAMIN K2 (MK-7) - 4 bottles of 90 softgels</td>
<td>$64.00</td>
<td>$48.00</td>
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<tr>
<td>01585</td>
<td>(SUPER) ZEAXANTHIN W/LUTEIN &amp; MESO-ZEAXANTHIN AND C3G - 60 softgels</td>
<td>$22.00</td>
<td>$16.50</td>
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<td></td>
<td>(SUPER) ZEAXANTHIN W/LUTEIN &amp; MESO-ZEAXANTHIN AND C3G - 4 bottles</td>
<td>$79.20</td>
<td>$59.40</td>
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<tr>
<td>01586</td>
<td>(SUPER) ZEAXANTHIN W/LUTEIN &amp; MESO-ZEAXANTHIN - 60 softgels</td>
<td>$42.00</td>
<td>$31.50</td>
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<td>(SUPER) ZEAXANTHIN W/LUTEIN &amp; MESO-ZEAXANTHIN PLUS ASTAXANTHIN AND C3G</td>
<td>$152.00</td>
<td>$114.00</td>
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<tr>
<td></td>
<td>PLUS ASTAXANTHIN AND C3G - 4 bottles of 60 softgels</td>
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<tr>
<td>00061</td>
<td>ZINC LOZENGES WITH VITAMIN C - 75 lozenges</td>
<td>$9.50</td>
<td>$7.13</td>
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<td></td>
<td>ZINC LOZENGES WITH VITAMIN C - 4 bottles of 75 lozenges</td>
<td>$27.00</td>
<td>$20.25</td>
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<tr>
<td>01051</td>
<td>ZYFLAMEND - 120 softgels</td>
<td>$60.95</td>
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<td>01029</td>
<td>ZYFLAMEND EASYCAPS - 180 caps</td>
<td>$31.95</td>
<td>$23.96</td>
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</table>

SUB-TOTAL OF COLUMN 19

GIVE THE LIFE-ENHANCING BENEFITS OF LIFE EXTENSION WITH A GIFT OF $10, $25, $50 OR $100
To order a Life Extension Gift Card for someone special, call 1-800-544-4440.

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.

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

GIVE THE LIFE-ENHANCING BENEFITS OF LIFE EXTENSION WITH A GIFT CARD!

To order a Life Extension Gift Card for someone special, call 1-800-544-4440.

GIVE THE GIFT of HEALTH, with a LIFE EXTENSION GIFT CARD!

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS
DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE
**Buyers Club Order Form**

**ORDER SUBTOTALS**

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**ORDER TOTALS**

| Sub-Total A (Sub-total of Columns 1 through 19) |

**SUPER SALE DEDUCT 10%** (subtotal X.10%) Ends 01/31/11

Postage And Handling (Any size order, continental U.S.) $5.50

C.O.D.s (Add $7 for C.O.D. orders)

UPS OVERNIGHT and $16. UPS 2ND DAY AIR and $7. For Puerto Rico, U.S. Virgin Islands, Alaska & Hawaii, and B.T. CANADA UPS EXPRESS Flat rate $17.50, UK Flat rate $25 USD. 

All Other International Air Will Be Added.

**GRAND TOTAL** (Must be in U.S. dollars)

**BILL TO ADDRESS**

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<tr>
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<td>PHONE</td>
<td>FAX</td>
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<td>VISA/MASTERCARD/AMEX/DISCOVER #</td>
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**SHIP TO ADDRESS**

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<td>FAX</td>
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</table>

**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](http://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 $700, 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)

**PRICES SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE NOTIFY THE LIFE EXTENSION FOUNDATION® OF ANY ADDRESS CHANGE**
### Buyers Club Order Form

**OFFER ENDS JANUARY 31, 2011**

To order online visit www.lifeextension.com/SuperSale

#### LIFE EXTENSION MEDIA

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<td>FOREVER YOUNG</td>
<td>$26.00</td>
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<td>THE EMPOWERED PATIENT</td>
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<td>WEIGHT LOSS GUIDE</td>
<td>$20.95</td>
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<tr>
<td>YOUR BLOOD DOESN'T LIE</td>
<td>$21.95</td>
<td>$17.47</td>
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<td>BRAIN SURGERY</td>
<td>$24.99</td>
<td>$18.74</td>
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<tr>
<td>FDA: FAILURE, DECEPTION, ABUSE</td>
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<td>STAY YOUNG &amp; SEXY WITH BIO-IDENTICAL HORMONE REPLACEMENT</td>
<td>$19.95</td>
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<tr>
<td>KNOCKOUT</td>
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As we age, structural alterations occur in our joints, leading to painful inflammation, discomfort, and loss of mobility.

ArthroMax™ is a multi-nutrient formula designed to provide broad-spectrum support for aging joints and cartilage. Based on recent scientific findings, ArthroMax™ has been improved with higher potencies and an exciting new ingredient.

ArthroMax™ contains more glucosamine sulfate along with a special Boswellia extract known as 5-LOXIN®. Glucosamine sulfate provides underlying structural foundation for joints, while 5-LOXIN® inhibits the 5-lipoxygenase enzyme, thereby reducing levels of pro-inflammatory leukotriene B4.*

**Key New Ingredient...**
**Black Tea Theaflavins**

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. New 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 down-regulate the expression of genes and cytokines associated with inflammatory conditions.

ArthroMax™ formula provides these bioactive theaflavin fractions, along with methylsulfonylmethane (MSM), which contains sulfur components that are critically important in maintaining comfortable joint function.* ArthroMax™ 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® OsteoBoron® also supports healthy bones and joints.*

Four vegetarian capsules of new ArthroMax™ with Theaflavins provide the following nutrients in one convenient, joint-protecting formula:

- **Black tea theaflavins with TF-2a fraction** 440 mg
- **Glucosamine sulfate 2KCl (from corn)** 2000 mg
- **MSM (methylsulfonylmethane)** 1000 mg
- **5-LOXIN®** 100 mg
- **Boron** 1.5 mg (as patented FruiteX® B® OsteoBoron®)

ArthroMax™ with Theaflavins has less than 10 mg of caffeine per serving (the amount found in a quarter cup of brewed green tea).

The retail price of a bottle of 120 vegetarian capsules of ArthroMax™ with Theaflavins is $44. If a member buys four bottles during Super Sale, the price is reduced to only $27 a bottle. Contains corn.

To order ArthroMax™ with Theaflavins, call 1-800-544-4440 or visit www.LifeExtension.com

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
The better Curcumin for Optimal Absorption

In 2010, there were more than 160 published studies on curcumin. Every week, scientists discover new benefits of curcumin such as reducing inflammation and promoting healthy DNA function.

Unfortunately, not all forms of curcumin are readily absorbed into the bloodstream. As a result, you may not be achieving peak blood levels of this vital nutrient.

**Super Bio-Curcumin®** is absorbed up to seven times more than regular curcumin.1,2

The graphs on this page illustrate that just one 400 mg capsule of **Super Bio-Curcumin®** can provide curcumin levels equivalent to ingesting 2,500-2,800 mg of other curcumin supplements.

Additionally, **Super Bio-Curcumin®** can stay in the bloodstream almost twice as long as other curcumin supplements.

Life Extension’s **Super Bio-Curcumin®** contains the newly patented BCM-95® turmeric compound. A bottle containing 60 **Super Bio-Curcumin® with BCM-95®** capsules retails for $35. If a member buys four bottles during **Super Sale**, the price is reduced to just $21.60 per bottle. Each bottle will last most members two months.

Contains rice.

References:

To order **Super Bio-Curcumin® with BCM-95®**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com).

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

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A Special Offer From Life Extension®

When you buy Theralac® for a friend, you’ll get a bottle FREE!

Buy a bottle of Theralac® for a friend.

Because Theralac® is a medical-strength probiotic, they will feel it working fast, helping them cleanse their digestive tract and improve digestive wellness in a few short days. Surely you know someone who could benefit from the best probiotic on the market… and who will appreciate a gift from you.

Life Extension® will ship the Theralac® direct to your friend.

The Theralac® will be sent promptly, along with information about Life Extension®. They will learn why you became a member, and how they can join at a special introductory rate. Then they can buy high quality Life Extension® supplements at discounted member pricing, just like you.

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For being so kind as to share the benefits of Life Extension® membership with a friend, you’ll receive YOUR FREE bottle. You already know the benefits of Life Extension® membership. If you have never tried Theralac®, here’s your chance. If you have, you already know why it’s the strongest probiotic on the market today. And Theralac® has been recommended 9 times in the Blaylock Wellness Report. Thousands of doctors around the world dispense Theralac® to their patients.

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For a large percentage of men over the age of 50, having a healthy prostate is the key to living a normal life. Dietary supplementation for urinary and prostate health helps men maintain a normal hormonal balance, which promotes normal urinary flow and prostate health. Choosing to support a healthy prostate through supplementation is one of the smartest choices an aging man can make.

Ultra Natural Prostate Formula combines eleven cutting-edge natural ingredients that have been scientifically substantiated to protect the prostate gland and maintain its healthy function.* One of the newest additions to the formula is Euro-

pean pumpkin seed oil extract, which is rich in delta-7 sterols and fatty acids.

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 has been added to 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 HRMLignan™, 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.

Ultra Natural Prostate Formula also contains 5-LOXIN® boswellia extract to protect against the dangerous enzyme 5-lipoxygenase, and the mineral boron to help slow elevation of prostate-specific antigen (PSA).

The retail price for one bottle of Ultra Natural Prostate Formula is $38. If a member buys four bottles during Super Sale, the price is reduced to $23.63 per bottle. If a member buys 12 bottles during Super Sale, the price is reduced to $21.60 per bottle.

Contains soybeans.

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

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URGENT NEED TO RENEW MITOCHONDRIA (Page 7)  
Mitochondrial dysfunction is central to most killer diseases of aging, underscoring the need for all aging humans to maintain youthful mitochondria levels. A natural coenzyme called PQQ has been shown to grow new mitochondria in aging cells!

BROAD-SPECTRUM DEFENSE OF NOVEL BERRY EXTRACT (Page 40)  
Scientists are increasingly focusing on the potent free-radical fighter C3G, a berry extract shown to enhance night vision and prevent numerous degenerative diseases.

SUZANNE SOMERS’S SEXY FOREVER (Page 78)  
Life Extension® members know that age-related disease can be postponed or prevented through clinically validated, natural interventions. In this exclusive excerpt from her latest book, celebrity member Suzanne Somers brings this scientific data to a national audience.

ANTI-AGING POWER OF CERAMIDES (Page 26)  
Ceramides are natural compounds essential to preserving young-looking skin. New research shows that when ingested, they may also improve cholesterol levels, enhance glucose control—even combat colon cancer.

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Chromium insufficiency directly contributes to high blood sugar. Yet 25-50% of Americans are now chromium-deficient. Discover how a cutting-edge chromium complex works in synergy with other targeted nutrients to slash blood sugar levels.

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