BREAST CANCER
What Are Doctors Missing?

Safer Approach to Slash Your Cholesterol

Why Your Brain Craves DHA

Novel Laser Therapy For Breast Cancer

Dorothy Hamill’s Courageous Breast Cancer Victory
Two-Per-Day Tablets retail for $20, but members pay only $13.50 each when four bottles are purchased. Two-Per-Day Capsules retail for $22, but cost members only $15 each when four are purchased.

Each bottle of Two-Per-Day lasts 60 days, so members can obtain the benefits of this high-potency formula for as little as $7.50 per month.

Compared to conventional “one-a-day” products, Life Extension Two-Per-Day provides up to 50 times more potency!

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

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

### Compare CENTRUM® to TWO-PER-DAY:

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

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

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

### Sample Ingredient Comparison

**LIFE EXTENSION® TWO-PER-DAY**

- Vitamin E: 100 IU (natural) vs. 50 IU (synthetic)
- Natural Folate: 400 mcg vs. 400 mcg (synthetic)
- Zinc: 30 mg vs. 11 mg
- Selenium: 200 mcg vs. 55 mcg
- Lutein: 5,000 mcg vs. 250 mcg
- Lycopene: 2,000 mcg vs. 300 mcg
- Biotin: 300 mcg vs. 30 mcg
- Boron: 3,000 mcg vs. 150 mcg
- Chromium: 200 mcg vs. 45 mcg
- Molybdenum: 100 mcg vs. 45 mcg
- Magnesium: 100 mg vs. 50 mg
- Manganese: 2 mg vs. 2.3 mg
- Iodine: 150 mcg vs. 150 mcg
- Potassium: 25 mg vs. 80 mg
- Vitamin A (as beta-carotene): 4,500 IU vs. 1,000 IU
- Vitamin A (preformed): 500 IU vs. 1,500 IU
- Choline (as bitartrate): 20 mg vs. (none)
- Inositol: 50 mg vs. (none)
- PABA: 30 mg vs. (none)
- Calcium: 12 mg vs. 220 mg
- Alpha Lipoic Acid: 125 mg vs. (none)

**Centrum® Silver® Adults 50+**

- Vitamin E: 50 IU vs. 100 IU (natural)
- Natural Folate: 400 mcg vs. 400 mcg (synthetic)
- Zinc: 30 mg vs. 11 mg
- Selenium: 200 mcg vs. 55 mcg
- Lutein: 5,000 mcg vs. 250 mcg
- Lycopene: 2,000 mcg vs. 300 mcg
- Biotin: 300 mcg vs. 30 mcg
- Boron: 3,000 mcg vs. 150 mcg
- Chromium: 200 mcg vs. 45 mcg
- Molybdenum: 100 mcg vs. 45 mcg
- Magnesium: 100 mg vs. 50 mg
- Manganese: 2 mg vs. 2.3 mg
- Iodine: 150 mcg vs. 150 mcg
- Potassium: 25 mg vs. 80 mg
- Vitamin A (as beta-carotene): 4,500 IU vs. 1,000 IU
- Vitamin A (preformed): 500 IU vs. 1,500 IU
- Choline (as bitartrate): 20 mg vs. (none)
- Inositol: 50 mg vs. (none)
- PABA: 30 mg vs. (none)
- Calcium: 12 mg vs. 220 mg
- Alpha Lipoic Acid: 125 mg vs. (none)

**Sample Ingredient Comparison**

- Vitamin C: 500 mg vs. 60 mg
- Vitamin D: 2,000 IU vs. 500 IU
- Vitamin B1: 75 mg vs. 1.5 mg
- Vitamin B2: 50 mg vs. 1.7 mg
- Vitamin B6: 75 mg vs. 3 mg
- Vitamin B12: 300 mcg vs. 25 mcg
- Niacin (as niacinamide): 50 mg vs. 20 mg
- Pantothenic acid: 100 mg vs. 10 mg
- Vitamin E: 100 IU (natural) vs. 50 IU (synthetic)
- Natural Folate: 400 mcg vs. 400 mcg (synthetic)
- Zinc: 30 mg vs. 11 mg
- Selenium: 200 mcg vs. 55 mcg
- Lutein: 5,000 mcg vs. 250 mcg
- Lycopene: 2,000 mcg vs. 300 mcg
- Biotin: 300 mcg vs. 30 mcg
- Boron: 3,000 mcg vs. 150 mcg
- Chromium: 200 mcg vs. 45 mcg
- Molybdenum: 100 mcg vs. 45 mcg
- Magnesium: 100 mg vs. 50 mg
- Manganese: 2 mg vs. 2.3 mg
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- Vitamin A (as beta-carotene): 4,500 IU vs. 1,000 IU
- Vitamin A (preformed): 500 IU vs. 1,500 IU
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- PABA: 30 mg vs. (none)
- Calcium: 12 mg vs. 220 mg
- Alpha Lipoic Acid: 125 mg vs. (none)

**Sample Ingredient Comparison**

Contains soybeans, rice, and corn.

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

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.
30 LASER THERAPY FOR BREAST CANCER PATIENTS
In a human clinical research trial supported by Life Extension®, scientists are testing an innovative, laser-assisted immune therapy against advanced breast cancer. This sophisticated technique not only destroys primary tumors but also appears to act as a cancer vaccine, preventing recurrences. Results so far are encouraging.

42 DOROTHY HAMILL: AN INSPIRATION ON AND OFF THE ICE
Five years ago, America’s Sweetheart—Olympic Gold Medal winner and longtime Ice Capades star Dorothy Hamill—was diagnosed with breast cancer. Her return to vibrant health has involved participation in research studies, diet, exercise, and supplements.

66 DHA: AN ESSENTIAL BRAIN FOOD
Studies show that brain tissue contains the highest concentration of DHA in the body. For those wishing to boost their DHA levels to avoid cognitive degeneration, NASA scientists have found a rich source of vegetarian DHA available from marine algae.

78 HOW BIOFLAVONOIDS CREATE YOUTHFUL SKIN TONE
A topical formulation harnesses the rejuvenating synergy of three flavonoids—quercetin, hesperidin, and rutin—to nourish and heal skin cells through multiple pathways. Combined, these flavonoids minimize uneven skin tone, age spots, wrinkles, and spider veins.

7 AS WE SEE IT – METFORMIN MAKES HEADLINE NEWS
Extensive scientific evidence documents the anti-cancer properties of metformin. Yet it is illegal for manufacturers to promote metformin to healthy people who want to reduce their risk of cancer, vascular occlusion, or obesity. Unless the current political/legal stranglehold over medical innovation is lifted, needless suffering and death will continue.

23 IN THE NEWS
Selenium with CoQ10 lowered deaths from cardiovascular disease by 54%; curcumin prevents type II diabetes in prediabetics; middle-aged adherence to Mediterranean diet reduced mortality by up to 62%; improperly cooked meat increases risk of advanced cancer—confirming longstanding Life Extension® warnings; and more.

87 PROFILE
Cardiac surgeon and researcher Dr. Sergey Dzugan pioneered the hypothesis that high cholesterol is caused by the body trying to correct age-diminished steroid hormone levels by boosting their precursor—cholesterol. His remarkable study results demonstrated that a multimodal combination of hormones, nutrients, and vitamins effectively targets elevated cholesterol without medication.

97 SUPER FOODS
Research indicates that celery stalks, seeds, and leaves offer strong protection against heart disease, cancer, diabetes, and gout. In addition to vitamin K, potassium, folate and magnesium, celery contains a number of complex compounds such as apigenin and luteolin.
In 2003, the Life Extension Foundation® introduced a standardized resveratrol extract shown to favorably alter genes implicated in the aging process—many of the same genes that respond to calorie restriction. Since then, we have identified additional compounds that simulate calorie restriction's ability to trigger youthful gene expression—the process by which genes transmit signals that slow certain aspects of aging. Compelling evidence reveals that certain compounds found in berries, such as pterostilbene and fisetin, possess potent "longevity gene" activators that work in synergy with resveratrol. For example, fisetin (found in strawberries) has been shown to stabilize resveratrol in the body by shielding it from metabolic breakdown,\(^\text{10}\) thus extending its beneficial effects.

**High-Potency Resveratrol with Synergistic Activators**

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

A bottle containing 60 vegetarian capsules of Optimized Resveratrol with Synergistic Grape-Berry Actives retails for $46. If a member buys four bottles, the price is reduced to just $31 per bottle. The suggested dose of one capsule a day provides:

<table>
<thead>
<tr>
<th>Ingredient</th>
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<tr>
<td>Trans-Resveratrol</td>
<td>250 mg</td>
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<tr>
<td>Grape-Berry Actives</td>
<td>85 mg</td>
</tr>
<tr>
<td>Quercetin</td>
<td>60 mg</td>
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<tr>
<td>Trans-Pterostilbene</td>
<td>0.5 mg</td>
</tr>
<tr>
<td>Fisetin</td>
<td>10 mg</td>
</tr>
</tbody>
</table>

**References**

10. Xenobiotica. 2008 Sep;38(9):857-66

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

To order Optimized Resveratrol with Synergistic Grape-Berry Actives, call 1-800-544-4440 or visit www.LifeExtension.com
Gustavo Tovar Baez, MD, operates the Life Extension Clinic in Caracas, Venezuela. He is the first physician in Caracas to specialize in anti-aging medicine.

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

Thomas F. Crais, MD, FACS, is a board-certified plastic surgeon, was medical director of the microsurgical research and training lab at Southern Baptist Hospital in New Orleans, LA, and currently practices in Sun Valley, ID.

William Davis, MD, is a preventive cardiologist and author of Wheat Belly: Lose the Wheat, Lose the Weight and Find Your Path Back to Health. He is also medical director of the online heart disease prevention and reversal program, Track Your Plaque (www.trackyourplaque.com).

Martin Dayton, MD, DO, practices at the Sunny Isles Medical Center in North Miami Beach, FL. His focus is on nutrition, aging, chelation therapy, holistic medicine, and oxidative medicine.

John DeLuca, MD, DC is a 2005 graduate of St. George’s University School of Medicine. He completed his Internal Medicine residency at Monmouth Medical Center in Long Branch, New Jersey, in 2008 and is board certified by the American Board of Internal Medicine. Dr. DeLuca is a Diplomate of the American Academy of Anti-Aging Medicine and has obtained certifications in hyperbaric medicine, pain management, nutrition, strength and conditioning, and manipulation under anesthesia.

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

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

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

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

Mitchell J. Ghem, 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 hemapoietic studies.

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

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

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

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

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

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

Prof. Francesco Marotta, MD, PhD gastroenterologist and nutrigenomics expert with extensive international university experience. Consulting Professor, WHO-affiliated Center for Biotech & Traditional Medicine, University of Milano, Italy, Hon. Res, Professor, Human Nutrition Dept, TWU, USA. Author of over 130 papers and 400 congress lectures.

Philip Lee Miller, MD, is founder and medical director of the Los Gatos Longevity Institute in Los Gatos, CA.

Michele G. Morrow, DO, FAAFP, is a board-certified family physician who merges mainstream and alternative medicine using functional medicine concepts, nutrition, and natural approaches.

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

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

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

Patrick Quillin, PhD, RD, CNS, is a clinical nutritionist in Carlsbad, CA, and formerly served as vice president of nutrition for Cancer Treatment Centers of America, where he was a consultant to the National Institutes of Health.

Allan Rashford, MD, graduated from the University of Iowa Medical School. Upon completing medical training, he became chief of medicine at St. Francis Hospital in South Carolina, and he was later named president of the Charleston Medical Society.

Marc R. Rose, MD, practices ophthalmology in Los Angeles, CA, and is president of the Rose Eye Medical Group. He is on the staffs of Pacific Alliance Medical Center, Los Angeles, and other area hospitals.

Michael R. Rose, MD, a board-certified ophthalmologist with the Rose Eye Medical Group in Los Angeles, CA, is on the staffs of the University of Southern California and UCLA.

Ron Rothenberg, MD, is a full clinical professor at the University of California San Diego School of Medicine and founder of California HealthSpam Institute in San Diego, CA.

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

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

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

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

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

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

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

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

Paul Wand, MD, Fort Lauderdale, FL, is a clinical neurologist with special expertise in treating and reversing diabetic peripheral neuropathy and brain injuries from various causes.

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

Jonathan V. Wright, MD, is medical director of the Tahoma Clinic in Renton, WA. He received his MD from the University of Michigan and has taught natural biochemical medical treatments since 1983. Dr. Wright pioneered the use of bioidentical estrogens and DHEA in daily medical practice. He has authored 11 books and publishes Nutrition and Healing, a monthly newsletter with a worldwide circulation of more than 100,000.
Örn Adalsteinsson, PhD, holds a master’s and doctorate from the Massachusetts Institute of Technology (MIT). He has specialized in human therapeutics including vaccines, monoclonal antibodies, product development, nutraceuticals, formulations, artificial intelligence, hormones, and nutritional supplementation. He has also authored articles and contributed to peer-reviewed publications and served as an editor for the Journal of Medicinal Food.

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

John Boik, PhD, is the author of two books on cancer therapy, Cancer and Natural Medicine (1996) and Natural Compounds in Cancer Therapy (2001). He obtained his doctorate at the University of Texas Graduate School of Biomedical Sciences with research at the MD Anderson Cancer Center, focusing on screening models to identify promising new anti-cancer therapy. He conducted his postdoctoral training at Stanford University Department of Statistics. He is currently president of New Earth BioMed, a nonprofit cancer research corporation that studies mixtures of natural products.

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

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

Deborah F. Harding, MD, is founder of the Harding Anti-Aging Center. She is triple-board-certified in internal medicine, sleep disorder medicine, and anti-aging medicine. She also earned the Cenegenics certification in age management medicine. She is a faculty member of the new University of Central Florida Medical School.

Steven B. Harris, MD, is president and director of research at Critical Care Research, a company that grew out of 21st Century Medicine in Rancho Cucamonga, CA. Dr. Harris participates in groundbreaking hypothermia, cryothermia, and ischemia research. His research interests include antioxidant and dietary-restriction effects in animals and humans.

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

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

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

Ralph W. Moss, PhD, is the author of books such as Antioxidants Against Cancer, Cancer Therapy, Questioning Chemotherapy, and The Cancer Industry, as well as the syndicated “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.
Scientists have identified specific extracts from cruciferous vegetables—such as broccoli, cauliflower, cabbage and Brussels sprouts—that help maintain healthy hormone metabolite balance. **Triple Action Cruciferous Vegetable Extract** combines some of these plant extracts into a comprehensive formula for optimal DNA protection.

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

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

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

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

**REFERENCES**


Those who want to obtain the benefits of trans-resveratrol can order **Triple Action Cruciferous Vegetable Extract with Resveratrol**. Each capsule provides 20 mg of trans-resveratrol in addition to the vegetable extracts and retails for $32 per 60-capsule bottle. When a member buys four bottles, the price is reduced to only $22.20 per bottle. Contains corn.

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

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
Metformin is the first-line drug of choice in the treatment of type II diabetes. It was first approved in Europe in 1958.¹

Americans had to wait until 1994 to legally obtain metformin.¹ The holdup in approving metformin goes beyond the FDA. It is an indictment of a political/legal system that will forever cause needless suffering and death unless substantively changed.

When Life Extension® informed Americans about drugs like metformin in the 1980s, the FDA did everything in its power to incarcerate me and shut down our Foundation.² FDA propaganda at the time was that consumers needed to be “protected” against “unproven” therapies.

As history has since proven, the result of the FDA’s embargo has been unparalleled human carnage. So called “consumer protection” translated into ailing Americans being denied access to therapies that the FDA now claims are essential to saving lives.

Today’s major problem is not drugs available in other countries that Americans can’t access. Instead, it is a political/legal system that suffocates medical innovation.

Headline news stories earlier this year touted the anti-cancer effects of metformin, data that Foundation members were alerted to long ago.³

The problem is that it is illegal for metformin manufacturers to promote this drug to cancer patients or oncologists. It’s also illegal to promote metformin to healthy people who want to reduce their risk of cancer, diabetes, vascular occlusion, and obesity.

This fatal departure from reality continues unabated, as our dysfunctional political/legal system denies information about metformin that could spare countless numbers of lives. >>
Liver inappropriately continues to pump out glucose. This inappropriate outburst of glucose from the liver in type II diabetes patients is a classic hallmark of the disease. In fact, scientific data that measures glucose output by the liver shows that the typical type II diabetic produces three times more glucose in their liver than non-diabetics. And, as previously reported in this publication, even most non-diabetics produce too much glucose in their liver as they age. Scientific data shows that metformin reduces glucose production and the rate of gluconeogenesis by anywhere from 24% to 36%, respectively, thus reducing blood glucose levels while lowering the amount of insulin that is chronically secreted. Metformin also enhances insulin sensitivity, thus enabling cells to remove more glucose from the bloodstream, which further lowers glucose and insulin levels. In a recent study conducted by a team of researchers in Italy, 500 mg three times a day of metformin reduced insulin levels by 25%.

Type II diabetics suffer sharply higher rates of cancer and vascular disease. The anti-diabetic drug metformin has been shown in numerous scientific studies to slash the risk of cancer and lower markers of vascular disease. Metformin was shown to reduce blood sugar levels in the 1920s. One reason it fell off the radar screen is that insulin quickly became popular because it produced an immediate glucose-lowering effect.

What doctors back then did not realize is that while insulin saved the lives of type I diabetics (who produce little or no insulin), those with type II diabetes often produce too much insulin as their pancreas tries to offset multiple metabolic imbalances.

One of the metabolic imbalances of type II diabetes is the excess formation of glucose in the liver. To ensure that blood glucose never drops too low, the liver manufactures glucose in a process called gluconeogenesis. In type II diabetes, despite an elevated blood glucose level, the liver inappropriately continues to pump out glucose. This inappropriate outburst of glucose from the liver in type II diabetes patients is a classic hallmark of the disease. In fact, scientific data that measures glucose output by the liver shows that the typical type II diabetic produces three times more glucose in their liver than non-diabetics. And, as previously reported in this publication, even most non-diabetics produce too much glucose in their liver as they age.

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Excess Insulin Is a “Death Hormone”

In response to continuous over-production of glucose by the liver, the pancreas secretes huge amounts of insulin to suppress it. This excess amount of insulin damages blood vessel walls and promotes tumor growth. For a type II diabetic who is overproducing insulin, the use of insulin injections provides a relatively brief respite from high blood glucose levels—with horrific long-term consequences.

Drug companies today are heavily promoting convenient insulin injection devices to physicians and suggesting that many of them have forgotten about insulin’s proven glucose-lowering effects. The harsh reality is that for most type II diabetics, excess insulin represents a “death hormone” that causes weight gain, cancer, and vascular disease.

It was not only the discovery of insulin that delayed recognition of metformin. Drugs known as sulfonylureas promote the insulin release from the pancreas. Sulfonylureas were liberally prescribed for decades and are another ill-conceived way of temporarily suppressing blood glucose at the expense of systemic metabolic havoc.

Like insulin, sulfonylurea drugs induce weight gain, which is the opposite effect one is seeking when treating most type II diabetics. All sulfonylureas carry an FDA-mandated warning about increased risk of cardiovascular death.

In one study lasting more than 10 years, patients who primarily received metformin had a 39% reduction in the risk of heart attack and a 36% reduction of death from any cause. The same
study showed that metformin did not cause weight gain in overweight patients, while patients prescribed sulfonylureas gained more than 7 pounds, and those using insulin injections gained over 10 pounds.53

For the multi-decade period Americans were denied access to metformin, doctors felt they had little choice but to prescribe sulfonylurea drugs and insulin injections. The needless suffering and death endured by diabetics during this “dark age” of American medicine is incalculable.

**Why American Doctors Were Afraid of Metformin**

For decades, the American medical establishment labored under an egregious misconception about the safety of metformin.

The reason was that drugs in the same class of metformin (biguanides) can cause a potentially fatal condition called lactic acidosis, where the body becomes overly acidic in the presence of excess lactic acid. While other biguanide drugs were withdrawn because of lactic acidosis risk, it turned out that metformin did not induce this same side effect in healthier people.54 As long as one has sufficient kidney, liver, cardiac, and pulmonary function, any excess lactic acid caused by metformin is safely removed by the kidneys.55-57

It turned out that only patients with severe kidney, liver, pulmonary, or cardiac impairment had to avoid metformin because of lactic acidosis concerns, and even these worries were overblown.

I’ll never forget what a brilliant medical doctor personally told me after a large study came out that dispelled the myth connecting metformin with lactic acidosis. This doctor knew how effective metformin was, but was terrified of creating lactic acidosis in any of his patients. He told me something to the effect of, “If this study showing lactic acidosis is not a risk for metformin users is true, then the multi-decade oversight that caused doctors to fear metformin represents one of the great blunders in medical history.”

The regrettable fact is that doctors in the United States were taught to avoid drugs in the class of metformin, even though metformin itself was being safely used throughout the world. If only the medical establishment in the United States had looked across the border as close as Canada, they would have seen metformin being liberally prescribed with nowhere near the incidences of lactic acidosis they feared.

In the early years, when I was taking metformin for anti-aging purposes, most doctors warned me about lactic acidosis risk. I always asked where in the scientific literature does it show a healthy person is at risk for lactic acidosis when taking metformin? They could never cite a reference, so I continued taking my metformin.

**How Metformin Functions**

Metformin reduces blood glucose levels primarily by suppressing glucose formation in the liver (hepatic gluconeogenesis).59

More importantly, it activates an enzyme called AMPK (AMP-activated protein kinase) that plays an important role in insulin signaling, systemic energy balance, and the metabolism of glucose and fats.60

Activation of AMPK is one mechanism that may explain why diabetics prescribed metformin have sharply lower cancer rates. For instance, in a controlled study at MD Anderson Cancer Center, the risk of pancreatic cancer was 62% lower in diabetics who had taken metformin compared to those who had never taken it.61 Diabetics suffer sharply higher incidences of pancreatic cancer than non-diabetics.61

**Analysis Shows Metformin Does Not Cause Lactic Acidosis**

A Cochrane Systematic Review of over 300 trials evaluated the incidence of lactic acidosis among patients prescribed metformin vs. non-metformin anti-diabetes medications. Of 100,000 people, the incidence of lactic acidosis was 4.3 cases in the metformin group and 5.4 cases in the non-metformin group. The authors concluded that metformin is not associated with an increased risk for lactic acidosis.58
Your Nutrients “May” Work As Well As Metformin

Virtually every Life Extension® member takes curcumin on a daily basis.

Curcumin activates the same AMPK enzyme at a rate that may be higher than metformin. Curcumin also increases insulin sensitivity while reducing expression of glucose-producing genes.80

Coffee rich in chlorogenic acid or green coffee extract supplements have demonstrated a profound reduction in gluconeogenesis—with a corresponding decrease in post-meal glucose elevations.81-83

We know that suppression of gluconeogenesis, enhanced insulin sensitivity, and activation of AMPK are some of the mechanisms behind metformin’s broad-spectrum benefits.

It is not possible at this time, however, to know for sure if aging humans can derive identical benefits from nutrients like curcumin and chlorogenic acid as are provided by metformin.

With my understanding of the beneficial mechanisms of curcumin and chlorogenic acid, I personally take these nutrients plus a high dose (850 mg) of metformin two to three times a day.

How Metformin May Increase Heart Attack Risk

Metformin reduces triglycerides,62-64 glucose,32,65,66 insulin,67-69 and hemoglobin A1C (a marker of long term glucose control).32,70 These blood markers are all proven heart attack risk factors. Yet not all studies show metformin reduces heart attack incidence.

One study found that when metformin was added to a group of non-overweight patients taking sulfonylurea drugs, there was a significant increase in overall mortality.71 This suggests that metformin should not be combined with sulfonylureas.

Furthermore, not all studies show that metformin reduces cardiovascular risk or improves overall survival in type II diabetic patients. There are several reasons to explain these discrepancies.

Metformin is known to cause vitamin B12 deficiency which translates into higher levels of artery-clogging homocysteine.72-74 The tiny amount of vitamin B12 and other B-vitamins found in commercial supplements is not always sufficient to offset this problem. Those who take metformin should ensure they are taking higher doses of B-vitamins (at least 300 mcg of vitamin B12) and check their homocysteine levels to make sure it stays in the safer ranges.75 One study showed that the addition of 5,000 mcg of folic acid to patients taking metformin reduced their homocysteine from 15.1 μmol/L to 12.1 μmol/L.76 Optimal homocysteine levels are probably under 8 μmol/L, but any reduction is helpful.

Sadly, most diabetics prescribed metformin don’t check their homocysteine levels and don’t take enough B-vitamins to prevent a deficiency.

Some studies show that metformin reduces free testosterone and total testosterone levels in men.77 Testosterone is especially important in male diabetics as it significantly enhances insulin sensitivity.78 Life Extension has previously published clinical data showing the critical importance of diabetic men to maintain youthful testosterone levels in order to improve glucose utilization.79

The greatest challenge in evaluating clinical data on metformin is that it is often prescribed to debilitated patients who have undergone severe arterial attack for many decades. These diabetic patients are at significant risk of cardiovascular disease from a number of underlying causes. They need to take aggressive steps to correct all independent risk factors for vascular disease, something that is never done in clinical studies.
Overlooked is a problem that will affect every one of us—the suffocating impact of antiquated legislation on medical progress.

Once you or a family member is diagnosed with a disease like pancreatic cancer, campaign ads become background clutter. Your only concern is finding a therapy that offers some hope of survival.

The best our current archaic system offers for pancreatic cancer is a drug called gemcitabine. Compared to another chemo drug, gemcitabine increased average survival by a meager 36 days, which conventional doctors described as a “significant improvement.”

A team of researchers was able to improve on gemcitabine by using instead a toxic combination of chemotherapy drugs (called FOLFIRINOX). Compared to the gemcitabine group, patients able to tolerate the debilitating side effects of FOLFIRINOX lived 4.3 months longer than the gemcitabine group, but suffered greater toxicity.

The fact that pancreatic cancer still quickly kills virtually everyone who contracts it is a stark example of how today’s regulatory system stifles innovation. Unregulated environments have produced technologies like handheld computers that perform miraculously and are affordable to mostly everyone.

A suggested starting dose of metformin is 250 mg before a large meal. The dose may be increased after a week to 250 mg before three meals a day. After a month, you may consider increasing to 500 mg before meals and eventually go up to 850 mg before meals, which is the upper limit dose.

If you notice a slight reduction in appetite, use it to cut back on your calorie intake and hopefully shed some fat pounds. By stabilizing blood sugar and insulin levels, metformin can help reduce food cravings.

Should You Ask Your Doctor About Metformin?

Metformin is a synthetic compound available in low cost generic form. Some members tell me their health insurance plans cover almost 100% of the cost. Even out of pocket, metformin is remarkably inexpensive.

The challenge some members find is persuading their doctors to prescribe metformin if they are not diabetic. You may recall the many articles we have published showing that any elevation of fasting glucose above 85 mg/dL increases one’s risk for contracting classic diabetic complications like heart attack and stroke.

Therefore, those whose glucose levels exceed 85 mg/dL should consider metformin for its glucose-lowering properties alone, though chlorogenic acid-standardized coffee extracts may accomplish a similar effect.

No one should take metformin without having a complete battery of blood tests to show their doctor that it is not contraindicated because of disorders like kidney failure. Those with low blood sugar (hypoglycemia) may not be able to use metformin.

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If you notice a slight reduction in appetite, use it to cut back on your calorie intake and hopefully shed some fat pounds. By stabilizing blood sugar and insulin levels, metformin can help reduce food cravings.
The 37-year delay in approving metformin provides a real world example of how broken our political/legal systems are when it comes to finding cures for degenerative disease and the aging process itself.

**What You Can Do To Stop Needless Suffering and Death**

Scientists have identified novel ways of treating cancer and other illnesses, but too little of this new technology is being used in clinical practice. When new discoveries are made, drug companies spend years seeking a patent, and then more years carrying it through the cumbersome bureaucratic approval process. A major reason so many cancer patients die today is an antiquated regulatory system that causes effective therapies to be delayed (or suppressed altogether).

This system must be changed, if the 1,500 American cancer patients who perish each day are to have a realistic chance of being saved. Our long-standing proposal has been to change the law so that anyone can opt out of the FDAs umbrella of “protection.” This approach will allow companies to sell drugs that have demonstrated safety and a reasonable likelihood of effectiveness, which are clearly labeled “Not Approved by the FDA.” Patients who wish can still use only FDA-approved drugs, while those willing to take a risk, in consultation with their doctors, will be allowed to try drugs shown to be safe that are still not approved.

We believe that this initiative will result in a renaissance in the practice of medicine similar to the computer technology revolution of the past four decades. In this environment, many lethal diseases will succumb to cures that are less expensive than is presently the case. And greater competition will help eliminate the health care cost crisis that exists today.

Seriously ill people, in consultation with their doctors, should be able to make up their own minds about what drugs they are willing to try.

This is the time when political leaders will at least listen to their constituent’s concerns. I encourage each of you to log on to our legislative action website at www.lef.org/lac to easily email your representative and two senators a letter demanding they enact legislation that will enable those with serious illness to obtain therapies far enough along in the clinical trials process to be deemed safe, but not yet approved by the FDA.

For longer life,

William Faloon

(References may be found on page 15.)
Tell Congress to Change the Law!

There are millions of cancer patients alive right now who face possible or probable death in the next twelve months. If you add their family members and friends, there are tens of millions of Americans who should be outraged by an outdated regulatory system that bans access to potentially lifesaving therapies.

The FDA continues to suppress innovative therapies because the public has failed to demand that our elected officials rein in the FDA’s arbitrary authority. The first step in changing today’s outmoded system is for those who understand the magnitude of this problem to communicate the urgent need for change to Congress.

Those concerned about this serious issue should log on to www.lef.org/lac to insist that their Representative and two Senators help enact legislation that will enable cancer patients to obtain therapies far enough along in the clinical trials process to be deemed safe, but not yet approved by the FDA.

Those without computer access can photocopy the next page and mail it to their Representative at The US House of Representatives, Washington, DC, 20515 and two Senators at The US Senate, Washington, DC, 20510. We also ask that you phone your Congressional members at 1-202-224-3121 to let them know how disgusted you are that doctors and patients are not allowed to choose drugs that may be effective against an often fatal disease.
The Honorable:

I am writing to ask that you sponsor or co-sponsor legislation to enable cancer patients (and those with other serious diseases) to purchase medications while they are pending final approval by the FDA. This approach will allow companies to sell novel drugs with a label clearly stating that they are “Not Approved by the FDA.”

Consumers who wish to rely on the FDA can limit their choices to fully approved drugs only, while those willing to take a risk (in consultation with their doctors) will be allowed to try what they choose. (Companies that make fraudulent claims for products can be prosecuted under the laws that exist today.)

This initiative can result in a renaissance in the practice of medicine, similar to the computer technology revolution that has occurred over the past three decades. In this environment free of regulatory burden, many inexpensive cures will very likely be found for lethal diseases. And greater competition will help eliminate the health care cost crisis that exists today.

I am tired of reading about medical breakthroughs, only to be told that I will have to wait years before the therapy might become available. As 1,500 Americans die of cancer each day, I consider the introduction and passage of such a law an extremely high priority.

Seriously ill people have the fundamental right to make up their own minds about what drugs they are allowed to try, in consultation with their physicians. Please let me know that you will sponsor or co-sponsor such legislation, which will provide us with quicker access to drugs that the FDA has found safe and potentially effective, but have not yet received final approval.

Sincerely,

Name:
Address:
City:
ST:
Zip:
AS WE SEE IT

References


49. Chu N, Spiegelman D, Hotamisligil GS, Rifai N, Stamper M, Rimm EB. Plasma insulin, leptin, and soluble TNF recep-
NATURAL APPROACHES FOR OPTIMAL GLUCOSE CONTROL

GREEN COFFEE EXTRACT

Standardized chlorogenic acid supplements taken before meals can help many people achieve optimal glucose control.

People who take extraordinary steps to limit their carbohydrate exposure may still be experiencing higher-than-desired blood sugar throughout the day. The reason? Blood sugar can surge to dangerously high levels that can last for hours following meals and even the entire day! Studies show even in people with normal fasting glucose, gaining control of after-meal surges may provide additional support for cardiovascular and metabolic health. 1,3

To address this widespread problem, a natural compound called CoffeeGenic™ Green Coffee Extract is available. This next-generation glucose control compound was shown to induce a remarkable 32% drop in after-meal blood sugar! 4

Novel Green Coffee Compound

At the core of CoffeeGenic™ Green Coffee Extract’s power to favorably modulate after-meal glucose levels is chlorogenic acid, a polyphenol found in the green coffee bean.

Chlorogenic acid has been shown to inhibit excess activity of the glucose-6-phosphatase enzyme. 5,6 This enzyme triggers glucose formation from non-carbohydrate substrates and glycogen release from the liver, both of which can create excess glucose in the blood. 6 Neutralizing excess glucose-6-phosphatase is essential for most people to achieve optimal glucose control.

Another means by which chlorogenic acid supports healthy after-meal glucose levels is by targeting the alpha-glucosidase enzyme. This intestinal enzyme breaks apart complex sugars and enhances their absorption into the bloodstream. 7

Chlorogenic acid also increases the signal protein for insulin receptors in liver cells. 8

Why CoffeeGenic™ Green Coffee Extract

CoffeeGenic™ Green Coffee Extract is produced through a patented extraction process to deliver an extraordinarily high proportion of chlorogenic acid for maximum potency. The coffee beans sourced for CoffeeGenic™ Green Coffee Extract are organically grown.

For those who want to take CoffeeGenic as a standalone, it is available in 200 mg and 400 mg potencies. One vegetarian capsule of CoffeeGenic™ Green Coffee Extract should be taken before heavy meals. This Green Coffee Extract is standardized to 50% chlorogenic acid.

• CoffeeGenic™ Green Coffee Extract (200 mg) • Item # 01604 (Each serving contains approximately 6 mg caffeine)

A bottle containing 90 200 mg vegetarian capsules of CoffeeGenic™ Green Coffee Extract retails for $25. If a member buys four bottles, the price is reduced to just $16.50 per bottle.

• CoffeeGenic™ Green Coffee Extract (400 mg) • Item # 01620 (Each serving contains approximately 12 mg caffeine)

A bottle containing 90 400 mg vegetarian capsules of CoffeeGenic™ Green Coffee Extract retails for $38. If a member buys four bottles, the price is reduced to just $25.50 per bottle. Those seeking to emulate the dose used in the 2012 study that induced an average 17.6 pounds of weight loss should take one 400 mg capsule of standardized green coffee bean extract three times a day.

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

References


To order any of the Green Coffee Extract formulas, 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.
Unrivaled Potency and Absorability with BCM-95®

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

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

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

A bottle containing 60 vegetarian capsules of Super Bio-Curcumin® retails for $38. If a member buys four bottles, the price is reduced to only $26.25 per bottle. Contains rice.

References

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

Bio-Curcumin® and BCM-95® are registered trademarks of Dolcas-Biotech, LLC. U.S. Patent Nos. 7,883,728, 7,736,679 and 7,879,373.

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

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.
Cruciferous Vegetable Soups

The World's Healthiest Vegetables
One Smart Bowl of Soup™
Processed food companies sell vegetable soups so cheaply because they load them with high-glycemic carbohydrates (rice, potatoes, pasta) that cost virtually nothing. They then add inexpensive ingredients like corn, sugar, and sometimes omega-6 fats (like cottonseed oil). So for less than $2, you get a relatively high-carb-calorie soup that provides virtually no health benefits.

Life Extension® has formulated two vegetable soups that contain only healthy ingredients, including loads of cruciferous vegetables (cauliflower, broccoli, cabbage, etc.), extra-virgin olive oil, and a host of other beneficial plant foods.

Each serving of Rich Rewards Cruciferous Vegetable and Rich Rewards Spicy Cruciferous Vegetable soup contains only 60 to 70 calories of the best-documented foods to maintain your precious health. You can consume the entire contents or use a smaller portion of the soup as part of a meal for you (or several people).

Each 60-70 calorie portion of these new soups provides a full serving of the world’s healthiest vegetables. The entire container supplies about 3.5 servings of these vegetables—with none of the glucose-spiking fillers found in commercial soups.

The retail price for a 3.5 serving bottle of Rich Rewards Cruciferous Vegetable or Rich Rewards Spicy Cruciferous Vegetable soups is $11.95. Member price is $8.96. If a Life Extension® member purchases any assortment of six bottles, the price is reduced to $8.44 per bottle (or $2.56 per serving).
Broad-Spectrum Defense

Adrenal Energy Formula combines four known stress-modulating extracts—Holy Basil, Cordyceps, Bacopa, and Ashwagandha—each scientifically validated to support homeostasis, even on the most stressful days.

Each of these extracts modulates a different set of stress related changes in the body’s chemistry. Combined, they may complement each other to provide complete adaptogenic stress defense!

For those who are seeking protection from the damaging effects of stress, Adrenal Energy Formula is a broad-spectrum, potent, and safe formulation for maintaining healthy energy and vitality!

Adrenal Energy Formula modulates stress and supports energy and balance.

A bottle containing 40 vegetarian capsules of Adrenal Energy Formula retails for $23. If a member buys four bottles, the price is just $15.75 per bottle. Item# 01628

A bottle containing 60 vegetarian capsules of Adrenal Energy Formula retails for $24. If a member buys four bottles, the price is just $16.50 per bottle. Item# 01628

References

To order Adrenal Energy Formula, 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.
Mediterranean Diet Consumed in Middle Age Associated with Reduced Risk of Dying Over 6.8 Years of Follow-Up

In an article published in the Journal of Nutrition, Spanish researchers report a significantly reduced risk of dying in association with greater adherence to a Mediterranean diet by middle-aged men and women.*

Almudena Sanchez-Villegas and colleagues evaluated data from 15,535 Spanish university graduates who participated in the Seguimiento Universidad de Navarra Project, which began enrollment in 1999. Subjects in the current study had an average age of 38 and were free of cardiovascular disease, diabetes, or cancer upon enrollment. Dietary questionnaires completed at the beginning of the study and during follow-up were graded according to adherence to the Mediterranean diet.

One hundred twenty-five deaths occurred between 1999 and 2010. Compared with participants who had low adherence to the diet, moderate adherence was associated with a 42% lower adjusted risk of dying and high adherence with a 62% lower risk.

The Mediterranean diet is a high-fiber, heart-healthy eating plan where meals are centered around fruits, vegetables, and monounsaturated (good) fats like olive oil, nuts, and fish, with smaller amounts of meat and refined carbohydrates.

Editor’s Note: The authors suggest antioxidant and anti-inflammatory effects as well as prevention of endothelial damage as disease-protective mechanisms associated with high Mediterranean diet adherence.

—D. Dye

High Antioxidant Diet Could Lower Pancreatic Cancer Risk

Research described in an article published in the journal Gut reveals an association between higher levels of dietary antioxidants and a lower risk of cancer of the pancreas.*

A team from the University of East Anglia and the University of Cambridge evaluated data from 23,658 participants in the EPIC-Norfolk study of men and women residing in Norfolk, England. Food diaries completed after enrollment provided data concerning the participants’ intake of vitamins C, E, selenium, and zinc. Blood samples provided by 95% of the subjects were analyzed for serum vitamin C levels.

Over the first decade of follow-up, 49 men and women developed cancer of the pancreas. Among participants whose combined intake of vitamins C, E, and selenium were among the top 75%, there was a 67% lower risk of developing pancreatic cancer compared to subjects whose intake was among the lowest 25%.

Editor’s Note: Authors Andrew R. Hart and colleagues remark that if the association is causal, 8.2% of all pancreatic cancers could be prevented by improved intake of selenium and vitamins C and E.

—D. Dye


**IN THE NEWS**

### Higher Vitamin B1 and B6 Status Linked with Lower Risk of Dying Over Eight-Year Period

The journal *Clinical Nutrition* published the finding of an association between higher intake of vitamins B1 and B6, as well as higher plasma levels of pyridoxal-phosphate (an indicator of vitamin B6 status), with a lower risk of dying among older men and women during up to ten years of follow-up.*

The study included 1,747 subjects who participated in the Taiwanese Elderly Nutrition and Health Survey from 1999 to 2000. The participants were followed through 2008, during which 627 men and women died.

Subjects whose intake of vitamin B1 or vitamin B6 was among the top one-third of participants had a **26%** lower adjusted risk of dying over follow-up compared to those whose intake was among the lowest third. Having an adequate pyridoxal phosphate level resulted in a **48%** lower risk of dying than that experienced by those with deficient levels.

*Editor’s Note:* Vitamin B1 has particular relevance to muscle, blood, cardiovascular, and neurologic functions, and higher vitamin B6 intake and plasma concentrations may reduce elevated homocysteine levels, thereby lowering the risk of premature death due to conditions associated with hyperhomocysteinemia.

—D. Dye


### Coenzyme Q10 Plus Selenium Supplementation Reduces Cardiovascular Deaths in Trial

A four-year trial of CoQ10 and selenium has revealed a significant reduction in the risk of dying from cardiovascular disease among supplemented men and women.* The study, which was reported in the *International Journal of Cardiology*, also uncovered a reduction in the cardiac N-terminal proBNP (NT-proBNP), a biomarker of cardiomyocyte wall tension, which is elevated in congestive heart failure and left ventricular dysfunction.

In a double-blinded trial, 228 Swedish citizens received a placebo or 200 micrograms of selenium per day plus 100 milligrams of CoQ10 twice daily for 48 months. Over 5.2 years of follow-up (which included the four-year treatment period), **5.9%** of the supplemented group and **12.6%** of the placebo group died of cardiovascular causes, which indicated a **54%** adjusted risk reduction. Those in the treatment group also had lower levels of NT-proBNP compared to placebo, and better cardiac function as determined by echocardiography.

*Editor’s Note:* Authors Urban Alehagen and colleagues remark that selenium is essential for the optimal activity of TrxR1, a protein necessary for the effectiveness of CoQ10, which, in turn, is active in several metabolic pathways in the heart. Thus, having insufficient levels of either nutrient increases the risk of cardiovascular events.

—D. Dye

* Int J Cardiol. 2012 May 22.

### Reduced Vitamin D Levels Linked with Greater Risk of Dying Over 12-Year Period Among Frail Older Adults

In an article published in the *European Journal of Clinical Nutrition*, Ellen Smit and her associates report an increased risk of dying over a 12-year period among frail older men and women with reduced levels of vitamin D compared to those with higher levels.*

The study included 4,731 participants who were over the age of 60. Among those whose vitamin D levels were among the lowest **25%** of participants, there was a **94%** greater risk of being frail compared to those whose levels were highest.

Over a median 12.6 years of follow-up, subjects who were frail had more than twice the risk of dying than non-frail participants. Those who suffered from both frailty and low vitamin D levels had three times the risk of mortality compared to those who were not frail and whose vitamin D levels were high.

*Editor’s Note:* Frailty was defined as meeting three of five criteria that included low body mass index, slow gait, weakness, exhaustion, and reduced physical activity levels. Intermediate levels of vitamin D were associated with pre-frailty, defined as having one to two frailty factors.

—D. Dye


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### Coenzyme Q10 Plus Selenium Supplementation Reduces Cardiovascular Deaths in Trial

A four-year trial of CoQ10 and selenium has revealed a significant reduction in the risk of dying from cardiovascular disease among supplemented men and women.* The study, which was reported in the *International Journal of Cardiology*, also uncovered a reduction in the cardiac N-terminal proBNP (NT-proBNP), a biomarker of cardiomyocyte wall tension, which is elevated in congestive heart failure and left ventricular dysfunction.

In a double-blinded trial, 228 Swedish citizens received a placebo or 200 micrograms of selenium per day plus 100 milligrams of CoQ10 twice daily for 48 months. Over 5.2 years of follow-up (which included the four-year treatment period), **5.9%** of the supplemented group and **12.6%** of the placebo group died of cardiovascular causes, which indicated a **54%** adjusted risk reduction. Those in the treatment group also had lower levels of NT-proBNP compared to placebo, and better cardiac function as determined by echocardiography.

*Editor’s Note:* Authors Urban Alehagen and colleagues remark that selenium is essential for the optimal activity of TrxR1, a protein necessary for the effectiveness of CoQ10, which, in turn, is active in several metabolic pathways in the heart. Thus, having insufficient levels of either nutrient increases the risk of cardiovascular events.

—D. Dye

* Int J Cardiol. 2012 May 22.

### Reduced Vitamin D Levels Linked with Greater Risk of Dying Over 12-Year Period Among Frail Older Adults

In an article published in the *European Journal of Clinical Nutrition*, Ellen Smit and her associates report an increased risk of dying over a 12-year period among frail older men and women with reduced levels of vitamin D compared to those with higher levels.*

The study included 4,731 participants who were over the age of 60. Among those whose vitamin D levels were among the lowest **25%** of participants, there was a **94%** greater risk of being frail compared to those whose levels were highest.

Over a median 12.6 years of follow-up, subjects who were frail had more than twice the risk of dying than non-frail participants. Those who suffered from both frailty and low vitamin D levels had three times the risk of mortality compared to those who were not frail and whose vitamin D levels were high.

*Editor’s Note:* Frailty was defined as meeting three of five criteria that included low body mass index, slow gait, weakness, exhaustion, and reduced physical activity levels. Intermediate levels of vitamin D were associated with pre-frailty, defined as having one to two frailty factors.

—D. Dye

**Persian Saffron May Help Cure MS**

A recent article published in the *Journal of Immunology* by a group of medical researchers at the University of Alberta have found that an active ingredient in the Persian spice saffron may be used to treat diseases involving neuroinflammation, such as multiple sclerosis.

In experiments conducted by the Alberta scientists, the use of a compound called crocin suppressed both inflammation and certain cell stresses, resulting in decreased neurological impairment in lab models and cell cultures with MS.

“We found there is a compound in saffron, known as crocin, that exerts a protective effect in brain cell cultures and other models of MS. It prevented damage to cells that make myelin in the brain,” said researcher Chris Power of the University. He noted that they are not close to clinical trials, but the results thus far are exciting.

—M. Richmond


**Vitamin B6 May Reduce Risk of Certain Breast Cancers**

Scientists at the Cancer Epidemiology Program, University of Hawaii Cancer Center, recently examined the association of prediagnostic plasma concentrations of pyridoxal-5’-phosphate (PLP), an active form of vitamin B6, with postmenopausal breast cancer risk in a case-control study nested in the Multiethnic Cohort in Hawaii and Southern California.

After examining over 700 cases, along with over 700 similarly matched controls, scientists concluded that the data suggests higher circulating levels of vitamin B6 are associated with a reduced risk of invasive postmenopausal breast cancer. In fact, women with plasma PLP concentrations in the highest quartile had a 30% reduced risk of invasive breast cancer compared to the women in the lowest PLP quartile. When combined with further information from two other prospective studies, the group determined that there may be a role for vitamin B6 in breast cancer prevention.

—M. Richmond

Berries: A Valuable Weapon Against Parkinson’s

A recent article in the journal *Neurology* examined whether higher intakes of total flavonoids and their subclasses (flavanones, anthocyanins, flavan-3-ols, flavonols, flavones, and polymers) were associated with a lower risk of developing Parkinson’s disease (PD).*

In the analysis, scientists included 49,281 men in the Health Professional Follow-up Study and 80,336 women from the Nurses’ Health Study. Five major sources of flavonoid-rich foods (tea, berry fruits, apples, red wine, and orange/orange juice) were also examined. Flavonoid intake was assessed using an updated food composition database and a validated food frequency questionnaire.

In men, after adjusting for multiple confounders, participants in the highest quintile of total flavonoids had a 40% lower PD risk than those in the lowest quintile. This led scientists to conclude that intake of some flavonoids may reduce PD risk, particularly in men, but a protective effect of other constituents of plant foods cannot be excluded.

**Editor’s Note:** Life Extension® has long touted the benefits of berries in a longevity-centered diet. Life Extension’s Berry Complete supplement is an excellent way to make sure you consume the proper amount of brain-protecting benefits from berries.

—M. Richmond

* Available at: [http://www.neurology.org/content/early/2012/04/04/ WNL.0b013e31824f7f4c.short?rss=1](http://www.neurology.org/content/early/2012/04/04/ WNL.0b013e31824f7f4c.short?rss=1). Accessed August 20, 2012.

Improperly Cooked Red Meat May Affect Cancer Risk

Life Extension® has been sounding the alarm on the dangers of over-cooked meat for years. A group of scientists from the University of Southern California, Norris Comprehensive Cancer Center, Keck School of Medicine conducted a study that once again confirms our position. The study, led by Mariana Stern, investigated the association between red meat and poultry intake and localized and advanced prostate cancer risk factor (PCA) taking into account cooking practices and polymorphisms in enzymes that metabolize carcinogens that accumulate in cooked meats.†

In an interview done by Molly Rugg with Stern for USC’s Keck School of Medicine website, Stern stated that, “We found that men who ate more than 1.5 servings of pan-fried red meat per week increased their risk of advanced prostate cancer by 30%. In addition, men who ate more than 2.5 servings of red meat cooked at high temperatures were 40% more likely to have advanced prostate cancer.”

—M. Richmond


Multi-Modal Therapies Show Promise in Treating Breast Cancer

A recent study published in the *New England Journal of Medicine* showed that a combination of anastrozole (Arimidex®) and fulvestrant (Faslodex®) improved the overall survival and progression-free survival in women with certain hormone-receptor positive metastatic breast cancers.*

In order to study the drugs being used together, the team of scientists ran a trial involving 694 women who were randomly assigned a dose of Arimidex® alone or Arimidex® and Faslodex®.

The scientists concluded that, “The combination of anastrozole and fulvestrant was superior to anastrozole alone or sequential anastrozole and fulvestrant for the treatment of HR-positive metastatic breast cancer, despite the use of a dose of fulvestrant that was below the current standard.”

**Editor’s Note:** The aromatase inhibitor drug anastrozole dramatically reduces estrogen levels. Some women cannot tolerate estrogen deprivation, but for those with estrogen receptor positive breast tumors, anastrozole significantly improves survival.

—M. Richmond

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

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

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

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

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

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

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

The retail price for 60 100 mg softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is $62. If a member buys four bottles, the price is reduced to $42 per bottle. Item # 01426

The retail price for 100 50 mg softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is $58. If a member buys four bottles, the price is reduced to $39.75 per bottle. Item # 01425

The retail price for 30 200 mg softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is $62. If a member buys four bottles, the price is reduced to $42 per bottle. Item # 01431

References

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
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.1-3 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

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

1. **PQQ.** 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.11-16

Mitochondrial Basics with BioPQQ™ 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 with BioPQQ™ supplies:

- **BioPQQ™** ........................ 10 mg
- **R-lipoic acid** ........................ 100 mg
- **Acetyl-L-carnitine**  .......... 250 mg
- **arginate dichloride**

A bottle containing 30 capsules of Mitochondrial Basics with BioPQQ™ retails for $52. If a member buys four bottles, the price is reduced to just $34.50 per bottle.

PQP can also be obtained as a low-cost standalone or in the Mitochondrial Energy Optimizer with BioPQQ™ formula.

To order 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 Geronova 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

Contains soybeans.

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 2008, Life Extension® introduced Berry Complete, a unique, high-potency blend of extracts from Nature’s most powerful free radical fighters.1-3 The antioxidant strength of just one capsule equaled more than 50% of the recommended five daily servings of fruits and vegetables.

Last year we introduced an even more powerful antioxidant formula. A single capsule of the new Enhanced Berry Complete with RZD™ Açaí delivers an antioxidant value equivalent to more than 100% of the recommended daily fruit and vegetable intake.

It is also the first antioxidant formula to use a cutting-edge extraction technology called Radiant Zone Drying™. This patented process delivers the most complete nutritional profile of the açaí berry—for a breakthrough in antioxidant defense.

**ORAC: A Measure of Antioxidant Power**

To measure the antioxidant strength of various foods, scientists use what is known as the ORAC index. While berries score higher than most fruits and vegetables, açaí boasts one of the highest ORAC values known to modern science.

Unfortunately, most commercial products containing açaí do not reflect the full nutritional content of the fruit. Only a fraction of its phenolic content survives industrial processing, handling, and storage.

RZD™ extraction technology allows for optimal delivery of açaí polyphenols, including highly beneficial anthocyanins, proanthocyanidins, and flavonoids, along with essential fatty acids and other vital compounds.

Why should this matter to you? It’s more than a matter of antioxidant potency. In 2010, a team of researchers reported for the first time that açaí, blueberry, and strawberry polyphenols may provide targeted support for cellular metabolic processes that promote neural and cognitive health in the aging brain.4 But you need the complete polyphenolic profile to get the benefit.

Each vegetarian capsule of Enhanced Berry Complete with RZD™ Açaí also contains standardized extracts of high-ORAC value foods including:

- Blackcurrant
- Blackberry
- Elderberry
- Wild blueberry
- Wild bilberry
- Sweet cherry
- Tart cherry
- Raspberry
- Grape
- Cranberry
- Prune
- Strawberry
- Pomegranate
- Black soybean hull
- Blue corn

Enhanced Berry Complete with RZD™ Açaí gives you a convenient way to obtain a broad spectrum of seasonal, hard-to-find, highly perishable foods, for optimal antioxidant value.

A bottle containing 60 vegetarian capsules of Enhanced Berry Complete with RZD™ Açaí retails for $29. If a member buys four bottles, the cost is just $19.50 per bottle. Contains soybeans. Contains corn.

**References**


RZD™ and Radiant Zone Drying™ are trademarks of Columbia Phytotechnology, LLC.

To order Enhanced Berry Complete with RZD™ Açaí, 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.
Preamble

If you wonder what results are occurring with the millions of dollars that Life Extension® donates to cancer research, this article provides a real world report of a successful clinical trial conducted outside the United States.
Innovative Laser Therapy Offers New Hope for Breast Cancer Patients

We are still losing the war on cancer.¹
While the establishment brags that more cancer patients survive than ever before, the horrific side effects inflicted by conventional therapy often leave patients partially or severely debilitated, and set the stage for deadly secondary diseases.

Over 570,000 Americans are expected to die from cancer this year.² For those people, the dangerous mix of chemotherapy, radiation, and surgery not only failed to cure the cancer, but destroyed their remaining quality of life. Meanwhile, many promising therapeutic techniques languish in laboratories and private clinics, quashed by excessive FDA regulations and greedy pharmaceutical giants eager to protect their own lucrative turf.

But all of that may be about to change, thanks to pioneering work on breast cancer from a progressive clinic outside the US. There, a group of physicians and scientists have teamed up in a study that’s the first of its kind: a human clinical trial using a sophisticated form of laser/immune therapy to treat advanced breast cancer.³

The technique is called laser-assisted immunotherapy.

This laser treatment has the potential to destroy primary breast tumors. This unique treatment can also seek and destroy cancer cells that have spread (metastasized) from the original tumor to other parts of the body. This is especially critical as metastasized cells are the primary cause of cancer death.

In addition to being a potentially effective cancer treatment, laser-assisted immunotherapy appears to be able to act as a cancer vaccine, effectively preventing the same cancer from recurring.

This innovative procedure may be the life-saving therapy that cancer patients have been waiting for. > >
Laser-Assisted Immunotherapy: An Innovative Approach to Treating Advanced Cancers

An ideal approach to treating advanced cancers would accomplish two things:

1. Eliminate the original tumor.

2. Empower the immune system to destroy the cancer cells. Then, instead of having to locate and treat every infiltrated lymph node and every hidden metastasis, the body’s natural tumor surveillance system would do its work, root out the cancer, and prevent recurrence.

This is the central principle behind laser-assisted immunotherapy.4,5 Laser-assisted immunotherapy involves no surgery, chemotherapy, or dangerous radiation. Instead, the technique uses a precise laser beam to destroy the primary tumor, and then delivers a powerful boost to the immune system’s natural cancer defense systems.4 In this way, the entire immune system joins the fight against an individual’s own specific cancer.6

Laser-assisted immunotherapy includes the following three components:

1. A laser beam operating in the “near-infrared” frequency of light.7 This beam heats tissue to a depth of several centimeters, allowing the beam to penetrate directly into a solid tumor with minimal damage to normal tissue.8 Because it can be focused directly through intact skin, no surgical incision is required. These lasers have been in use in cancer therapy for more than 20 years.9 On their own, however, they can’t safely raise the temperature of tumor cells without damaging adjacent healthy tissue.9,10 That requires the use of a second component...

2. A photosensitizer, a chemical that makes cancer cells more vulnerable to destruction by the laser without the unacceptable heating of nearby normal cells.6 The technique was proven in pre-clinical studies with the use of a compound called indocyanin green (ICG) as the photosensitizer. Like the laser, ICG is safe for clinical applications and is FDA approved. The combination of the laser and photosensitizer leads to localized destruction of tumor cells. However, these two components alone may not be effective at completely ridding the body of cancer because they cannot attack distant, often hidden tumor metastases.11 To kill those, one more crucial component is required...

3. An immune system booster12, or “adjuvant,” that activates the cancer patient’s natural cancer-attacking killer cells.7 Growing tumors have multiple ways of evading the immune system, effectively concealing their abnormal nature from circulating immune surveillance cells. Once the tumor is partially broken up by the laser, however, the injection of the adjuvant then calls the immune system’s attention to the newly revealed tumor markers.8,13 Circulating immune cells can then begin killing malignant cells anywhere they have spread in the body.14 This immune booster may soon be submitted to FDA for approval and those involved in submitting the New Drug Application have asked that we not disclose its name in print.
The key aspect of this approach is that the stimulated immune system attacks not only the primary tumor, but also metastases located anywhere in the body. Because those metastases often bear the same abnormal signal proteins as the primary tumor, they now essentially have a mark on their back for the body’s natural defense mechanism to seek out and destroy—no matter where they’ve moved to in the body.

As an added bonus, the immune system “remembers” the identifying markers of the cancer and continuously maintains surveillance to prevent future recurrence. In essence, laser-assisted immunotherapy creates a tiny “vaccine factory” within the victim’s body that throws the entire immune system’s resources at precisely that person’s own tumor (see Sidebar at the end of this article for more on this topic).

Lab Studies Provide Dramatic Results

Laser-assisted immunotherapy has received compelling validation in the laboratory. When rats with experimentally induced breast cancer were subjected to the treatment, they experienced marked increases in survival rates. In addition, researchers have documented the eradication of both primary tumors and metastases. Most importantly, successfully treated rats have proven to be resistant to developing new tumors—even when cancer cells were directly injected into the animals’ bodies.

For the pre-clinical experiments, rats were injected with breast cancer cells, which formed localized primary tumors. After 11 days, the animals were treated with the laser therapy with the indocyanin green or laser therapy with indocyanin green and the immune booster described above.

In the group of untreated animals, the primary tumors grew rapidly within the first month, and all animals died by 40 days. The treated animals, on the other hand, had only modest growth of the primary tumor, which then proceeded to shrink in size—and

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Advanced Breast Cancer Treatment: Hope Is On The Horizon

- Laser-assisted immunotherapy offers exciting possibilities in the war on cancer. This type of laser therapy has the unique ability to destroy both an advanced primary tumor and life-threatening metastases.
- Laser-assisted immunotherapy appears to be able to act as a cancer vaccine, effectively preventing the same cancer from recurring.
- Laser-assisted immunotherapy involves no surgery, chemotherapy, or dangerous radiation. Instead, the technique uses a precise laser beam to destroy the primary tumor, and then delivers a powerful boost to the immune system’s natural cancer defense systems.
- The results of the first human study are encouraging. Among all 15 subjects in the study, 80% remain alive today. Compare that with the typical survival rate in the United States for women with such advanced breast cancer, which is only 23.8% at 5 years.
38% of the animals survived until the end of the study at 120 days (Figures 1 and 2). Only animals administered the three-prong combination achieved long-term survival. In other words, the 38% of the animals that survived until the end of the study all received the full laser-assisted immunotherapy that included indocyanin green and the immune enhancement adjuvant.

The most dramatic result—and the one with the greatest potential impact for people with breast cancer—was the effect on metastases. The untreated animals developed multiple metastases in the groin (inguinal) and armpit (axillary) areas. In the treated group, however, the metastases were completely destroyed within 40 days (Figure 3).

Human Breast Cancer Study Results: 80% Survival Rate for Stage IV Cancer

Energized by the striking results from the animal studies, a group called the International Strategic Cancer Alliance decided to bring the benefits of laser-assisted immunotherapy to women with breast cancer. This malignancy is expected to cause over 290,000 new cases this year in the US and affects millions of women who battle with recurrence and remissions. It is a significant cause of death, disfigurement, and disability.

The researchers were determined to evaluate the laser-assisted immunotherapy as soon as possible. Frustrated with the corrupt, inefficient, and time-consuming ways of the FDA—the all-powerful agency that regulates such research in the US—they chose a highly regarded private clinic in the Caribbean as the venue for their study.

Because of the technique’s unique ability to destroy both an advanced primary tumor and life-threatening metastases, the researchers decided to treat women with breast cancers that had already spread to the lymph nodes or to other parts of the body. Although the study was opened to 45 women, the following is a preliminary report on the first 15 subjects enrolled.

The study protocol was similar to that used in the animal studies described above. Subjects received two courses of treatment over two weeks, and were followed for one year. If needed, an additional course of treatment was available.
After a physical examination and blood testing, the women received an injection of a local anesthetic in the area of the primary breast cancer, followed by injection of the photosensitizing agent (indocyanin green) into the tumor. Next, the near-infrared laser was applied to the area in and around the tumor. During this phase, the laser destroyed cells in the primary superficial tumor, while exposing their biological markers to the subject’s immune system.

After 10 to 12 minutes of laser therapy, the immune-boosting material was injected around and underneath the tumor. In this phase of the treatment, the subject’s own immune system cells were drawn to the tumor area to attack the primary breast tumor, as well as the malignant cells in lymph nodes and metastases in other parts of the subject’s body.

The results from this early study are encouraging, particularly in light of established rates of survival. Among all 15 subjects in the study, 80% remain alive today. Compare that with the typical survival rate in the United States for women with such advanced breast cancer, which is only 23.8% at 5 years. (This study is so new that no woman has yet reached the 5-year milestone.)

At the time of this writing, the women in the laser-assisted immunotherapy study had an average survival of more than 29 months after treatment, and still counting. Results of conventional chemotherapeutic or anti-hormone breast cancer treatment aren’t nearly as encouraging. One study reported an average survival of just 15.4 months, another small study reported survival up to 23.1 months, but had no survivors by 3 years.

**Tales of Courage and Survival**

Of course, compelling as they might be, numbers tell only a portion of any story about human health and longevity. The real picture of the treatment’s potential comes from the real-life stories of the women who participated in this study. Here are just a few of those stories.

A 66-year-old woman enrolled in the study in August 2008, after having only a modest response to eight cycles of conventional chemotherapy. At the time of her enrollment, her disease had progressed to stage IV, with at least one metastasis as diagnosed with a PET/CT scan. She received one full laser-assisted immunotherapy treatment in December 2008. A follow-up PET/CT scan showed disappearance of the primary tumor, and no new metastases or lymph node involvement.

One year and nine months after the treatment, this patient received the following mammography report:

![Microscopic Image of Breast Carcinoma](image1)

Metastatic tumors in an untreated animal rapidly grew in size, culminating in the animal’s death on day 30. By contrast, those in the treated animal grew modestly, peaked at about day 32, and then rapidly regressed. No metastases were detected after day 40 in the treated animal, which survived to the end of the study.

![Figure 3. Size of Breast Cancer Metastases](image2)
“The result of your breast imaging exam shows no evidence of cancer.”

She remains disease-free at more than 3 years and 4 months following treatment.

A 78 year-old woman with stage IV breast cancer, who had received no conventional treatment, enrolled in the study in January 2009. After undergoing the laser-assisted immunotherapy, a follow-up PET/CT scan revealed no visible cancer and no metastases. She did experience a brief recurrence of the tumor, but that condition resolved without further therapy.

More than 3 years later, she too remains disease-free.

Two women with earlier stage cancers (stage II) entered the study in 2009; one had received some conventional therapy while the other had none. Following laser-assisted immunotherapy, both subjects remain alive and disease-free today.

These cases show the great potential of laser-assisted immunotherapy in treating breast cancer. No therapy is perfect, however, and it’s important to note that not all of the women in the study experienced the same results as the ones mentioned above.

For example, a 65-year-old woman with stage IV breast cancer enrolled in the study in August 2008, after a number of failures of conventional therapy. She did experience some tumor recurrence requiring surgery 15 months after her initial laser treatment, but survived until 3 years and 3 months after the start of the study. The experimental treatment may have prolonged her life, but there is no way to be certain.

More than 3 years later, she too remains disease-free.

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Summary

Laser-assisted immunotherapy is a promising new weapon in the war on cancer. The results of this study so far show 80% of the participants still alive today compared to the typical 5-year survival rate in the US of only 23.8% for advanced breast cancer. Providing a non-toxic therapy that supports and stimulates rather than destroys the body’s best defense arsenal, the immune system, is a monumental gain against the tenacious and formidable opponent known as cancer.

Of particular significance is the lack of serious side effects caused by laser-assisted immunotherapy. Even lumpectomies can result in significant mutilation to the affected breast, while follow-up radiation, chemotherapy and hormone-blocking agents result in debilitating initial side effects and deadly long-term toxicities.

For example, in a report released last month that studied 12,000 breast cancer survivors, there was a 470% increased risk of developing heart failure in the group receiving chemotherapy compared to breast cancer patients who did not undergo chemotherapy. The cancer establishment considers those treated with chemotherapy to be successes if they survive the cancer, but conveniently ignores the fact that the treatment causes heart failure.

The objective of laser-assisted immunotherapy is to eradicate the primary tumor along with metastatic lesions without inflicting the side effects associated with conventional breast cancer treatment.
If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.

For more information regarding the availability of the laser-assisted immunotherapy for breast cancer, please call International Strategic Cancer Alliance at 888-868-2981.

Creating a Customized Cancer Vaccine

Developing an effective anti-cancer vaccine has been the goal of oncology for decades. The idea is to identify one or several markers, or antigens, borne only by tumor cells, for use in the manufacture of a vaccine. In theory, such a vaccine could eliminate cancer once and for all. The vaccine could even be beneficial for those with existing cancers, as the vaccine could expedite destruction of the existing tumor by activating the immune system.

However, like most attempts at a “one-size-fits-all” strategy, this approach has flaws that limit its appeal. Often what appears to be a single tumor actually contains multiple different cell lines, each bearing a unique marker, and each affecting patient survival differently. A cancer vaccine prepared in a laboratory therefore has essentially zero chance of raising an immune response to every cell type in any one person’s tumor, allowing a few to survive and produce cancer recurrences.

This situation is quite similar to the well-known annual quandary of flu vaccine manufacturers. Based on the best available information about the previous year’s flu virus, they must make an educated guess about which specific viral components to include in the upcoming year’s vaccine (e.g., H1N1, H5N1, etc). Most years they are successful, but occasionally a virus appears for which we are entirely unprotected.

Laser-assisted immunotherapy eliminates this kind of guesswork. That’s because the “vaccine” is manufactured within each individual person’s body, in response to their own unique tumor markers. This customized vaccine can then direct all of the immune system’s powerful resources to eliminating the existing cancer, at the same time producing persistent immunity against future recurrences.
References


A Potent, Immune Enhancing Strain of Bifidobacteria

Researchers have shown that a unique well-studied strain of the bifidobacteria probiotic called **BB536®** increases the number of healthy bacteria in the colon.\(^8\) An in vivo study demonstrated a significant increase in longevity in mice supplemented with bifidobacteria.\(^9\) Long studied by Japanese scientists, BB536® was found to reduce production of inflammatory cytokines that often accompany seasonal symptom development.\(^8\)

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

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

**Contains milk.**

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

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

People take probiotics to facilitate a healthy GI tract, but probiotics perform many more important functions. For example, researchers have discovered that probiotics inhibit **nuclear factor kappa B** (NFkB), which helps suppress inflammation as well as positively modulate cellular signaling pathways.\(^2\)

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

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

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

With age, we can experience a decline in vital beneficial bacteria and the strength of our immune system. Restoring the gut’s friendly bacteria can stimulate and regulate healthy immune function.\(^5\)

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**References**


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To order **Bifido GI Balance** call 1-800-544-4440, or visit [www.LifeExtension.com](http://www.LifeExtension.com)
Tender, sensitive joints can limit everyday activities. As you age and continue to put stress on your joints, you can compromise joint cartilage—which exposes small collagen fibers. Your body’s immune system mistakenly identifies these collagen fibers as “foreign cells.” This triggers an inflammatory response against the collagen-containing cartilage in your own joints. Inflammation and joint discomfort can soon follow. Data shows that a patented collagen provides targeted support for the immune issues related to joint discomfort.¹

To meet this urgent need, Life Extension® now offers Bio-Collagen with Patented UC-II®—a novel form of undenatured type II collagen from chicken cartilage. Taken orally, UC-II® travels to the intestinal tract where it “introduces” the immune system to the same type of collagen molecules found in joint cartilage.

ADVANCED MOLECULAR STRUCTURE

Not just any form of collagen will do. Normally, when chicken collagen is processed, its molecular shape is changed. It loses bioactivity and becomes denatured—which researchers found has no beneficial effect² on the immune system.

Fortunately, a unique processing technique preserves the correct molecular shape of the collagen³—⁴ and preserves its bioactivity⁵—producing a form known as undenatured collagen.

The result of this innovative process is an undenatured chicken collagen called Bio-Collagen with Patented UC-II®.

SCIENTIFICALLY VALIDATED

Scientific studies have found that UC-II® reduced sensitive joint discomfort and eased joint function.¹⁶¹⁰ One double-blind, placebo-controlled study on patients found that UC-II® provided relief by 33%, and decreased joint discomfort scores by a remarkable 40%—in just 90 days!¹

CONVENIENT ONE-PER-DAY DOSE

The suggested daily serving of one capsule of Bio-Collagen with Patented UC-II® supplies 40 mg of this proprietary blend. The retail price of a bottle of 60 capsules of Bio-Collagen with Patented UC-II® is $36. If a member buys four bottles, the price is reduced to $24 per bottle or just $12 a month.

To order Life Extension® Bio-Collagen with Patented UC-II®, 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.
Which VITAMIN D is Right for You?

Vitamin D3 1,000 IU
250 capsules
Retail: $12.50
Four-bottle Member Price: $8.44 ea.
Commercial companies offered only 400 IU vitamin D products when Life Extension long ago introduced this 1,000 IU version. For most people, this 1,000 IU potency is insufficient to attain optimal vitamin D blood levels. For smaller individuals who obtain 2,000-3,000 IU in their 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 with Sea-Iodine™*
60 vegetarian capsules
Retail: $14
Four-bottle Member Price: $9.38 ea.
Most people do not ingest enough vitamin D and iodine, especially those seeking to reduce their salt intake. Combining 5,000 IU of vitamin D3 and 1,000 mcg of iodine into one capsule makes taking these two nutrients economical and convenient.
Item # 01573
Please refer to website for allergen information.

Vitamin D3 7,000 IU
60 capsules
Retail: $14
Four-bottle Member Price: $9.45 ea.
Some individuals (such as those weighing more than 180 pounds) may require higher potencies of vitamin D. When combined with 1,000-3,000 IU obtained from multi-nutrient formulas, this 7,000 IU vitamin D3 capsule should enable these individuals to attain 25-hydroxyvitamin D blood levels above the desired range of 50 ng/mL.
Item # 01418
Please refer to website for allergen information.

Vitamin D3 Liquid Emulsion 2,000 IU
1 ounce
Retail: $28
Four-bottle Member Price: $18.75 ea.
For those rare individuals who have difficulty absorbing enough vitamin D3 from powdered capsules, this liquid emulsion of vitamin D can be used.
Item # 00864
Please refer to website for allergen information.

Vitamin D3 1,000 IU
250 capsules
Retail: $12.50
Four-bottle Member Price: $8.44 ea.
Commercial companies offered only 400 IU vitamin D products when Life Extension long ago introduced this 1,000 IU version. For most people, this 1,000 IU potency is insufficient to attain optimal vitamin D blood levels. For smaller individuals who obtain 2,000-3,000 IU in their 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 with Sea-Iodine™*
60 vegetarian capsules
Retail: $14
Four-bottle Member Price: $9.38 ea.
Most people do not ingest enough vitamin D and iodine, especially those seeking to reduce their salt intake. Combining 5,000 IU of vitamin D3 and 1,000 mcg of iodine into one capsule makes taking these two nutrients economical and convenient.
Item # 01573
Please refer to website for allergen information.

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

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, including a 5,000 IU vitamin D formula that also provides 1,000 mcg of iodine per capsule.

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

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

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.
Mention the name Dorothy Hamill to adults who lived through the 1970s and one phrase immediately pops up: America’s Sweetheart. This title was bestowed on Hamill after her captivating performance in the 1976 Olympics, where she earned a gold medal in figure skating at the age of 19. To say her star took off after her triumph would be one of the bigger understatements in sports. Practically overnight, Hamill went from earning a self-confessed going rate of two dollars an hour for babysitting to being offered thousands of dollars a week to do what she loved: ice skate.

She would go on to star in the Ice Capades for seven years before actually owning it for a short time. By traveling the country, appearing on television in skating specials, and showing up for interviews during many winter Olympics, Hamill has remained in the public eye, though the headlines about her that appeared a few years ago had nothing to do with skating. > >
“I think, for me, it was more that I tried to keep a positive outlook from the start,” she says. “I look at it like I was very lucky in getting my diagnosis with the timing and all of the advances in medicine that have been made recently.”

Not only did Hamill benefit from those advances, she actually volunteered to participate in a study to help future patients.

Helping Future Cancer Patients

“When I first got diagnosed, the plan was that I would have surgery, radiation, then chemo,” she explains. “But then I went to the Kimmel Cancer Center at Johns Hopkins for a second opinion and they said that I didn’t need the chemo. Apparently there had just been a study released that showed that with the particular form of breast cancer that I had, having chemo in addition to radiation didn’t affect the chance of recurrence.”

At this point, Hamill could have simply gotten her treatment and gone home, but she had a much more altruistic vision of how she was going to do her part to not only beat her cancer, but to help other women beat their cancer.

“Around the time of my surgery there was a study starting that would measure the effectiveness of aromatase inhibitors,” she says. “I felt that since I got to benefit from others who had participated in studies it was only fair that I do my part.”

Hamill says that her cancer was hormone related, which is why her doctors mentioned the study. For those that don’t know, aromatase is the enzyme that synthesizes estrogen. Studies have shown that most cases of breast cancer require estrogen to grow, so taking an aromatase inhibitor may block the production of estrogen or prevent the normal response of estrogen, thus starving the tumor.

Unfortunately, the new drugs (aromatase inhibitors) didn’t help Hamill at all. In fact, they were making her ill.

“The fact that I was part of that study, that’s how I knew that I was feeling worse and worse,” she says. “Soon, they switched my medication and the doctors told me, ‘These drugs are just not for you.’”

The reason aromatase inhibitor drugs make some women feel so lousy is that it deprives them of estrogen. While this has been shown to improve survival odds in women with estrogen-receptor positive breast tumors, the severe depletion of estrogen can be too much for many women to handle, and there may be long-term side effects such as bone loss.*

A Tough Diagnosis

Most people assume that celebrities lead a charmed, worry-free life, but no amount of fame or achievement in the name of your country can give you immunity from cancer. About five years ago, Hamill was diagnosed with breast cancer, and suddenly, like other cancer patients, her life changed.

“With cancer, once I got diagnosed, I knew I had to have surgery,” she says. “It’s not like in ice skating, where you know if you work harder, you can achieve the result you want. Once you get your diagnosis you have to do as best you can on your mental outlook and do your research to understand how complex cancer is.”

For someone who had spent the better part of her young life willing her body to achieve her dream, Hamill found herself in a struggle where she no longer controlled the outcome.
Dorothy Hamill’s Skating Accomplishments

- World Championship Winner: 1976
- Olympic Gold Medal winner: 1976
- US Figure Skating Hall of Fame member
- Olympic Figure Skating Hall of Fame member
- World Figure Skating Hall of Fame member

Focusing on Recovery

It’s now been almost five years since her surgery and radiation.

For the first three years post-surgery, Hamill felt fatigued and achy from the operation, radiation, and the medication she was still taking.

“Right after the radiation I was so tired and fatigued, that’s when doctors suggested that I start taking vitamin D,” she says.

Many patients undergoing radiation have low levels of vitamin D that may go undiagnosed by their doctors. When those levels are brought back to normal with vitamin D3 supplementation, many patients feel their energy levels return as well.

In addition to the vitamin D, Hamill takes a multivitamin and eats a healthy diet that includes lots of seafood in order to get the appropriate amount of omega-3s.

“I eat lots of fish because we’re in Nantucket,” she says. “I generally eat healthy, but I’m more aware of what I should be eating now than before. When I was training I worked with a kinesiologist and took potassium supplements and all kinds of things to stay in peak form.”

Along with her diet and her supplements, Hamill relied on her loving family and the doctors at Hopkins, who she feels were amazing, to help her through her recovery.

“My husband and daughter were there for me the whole way,” she says. “And the doctors at Hopkins were incredible. Any time I had a question, they’d take a phone call day or night.”

Moving Beyond Cancer

These days, Hamill says that she’s feeling well and doing well. She skates every day and runs a fantasy camp for adults, though she says her performing days may soon be behind her.

“The aches and pains of slamming into the ice for all those years have taken their toll,” she says. “I’m getting a little too old to perform, but skating is the one place where I feel energized. It’s always been therapeutic for me. I love the cool air; the wind in my face. I can’t do some of the simple things that used to be easy, but I still love it.”

In addition to skating, Hamill does some yoga and likes to do some running and biking for exercise. Much of her time, however, is devoted to charity work.

“At this point, I’ll do performances to raise money for various kinds of cancer,” she says. “I try not to limit my efforts to just breast cancer. I’ve worked with Scott Hamilton and his big benefit for the Cleveland Clinic. I’ve worked with the Dana Farber Institute and the Jimmy Fund over the years to help raise money for children’s cancer research.”

Some of her most important work is with a program called I-Skate at the Kennedy Krieger Institute in Baltimore, where she works with kids who have spinal cord injuries and neurological problems.

“We have a skating session every Sunday during the winter,” she says. “Some of the kids are in wheelchairs, others have braces or crutches or different disabilities. We’ve been doing it for four years and we’ve seen some of these kids from little kids who were using walkers to those same kids actually knowing how to skate on their own. The kids don’t have any idea who I am or that I was an Olympic ice skater, but the joy on their beautiful faces is amazing.”

The happiness in Hamill’s voice as she describes her work with these children is evident. So is that positive outlook she mentioned earlier.

“As great as things can be, you know that some day something is going to come up,” she says. “When you look at the rest of the world, I think of my cancer and say, ’Thank goodness it’s only this.’ That doesn’t mean that it can’t come back or won’t come back, but I keep a positive outlook and do what I enjoy doing.”

To learn more about Dorothy Hamill or to donate to the Kennedy Krieger Institute, visit www.dorothyhamill.com.

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

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.\textsuperscript{1-9}

To ensure the purest, most stable, and easy-to-tolerate fish oil supplement, Life Extension® SUPER OMEGA-3 EPA/DHA is molecularly distilled. This proprietary technology ensures any environmental pollutants are reduced to extremely low levels. The result? Our fish oil enjoys a 5-star rating for purity, quality, and concentration from the International Fish Oil Standards program (IFOS)—the highest possible ranking from the world’s premier testing laboratory.

Sesame Lignans and Standardized Olive Fruit Extract for Enhanced Benefits

Fish oils (and other fatty acids) have a tendency to oxidize, rendering them nutritionally inferior. Scientific studies show that when added to fish oil, sesame lignans safeguard against oxidation and direct fatty acids toward pathways that help with inflammatory reactions.\textsuperscript{10}

To further emulate the benefits of a Mediterranean diet, Super Omega-3 delivers standardized, high-potency olive fruit extract. Research shows that fish oil combined with olive oil helps with inflammation better than fish oil alone.\textsuperscript{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.\textsuperscript{12-15}

Super Omega-3 (4 regular size softgels) supplies the equivalent content of 6 tablespoons of extra virgin olive oil. Take two softgels twice daily with meals.

A bottle containing 120 softgels of Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract retails for $32. If a member buys four bottles, the price is reduced to just $21 per bottle. If 10 bottles are purchased, the cost is just $18.68 per bottle. (Item # 01482)

References

CAUTION: If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product. Contains fish (anchovy, mackerel), sesame, and corn. Supportive but not conclusive evidence shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease. IFOS® certification mark is a registered trademark of Nutrasource Diagnostics, Inc. These products have been tested to the quality and purity standards of the IFOS® program conducted at Nutrasource Diagnostics, Inc.

Just one serving of SUPER OMEGA-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract provide:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA Pure™ Extract (eicosapentaenoic acid)</td>
<td>1400 mg</td>
</tr>
<tr>
<td>DHA Pure™ Extract (docosahexaenoic acid)</td>
<td>1000 mg</td>
</tr>
<tr>
<td>Olive Fruit Extract (std. to 6.5% polyphenols)</td>
<td>600 mg</td>
</tr>
<tr>
<td>(39 mg), 1.73% hydroxytyrosol/tyrosol (10.4 mg), 0.5% verbascoside/oleuropein (3 mg)</td>
<td></td>
</tr>
<tr>
<td>Sesame Seed Ligan Extract</td>
<td>20 mg</td>
</tr>
</tbody>
</table>

A SMALLER SOFTGEL for easier swallowing!

Some members have requested we make Super Omega-3 available in a smaller capsule for easier swallowing. We have accomplished this by making half-size softgels available.

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

For those with sensitive stomachs, Super Omega-3 is also available with enteric coating and retails for $34. If a member buys four bottles, the price is reduced to $23.25 per bottle. If 10 bottles are purchased, the cost is just $21 per bottle. (Item # 01484)

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

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.
There are three forms of vitamin K that the human body can utilize to promote arterial health and bone support.1-8 Life Extension’s Super K with Advanced K2 Complex provides the dynamic trio of vitamin K forms in one softgel, including vitamin K1, vitamin K2 (MK-4), and vitamin K2 (MK-7).

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

**Vitamin K2** is usually found in meats, dairy, and egg yolks. Since you may be avoiding these foods for health reasons, ingesting a K2 supplement is essential. MK-4 is the most rapidly absorbed form of K2, and MK-7 boasts a very long half-life in the body, making both forms the perfect complement to any vitamin K regimen.9

Each bottle of Super K lasts 90 days, so members pay as little as $5.75 a month for this high-potency blend of all three active forms of vitamin K. The retail price for a bottle containing 90 softgels is $26. If a member buys four bottles, the price is reduced to just $17.25 per bottle.

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

**Super K formula provides in just one daily softgel:**

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin K1</td>
<td>1000 mcg</td>
</tr>
<tr>
<td>Vitamin K2 (MK-4)</td>
<td>1000 mcg</td>
</tr>
<tr>
<td>Vitamin K2 (MK-7)</td>
<td>100 mcg</td>
</tr>
</tbody>
</table>

To order Super K with Advanced K2 Complex or Super Booster, call 1-800-544-4440 or visit www.LifeExtension.com

**Warning to Coumadin® (warfarin) Drug Users**

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

**References**


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

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

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

**Milk Thistle (Silybum marianum) Extract (seed)** 750 mg
[std. to 80% Silymarin (600 mg),
30% Silibinins (225 mg),
and 8% Isosilybin A and Isosilybin B (60 mg)]

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

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

Reference

*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.
Most people assume that hearing loss is an inevitable consequence of aging. Surprisingly, scientific studies show that much hearing damage occurs from repeated exposure to the sounds of daily life.1
Experts estimate that 30 million Americans are exposed to dangerous levels of noise each day.2

HEARING LOSS FROM URBAN LIVING
The maximum safe sound level for regular environmental exposure is considered to be 70 decibels.3,6
Yet studies now show that urban dwellers can be exposed to chronic sound levels above 74 decibels in the course of their daily activities; public transit sound levels can exceed 79 decibels.3,7
Of equal concern is that the safe industrial sound level is considered to be a maximum of 85 decibels. So just walking down the street, we’re endangering our hearing from sounds that exceed levels deemed safe. They emanate from construction sites, passing vehicles, public transit, and of course, the music in stores and clubs.

THE SOLUTION? HEAROS™ EAR PLUGS.

EVERYDAY HEARING PROTECTION
What are social ear plugs? They are not ear plugs in the traditional sense, because they don’t muffle and distort sound.
Instead, social ear plugs are sound attenuators.
In other words, they let you hear the same high and low frequencies—they simply lower the overall volume for you. This is the secret behind Hearos™ Hi-Fidelity Ear Plugs’ ability to protect your hearing while allowing natural hearing and speech. You’re able to “turn down” the volume around you, without impacting how you hear sounds or conversations with others.

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

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

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

One container of Hearos™ Hi-Fidelity Ear Plugs retails for $14. Member price is reduced to $10.50. Some people purchase more than one set to have them available in as many places as possible such as one’s car, suitcase, or different residences.

To order Hearos™ Hi-Fidelity Ear Plugs, call 1-800-544-4440 or visit www.LifeExtension.com

References
Every year, nearly 250,000 women learn that they have invasive breast cancer. Roughly 58,000 more will be diagnosed with early cases of the disease. And about 40,000 will die.

Some women are so paralyzed by the fear of this disease that they undergo double mastectomies in a drastic attempt to prevent it from occurring.

Despite these dire numbers and drastic actions, there is hope for the prevention of breast cancer. And it doesn’t come in the form of risky surgical procedures—it comes from nature itself.

Up to 50% of breast cancer cases are now thought to be preventable through simple changes in diet and lifestyle. The use of specific agents to prevent cancer from developing is called chemoprevention. Utilized properly, chemoprevention should be able to eliminate pre-malignant cells, block the progression of normal cells into invasive tumors, and ultimately stop a cancer before it ever reaches a size that could cause symptoms or be detected.

Research has demonstrated that there are scores of nutrient molecules with potent, and often multiple chemotherapeutic effects. For example, calcium, selenium, and vitamin D have all shown some effect in reducing cancer occurrence. An even larger array of nutrients is responsible for changes that promise powerful chemoprevention against breast cancer.

In this article we’ll explore some of the most exciting implications of the power of nutritional supplementation to prevent breast cancer. Then we’ll give you a rundown of nearly three dozen specific nutrients that hold out special hope in the fight against this epidemic killer.
A relatively new science called epigenetics has shed light on the enormous control we as individuals have on whether or not we develop cancer. The science of epigenetics is the study of long-lasting changes in gene function that do not involve changes in gene structure. Epigenetics has taught us that we can use factors such as nutrients to turn a gene on and off.

If the gene that's activated is a tumor-suppressor gene (a gene that prevents excessive cell replication), or one that triggers termination of defective cells (such as pre-malignant cells through normal apoptotic processes), these epigenetic modifications are capable of blocking the progression of a cancer cell.

The science of epigenetics has finally explained how nutrients and certain drugs can change the way breast cancer cells age and reproduce.

Based on the science of epigenetics, Big Pharma is now racing to produce chemopreventive drugs. But nature is far ahead, as usual. Scores of researched nutrients have potent, and often multiple, epigenetic and chemotherapeutic effects (Table 1)—without the side effects associated with drugs like tamoxifen, which the FDA approved for breast cancer prevention.

In the next section, we’ll look at nature’s most powerful chemopreventive nutrients (and a few drugs), how they work, and what they may mean for the future of breast cancer.

### TABLE 1. Risk Reduction for Breast Cancer By Specific Compounds

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Reduction in Breast Cancer Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin</td>
<td>20-32%[^62,^66,^146]</td>
</tr>
<tr>
<td>Coffee</td>
<td>40%[^147]</td>
</tr>
<tr>
<td>Conjugated Linoleic Acid</td>
<td>60%[^148]</td>
</tr>
<tr>
<td>Fish Oil, Omega-3 Fats</td>
<td>73-81%[^149]</td>
</tr>
<tr>
<td>Green Tea</td>
<td>22-48%[^150-^152]</td>
</tr>
<tr>
<td>Lycopene</td>
<td>40-68%[^153-^155]</td>
</tr>
<tr>
<td>Melatonin</td>
<td>38%[^156]</td>
</tr>
<tr>
<td>Metformin</td>
<td>23-56%[^157,^158]</td>
</tr>
<tr>
<td>Resveratrol</td>
<td>61%[^159]</td>
</tr>
<tr>
<td>Soy &amp; Soy Isoflavones</td>
<td>18-92%[^160-^162]</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>11-44%[^87,^163]</td>
</tr>
</tbody>
</table>

[^14-17]: Coenzyme Q10 (CoQ10)
[^18-20]: Coffee and many of its constituents
[^21-23]: Curcumin
[^24]: Green tea polyphenols, especially epigallocatechin gallate (EGCG)
[^25]: Indole-3-Carbinol (I3C)
[^26-27]: Lycopene
[^28]: Melatonin
[^29]: Metformin
[^30]: N-acetylcysteine (NAC)
[^31]: Pomegranate juice and extracts
[^32]: Resveratrol
[^33]: Selenium
[^34]: Silybinin and silymarin
[^40-47]: Soybean flavonoids genistein and diadzein
[^42]: Sulforaphane
[^49-53]: Tocotrienols

### 1. Nutrients that Prevent DNA Damage

Breast cancer, like all others, invariably begins with some change to the DNA structure or function of an individual cell. Both DNA damage and a change in the way a normal gene is expressed can trigger a cell to become malignant. In either case, a tumor suppressor gene can become silenced, allowing unregulated cell replication, or a tumor promoter gene can become activated. However, many nutrients work to prevent the DNA damage that can lead to a cell becoming cancerous.

The list of nutrients proven to have anti-breast cancer effects is long, a tribute to the role of oxidant damage in breast cancer formation. Antioxidant nutrients proven to have anti-breast cancer effects include:

- Coenzyme Q10 (CoQ10)
- Coffee and many of its constituents
- Curcumin
- Green tea polyphenols, especially epigallocatechin gallate (EGCG)
- Indole-3-Carbinol (I3C)
- Lycopene
- Melatonin
- Metformin
- N-acetylcysteine (NAC)
- Pomegranate juice and extracts
- Resveratrol
- Selenium
- Silybinin and silymarin
- Soybean flavonoids genistein and diadzein
- Sulforaphane
- Tocotrienols
2. Nutrients that Control Regulatory Genes

Processes called hypermethylation and histone deacetylation can unlock undesirable epigenetic expression or suppress regulatory genes. Fortunately, a number of nutrients block these processes, and therefore can help to prevent the epigenetic changes that lead to breast cancer. These include:\textsuperscript{7,11}

- Omega-3 fatty acids from fish oil\textsuperscript{54}
- Lycopene\textsuperscript{55}
- Genistein, a soy isoflavone\textsuperscript{55}
- Resveratrol\textsuperscript{56,57}
- Caffeic acid, a component of coffee\textsuperscript{19}
- Sulforaphane from cruciferous vegetables\textsuperscript{10,58,59}

3. Nutrients that Fight Cancer-Promoting Inflammation

Once a cell has become malignant, inflammation is a powerful epigenetic promoter of the next steps in the process of cancerous transformation.\textsuperscript{60} Nature provides many natural anti-inflammatory molecules with specific promise in breast cancer chemoprevention, including the following:

- Acetylsalicylic acid (aspirin)\textsuperscript{61-66}
- Conjugated linoleic acid (CLA)\textsuperscript{67,68}
- Coffee compounds\textsuperscript{18,69}
- Curcumin\textsuperscript{70,71}
- Omega-3 fatty acids EPA and DHA from fish oil\textsuperscript{72}
- Pomegranate extracts\textsuperscript{73}
- Quercetin\textsuperscript{74}
- Resveratrol\textsuperscript{19}
- Vitamin D\textsuperscript{75}

Activate Powerful Cancer Protection with Natural Nutrients

- Breast cancer threatens the lives of millions of women.
- Breast cancer is caused by a complex interaction of multiple dietary, lifestyle, environmental, and genetic factors.
- The science of epigenetics, the study of how genes can be expressed differently without changes in actual gene structure, has provided profound new insights into breast and other cancers.
- A large number of nutrients have now been found to exert favorable epigenetic effects on breast cancers from the moment a cell undergoes malignant transformation through the fully-developed tumor’s attempts to invade and metastasize.
- Nutrient-based epigenetic chemoprevention represents an entirely new front in the battle against breast cancer.
4. Nutrients that Block Excessive Cell Replication

The excessive rate of cell replication is one of cancer’s best-known features. Many nutrients are capable of blocking the continuous churning of the cellular replication cycle and slowing or stopping cancer growth, which ultimately contributes to breast cancer chemoprevention through epigenetic means. These include:

- Apigenin, a yellow flavone molecule found in many plants\(^{76}\)
- Aspirin\(^{77}\)
- Coffee components\(^{78}\)
- Indole-3-Carbinol (I3C) from cruciferous vegetables\(^{79,80}\)
- Melatonin\(^{81}\)
- Pterostilbene, a close relative of resveratrol\(^{82}\)
- Selenium\(^{83}\)
- Sulforaphane from cruciferous vegetables\(^{10,84}\)

5. Nutrients that Transform Malignant Cells Back into Healthy Ones

Even after cells have undergone malignant transformation, there’s a chance to reverse that process by forcing them to “differentiate” back into normal tissue-forming cells. Nutrients that promote the differentiation of breast cancer cells include:

- Conjugated linoleic acid (CLA)\(^{85}\)
- N-acetylcysteine (NAC)\(^{32}\)
- Vitamin D\(^{86,87}\)

6. Nutrients that Trigger the Death of Cancer Cells

A powerful natural means of controlling cell replication is the process of apoptosis, or programmed cell death. Normal cells have the ability to self-destruct if they receive signals that they are replicating too rapidly. Malignant cells lose this ability, contributing to their overwhelming growth rate. A number of nutrients have the ability to restore breast cancer cells’ ability to die by apoptosis, including the following:

- Apigenin\(^{76,88,89}\)
- Coffee compounds\(^{78}\)
- Conjugated linoleic acid (CLA)\(^{90}\)
- Curcumin\(^{91,92}\)
- Green tea polyphenols and EGCG\(^{24}\)
- Indole-3-Carbinol (I3C)\(^{79,93}\)
- Melatonin\(^{94}\)
- N-acetylcysteine (NAC)\(^{95}\)
- Pomegranate\(^{96,97}\)
- Quercetin\(^{98}\)
- Selenium\(^{83}\)
- Silibinin\(^{99}\)
- Soy Isoflavones\(^{97,100,101}\)
- Tocotrienols\(^{102,103}\)
- Vitamin D\(^{94}\)

7. Nutrients that Restore Receptors that Enhance Standard Treatments

Roughly 70% of breast cancer cells depend on a continuous supply of estrogen for their growth, while a smaller number of cancers depend on the growth factor called HER2/neu. These cancers can potentially be treated by interfering with the receptors, making them (at least in theory) less dangerous.

Between 15 and 25% of breast cancers, however, are so-called “triple-negative” cancers, meaning that they lack any of the three receptors (estrogen,
progesterone, or HER2/neu), and are correspondingly resistant to treatment. Among the most exciting discoveries in the epigenetics of nutrients for cancer chemoprevention is that many nutrients can restore one or more of those receptors to the surface of breast cancer cells, lowering the bar to effective standard treatments such as the estrogen receptor blocker tamoxifen.15

Other nutrients can modify at least one of the receptors, impairing the cells’ ability to receive the growth signals they require, and triggering their early death.

Nutrients (and a drug) capable of epigenetic chemoprevention through modification or restoration of breast cancer receptors, or which have effectiveness against triple negative cancers include:

- Coffee104,105
- Conjugated linoleic acid (CLA)106
- Curcumin107
- Green tea polyphenols11,108
- Melatonin109
- Metformin110
- Omega-3 fatty acids from fish oil111
- Sulforaphane from cruciferous vegetables11,112

8. Nutrients that Inhibit Estrogen Production

The enzyme aromatase is responsible for producing estrogen in body tissues, including breast cells. Therefore, inhibiting aromatase activity is an important means of slowing the growth of the 70% of estrogen-dependent breast cancers. Nutrients capable of chemoprevention through aromatase inhibition include:

- Chrys113
- Enterolactone from lignan extract114
- Grape seed extract115
- Hops extracts116
- Melatonin109
- Pomegranate117
- Vitamin D75

Note: aromatase inhibiting drugs like Arimidex® (anastrozole) have far more potent estrogen-suppressing effects, but they lower estrogen so much that they can induce severe menopausal effects.

9. Nutrients that Block Abnormal Growth Factors

In addition to estrogen, progesterone, and HER2/neu, a number of other growth factors act on breast cancer cells. Inhibition or epigenetic modification of these growth factors is a major target in breast cancer chemoprevention, especially by the following nutrients:

- Apigenin118
- Conjugated linoleic acid (CLA)119
- Curcumin92
- Gamma tocotrienol120
- Green tea polyphenols108,121
- Indole-3-Carbinol (I3C)80
- Melatonin94
- Omega-3 fatty acids111
- Silibinin11
- Sulforaphane59
- Vitamin D94
Breast Cancer: The Basics

By the time breast cancer is detectable, it has already gone through a lengthy and complex series of events that turned a normal, healthy cell into a cancerous one. Basically, cancer occurs when cellular replication has gone awry.8

In a healthy body, excess cell replication is under tight control by genetic signals from genes called tumor suppressor and suicide genes.5 When a tumor suppressor gene is turned on in response to an abnormal signal, it prevents cell division from getting out of control. Similarly, the activation of a suicide gene triggers a programmed form of cell death called apoptosis.

Ultimately, the development of cancer is the direct result of how genes express themselves in tissues. Cancers form when the function of a gene changes—either activating cancer-producing genes, or deactivating cancer-suppressing genes.7

10. Nutrients that Cut Off the Blood Supply to Growing Tumors

Once a cancer has begun its rapid growth phase, it requires a vast increase in its blood supply. Tumor cells are capable of inducing new blood vessel growth (angiogenesis) through multiple epigenetic mechanisms. A number of nutrients are capable of reversing that process and depriving growing tumors of blood supply. These include:

- Apigenin122-124
- Coenzyme Q10 (CoQ10)17,125
- Coffee diterpenes18
- Conjugated linoleic acid (CLA)85
- Curcumin126
- Grape seed extract127,128
- Green tea129,130
- Indole-3-Carbinol (I3C)79
- Lycopene27
- Melatonin27
- N-acetylcysteine (NAC)30,33,34
- Omega-3 fatty acids131
- Pomegranate132
- Quercetin74
- Silibinin133
- Soy isoflavones134,136
- Vitamin D75,86
Growing tumors develop the ability to invade local and regional tissues, and to “seed” other body areas with malignant cells through the process of metastasis. To accomplish these processes, tumors increase their production of “protein-melting” enzymes called matrix metalloproteinases, or MMPs. Effective chemoprevention involves epigenetic changes that impair tumors’ production of MMPs, as is seen in the activities of these nutrients (and drugs):

- Coenzyme Q10 (CoQ10)\textsuperscript{137}
- Coffee diterpenes and phenolics\textsuperscript{18,138}
- Conjugated linoleic acid (CLA)\textsuperscript{139}
- Cruciferous vegetable components sulforaphane and isothiocyanates\textsuperscript{140}
- Curcumin\textsuperscript{141}
- Green tea polyphenols\textsuperscript{24,121,130}
- Melatonin\textsuperscript{142}
- N-acetylcysteine (NAC)\textsuperscript{31}
- Silibinin\textsuperscript{41,42,133}
- Soy isoflavones\textsuperscript{101,135}

Compounds that function via other mechanism to inhibit metastasis include:

- Modified citrus pectin\textsuperscript{143+}
- Aspirin\textsuperscript{144}
- Cimetidine\textsuperscript{145+}

+Note that cimetidine and modified citrus pectin are only used by those with existing cancers. They have not shown preventive effects.

Summary

Breast cancer, the leading malignancy among women, has long evaded attempts at prevention. However, breakthroughs in the science of epigenetics has led both to a greater understanding of how breast cancer forms—and ultimately to the discovery of novel approaches to chemoprevention.

A large number of nutrients are capable of beneficial epigenetic modifications in breast cancer cells. These nutrients are capable of impeding breast cancer initiation, promotion, proliferation, invasion, and metastasis. They accomplish these multiple effects through the activation of genes that suppress cancer, the deactivation of genes that promote cancer, the promotion of cancer cell death through apoptosis, the modification of hormonal and other growth factor receptors, and fundamental effects such as antioxidant and anti-inflammatory actions.

With the broad range of breast cancer chemoprevention available through nutrient supplementation, it only makes sense to include a wide variety of these supplements in your health promotion regimen. ●

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

\textsuperscript{References found on page 60.}
## Breast Cancer Chemopreventive Nutrients

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Antioxidant</th>
<th>Modulate Gene Expression</th>
<th>Anti-inflammatory</th>
<th>Control Cell Cycle</th>
<th>Promote Healthy Differentiation</th>
<th>Trigger Apoptosis</th>
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<td>Apigenin</td>
<td></td>
<td></td>
<td></td>
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<td>Aspirin</td>
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<td>Nutrient</td>
<td>Reactivate Receptor Expression</td>
<td>Slow Aromatase Activity</td>
<td>Block Abnormal Growth Factors</td>
<td>Inhibit New Blood Vessel Growth</td>
<td>Prevent Invasion and Metastasis</td>
<td>Suggested Daily Chemopreventive Dose</td>
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<td>X⁷⁵,⁸⁶</td>
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<td>X¹²⁰</td>
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</table>

**TABLE 2: Dosing for Chemoprevention**

* Vitamin D dosing varies for each individual. Regular blood testing is needed to make sure your level of supplementation is adequate.
References


YOU MAY BE ONE OF THEM.
Optimal uptake of magnesium may now be obtained in a highly absorbable form called Neuro-Mag™ available in capsules or tasty natural lemon-flavored powder.

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

A Critical Brain Booster. . .
Magnesium is needed for more than 300 biochemical reactions in the body.²
Long known for its role in cardiovascular³ ⁴ and bone health,⁵ researchers are now focusing intensely on magnesium’s benefits for cognitive function.⁶
It is very hard for your body to maintain optimal levels of magnesium in the brain.¹ This is of special concern for maturing individuals, as magnesium deficiency increases over time.¹

Absorbs Into the Brain
Most commercially available magnesium supplements are not readily absorbed into the central nervous system.
To overcome this obstacle, an innovative form of magnesium is being introduced called Neuro-Mag™ shown to specifically target the aging brain and nervous system.
In pre-clinical models, magnesium L-threonate contained in Neuro-Mag™ boosted magnesium levels in spinal fluid by an impressive 15% compared to no increase with conventional magnesium.²
Even more compelling, animal models revealed improvements of 18% for short-term memory and 100% for long-term memory using the Neuro-Mag™ form of magnesium.²

Capsules or Powder…Value Priced
The suggested daily dose of three Neuro-Mag™ Magnesium L-Threonate Capsules provides 2,000 mg of Magnesium-L-Threonate. While this supplies a modest 144 mg of elemental magnesium, its superior absorption into the bloodstream and nervous system make it a preferred choice for aging humans to supplement with.
This same brain health-supporting magnesium is also available in a good tasting powder mix called Neuro-Mag™ Magnesium L-Threonate Powder. In addition to its appealing natural lemon flavor, the one-scoop per day serving size supplies the same amount of magnesium plus 500 mg of calcium (as calcium lactate gluconate—a highly soluble form of calcium) and 1,000 IU of vitamin D3.
A bottle containing 90 vegetarian capsules of Neuro-Mag™ Magnesium L-Threonate or 30 scoops of Neuro-Mag™ Magnesium L-Threonate Powder retails for $40. If a member buys four bottles, the price is reduced to $27 per bottle. Contains corn.

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

References

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

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.
Women today face a growing number of health issues, including the need to support DNA gene structure in the breast. Detrimental factors such as the aging process, along with the daily bombardment of damaging environmental estrogen-like compounds, demonstrate the need to support a woman’s breast cellular structure.

A wealth of research shows that specific plant extracts can positively influence cellular status and remove some of the anxiety women face about maintaining a healthy balance of estrogens.

Two important metabolites that estrogen is broken down to in the body are: the good 2-hydroxyestrone and the bad 16 alpha-hydroxyestrone. Scientists have identified nutrients like indole-3-carbinol (I3C) that can tip the delicate balance of estrogens in favor of the good form.

Women seeking to proactively restore their youthful hormonal balance can now take a new, phytonutrient-based formula that helps support healthy estrogen activity and detoxification. Some of the active ingredients in the Breast Health Formula are:

- **Phytoestrogens** that function as selective estrogen receptor modifiers help block certain estrogen receptor sites on cells, thus preventing bad estrogen from exerting its harmful effects
- **Plant lignans** that boost beneficial enterolactone levels and favorably alter estrogen metabolism
- ** Cruciferous Vegetable Extracts** (such as I3C) that effectively increase 2-hydroxyestrone while reducing undesirable 16 alpha-hydroxyestrone
- **Calcium D-Glucarate** to safely facilitate the removal of harmful estrogen from the body
- **Vitamin D** to restore healthy genetic regulatory switching to aging cells

Breast Health Formula provides nutrients that have demonstrated broad-spectrum support for preserving optimal breast health.

The daily dose of two capsules supplies:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Phytoestrogens (isoflavones) and Group-B</td>
<td>34.5 mg</td>
</tr>
<tr>
<td>Saponins (from 111.5 mg SoySelect® soybean (Glycine max) 70:1 extract)</td>
<td></td>
</tr>
<tr>
<td>Indole-3-Carbinol (I3C)</td>
<td>100 mg</td>
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<tr>
<td>DIM (3,3’-Diindolylmethane)</td>
<td>14 mg</td>
</tr>
<tr>
<td>Calcium D-Glucarate</td>
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<tr>
<td>Vitamin D (as cholecalciferol)</td>
<td>1000 IU</td>
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<tr>
<td>Enterolactone Precursors Proprietary Blend</td>
<td>25 mg</td>
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<tr>
<td>HMRlignan™ Norway spruce (Picea abies)standardized lignan extract (knot wood) and Secoisolariciresinol diglucoside from ActiFlax™ flax (Linum usitatissimum L) lignan extract (seed)</td>
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<td>Iodine (as potassium iodide)</td>
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<tr>
<td>Cruciferous Vegetable Proprietary Blend</td>
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<tr>
<td>Broccoli (Brassica oleracea L) GMO-free Extract (standardized to 4% glucosinolates)</td>
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<tr>
<td>Watercress (Nasturtium officinale) 4:1 extract (leaf)</td>
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<tr>
<td>Sawasabi™ Wasabi (Wasabia japonica) powder (rhizome) [standardized to 12,000 ppm Total Isothiocyanate]</td>
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The retail price for 60 vegetarian capsules of Breast Health Formula is $34. If a member buys four bottles, the price is reduced to only $22.50 per bottle. Contains soybeans, corn, and rice.

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.
DHA
An Essential Brain Food
When NASA scientists began their search for the perfect space food for astronauts, they turned their attention to marine algae. What they discovered was that algae was a rich source of the fatty acid DHA (docosahexaenoic acid). The result of their investigation produced a nutrient dense food that could be used not only for astronauts but for those here on earth.

DHA is a brain food. Studies show that brain tissue contains the highest concentration of DHA in the body, which indicates its value for brain function. Within the brain itself, regions most closely related to memory show the greatest DHA concentrations. Those with a DHA deficiency often show cognitive deficiencies and an increased risk for Alzheimer’s. Children with high levels of DHA often perform better on tests. As a key fatty acid, DHA plays critical roles throughout the body and is a component of the brain’s cerebral cortex, the retina, and human sperm.

As we age, DHA levels normally drop off in older individuals, especially in the all-important hippocampus region of the brain. Studies have shown that supplementation to older animals results in the normalization of hippocampal DHA content.

Algae-based DHA supplementation increases the omega-3 index by 75%. A low omega-3 index indicates high risk for developing coronary artery disease. While most people obtain their DHA from fish or fish oil supplements, NASA’s discovery created an option for those who need to boost their vital DHA levels to avoid cognitive degeneration. Thanks to our space program, the benefits of DHA are available for everyone who seeks to avoid the risks of a DHA deficiency.

BY KIRK STOKEL
DHA: Triple-Acting Neuroprotection

Brain tissue has the highest concentration of DHA in the body, suggesting that brain function relies in unique ways on this powerful fatty acid. Within the brain itself, regions most closely related to memory show the greatest DHA concentrations. And even at the cellular level, DHA concentrates in the structures involved in forming new memories, such as synaptic membranes and tiny outgrowths called “neurites.”

Large-scale epidemiological studies reveal the benefits of sustained high DHA intake on brain function. Consuming an average of 3g/day of fatty fish offers a 19 to 23% reduction in the risk of mild cognitive impairment, a condition associated with later progression to Alzheimer’s disease. People who eat still larger amounts of fatty fish may experience protection of up to 75%. On the other hand, low fish intake and low blood DHA levels correlate strongly with increased risk of cognitive impairment and especially Alzheimer’s. Animal studies show learning and memory deficits under conditions of DHA deficiency; studies of the animals’ brains demonstrate inflammatory and oxidative damage to neurons. All of these deleterious effects resolve when adequate DHA intake resumes.

Unlike other fats, which accumulate in fat cells for storage and later release for energy, DHA resides almost exclusively in cell membranes, which undergo continuous degradation and renewal. That means in turn that your body needs a constant dietary supply of DHA to avoid depletion and neuronal injury.

One study showed that DHA supplementation in humans at 2g/day provides sufficient DHA to maintain healthy function, but levels drop when the patients stopped taking the supplements. To achieve these levels often requires additional DHA supplementation beyond eating a regular diet of fish.

DHA influences how the brain develops and functions; it helps to determine brain structure, and it protects brain tissue from damage. DHA’s protective effects come from three distinct mechanisms:

1. **DHA protects brain tissue from inflammatory damage.** It accomplishes this by promoting development of anti-inflammatory molecules while suppressing pro-inflammatory molecules in brain cell membranes. That alone offers powerful protection against oxidative and other stresses that age brain tissue.

2. **DHA stimulates physical changes that underlie learning and memory.** DHA promotes outgrowth of neurites, the tiny projections that form intimate connections between cells as memories form. DHA promotes rapid signal transduction across synapses and helps membranes maintain their fluidity, a condition required for rapid changes in shape and function we recognize as memory.

3. **DHA promotes healing after injury to brain tissue.** Immediately after such an injury, cell membranes release DHA in massive amounts for conversion into compounds called protectins.
**Protectins** are nature’s way of maintaining the balance between oxidant damage and recovery. They begin to form at the very first sign of damage at the cellular level, whether from a seizure, a stroke, or a traumatic brain injury.4,5,13,15,20

Scientists say that DHA-derived protectins function in a dual manner: they trigger anti-inflammatory processes and simultaneously begin the process of injury resolution.13,15 Acting fast enough and in sufficient quantities, protectins may be able to quash widespread brain degeneration, stopping or slowing neurodegenerative diseases like mild cognitive decline, and even Alzheimer’s and Parkinson’s diseases.

The best way to stimulate protectin synthesis? Make DHA maximally available to brain cells, where it’s available for immediate release.20

Let’s now look at laboratory and human studies that demonstrate how DHA protects memory, enhances learning, and slows brain aging.

**Studies Highlight DHA Memory-Protection in Brain**

Animal studies repeatedly demonstrate the strongly neuroprotective effects of DHA supplementation in brain structure and function. While DHA levels normally drop off in older individuals, especially in the all-important hippocampus region of the brain, supplementation to older animals results in the normalization of hippocampal DHA content.10,11

As a result, supplemented animals’ brains show all the effects that DHA produces, including enhanced outgrowth of connections between neurons, more rapid transmission of electrical pulses across synapses, and protection against the physical and biochemical changes associated with Alzheimer’s disease.6,10,11,18,21-24 Blood flow to memory-critical regions of the brain increases following DHA supplementation, and new brain cells form in older animals.25,26

Animals’ behavior, especially related to learning and memory, is markedly enhanced after DHA supplementation. Supplemented animals better remember the location of a submerged platform in the Morris water maze test, a standard test of spatial memory of the kind so readily lost in Alzheimer’s disease.17,27,28 Similarly, supplemented animals outperform controls on tests of reference memory (the ability to relate current conditions to those experienced in the past).29 And in those animals, brain regions related to memory show higher concentrations of DHA than do controls.29

Exercise enhances brain plasticity, the neuronal flexibility that underlies learning; now studies reveal that DHA supplementation provides a synergistic...
DHA: An Essential Brain Food

Boost to regular exercise. Exercise and supplemented animals perform better on memory tasks than do those receiving either treatment alone. DHA-protected brains function better in the event of physical trauma to the head. Animals supplemented with DHA before undergoing experimental traumatic brain injury show reduced injury responses in brain tissue, including a reduction in the tragic diffuse axonal injury suffered by many human victims of head trauma.

Low brain concentrations of DHA are thought to contribute to the cognitive decline seen in Alzheimer's disease. Conversely, higher DHA levels correlate well with improved performance on tests of memory and learning, as seen in a landmark study of school children in Canada. Children followed from birth to 11 years of age, and who had higher DHA levels in their blood at birth and at the time of testing, had better performance on memory and learning tests.

Numerous studies have demonstrated the protective effects of DHA supplementation on cognitive function and memory. The effects are most pronounced in people with minimal cognitive impairment, or MCI, which is a mild form of cognitive decline that often proceeds to Alzheimer's disease. Roughly 15% of people with MCI will progress to Alzheimer's disease each year, while only about 1% of those without MCI do so.

In one such study, a relatively low dose of DHA and another fatty acid improved memory and attention scores in patients with MCI and organic brain injury, but not in the Alzheimer's disease patients.

Similarly, older adults with MCI took DHA plus melatonin and tryptophan as an emulsion for 12 weeks, and underwent a battery of cognitive, behavioral and nutritional tests. Their memories, mental status, and verbal fluency all improved significantly. And a combination of DHA with phosphatidylserine, another brain nutrient, improved verbal recall in nondemented older adults with mild cognitive impairment.

People with mild cognitive impairment may progress to full-blown dementia; if they have symptoms of depression that progress may be faster. In a study of 40 adults with both MCI and depression, a DHA supplement of 1.55 g/day reduced their scores on a depression scale, while at the same time improving their verbal fluency. Those with the highest post-supplement DHA levels reported the greatest improvement in overall physical health.

In another study, people with age-related cognitive decline, which may or may not progress to Alzheimer's disease, supplemented with 900 mg/day of DHA. They made significantly fewer errors on tests of visual and spatial learning and memory, along with improved immediate and delayed verbal recognition memory, compared with control patients. DHA levels in these patients doubled during supplementation, and were closely correlated with improved memory scores.

Unfortunately, DHA supplementation, like any other treatment, is much less effective in fully-developed Alzheimer's disease, presumably because so much irreversible damage has already been done. Still, supplementation may ameliorate some of the troubling features of the disease. Alzheimer's patients typically lose weight as a result of lost sense of smell and taste, and a general disinterest in food. But supplementation with DHA at 1.7 g/day improved weight gain in patients with mild to moderate Alzheimer's; and again blood concentrations of DHA correlated well with weight gain and appetite improvement.

Similar studies report improvement in the sense of smell and nutritional intake following DHA supplementation.

Vegetarians Dangerously Deficient in DHA

Those who follow a vegan diet run the risk of a serious DHA deficiency because their diets provide little or no DHA at all. Even a vegetarian diet with dairy and egg products only supplies about 20 mg/day of DHA. Until recently, though, vegetarians and vegans could not find acceptable sources of supplemental DHA, leaving them vulnerable to chronic diseases, especially those of the brain that affect cognition and memory.

But fish do not make DHA. Predatory ocean fish, our best animal source of omega-3 fatty acids, consume...
smaller fish and crustaceans. Those animals, in turn, feed on algae. And algae use specialized enzymes, powered by solar energy, to produce the DHA (and EPA) that we need in order to remain healthy.

As a result, all of the DHA we consume originates with tiny one-celled algal organisms.

Advances in aquaculture now make large-scale DHA production possible from algal cells grown in culture. First, specialized batch fermenters grow algae under ideal conditions. After harvesting, dryers remove moisture from the biomass, leaving the oil-rich residue. Next, extraction equipment separates the valuable oil from other organic material. At the end of the process, only the highly refined oil remains, rich in DHA and entirely free of animal products. Can algae-derived DHA replace fish oil as a health-promoting dietary component?

Emphatically yes, according to recent human studies.

Dosing with algae-derived DHA among vegetarians produces precisely the same increase in serum, red blood cell, and platelet DHA content seen with fish oil supplementation at equivalent doses.

One study showed increases of DHA in serum and platelets of 246% and 225%, respectively, after six weeks supplementation with 1.62 g/day of algae-derived DHA oil. As an additional benefit, levels of EPA, another vital omega-3 fatty acid, rose substantially as well, while levels of the inflammation-generating fat arachidonic acid decreased.

People with low DHA levels stand to gain the most from supplementation using algae-based DHA; one study found a 4 to 5-fold increase in blood levels following supplementation in cystic fibrosis patients, who often have imbalances in their fatty acid content.

Other studies report that algae-based DHA supplementation increases the “omega-3 index” by 75%. A low omega-3 index (the sum of red blood cell membrane EPA plus DHA content) indicates high risk for developing coronary artery disease. After supplementation with 940 mg/day of algal DHA, 69% of supplemented subjects, but none in the placebo group, managed to get their omega-3 index above the recommended 8%.

And vegetarians supplemented with algae-based DHA enjoy the same drop in cardiovascular risk factors as do non-vegetarians consuming fish oil. Those include lowering triglycerides, and the important total cholesterol/HDL cholesterol ratio.

Studies routinely report no side effects or adverse outcomes when patients consume even large doses of algae-derived DHA; the oil has the same excellent bioavailability as fish oil-derived DHA.

Summary

Compelling scientific data point to the value of maintaining high DHA concentrations in blood and brain tissue. DHA supplements derived from fish oil are an excellent source of the valuable omega-3 fatty acid.

But vegans and vegetarians, until recently, had no practical and acceptable source for DHA.
A new process now enables DHA to be extracted from algae, by means of completely vegan-friendly techniques. This DHA oil is equivalent to that derived from fish oil in terms of its bioavailability and impact on the human body.

Availability of a vegan/vegetarian-approved form of DHA is especially essential for maintaining brain health, memory, and learning functions. DHA reduces brain inflammation, a main risk factor for Alzheimer's and similar diseases. DHA stimulates new nerve cell growth and production of neuronal features that underlie learning. And recent studies show that DHA is required for production of essential protectins, molecules that initiate healing from the very onset of brain cell injury.

An algae-derived DHA enables anyone to increase their DHA intake.

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

Preserve Youthful Cellular ENERGY with Next-Generation LIPOIC ACID

Published studies have shown the critical importance of lipoic acid in supporting healthy mitochondrial function. Unlike other forms of lipoic acid, SUPER R-Lipoic Acid is more bioavailable, stable, and potent, achieving 10-30 times higher peak blood levels than pure R-lipoic acid. This unique sodium-R-lipoate can help you reach peak plasma concentrations within just 10-20 minutes of supplementation.

Super R-Lipoic Acid provides more of the active “R” form of lipoic acid than any other supplement.

A bottle of Super R-Lipoic Acid containing 60 vegetarian capsules retails for $49. If a member buys four bottles, the cost is only $33.75 per bottle. Each capsule contains 300 mg of stabilized, Bio-Enhanced® Super R-lipoic acid supplying 240 mg of R-lipoic acid. Suggested dose is one to two capsules.

References:

CAUTION: Because this product may lower blood glucose, consult your healthcare provider before taking this product if you are taking glucose lowering medication. Bio-Enhanced® is a registered trademark of Geronova Research, 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.
TARGETED BRAIN SUPPORT WITH VEGETARIAN DHA

Although the omega-3 fatty acids DHA and EPA occur together in fish oil, studies show that each of these fatty acids delivers unique health benefits.

While most people obtain enough DHA from fish oil supplements, some individuals wish to boost their DHA levels for cognitive health.

For example, DHA accounts for 40% of the polyunsaturated fats in the brain!

Brain synapses—the connectors through which brain neurons communicate with each other—have a higher concentration of DHA than almost any other tissue in the body.

DHA stimulates the production of neuronal features that underlie learning.

A Crucial Key to Brain Health

Recent studies show that DHA is required for the production of essential neuroprotectins to support healthy cell signaling. In fact, scientists have been focusing research specifically on how sufficient levels of DHA in healthy individuals may support normal mood and behavior in adults and children, as well as normal cognitive function at any age.1-4

Scientists Validated

DHA is a major structural fat in the retina of the eye, accounting for up to 60% of the total polyunsaturated fatty acids (PUFAs).

And a wealth of research demonstrates that this important fatty acid plays an important role in our bodies.5-16

Vegetarians Deficient in DHA

Scientific research has found that the proportions of DHA in body tissue "are substantially lower in vegans and vegetarians" compared with those who regularly eat foods from animal sources.2

A scientific study has found that 200 mg of DHA results in "a large increase in the proportion of DHA in blood lipids in vegetarians and vegans."17

Life Extension members now have access to a purified DHA oil derived entirely from algae cells in culture. Vegetarian Sourced DHA is a premium DHA derived from sustainable algae sources. It meets the most rigid standards of vegan and vegetarian diets.

A bottle containing 30 200 mg vegetarian softgels of Vegetarian Sourced DHA retails for $20. If a member buys four bottles, the price is reduced to just $13.50 per bottle.

References
3. Neurosci Res. 2006 Oct;56(2):159-64

Supportive but not conclusive research shows that consumption of DHA omega-3 fatty acid may reduce the risk of coronary heart disease.

To order Vegetarian Sourced DHA, call 1-800-544-4440 or visit www.LifeExtension.com.
Life Extension® Pycnogenol® French Maritime Pine Bark Extract is a natural plant extract containing procyanidins, bioflavonoids, and other health-giving molecules that synergistically support the body’s natural defenses against major processes that characterize premature aging. Its effectiveness is backed by 40 years of study.

Life Extension® Pycnogenol® French Maritime Pine Bark Extract is designed to counteract premature-aging-related changes by providing support for the following mechanisms:

**MEMBRANE FUNCTION:** Pycnogenol® promotes the integrity and normal characteristics of cell membranes.1-4

**DNA FUNCTION:** Pycnogenol® helps support normal DNA function through antioxidant activity and possibly other mechanisms.5-8

**EASE INFLAMMATION:** Pycnogenol® helps ease inflammation by normal modulation of inflammatory cytokine molecules.9-13

**OXIDATIVE STRESS:** Pycnogenol® supports the normal functioning of healthy antioxidant systems to help suppress free radicals and protect DNA.14-19

**GLYCAITION:** Pycnogenol® supports cellular metabolism of sugar, healthy fasting, and post-meal blood sugar levels already within normal range, and normal sugar absorption in the intestine.20-25

Unlike other forms of pine bark extract, Pycnogenol® is a superior patented and standardized ingredient that has undergone extensive human clinical research to substantiate its numerous anti-aging properties. A bottle of Life Extension® Pycnogenol® French Maritime Pine Bark Extract containing 60 vegetarian capsules retails for $64. If a member buys four bottles, the price is reduced to $54 per bottle. The dose for most people is one capsule daily, so each bottle lasts two months.

Each capsule of Life Extension® Pycnogenol® French Maritime Pine Bark Extract provides:

- Pycnogenol® dried French Maritime pine (Pinus pinaster) extract (bark)(std. to 65% procyanidins (65 mg)) 100 mg
- Vitamin C (as ascorbyl palmitate) 4 mg

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.
Suzanne discusses key topics with Life Extension doctors including:

- Solutions to our nation's #1 killer
- How to detox your liver
- Top anti-aging super foods
- Cortisol - why stress is making you fat
There are approximately 4,000 naturally occurring plant metabolites called bioflavonoids. These compounds are responsible for the vibrant-color of many fruits, vegetables, and flowers. They can also defend your skin against the damaging effects of stress, pollution, and even age itself.

Bioflavonoids have the ability to neutralize reactive oxygen species by donating one of their electrons, thus stabilizing the molecule and breaking the oxidative chain. This can result in visible signs of healthy, more vibrant skin.

Three of the better-known bioflavonoids, quercetin, hesperidin, and rutin, have intriguing research indicating their abilities to prevent and reverse wrinkles, reduce the appearance of age spots, and fight spider veins.
Another interesting property of quercetin is its ability to increase the production of collagen, a substance necessary for vibrant skin.³ This beneficial effect has made it an increasingly popular ingredient in more and more skin care products aimed at combating wrinkles.

**The Secret to Younger-looking Skin**

Only a decade or so ago, anti-aging products concentrated primarily on reducing wrinkles and plumping up the skin to produce a smoother, more youthful appearance. And although combating wrinkles is a necessary step in any anti-aging routine, it’s not the only factor in maintaining younger-looking skin.

Research has demonstrated that there’s another factor that plays a significant role in how old you look: the evenness of your skin tone.¹⁰⁻¹² The ability to lessen the appearance of age spots and the capacity to provide a lightening effect for sallow, age-damaged skin is central to achieving this goal. One of the best ways to do that is with the bioflavonoid hesperidin.⁴
Hesperidin has a similar structure to hydroquinone, a compound that has long been considered the professional gold standard for the treatment of age spots and other hyperpigmentation disorders. Like hydroquinone, hesperidin works by limiting the capacity of the skin cells to produce tyrosinase, the enzyme responsible for producing the skin pigment melanin. However, unlike hydroquinone, hesperidin does not come with a list of side effects. In fact, research has demonstrated that hesperidin safely produces a reduction in tyrosinase activity. By interfering with tyrosinase activity, hesperidin is ultimately able to inhibit the development of age spots.

Hesperidin has outstanding potential for cosmetic use. Its vasoprotective and skin-lightening actions work to counteract many of the visible signs of aging.

**Rejuvenate From the Inside Out**

Wrinkles and age spots aren’t the only visible signs of aging. Spider veins and varicose veins are unsightly and often embarrassing reminders that we’re not as young as we used to be. Although many people believe that these are inevitable factors in the aging process, research has proven that it is possible to defy these signs of old age.

Spider veins and varicose veins occur as a result of the gradual weakening and deterioration of capillaries. In order to maintain healthy blood circulation, it’s imperative that the arteries and capillaries be kept as clean and strong as possible. Unfortunately, being so small, the capillaries are extremely susceptible to damage from free radical assault, aging, and other factors that can lead to compromised integrity and function. This can lead to rupturing and bleeding that is visible as “broken veins” on the surface of the skin. However, maintaining the health of the circulatory system can prevent this type of damage from occurring.

One of the best ways to maintain the health of your capillaries is with a bioflavonoid found naturally in fruits and vegetables called rutin. Rutin has the capacity to regenerate vitamin C after it neutralizes a free radical, thus helping to restore its antioxidant potential. Because vitamin C plays a critical role in the manufacture of collagen, an important component of capillary walls as well as the sustaining framework of the epidermis, this could have a dramatic impact on the health of your skin.

Rutin has the ability to protect skin from damage caused by advanced glycation end products (AGEs). AGEs accelerate the aging of skin cells, which cause the skin to lose elasticity and collagen. One clinical study found that rutin can effectively modulate the breakdown of collagen caused by AGEs.
Rutin’s ability to provide microvascular protection, improve circulation, and defend against free radical damage makes it an excellent ingredient in any natural skin care formulation for aging skin.\textsuperscript{5,6,15,16} Also, because rutin can penetrate the skin, its use in a topical skin care formulation makes it extremely valuable.\textsuperscript{17-19}

**Summary**

As potent as these plant metabolites are on their own, they exhibit an even greater effect when they’re used together, as studies have shown they work synergistically by harmonizing with each other.\textsuperscript{20,21} Together, these three natural ingredients provide the rejuvenating power we need to help redefine aging skin and to fight the signs of premature aging such as spider veins, wrinkles, age spots, and more.

By nourishing and protecting the skin’s ability to heal and reproduce, bioflavonoids like quercetin, hesperidin, and rutin help to safely and naturally restore and maintain a more youthful appearance.

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**

4. Zhu W, Gao J. The use of botanical extracts as topical skin-heal and reproduce, bioflavonoids like quercetin, hesperidin, and rutin help to safely and naturally restore and maintain a more youthful appearance. 

High Potency FAT-SOLUBLE NUTRIENTS in ONE Softgel

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

Just one Super Booster provides:

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

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

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

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

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

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

**JUST ONE SOFTGEL OF SUPER BOOSTER SUPPLIES:**

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

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

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

Contains soybeans.

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

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Overlooked in the effort to support sexual function in aging men is the health of the vascular system. Blood flow through the delicate lining of the arteries (the endothelium) is essential to sexual arousal, so it should come as no surprise that endothelial function is closely associated with male sexual capacity.

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

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

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

**A Powerful Synergy to Support Sexual Health**

The patented blend of the following ingredients positively affects the male physiology in three ways, to provide optimal support:

1. **Pycnogenol®** (standardized French maritime pine bark extract) activates *endothelial nitric oxide synthase* (eNO-S),7 the enzyme required to make *nitric oxide*. Nitric oxide (NO) relaxes the vessels that enable efficient blood flow—the key to healthy male sexual activity and overall vascular health. Pycnogenol® further amplifies this relaxing effect by extending the amount of time nitric oxide remains in the bloodstream.

2. **L-Arginine** is the biological precursor to nitric oxide synthesis in the endothelium.7 It interacts *synergistically* with Pycnogenol® to sustain nitric oxide levels sufficient for healthy sexual function.

3. **Icariin**—from a natural plant extract used in traditional Chinese medicine—has been shown to deactivate the enzyme normally responsible for *winding down* male sexual response, further promoting sustained activity.8 *Prelox® Natural Sex for Men®* contains a standardized extract providing a proprietary form of high-quality icariin.

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

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
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<td>Prelox® Proprietary Blend</td>
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<td>Icariin [Natural Sex® Epimedium sagittatum Extract (aerial parts)]</td>
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A 60-tablet bottle of *Life Extension® Prelox® Natural Sex for Men®* retails for $52. If a member buys four bottles, the price is reduced to just $36 per bottle.

**References**


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To order *Prelox® Natural Sex For Men®*, 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.
A line of skin care products developed by renowned dermatologist Gary Goldfaden, MD

Developed Exclusively for Life Extension®

With topical Cosmesis Bioflavonoid Cream, you can provide your skin with targeted support by harnessing the power of naturally occurring plant metabolites called flavonoids.

Three of the best known ones—quercetin, hesperidin, and rutin—have solid research on their skin-supporting benefits.

**Triple Protection for Vibrant Skin**

Cosmesis Bioflavonoid Cream starts by combatting premature aging at the cellular level with quercetin, one of the most powerful and abundant of the natural flavonoids. Quercetin enhances the viability of your skin cells, which has a direct impact on your skin’s elasticity and collagen. When applied directly to the skin, quercetin helps protect your skin’s antioxidants from sun damage. Quercetin increases the production of collagen, a substance necessary for optimal skin support.

The second flavonoid, hesperidin, helps guard against uneven skin tone by maintaining the activity of tyrosinase, the enzyme responsible for producing the skin pigment melanin.

The third, rutin, can provide targeted support for the capillaries and veins just under the surface of your skin. This boosts the health of your skin by allowing it to receive more oxygen and nutrients.

But as beneficial as these plant metabolites are on their own, they exhibit an even greater effect when they’re used together. That’s why Life Extension® is providing you with the triple benefits of these three flavonoids in one easy-to-use cream called Cosmesis Bioflavonoid Cream.

The combined power of these three natural ingredients provides support to help defend against the visible signs of premature aging.

The retail price for a 1 oz. jar of Cosmesis Bioflavonoid Cream is $46. If a member buys two jars, the price is reduced to just $29.25 a jar.

**References**


To order Cosmesis Bioflavonoid Cream, call 1-800-544-4440 or visit www.LifeExtension.com.
A Partnership in Heart Health

New Chapter Zyflamend & Life Extension Super Omega-3

A Holistic Approach to Cardiovascular Health

Maintaining heart health and a strong cardiovascular system are vital to a healthy body. Diet and exercise are the most important factors. Scientists and doctors both agree that a program of preventive health today is preferable to a treatment program tomorrow. But unfortunately, most Americans don’t eat enough heart-healthy foods or get enough exercise. We now know that there are several additional factors that can support cardiovascular health, including:

• Supporting the body’s healthy inflammation response
• Consuming “good fats” such as Omega-3 fatty acids

What is the Inflammation Response?

Our body’s inflammation response is a natural healing process. We often think of the inflammation response as something we can feel—such as in our joints and muscles where there are large numbers of sensitive nerve endings. But we can also have a response we can’t feel, where sensitive nerves aren’t concentrated—including in the heart and blood vessels. Whether we’re aware of it or not, this inflammation response can affect every organ and cell.

Extensively Researched Herbal Blend

New Chapter’s Zyflamend represents a scientific breakthrough in supporting a healthy inflammation response.* Zyflamend is formulated based on a large body of scientific research showing its ten herbs and spices contain hundreds of plant compounds that support a healthy inflammation response.* Just as important as a daily multivitamin, Zyflamend is the patented herbal protocol to help your whole body’s natural inflammation process stay balanced and healthy every day.* Zyflamend has been studied at leading research institutions and shown to benefit multiple areas of health, including heart health.*

Omega-3 Is Important for Cardiovascular Health

Life Extension’s Super Omega-3 is a premium, scientifically validated fish oil concentrate. Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract promotes a healthy heart.* Fish oils (and other fatty acids) have a tendency to oxidize, rendering them nutritionally inferior. Scientific studies show that when added to fish oil, sesame lignans safeguard against oxidation and direct fatty acids toward pathways that help with inflammatory reactions.† 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.‡


To order Zyflamend or Super Omega-3, call 1-800-544-4440 or visit www.LifeExtension.com

© 2012 New Chapter, Inc.  † According to 2011 SPINS® Market Research  ‡ Supportive but not conclusive evidence shows that consumption of EPA and DHA Omega-3 fatty acids may reduce the risk of coronary heart disease.
For more than two decades, mainstream medical practitioners have been attempting to cure heart disease by blindly “treating” elevated cholesterol with statin drugs. While it is true that high cholesterol levels are strongly associated with cardiovascular risk, recent studies have shown that the use of statins has prolonged, damaging side effects and that their level of actual risk reduction is not as robust as pharmaceutical companies claimed.¹-³

Dr. Sergey Dzugan, MD, PhD, a cardiac surgeon and the author of The Magic of Cholesterol Numbers, has put forth a bold new hypothesis stating that declining hormone levels are the root cause of elevated cholesterol. This cutting-edge approach, known as the “Dzugan Method” stipulates that high cholesterol is caused by the body trying to correct deficient hormone levels by boosting their precursor, cholesterol.

The current method of treating cardiac problems with statins is not a complete solution, as evidenced by the high number of Americans who still suffer heart attacks despite using prescription statins. In this article, you will read about the innovative method that Dr. Dzugan has developed that has demonstrated tremendous success in lowering cholesterol, relieving migraines, and improving the quality of life of patients.
Ed was 57 in August of 2000. Like so many Americans his age, Ed struggled with the realities of aging. He carried multiple diagnoses, including severely elevated cholesterol (330 mg/dL), depression, and insomnia. Ed had also been dealing with severe erectile dysfunction since age 39. He’d begun noticing short-term memory problems, and felt constantly fatigued. Neither he nor his doctor could tell which of his symptoms were related to his cholesterol-lowering medication, and which symptoms resulted from underlying disease. In desperation, Ed turned to Sergey A. Dzugan, MD, PhD, co-founder of the Dzugan Method of hormonorestorative medicine.

Fast-forward to September of 2003. Ed’s total cholesterol was now 187 mg/dL, and he’d lost weight. But the most astonishing thing was that Ed was completely symptom-free! Gone were his depression, his sleepless nights, his flagging energy, and his memory problems. Ed’s erectile dysfunction had resolved, and he approached each day with renewed optimism and vigor.

Ed was among the fortunate few patients who came to see Dr. Dzugan in the early years of his pioneering approach to aging. Since Ed, Dzugan and his colleague Dr. George Rozakis have treated hundreds of similar patients, people with a host of chronic conditions ranging from elevated cholesterol to depression to chronic fatigue syndrome to migraines. In fact, the astonishing thing is that so far, chronic conditions from across the spectrum of disease have yielded to the Dzugan Method — even diseases that appear to be entirely unrelated from a traditional standpoint.

Simply put, Dzugan recognized that elevated cholesterol levels are the consequence of a lifetime of hormonal disturbances. Dzugan calls them “acquired errors of physiology.” By treating those errors — restoring a youthful hormonal milieu — Dzugan and Rozakis routinely see plummeting cholesterol levels. More to the point, they also see dramatic reversal of complaints such as Ed’s, accompanied by stunning improvements in overall quality of life. This innovative approach to maintaining healthy bio-markers remains largely unknown to mainstream physicians.

Cholesterol: Deadly Cause or Collateral Consequence?

Cholesterol causes heart disease, right? Therefore lowering cholesterol reduces the risk of heart disease, according to the perceived gospel of mainstream medicine.4,5 Dzugan and Rozakis suggest that this vastly over-simplified view is a potentially dangerous one.

Both sides know that coronary heart disease and stroke are leading causes of death and disability, and have spent decades working to identify their origins. Mainstream researchers now recognize that endothelial dysfunction and inflammation are fundamental to the process. And they’ve correctly implicated cholesterol and its oxidation products...
as critical risk factors that contribute to early endothelial damage and ultimately produce atherosclerosis. But that's where the discussion stops for most mainstream practitioners, who tend to think in terms of “one condition, one drug.” That accounts for mainstream medicine’s (and Big Pharma’s) almost compulsively narrow focus on cholesterol as a risk factor, and on cholesterol-lowering drugs as risk reducers.

Dzugan and Rozakis, on the other hand, argue persuasively that the benefits of cholesterol lowering drugs (CLDs) are overstated — and that their risks are underemphasized. A 2010 analysis in the prestigious Archives of Internal Medicine supports their position. It concludes that the recent JUPITER trial (Justification for the Use of Statins in Primary Prevention) was flawed and that its results “do not support the use of statin treatment for primary prevention of cardiovascular diseases and raise troubling questions concerning the role of commercial sponsors.”

Dzugan and Rozakis take a decidedly different approach. Their stunning revelation was that cholesterol elevations in fact result from a host of “acquired errors of physiology.” In other words, we have elevated cholesterol with aging because we’ve accumulated a number of distinct, measurable, and treatable derangements of our basic metabolism. That would explain why lowering cholesterol with drug therapy may not only be ineffective, it might be dangerous. Indeed, says Dzugan, “It is absolutely not true that low cholesterol is healthier!” To better understand this revolutionary statement we need to examine Dzugan’s original thinking going back 15 years.

**A New Hypothesis**

Sergey Dzugan is a keen observer of the natural world, and one who readily thinks outside the boundaries of conventional medical thought. Dzugan noticed that side effects of cholesterol-lowering drugs mimic symptoms of fibromyalgia and chronic fatigue syndrome (CFS), and that both conditions have shown in studies to be related to hormonal disruptions. He noticed the evidence that steroid hormones influence cholesterol levels. He observed the natural increase in cholesterol production during periods of increased physiologic demand, such as pregnancy, childhood growth spurts, stress, and wound healing. He was intrigued by observations that total cholesterol levels are often surprisingly low in a host of mental illnesses and substance abuse. Finally, Dzugan noted the substantial proportion of people who develop cardiovascular disease who do not have elevated cholesterol levels.

Like all brilliant scientists, Dzugan was able to assemble these apparently disparate observations into a coherent new theory based on a common thread of evidence, namely the interrelationships between cholesterol and steroid hormones. All steroid hormones in our bodies are produced from cholesterol as a precursor — the human body uses more than 60 such hormones, with the sex hormones and their related molecules being among the most important.

As in many chemical reactions, the supply of the precursor molecule directly influences the supply of the final product. Dzugan knew that levels of steroid hormones, especially sex hormones and related molecules, decline with advancing age. And low sex hormone levels are independently associated with elevated cholesterol at all phases of life.

Together these facts led Dzugan to his remarkable insight: elevated cholesterol is the reactive consequence of reduced steroid hormone production in the body. That is, normal physiologic feedback mechanisms in the steroid production system react to the age-related decline in steroid hormones by increasing the amount of cholesterol, in an effort to boost...
production back to more youthful levels. By this line of reasoning, then, elevated cholesterol is, paradoxically, a normal (if not a healthy) response to falling steroid hormones with age.

Dzugan’s hypothesis is readily tested. If it is correct, then by carefully restoring steroid hormone levels to their optimal, youthful concentrations, we should see an immediate drop in total cholesterol. Of course, we would also expect to see improvement in other physiologic parameters that rely on healthy steroid levels as well.

**A Pair of Landmark Studies**

Dzugan set out to test his radical hypothesis with a bold new strategy in 1996. He defined for the first time the notion of **hormonorestorative therapy (HT)** for the regimen that was used in his first group of patients. According to Dzugan’s study protocol, HT involves therapy with multiple bio-identical hormones, administered in proper ratios and on dosing schedules designed to simulate the natural human production cycle to restore hormone concentrations to their optimal levels.

Dzugan stresses that his method does not involve administering standard doses of hormones across the board. The vital first step is comprehensive blood testing to determine baseline levels. The next is to use that information to bring each hormone, not to its “normal” level for age (because those levels are too low by definition), but rather to the upper one-third of the range for a healthy young adult 20-30 years old. Finally, frequent re-testing is required, since changing levels of one hormone always affects levels of the others, often requiring dose modifications. This is why Dzugan uses the term “optimization” rather than “normalization” for his target hormone levels.

In addition, Dzugan’s method involves administering the hormones in physiologically appropriate patterns that mimic their natural pulsatile release in the body. And he stresses the use of human, or bio-identical hormones, with discontinuation of any synthetic or animal-derived hormones the patient may already be taking.

Dzugan and Rozakis also test for and restore vitamin D3 to its optimal levels, because the body uses cholesterol to manufacture D3. And of course, all of this implies that there’s simply no fixed regimen for every patient — each person must receive individualized therapy.

But does it work? Dzugan’s results to date have been nothing short of dramatic. In his first study, he analyzed 20 consecutive patients with high cholesterol (mean age of 59 years). Dzugan obtained a lipid profile and determined levels of a panel of hormones — pregnenolone, dehydroepiandrosterone sulfate (DHEA-S), progesterone, total estrogen, and total testosterone. Each patient received hormonorestorative therapy, consisting of some or all of those 5 hormones tailored to meet his or her specific needs as determined by baseline levels and by the target levels for youthful adults.

All patients responded to hormonorestorative therapy with reductions in their total cholesterol, with levels dropping below 200 mg/dL in 60% of patients, and no patient having a final level higher than 226 mg/dL. The average total cholesterol level before treatment was 264 mg/dL, while post-treatment it was 188 mg/dL, representing an average drop in total cholesterol levels of 29%. No patient exhibited complications or side effects related to hormonorestorative therapy, and most patients described markedly improved quality of life.

Good scientists never accept a single positive result as proof of a hypothesis — they repeat their work, ideally with larger sample sizes. Dzugan is a good scientist, and in 2010 he and his colleagues published their follow-up findings. This time they studied 112 patients with elevated cholesterol and a mean age of 54. They obtained similar baseline labs, and provided similar hormonorestorative therapy, adding also, as needed, thyroid hormone, melatonin, and (rarely) hydrocortisone.

Their results were as dramatic as the first time. Mean serum total cholesterol dropped from 253 mg/dL to 191 mg/dL, a drop of 25%. Sixty-three percent of patients saw their high cholesterol restored to safe levels; the remaining 37%...
still had levels slightly higher than normal but substantially lower than at baseline. LDL cholesterol and triglycerides fell markedly in all patients, and no patient experienced a hormone-related adverse event.

Dzugan is quick to point out a surprising finding from this second study: HDL (“good”) cholesterol actually decreased slightly during hormonorestorative therapy, from a mean of 63 to 50 in the study group as a whole. Dzugan interprets this apparent paradox as a good sign. He notes that a primary function of HDL is to transport excess cholesterol away from tissue accumulations back to the liver for degradation. Hormonorestorative therapy normalizes total cholesterol physiologically, by taking away the need for it to support hormone production. In that case there’s no longer a need for the extra HDL carrier molecules, and their level would in fact be expected to decrease.

Here’s how Dzugan summarizes this stunning vindication of his theory. Elevated cholesterol levels, he says, are true risk factors or markers — but not always the cause — of coronary heart disease. Rather, it is the age-related decline in steroid hormones, particularly the sex hormones estrogen, progesterone, testosterone, DHEA, and pregnenolone, that triggers a feedback loop to elevate cholesterol concentrations. By this mechanism the body is striving to support levels of vital steroid hormones it needs for tissue repair and maintenance, and to respond to physiologic stresses. But because of age-impaired hormone synthesis mechanisms, the elevated cholesterol can’t actually contribute to restoring hormones to their optimum levels.

The end result, a persistently elevated cholesterol level, is indeed damaging. It ultimately produces the conditions we recognize as coronary heart disease, stroke, and their complications. Low hormone levels themselves can also be a cause of these problems. But Dzugan’s key point is that trying to correct the problem with cholesterol-lowering drugs (CLD’s) is wrong at the outset, and has no physiologic foundation. In Dzugan’s colorful terminology, “CLD’s ‘fight’ with the consequence (high cholesterol) rather than with the cause (low levels of steroid hormones).”

In a recent interview Dzugan drily noted that, “Chasing cholesterol is good business for doctors and pharmaceutical companies, but it has nothing to do with health.”

**Expanding the Concept: The Dzugan Method**

Flushed with the success of their studies of hormonorestorative therapy and cholesterol, Dzugan, Rozakis, and colleagues turned to a variety of other conditions as they fully developed their approach to restorative medicine. Say Dzugan and Rozakis, “The restorative medicine approach is effective for the diseases and conditions caused by physiologic errors because they are all basically the same disease.” That’s radical talk even for cutting-edge thinkers. Dzugan himself asks rhetorically, “How can heart disease be the same as migraine, or arthritis, or depression, or Alzheimer’s disease?” His answer: because they are all ultimately caused by the same set of core problems: physiologic and hormone imbalances that result from a lifetime of acquired errors in physiology. Dzugan’s ground-breaking new method is based on his application of this fundamental truth.

Today’s standard “single mode” therapy treats each individual condition, deficiency, or excess with one (or often several) drugs, each of which further perturbs your physiology. The multimodal Dzugan method involves treating many apparently unrelated conditions (for example, menopause, erectile dysfunction, high cholesterol, fatigue, and migraine) with a relatively small number of hormones and nutraceuticals, which act in concert to stabilize and normalize your physiology.
Dzugan’s patients, regardless of their apparent diagnosis, undergo careful screening with exhaustive medical histories and comprehensive blood testing, including determinations of steroid hormone status. A personalized program of hormone balancing is then prescribed, aimed at restoring those optimal, youthful levels of hormones. An important addition is the use of probiotics and elimination of intestinal parasites, both of which help to restore normal intestinal ecology. The beauty of this method is in its simplicity and individuality. See the interrelationships and balance the hormones, Dzugan suggests, and you will succeed in treating multiple conditions.

Ever-Growing Success

Dzugan’s method is not a vague academic hypothesis — it is showing dramatic success in managing a growing number of challenging conditions, including conditions as apparently disparate as migraines and eye disease.

Migraine headaches plague millions of people, affecting up to 12% of the population in some countries. Modern medicine remains woefully inadequate at managing these severe and painful attacks. As a result we use a host of partially effective drugs, many with substantial side effects, and none that reliably provide complete relief. In fact, migraines are widely held to be incurable; we tell patients that we can manage their symptoms at best, but that they’ll have to suffer from the disease forever.

Through a thorough review of the literature and his unparalleled understanding of basic human physiology, Dr. Dzugan reached a remarkable conclusion: perhaps migraines, like lipid disturbances, reflect age-related declines in hormone regulation and loss of metabolic integrity. Furthermore, Drs. Dzugan and Rozakis have observed that these physiologic disturbances can occur at any age. In fact, people with migraines are more likely to have elevated cholesterol and to be at risk for cardiovascular disease than non-migraine patients.

As with the cholesterol hypothesis, Dzugan needed to verify his hunch with a clinical study. Between 1999 and 2005, he treated 30 migraine patients by evaluating their metabolic status and hormone levels, correcting deficiencies and restoring the balance on an individualized basis. In addition to migraines, Dzugan’s patients virtually all had concurrent chronic illnesses, ranging from chronic fatigue syndrome and depression, to lipid disorders, sleep disorders, gastrointestinal disorders, and fibromyalgia. Lab tests revealed disturbing steroid hormone deficiencies.

In this case he not only restored optimal hormonal balance, but he also provided mineral supplements to correct patients’ calcium and magnesium levels, and kava root extract plus melatonin to “reset” the pineal gland function. Finally, he provided probiotic supplements in recognition of the close relationship between the intestine and the central nervous system.

Every single patient responded to Dzugan’s unique system of migraine management. No patient continues to have migraine symptoms, and all remain free of their concurrent illnesses as well. Total cholesterol normalized in 92% of patients, and no side effects of therapy were detected.

These dramatic results led Dzugan to conclude, “Simultaneous restoration of neurohormonal and metabolic integrity in migraine patients was a very effective treatment approach and was typically associated with a complete management of migraine. A new multimodal method of migraine treatment could be an effective physiologic intervention for people with migraines and could be an inexpensive resource for the healthcare system.”

In a 2010 report in the European Ophthalmic Review, Dzugan and colleague Dr. George Rozakis apply similar thinking to the vexing problem of age-related macu-
lar degeneration (AMD). AMD is a vision-stealing condition affecting millions of people as they age. The finding of cholesterol deposits in the characteristic retinal lesions of AMD led Rozakis and Dzugan to consider whether hormone deficits were leading to a compensatory build-up of cholesterol. Such a build-up would be exactly analogous to the known elevation of serum cholesterol in response to age-related hormone deficiencies. Said differently, when cholesterol levels are artificially driven too low with high-dose statin drugs, cholesterol may be over-synthesized in the maculae, leading to this blinding condition. Most people do not know that in addition to its primary production in the liver, cholesterol is synthesized in cells throughout the body.

Dzugan and Rozakis now embrace a multimodal combination of hormones, nutrients, and vitamins to strike at the underlying causes of the disease.

**Summary**

Dr. Dzugan and his foresighted colleagues have discovered a new fundamental and unifying truth about human aging. They recognize that conditions we traditionally view as primary causes (such as elevated cholesterol) may in fact be simply the effects of accumulated errors of physiology. The implications are enormous: when we repair a lifetime of errors of physiology using a tailored, multimodal therapeutic approach, we see truly remarkable results in conditions that otherwise perplex mainstream medicine.

**References**

THE STAGGERING TRUTH ABOUT CHOLESTEROL

Dr. Dzugan and his foresighted colleagues have discovered a new fundamental and unifying truth about human aging. They recognize that elevated cholesterol may in fact simply be the result of accumulated errors of physiology throughout a lifetime.

ENORMOUS IMPLICATIONS

If the theories in The Magic of Cholesterol Numbers are true, then when humans repair a lifetime of errors of physiology using tailored, multimodal therapeutic approaches, they can see truly remarkable results in conditions that otherwise perplex mainstream medicine.

WHAT YOU’LL LEARN

In The Magic of Cholesterol Numbers, you’ll gain knowledge about:

- Why mainstream doctors have taken a disastrous approach to cholesterol.
- What the Atherosclerosis – Cholesterol Axis is and why it’s important.
- What the REAL problems created by high and low cholesterol are.
- How cholesterol and steroid hormones are linked.
- What the “Grandmother” of steroids truly is.
- Why there are so many unfavorable misconceptions about estrogen in women.
- How Dr. Dzugan’s cutting edge hypothesis about high cholesterol is changing medicine.
- And much, much more!

Buy The Magic of Cholesterol TODAY and read about the incredible CLINICAL EVIDENCE that proves Dr. Dzugan is revolutionizing medicine.

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Retail price: $29.95
Member price: $22.46
Unlike commercial blood tests that evaluate only a narrow range of risk factors, Life Extension’s Male and Female Blood Test Panels measure a wide range of blood markers that predispose people to common age-related diseases. Just look at the huge number of parameters included in the Male and Female Blood Test Panels:

### MALE PANEL

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

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IS IT LOW T?

PLEASE ANSWER YES OR NO

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<td>3. DO YOU HAVE A DECREASE IN STRENGTH AND/OR ENDURANCE?</td>
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<td>4. HAVE YOU LOST HEIGHT?</td>
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<tr>
<td>5. HAVE YOU NOTICED A DECREASED &quot;ENJOYMENT OF LIFE&quot;?</td>
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<tr>
<td>6. ARE YOU SAD AND/OR GRUMPY?</td>
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<td>7. ARE YOUR ERECTIONS LESS STRONG?</td>
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<tr>
<td>8. HAVE YOU NOTICED A RECENT DETERIORATION IN YOUR ABILITY TO PLAY SPORTS?</td>
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<td>9. ARE YOU FALLING ASLEEP AFTER DINNER?</td>
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<tr>
<td>10. HAS THERE BEEN A RECENT DETERIORATION IN YOUR WORK PERFORMANCE?</td>
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The above AADM* questionnaire was developed by John E. Morley, M.D., J.Ch. It is to be used solely as a screening tool to assist a physician in diagnosing androgen (testosterone) deficiency. *Morgem Deficiency in the Aging Male.

IF YOU HAVE ANSWERED YES TO #1, #7, OR ANY THREE OTHERS, YOU MAY HAVE SYMPTOMS ASSOCIATED WITH LOW TESTOSTERONE.

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OVER 20 LOCATIONS NATIONWIDE
Although celery is often a complimentary addition to soups and dishes, its substantial health protection makes it a star player in any meal. Each stalk of celery, along with its seeds and leaves, contains vitamin K, folate, vitamin A, potassium, vitamin C, and molybdenum. It also contains a hefty dose of the unique compound 3-n-butylphthalide, which has shown to enhance cognitive function in a mouse model of Alzheimer’s disease. Incorporating celery into your daily diet can provide numerous health benefits, from treating gout to safeguarding against cardiovascular disease, cancer, and diabetes.
Celery’s Tale

Celery (Apium graveolens) belongs to the Umbelliferae family and is derived from wild celery that contains more leaves and less stalks. Although celery is believed to have originated in the Mediterranean, it’s also indigenous to India, Nepal, and China. It was first recognized for its medicinal properties as early as the 9th century before being utilized as a food source during the Middle Ages. Celery didn’t become a common vegetable until the 1800s in Europe and later was introduced to the United States in the 1900s.¹

Anti-Cancer Power

A growing body of evidence indicates that flavonoids are an integral component of any cancer-preventive strategy.² Two of these flavonoids, apigenin and luteolin, found in celery are distinguished for their ability to protect against various types of cancer.³ In one study reported in the International Journal of Cancer, scientists compared the intake of five flavonoids in women with and without ovarian cancer.³ After adjusting for confounding factors of tubal ligation (tubes tied), physical activity and duration of oral contraceptive use, researchers found only apigenin to be associated with reduced ovarian cancer risk, with the highest intake of the flavonoid linked to a 21% reduction risk.³ It is believed apigenin works by decreasing the expression of vascular endothelial growth factor (VEGF), a protein that stimulates the formation of new blood vessels that are vital for tumor growth.⁵

Pancreatic cancer is frequently diagnosed at more advanced stages in patients, making it difficult to treat and causing poor survival rates.⁶ Compelling data suggests that apigenin can combat pancreatic cancer through multiple mechanisms including impairing glucose uptake,⁷ triggering apoptosis (programmed cell death),⁸ and disrupting the cancer cell cycle.⁹

Other laboratory findings show that apigenin has inhibitory growth effects against thyroid, leukemia, lung, and prostate cancers.¹⁰ Luteolin, another celery flavonoid, has potent anti-cancer activity, particularly against colon cancer. Colon cancer cells secrete insulin-like growth factor II (IGF II), which plays a major role in signaling uncontrolled cell growth and replication. In a study published in the journal BMC Gastroenterology, researchers observed that luteolin suppresses the secretion of IGF II, thus halting the progression of colon cancer.¹¹

Both apigenin and luteolin provide a powerful defense against breast cancer. Italian researchers discovered that the highest intake of both flavonoids reduced the risk of breast cancer by 19% compared to the lowest intakes.¹²

Cardioprotective Effects

The heart promoting properties of celery are related to its ability to reduce the development of major risk factors that contribute to cardiovascular disease. In one study, researchers at the Ulleval University Hospital in Norway observed that increasing intakes of vitamin C rich foods, such as celery, led to less thickening of the carotid artery, thereby ensuring optimal blood flow and preventing atherosclerosis and subsequent heart disease.¹³

In a study published in the journal Pharmacology Magazine, scientists found that rats supplemented with celery seed extract daily for 60 days significantly reduced triglycerides levels by 22% and LDL cholesterol by 27%, along with a 28% increase in beneficial HDL cholesterol.¹⁴

Selecting and Storing Celery¹

1. Although it’s grown all-year round, celery is freshest during the summer months.
2. Choose crisp, compact, and relatively light celery in which the stalks snap off easily.
3. The leaves of the celery should be pale to bright green and devoid of yellow and black patches.
4. Store in a container or plastic bag in the refrigerator to retain firmness and freshness.
lowering effects of celery are due to the increased conversion of cholesterol into bile acids, which are eliminated in feces. In addition to its beneficial effects on lipid levels, celery also shows promise in lowering blood pressure. In the laboratory, celery seeds exhibited potent inhibition of angiotensin converting enzyme (ACE), a protein responsible for constricting blood vessels and elevating blood pressure. This may partially explain the results reported in a study published in the Tehran University Medical Journal in which 37 hypertensive patients between the ages of 45 and 65 administered 6 grams of celery seed powder significantly lowered mean systolic and diastolic readings by 17.1 and 4.4 mmHg, respectively.

**Diabetes Prevention**

By 2030, a projected 439 million adults worldwide will be living with diabetes. Emerging research indicates that consuming greater amounts of vitamin K, present in celery, can decrease the risk of developing this concerning disease. In a recent study, researchers at the University Medical Center Utrecht in the Netherlands assessed the relationship between vitamin K intake and the risk of type II diabetes in more than 38,000 Dutch men and women aged 20-70 years over a 10-year period. Taking into account confounding factors such as age, waist circumference, smoking, and physical activity, researchers concluded that those with the highest intake of vitamin K were nearly 20% less likely to develop type II diabetes compared with those who had the lowest intake of the vitamin.

Although the mechanisms are not yet clear, the research team noted that vitamin K might exert its protective effect by reducing inflammation, which in turn increases insulin sensitivity and improves glucose metabolism. The anti-diabetic benefits of celery can also be attributed to its unique ability to fight Helicobacter pylori (H. pylori), a bacterium that leads to a near three-fold increase in the risk of type II diabetes. In a study reported in the Journal of Pharmacy and Pharmacology, researchers identified an antimicrobial compound in celery seeds that is highly effective in blocking the growth of gastric H. pylori.

**Relieving Gout**

While research has focused primarily on finding safe treatments for rheumatoid arthritis and osteoarthritis, the incidence of gout has quietly risen in the past two decades. Gout is a form of arthritis characterized by elevated levels of uric acid, which causes the formation of crystals in joints that produce inflammation and pain. Celery might help treat gout by modulating uric acid levels. Egyptian researchers tested the effects of different plant extracts, including celery seed, on uric acid levels in rats induced with gout. At the end of the study, rats with gouty arthritis treated with celery seed extracts experienced a 56% reduction in uric acid levels, the highest of all the plant extracts.
Super Foods

Additional research shows that celery seeds might have potential use in alleviating inflammation and pain associated with gout. A study reported in the journal *Phytomedicine* revealed that celery seeds can provide dramatic pain relief by suppressing cyclooxygenase-2 (COX-2), an enzyme involved in the synthesis of pro-inflammatory cells.

**Summary**

While celery is regularly added to soups and dishes as a complementary component, its vast amount of nutrients, from vitamin K, potassium, folate, and magnesium, to its potent flavonoids apigenin and luteolin, make it a central player in any health-boosting meal. Celery’s stalks, along with its seeds and leaves, offer tremendous protection against heart disease, cancer, and diabetes, in addition to providing an effective treatment for gout. An easy way to incorporate celery into your diet is to eat the stalks with peanut butter or use it as a main vegetable in soups and salads.

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**

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OCTOBER 19 - 21, 2012

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Life Extension Research - Optimal Diets for Health
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We will give full credit of the registration fee toward Alcor membership sign-up fees!

SPEAKERS & EVENTS

Aubrey de Grey from the SENS Foundation
Joshua Mitteldorf on programmed aging
Michael Rose on “How to Control Your Aging”
Panel discussion with de Grey, Mitteldorf, and Rose
& more, including a tour of the Alcor facility
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.

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2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit; whichever is applicable (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be sent directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable health advisors by calling 1-800-226-2370; or review the results with your personal physician.

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**For Our Local Members:**
For those residing in the Ft. Lauderdale, Florida area, blood-draws are also performed at the Life Extension Nutrition Center from 9:00 am to 2:00 pm Monday through Saturday. Simply purchase the blood test and have it drawn with no wait! Our address is 5990 North Federal Highway, Ft. Lauderdale, FL 33308-2633.

---

**Most Popular Panels**
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**Comprehensive Panels**
- **Male Life Extension Panel (LC322582)**
  - CBC/Chemistry Profile
  - Homocysteine
  - Free Testosterone
  - PSA
  - C-Reactive Protein (high-sensitivity)
  - Estradiol
  - Total Testosterone
  - Vitamin D (25- hydroxy)
  - DHEA-S
  - Total and Free Testosterone
  - Total Testosterone
  - C-Reactive Protein (high-sensitivity)

- **Female Life Extension Panel (LC322535)**
  - CBC/Chemistry Profile
  - Estradiol
  - Progesterone
  - Total Testosterone
  - Vitamin D (25- hydroxy)
  - C-Reactive Protein (high-sensitivity)

- **Male Weight Loss Panel (LCWLM)**
  - CBC/Chemistry Profile
  - Insulin
  - Free Testosterone
  - Estradiol
  - Free T3
  - Free T4
  - C-Reactive Protein (high-sensitivity)

- **Female Weight Loss Panel (LCWLF)**
  - CBC/Chemistry Profile
  - Progesterone
  - Estradiol
  - Total Testosterone
  - Free T3
  - Free T4
  - C-Reactive Protein (high-sensitivity)

- **Male Hormone Add-on Panel (LCADDM)**
  - Pregnenolone and Dihydrotestosterone (DHT)
  - To provide an even more in-depth analysis of a man’s hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.

- **Female Hormone Add-on Panel (LCADDF)**
  - Pregnenolone and Total Estrogens
  - To provide an even more in-depth analysis of a woman’s hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.

- **Male Extension Thyroid Panel (LC304131)**
  - TSH, T4, Free T3, Free T4.

- **Female Comprehensive Hormone Panel**
  - (LC100011) CBC/Chemistry Profile
    - DHEA-S, Estradiol, Total and Free Testosterone, SHBG, TSH, Free T3.

- **Male Comprehensive Hormone Panel**
  - (LC100010) CBC/Chemistry Profile
    - DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.

**The CBC/Chemistry Profile (LC381822)**
- Over 40 Parameters Tested
- Cardiovascular Risk Profile
  - Total Cholesterol
  - HDL Cholesterol
  - LDL Cholesterol
  - Triglycerides
  - Estimated CHD Risk
  - Total and Free Testosterone
  - Total Testosterone
  - Vitamin D (25- hydroxy)
  - C-Reactive Protein

**Kidney Function Panel**
- BUN
- Creatinine
- Uric Acid

**Blood Protein Levels**
- Total Protein
- Globulin
- Albumin
- Albumin/Globulin Ratio

**Blood Count/Red and White Blood Cell Profile**
- Red Blood Cell Count
- White Blood Cell Count
- Platelet Count
- Hemoglobin
- Hemocrit
-MCV
- Monocytes
- Base
- Polynucleated Cells

**Blood Mineral Panel**
- Calcium
- Sodium
- Potassium
- Phosphorus

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

**General Health**
- Hemoglobin A1C (HBATC) (LC001453)
  - 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 (250H) (LC081950)**
  - This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.

**Food Safe Allergy Test**
- LCM73001
  - This test measures delayed (IgG) food allergies for 95 common foods.

**Aspirinworks™** (LC501620)
  - Taking aspirin to prevent heart attack? Is it working? This is a random urine test used to measure your resistance to aspirin.

**Omega Score™** (LC000189)
  - Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.

**CoQ10™** (Coenzyme Q10) (LC120251)
  - This test is used to check the blood level of CoQ10 and will enable more precise dosing for anyone seeking to achieve and maintain high levels of this critical antioxidant.

---

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

** This test is packaged as a kit, requiring a finger stick performed at home.
This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.

**C-REACTIVE PROTEIN (HIGH-SENSITIVITY)** (LC120766) $42
Measures inflammation factors in arteries. Recent studies indicate that C-reactive protein may be the most accurate risk factor for predicting heart attack and stroke.

**CARDIOVASCULAR RISK PANEL** (LC100008) $145
CBC/Chemistry profile (see description), Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Fibrinopeptide A, Homocysteine.

**VAP PLUS** (LC100009) $330
VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy.

**FIBRINOGEN** (LC01610) $31
High levels of this blood-clotting factor increase the risk of heart attack and stroke.

**HOMOCYSTEINE** (LC08994) $64
Can indicate if you are likely to have a heart attack or stroke. Even if you take folic acid, you still may have dangerously high levels of this artery-clotting metabolic debris that can be lowered with high doses of TMG, vitamin B6, and vitamin B12.

**VAP™ TEST** (LC804500) $90
The VAP cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subfractions.

**MALE HEALTH**

**PSA (PROSTATE-SPECIFIC ANTIGEN)** (LC01322) $31
Can provide an early warning sign for prostate disorders and possible cancer.

**FREE-PSA (INCLUDES TOTAL PSA)** (LC480780) $61
Recommended to determine if an elevated PSA is indicative of prostate cancer.

**BONE HEALTH**

**OSTEOCALCIN** (LC010249) $91
Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis.

**DPD CROSS LINK URINE TEST** (LC511105) $79
The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis.
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Acetyl-L-Carnitine-Argetine
Branchained Amino Acids
D, L-Phenylalanine Capsules
GABA Powder
Glycine Capsules
Glycine Powder
L-Arginine Capsules
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Bone-Up™
Bone Restore™
Bone Strength Formula w/CoAct™
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Chondrokos
Fast Acting Joint Formula
Glucosamine Chondroitin Capsules

BRAIN HEALTH
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Acetyl-L-Carnitine-Argetine
CDP Choline Capsules
Cognitex* with NeuroProtection Complex
Cognitex* w/ Pregnenolone & NeuroProtection Complex
Cognitex* Basics
DAME
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin with B6 and BHA
Lecithin Granules
Methylcobalamin Lozenges
Neuro-Mag™ Magnesium L-Threonate
Optimized Ashwagandha Extract
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Blackcurrant Freeze Dried Extract
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Eye Pressure Support with Mirtogenol®
Overcast Polarized Sunglasses
Solarshield Sunglasses
Super Zeaxanthin with Lutein & Meso-Zeaxanthin and C3G
Vision Optimizer

FIBER
AppleWise Polyphenol
Fiber Food
Hi-Lignan® Nutri-Flax®
TruFiber®
WellBetX PGX® Soluble Fiber Blend

FOOD
Spicy Cruciferous Vegetable Soup
Cruciferous Vegetable Soup
Rich Rewards Coffee

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

HEART HEALTH
AppleWise Polyphenol
Advanced Lipid Control
Aspirin (Enteric Coated)
Cho-Less™
D-Ribose Capsules
D-Ribose Powder
Endothelial Defense™ with Full-Spectrum Pomegranate™
Fibrinogen Resist
Forskolin
Garlicforce™
Homocysteine Resist
Kril Healthy Joint Formula
Natural BP Management
Olive Leaf Vascular Support
Peak ATP® w/GlycoCarn®
PhosphOmega®
Policosanol
Pycnogenol® French Maritime Pine Bark Extract
Red Yeast Rice
Super Absorbable CoQ10™ w/d-Limonene
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Mega Green Tea Extract (Decaffeinated)
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Liver Force
Liver Efficiency Formula
Certified European Milk Thistle
Hepatopro
SAMe
Silymarin

MINERALS
Bosil
Bone Restore
Bone Strength Formula w/CoAct®
Bone-Up™
Boron Capsules
Calcium Citrate with D3
Chromium Ultra
Copper
D-Strum’s Intensive Bone Formula
Floradix® Iron & Herbs
Floradix® Iron & Herbs

HORMONES
Advanced Natural Sex for Women®
Cordyceps CS-4
7-Keto® DHEA
DHEA
DHEA Complete
GH Pituitary Support Day Formula
GH Pituitary Support Night Formula
Melatonin
Melatonin Timed Release
Natural Estrogen with Pomegranate Extract
Pregnenolone
ProgestaCare for Women
Pure IGF
Super Miraforte with Standardized Lignans

IMMUNE ENHANCEMENT
AHCC® (Active Hexose Correlated Compound)
Aloe Vera Force™
Buffered Vitamin C Powder
Echinacea
Enhanced Life Extension Whey Protein
J26 Hyperimmune Egg
Immune Protect with PARACTIN®
Lactoferin
Lifeshield® Immunity™
Maitake SX-Fraction
Norwegian Shark Liver Oil
Optimized Fucoidan w/ Maritech® 926
Primal Defense™
ProBoost™ Thymic Protein A
Pure Gar™
Sambu® Guard
Supercritical Oreganoforce™
Thymic Immune Factors
Vitamin C with Dihydroquercetin
Zinc Lozenges with Vitamin C

INFLAMMATORY REACTIONS
Arthro-Immune Joint Support
ArthroMax™ with Theraflavins
Boswellia
Boswellia Topical Cream
Bromelain (Specially-coated)
DHA (Vegetarian Sourced)
Emulsified Norwegian Cod Liver Oil
Emulsified Super Twin EPA/DHA
Fast Acting Joint Formula
Ginger Force
Kril Oil
5-LOX Inhibitor w/ AprèsFlex™
Mega EPA/DHA
Mega GLA with Sesame Lignans
MSM
Natural Relief 1222™ Cream
Omega-3 Whirl
Serrafizyme
SOZyme™ with GliSODin® and Wolfberry
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Tart Cherry
Udo’s Choice Oil
Zyflamend® Tiny Caps®

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<th>Member Each</th>
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<td>ACETYL-L-CARNITINE - 500 mg, 100 caps</td>
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**SUB-TOTAL OF COLUMN 1**

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**SUB-TOTAL OF COLUMN 3**

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

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<td>CORDULUS SUPER STRENGTH - 600 mg, 150 veg. caps</td>
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<td>COSMESIS ANTI-GLYCATION SERUM - 1 oz W/BLUEBERRY &amp; POMEGRANATE EXTRACTS</td>
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<td>COSMESIS BIOFLAVONOID CREAM - 1 oz jar</td>
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<td>COSMESIS BROCCOLI SPROUT CREAM - 1 oz</td>
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<td>COSMESIS CORRECTIVE CLEARING MASK - 2 oz</td>
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<td>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz</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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**SUB-TOTAL OF COLUMN 5**
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<td>DHEA (VEGETARIAN SOURCED) - 200 mg, 30 veg. softgels</td>
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<td>DHEA - 25 mg, 100 tablets (dissolve in mouth)</td>
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<td>DMAE BITARTRATE - 150 mg, 200 caps</td>
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<td>DMS - 125 mg, 60 tablets</td>
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<td>DOG MIX - 100 grams powder</td>
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<td>EDTA - 500 mg, 60 caps</td>
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<td>EPHEDRA (Mega) - 120 softgels</td>
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<td>EUROPEAN LEG SOLUTION DIOSSMIN 95 - 600 mg, 30 veg. tabs</td>
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<td>EYE PRESSURE SUPPORT w/MIRTGENOL® - 30 veg. caps</td>
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**SUB-TOTAL OF COLUMN 7**

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<td>FAST-ACTING JOINT FORMULA - 30 caps</td>
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<td>FEM DOPHILUS® - 30 caps</td>
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<td>FIBER FOOD CAPS - 200 caps</td>
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<td>FIBRINOLYSIS RESIST® - 30 veg. caps</td>
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<td>FLAXSEED POWDER (H-LIGNAN® NUTRI-FLAX®) - 16 oz. powder</td>
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<td>FOLATE (OPTIMIZED) (L-METHYLFOLATE) - 1000 mcg - 100 veg. caps</td>
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<td>FOLIC ACID + B12 CAPSULES - 200 caps</td>
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<td>FUCOSIDIN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps</td>
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<td>(OPTIMIZED) GARLIC - 200 veg. caps</td>
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<td>GARLIC FORCE™ - 30 softgels</td>
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<td>GELATIN CAPSULES - 1000 empty caps size “00”</td>
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<td>GH PITUTARY SUPPORT DAY FORMULA - 120 vegetarian tabs</td>
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<td>GH PITUTARY SUPPORT NIGHT FORMULA - 120 veg. caps</td>
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<td>GINSENG - 60 softgels</td>
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<td>GINSEGO BLOBA CERTIFIED EXTRACT® - 120 mg, 365 caps</td>
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<td>GINSEGO EXTRACT (SUPER) - 120 mg, 100 caps</td>
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<td>PANAX RED GINSENG - 60 veg. caps</td>
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<td>GLA WITH SESAMAE LIGNANS (MEGA) - 60 softgels</td>
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<td>(L) GLUTAMINE CAPSULES - 500 mg, 100 caps</td>
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<td>00141</td>
<td>(L) GLUTAMINE POWDER - 100 grams</td>
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**SUB-TOTAL OF COLUMN 8**
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<td>GRAPE EXTRACT w/RESVERATROL (WHOLE) - 60 veg. caps</td>
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<td>5 HTP - 100 mg, 60 caps</td>
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<td>HCA - 90 caps</td>
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<td>HEARDOS™ EAR PLUGS - 1 pack - regular size</td>
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<td>HOLY BASIL - 60 softgel caps</td>
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<td>HOLY BASIL - 120 softgel caps</td>
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<td>HYDRODERM™ - 1 oz</td>
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<td>IDEAL BOWEL SUPPORT 290V - 30 veg. caps</td>
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<td>INOSINE - 500 mg, 60 caps</td>
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**SUB-TOTAL OF COLUMN 9**

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<td>JARRO-DOPHILUS EPS™ - 60 veg. caps</td>
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<td>JARRO-DOPHILUS ORAL PROBIOTIC LISENKE - Pom-Berry flavor, 8 pieces</td>
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<td>3.71</td>
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<td>K w/ADVANCED K2 COMPLEX (SUPER) - 90 softgels</td>
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<td>(NKO) KRILL OIL - 60 softgels</td>
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<td>LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps</td>
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<td>LIFE EXTENSION MIX™ - 490 caps</td>
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**SUB-TOTAL OF COLUMN 10**

To order call: 1.954.766.8433 or 1.800.544.4440
<table>
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**SUB-TOTAL OF COLUMN 11**

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**SUB-TOTAL OF COLUMN 12**

Life Extension members receive 25% off the retail price of all products.
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<td>10.19</td>
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<tr>
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<td>44.25</td>
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<tr>
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**SUB-TOTAL OF COLUMN 13**

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**SUB-TOTAL OF COLUMN 14**

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<td>59.00</td>
<td>44.25</td>
<td></td>
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</tbody>
</table>

**To order call: 1.954.766.8433 or 1.800.544.4440**

**NOVEMBER 2012**

**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**
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**SUB-TOTAL OF COLUMN 15**

**SUB-TOTAL OF COLUMN 16**

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

NOVEMBER 2012
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**SUB-TOTAL OF COLUMN 18**
To order online visit: www.LifeExtension.com

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**SUB-TOTAL OF COLUMN 19**

* These products are not 25% off retail price.
** Not eligible for member discount or member renewal product credit.
*** Due to license restrictions, this product is not for sale to customers outside of the USA.
' Member pricing not valid on this item.

As a member of the Life Extension Foundation®, you have the opportunity to participate in a great scientific endeavor. We are the world’s premier organization dedicated to stopping and reversing aging.

Our 32-year track record shows that we have been five to ten years ahead of conventional and alternative medicine in making new life-saving therapies available to our members.

When you join the Life Extension Foundation®, we update you on the latest published medical research by sending you FREE books. Our most impressive publication is the 1,666-page Disease Prevention and Treatment protocol book that contains novel therapies to treat 133 common diseases of aging. Disease Prevention and Treatment is the only book that combines conventional and alternative therapies in order to implement a treatment regimen for fighting the multiple processes involved in degenerative disease.

Each month, Life Extension Foundation® members receive a magazine packed with the latest medical findings from around the world. Members also can call a toll-free phone number to talk to our knowledgeable health advisors about their health issues.

If your number one priority is good health and a long life, please join our not-for-profit organization.

Four Easy Ways to Join
1. Call toll-free 1-800-544-4440
2. Go to www.lef.org
3. Fax back to 1-866-728-1050
4. Mail to: Life Extension Foundation® • PO Box 407198 Ft. Lauderdale, FL 33340-7198 • Local Number: 954-766-8433

MEMBERSHIP APPLICATION
I want to contribute to your research efforts to extend the healthy human life span. Enclosed is my first year’s membership donation of $75 to join the most elite group of longevity enthusiasts in the world. (Canadians add $7, all others outside the U.S. add $35)

Item code: MEMB1. Call for multiple year membership rates.

Name

Address

City ST ZIP

Email Phone

☐ Check enclosed (payable to Life Extension Foundation®)

☐ Charge my cc:

Card # Exp.

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.

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

* These products are not 25% off retail price.
** Not eligible for member discount or member renewal product credit.
*** Due to license restrictions, this product is not for sale to customers outside of the USA.
' Member pricing not valid on this item.

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

NOVEMBER 2012
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**ORDER TOTALS**

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

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

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

Shipping

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

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<td>(as DimaCal® dicalcium malate, TRAACS® calcium glycinate chelate, calcium fructoborate)</td>
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<td>Vitamin D3</td>
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<td>Magnesium (as magnesium citrate)</td>
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<tr>
<td>Boron</td>
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<td>(calcium fructoborate as patented FruiteX B® OsteoBoron®)</td>
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