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July 2013

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**Exclusive Interview
with Aubrey de Grey**

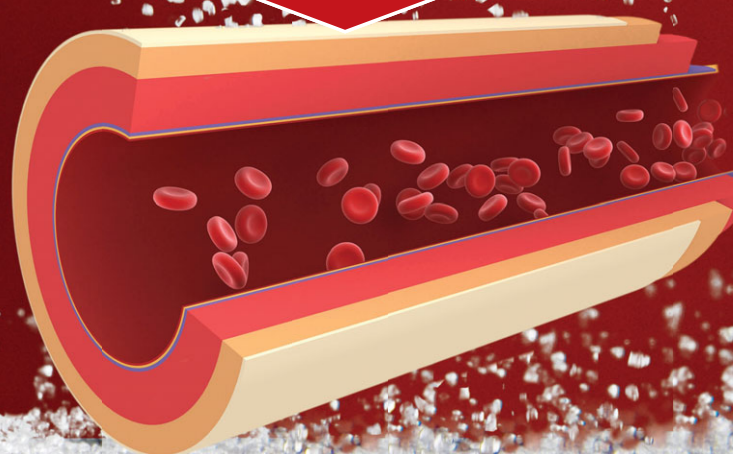
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Reishi Extract Mushroom Complex delivers powerful compounds and represents the **next generation** of natural immune support. Reishi extracts standardized to polysaccharides have been available for years, but most do not standardize for triterpenes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



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A bottle containing 60 vegetarian capsules of **Reishi Extract Mushroom Complex** retails for \$30. If a member buys four bottles, the price reduced to **\$20.25**.

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

REPORTS

**42 AUBREY DE GREY: CUTTING-EDGE LONGEVITY RESEARCH**

Life Extension Foundation® is honored to welcome **Dr. Aubrey de Grey**, the world's most acclaimed biomedical gerontologist, to our Scientific Advisory Board. After inheriting **\$16 million**, he donated **\$13 million** to a non-profit anti-aging organization. In this exclusive interview, Dr. de Grey discusses his seven strategies for ending aging.

**52 SHIELD YOURSELF AGAINST SOLAR RADIATION**

Despite the use of topical sun blocks, skin cancer rates continue to soar. A unique botanical extract, when taken internally, can protect the entire skin from the dangers of solar radiation including DNA mutations, photo-damaged skin (wrinkles), and collagen degradation.

**62 BROAD-SPECTRUM PROTECTION OF ANTHOCYANINS**

Rich in bio-active compounds known as **anthocyanins**, dark berries provide frontline defense against multiple diseases of aging such as cognitive decline, diabetes, cancer, and heart disease. In this special report we discuss the 16 top-ranked anthocyanin-rich food sources that provide superior benefits against aging and age-related diseases.

**78 A SAFER ALTERNATIVE FOR MANAGING DEPRESSION**

About **90%** of patients taking antidepressant medications experience at least one adverse side effect such as suicidal thoughts, anxiety, and sexual dysfunction. Compelling new findings indicate that **saffron** is equally as effective as certain medications in treating depression—but without the unwanted side effects. In addition, saffron can safely treat other mood disorders including anxiety and obsessive-compulsive disorder (OCD).

**28 ON THE COVER****REDUCE STARCH-INDUCED GLUCOSE SURGES**

All starches, even “healthy” grains, create after-meal **glucose** and **insulin** spikes. Researchers have discovered an **enzyme** known as **transglucosidase** that **reduces** the rapid conversion of **starch** to **sugar**—and transforms some of it into beneficial fiber—right in your digestive tract. Laboratory studies have shown that with **transglucosidase**, as much as **40%** of the starch ingested is less likely to be rapidly absorbed into your bloodstream.

DEPARTMENTS

**7 AS WE SEE IT**

An analysis of **fasting insulin** and **hemoglobin A1c** blood levels was conducted in Foundation members. A startling **66%** had **higher** than desired **fasting insulin**. Over 20% had **hemoglobin A1c** levels that placed them in a **pre-diabetic** state. A natural enzyme has been discovered that helps **reduce** after-meal blood sugar and insulin spikes by converting rapidly digestible **starch** in the intestines into a **fiber** that is not absorbed as glucose. Use of this enzyme **before starch-containing** meals can help protect against glucose intolerance and deadly **hyperinsulinemia**.

21 IN THE NEWS

Zinc cuts risk of advanced age-related macular degeneration, high homocysteine levels linked to frailty, increased omega-3

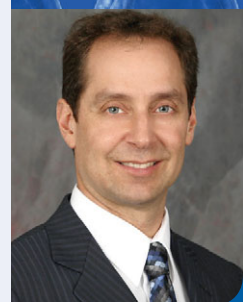
levels add years to life span, the prevalence of diabetes is twice as high among those with lowest melatonin levels, green tea prevents **beta-amyloid** aggregates associated with Alzheimer's, and more.

91 WELLNESS PROFILE

Aubrey de Grey is the world's most famous biomedical gerontologist. In this exclusive Life Extension profile, readers will learn about Dr. de Grey's multi-platform approach to end aging and extend life span indefinitely.

97 ASK THE DOCTOR

Dr. Scott Fogle, Life Extension®'s Director of Clinical Information and Laboratory Services, discusses three blood tests to help readers better manage the risks of high blood sugar.





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CONTRIBUTORS

Ben Best • Michael Downey • D. Dye • Scott Fogle, ND
Scott Newman • Andrea Pryce, ND • Scott Rackinow • M. Richmond

ADVERTISING

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

VICE PRESIDENT OF SALES AND BUSINESS DEVELOPMENT

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

CIRCULATION & DISTRIBUTION

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

Customer Service: 800-678-8989 • email: customerservice@lef.org
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Enhanced Night Vision!

EYE PROTECTION FORMULA

Maintain Macular Density

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

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

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

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

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

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

Comprehensive Ocular Protection in One Daily Softgel

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

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

The retail price for a bottle containing 60 softgels of **Super Zeaxanthin with Lutein, Meso-Zeaxanthin and C3G** is \$22. If a member buys four bottles, the price is reduced to **\$14.85** per bottle.



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Jonathan V. Wright, MD, is medical director of the Tahoma Clinic in Renton, WA. He received his MD from the University of Michigan and has taught natural biochemical medical treatments since 1983. Dr. Wright pioneered the use of bioidentical estrogens and DHEA in daily medical practice. He has authored 11 books and publishes *Nutrition and Healing*, a monthly newsletter with a worldwide circulation of more than 100,000.

SCIENTIFIC ADVISORY BOARD



Örn Adalsteinsson, PhD, is chairman of the Life Extension® Scientific Advisory board. He holds a master's and doctorate from the Massachusetts Institute of Technology (MIT). He has specialized in human therapeutics including vaccines, monoclonal antibodies, product development, nutraceuticals, formulations, artificial intelligence, hormones, and nutritional supplementation. He has also authored articles and contributed to peer-reviewed publications and served as an editor for the *Journal of Medicinal Food*.



Aubrey de Grey, PhD, is a biomedical gerontologist and Editor-in-Chief of Rejuvenation Research, the world's highest-impact peer-reviewed journal focused on intervention in aging. He received his BA and PhD from the University of Cambridge in 1985 and 2000 respectively. Dr. de Grey is a Fellow of both the Gerontological Society of America and the American Aging Association, and sits on the editorial and scientific advisory boards of numerous journals and organizations.



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



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.



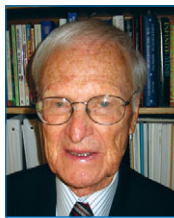
Deborah F. Harding, MD, is founder of the Harding Anti-Aging Center. She is double board-certified in internal medicine and sleep disorder medicine. She also earned the CeneGenics certification in age management medicine. She is a faculty member of the new University of Central Florida Medical School.



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



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



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



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



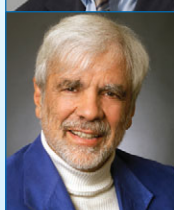
Ralph W. Moss, PhD, is the author of books such as *Antioxidants Against Cancer*, *Cancer Therapy*, *Questioning Chemotherapy*, and *The Cancer Industry*, as well as the award-winning PBS documentary "The Cancer War." Dr. Moss has independently evaluated the claims of various cancer treatments and currently directs The Moss Reports, an updated library of detailed reports on more than 200 varieties of cancer diagnoses.



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



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



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.

ULTIMATE eye HYDRATION

Maintaining eye support is essential for optimal eye health.

As we get older, our eyes become vulnerable to a variety of insults that can cause irritation and dry eye. With just a few drops of the proper eye lubricant, **eye irritation** stemming from **dryness** may be alleviated.

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Blood Levels of Insulin and Hemoglobin A1c in Foundation Members



BY WILLIAM FALOON



Life Extension® has an advantage in identifying modern causes of premature aging and death. That's because we have direct access to **tens of thousands** of our members' blood test results.

Our review of this real-world data enables us to uncover **disease risk factors** that are **overlooked** by the mainstream media. We then alert members about simple steps they can take to mitigate these hazards.

Earlier this year, we analyzed **fasting insulin** and **hemoglobin A1c** blood levels in over **10,000** members. A startling **66%** had **higher** than desired **fasting insulin**. **Twenty-two percent** had **hemoglobin A1c** levels that placed them in a **pre-diabetic** state.

Hemoglobin A1c measures the percentage of **glycated hemoglobin** in one's blood. Hemoglobin A1c levels should be below 5.6%,¹ yet more than **one in five** people we tested had a reading over 6%.

Gaining early access to this kind of data can spare aging humans the ravages of degenerative illness. Armed with this knowledge, Foundation members can slash their risk of cancer, vascular occlusion, and other complications before frank **diabetes** is diagnosed.

This article will describe the dangers of elevated **fasting insulin** and **hemoglobin A1c**, our recent analysis of member blood tests, and a novel way to protect against **glycemic overload**. >



What Is Insulin Supposed to Do?

Insulin is a hormone that regulates **carbohydrate** and **fat** metabolism.² Insulin enables liver and muscle cells to take up blood sugar (glucose) for **energy** production or **storage**.² Insulin also facilitates the packing of glucose into **fat cells** as triglycerides.²

A burst of insulin is released in response to food ingestion. Once glucose has been safely shuttled into energy producing cells or stored, insulin levels should drop below 5 $\mu\text{IU/mL}$.³ Only a tiny amount of residual insulin should be needed to maintain glucose homeostasis.

When **fasting insulin** is over **5 $\mu\text{IU/mL}$** , this indicates a metabolic problem such as **pre-diabetes**, which sharply increases risk for degenerative diseases.³ Some medical texts state that insulin should virtually vanish from the blood once glucose levels reach **83 mg/dL** .⁴

In people suffering from metabolic disorders and/or obesity, **insulin** levels remain stubbornly **high**. This not only generates damaging reactions throughout the body, but precludes **weight loss** as glucose is forced into fat cell storage.

Life Extension's analysis of over 10,000 **fasting insulin** blood test results showed that **66%** were over 5 $\mu\text{IU/mL}$. Many of these subjects were overweight, which partially explains why such a high percentage had high fasting insulin levels. Insulin control is an important component for successful weight loss.

The Dark Side of Insulin

Those afflicted with **type I diabetes** do not produce enough insulin. For these individuals, insulin injections become a life-saving therapy.

Insulin, however, has an insidious **dark side**. High levels are

associated with virtually every aging-related disease, thus making **insulin control** essential if one is to achieve optimal longevity.

Aging, poor diet, and other factors deprive cells of **insulin sensitivity**.⁵⁻⁷ Loss of insulin sensitivity contributes to excess insulin release as the body seeks to force serum glucose into cells.

The most immediate and noticeable effect of excess insulin production is unwanted **weight gain**.⁸⁻¹⁰ Insulin drives fat into cells, prevents fat from being released from cells, and can result in chronic hunger.^{11,12} High insulin levels contribute not only to obesity, but also to the disease states associated with being overweight.

Some degenerative disorders associated with too much **insulin** include heart attack¹³⁻¹⁶ and cancer.¹⁷⁻¹⁹

Insulin saves the lives of type I diabetics who are dependent on it, but becomes a toxic hormone in aging people who secrete too much. Reducing excess serum insulin is a critical component of any scientific program designed to facilitate fat loss and extend life span.

Hyperinsulinemia

Insulin is produced in the pancreas to stimulate uptake of glucose from blood into the body's cells. The inability of the body's cells to utilize insulin is called **insulin resistance**.

As a result of insulin resistance and other factors, the pancreas produces more insulin than normal so there are higher levels of insulin circulating in the bloodstream. This is called **hyperinsulinemia**.

In a normal person, one unit of insulin might be needed to help **10**

mg of glucose go into a cell group. In **hyperinsulinemia**, ten units of insulin might be needed to get the same **10 mg** of glucose into the cell group.²⁰ Hyperinsulinemia and insulin resistance create myriad problems, including elevated triglycerides,²¹⁻²⁴ low HDL,^{25,26} type II diabetes,²⁷⁻²⁹ and obesity.^{14,30-32}

Figure 1 on this page shows the pathways to obesity and several degenerative diseases associated with insulin resistance and hyperinsulinemia.

increases the risk and progression of certain **cancers**.^{17,19,38-40} High insulin promotes the formation of beta-amyloid in brain cells and may contribute to the development of **Alzheimer's** disease.⁴¹ Overproduction of insulin is even a contributory factor to **prostate enlargement** because of its effects in promoting the overgrowth of prostate cells.⁴²

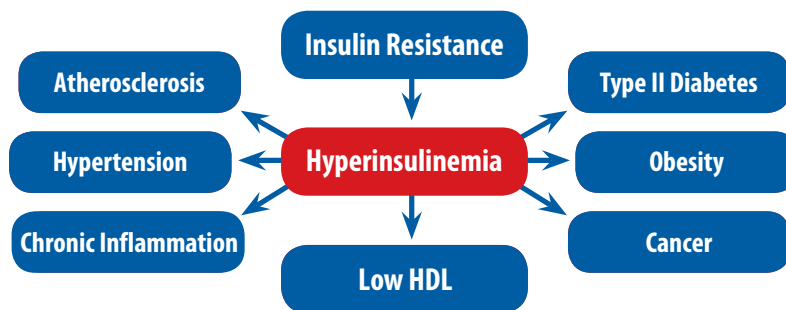
High serum insulin is associated with the development of **abdominal obesity**, which

exacerbates the many problems induced by insulin resistance and increased belly fat, including **atherosclerosis**^{14,43-45} and **impotence**.⁴⁶⁻⁵⁰ Obesity is associated with excess insulin and reduced insulin sensitivity, both risk factors for type II diabetes.⁵¹

Perhaps the simplest way to evaluate the toxic effects of excess insulin is by examining its effects on human mortality. One study showed that over a 10-year period, the risk of dying was almost **twice as great** for those with the highest levels of insulin compared to those with the lowest.⁵² The study authors stated that **hyperinsulinemia** is associated with increased all-cause and cardiovascular mortality **independent** of other risk factors.

Risks Associated with Insulin Dysregulation

Excess insulin and insulin resistance cause deleterious changes in many biochemical pathways that can lead to the development of a number of degenerative diseases and potentially life-threatening metabolic consequences.^{14,17-19,21-32}



Insulin and Age-Related Disease

An enormous volume of peer-reviewed published studies reveal that excess serum insulin (hyperinsulinemia) is a major health problem. Regrettably, this danger still is not recognized by the medical mainstream.

High serum insulin promotes hypertension by impairing sodium balance.^{33,34} Too much insulin harms the kidneys.³⁵ The vascular system is severely damaged by prolonged exposure to excess insulin.^{36,37}

By acting as a catalyst in promoting cell growth, excess insulin



Why Aging People Gain Weight

A review of the published literature indicates that a significant percentage of degenerative diseases are attributed to excess body **fat**. Those who are overweight face a significant risk of developing **type II diabetes**.⁵³⁻⁵⁵ The treatments for obesity and type II diabetes are interrelated. By effectively treating either one of these diseases, doctors can mitigate or control the other.

Poor diet, obesity, and aging result in excessive secretion of insulin.⁵⁻⁷ Suppressing the overproduction of insulin is a crucial component of a medically supervised weight-loss program.

A noticeable effect of surplus serum insulin can be constant hunger that results in a vicious cycle in which overeating causes more body **fat** to accumulate, which in turn causes even greater amounts of unwanted insulin to be secreted from the pancreas.^{12,56} We now know that *hyperinsulinemia* predicts diabetes mellitus.⁵¹ Even in children, serum insulin levels are far higher in obese than in non-obese children of the same age.⁵⁷

The effects of consuming high-glycemic foods and the subsequent hyperinsulinemia, hunger, and weight gain that occur were the subject of an article published in the *Journal of the American Medical Association* titled “*The Glycemic Index*.”⁵⁸ The article’s authors summarized their position as follows:

*“It is possible that the hunger incident to hyperinsulinemia may be a cause of overeating, and therefore, the obesity that so often precedes diabetes.”*⁵⁸



Dangerous After-Meal Sugar Levels

The excess elevation of blood sugar after eating wreaks havoc in the body via multiple pathological mechanisms. Elevations in postprandial (after-meal) blood sugar, along with the accompanying **insulin surge**, are major contributors to the development of diabetic and age-related disorders such as heart disease, as well as diseases of the microvasculature (small blood vessels within the eyes, kidneys, and those supplying the nerves).⁵⁹⁻⁶⁷

People who have normal fasting glucose levels but whose average **after-meal** glucose level exceeds **194 mg/dL** are **three times more** likely to suffer diabetic **retinopathy** than those who do not.⁶⁸

Growing evidence indicates that severe spikes in after-meal blood sugar are a major problem for non-diabetics as well.^{59,69} The two primary mechanisms by which post-meal hyperglycemia causes such problems are

formation of **advanced glycation end products** (the binding of glucose to body proteins) and increased production of **free radicals** that lead to arterial wall damage.^{70,71}

To investigate the relationship between glucose metabolism and the severity of heart disease, one study measured how many coronary arteries were blocked in relation to after-meal glucose/insulin blood levels and other atherogenic risk factors. All of the men participating in the study had normal fasting glucose blood readings, but in response to a glucose challenge, demonstrated significantly different rates of **glucose-insulin spikes**. Men with the **highest** levels of post-load glucose, insulin, and other measurements of glycemic imbalance had the greatest number of **blocked coronary arteries**.⁷²

These studies make it abundantly clear that blunting the **after-meal** increase in blood sugar **and** insulin is an important goal for those seeking optimal longevity.

Fasting Insulin Blood Levels in Life Extension Members

Since 1996, members of the Life Extension Foundation® have been able request their own blood tests. This has resulted in a significant increase for unique tests that are not routinely ordered by physicians. One of these tests is for **fasting insulin**. Since it was added to the **Male** and **Female Weight Loss Panels** several years ago, the number of **fasting insulin** tests has surged.

In the most recent analysis, data was collected from **January 2010 to February 2013**, a period spanning more than three years. More than 10,000 tests of fasting insulin were reviewed.

An upper limit for **fasting insulin** of **5 μ IU/mL** (micro international unit per milliliter) was established for this analysis.³ Only **34%** of these blood tests had a **fasting insulin** level of **5 μ IU/mL** or lower. A startling **66%** showed

fasting insulin over **5 μ IU/mL**, with some in dangerously high ranges of **10-30 μ IU/mL**.

There is an important confounding factor in this analysis that skewed the results upwards. Most of the people who ordered their **fasting insulin** blood test did so as part of the **Male** or **Female Weight Loss Panel**. Since insulin levels are higher in overweight and obese individuals, it is logical to assume that many of the **66%** whose fasting insulin was over **5 μ IU/mL** also were overweight or obese. Thinner people tend to have lower **fasting insulin** levels.

Latest Studies on Dangers of Excess Insulin

From 1999 to 2005, Life Extension spent millions of dollars evaluating published studies on the mechanisms and dangers of excess **fasting insulin** and conducting our own clinical trials on a compound that suppressed pan-

creatic release of surplus insulin.

We were never able to synthesize sufficient quantities of our insulin-suppressing compound, but another research team has developed an approach to reduce glucose/insulin levels that may revolutionize the way glycemic control disorders are treated.

Just to make sure we were still on the right track, we went back and looked at the peer-reviewed published literature to confirm the deadly effects of **hyperinsulinemia**.

Liver Diseases Caused by Hyperinsulinemia

As a greater percentage of the public becomes overweight or obese, an illness called **non-alcoholic fatty liver disease** is becoming prevalent. It is characterized by infiltration of fat into the liver that impairs normal functions.

In **2013**, two studies identified **hyperinsulinemia** as a major causative factor of **non-alcoholic fatty liver disease**, with **fasting insulin** being significantly elevated compared to controls.^{73,74} Two studies published in **2012** also connected hyperinsulinemia with this liver disease.^{75,76}

A **2013** study looked at patients affected with **primary liver cancer** and found a high prevalence of liver cancer in **type II diabetics**. Researchers noticed that liver cancer developed in these patients within the first five years after diagnosis of type II diabetes, which is when **insulin** levels are extremely **high**.⁷⁷



Hyperinsulinemia in College Students

A **2012** study looked at college students and found 8 out of 22 subjects were hyperinsulinemic with **fasting insulin** levels greater than **19 μ IU/mL**.⁷⁸

The study concluded by stating that the high prevalence of **hyperinsulinemia** in this population merits further investigation and intervention.⁷⁸

Studies of older people often show these high insulin readings, but this study reveals damaging processes occurring early in life. Remember that any fasting insulin reading above **5 μ IU/mL** is cause for concern and many of these college students were already almost **four times** as high!

Kidney Failure Linked to Hyperinsulinemia

In the US, a startling **40%** of people over age 65 show some sign of kidney failure.⁷⁹ Between 1980

and 2009, the prevalence of end stage renal disease increased nearly **600%**.⁸⁰

A **2012** study found a strong correlation between **hyperinsulinemia** and **chronic kidney disease** in metabolic syndrome patients. Insulin resistance was shown to be an **independent risk factor** for kidney disease in this patient group.⁸¹

High Insulin Initiates Cancer

People with **hyperinsulinemia** suffer higher rates of deadly malignancies.

A **2013** study showed over a ten-year period that **type II diabetics** treated with any kind of **insulin-augmenting** drug had an up to **80% increased** risk of experiencing cancer, an adverse cardiac event, or death from any cause compared to patients who only received the drug **metformin**, which **lowers** insulin levels.⁸² Metformin reduces risk of many

cancers,⁸³⁻⁹¹ and some of its mechanisms include reducing hepatic production of glucose⁹²⁻⁹⁴ and improving insulin sensitivity,⁹⁵⁻¹⁰⁰ both of which **reduce insulin** levels.

A drug class known as **sulfonylureas** stimulates pancreatic insulin secretion and temporarily reduces glucose. After the pancreas fails, these patients often resort to insulin injections to keep glucose under control. By giving type II diabetics **insulin-augmenting** therapies instead of lifestyle changes, nutrients, and metformin, doctors have unwittingly condemned huge segments of their patient population to higher risks of weight gain, neuropathy, renal failure, atherosclerosis, and cancer.¹⁰¹⁻¹⁰⁹

Not every diabetic patient needs insulin-augmenting drugs. Some people can produce all the surplus insulin they need in their pancreas to keep glucose down. Their chronic hyperinsulinemic condition, however, predisposes them to greater cancer incidences as **insulin** provides a strong signal for malignant cells to proliferate.¹⁷ One study found that individuals with the highest insulin levels had a **62% increased** risk of cancer mortality.¹¹⁰

Hyperinsulinemic individuals, including type II diabetics and the obese, suffer far greater rates of cancer. Hyperinsulinemia creates **chronic inflammation** and the generation of **free radicals**, both of which damage DNA genes needed to regulate healthy cellular proliferation.^{16,19,38,111,112}

A number of studies published in **2012-2013** describe the mechanisms by which **hyperinsulinemia** increases cancer risk and suggests that understanding and circumventing these pathways may lead to targeted prevention.¹¹³⁻¹²⁵



Controlling Hyperinsulinemia Critical for Cancer Patients

Once a person is diagnosed with cancer, it becomes imperative to suppress excess insulin secretion. That's because in addition to initiating cancer, insulin stimulates the proliferation of malignant cells.¹²⁶

A **2013** review evaluated the scientific literature on the role of hyperinsulinemia in promoting existing cancers. It summarized by stating that the death rate of pancreatic and other cancers can be reduced by an aggressive approach to reversing obesity and hyperinsulinemia and achieving good glycemic control.¹¹³

When we consult with oncologists about comprehensive cancer treatments, a central element is for the patient to make significant lifestyle changes and be prescribed the drug **metformin** to reduce levels of tumor-promoting insulin.

Role in Alzheimer's Disease

Alzheimer's disease is the fastest growing threat to health in the United States, according to a report released in **2013** from a team of researchers at the University of Washington in Seattle.¹²⁷

We know of multiple underlying causes for Alzheimer's, including mitochondrial dysfunction, oxidative stress, and chronic inflammation.¹²⁸⁻¹³⁵ A study published in **2012** described how insulin is involved in the metabolism of beta-amyloid and concluded that insulin resistance is involved in the pathogenesis of neurodegenerative diseases including Alzheimer's.¹³⁶

Other studies published in **2012-2013** describe the toxic

effects of hyperinsulinemia in the development of neurodegenerative diseases that result in senility.¹³⁷⁻¹⁴¹

Mainstream Medicine's Lethal Misconception

We don't blame doctors who desperately sought out therapies to lower surging **glucose** levels in their diabetic patients. They often had no choice but to administer **insulin-augmenting drugs**, which temporarily dropped their patient's glucose to survivable ranges.

A side effect quickly observed was weight gain in those using insulin-augmentation to control blood glucose. As these patients gained weight, they became more insulin-resistant and had to rely on greater quantities of insulin-augmented drugs. Many of these drug labels started carrying warnings of increased risk of heart attack and early death.

Research initiated by Life Extension in 1999 relating to the toxic role of excess **insulin** in virtually every age-related

disease has since been corroborated by numerous independent studies. **Hyperinsulinemia** is a killer worse than cholesterol, since high **insulin** levels not only increase vascular risk,^{36,37,141} but also cancer,^{17-19,126,142} liver and kidney disease,¹⁴³⁻¹⁴⁷ neurodegeneration,^{148,149} and obesity.^{8,30-32}

The scientific literature is unanimous in recognizing the lethal impact of **hyperinsulinemia**. An analysis of blood test results from Life Extension members reveals that **66%** have higher than desired **fasting insulin** levels (above **5 µIU/mL**). Virtually all of these members should be asking their doctors to prescribe **metformin**, as this drug reduces glucose and insulin blood levels via multiple mechanisms including curbing excessive glucose production (gluconeogenesis) in liver.⁹³

Twenty-two percent of our members had **hemoglobin A1c** levels over **6%**, which places them in a **pre-diabetic** state. Clearly more has to be done to gain control of these **glycemic** measurements of future disease risks.



Breakthrough in Preventing Dietary Starches from Converting to Glucose

The modern American diet contains excessive amounts of **starches**.

What most people don't realize is that **starches** are broken down in the intestines and produce rapid elevation of after-meal **glucose** and **insulin** blood levels. Even people with "normal" fasting blood sugar levels are at increased cardiovascular risk if their **after-meal** glucose/insulin levels rise too high, too fast.^{150,151}

A natural enzyme has been discovered that helps **reduce** after-meal blood sugar and insulin spikes in a totally unique way.¹⁵² This enzyme converts rapidly digestible **starch** in the intestines into a **fiber** that is not readily absorbed as glucose.^{153,154}

Based on the evidence you will read in this month's issue, widespread use of this enzyme **before starch-containing** meals could help reduce the epidemic of glucose intolerance and hyperinsulinemia that is plaguing the modern world.

For longer life,



William Faloon

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

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

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

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

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

How CoffeeGenic® Works

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

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

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

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

Comprehensive Formula

The *standardized green coffee extract* in the **CoffeeGenic® Weight Management™ with Green Coffee Extract (GCA™)** formula has been enhanced with the following nutrients to reinforce the ability to support weight-loss:

1. Green Tea Decaffeinated Extract

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

2. Iodine

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

3. Chromium

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

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

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

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

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

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

The suggested dose is just one capsule before each meal.

A bottle of **90 vegetarian capsules of CoffeeGenic® Weight Management™ with Green Coffee Extract (GCA™)** retails for \$48. If a member buys four bottles, the price is reduced to **\$31.50 per bottle**.

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

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

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

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

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

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Item # 01707

Are You Obtaining Enough TAURINE?

Taurine is so vital that scientists have described it as "**one of the most essential substances in the body**."¹ Food sources provide relatively little taurine,^{2,3} and as we age, synthesis of taurine in our bodies (from cysteine) markedly declines.³⁻⁵

Fortunately, taurine is one of the **lowest-cost** nutrients, making it affordable to supplement with optimal doses.



SYSTEM-WIDE HEALTH BENEFITS

Taurine is one of the most abundant amino acids.^{1,6} Extensive studies have demonstrated the ability of **taurine** to support:

- Insulin sensitivity and glucose utilization,^{7,8}
- Proper utilization of minerals such as calcium,¹
- Eye health,^{1,9,10}
- Regulation of the central nervous system,⁶
- Cell membrane stability⁶ and balanced water content (*osmoregulation*),^{11,12}
- Immune system modulation,^{11,13}
- Bile salt formation,¹¹
- Neuron integrity^{6,11} and cognitive function,¹⁴
- Liver function,¹⁵ and
- Cardiovascular health.^{12,16,17}

To promote **system-wide** health, the body requires adequate levels of this *essential* nutrient.^{1,11,18}

ULTRA-LOW COST

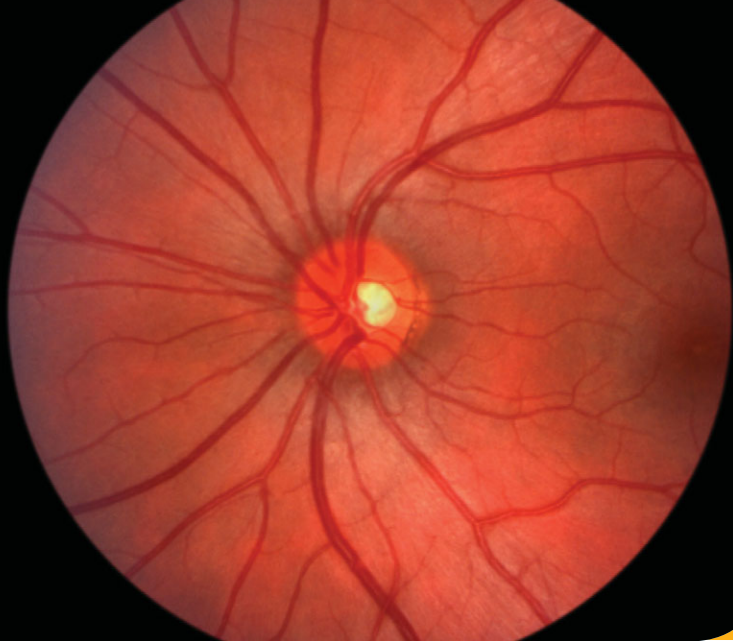
A bottle of 50 **1,000 mg** capsules of **Life Extension® Taurine** retails for **\$8.95**. If a member buys four bottles, the price is reduced to **\$6** per bottle.

One capsule taken one to four times daily on an empty stomach, or as recommended by a healthcare practitioner, supports optimal taurine levels. **Taurine** may represent one of the better values on the nutritional supplement marketplace today.

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or visit www.LifeExtension.com



IN THE NEWS

Long-term Nutritional Supplementation Reduces Progression of Age-Related Macular Degeneration

An article published in *Ophthalmology* reports long-term benefit from supplementation with a nutritional formula containing antioxidants and zinc in men and women with age-related macular degeneration.*

Researchers evaluated data from 3,549 follow-up participants in the Age-Related Eye Disease Study (AREDS), which enrolled 4,757 subjects from 1992 through 1998. Participants received a placebo, antioxidant vitamins (beta-carotene, vitamin C, and vitamin E), or antioxidants plus zinc. Eye examinations were conducted with annual fundus photographs and best-corrected visual acuity assessments. Medical histories and mortality were obtained for safety monitoring.

Among participants whose macular degeneration was intermediate or advanced in one eye, those who received antioxidants plus zinc during the trial continued to experience a significant reduction in the risk of developing advanced macular degeneration or neovascular macular degeneration in comparison with the placebo group by the end of the follow-up study.

Editor's Note: When mortality was analyzed, those who received zinc were found to have a **17%** lower adjusted risk of dying from any cause over a follow-up period of 10 years in comparison with those who did not receive the mineral. The protective effect was strongest against death from circulatory diseases.

—D. Dye

* *Ophthalmology*. 2013 April 10.

High Homocysteine Linked with Frailty and Earlier Mortality in Men

An article published in *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* revealed an association between higher levels of homocysteine and a greater risk of frailty and early death in older men.*

The study included 4,248 community-dwelling men aged 70-88 years. Plasma homocysteine levels of **15 $\mu\text{mol/L}$** or more were measured in samples obtained from 1,117 participants.

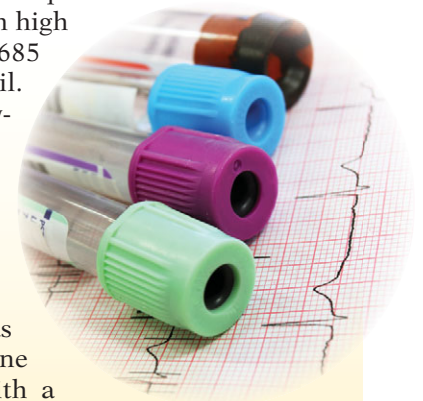
Of these individuals with high homocysteine levels, 685 were classified as frail. Over an average follow-up of 5.1 years, 749 deaths occurred.

Among subjects who had high homocysteine, the risk of frailty was **49%** greater than those whose homocysteine was low. High homocysteine was also associated with a **25%** increased adjusted risk of dying over follow-up as compared to those with lower homocysteine levels.

Editor's Note: Homocysteine is a damaging amino acid synthesized in the body from the essential amino acid methionine. High levels of homocysteine have been associated with an increase in cardiovascular events and other conditions.

—D. Dye

* *J Gerontol A Biol Sci Med Sci*. 2013 May;68(5):590-8.



Higher Omega-3 Levels Linked with Lower Risk of Dying over a 16-Year Period

The Annals of Internal Medicine reports the finding of a study of older US adults that uncovered a protective effect for high plasma phospholipid omega-3 polyunsaturated fatty acids against the risk of dying over a 16 year follow-up period.*

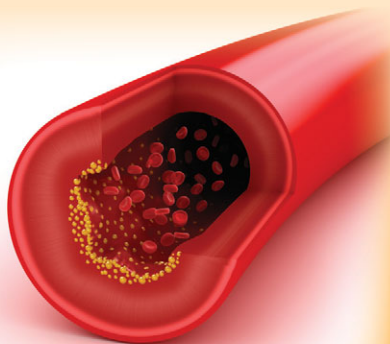
The study included 2,692 men and women aged 74 years (± 5 years) without prevalent coronary heart disease, stroke, or heart failure at baseline. Blood samples obtained during 1992-1993 were analyzed for plasma phospholipid EPA, DHA, and docosapentaenoic acid (DPA). Over 16 years of follow-up, 1,625 deaths occurred, including 359 caused by coronary heart disease and 130 resulting from stroke.

Men and women whose total omega-3 fatty acids were among the top one-fifth of participants had a **27% lower** risk of dying over follow-up than those whose levels were among the lowest fifth.

Editor's Note: On average, having an omega-3 fatty acid level among the top fifth conferred **2.2** extra years of life after age 65 in comparison with subjects whose level was lowest.

—D. Dye

* *Ann Int Med.* 2013 Apr 2;158(7):515-25.



Reduced Melatonin Levels Linked to Greater Diabetes Risk

The *Journal of the American Medical Association* reports a link between decreased levels of melatonin and a greater risk of developing type II diabetes. Melatonin is a sleep-inducing hormone produced by the brain's pineal gland in response to darkness.*

The researchers matched 370 women who developed diabetes while enrolled in the Nurses' Health Study with 370 non-diabetic participants. Morning urine samples obtained upon enrollment in 2000 were analyzed for the ratio of 6-sulfoxymelatonin (the major metabolite of melatonin) to creatinine in order to estimate overnight melatonin secretion.

Women with diabetes had a 6-sulfatoxymelatonin to creatinine ratio that was significantly lower than that of the control group. Among those whose ratio was among the lowest of the participants, their adjusted risk of developing diabetes was more than twice that of women in the highest melatonin group.

Editor's Note: "Further research is warranted to assess if melatonin secretion is a modifiable risk factor for diabetes within the general population," the authors of the study said.

—D. Dye

* *JAMA.* 2013 Apr 3;309(13):1388-96.

The New York Times Shines Spotlight on Hospitals Profiting from Surgical Errors

An article by Denise Grady in the *New York Times* brings to light a study and an editorial from the *Journal of the American Medical Association* that outlines how hospitals make money from mistakes made in the operating room.*

Hospitals make money from their own mistakes because insurers pay them for the longer stays and extra care that patients need to treat surgical complications that could have been prevented, a new study finds.

The article states that: The study is based on a detailed analysis of the records of 34,256 people who had surgery in 2010 at one of 12 hospitals run by Texas Health Resources. Of those patients, 1,820 had one or more complications that could have been prevented, like blood clots, pneumonia, or infected incisions.

The median length of stay for those patients quadrupled to 14 days, and hospital revenue averaged \$30,500 more than for patients without complications (\$49,400 versus \$18,900). Private insurers paid far more for complications than did Medicare or Medicaid or patients who paid out of pocket.

The authors said in an interview that they were not suggesting that hospitals were trying to make money by deliberately causing complications or refusing to address the problem.

"Absolutely not," said David Sadoff, a managing director of the Boston Consulting Group. "We don't believe that is happening at all."

But, he said, the current payment system makes it difficult for hospitals to perform better because improvements can wind up costing them money.

—M. Richmond

* Available at: http://www.nytimes.com/2013/04/17/health/hospitals-profit-from-surgical-errors-study-finds.html?_r=0. Accessed April 21, 2013



Green Tea Extract an Effective Weapon against Alzheimer's Disease

A recent article in the *Proceedings of the National Academy of Sciences* showed how researchers at the University of Michigan have found a new potential benefit of a molecule in green tea, preventing the misfolding of specific proteins in the brain.*

Faculty member Mi Hee Lim and an interdisciplinary team of researchers used green tea extract to control the generation of metal-associated amyloid-aggregates associated with Alzheimer's disease in the lab.

The specific molecule in green tea, epigallocatechin-3-gallate, also known as EGCG, prevented aggregate formation and broke down existing aggregate structures in the proteins that contained metals, specifically copper, iron, and zinc.

"A lot of people are very excited about this molecule," said Lim, noting that EGCG and other flavonoids in natural products have long been established as powerful antioxidants. "We used a multidisciplinary approach. This is the first example of structure-centric, multidisciplinary investigations by three principal investigators with three different areas of expertise."

—M. Richmond

* *Proc Natl Acad Sci U S A*. 2013 Mar 5;110(10):3743-8.

Intake of Fiber and Fiber-rich Plant Foods is Associated with Lower Risk of Some Cancers

Plant-based and fiber-rich diets high in vegetables, fruit, and whole grains are recommended to prevent cancer and chronic conditions associated with renal cell carcinoma (kidney cancer), such as obesity, hypertension, and diabetes.

A recent study published in the *American Journal of Clinical Nutrition* investigated the diet habits of a large prospective cohort of US men and women.*

Total dietary fiber intake was associated with a significant **15–20%** lower risk of kidney cancer in the 2 highest quintiles compared with the lowest. Intakes of legumes, whole grains, and cruciferous vegetables were also associated with a **16–18%** reduced risk of kidney cancer.



Editor's Note: Consuming foods with healthy fiber and cruciferous vegetables like Life Extension®'s line of Rich Rewards™ soups is an intelligent step in lowering cancer risk and improving overall health.

—M. Richmond

* *Am J Clin Nutr* May 2013

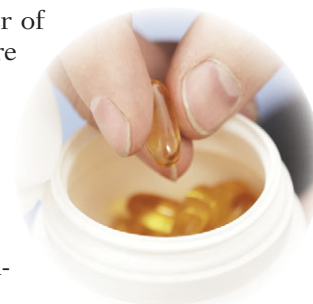
Fish Oil Supplements May Prevent Skin Cancer

Skin cancer is a major public health concern, and the majority of cases are caused by solar ultraviolet radiation (UVR) exposure, which suppresses skin immunity. Omega-3 PUFAs protect against photoimmunosuppression and skin cancer in mice, but the impact in humans is unknown.*

A new study published in *The American Journal of Clinical Nutrition*, revealed that consuming regular doses of fish oils increases immunity to sunlight in humans.

Professor Lesley Rhodes, Professor of Experimental Dermatology from the Photobiology Unit Dermatology Centre at the University's School of Medicine and Salford Royal NHS Foundation Trust, said their study was the first of its kind conducted using humans:

"There has been research in this area carried out on mice in the past but this is the first time that there has been a clinical trial directly in people. It has taken a number of years to get to this stage and the findings are very exciting. This study adds to the evidence that omega-3 is a potential nutrient to protect against skin cancer. Although the changes we found when someone took the oil were small, they suggest that a continuous low level of chemoprevention from taking omega-3 could reduce the risk of skin cancer over an individual's lifetime."



—M. Richmond

* *Am J Clin Nutr* March 2013

Antioxidant Improves Donated Liver Survival Rate to More Than 90%

Results published in a recent issue of *Liver Transplantation*, a journal of the American Association for the Study of Liver Diseases (AASLD), suggest that the antioxidant N-acetylcysteine (NAC), when injected prior to harvesting of the liver, significantly improves graft survival and complication rates following transplantation even when a sub-optimal organ is used.^{1,2}

A 2010 World Health Organization (WHO) report estimates that 22,000 liver transplants were performed worldwide, with nearly 18,500 from deceased donors.

"Liver transplantation is the standard treatment for end-stage liver disease," explains lead author Dr. Francesco D'Amico from Padova University in Italy. "Antioxidants such as NAC could potentially reduce damage to deceased donor livers, improving graft function."

Studies have shown that ischemia-reperfusion injury (IFI)—damage to the liver tissue when blood supply returns to the liver after lack of oxygen (ischemia)—often occurs during storage and preservation of donated livers and impacts early graft function post-transplantation.

Dr. D'Amico concludes, "Our study was the first randomized trial to investigate the use of NAC antioxidant infusion during the liver procurement procedure. We propose that NAC be used during organ harvesting to improve liver transplantation outcomes, particularly with the increased use of suboptimal organs."

—M. Richmond

1. *Liver Transpl.* 2013 Feb;19(2):135-44.

2. Available at: <http://www.wiley.com/WileyCDA/PressRelease/pressRelease-Id-107664.html>. Accessed April 21, 2013.

Black Tea Lowers the Rate of Blood Pressure Variation

Measures of blood pressure variation have been associated with cardiovascular disease and related outcomes. The regular consumption of black tea can lower blood pressure, but its effects on blood pressure variation have yet to be investigated. A recent article in the *American Journal of Clinical Nutrition* set out to determine whether this was the case.*

The study included men and women with systolic blood pressure between 115 and 150 mmHg at screening. They were recruited in a randomized, controlled, double-blind, 6-month parallel-designed trial designed primarily to assess effects on blood pressure. Participants consumed 3 cups/day of either powdered black tea solids (tea) or a flavonoid-free caffeine-matched beverage (control). The 24-hour ambulatory blood pressure level and rate of measurement-to-measurement blood pressure variation were assessed at baseline on the first day and at three- and six-month intervals.

Across the time points, tea, compared with the control, resulted in lower rates of systolic and diastolic blood pressure variation during the nighttime. These effects, which were immediate at day one and sustained over six months, were independent of the level of blood pressure and heart rate. The rate of blood pressure variation was not significantly altered during daytime.

—M. Richmond

* *Am J Clin Nutr* May 2013

Research Provides New Insight Regarding Transmission of the Influenza Virus

Although there is little data on their benefit, the Centers for Disease Control recommend that healthcare centers provide surgical masks to suspected flu patients in an effort to reduce aerosol transmission of the influenza virus. A study conducted by a research team at the University of Maryland found that people may be exposed to the flu through airborne virus more frequently than previously thought. The study also found that when flu patients wear a surgical mask, the release of virus in even the smallest airborne droplets can be significantly reduced.*

"Our study provides new evidence that there is nearly **nine times** more influenza virus present in the smallest airborne droplets in the breath exhaled from those infected with flu than in the larger droplets that would be expected to carry more virus. This has important implications for how we prevent the spread of flu," explains Donald Milton, MD, DrPH, Director of the Maryland Institute for Applied Environmental Health that led the study of aerosol spread of the influenza virus that was published in the journal *PLOS Pathogens*.

Dr. Milton and his team collected samples of exhaled particles (one with and one without a facemask) in two sizes (fine and coarse) from 37 volunteers within 5 days of seasonal influenza onset, measured viral copy number, and tested the fine-particle fraction for culturable virus. Overall, masks produced a **3.4 fold** reduction in viral aerosol shedding.

—A. Pryce, ND

* *PLoS Pathog.* 2013 Mar;9(3):e1003205.

Comprehensive Pomegranate Protection!

FULL-SPECTRUM POMEGRANATE™ FORMULA

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

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

The Next-Generation Pomegranate Formula

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

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

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

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

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

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

Full-Spectrum Pomegranate™

A bottle containing 30 softgels of **Full-Spectrum Pomegranate™** retails for \$24. If a member buys four bottles, the price is reduced to **\$15.75** per bottle. **Item # 01423**

Contains soybeans.



Item # 01423

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

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1. J Ethnopharmacol. 2007 Jan 19;109(2):177-206.
2. Eur J Nutr. 2003 Jan;42(1):18-28.
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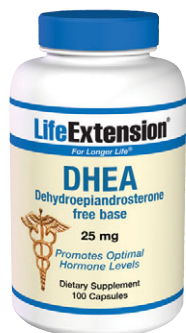
POMELLA® extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Science, Inc.

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



Most Popular DHEA Dosages

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



Item #00335

DHEA 25 mg • 100 Capsules

The minimum dose of DHEA for most healthy aging people is 25 mg a day, though optimal doses are often higher in men. These 25 mg capsules are a popular way to consume the precise amount of DHEA your body may need. A bottle containing 100 **25 mg** capsules of DHEA retails for \$18; if a member orders four bottles, the price is reduced to **\$11.25 per bottle**. Contains rice.



Item #00882

DHEA 50 mg • 60 Capsules

The optimal daily dose of DHEA for most people is 50 mg. These economical 50 mg capsules enable most people to conveniently consume the optimal dose of DHEA in just one capsule. A bottle containing 60 **50 mg** capsules of DHEA retails for \$19; if a member orders four bottles, the price is reduced to **\$12.75 per bottle**.



Item #00454

DHEA 15 mg • 100 Capsules

While published studies show the greatest benefit occurs when 50-75 mg of DHEA is consumed each day, some women only need a low dose of DHEA. Just one of these 15 mg capsules a day is all some women need to bring DHEA levels back to youthful levels. A bottle containing 100 **15 mg** capsules of DHEA retails for \$14; if a member orders four bottles, the price is reduced to **\$9 per bottle**.



Item #00607

DHEA 25 mg • 100 Dissolve-in-Mouth Tablets

A bottle containing 100 **25 mg dissolve-in-mouth** tablets of DHEA retails for \$14; if a member orders four bottles, the price is reduced to **\$8.81 per bottle**.

Some people want to take DHEA in sublingual tablet form to avoid first pass through the liver, though published studies show that swallowing DHEA capsules consistently boosts blood DHEA levels already within normal range.

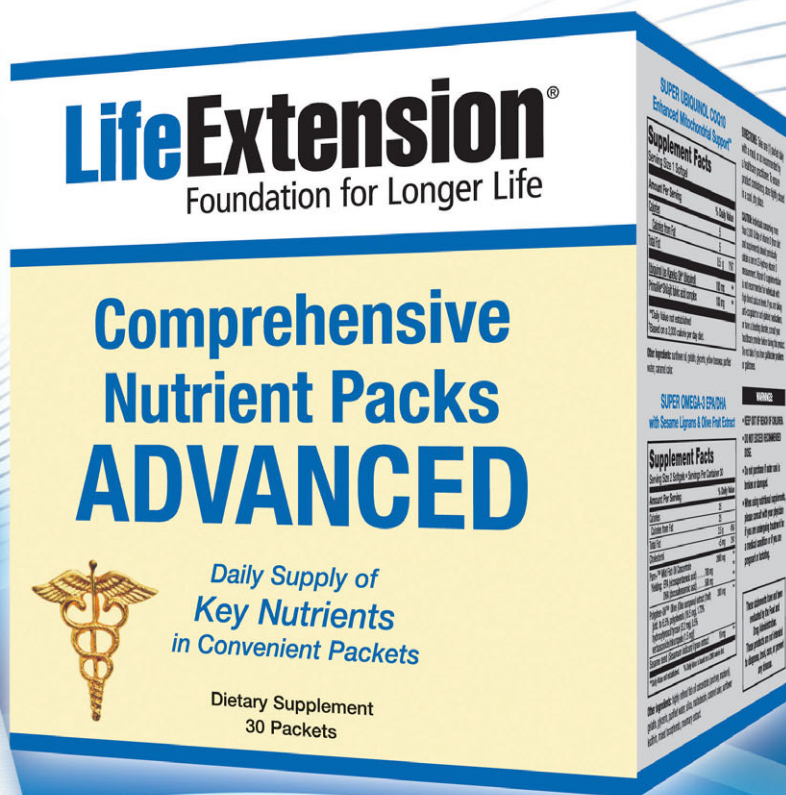
CAUTION: Do not use DHEA if you are at risk for or have been diagnosed as having any type of hormonal cancer, such as prostate or breast cancer.

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

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Daily Individual
Packs
Containing
Five Protective
Formulas



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- **Super Bio-Curcumin®** (1 capsule provides **400 mg** of Bio-Curcumin® that can provide blood levels equal to **2,500-2,800 mg** of commercial curcumin supplements)
- **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support** (1-100 mg softgel)
- **Super Booster Softgels with Advanced K2 Complex** (1 softgel)

The Best Way to Manage Your Daily Supplement Regimen

These vital nutrients, bundled at no extra cost into a single packet, combine convenience with superior value when compared to buying each product separately.

A box containing a **30-day** supply of **Comprehensive Nutrient Packs Advanced** retails for \$90. If a member buys four boxes, the cost is just **\$61.50 per box. Item# 01796**

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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.

STOP STARCH-INDUCED Glucose Surges

About 35 years ago, the **federal government** revised their dietary guidelines to advise Americans to increase the amount of **carbohydrates** they consume to around **60%** of their daily food intake. The objective was to achieve a healthier lifestyle.¹

The latest guidelines from the **Institute of Medicine** recommend a daily **carbohydrate** intake of up to **65%** of daily food intake.²

The **catastrophic result** has been an epidemic of life-threatening obesity, type II diabetes, metabolic syndrome, and other diseases.²

The reason is simple. **Starch** is one of the largest dietary sources of blood sugar and dangerous after-meal blood glucose spikes.^{3,4} Even if you eat so-called “healthy grains” such as whole wheat and brown rice, these all convert into sugar during digestion.⁵

Fortunately, researchers have uncovered a dual-action enzyme known as **transglucosidase** (pronounced trans-gluco-side-ace) that blocks the **conversion of starch into sugar** and transforms it into beneficial **fiber**.⁶

While you can't eliminate all starch from your diet, you can neutralize its negative impact on your body. **Transglucosidase** represents a novel mechanism for protecting against the harmful effects of dietary starch.



Impressive laboratory studies have shown that when ***transglucosidase*** comes in contact with starchy foods and natural enzymes in the digestive tract, there's a **31% reduction** in rapidly digested starch (the kind that causes blood sugar to spike right after a meal) and an **11%** increase in slowly digested starch (which gets converted to sugar more slowly, if at all).⁷

Together, that means approximately **40%** of the **starch** you ingest is less likely to be rapidly absorbed into your bloodstream.

Human clinical studies have confirmed the ability of ***transglucosidase*** to reduce blood glucose and insulin levels.

For the typical aging adult, this offers a powerful way to help prevent crossing the line into prediabetes or overt diabetes, preserving pancreatic function, protecting against deadly glucose/insulin surges—and ultimately leading to a longer, healthier life. >



Hidden Dangers of a High-Starch Diet

If you're a diabetic—or experiencing even slightly elevated blood sugar—you probably know that sugar is one of the worst things you can put into your body. What you might not know is that one of the biggest sources of sugar in your diet is **starch**.⁷ Because even whole grains are converted to sugar during digestion, every gram of starch you eat could represent one gram of free glucose in your blood.^{5,8}

That means that even seemingly healthy food choices (whole grain bread, brown rice, and whole wheat pasta, for example) can lead to increases in blood sugar and insulin—and ultimately an increased threat to your health—especially if you already suffer from insulin resistance (prediabetes) or diabetes.

Starchy foods are rich in glucose precursors such as amylopectin, which is the main form of rapidly digestible starch in the human body.⁹ Because the starch in various foods is converted into sugar at different rates, it results in variable rates of blood sugar elevation, insulin response, and satiety (the sense of fullness you get after eating a portion of each food).^{5,10}

Regardless of the form of starch you eat however, be it whole grain bread and brown rice or cookies and cake, the fact remains that all digestible starch gets turned into sugar as it passes through the digestive tract.^{5,7,8} And that results in elevations in blood sugar

and dangerously higher insulin levels—whether you suffer from diabetes or not.

When sugar (glucose) binds to your body's proteins, it produces **advanced glycation end products**, which are “sugar-coated” proteins that have become stiff, inflexible, and dysfunctional.¹¹⁻¹³ Advanced glycation end products trigger inflammation and oxidation, leading to massive amounts of the tissue damage that underlies chronic disease—and aging itself.^{12,13}

Impact of Insulin Excess

In response to surplus blood sugar, your body has to pump out far too much insulin.^{6,14,15} Insulin is a hormone that's essential for carbohydrate and fat metabolism. But when it's secreted in excess, insulin becomes a “death hormone.” Chronically elevated insulin levels put you at increased risk of dying from diseases as diverse as cancer, obesity, heart attacks, and strokes, and can ultimately lead to a “burnt-out” pancreas incapable of any glucose control at all.^{14,16-18}

Even people with “normal” fasting blood sugar levels are at an increased risk if their after-meal glucose levels rise too high, too fast.^{19,20} That's why, even if you're not diabetic, you need to be doing all you can to keep your blood sugar and insulin levels under control.

Too many Americans are living in a dangerous “gray zone” with their health. Even though they think they're safe from harm, their glucose and insulin levels are precariously approaching abnormal. You could be living on the brink of a major health disaster—and not even know it.²⁰

Conventional Doctors Missed the Boat

Modern-day physicians aren't helping the situation because they typically wait far too long before they respond to a patient's “pre-diabetic” state (technically called impaired glucose tolerance, or insulin resistance). And when they do respond, it's often with costly prescription drugs that don't fully address the underlying problems. In the end, prevention makes the most sense.

Fortunately, researchers have discovered a unique enzyme that can help prevent you from crossing the line into prediabetes or overt diabetes by mitigating the harmful effects of dietary starch.⁶ This transformative enzyme is called **transglucosidase**.

Aided by your body's own starch-digesting enzymes, **transglucosidase** literally rearranges the molecular structure of starch. Instead of allowing starch to be converted into free sugars that spike your blood glucose and trigger deadly insulin release, transglucosidase converts starch into beneficial, indigestible, prebiotic fiber—right in your own digestive tract.^{6,7,21-23}

With the help of **transglucosidase**, you can achieve multiple life-saving goals with a single supplement:

1. You'll convert less starch to sugar, ensuring a smaller glucose load, especially in the critical after-meal period.^{6,21,22}
2. You'll release less insulin, thus reducing your risk of excess insulin's deadly health effects.^{6,21,22}
3. You'll be providing yourself with additional prebiotic fiber, further reducing your risk of diabetes and enhancing intestinal health.^{7,23-29}

Neutralize Dietary Starch

As stated earlier, regardless of the form of starch you eat, all digestible starch gets turned into sugar as it passes through the digestive tract.^{7,8} And that results in elevations in blood sugar and a rise in insulin levels into the danger zone. The riskiest period is the two hours immediately following a meal; studies show that this after-meal blood glucose and insulin surge is a major risk factor for cardiovascular disease.¹² Fortunately, **transglucosidase** can help eliminate the dangers of this after-meal period.

So what does happen to the **starch** you just ate? That's the second part of the transglucosidase story.

In addition to blocking the conversion of starch into sugar, **transglucosidase** converts that harmful sugar into beneficial prebiotic dietary fiber.^{6,23,30}

We know that the more fiber you consume, the better your health. High-fiber diets may help you live longer for several reasons.³¹ Prebiotic fiber feeds the beneficial bacteria living in your colon; those bacteria in turn convert other types of fiber into healthy molecules that lower levels of inflammation in your body, slow excessive weight gain, reduce your blood cholesterol, shrink your risk of cancer, and—importantly—help normalize blood glucose and insulin levels.³²⁻³⁶

But despite the American Dietetic Association's recommendation that healthy adults should consume **20 to 35 grams/day** of dietary fiber, most people don't come anywhere close to this level of intake, partly because it's hard to find good, palatable sources of fiber.³²

When you supplement with **transglucosidase**, however, you are capable of converting unhealthy **starches** with high sugar release and low fiber content into healthy prebiotic **fiber**—directly in your own digestive tract.^{6,21,22}

Transglucosidase: Reducing Sugar Surges

- High blood sugar and the resulting high insulin levels pose a grave threat to Americans' health, even for non-diabetic people.
- The biggest source of glucose in the diet is not sugar or sweeteners, but rather starch, which is made up of hundreds of individual glucose molecules that break off and are absorbed during digestion.
- Slowing starch digestion is one important way of reducing dangerous spikes in blood sugar following a meal, as is increasing one's intake of prebiotic dietary fiber.
- Transglucosidase offers a revolutionary approach to managing high blood sugar and insulin surges by converting starch into prebiotic fiber directly in the intestinal tract.
- Studies show that transglucosidase can stop the progression of prediabetes to diabetes, while limiting tissue damage and lowering cardiovascular and cancer risk factors among diabetics.
- If you are concerned about the risks of high blood sugar, you should take a transglucosidase supplement before every starch-containing meal.





Human data confirms the benefit of *transglucosidase* for improving the health of the beneficial bacteria that reside in the digestive tract. In a group of forty type II diabetics receiving transglucosidase for 12 weeks, **67%** had considerable improvement in the health and balance of bacterial colonies in their digestive tract.³⁷ Researchers believe that the modulation of gut bacteria by transglucosidase may be one of the main mechanisms by which transglucosidase supports control of glucose levels and promotes weight loss in type II diabetics.

That means transglucosidase has the potential to radically change the equation when it comes to the dangers of starch in your diet. Given its dual mechanism of action—blocking the release of harmful sugar

Table 1: The Impact of Common Starchy Foods on Glucose, Insulin, and Satiety Scores ^{45,46}

Because one gram of starch could be converted by digestive enzymes into one gram of sugar, foods that are high in starch are also high in sugar.^{5,8} Sugar is released more easily from some foods than from others, resulting in very different blood sugar and insulin profiles. In this table, various foods are compared with white bread, a starchy food that is rapidly converted to sugar. The “glucose score” indicates how much glucose a food contains compared to white bread; the “insulin score” indicates how much a given food raises blood insulin compared to white bread; and the “satiety score” indicates how full you feel after eating identical portions of each food, compared to white bread.^{45,46}

Food	Glucose score	Insulin score	Satiety score
White bread (baseline)	100	100	100
Whole-grain bread	97	96	157
White rice	110	79	138
Brown rice	104	62	132
White pasta	46	40	119
Brown pasta	68	40	188
Potatoes	141	121	323
Baked beans	114	120	168
Crackers	118	87	127
Mars bars	79	122	70
Bananas	79	81	118
Cornflakes	76	75	118
Porridge	60	40	209
Apples	50	59	197

from starch and converting it instead into beneficial fiber—**transglucosidase** has the power to help prevent you from crossing the line into prediabetes (insulin resistance) or overt diabetes, preserving your pancreatic function and protecting you from dangerous insulin surges—and ultimately prolonging your life.

Reduce Your Risk of Developing Diabetes

Transglucosidase has been studied around the world, and it's one of the only known natural enzymes that can prevent the progression of prediabetes to full-blown diabetes.⁶

People with prediabetes often have **fasting glucose** levels near the upper limits of “normal” (near or above **100 mg/dL**) and have already lost the ability to control **after-meal** glucose and insulin surges. Prediabetics have a high risk of progressing to full-blown diabetes—but even if they don't, these “mild” elevations in blood sugar still correlate strongly with



Shield Your Body from Chronically Elevated Insulin

Anyone whose blood sugar is not under optimum control is exposed to the dangers of chronically elevated insulin levels. That's because your body will pump out insulin so long as blood sugar levels are above normal—and can result in an insulin level that may be dangerously elevated in its effort to keep blood sugar at a normal level, making it a truly hidden danger.

Insulin, of course, is a useful and necessary hormone. It is responsible for driving blood sugar into cells, where it's burned for energy. Without properly regulated amounts of insulin we couldn't survive.

But insulin, like many hormones, has multiple functions. The little-known “dark side” of insulin is that it is a powerful growth factor.⁴¹ And in the healthy adult body, there's limited usefulness in growth factors. Excessive growth factor production triggers cell replication in places we don't want it. Insulin and other growth factors are implicated, for example, in cancer, where unregulated cellular reproduction produces deadly malignancies.⁴² And imbalanced growth factors, including insulin, are also implicated in the thickening and poor responsiveness of smooth muscle cells lining arterial walls, contributing to cardiovascular disease.⁴¹

Excessive insulin production is the result of insulin resistance, which is another way to say “prediabetes.” High insulin levels are associated with a **37%** increase

in the risk of dying from cancer—whether or not you have diabetes.^{40,43} Doctors are finally learning to pay attention to insulin levels as well as to blood sugar levels when evaluating new treatments and when advising their patients. And they are starting to seek therapies that increase insulin sensitivity and lower overall insulin levels.⁴⁴

Most antidiabetic drugs aim only to drive down blood sugar levels and have no effect on insulin; others are actually intended to increase your insulin levels in the attempt to reduce blood sugar. But **transglucosidase** works in part by lowering insulin levels as blood sugar normalizes.

In human studies in which healthy subjects with evidence of insulin resistance ate a test meal of white rice (high in starch), placebo recipients saw their insulin levels rise along with their after-meal blood sugars (the expected response), while those receiving **transglucosidase** had small decreases in insulin over the same time period.⁶ And in patients with diabetes, who already had elevated insulin levels, 12 weeks of **transglucosidase** supplementation led to significant drops in insulin concentration overall. These are remarkable findings, given that these subjects made no other changes in their diets or lifestyles.

diseases such as heart attack, inflammatory bowel disease, and cancer.^{6,38}

In a study including prediabetics, one group received a “low dose” of **450,000* units** of transglucosidase, one group received a “high dose” of **900,000 units** of transglucosidase, and a third group received a placebo.⁶ The subjects took the supplements along with a test meal of white rice (high in starch) that is readily converted to glucose.

Dosing Enzymes

*Unlike many other nutrients, enzymes are dosed according to their unit of activity. One enzymatic unit is the amount of enzyme needed to convert one micromole (μmol) of a substance per minute. This is not to be confused with the International Unit (IU), which is an unrelated measure of other biologically active substances such as vitamin D.

Because **transglucosidase** is an enzyme, the dosages are measured in “units of enzyme activity” not milligrams or International Units (IU). A **450,000** unit dose is typically the amount found in one capsule.



Over the course of three hours following the control meal, the subjects' total blood sugar rose into dangerous territory, as would be expected for people with prediabetes.⁶ But the people who supplemented with **transglucosidase** at either dose had significantly lower total blood sugar concentrations over the three-hour period, along with a trend towards lower insulin levels. There were no significant side effects.

What this means for you is that, if you are a prediabetic, you can safely limit the negative impact of a starchy meal—and can slow your rate of progression towards diabetes.⁶

Reduce the Impact of Diabetes

Another clinical study looked at patients who already had type II diabetes, and the researchers found that the benefits of transglucosidase are just as exciting for those with full-blown diabetes as they are for prediabetics.²²

Diabetics not only have elevated blood sugar and often high insulin levels, but also have detectable evidence of advanced glycation end products in the form of **hemoglobin A1c** (HbA1c). This blood test is an indication of total blood sugar levels over an approximate two to three-month period.

Patients in the study received total daily doses of **900,000 units** of transglucosidase, **2.7 million units** of transglucosidase, or a placebo.²² Both doses produced respectable reductions in hemoglobin A1c, lowering it by an average **0.18** and **0.21%**, respectively (normal measurements for this test should not exceed **5.5%**).

Patients' **insulin** concentrations fell significantly as well, by **2.79** and **3.59 $\mu\text{IU/mL}$** , respectively.²² And while transglucosidase does not replace **metformin** if internal overproduction of glucose by the liver is the culprit behind elevated fasting glucose (**>85 mg/dL**) or elevated HbA1C (**>5.5%**), its dramatic insulin reductions are similar to those seen with the drug metformin, which can reduce **fasting insulin** by about **38%** in obese, insulin-resistant people.^{39,40}

But the benefits of transglucosidase for diabetics don't end there. The patients taking **transglucosidase** also had significant increases in a beneficial cytokine called adiponectin and significant reductions in triglycerides and diastolic blood pressure.²²

On the other hand, the placebo patients experienced significant increases in their body mass index (a measure of total weight for height) and also had increases in markers of fat-induced liver damage. Neither group of patients taking **transglucosidase** had such changes.²²

If you already have type II diabetes, the availability of this novel enzyme is excellent news. It means that supplementing with **transglucosidase** not only helps protect against dangerous glycation reactions taking place in your tissues (which will cause heart, kidney, nerve and eye disease, given time), but also blunts excessive **insulin** levels (which raise your risk of cancer and cardiovascular diseases). In addition, it can also help protect you from further weight gain and other measures of poor health. And it's all done without taking a single drug.

Summary

Chronically elevated glucose and insulin levels, especially those immediately following a meal, should be a major concern of any adult—even if you have no known history of high blood sugar. High insulin and glucose blood levels are at least as dangerous as high cholesterol when it comes to increased risk of **cardiovascular disease**.

In addition, chronically elevated glucose and insulin sharply elevate **cancer** rates. That's why it's important to take all possible steps to prevent dietary **starch** from converting into deadly sugar calories.

Transglucosidase is a groundbreaking supplement that is the first of its kind. Its dual mechanism of action helps manage high blood sugar and excess insulin by blocking the release of harmful sugar from **starch**...converting it instead into beneficial **fiber**.

This is a medical breakthrough capable of mitigating the growing diabetes epidemic—and is a critical new tool in our kit for managing dangerous metabolic conditions.

If your **fasting glucose** is over **85 mg/dL** (which most adults are), or you have other indicators of glucose impairment such as elevated **hemoglobin A1c** or elevated **fasting insulin**, take **transglucosidase** before your two heaviest starch-containing meals of the day.

Human clinical trials have established its value in healthy as well as diabetic individuals. And that translates to lower risks for cancer, vision problems, and heart disease. ●

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



Doggie Diabetes

Diabetes is common in dogs as well as people. Fortunately, **transglucosidase** can help manage glucose levels in dogs as well as in humans. When researchers in Japan studied transglucosidase in animals, they found that the results were virtually identical with what we've seen in human studies.²¹

Healthy non-diabetic control dogs receiving transglucosidase experienced lower total after-meal glucose and insulin levels compared with those receiving the control diet alone. And the usual "spike" in after-meal glucose levels was virtually eliminated, allowing the dogs to maintain normal glucose concentrations of **85 to 95 mg/dL**.²¹

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ARE YOU GETTING Curcumin's BENEFITS?



How Much Curcumin Are You Absorbing?

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

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

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

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

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

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

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

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

Unrivalled Potency and Absorbability with BCM-95®

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

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

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



Item # 00407

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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.

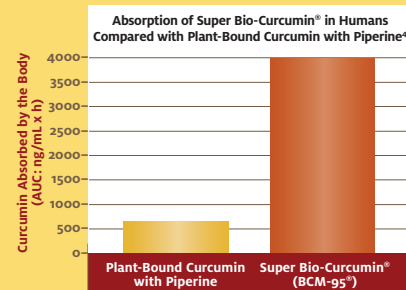


Chart 1. Super Bio-Curcumin® (BCM-95®) showed 6.3 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with plant-bound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin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

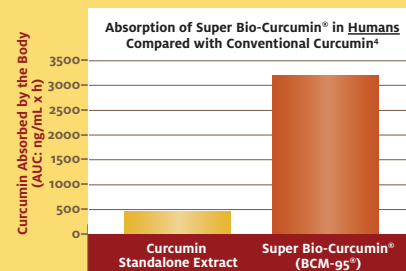


Chart 2. Super Bio-Curcumin® (BCM-95®) showed 6.9 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with conventional curcumin (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed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

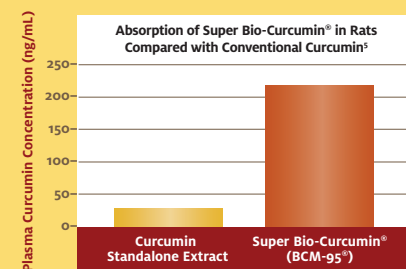


Chart 3. Bioavailability in rats fed with BCM-95® is 7.8 times higher than conventional curcumin.

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

Life Extension® **BREAKTHROUGH!**

LIMIT THE RELEASE OF SUGAR FROM STARCHY FOODS

Convert the **Starch** You Eat to **HEALTHY FIBER!**

Hundreds of studies document the importance of protecting against blood **glucose** surges.¹

What the public doesn't realize is that a huge source of **blood sugar** emanates from dietary **starch**.^{2,3} This includes bread, pasta, potatoes, and rice. But even so-called healthy carbohydrates like whole-grain bread and brown rice can induce undesirable glucose spikes.⁴

In a breakthrough development, scientists have shown that an enzyme called **transglucosidase** converts **starches** into prebiotic **fiber**—*within your own digestive tract!*^{5,6} Taking this enzyme with starchy meals helps avoid the flood of **glucose** into the bloodstream that results from eating carbohydrates.

COMPELLING HUMAN RESEARCH DATA

Published studies show that **transglucosidase** limits the amount of **SUGAR** released from **STARCH**, especially in the critical **after-meal** period. It does this by converting dietary starch into a beneficial indigestible prebiotic **fiber**.^{5,6}

Contains soybeans. Contains tree nuts (coconut).

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

Transglucosidase has been demonstrated in humans to reduce the level of **rapidly digested** starch in a carbohydrate food item by **31%**.⁷ This helps maintain healthy blood glucose, cholesterol, and insulin levels for those whose levels are already in the normal range.⁸⁻¹¹

SHIELD AGAINST AFTER-MEAL GLUCOSE SURGES

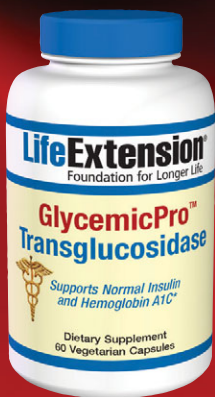
Each vegetarian capsule of the new **GlycemPro™ Transglucosidase** contains a full **450,000 TG** (transglucosidase activity units) of **transglucosidase**.

Just one capsule taken with starch-containing meals helps limit the release of sugar from starch. Those who consume a low-starch diet may need to take only one **GlycemPro™ Transglucosidase** capsule daily with their starch-containing meal.

A bottle of 60 vegetarian capsules of **GlycemPro™ Transglucosidase** retails for \$54. If a member buys four bottles, the price is reduced to **\$37.50** per bottle.

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Item # 01731

To order **GlycemicPro™**
Transglucosidase,
call **1-800-544-4440** or visit
www.LifeExtension.com

Healthy Vegetable Soups

NO GLUCOSE-SPIKING
STARCHES!

Look at the label of commercial soups and see how much rice, pasta, potatoes, and other **glucose-spiking** starches they contain. The reason for this is that starches are cheap fillers that cost virtually nothing. Consumers seeking to eat healthier pay the price when they ingest these **starches** that create dangerous **after-meal** blood **glucose** surges.

Life Extension® set out on a mission years ago to provide members with foods that provide only beneficial ingredients—with none of the dangerous **starches** that comprise such a big percentage of most commercial soups and other foods. These soups are made with no saturated fat, cholesterol, *trans* fat, or dairy.

Here we present a description of Life Extension's three ultra-healthy vegetable soups.



Rich Rewards™ Black Bean Vegetable Soup:

**A Low-Glycemic Healthy Soup
without High-Glycemic Carbs Found in
Commercial Soups**

Black Bean Vegetable Soup delivers **52%** of the daily value of fiber while providing loads of black beans, barley, garden-fresh vegetables, mushrooms, heart-healthy extra-virgin olive oil, and a host of other beneficial plant foods.

A 32-ounce bottle of 3.5 servings of **Rich Rewards™ Black Bean Vegetable Soup** retails for \$13. If a member buys six bottles, the price is reduced to **\$9.19** per bottle.

Item# 01712

Item# 01705



Item# 01530



Item# 01531



Rich Rewards™ Lentil Vegetable Soup:
120 Calories Per Serving
of the Best-Documented Foods to
Maintain your Precious Health

Life Extension® has formulated a **lentil vegetable soup** suitable for vegans that contains only garden-fresh ingredients, including lentils, mushrooms, tomatoes, carrots, **extra virgin olive oil**, and a host of other beneficial **plant foods**.

The retail price for a **3.5 serving bottle** of **Rich Rewards™ Lentil Vegetable Soup** is \$13. If a member buys six bottles the price is reduced to **\$9.19** per bottle. **Item# 01705**

Rich Rewards™ Cruciferous Vegetable Soups:
The World's Healthiest Vegetables in
One Smart Bowl of Soup

A full serving of either the regular-flavored **Cruciferous Vegetable Soup** or the **spicy** flavor contains less than 71 calories with no added starches, preservatives, or sugars! Each serving is an excellent source of cruciferous vegetables, is low in total fat per serving, has no saturated fat or cholesterol, and has **0 grams trans fat**.

The retail price for a **3.5 serving bottle** of **Rich Rewards™ Cruciferous Vegetable** or **Rich Rewards™ Spicy Cruciferous Vegetable** soups is \$11.95. If a member purchases any assortment of six bottles, the price is reduced to **\$8.44** per bottle. **Item# 01530 & # 01531**

To order your fresh supply of any variety of
Rich Rewards™ Vegetable soup, call 1-800-544-4440 or visit www.lef.org/soup

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.



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Life Extension Magazine Exclusive

Interview with **Aubrey de Grey, PhD**

Life Extension magazine® last interviewed renowned anti-aging expert Dr. Aubrey de Grey in February of 2006, and published a review of Dr. de Grey's book *Ending Aging* in December 2007.

Dr. de Grey's SENS Foundation is aggressively seeking to extend the healthy human life span.

With Dr. de Grey recently being named to the Scientific Advisory Board of the Life Extension Foundation®, we thought this would be a good time for a follow-up interview.

SENS by the way, stands for **Strategies for Engineered Negligible Senescence**.

The ultimate purpose of maintaining a state of **negligible senescence** is the postponement of age-associated disease as long as the therapies are reapplied.

LE: You have recently joined the Scientific Advisory Board of the Life Extension Foundation®. What do you hope to accomplish as a Board Member?

AdG: I'm delighted and honored to have been invited to join Life Extension Foundation's® Scientific Advisory Board. I accepted with pleasure, because I think I can offer a range of expertise concerning biomedical research, a field that is not the sole source of Life Extension Foundation's® business but very much does form a key component of the efforts into which Life Extension Foundation® reinvests its profits.

LE: When *Life Extension* magazine® interviewed you in 2006 you were managing the Methuselah Foundation. Since then you have created the SENS Foundation. Can you explain the difference between the two foundations?

AdG: The Methuselah Foundation is still run by the person with whom I co-founded it, Dave Gobel. We split it in two (forming SENS Foundation, which we have recently renamed SENS Research Foundation) in 2009 because we came to the conclusion that it was not proving efficient, from an outreach and fundraising perspective, to have one organization pursuing two very different approaches to the same mission, namely prizes (the MF's original focus) and direct sponsorship of research. So SENS Research Foundation now handles the research sponsorship and Methuselah is mainly back on prizes. We are still on totally cordial terms and I think everyone feels that it was the right decision: both organizations have thrived since the split.

Dr. de Grey's book outlines seven strategies for ending aging, which are based on the seven causes of aging that he has identified. They are:

1. Extracellular junk
2. Cell senescence
3. Extracellular crosslinking
4. Intracellular junk
5. Mitochondrial mutations
6. Cancer-causing nuclear mutations (and epimutations)
7. Cell loss leading to tissue atrophy.

His program of strategies is called SENS, i.e., Strategies for Engineered Negligible Senescence. Each strategy is given a distinctive "SENS" name, as follows:

AmyloSENS (extracellular junk) – Aging leads to an accumulation of junk outside of cells, the most notorious example of which is the amyloid plaque that is believed to cause Alzheimer's disease. AmyloSENS would attempt to use the immune system to eliminate amyloid and other damaging extracellular junk.

ApoptoSENS (cell senescence) – Cells that become old and no longer divide (senescent cells) produce inflammatory substances that contribute to many of the diseases of aging. ApoptoSENS would eliminate senescent cells by inducing such cells to "commit suicide" (apoptosis).

GlycoSENS (extracellular crosslinks) – Proteins form cross-links with sugars (glycation) as tissues age. As a result of this crosslinking, tissues lose suppleness, becoming stiff and full of fibrous material.

GlycoSENS seeks enzymes that will selectively break-down these harmful crosslinks.

LysoSENS (intracellular junk) – Waste material of various kinds ("junk") that is formed within cells is often broken down by a specialized organelle called the lysosome, which contains enzymes for that purpose. Unfortunately, some junk (proteins, fats, metals, etc.) cannot be broken down by normal lysosome enzymes, and this junk accumulates with age. The goal of LysoSENS is to develop and provide additional enzymes to the lysosomes that would break down more forms of junk molecules.

MitoSENS (mitochondrial mutations) – Mitochondria generate energy for cells, but in doing so they generate large amounts of free radicals. A prime target for these free radicals is the DNA within the mitochondria that controls mitochondrial function. MitoSENS seeks to make copies of mitochondrial DNA in the DNA of the cell nucleus, where it would be a safe distance from the damaging free radicals produced within the mitochondria.

OncoSENS (cancer-causing nuclear mutations/epimutations) – Most forms of cancer utilize the enzyme telomerase to maintain long telomeres (the caps of chromosomes that keep them functional). OncoSENS proposes to eliminate telomerase as a means of controlling cancer. Telomeres are needed by stem cells, but OncoSENS would replace this need by a program of tissue replacement (RepleniSENS).

RepleniSENS (cell loss and atrophy) – With age, cells are lost or atrophy, thereby causing tissues to stop functioning properly. RepleniSENS would utilize stem cell therapies to restore cells and tissues.



LE: You recently inherited a large sum of money and chose to donate most of it to the SENS Foundation. Will you provide some details and explain your motives?

AdG: My mother died in May 2011 and I was her only child; the upshot is that I inherited roughly \$16.5 million. Of that, I assigned \$13 million to SENS (I won't bore you with the legal details, which were tedious in the extreme). It was pretty much a no-brainer for me: I've dedicated my life to this mission, and I dedicate all my time to it, so why not my money too? I retained enough to buy a nice house, but beyond that I have inexpensive tastes and I have no doubt that this is the best use of my wealth. It will accelerate research considerably, and also it will have indirect benefits in terms of helping us to put more resources into raising the profile of this work and garnering more support.

LE: Who are the other major donors to the SENS Foundation, and what proportion of the budget is covered by the money you donated?

AdG: My donation will be spent over a period of about five years, and it roughly doubles the budget we had previously, from \$2 million annually to \$4 million. The number one external donor remains our stalwart supporter Peter Thiel. Additionally, another internet entrepreneur, Jason Hope, has recently begun to contribute comparable sums.

LE: What will the SENS Foundation do when your donation money runs out?

AdG: It's hard to look ahead as far as five years, the projected duration of my donation, but we certainly have great confidence that our outreach efforts will bear fruit in that time. My hope is that five years from now we will be big enough that the expiry of my donation will go relatively unnoticed.

LE: Do you have a strategy for raising money for research on aging?

AdG: Absolutely—lots of strategies. The brutal lecture schedule I undertake and the 100+ interviews I do each year are part of it, as they've always been. The research we do, and the progress we demonstrate, are of course also key. And now that we have a little more to spend in that area, we have a really talented staff that is developing various other areas.

LE: Do you think aging is a factor that increases the risk of disease?

AdG: No, I don't. Gerontologists will say yes, it's a risk factor, but all they'll mean is that there is a correlation. Non-scientists will hear the statement and will infer that with appropriate choices one can reliably avoid the diseases of old age, just as with the appropriate choices one can reliably avoid being hit by a truck when crossing the street even though crossing the street is a risk factor for being hit. As such, this is one of the most counterproductive of the many failures of communication of which I claim my colleagues in gerontology are guilty. The actual fact is that aging is the CAUSE of the diseases of old age, and we need to start saying so.

LE: Do you think research on ending aging should be distinct from research against specific aging-related diseases?

AdG: No, I certainly do not, and this leads on from the previous question. The more we appreciate that aging is the cause of age-related diseases, the more we can get the research communities that are focused on those diseases to understand that the treatment of aging is no more nor less than preventative geriatrics. The general concept of preventative medicine already has a good rap, and we need to be making use of that.

LE: What is advantageous and what is disadvantageous about the money spent on aging research by the National Institute on Aging (NIA, a branch of the US federal government's National Institutes of Health)?

AdG: It's pretty much all advantageous - just not nearly as advantageous as it could be. There is pitifully little money going into the search for interventions to postpone aging, and of what there is, pitifully little is focused on late-onset interventions.

LE: What do you think of the way the Ellison Medical Foundation spends money on aging research?

AdG: Exactly the same as for the NIA. The Ellison Foundation was set up with a remit to fund work that complemented the NIA, but I'm afraid to say that in practice it has merely supplemented it.

LE: Do you think it is more important for aging research to raise money from wealthy individuals than would be the case for research on cancer or heart disease?

AdG: I think wealthy individuals have a key role to play across the whole non-profit world, but probably even more in fields that so far lack widespread public support, of which the defeat of aging is unfortunately still one.

LE: For which of your SENS strategies would success achieve the most additional healthy years?

AdG: No one strategy would achieve very much on its own - certainly not as much as ten years, probably not even five.

LE: Which of the SENS strategies has the best prospect for success first?

AdG: A couple of the strategies are already in clinical trials for some relevant conditions - stem cells for various things, including Parkinson's disease, and vaccination against extracellular debris for Alzheimer's.

LE: Which of the SENS strategies would be the most difficult to achieve?

AdG: I think it's pretty clear that the approaches for defeating cancer and for obviating mitochondrial mutations are the hardest, because they will both involve gene therapy, something we're not at all good at yet. Out of those two, I would say that the OncoSENS (the elimination of telomerase enzyme) is the harder, because it is much more complex and also because it involves gene targeting rather than just insertional gene therapy.

LE: Will you make a general statement about the goal of SENS research?



AdG: SENS is based on the appreciation that there is a continuum between (a) the initially harmless, progressively accumulating damage that accumulates in the body as a side-effect of its normal operation and (b) the pathologies that emerge when the amount of that damage exceeds what the body is set up to tolerate. We want to treat (remove or obviate) the damage and thereby prevent the pathology.

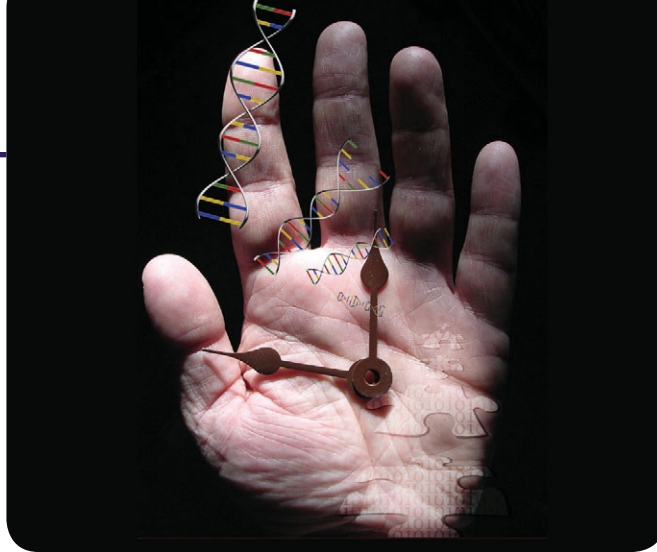
LE: How difficult would it be to eliminate **lipofuscin** (the cellular junk that particularly accumulates in neurons and heart muscle cells) compared to eliminating **7KC** (an oxidized derivative of cholesterol that accumulates in atherosclerotic plaques) or **A2E** (a substance accumulating in the retina with age that causes macular degeneration and blindness) as a lysoSENS project? How much difference do you think elimination of lipofuscin would make in terms of rejuvenation?

AdG: This is a big question right now. We have a PhD student in our funded group at Rice University who is working on lipofuscin, but he is just starting. Lipofuscin is indeed harder, but what makes it harder is not the aging-versus-disease distinction but simply the nature of the substance. Lipofuscin is very heterogeneous in its molecular composition, and moreover it is mainly made of proteins, so it is hard to distinguish from material that we don't want to break down. I should note in passing that the material whose accumulation causes macular degeneration is often called lipofuscin but really should not be, because the only thing it has in common with bonafide lipofuscin is its subcellular location (the lysosome) and its fluorescence properties: its molecular composition is entirely different.

LE: In the 2011 report of the SENS Foundation, progress on mitoSENS (making copies of mitochondrial DNA in the nucleus to protect them from free-radicals generated by mitochondria) was restricted to 5 of the 13 protein-encoding mitochondrial genes. How confident are you that all 13 such genes can be copied into the nucleus in the foreseeable future? Are some of those genes more important than others, or are you simply going after the easier targets?

AdG: We're pretty confident. Some of the genes we've chosen to work on first are easy targets in the sense that other researchers have demonstrated some success with them already; other genes are chosen more because success would be high-impact, in that it would allow more clear-cut assays of efficacy. In the end, all 13 are equally important.

LE: You have been demonstrating an increased appreciation for the role of neurofibrillary tangles (tangled



aggregates of tau protein) as a potential cause and treatment target resulting in the cognitive decline of Alzheimer's disease. Are you planning any SENS Foundation projects to remove tangled tau to better prevent Alzheimer's disease than simply removing amyloid? Would this be distinct from LysoSENS (elimination of intracellular junk by more powerful enzymes in lysosomes)?

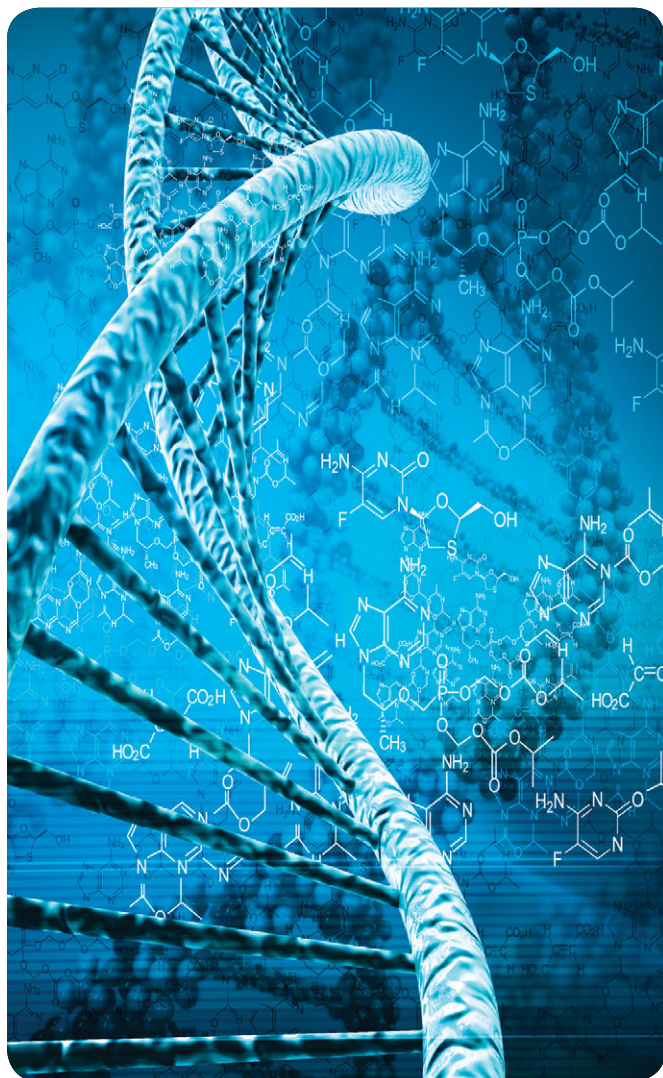
AdG: I've always said that (tau) tangles are likely to be just as important as (amyloid) plaques in Alzheimer's disease, and indeed that cell loss must also be addressed. Absolutely we want to remove tangles. Tangles are an unusual type of intracellular aggregate in that they are not normally eliminated by lysosomes, but they are still a target of LysoSENS because we believe that they are the visible manifestation of a "traffic jam" caused by lysosomal dysfunction, which is itself caused by other molecules, maybe the same ones that cause atherosclerosis. (This suspicion arises from, among other things, the fact that apoE genotype is the most significant genetic contributor to risk of both Alzheimer's disease and atherosclerosis.) At the moment we have no project in this area but we are in detailed conversations with people focused on it.

LE: Is AmyloSENS (elimination of extracellular junk, mainly amyloid) now primarily focused on **trans-thyretin amyloid**, rather than the amyloid plaques believed to cause Alzheimer's disease? (Transthyretin is a form of amyloid that accumulates outside of the brain, especially in the heart, and has been found to be the frequent cause of death of persons over 110 years of age.)

AdG: Yes, our only AmyloSENS project at present (a collaboration between labs at Harvard and at University of Texas, Houston) is focused on transthyretin amyloid. We are leaving the research on Alzheimer's disease amyloid to the many well-funded groups that already have it in their sights. The other main amyloid identified as having a role in Alzheimer's disease is islet amyloid in the pancreas, and we may get into that area soon.

LE: SENS Foundation has been investigating the possibility that mutation and epimutation (changes in gene expression rather than alterations of the genes themselves) may be deleterious in ways other than cancer. If that proves to be true, what strategies do you envisage to address that problem?

AdG: Our current work is focused on epimutations; we feel that the work of experts in the field of the genetics of aging (Jan Vijg's group at the Albert Einstein College of Medicine in particular) has already shown really conclusively that mutations accumulate far too slowly in most tissues (notably the brain) during adulthood to have any chance of contributing to age-related ill-health. If epimutations don't come out the same way, we will need to look at ways to mildly accelerate cell turnover, combined with autologous stem cell therapy, which uses one's own stem cells for cellular therapy. But that's awfully hard, so let's hope we don't need to go there!



LE: In the November 2, 2011 issue of *Nature*, Darren J. Baker, *et al.* described success in rejuvenation of an accelerated-aging model of a mouse.* Do you think that Baker's group is more successfully fulfilling ApoptoSENS than the SENS Foundation is likely to achieve?

AdG: The Baker paper was a huge validation of the idea that death-resistant cells are bad for you, but it didn't actually put forward any particular approach to eliminating such cells in genetically unmodified organisms, so it in no way "fulfills ApoptoSENS."

LE: The 2011 research report of the SENS Foundation contained only a brief mention of RepleniSENS, the use of stem cells to restore and replace cells and tissues. Given all the interest in stem cell therapies by others, is there really a need for SENS Foundation to be doing research in this area?

AdG: You've got it - this is the clearest example of a theme of SENS which is not being pursued aggressively by SENS Research Foundation, and that's precisely because it's being supported so well by others. That said, we still keep our eyes very open for specific projects in the RepleniSENS space that might need a leg up.

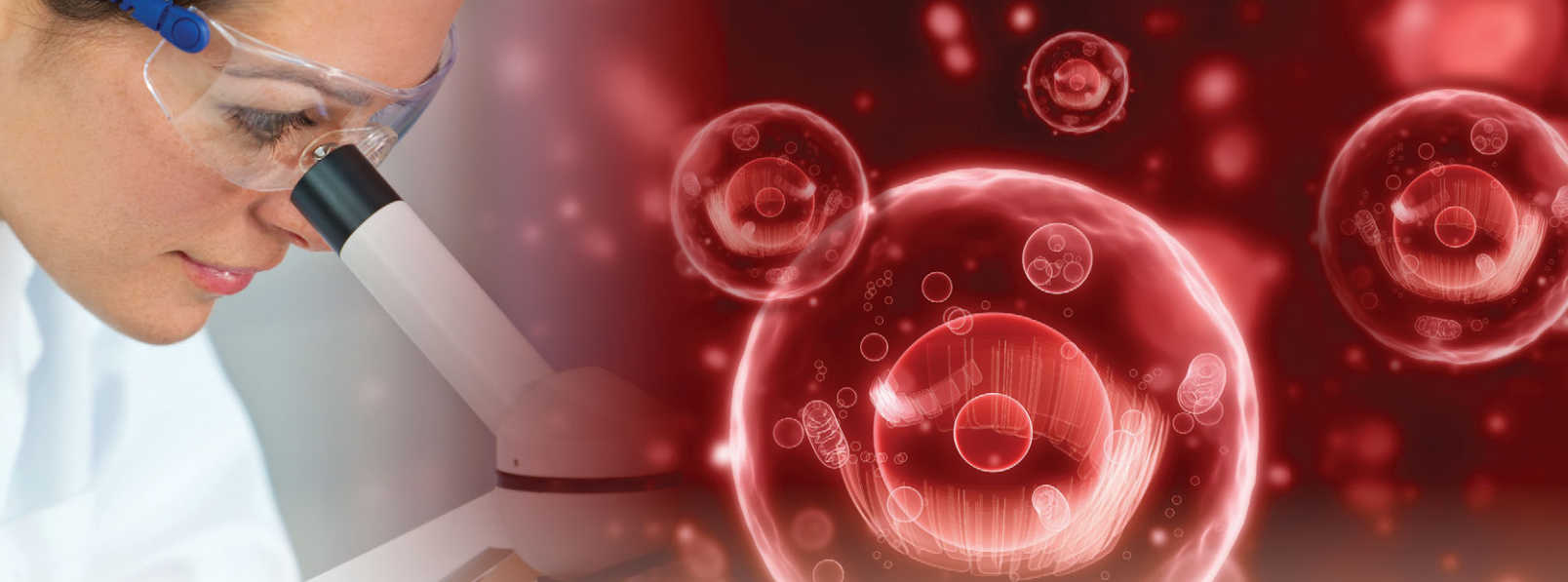
LE: Thank you for participating in this interview, Dr. de Grey, and we are pleased that you have joined the Scientific Advisory Board of the Life Extension Foundation®. ●

Dr. Aubrey de Grey is a biomedical gerontologist based in Cambridge, UK and Mountain View, California, USA, who first researched the idea for, and founded, the SENS Research Foundation. He received his BA and PhD from the University of Cambridge in 1985 and 2000 respectively, with his original field being in computer science. Dr. de Grey is Editor-in-Chief of Rejuvenation Research, a Fellow of both the Gerontological Society of America and the American Aging Association, and sits on the editorial and scientific advisory boards of numerous journals and organizations. For more information on Aubrey de Grey or the SENS organization, visit: www.sens.org.

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

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FIGHT BACK AGAINST AGING!

Aging is Characterized by Inflammation, Glycation, and Mitochondrial Decay

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

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

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

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

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

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

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

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



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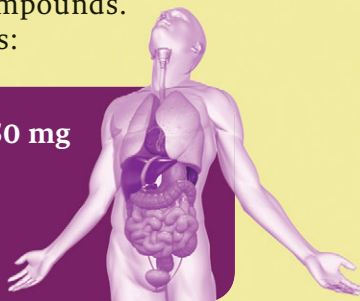
Unleash the Power of the Milk Thistle Seed

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!

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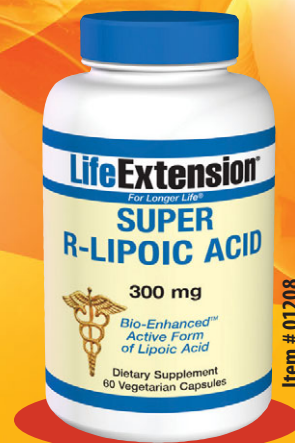
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BY SCOTT NEWMAN

AVOIDING CANCER RISKS OF **SUN DAMAGE**

No matter where you live, the ongoing depletion of the ozone layer increases your risk of skin cancer.¹

Over the past 40 years, melanoma cases increased **800%** for women and **400%** for men. Non-melanoma cases increased **153%** for women and **64%** for men.^{1,2} Skin cancer now accounts for over **40%** of all cancers in the US.³

Topical sun blocks aren't putting a dent in the rates of skin cancer. Thankfully, researchers have found a unique botanical extract that, taken internally, protects skin from solar damage and minimizes the potentially lethal DNA mutations that occur from sun exposure.

Nearly a decade of rigorous research and clinical trials has shown that the fern plant ***Polypodium leucotomos*** has the uncanny ability to shield the skin against the dangerous effects of ultraviolet (UV) exposure.⁴⁻⁹ >





Numerous studies demonstrate that *Polypodium leucotomos* reduces the number of sunburn cells following exposure to solar rays,^{6,7} protects against UV-induced DNA damage,^{6,10} reduces inflammation,^{6,10} influences the immune system,^{6,7,11,12} acts against tumors,¹³ and inhibits collagen-degrading enzymes.^{14,15}

Polypodium leucotomos specifically targets the skin—protecting from sunburn, cell death, DNA damage, and oxidant activity from natural and artificial ultraviolet light.^{4,6,7,10} In addition, a new natural compound known as red orange complex has been shown to provide supplementary protection against UVB damage.^{16,17}

In this article, you'll learn how *Polypodium leucotomos* helps protect skin from the ultraviolet damage that leads to short-term damage (such as sunburn and sun poisoning) and long-term damage (such as wrinkles and skin cancer).



A Revolutionary Approach to Sun Protection

Current staggering skin cancer rates shows that sunscreens are not offering adequate protection against damaging solar rays.²

Scientists have found that an extract of the fern *Polypodium leucotomos* when taken internally, slows the rate of harmful UV rays penetrating the skin—and prevents the damage caused by rays when they do get through.⁴⁻⁸ Ultimately, this helps avoid cellular changes in the skin that lead to premature aging and cancer.⁹

Best of all, *Polypodium leucotomos* offers this protection from the inside out. The result is an oral photoprotective agent that provides uniform, cellular total-body surface protection (including the eyes, lips, and the scalp).

Oral Protection From Sunburn

Sunburn occurs when your skin is exposed too long to ultraviolet light. Although we don't normally think of it in these terms, sunburn is literally inflammation of the skin. Over time, chronic inflammation is just as harmful to your skin (your body's largest organ) as it is to any other organ in your body.

Unfortunately, the more sunburns your skin experiences early in life, the more you increase your risk of skin cancer later on.¹⁸ And of course, skin that is

repeatedly overexposed to ultraviolet light is more prone to wrinkle, dry out, and age prematurely.¹⁹

It's hard to imagine that swallowing a capsule could provide such potent protection from the sun's harmful rays. But multiple studies have proven that taking oral *Polypodium leucotomos* can *dramatically* increase the amount of time you can spend in the sun before your skin becomes red and inflamed.^{6,7,20}

One of the early clinical studies on *Polypodium leucotomos* determined that the oral extract offered significant protection against the sun's rays.²⁰ The study subjects experienced an almost **three-fold** increase in the amount of time they spent in the sun before their skin began to burn, compared to when they weren't using any form of UV protection. Subjects taking medication associated with increased photosensitivity experienced even more impressive results—lengthening the amount of sunlight their skin could tolerate before damage occurred by nearly **seven-fold**.²⁰

Another study confirmed the ability of *Polypodium leucotomos* to protect the skin against UV damage.⁶ This particular study consisted of subjects with fair to light skin, which means they were more vulnerable to sun damage in the first place.

The active group was administered the *Polypodium leucotomos* extract (**7.5 mg/kg** body weight, a dose that translates to **525 mg** for a typical 154-pound person) and was then directly exposed to varying doses of artificial ultraviolet radiation. Once again, the

subjects taking the *Polypodium leucotomos* extract experienced a significant decrease in the reddening of their skin—but the microscopic effects were even more impressive.⁶

Those who had taken the extract experienced less UV-induced damage, including significantly fewer sunburn cells, which are indicators of light-induced tissue injury. They had a reduction in the kind of DNA damage that can lead to cancer, and had a protective effect on radiation-sensitive Langerhans cells, key immune cells found in the outer layer of skin (the epidermis).⁶

Protecting Against “Sun-Poisoning”

Polypodium leucotomos offers photoprotection against one of the most extreme forms of sun damage—sun poisoning. Those who suffer from sun poisoning can break out in a rash even after limited exposure to the sun. This condition is known as polymorphic light eruption, which belongs to a category of UV-induced skin disorders known as idiopathic dermatoses. In a recent study, 57 patients with idiopathic dermatoses took **480 mg** per day of *Polypodium leucotomos* orally and then exposed themselves to sunlight.²¹ The *Polypodium leucotomos* extract significantly reduced symptoms in **73%** of the subjects.

This study had nearly identical results to a previous study of patients with idiopathic dermatoses.⁸ In that study, the subjects took **480 mg** of oral *Polypodium leucotomos* and then exposed themselves to sunlight—and an astounding **80%** of the patients reported benefits from its use.

Prevent Wrinkles and Premature Aging

In study after study, *Polypodium leucotomos* has proven its ability to decrease the short-term consequences of sun exposure, such as redness and sunburn cell formation.^{6-8,11,12,21} But the long-term benefits are equally impressive.

Clinical research shows that taking oral *Polypodium leucotomos* extracts provide the skin with extraordinary protection from photoaging.⁶⁻⁸

UV rays wreak havoc on human skin, generating free radicals and other harmful substances that damage the DNA that is responsible for ensuring every skin cell fulfills its designated role—including the regeneration of healthy new skin cells.²² Ultraviolet light destroys specialized immune cells called Langerhans’ cells that are abundantly found in the skin²² and are responsible for destroying harmful substances such as germs, toxins, tumors, or other invaders before they can hurt the skin or penetrate further into the body.

What You Need to Know

Plant Extracts Guard Against UV-Induced Skin Damage

- Ultraviolet (UV) radiation directly damages DNA and impairs normal skin cell functions, leading to premature skin aging, immune suppression, and cancer.
- Currently, the standard means of protection against UV rays include avoiding sun exposure and using sunscreen. However, despite warnings, skin cancer rates continue to climb.
- The fern plant *Polypodium leucotomos* and red orange extract offer a safe, easy, and effective way of shielding the skin against the dangerous effects of ultraviolet (UV) exposure in the form of an oral supplement.
- *Polypodium leucotomos* has powerful antioxidant effects that specifically target the skin—protecting the skin from sunburn, cell death, DNA damage, and oxidant activity from both natural and artificial ultraviolet light.
- Oral *Polypodium leucotomos* extracts provide a convenient way to protect your skin from short-term UV damage (such as sunburn and sun poisoning) and attenuate long-term UV damage (such as wrinkles and skin cancer).
- Red orange extracts exert an anti-inflammatory effect against human cells, including *keratinocyte* cells found in the epidermal skin layer.
- Human studies show that red orange complex provides photoprotection against UVB-induced skin erythema.



Polypodium leucotomos

Misconception About How Skin is Damaged By the Sun

Misconceptions can be deadly. If you think you can safely lie out in the sun as long as you are covered with a commercial sunscreen, the science indicates you are mistaken. Increasingly, studies suggest that no commonly available sunscreen completely prevents photodamage.³⁶

Even if you choose to avoid sunbathing, typical everyday exposure (30 four-minute exposures over the course of a week) is equivalent to spending over two hours every week at the beach. In fact, everyday sun exposure is a causative factor in skin aging.^{37,38}

With the onset of the long, sunny days of summer and the ongoing depletion of the Earth's protective ozone layer, protecting your skin against solar radiation should be a priority. As the incidence of skin cancers and premature aging of the skin continues to increase to epidemic levels, taking aggressive steps to guard against sunlight-induced free radicals is of paramount importance.



If left unchecked, the result of this UV damage is skin that develops lines and wrinkles, sags, dries out, and thins—in other words, UV damage contributes to the premature aging of your skin.¹⁹ Fortunately, *Polypodium leucotomos* slows the absorption of harmful UV rays and diminishes the DNA damage inflicted by sun-generated free radicals—leading to long-term skin protection and promoting healthy, youthful skin.²⁰

In a recent study, scientists studied the impact of *Polypodium leucotomos* on both UV radiated and non-radiated fibroblasts in vitro. They wanted to determine if it would have an effect on *matrix metalloproteinases* (MMPs), which are enzymes stimulated by UV light and that break down elastin and collagen the proteins that are responsible for keeping your skin supple and firm.¹⁴

The researchers determined that *Polypodium leucotomos* could both prevent and repair damaged skin. It prevents skin aging by directly inhibiting MMP expression (preventing the breakdown of collagen in the first place). It repairs damaged skin by stimulating the production of collagen and elastin.^{14,15}

As an added bonus, *Polypodium leucotomos* extracts have been shown to inhibit protein-destroying skin enzymes that decrease skin elasticity, which could

help delay the visible skin aging effect of ultraviolet radiation exposure.¹⁵ Additional research has found that *Polypodium leucotomos* decreases the development of damaging inflammation in the skin^{6,23} and increases survival of healthy skin cells.^{23,24}

Protection Against Skin Cancer

In addition to creating visibly damaged skin, unprotected sun exposure is the most preventable risk factor for skin cancer in the US.²⁵ That's because the same inflammation and DNA damage that can lead to the accelerated aging of the skin can lead to structural changes that can increase your risk of cancer.⁹

Fortunately, the same mechanisms of action in *Polypodium leucotomos* that protect the skin against sunburn and age-related sun damage has the potential to provide unprecedented long-term protection against skin cancer as well.^{4,6,7,10-15}

One study found that *Polypodium leucotomos* helps preserve skin health by maintaining Langerhans cells, the specialized immune cells in the skin that scavenge toxins and debris.^{6,20} The extracts have also shown to reduce UV-induced DNA damage in skin cells that is associated with skin cancer.^{6,26}

This means that taking an oral *Polypodium leucotomos* extract may allow for better DNA repair and subsequently fewer mutations that can initiate cancer.²⁶

Based on these impressive results, the researchers concluded, “Oral administration of *Polypodium leucotomos* is an effective systemic chemophotoprotective agent leading to significant protection of skin against UV radiation.”⁶

How it Works

Polypodium leucotomos’s benefits for the skin are nothing new. For centuries, natives of Honduras have used the plant to protect themselves against sunburns, tumors, psoriasis, and other skin diseases. More recently, however, research has shown why this fern offers such powerful protection for your skin.

In an article published in *Photochemical and Photobiological Sciences*,⁵ Dr. Salvador Gonzalez, a renowned physician-researcher in dermatology and photo-medicine at Memorial Sloan-Kettering Cancer Center, reviewed several proposed mechanisms by which the natural ingredient appears to work:

- **It inhibits free radicals.** *Polypodium leucotomos* slows the proliferation of free radicals that are normally seen with sun exposure and normal metabolic processes throughout the body.^{4,5,27}
- **It prevents DNA damage.**⁵ *Polypodium leucotomos* prevents damage to and decomposition of DNA and natural elements that protect the skin (such as Langerhans cells), and prevents UV rays from killing skin cells and supporting structures.^{5,27}
- **It acts as a powerful anti-inflammatory**—especially in skin tissue.⁵
- **It inhibits photo-immunosuppression.**⁵ *Polypodium leucotomos* prevents UV rays from suppressing immune function, which is important in preventing harmful cellular changes that could lead to the development of skin cancer.^{6,11}

Polypodium leucotomos not only has short-term effects such as inhibiting reactive oxygen species (free radicals) production and DNA damage, but the short-term effects “translate into long-term prevention of photoaging and photocarcinogenesis,” Dr. Gonzalez said.⁵

These mechanisms help explain why *Polypodium leucotomos* extracts are proving time and again to decrease the consequences of acute sun exposure such as redness, sunburn-cell formation, and the suppression of vital Langerhans cells.⁵⁻⁷

Supporting Compound Enhances the Effects

Various combinations of ultraviolet-protective antioxidants have intrigued researchers with their potential high-powered protective effects from solar damage.²⁸ Fortunately, an extract from red oranges has been found to provide mechanisms to enhance the photoprotective effects of *Polypodium leucotomos*.

Red Orange Complex

Furthering protection from sun damage is a new standardized extract, **Red Orange Complex**, obtained from three Mediterranean red orange varieties (*Citrus sinensis* var. Moro, Tarocco, and Sanguinello). The main active compounds are phenolic compounds—including *anthocyanins*, *flavanones* and *hydroxycinnamic acids* (as well as ascorbic acid).^{16,29,30}



Lab studies indicated that red orange complex exerts:

- An anti-inflammatory effect against human cells, including keratinocyte cells^{30,31}—the predominant cell type in the skin epidermis;
- An anti-proliferative effect against human cancer cells in cell culture studies;³²
- An inhibiting effect on UVB-induced apoptosis (cell death);³³ and
- Potent antioxidant support, suggested to stem not from the individual antioxidants, but from a combined positive effect on the broader antioxidant complex-system.^{16,33}

In vivo research has shown that red orange complex provides photoprotection against UVB-induced skin erythema.^{16,17}

Supplementation with this complex was found to increase serum *thiol* groups—which are free radical quenchers—in individuals occupationally exposed to significant automobile exhaust pollution³⁴ and to reduce oxidative stress in type II diabetic patients.³⁵

These results prompted a clinical trial to study the photoprotective capacity of the extract. A group of 18 volunteers were enrolled in a study in which researchers measured the skin protective ability of 15 days of oral red orange complex supplementation against UVB-induced damage. The intensity of the induced erythema was found to be decreased by about **35%**, demonstrating significant skin defense.¹⁷

Summary

Photoprotection is crucial for preventing immune suppression, premature skin aging, and skin cancer. Sunscreens aren't offering adequate protection against sun-induced skin damage.

Oral extracts from the fern *Polypodium leucotomos* and red oranges work from the inside out to shield the skin against the dangerous effects of ultraviolet (UV) exposure. *Polypodium leucotomos* has powerful effects that specifically target the skin—protecting against sunburn, cell death, DNA damage, and oxidation from natural and artificial ultraviolet light.

Based on the research studies, taking *Polypodium leucotomos* extract combined with red orange extract can protect your skin from short-term and long-term damage, such as sunburn, wrinkles, and skin cancer—all at the same time!

If you're planning on being in the sun for long periods of time, or are just exposed to 20 minutes a day of everyday exposure, the oral ingestion of *Polypodium leucotomos* and red orange extracts affords consider-



The Benefits of Oral Sunblock*

- It protects the entire skin surface, including the mucous membranes and the scalp.
- It cannot be rubbed off or removed by perspiring or bathing.
- It provides quick, easy sun protection for everyday use.

* If you're planning on being in the sun for any period of time, it's best to combine the use of oral *Polypodium leucotomos* extracts with a high-SPF sunscreen for added protection.

able benefit. For prolonged periods of sun exposure a high-SPF sunscreen should be used for added protection.

Even diligent individuals are challenged to apply sunscreen to all parts of their skin that are exposed to UV rays, thus making systemic protection provided by internal protectors such as *Polypodium leucotomos* that much more important. ●

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

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TRIPLE ACTION CRUCIFEROUS

Vegetable Extract with Apigenin



Item # 01468

Item # 01469

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

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

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

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

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

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

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

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

Contains corn.

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

Enhanced FERNBLOCK® with RED ORANGE COMPLEX

Internal Skin Protection From Sun Exposure

Sunscreens do not always offer complete protection against ultraviolet exposure.^{1,2}

Scientists have discovered that an extract of the fern *Polypodium leucotomos* helps inhibit cellular changes in the skin that can lead to premature aging due to sun exposure.³

Taken orally, **Enhanced FernBlock® with Red Orange Complex** provides an **additional** layer of support for the body's ultraviolet-light defenses.

Best of all, *Polypodium leucotomos* offers this protection from the inside out. The result is an oral photoprotective agent that provides uniform, systemic, total-body surface protection (including the eyes, lips, and the scalp), without the problems associated with sunscreen.^{4,5}

Oral Sun Defense

FernBlock® has shown remarkable effectiveness in promoting skin defenses against harmful solar radiation.^{3,6-9}

FernBlock® in this **oral** formulation works by promoting the body's ability to inhibit absorption of ultraviolet rays and to quench the free radicals that this type of radiation can generate.^{6,7} In one clinical study, *Polypodium leucotomos* offered significant protection against the sun's rays, even for those taking medication that causes increased sun sensitivity.¹⁰ The study subjects experienced an almost **three-fold** increase in the amount of time they spent in the sun before their skin began to burn, compared to when they weren't using any form of UV protection.¹⁰

Enhanced Formula

This product has been upgraded to contain **Red Orange Complex**, a standardized extract that is obtained from three **red orange** varieties—*Citrus sinensis* var. Moro, Tarocco, and Sanguinello.

The main active **phenolic** compounds include **anthocyanins**, **flavanones**, and **hydroxycinnamic acids**. It also includes vitamin C,¹¹ which works together to support the body's natural photoprotection against ultraviolet radiation,^{12,13} by helping to balance the body's normal inflammation response,¹⁴ free-radical defense mechanism,¹⁵ and healthy apoptotic (cell death) activity.¹⁵

In a controlled human trial, 15 days of **oral** supplementation with **Red Orange Complex** was demonstrated to **measurably** support natural skin defenses against ultraviolet radiation.¹³

FernBlock® is a registered trademark of Industrial Farmaceutica Cantabria, S.A.

Note: This product is not a sunscreen.

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More Comprehensive Sun Protection

Enhanced FernBlock® with Red Orange Complex is designed to complement topical sunscreens for sun exposure. Taken orally, **FernBlock®** supplements the effectiveness of topical sunscreens by protecting the **entire skin surface** and has an obvious advantage in that it **cannot be removed by perspiring or bathing**.

If taken daily, just one capsule should provide everyday protection. Each vegetarian capsule of **Enhanced FernBlock® with Red Orange Complex** provides:

FernBlock® <i>Polypodium leucotomos</i> extract (leaf)	240 mg
Red Orange Complex (Sicilian red oranges – <i>Citrus sinensis</i> var. Moro, Sanguinello, and Tarocco) extract (fruit and peel)	100 mg
Vitamin C (as ascorbic acid from Red Orange Complex)	5.5 mg



Item #01728

A bottle of 30 vegetarian capsules of **Enhanced FernBlock® with Red Orange Complex** retails for \$42. If a member buys four bottles, the price is reduced to **\$28.50** per bottle.

To order Enhanced FernBlock® with Red Orange Complex, 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.

BY MICHAEL DOWNEY

Uncovering the *Broad-Spectrum* Protection of **ANTHOCYANINS**

Consumers hear a lot today about “healthy foods” that are shown to prevent disease.

Missing from news broadcasts are details about how to benefit from **specific plant components** that published studies document help protect against degenerative disorders.

In seeking to clarify their knowledge base, scientists are focusing a lot of research on compounds known as **antho-cyanins**, which provide berries and other plants with their rich deep red and purple colors and have been proven to combat multiple pathways of disease.^{1,2}

In this report, we provide you with research findings about various anthocyanin-rich plants and how you can access their disease prevention benefits. >





Hidden in berries and other plants are diverse bioactive compounds that provide broad-spectrum protection against cognitive decline, diabetes, cancer, and heart disease.¹⁻⁴

According to the National Institutes of Health, ***“There is accumulating evidence that much of the health-promoting potential of berries may come from phytochemicals, the bioactive compounds not designated as traditional nutrients.”***⁵

What the *National Institutes of Health* is saying is that the disease prevention properties of healthy plants extends beyond the vitamins and minerals they naturally supply.

Anthocyanins: Powerful Antioxidant Protection

Extensive research confirms that the most powerful antioxidant berries are those that contain a class of polyphenols known as ***anthocyanins***. These nutrients create the deep red, blue, and purple pigments found in plants such as blueberries, elderberries, blackberries, and açai.^{1,6-8} Berry anthocyanins strongly combat oxidative stress, a causative factor in the pathogenesis of many major diseases¹ such as Parkinson’s disease,⁹ Alzheimer’s disease,¹⁰ amyotrophic lateral sclerosis (ALS),^{11,12} cancer,¹³ and allergic disorders.¹⁴

In a new development, scientists are suggesting that superior free-radical defense is just part of the berry benefit story.

Mechanisms: Beyond Antioxidant Activity

Recent evidence indicates that anthocyanin-rich foods exert their effects through **multiple mechanisms** that go far beyond berries' well-known antioxidant activity. These underlying pathways have been shown to:

1. Enhance glucose metabolism and reduced glucose absorption.¹⁵⁻¹⁷
2. Reduce the formation and enhance immune system clearance of amyloid protein, the hallmark protein seen in the brain of individuals with Alzheimer's disease.¹⁸
3. Inhibit LDL oxidation¹⁶ and improved lipid profiles.^{17,19}
4. Induce cancer apoptosis (programmed cell death) in several cancer cell lines.²⁰⁻²³
5. Possesses antiviral,²⁴ antibacterial,²⁵ and antiparasitic^{26,27} activity.
6. Inhibit DNA damage.^{5,28}
7. Inhibit inflammatory gene expression and reduce inflammation.^{5,16}
8. Reduce capillary permeability and fragility.²
9. Boost nitric oxide, an important cell signaling molecule.^{2,16}
10. Improve neuronal cellular communication.²⁹
11. Inhibit pathways that lead to tumor cell resistance to chemotherapeutic agents.³⁰
12. Metabolize carcinogens and xenobiotics.³⁰

Next, we'll examine the anthocyanin sources considered by scientists to be ***the most potent***.

Top-Ranked Sources

A wealth of studies has validated that each of the following food sources provides **superior** benefits against aging and age-related diseases.

Açaí

A standard index for determining the **antioxidant value** of various organic compounds is known as *oxygen radical absorbance capacity*, or **ORAC**.³¹ Of all fruits and vegetables—**açaí berries** have one of the highest reported total ORAC scores of any fruit or vegetable.³²

In lab studies, açai extracts **inhibited proliferation of human colon cancer cells** by up to **90.7%**³³ and proliferation of human **leukemia** cells by **56-86%**.³⁴

As a major cardiovascular protector, animal studies showed that Açai induces long-lasting arterial wall relaxation (endothelium-dependent vasodilation),³⁵ and reduces total and non-HDL cholesterol.³⁶

With implications for treatment of neurological disorders such as Alzheimer's disease and Parkinson's disease, açai-treated brain tissue showed decreased reactive oxygen species-induced damage to the lipids and proteins in the tissue, regardless of the area of the brain from which it was taken.³⁷ And studies using freeze-dried açai fruit pulp have shown it to have beneficial anti-inflammatory action—an important finding since inflammation underlies many chronic diseases of aging.³⁸



Açaí



Aronia



Bilberries



Blackberries

In an uncontrolled **2011** pilot study, consumption of açai fruit pulp reduced levels of selected markers of metabolic disease in ten overweight humans. In just one month, açai reduced fasting glucose, insulin, and total cholesterol levels, and ameliorated the increase in plasma glucose following a standardized meal.³⁹

Aronia

Also known as chokeberries, **aronia berries** have been found to yield very high ORAC values.³² Aronia has been shown to decrease lipid peroxidation,¹⁶ as well as oxidative stress.⁴⁰ In vitro research found an anti-clotting effect.⁴¹ Drinking aronia berry juice reduced exercise-induced oxidative damage to red blood cells.⁴²

In animals with experimentally induced high cholesterol, scientists observed that aronia exerted a significant cholesterol-lowering effect.⁴³ Animal studies have demonstrated that aronia extracts have a protective effect on the liver,⁴⁴ and, in diabetic rats, can help return the blood levels of both glucose and cholesterol to normal levels.⁴⁵

Human intervention studies showed **improvements in lipid profiles, glucose metabolism, and reduced LDL oxidation.**^{16,40}

In a host of studies, aronia compounds inhibited proliferation of human cervical tumor cells,⁴⁶ killed malignant brain tumor cells,⁴⁷ reduced biological markers of colon cancer,⁴⁸ and helped prevent gastric ulcers.⁴⁹

Bilberry

Bilberry, a relative of the blueberry, promotes frontline prevention against cardiovascular disease by significantly inhibiting *angiotensin-converting enzyme* (ACE), which contributes to hypertension by promoting narrowing of the arteries (vasoconstriction).⁵⁰

Bilberries improve insulin sensitivity, which may help ward off diabetes.⁵¹ They also enhance short-term memory in animal models, suggesting the potential to help prevent Alzheimer's disease.⁵²

These berries inhibit proliferation of breast cancer cells and induce apoptosis in animal models,⁵³ and bilberry extract defends against intestinal cancer.⁵⁴⁻⁵⁶

Extract of bilberry helps increase enzymes that inhibit oxidative stress in the eyes, suggesting it protects against age-related eye disorders, such as macular degeneration.⁵⁷ In **2012**, a study found that bilberries may prevent the early, gene-related changes that precede obesity- and diabetes-related visual impairment.⁵⁸



What You Need to Know

The Disease-Fighting Power of Anthocyanins

- A barrage of about 10,000 oxidative assaults befalls each of your body cells every day, accelerating aging and age-related diseases.
- The deep pigmentation of berries and some other foods indicates their rich content of powerful anthocyanins, which provide broad, disease-prevention activity.
- Anthocyanins and other compounds offer comprehensive antioxidant defense, as well as regulatory control of inflammation, enzymes, gene expression, and many other biochemical pathways.
- Extracts afford aging humans the concentrated polyphenols they need to optimally inhibit or even reverse free-radical aging.

Blackberry

Extracts of **blackberry** show the potential, in lab studies, to **inhibit the growth of human cancer cells** of the colon, breast, and prostate.^{59,60}

Compounds found in blackberries have been shown to be anti-inflammatory,⁶¹ antibacterial,⁶² and significantly antioxidative.³¹ They were found to be as effective as the drug *metronidazole* (Flagyl®) in treating a parasite and common cause of diarrhea known as *Giardia duodenalis*.²⁷ And in **2012**, scientists reported that blackberries appear to be a promising therapy for periodontal (gum) disease.⁶³

Are Anthocyanin Extracts Superior to Whole Berries?

Researchers at Ohio State University treated rats with a carcinogenic compound and fed them a diet that was **5%** made up of berries. Each of the seven test groups ate a different type of berry—açaí, blueberry, and so on.¹⁷⁶

The scientists noted that there are—and this is crucial—significant, known *differences* among these berry types in terms of their levels of antioxidants such as anthocyanins and ellagitannins. Despite this, however, they found that all seven berry types proved “*equally effective*”—both in preventing tumor genesis and inhibiting tumor progression.¹⁷⁶

This suggested that berries’ antioxidant content alone may not explain all of their beneficial effects.

A different study has enhanced our understanding of the superlative protection provided specifically by extracts of berries.¹⁷⁷

In tests on mice that were fed high-fat diets, scientists found that purified anthocyanin *extracts* from strawberries and blueberries prevented obesity and abnormal blood-fat levels (dyslipidemia).

Yet consumption of powdered, *whole* berries did not!¹⁷⁷

Berry extracts may provide potent benefits that even the whole berries themselves may not.

As you’ll learn, each different type of berry has been verified to provide protection against a *unique* set of diseases—and this has an important implication.

Optimum disease protection may require getting a full range of berry types each day—which is almost impossible without the use of supplemental extracts.

They are particularly rich in an anthocyanin called *cyanidin-3-O-beta-D-glucoside* (C3G), which holds a higher ORAC value than many other tested anthocyanins.²⁸ C3G has been shown to inhibit free radical damage induced by ultraviolet (UV),⁶⁴ defend against oxidative effects in the liver,⁶⁵ protect blood lipids against lipid peroxidation,⁶⁶ and protect blood vessels.⁶⁷ C3G plays an important role in protecting retinal tissue and retinal pigments from oxidative damage. It stimulates regeneration of the retinal pigment called **rhodopsin**.⁶⁸ Rhodopsin is particularly vital to vision under dim light conditions. When rhodopsin levels are depleted, more time is needed for the remaining pigment to return to its normal, light-sensitive state. C3G increases the restoration of rhodopsin levels.^{69,70}

Additionally, C3G protects retinal cells from harmful oxidation that is triggered by light and reduces the age-associated accumulation of a fluorescent pigment called A2E that interferes with normal function of the retina.⁷¹

Blackcurrant

Studies demonstrate that **blackcurrants** relax the aorta by enhancing the synthesis of **nitric oxide**,⁷² improving the functioning of blood vessels,⁷³ and reducing susceptibility of low-density lipoprotein (LDL) to oxidative stress, resulting in cardioprotective benefits.⁷¹ Blackcurrant anthocyanins improve blood flow in the human forearm and have been shown to reduce muscle fatigue and stiffness.⁷⁴

One study found that black currant extract improved volunteers’ ability to adapt to darkness and decreased symptoms of tired eyes.⁷⁵

A scientific review published in **2012** noted the therapeutic potential of blackcurrants against cardiovascular-associated illnesses, neurodegenerative and ocular diseases, kidney stones, and diabetic neuropathy.⁷⁶

Blackcurrant has also been shown to stop the growth of certain harmful bacteria,^{62,77} provide potent anti-viral activity,⁷⁸ and alleviate allergy-driven airway inflammation, a major cause of asthma.⁷⁹ And in lab studies, mice given blackcurrant juice were shown to **live longer**.⁸⁰

Blueberry

Abundant in polyphenols that can cross the blood-brain barrier, **blueberries** are well known for their **enhancement of cognitive performance** and their protection against age-related decline of memory and brain function.⁸¹⁻⁸³



Black Currant

Blueberries

Cherries

Blue Corn

Blueberries have been shown not only to improve cognition in animal models of Alzheimer's disease, but to decrease aggregation and enhance immune system breakdown removal of amyloid beta plaques in the brain.¹⁸ Blueberries help protect the aorta^{84,85} and the myocardium, and may prevent heart failure following myocardial infarction.⁸⁶ They lower blood pressure and lipid peroxidation.⁸⁷ They have also been found to improve insulin resistance and glucose control in pre-clinical models.^{87,88}

In the laboratory, blueberry induced self-destruction among oral, breast, colon, and prostate cancer cells.⁶⁰

Other beneficial effects of blueberries include activity against colitis (when taken with probiotics),⁸⁹ liver injury,⁹⁰ prevention of collagen breakdown in bone,⁹¹ inflammation,⁹² and neurodegeneration.⁹²

Cherry

Both sweet *and* tart varieties of **cherry** have exhibited potent cardiovascular and antidiabetic effects.

Traditionally associated with the soothing of arthritis and gout, cherries have been found to block inflammatory pathways associated with these diseases;⁹³⁻⁹⁵ and a 2012 study found cherry intake reduced gout attacks by **35%**.⁹⁶ These berries and their extract also inhibit the inflammatory processes involved in heart disease.^{94,95,97}

Rat studies using whole **tart** cherry powder suggest a protective role against both heart disease and diabetes, through an ability to reduce blood levels of

triglycerides, cholesterol, glucose, and insulin, as well as the amount of cholesterol stored in the liver.⁹⁸ Tart cherries have also been found effective in suppressing inflammation-induced pain.⁹⁹

Cherries are rich in a phytonutrient—*perillyl alcohol*—shown to prevent development, or limit progression, of several cancer types.¹⁰⁰⁻¹⁰³ And when anthocyanins and cyanidin supplements from cherries were fed to mice with a genetic susceptibility to colon cancer, they developed fewer tumors than those who did not receive the cherry-based supplement.¹⁰⁴

Blue Corn

Anthocyanins and other exceptionally active antioxidants are not limited to berries.

Blue corn, also known as purple corn, is botanically identical to yellow corn but with one important difference. Its deep blue-purple color is the result of its rich anthocyanin content—with a concentration equal to, or greater than, the anthocyanin concentration of blueberries.¹⁰⁵

Blue corn possesses **anti-mutagenic effects**, reducing expression of genes involved in the proliferation of tumor cells,^{106,107} as well as suppressing the development of colon cancer cells in rats.¹⁰⁸

Scientists studied rats on a high-fat diet, and divided them into two groups. The test group's diet was supplemented with purple corn pigment, and these subjects were found to be less likely to develop early signs of obesity and diabetes than the controls.¹⁵



Cranberry

Cranberries provide powerful protection against oxidative damage—they were shown in an 8-week, double-blind, placebo-controlled trial involving 65 healthy women to significantly reduce blood levels of advanced oxidation protein products.¹⁰⁹

But cranberries and cranberry juice are probably best known for their ability to help prevent urinary tract infections,^{110,111} and are believed to work by **inhibiting the adherence of *E. coli*** to the urethra and bladder wall, making it easier for the body to flush them out.^{112,113} Similarly, they may protect against gastric ulcers by preventing *Helicobacter pylori*, the bacterium implicated in this condition, from adhering to the stomach lining.^{114,115}

Cranberries also display anti-proliferative activity in vitro and in vivo, against cancer cells of several different types: gastric,¹¹⁶ esophageal adenocarcinoma,¹¹⁷ breast,¹¹⁸ prostate,¹¹⁸ colon,¹¹⁸ and lung.¹¹⁸

Evidence indicates that cranberry compounds may protect cardiovascular health through various mechanisms, including modulation of blood pressure, inhibition of platelet aggregation, and reduction of inflammation.^{87,119}

Elderberry

Elderberries have natural anti-viral activity. A standardized elderberry product was shown in placebo-controlled, double-blind, human studies to reduce the duration of illness from seasonal influenza to as little as **2-4 days**.^{120,121} In lab studies, elderberry

anthocyanins were also found to bind to H1N1 swine flu virus, blocking its ability to infect host cells—exhibiting certain activity comparable to that of oseltamivir (Tamiflu®).¹²² Elderberry has been shown in cell culture studies to be **effective against at least 10 different strains of influenza**.^{120,121}

Elderberry also delivers cardioprotective benefits by reducing lipid peroxides,¹²³ neutralizing lipid peroxyl radicals,¹²³ inhibiting LDL oxidation,¹²³ and significantly protecting endothelial cells against oxidative stress.¹²⁴ A remarkable recent study found elderberry extract **reverses** hyperlipidemia (high cholesterol) and lipid peroxidation.¹²⁵

Grape

Grapes and grape seeds have been shown in the lab to block the proliferation of prostate, colon, leukemia, and other cancer cells.¹²⁶⁻¹³⁰ A **2012** study concluded that grape seed proanthocyanidins may be a promising cancer therapy for head and neck squamous cell carcinoma.¹³¹

Evidence indicates that the highly active compounds in grapes and grape seeds protect cardiovascular health by helping to prevent platelet aggregation,¹³² LDL oxidation,¹³³ high blood cholesterol,¹³⁴ reduce fatty streaks in the aorta,¹³⁴ minimize inflammation,¹³⁵ and prevent decreased blood flow to the brain.¹³⁶

Grapes may help combat Parkinson's, Alzheimer's, and other neurodegenerative diseases.^{137,138} Polyphenol extracts from grape seeds have the ability to potentially inhibit the production of neurofibrillary tangles, a



primary marker for Alzheimer's disease.¹³⁷ In a model of Parkinson's, whole grape extract was shown not only to preserve motor functions, but to **extend the life span** of fruit flies.¹³⁸

Pomegranate

Extracts of **pomegranate** have shown promise in reducing the risk of metastasis in breast cancer.¹³⁹ They initiate apoptosis (programmed cell death) and inhibit the proliferation of prostate, lung, colon, and other cancers.¹⁴⁰⁻¹⁴² In both mice and humans with prostate cancer, consuming pomegranate slowed the rising levels of *prostate-specific antigen* (PSA), which is a marker of disease progression.^{143,144}

Pomegranate juice has been shown in human studies to help **protect cardiovascular health** by significantly *reducing* both arterial plaque,¹⁴⁵ lowering blood pressure,¹⁴⁶ and improving blood lipid profiles.¹⁴⁷ Pomegranate-derived compounds help reduce the adverse effects caused by metabolic syndrome.¹⁴⁷

This fruit has been shown to reduce inflammation in colitis,¹⁴⁸ enhance drug antibacterial activity,¹⁴⁹ and suppress inflammation and joint damage in

rheumatoid arthritis.¹⁵⁰ There is even evidence that pomegranate supports the skin's underlying structure and lowers the production of collagen-degrading enzymes, resulting in younger-looking skin.¹⁵¹

Prune

Nutritional and lifestyle factors can reduce the risk of osteoporosis. According to a 2011 review, the **prune** is the fruit that is the **most effective at both preventing and reversing bone loss** in part due to suppressing the rate of bone turnover.¹⁵²

In rats, prune consumption produced changes in the bowel that suggest a protective effect against colon cancer.¹⁵³ In obese rats, extract of plum also reduced blood levels of glucose and insulin, and increased insulin sensitivity, clearly suggesting they might be effective against type II diabetes.¹⁵⁴

Prunes have also been shown to improve the body's ability to absorb iron.¹⁵⁵

Raspberry

Raspberries are a rich source of *ellagitannins*, which are converted in the body to *ellagic acid*,¹⁵⁶ a well-known antioxidant.¹⁵⁷ Scientists recently established that ellagic acid—by suppressing oxidative stress and inflammation—may provide a useful dietary supplement to decrease the characteristic changes associated with metabolic syndrome, induced by a high-fat, high-carbohydrate diet.¹⁵⁸

In vitro, raspberries protect against DNA damage¹⁵⁹ in colon cancer cells, and inhibit colon cancer





invasion.¹⁶⁰ Raspberry and raspberry seed extracts have shown efficacy against oral, breast, cervical, and prostate cancers in the lab.^{60,161,162} Raspberries have been shown, in vitro, to stimulate apoptosis in human cancer cells^{20,60}

Also, findings suggest that moderate consumption of raspberry juices helps prevent the development of atherosclerosis through improved antioxidant status and serum lipid profiles.¹⁶³

Black Soybean Hull

Although not a fruit, **black soybean hull** is rich in anthocyanins, and notably, in C3G (cyanidin-3-O-beta-D-glucoside), as discussed in the section on blackberries.¹⁶⁴

Substantial experimental findings reported that black soybean offers promise in **fighting colon cancer**¹⁶⁵ and **insulin resistance**.¹⁶⁶ It also promotes wound healing in skin cells and reduces inflammation in endothelial cells.¹⁶⁷ And research showed that black soybean helps protect human LDL cholesterol against oxidation, which might inhibit processes that lead to atherosclerosis.¹⁶⁸

Then, in 2012, scientists published a study reporting “*potent* health benefits of black soybean seed coat anthocyanins in neuroprotection,” mediated through the modulation of a number of genetic signaling pathways.¹⁶⁹

Strawberry

Strawberry extracts are impressive cancer fighters. They’ve been shown to inhibit the growth of oral, colon, prostate, liver, and breast cancers.^{60,170,171}

A diet high in strawberries was found effective in protecting animals from age-related deficits in learning and memory.⁸¹ Researchers confirmed in 2012 that, although eating more berries may **reduce cognitive decline** in elderly humans, “flavonoid-rich blueberries and strawberries offer [the] **most benefit**.”⁸³

In experimental studies, strawberries have also been found to deliver substantial **cardiovascular benefits**. They reduce the formation of unwanted blood clots, which may help prevent heart attack and stroke,¹⁷² lower total and LDL cholesterol,⁸⁷ improve lipid peroxidation,¹⁷³ and decrease biomarkers of atherosclerosis (*malondialdehyde* and *adhesion molecules*).⁸⁷

Strawberries favorably affect postprandial inflammation and insulin sensitivity. In a compelling study, overweight humans were given either a strawberry drink or a placebo drink following a high carbohydrate, moderate fat meal. The strawberry group showed lower levels of biomarkers for inflammation and a reduction in postprandial insulin response.¹⁷⁴

Summary

Every cell in the human body is hit by an estimated **10,000** individual strikes by free radicals each day—a factor in aging and degenerative disease onset.¹⁷⁵

Scientific research suggests that berries and other dark-pigmented foods that are rich in **anthocyanins** provide frontline defense against multiple diseases of aging.

In addition to strong antioxidant protection, these plant compounds favorably regulate vital genes, signaling compounds, enzymes, metabolic factors, and other vital pathways.

Standardized extracts provide the concentrated **anthocyanins**—and other polyphenols—to ensure that your tissues derive their multiple benefits. ●

If you have any questions on the scientific content
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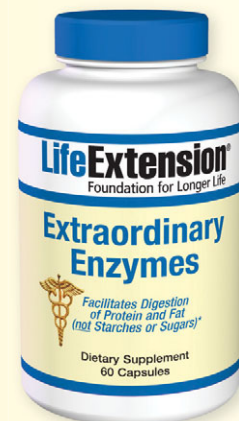
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Another Breakthrough in Antioxidant Defense!

In 2008, **Life Extension**® introduced **Berry Complete**, a unique, high-potency blend of extracts from Nature's most powerful free radical fighters.¹⁻⁵ The antioxidant strength of just one capsule equaled **more than 50%** of the recommended five daily servings of fruits and vegetables.

We then introduced an *even more* powerful antioxidant formula. A single capsule of the new **Enhanced Berry Complete with Açai** delivers an antioxidant value equivalent to **more than 100%** of the recommended daily fruit and vegetable intake.

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, **açai** boasts one of the *highest* ORAC values known to modern science.

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

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 **açai**, **blueberry**, and **strawberry** polyphenols may provide targeted support for cellular metabolic processes that promote neural and cognitive health in the aging brain.⁶ But you need the *complete* polyphenolic profile to get the benefit.

Enhanced Berry Complete with Açai 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 Açai** retails for \$29. If a member buys four bottles, the cost is just **\$19.50** per bottle. Contains soybeans.



Each vegetarian capsule of **Enhanced Berry Complete with Açai** also contains standardized extracts of high-ORAC value foods including:

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

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To order **Enhanced Berry Complete with Açai**,
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BY MICHAEL DOWNEY

A Safer Alternative for Managing **Depression**

More Americans suffer from depression today than ever before. Reports from the Centers for Disease Control reveal that **1 in 10** US adults say they are suffering from depression,¹ and by 2020, depression is expected to be the world's second-leading cause of disability.²

But within this tragedy is another.

In the words of one 2013 study, this problem continues to escalate “after more than half a century of modern psychopharmacology, with billions of dollars spent on antidepressants annually world-wide.”³ Over the last 25 years, the use of antidepressant medication in the US has gone up **400%**,⁴ and **11%** of Americans aged 12 years and over now take antidepressant medication.⁴

The tragedy? About **90%** of these patients experience at least one of the numerous serious side effects⁵⁻¹⁰—which can include anxiety, constipation, thoughts of suicide, insomnia, and weight gain.⁶⁻¹⁰ Also, a just-published study was the second report to find an association between the use of antidepressants during pregnancy and the risk of autism for the child.¹¹ And one extremely common adverse effect afflicts as many as **73%** of individuals who take antidepressants: sexual dysfunction.¹⁰

In fact, while antidepressants often lose their efficacy over the course of treatment,¹² their sexual side effects can continue long after—**even years after**—drug use is discontinued!⁹





So in an attempt to avoid adverse reactions, many individuals are seeking alternatives to pharmaceutical medications.¹³

In this article, we unveil compelling new findings demonstrating that saffron (*Crocus sativus*) is equally as effective as certain current medication options in treating depression—but without the unwanted effects.^{14,15}

We'll also examine new evidence indicating that—when added to an existing regimen of antidepressants—saffron works as a powerful adjunct therapy to block their adverse sexual effects!¹⁶

You will also learn how saffron successfully—and safely—treats other conditions for which antidepressants are often prescribed, such as anxiety and obsessive-compulsive disorder. >

Saffron Powerfully Targets Mood

Saffron was historically used for depression in Persian traditional medicine,¹⁷ but there was no evidence-based documentation back then.¹⁴ This early use led to modern-day research into saffron's impact on mood.

Starting in 2001, research found that saffron extract produced a distinct antidepressant benefit.¹⁸ But this testing was conducted on mice.

Scientists needed to confirm this benefit in a more scientifically conclusive way—in a double-blind, randomized, human trial that compared saffron benefits to placebo.

A team conducted a 6-week, double-blind, placebo-controlled, single-center, and randomized trial on 40 adult outpatients who—when assessed in a structured clinical interview—were diagnosed as suffering from major depression according to the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition. They were randomly divided into two groups. One group was given a **30-milligram** capsule of saffron **twice daily** and the other group was given a twice-daily placebo.¹⁷

At 6 weeks, the saffron subjects showed significantly better outcomes on the Hamilton depression rating scale than placebo, indicating *“the efficacy of **Crocus sativus** [saffron] in the treatment of mild to moderate depression.”*¹⁷

Also, there were no significant differences in observed adverse reactions. The author of the published study suggested further human trials.¹⁷

Scientists then set out to weigh the efficacy of saffron extract against common antidepressant drug medications.



Saffron ‘Equally Effective’ Against Depression As Antidepressants!

First, researchers directly compared the efficacy of saffron stigma extract to that of the antidepressant Tofranil® (imipramine) against significant degrees of depression.

In a double-blind, single-center trial, scientists randomly divided 30 depressed patients into two groups. They gave **30 milligram** capsules of saffron **3 times daily** to one group. The other group received **100 milligrams** of Tofranil® **3 times daily**. All subjects met the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, criteria for major depression.¹⁴

Just 6 weeks later, the saffron dose was declared to be equally as beneficial as Tofranil® in the treatment of mild to moderate depression. However, only the Tofranil® group suffered anticholinergic symptoms, such as dry mouth. (An anticholinergic agent blocks the neurotransmitter acetylcholine in the nervous system.) Also, the participants taking Tofranil® experienced significant unwanted sedation. The study author concluded that saffron has “therapeutic benefit in the treatment of mild to moderate depression.”¹⁴

Next, scientists compared the potency of saffron extract to the antidepressant Prozac® (fluoxetine).

Forty adult outpatients who met the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, criteria for depression were randomly assigned to receive either **twice-daily 30-milligram** capsules of saffron stigma or **twice-daily** capsules of **20 milligrams** of Prozac®.¹⁵

At the close of the 6-week, double-blind, randomized trial, saffron was found to be as effective as Prozac® in the treatment of mild to moderate depression. There were no significant differences in unwanted reactions.¹⁵

These studies clearly establish that saffron is a potent alternative to commonly prescribed antidepressants for treating depression—without the adverse effects.

Treating Other Emotional-Cognitive Disorders—Without the Side Effects!

Despite their name, antidepressants are used to treat more than depression. They are prescribed for a broad range of other emotional and cognitive conditions, such as obsessive-compulsive disorder, anxiety, and Alzheimer's disease.¹⁹⁻²²

Some scientists reasoned that—if saffron treats depression as effectively as antidepressant drugs—it may provide a safer treatment for these other conditions as well.

Several avenues of research were developed.

Alzheimer's Disease

A 2013 report predicts America will have “tsunami of Alzheimer’s” within the next 40 years as the number of Americans living with the disease triples to nearly 15 million.²³

Doctors commonly prescribe antidepressants for these patients, notably Zoloft® (*sertraline*)¹⁹—despite the fact that the published data strongly suggest that these medications are not efficacious for Alzheimer’s disease and frequently produce adverse reactions.²⁴

To determine whether saffron would provide an alternative treatment, scientists set up a double-blind, randomized, and placebo-controlled trial. Each day, parallel groups of Alzheimer’s patients were given either capsules of **15 milligrams** of saffron twice daily or placebo capsules twice a day. Standard assessment scales were used to monitor cognitive and clinical profiles.²⁵

After 16 weeks, saffron produced significantly better cognitive function scores than placebo, prompting the study author to write that:

“Saffron is both safe and effective in mild to moderate [Alzheimer’s disease].”²⁵

When further tested in a 22-week, multi-center, randomized, double-blind trial against the Alzheimer’s medication Aricept® (*donepezil*), saffron proved to be equally effective. However, many people in the Aricept® group experienced vomiting as a possible side effect of the medication.²⁶

Anxiety

Anxiety conditions can be crippling, and the proportion of Americans who will have serious anxiety symptoms during some period of their life is about **29%**.²⁷

Selective serotonin reuptake inhibitors (SSRIs) are often recommended for the treatment of generalized anxiety disorders,²⁰ and for social anxiety.²¹ But of course, they come with an array of negative reactions ranging from nausea to sexual dysfunction.⁶⁻⁹

Fortunately, animal studies have revealed a powerful—and safer—alternative.

Evidence demonstrates that treatment with active saffron constituents known as crocins induces anxiolytic-like (anxiety-reducing) benefits without adverse reactions.²⁸

Also, the saffron compound *safranal* demonstrates anxiolytic benefits and increased total sleep time—but without any negative impact on motor coordination.²⁹



What You Need to Know

Balance Brain Chemistry with Saffron

- Depression is a mushrooming health problem, now afflicting **1 in 10** American adults.
- Drug antidepressants are now regularly taken by **11%** of Americans, **90%** of whom suffer at least one of the numerous adverse effects that range from convulsions to abnormal bleeding to sexual dysfunction.
- Accumulating studies demonstrate that saffron (*Crocus sativus*) treats depression equally well but without these risky side effects.
- Other research reveals that saffron also successfully treats other conditions for which antidepressant medications are used, including anxiety, Alzheimer’s, and obsessive-compulsive disorder.
- Surprising new evidence now shows that, when saffron is added to the regimen of male and female patients already taking antidepressants, it reverses the sexual side effects associated with these drugs!



Obsessive-Compulsive Disorder

Obsessive-compulsive disorder (OCD) can be so severe that it becomes disabling—those afflicted by this condition may spend virtually all of their time on their obsessions and compulsions.³⁰

Most commonly, antidepressants are tried first, in an attempt to control the time-consuming and stressful symptoms.²² With obsessive-compulsive disorder, it's not unusual to have to try several medications of differing dosages before finding one that exerts any degree of symptomatic control.²² Ultimately, different drugs may need to be combined,²² which of course, can result in multiple levels of negative symptoms that significantly offset the positive benefits.

The evidence suggests that there is a functional interaction between the crocins found in saffron and the serotonergic (serotonin-neurotransmitter) system,³¹ which led scientists to study the effect of saffron on obsessive-compulsive disorder.

In an animal model of this condition, crocin compounds from saffron were found to substantially reduce obsessive-compulsive disorder symptoms without significant adverse effects.³¹

Hyperphagia and Uncontrolled Eating

Obesity is now an epidemic. Meanwhile, neurotransmitter imbalances, particularly low levels of serotonin, have been shown to increase vulnerability to food cravings, overeating and obesity.³² The con-

dition known as *reactional hyperphagia*, sometimes called *reactional polyphagia*, involves uncontrolled snacking and eating.³³ Stress and dysregulated brain reward pathways have been strongly implicated.³⁴⁻³⁷

Unfortunately, appetite-suppressing medications have been documented to cause numerous and deadly effects—including heart valve damage, birth defects, liver injury, and increased blood pressure.³⁸

Scientists hypothesized that a patented extract of saffron may reduce snacking and enhance satiety through its beneficial impact on the brain and mood. They launched a randomized, double-blind, placebo-controlled clinical trial with 60 mildly overweight, female volunteers, at least half of whom had been assessed as suffering from this type of compulsive between-meal snacking behavior. Subjects were randomly given either daily doses of **176.5 mg** of patented saffron extract or a placebo. All subjects were instructed to maintain their normal dietary habits, and all between-meal snacking was recorded.³⁷

Over 8 weeks, the number of snacking events for the placebo group decreased by **28%**. In the saffron group, between-meal snacks decreased by **55%** and they reported a reduced feeling of the “need” to snack!³⁷

After 8 weeks and without any dieting, the saffron group had lost an average of **2 pounds** and reported increased energy and alertness.³⁷ These small weight loss results show how it takes more than reduced snacking to achieve meaningful weight loss.

Scientists concluded that saffron offers more than just an effective, side-effect-free alternative to prescription antidepressants in the treatment of depression—saffron also safely treats other conditions for which antidepressants are used: Alzheimer’s disease, anxiety, obsessive-compulsive disorder, and uncontrolled eating (reactional hyperphagia).^{19-22,25,29,37}

But what about individuals whose doctors are reluctant to discontinue their regular prescription after finally managing, often years later, to stabilize the specific symptoms of their particular condition with just the right dosage of the right antidepressant—are they stuck with their current negative sexual effects?

Sexual Dysfunction Plagues Over Half of Antidepressant Users

Although antidepressants are associated with a wide array of negative reactions,⁶⁻¹⁰ adverse sexual effects—which can include loss of sexual drive, failure to reach orgasm and erectile dysfunction—are among the most common.^{9,10} While men are affected more often, women report more serious sexual side effects.¹⁰

These unwanted sexual symptoms are considered to be commonly underestimated.¹⁰ Still, research pegs the incidence of sexual dysfunction with selective serotonin reuptake inhibitors (SSRIs) and Effexor® (venlafaxine) to be between **58** and **73%**!¹⁰ And these sexual symptoms can persist long after the medication has been discontinued—for months, years, or indefinitely!⁹

About **40%** of people taking antidepressants report a low tolerance for their negative sexual effects,¹⁰ which can lead to non-compliance and relapse.³⁹ This situation has prompted scientists to call on clinicians to “consider the impact of pharmacotherapy on patients’ sexual functioning.”³⁹

Unfortunately, when depressed and even suicidal individuals have struggled for years with different antidepressants before finally attaining stable relief with a specific dosage of a specific drug—doctors are reluctant to change their regimen “simply” to avoid the sexual symptoms. (The same goes for the sexual complaints of those who have finally achieved success with antidepressants for other, non-depression conditions such as anxiety,⁴⁰ eating disorders,^{41,42} and obsessive-compulsive disorder.⁴¹)

Instead, doctors often prescribe additional medications aimed at offsetting the sexual dysfunction caused by the antidepressants.⁴³⁻⁴⁷ But these added drugs bring their own adverse reactions⁴⁸—and some even reverse the positive mood benefit of the original antidepressant!⁴⁵

Scientists knew that, in addition to its antidepressant potency, saffron had shown aphrodisiac and other positive effects on sexual function in both animal and human studies.^{16,49-51}

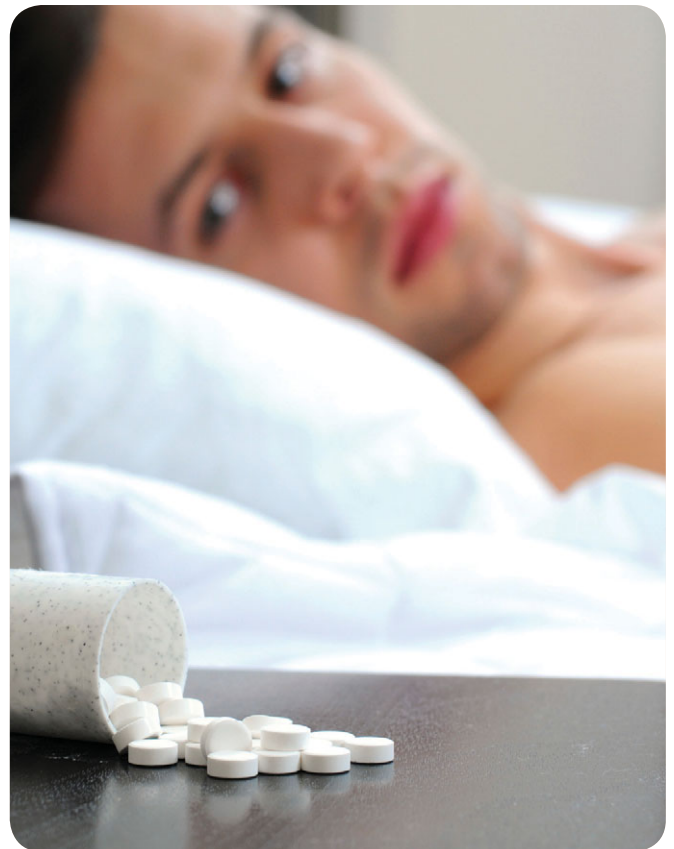
So what would happen, they wondered, if saffron were simply added to the antidepressant regimen of patients who suffered from serious sexual effects—but without dropping their current side-effect-producing antidepressants?

The results were startling.

Saffron Blocks the Sexual Side Effects of Antidepressants!

In late 2012, researchers tested the impact of saffron on the adverse sexual effects experienced by men who otherwise derived some benefit from, and continued to take, their prescribed antidepressant.¹⁶

A randomized, double-blind trial enlisted 36 married men with major depressive disorder whose symptoms had been successfully stabilized on Prozac®—but who had complaints of sexual impairment. They were randomly assigned to add to their usual dosages of Prozac® **2 daily** doses of either **15 milligrams** of saffron or a placebo. Sexual function was assessed using a standard index.¹⁶





Reported Side Effects of Antidepressant Drugs

There have been 119 published studies from twelve countries, as well as 99 drug regulatory agency warnings from ten countries plus the European Union, together indicating that antidepressants can cause the following adverse effects.^{6-10,70}

- Abnormal bleeding or bruising
- Abnormal thoughts
- Agitation
- Aggression
- Akathisia (severe restlessness)
- Anxiety
- Birth defects
- Black tongue
- Blurred vision or vision changes
- Coma
- Confusion
- Constipation
- Convulsions
- Crushing chest pain
- Death
- Decreased memory or concentration
- Delirium
- Delusional thinking
- Depression
- Diabetes
- Diarrhea
- Difficulty breathing or swallowing
- Dizziness or faintness
- Dry mouth
- Emotional numbing
- Extreme restlessness
- Fainting
- Hallucinations
- Headaches
- Heart rate decreases
- Heart attacks
- Homicidal ideation or action
- Hostility
- Hyperactivity
- Hypomania
- Impaired driving
- Insomnia
- Lethargy
- Liver problems
- Low white blood cell count
- Mania or manic reactions
- Memory lapses
- Mood swings
- Muscle spasms
- Nausea
- Nervousness
- Neuroleptic malignant syndrome
- Night sweats
- Nightmares
- Numbness in extremities
- Panic attacks
- Paranoia
- Priapism
- Premature births
- Psychotic episodes
- Restlessness
- Risk of breast cancer
- Risk of falls
- Sedation
- Self-harm
- Seizures
- Serotonin syndrome
- Severe headache
- Severe muscle stiffness
- Sexual dysfunction
- Shakiness
- Shuffling walk
- Slow or difficult speech
- Spontaneous abortion
- Stroke
- Suicidal thoughts or behavior
- Tremors
- Violent behavior
- Weight gain
- Withdrawal symptoms
- Yellowing of skin or eyes

After just 4 weeks, the men in the Prozac®-plus-saffron group had experienced significantly greater improvement in erectile function and intercourse satisfaction than the Prozac®-plus-placebo group. The team determined that saffron is a “tolerable and efficacious treatment” for male sexual dysfunction induced by Prozac®.¹⁶

Next, scientists set out to determine if saffron could similarly offset the unwanted sexual effects experienced by women whose depression was being successfully controlled by, and who continued to take, their antidepressant.⁴⁹

In 2013, a team enlisted 38 women, all of whom had major depression that had been stabilized on Prozac®—but who continued to suffer from various types of sexual dysfunction induced by this antidepressant. In a double-blind study, half of the women were randomly assigned a supplement of **30 milligrams daily** of saffron extract and the rest were assigned a placebo. All participants also continued to take their usual dosage of Prozac®, and assessments were made using the Female Sexual Function Index (FSFI).⁴⁹



After 4 weeks—despite still taking the same antidepressant that had induced the unwanted sexual symptoms in the first place—women in the saffron group experienced significant improvement in total sexual function (FSFI), arousal, lubrication, and pain.⁴⁹

Clearly, saffron offers a potent, adjunct therapy for treating the sexual side effects caused by taking antidepressants.

Additional Saffron Benefits

Evidence also suggests that saffron may play a role in treating other diseases.

Cancer is a growing health concern worldwide, causing more than **7.5 million** deaths each year;⁵² and botanical extracts have been one of the main sources for development of chemopreventive agents.⁵³

Recent scientific evidence, both in vitro and in vivo, has suggested that saffron extract and its main active constituents can help inhibit carcinogenesis and tumor genesis.⁵⁴⁻⁵⁷ Rodent studies further demonstrate that saffron can reduce the serious negative effects of the anticancer drug **Platinol®** (*cisplatin*).^{58,59} These anticancer findings have prompted extensive current research on saffron and its components, including safranal and crocin, as promising preventive agents against cancer.

The mechanism for saffron’s anticancer potential is not known but may be related to its demonstrated free-radical-scavenging activity.⁶⁰⁻⁶² In human studies, **50 milligrams** of saffron dissolved in **100 ml** of milk and consumed **twice a day** produced a significant decrease in lipoprotein oxidation susceptibility in individuals with coronary artery disease (CAD), further indicating the potential of saffron as an antioxidant.⁶³

In animal research, crocin analogs isolated from saffron significantly increased blood flow in the retina and choroid (the layer between the retina and the outer sclera) and facilitated recovery of retinal function.⁶⁴ This suggested that saffron might help combat certain eye conditions. Subsequently, several studies have confirmed that saffron demonstrates the ability to protect the retina from damage thereby acting to potentially slow the progress of the serious eye conditions such as macular degeneration and retinitis pigmentosa.⁶⁵⁻⁶⁷

Perhaps suggestive of other fertile areas for future investigations, traditional and folk medicine have long used saffron for numerous medical benefits, including as a remedy for pain (an analgesic), poor digestion, high blood pressure, high cholesterol, respiratory diseases, and as an aphrodisiac agent.^{68,69}

Summary

Depression now afflicts **1 in 10** American adults,¹ a number projected to explode.²

Part of this tragedy is the fact that **11%** of Americans now use antidepressants.⁴ About **90%**⁵ of these patients experience at least one of the numerous adverse effects⁶ of these drugs, which can include suicidal thoughts, anxiety, abnormal bleeding, and sexual dysfunction.⁶⁻¹⁰

In fact, although the effectiveness of antidepressants can diminish over the course of treatment,¹¹ their sexual side effects can continue months, or even years, after these drugs have been discontinued!⁹

In light of these serious complications, scientists and patients have been seeking safer alternative therapies.¹⁷ Mounting research reveals that saffron (*Crocus sativus*) treats depression equally effectively—but without the unwanted effects.

Studies also show that saffron is just as effective against other conditions for which antidepressant drugs are commonly prescribed, such as obsessive-compulsive disorder, anxiety, and Alzheimer's disease.

Remarkably, newly published evidence demonstrates that saffron also works as adjunct therapy to **reverse** the sexual side effects so frequently experienced by men and women taking antidepressants! ●

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

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NEW

ASTAXANTHIN Formula with *Increased* Bio-availability

Astaxanthin is a fat-soluble carotenoid compound. The challenge to deriving maximum benefits is its normally limited absorption—as low as about **50%**.^{1,2} Assimilation of astaxanthin is impeded by limited uptake and intestinal degradation.

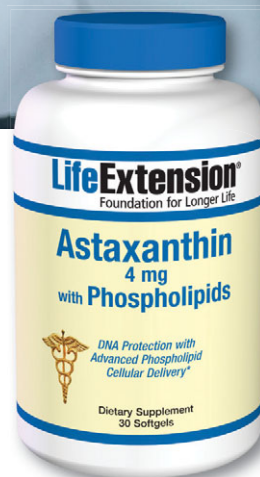
A new **Astaxanthin 4 mg with Phospholipids** combines **4 milligrams** of natural astaxanthin with a *proprietary blend* of **phospholipids**.

By incorporating phospholipids, scientific study shows that carotenoid **absorption** may be enhanced **several-fold**.³

The new **Astaxanthin 4 mg with Phospholipids** uses four different phospholipids to facilitate maximum absorption of **astaxanthin** into the bloodstream, where it is transported to cells throughout the body.

ASTAXANTHIN

Each softgel of the new **Astaxanthin with Phospholipids** provides **4 mg** of natural astaxanthin along with **80 mg** of proprietary phospholipid blend. Just one softgel a day provides tremendous systemic cellular support!



Item #01720

A bottle of 30 softgels of **Astaxanthin 4 mg with Phospholipids** retails for \$16. If a member buys four bottles, the price is reduced to **\$10.50** per bottle. **Contains soybeans.**

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To order **Astaxanthin 4 mg with Phospholipids**,
call 1-800-544-4440 or visit www.LifeExtension.com



TAKE A BITE OUT OF YOUR Appetite

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

The *fantastic news* is that a proprietary extract of **saffron**, called **Satiereal®**, is *clinically proven* to deal with nearly all of the above issues. In fact, women involved in **Satiereal®** studies experienced the following **amazing results**^{1,2}:

- **100% reduction in the desire to snack**
- **55% fewer instances of eating between meals**
- **Less hunger**
- **Moderate weight loss**
- **More energy**
- **Better mood**

Satiereal® is a registered trademark of INORÉAL. International patents pending. The fact that Satiereal® induced significant reductions (100%) in the desire to snack, but with only moderate weight loss, is further support for the multi-pronged approach needed to effectively manage weight that has long been espoused by Life Extension®.

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

A bottle containing 60 vegetarian capsules of **Optimized Saffron with Satiereal®** retails for \$36. If a member buys four bottles, the cost is **\$24** per bottle.

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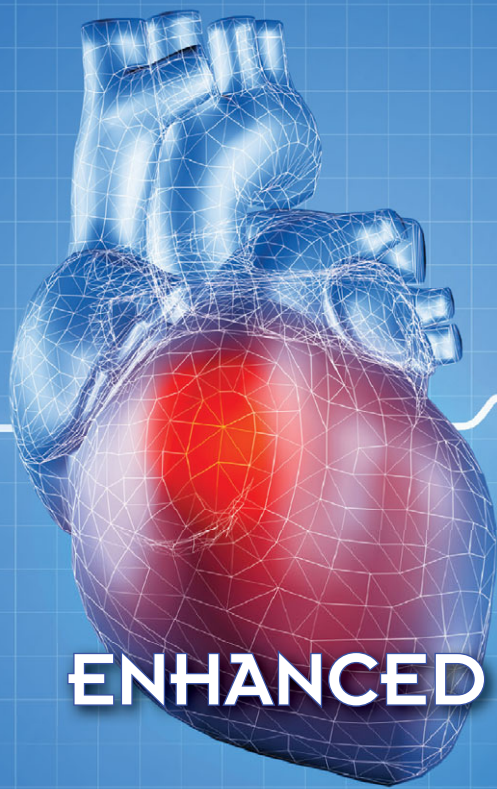
This supplement should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.



Item #01432

To order **Optimized Saffron with Satiereal®**, 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.



ENHANCED HEART MUSCLE FUNCTION

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

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

Hawthorn: Peak Cardiotonic Support

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

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

Studies indicate that the constituents in Hawthorn powerfully support:

- Strong *contractile force* of human heart muscle.³
- Protection for heart muscle cells from oxidant damage.^{1,2}
- Normal gene expression to promote cardiovascular health.^{2,4,5}
- Improved cardiovascular performance.¹¹

Arjuna: Boosting Heart-Health Benefits

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

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

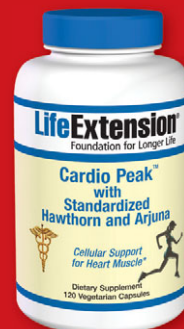
A comprehensive program that includes diet, exercise, and lifestyle changes is important to your cardiovascular health. For unique **cardiotonic support** for a strong and healthy heart, **Cardio Peak™ with Standardized Hawthorn and Arjuna** may become a key element in your daily regimen!

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

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

Rejuna™ Arjuna (<i>Terminalia arjuna</i>) 10:1 extract (bark) [std. to 40% polyphenols (600 mg)]	1,500 mg
Hawthorn-Derived Oligomeric Proanthocyanidins (OPCs) [from standardized Hawthorn (<i>Crataegus monogyna</i>) and <i>Crataegus laevigata</i>] extract (leaf and flower)]	60 mg

A bottle of 120 vegetarian capsules of **Cardio Peak™ with Standardized Hawthorn and Arjuna** retails for \$36. If a member buys four bottles, the price is reduced to **\$24** per bottle.

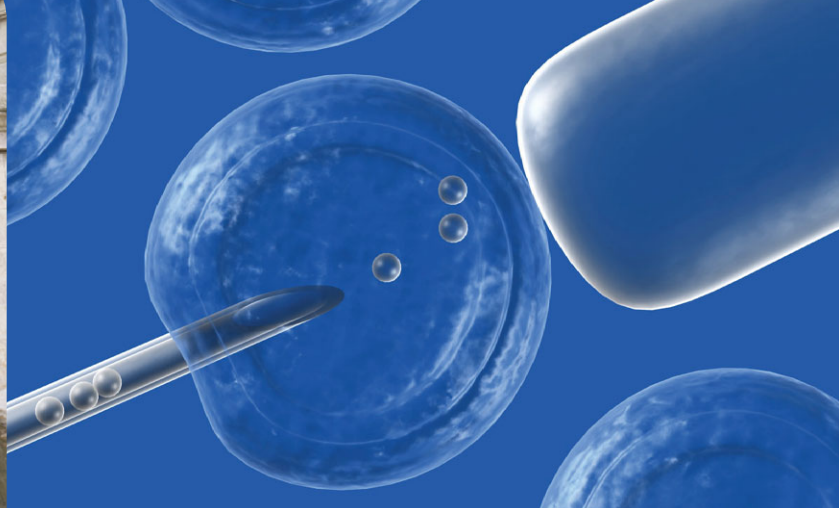


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WELLNESS PROFILE

BY JON FINKEL

Aubrey de Grey: On the Cutting Edge of Longevity Research



Preamble by William Faloon

Aubrey de Grey is the world's most famous biomedical gerontologist. **Life Extension Foundation®** is honored he has joined our **Scientific Advisory Board**.

There is something so unique about Aubrey that I felt compelled to bring it up in this introduction. Aubrey has spent his life investigating methods to slow and reverse aging, which is not a financially lucrative activity.

Aubrey's mother died and left him **\$16 million**. Instead of doing what virtually anyone else would with this money, Aubrey donated **\$13 million** to an organization dedicated to eradicating human aging.

Other than Saul Kent and me, who have donated our worldly assets to funding research to eliminate the scourges of aging and death, Aubrey is quite unique. He could have secured a comfortable lifestyle for himself, but recognized the greater good to humanity once aging is conquered.

On **February 20, 2013**, the founders of **Google** and **Facebook** joined forces to back big money prizes for research aimed at extending human life. There are other multi-billionaires supporting biomedical research, but none will make personal lifestyle sacrifices as Aubrey, Saul, and I have done.

There are many wealthy Life Extension members who will read this article. I ask that if their net worth ensures they will never endure personal economic hardship, that they consider donating money to non-profit organizations (like the Life Extension Foundation® and the one Aubrey established) that are funding dozens of scientific projects aimed at radically extending the healthy human life span.

Aubrey de Grey is the champion of a major issue that may be the least polarizing topic among the general public: not dying.

Regardless of your race, your religion, your political affiliation or your gender, most people can generally agree on the fact that living a healthy life for a long time is far better than getting sick and dying at a needlessly young age. For de Grey, increasing the human life span beyond what is now capable isn't just something he thinks about in his free time; it is the singular focus of his professional life.

Officially, de Grey is a biomedical gerontologist and the Chief Science Officer of the SENS Foundation, which de Grey launched in March, 2009. Its purpose is best explained on the foundation's website:

"SENS is an acronym for 'Strategies for Engineered Negligible Senescence.' It is best defined as an integrated set of medical techniques designed to restore youthful molecular and cellular structure to aged tissues and organs. Essentially, this involves the application of regenerative medicine to the problem of age-related ill-health. However, regenerative medicine is usually thought of as encompassing a few specific technologies such as stem cell therapy and tissue engineering, whereas SENS incorporates a variety of other techniques to remove or obviate the accumulating damage of aging. This broadly defined regenerative medicine - which includes the repair of living cells and extracellular material in situ - applied to the damages of aging, is what we refer to as rejuvenation biotechnologies."

In short, the mission of SENS is to prevent people from getting sick. Ever. And de Grey has not only dedicated his life to achiev-

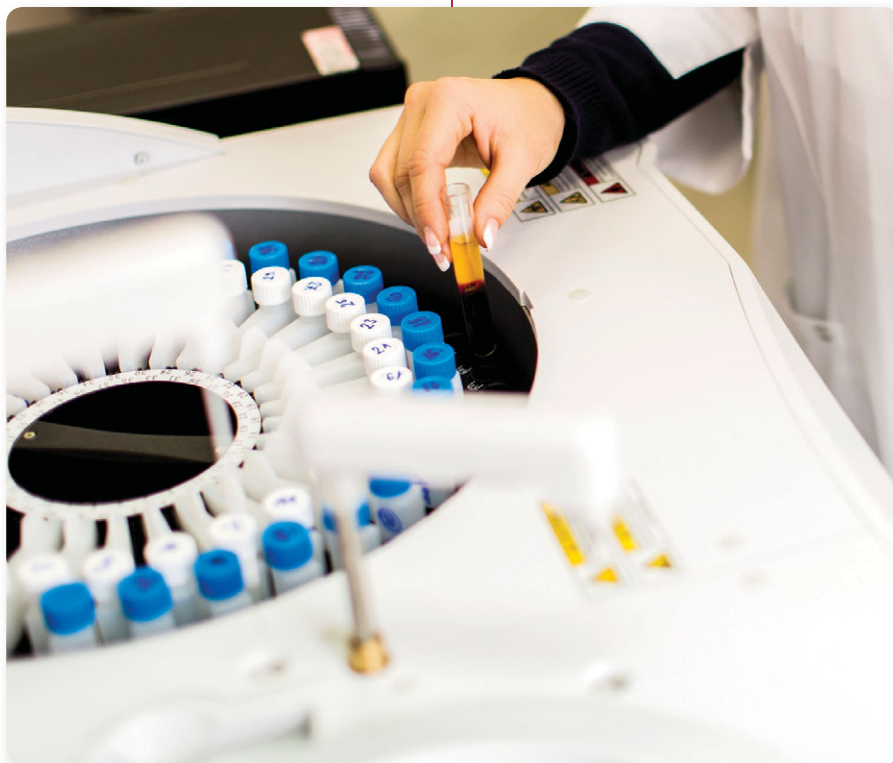
ing this goal, he has dedicated his wallet as well. When his mother passed away in 2011, he inherited over \$16 million, of which he has donated \$13 million to SENS; this is why he talks about ending sickness forever with such passion. He plans to make it happen.

In a speech de Grey gave at the world famous TedMed conference in 2009, he opens with a series of stats that treat aging as society normally treats disease or murder or drunk driving accidents. To start, he debunks the idea that dying of "natural causes" is a good or normal thing. In fact, in one of his first slides, he says the current definition of a "natural cause" death is anything that mainly kills older people. According to him, under the international classification of diseases, of the near 150,000 people who die per day worldwide, nearly two thirds of them die of aging.

"In the United States and the developed world, the proportion is over ninety percent," he says in his presentation. "That's thirty World Trade Center tragedies every day."

But what also concerns de Grey is the quality of life of the aged in the last years of their existence.

"I'm very much in favor of being positive about all of the wonderful things that people accumulate in their lives as they age," he says. "All the wisdom and experience and so on. But the fact is that we should not be downplaying or ignoring the fact that it would be much better if all those same people, with all of their experiences and wisdom also had the vigor and the physical and mental agility that they had as young adults. Currently, it's not fun and it's very expensive to keep the elderly going in the frail and decrepit state that a large proportion of elderly are in. The number I found was that it costs the govern-



ment \$200 billion a year to care for the elderly in the United States.”

To zero in on the serious nature of this issue, in the presentation, de Grey brings up the hypothetical question of whether or not aging is humanity’s worst problem. To hammer the point home, he answers the question with a question: Aging kills 100,000 people a day in the developed world. What else does that? The answer, of course, is nothing.

Attacking the Myths of Anti-Aging

“A lot of people when they think about the concept of combating aging, they think about the idea of keeping people alive in that frail and undesirable, ill-health stage of life,” de Grey tells his audience. “But that’s not what we’re about. We’re about extending the healthy part of life. Many people choose to rationalize the idea that aging is inevitable because they don’t think there is anything they can do about it. But we’re getting to a point where it’s not as simple as that.”

In order to explain that statement, de Grey proposes his own definition of aging, which he states as metabolism causing ongoing ‘damage,’ followed by this damage eventually causing pathology, which, in his definition, is everything that goes on later in life. Essentially, we accumulate systemic damage throughout our body as it sustains itself and eventually the accumulation of “damage” manifests itself in a way that hinders our metabolism, which then leads to our demise, be it through a disease, a heart attack, stroke, etc.

This explanation leads to the approach that if humans take the



responsibility upon themselves to intervene in this process, through living a healthy lifestyle, eating a healthy diet, staying fit, and taking the proper supplements, they then can stall the onset of damage, thus keeping a healthy metabolism running longer.

The formula de Grey uses to explain this strategy is simple: slow down the pathology and we give people a better quality of life for a larger amount of time.

While this is a sound strategy for living healthier and staving off the early onset of many common diseases that stem from a sedentary lifestyle and a fat/sugar-laden diet, de Grey believes that you still may not be making significant gains in healthy life extension - though for the time being it’s the best approach we have.

The real gains will come from enacting the SENS methodology in the future.

Cleaning Up Metabolism

Unlike many of the life-extending strategies that involve trying to prevent any damage, which may be futile, de Grey believes that an approach that involves the maintenance of metabolism (thus limiting damage) may achieve large boosts in human life span in the near future.

“Repairing damage and keeping the overall abundance of damage down through periodic repair is a much more promising process,” he says in his presentation. “This doesn’t allow pathologies to emerge.”

He uses the analogy of a 50-year-old car that still runs well due to exceptional maintenance to make his point. And yes, he believes that humans are, at their root, really complex machines that simply need lots of repair

and maintenance. If you adopt this maintenance approach, as de Grey does, then extending the human life span comes down to knowing how to keep damage at manageable levels throughout the human body.

This is where the core of his philosophy is introduced with what he calls the Seven Deadly Things, namely:

1. Junk – Inside Cells
2. Junk – Outside Cells
3. Cells – Too Few
4. Cells – Too Many
5. Mutations – Chromosomes
6. Mutations – Mitochondria
7. Protein Crosslinks

Under his system, all of the various molecular and cellular changes in the body that cause damage can be classified this way. While the Seven Deadly Things obviously simplifies some extremely complex processes in the body, the terms are a way for laymen to understand what he's talking about.

This is, perhaps, why de Grey has become one of the go-to experts in the field of biogerontology and longevity. In the last decade, he has spoken at countless scientific and technology conferences, and he has appeared in the *New York Times*, *60 Minutes*, *Wired Magazine*, and many others.

In each interview, he uses his ability to distill highly technical medical jargon down to its base form for mass consumption as a way of promoting the science of longevity. For instance, in his above example, what he refers to as “junk,” he also describes as, “accumulating molecular byproducts of the metabolic process.” For the general public, “junk” is clearly easier to understand.

But getting back to his ideas about vastly extending the human life span, de Grey believes that what he calls Robust Human Rejuvenation (maintenance) is possible through limiting the damage caused by cell loss and cell atrophy, extracellular junk, extracellular crosslinks, death-resistant cells, mitochondrial mutations, intracellular junk, and nuclear [epi]mutations when cancer is involved.

While the technology by which science is able to attack these conditions is only in its infant stages in some cases (in some cases younger, and in others, the technology may be right around the corner) de Grey sees a revolution in regenerative medicine as inevitable.

“We’ll be doing a lot of regenerative medicine against the precursors of a lot of medical conditions,” he says as he wraps up his speech.

“Yes, it’s a leap of faith that we will be able to put all of these technologies together, but this is what the process in any new, complex pioneering technology is like.” ●

Life Extension is proud to announce the addition of Aubrey de Grey to our Scientific Advisory Board.

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 on Aubrey de Grey or the SENS organization, visit: www.sens.org





VASCULAR BENEFITS OF A Mediterranean Diet VALIDATED IN HUGE NEW STUDY

A large, rigorous study published in the *New England Journal of Medicine* confirmed the health benefits of those who switch to a **Mediterranean diet** rich in **omega-3 fish oil** as well as protective nutrients called polyphenols found in **olive oil**, fruits, vegetables, nuts like walnuts, and wine.¹ The study ended early because the benefits were so overwhelming, with startling benefits for vascular health, that it was considered unethical to continue to deprive the control group.¹

In addition to the health-promoting benefits of vegetables and fruits with their abundance of polyphenol nutrients, the Mediterranean Diet group took at least **4 table-spoons** of polyphenol-rich extra-virgin **olive oil** a day.¹

LIFE EXTENSION® MEMBERS LONG AGO BENEFITED

Starting in **2005**, Life Extension members began taking a supplement (**Super Omega-3**) that provided potent concentrations of **fish oil** and **olive polyphenols** like hydroxytyrosol and oleuropein. This supplement also provided standardized **sesame lignans** to support the beneficial effect of omega-3 fatty acids in the body.²

Olive oil contains polyphenol nutrients that have demonstrated wide-ranging health benefits.³⁻⁵ The recommended twice daily dose of **Super Omega-3** supplies a similar polyphenol content to that found in **4 to 6 tablespoons of olive oil**.

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

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.

SUPER OMEGA-3 WITH SESAME LIGNANS AND OLIVE FRUIT EXTRACT

To ensure the purest, most stable, and easy-to-tolerate fish oil, **Super Omega-3 EPA-DHA** is *molecularly distilled*. It enjoys the highest **5-star rating** for **purity, quality, and concentration** from the renowned **International Fish Oil Standards** program.⁶ The **sesame lignans** not only direct the omega-3s toward more effective pathways in the body, but guard the delicate fish oil from oxidation.^{2,7}

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 **\$21** per bottle. If **10 bottles** are purchased, the cost is **\$18.68** per bottle. (Item #01482)

The daily dose (four regular size softgels) of **Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract** provides:

EPA (eicosapentaenoic acid)	1,400 mg
DHA (docosahexaenoic acid)	1,000 mg
Olive Fruit Extract [std. to 6.5% polyphenols (39 mg), 1.73% hydroxytyrosol/tyrosol (10.4 mg), 0.5% verbascoside/oleuropein (3 mg)]	600 mg
Sesame Seed Lignan Extract	20 mg



Item #01482

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

COSMESIS YOUTH SERUM

A new weapon has been developed in the fight against aging skin. It's a powerful **peptide** that breathes new life into aging and damaged skin.

By mimicking the action of the body's own natural thymic **youth hormone**, this innovative peptide works at the *cellular level* to reinforce your skin's immune defenses and to stimulate the growth of new skin cells.

The result? Improved tone and texture—in as little as 5 days!

This anti-aging peptide is called **Acetyl Tetrapeptide-2 (AT-2)**, and it's one of the top ingredients in **Cosmesis Youth Serum**.

5 DAYS TO YOUNGER-LOOKING SKIN

Acetyl Tetrapeptide-2 has been shown to rejuvenate facial skin, improve skin tone and texture—and help defend against the visible signs of *premature aging*.

Experimental studies have shown:¹

- Increased **cellular growth** by **51%**—in just 5 days!
- Increased **keratin** production by **75%**!
- Increased **keratohyalin** production by **28%**!
- Increased production of **granulocyte-macrophage colony-stimulating factor (GM-CSF)**, the substance that activates your skin's immune cells, by **450%**—in just 5 days!

By reinforcing immune defenses and enhancing skin regeneration, this discovery can help restore aging, mature skin to a more youthful appearance.

THE SERUM'S SECRET WEAPON...

Cosmesis Youth Serum contains a seaweed called **Chondrus crispus** that repairs damaged skin cells, improves skin cell growth, and reduces oxidative damage to the skin. This nutrient-packed botanical...

...Provides skin-supporting vitamins, minerals, and phytonutrients that help *rejuvenate* and *restore* aging skin,²

...Improves skin softness and silkiness by trapping and holding moisture, *cooling*, and *hydrating* the skin,³ and

...Provides a *protective, water-binding barrier* that promotes the *regeneration* of damaged skin.⁴

But that's not all...

The **Chondrus crispus** in **Youth Serum** contains a performance-boosting ingredient called **carrageenan** that delivers active ingredients **deep** into your skin, leaving skin looking younger, healthier, and more refreshed.⁵

Together, the two **skin rejuvenators** in **Cosmesis Youth Serum** help revive aging skin by exfoliating, nourishing, moisturizing, protecting, detoxifying, and regenerating it. The unique combination of nourishing botanical extracts and potent anti-aging polypeptides can breathe new life into aging and damaged skin.

PEPTIDES AND SKIN CARE

Peptides are the *natural choice* for repairing damaged and aging skin. These anti-aging, non-toxic substances...

- Trigger **increased collagen production**.⁶
- Enhance **antioxidant defense**.⁷
- Improve **cellular repair**.⁸

The result? Softer, smoother, more radiant-looking skin.

A 1-oz bottle of **Cosmesis Youth Serum** retails for \$65. If a member buys 2 bottles, the price is reduced to **\$42.75** per bottle.

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ASK THE DOCTOR

BY SCOTT FOGLE, ND

Three Blood Tests to Help You Better Manage the Risks of High Blood Sugar

Q ■ I noticed that on a recent blood test my fasting blood sugar is **105 mg/dL**. Last checkup it was **100 mg/dL**. My doctor says it's fine and not to worry but everything I've read tells me that I might be on the road to diabetes or have something called impaired insulin sensitivity (or insulin resistance). Can you suggest some blood tests that would give me a better picture of my risk factors, especially since both diabetes and high cholesterol issues run in my family?



SCOTT FOGLE, ND

A ■ That is a great question, and you are wise to raise it. You may have the condition referred to as “impaired glucose tolerance,” also known as “insulin resistance” or “pre-diabetes.” In other words, your glucose level is indeed too high if your goal is optimal health.

Here's why...

Though mainstream medicine once tolerated blood sugars as high as **140 mg/dL** as “normal,” we now recognize the substantial cardiovascular, stroke, and cancer risks posed by sugar levels anywhere above **85 mg/dL**.¹⁻⁴ Above that level, your tissues

are exposed to glucose at concentrations that cause chemical reactions with your body's proteins and fats called **glycation**. Glycated proteins and fats trigger inflammation and oxidative stress, major enemies of longevity. Virtually all chronic diseases of aging (and aging itself) are accelerated by high glucose levels. As blood sugar rises, your risk of dying also goes up by approximately **40%** when **fasting glucose** consistently falls in the range of **110-124 mg/dL**. Risk of dying **doubles** when **fasting glucose** reaches the range of **126-138 mg/dL**.⁵

But glucose is only part of the story. In order to keep your sugar under control, your body puts out increasingly large amounts of **insulin**, the hormone we need to take sugar out of the bloodstream and drive it into cells. And insulin, while critically important for acute blood sugar control, poses a problem in the longer term.

Insulin is a growth factor, so too much insulin can predispose you to many kinds of cancer, as well as to heart disease, stroke, and the process of accelerated aging.⁶⁻¹⁸

In other words, your body may be putting out high amounts of

insulin just to keep your blood sugar as "low" as **100 to 105 mg/dL**, but you are not out of the woods! To get a better idea of your overall risk, you'll need to know more than just a fasting blood sugar level. You'll need to know your insulin levels as well, particularly how much insulin it takes to get your blood sugar levels under control after you eat but most doctors never think to order those tests. Ideally, it shouldn't take too much insulin; if it does, then that is an early warning sign of insulin resistance.

There's more. Fasting blood glucose gives you no information about how your body handles the inevitable glucose load after a meal. Studies show that the *2-hour after-meal (postprandial) glucose level* correlates most strongly with catastrophic outcomes like cardiovascular disease, so getting fasting sugar under control is only half of the battle.¹⁹ This all goes to say that you'll want to get some measurement of your glucose and insulin levels following a standard glucose load, in order to get an idea about how your own individual body manages it.

Three Tests to Assess Blood Sugar Management

Let's take a look at a group of three tests that together give you the best picture of your blood sugar when fasting and after a meal, your insulin levels when fasting and after a meal, the amount of glucose-related damage your body's proteins are undergoing, and the way your lipid profile is being affected by your blood sugar. Using the results from these tests can help you and your physician avoid the devastating damage caused by high blood sugar.

Glucose Tolerance Test with Insulin

A glucose tolerance test with insulin provides your body with a single, precisely measured dose of glucose, and then measures your blood sugar and insulin responses over a total of three hours. You'll fast overnight (just like for any routine fasting blood sugar test), and on the morning of the test you'll have a fasting blood glucose and insulin level drawn to establish your baseline. This also gives you an up-to-date measurement of your fasting glucose.

You'll then be given a drink containing **75 grams** of glucose, and asked to wait. At one, two, and three hours after you drink this glucose "challenge" dose, technicians will draw additional blood glucose and insulin levels. (Don't forget to bring a book, tablet, or laptop to keep yourself quietly occupied; the test requires that you remain seated at the test site until it is finished.)

The results of this test will show you what your body does with a known glucose load. If you

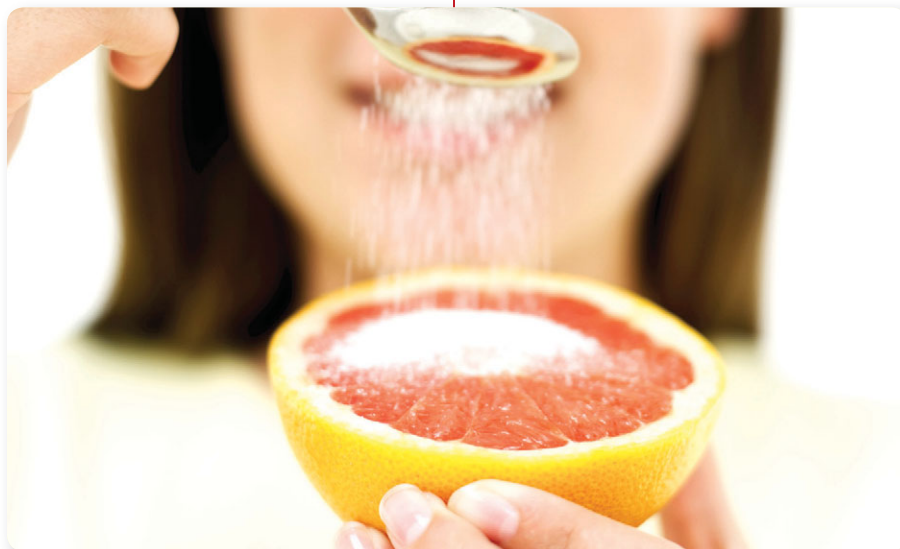


TABLE 1:
The Dangers of
After-Meal
Blood Sugar
Elevations²⁰

- Retinal damage to the eye
- Arterial blockage
- Oxidative stress
- Increased inflammation
- Endothelial dysfunction
- Reduced coronary blood flow
- Increased cancer risk



are healthy, you'll have a baseline fasting glucose of **70-85 mg/dL**, and a low fasting insulin level (less than **5 μ IU/mL**). Over the next few hours, you'll see a rise in blood glucose as your body absorbs it from your intestine, but that rise should be tempered by a slight increase in insulin.

By two hours, your glucose should not rise above **140 mg/dL** or ideally not above **125 mg/dL** (or more than **40 mg/dL** above your baseline value); higher two-hour postprandial glucose levels are strongly associated with a host of dangerous outcomes (**Table 1**).²⁰ But — and here's the most important point — you'll also have a simultaneous measurement of your insulin level. While it's good to have normal fasting and after-meal blood sugar levels, you still have a problem if your corresponding insulin levels are too high.

If you'll invest just three or four hours of your time, the glucose tolerance test with insulin will give you a more accurate picture of where you are right now, in terms of fasting and after-meal glucose and insulin. And that informa-

tion will give you powerful clues to your risk factors, not only for diabetes, but also for all kinds of age-related conditions. If your results are abnormal, you'll have a clear roadmap of how to respond, and an excellent measuring tool to track your progress.

Hemoglobin A1c

The glucose tolerance test with insulin gives you great information about where your body is right now, on the day of the test. To complement that information, you'll want some measure of longer-term sugar-induced glycation damage to your body's protein and lipid molecules. The standard test for that is **hemoglobin A1c (HbA1c)**, a direct measurement of glycation damage to hemoglobin, one of the most important molecules in your body, and one that is readily measured with a simple blood test.

If a fasting or after-meal glucose is a snapshot, think of hemoglobin A1c as a security camera recording that tracks where you've been over the past 2-3 months.¹⁹ Hemoglobin

A1c results are reported as the percent of total hemoglobin that's been damaged by glycation; a level of less than **5.7%** is considered good, but **5%** is even better. If your level is higher than **5.7%**, it means your body has been seeing too much sugar for too long — and that means your insulin levels will also likely have been elevated as your body tries to cope, with potentially disastrous consequences. Studies show that the risk of heart attack, stroke, and cancer all go up with rising levels of hemoglobin A1c.²¹⁻²³ And one of the strongest correlations with frailty in older adults is a persistently elevated hemoglobin A1c level.^{24,25}

VAP™ Test for Lipids

Although it doesn't measure glucose or insulin, the **vertical auto profile (VAP™)** test is especially valuable for people with borderline or elevated blood sugar. That's because both impaired glucose tolerance and full-blown diabetes are associated with blood lipid disturbances that create a very high cardiovascular disease and stroke

risk; one of the major risks is from smaller-than-normal particles of low density (LDL) cholesterol.²⁶⁻²⁹

Unlike standard lipid profiles, a single VAP™ test directly measures all of the major cholesterol-related particles that have known impact on heart and blood vessel health.^{30,31} This includes the so-called “small remnant” particles, basically leftovers from LDL- and very-low density lipoproteins (VLDL) that are independently associated with increased risk.

Why Know This Information?

Simply because, as with the situation of a “normal” glucose but elevated insulin, you might have met your goal of a low LDL and a higher HDL, but still be at risk. This was shown in a study that looked at people who had reached “normal” levels of non-HDL cholesterol. Depending on their baseline risk, **63 to 88%** of those people still turned out to have small low-density particle size, meaning that they were still at significantly raised risk for cardiovascular disease.³² A decrease in LDL size is associated with a **28%** increase in heart attack risk in men and a **130%** increase in risk among young women.^{33,34} This is because small, dense LDL can penetrate the cells lining your arteries much easier than large bouyant LDL, thus leading to arterial plaque faster.

VAP™ testing also measures the important lipoproteins Lp(a) and B100, and the subcategories of HDL cholesterol, HDL-2 and HDL-3. HDL-2 may offer the greatest cardiovascular protection; people with HDL-2 cholesterol less than **25 mg/dL** have a fourfold increased risk of a heart

attack compared with those who have higher levels.³⁵

Lp(a) and B100 particles are also associated with increased cardiovascular risk, and both are found in abnormally large quantities in people with diabetes or insulin resistance.³⁶ People with elevated Lp(a) have a **79%** increase in stroke risk, while those with a history of smoking and elevated Lp(a) are four times likelier to have blood vessel diseases.^{37,38} APO B100 is correlated to your LDL particle number, and the higher the number the greater the chance your LDL is being oxidized and glycated, both of which contribute to more plaque in arteries.³⁹

Summary

It is a good idea not to ignore a “borderline” fasting blood sugar result, especially in light of the current recommendations to keep blood sugar at **85 mg/dL** or lower. Even a marginally-elevated glucose level may mask a dangerously high insulin level; fasting glucose measurements also provide no information about the after-meal glucose surge that does much of the damage.

People concerned about their glucose should consider three tests: a glucose tolerance test with insulin measurement, a hemoglobin A1c, and a VAP™ lipid profile. The results of those tests will give you a customized assessment of your cardiovascular risk status. ●

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

Dr. Scott Fogle is the Director of Clinical Information and Laboratory Services at Life Extension® where he oversees scientific and medical information and is in charge of its health advisors as well as its laboratory division.

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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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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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Blood Testing The Ultimate Information

MOST POPULAR PANELS

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<p>○ COMPREHENSIVE PANELS</p> <p>MALE LIFE EXTENSION PANEL (LC322582) \$269</p> <p>Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes:</p> <p>DHEA-S C-Reactive Protein</p> <p>TSH for thyroid function Homocysteine</p> <p>Estradiol Free Testosterone</p> <p>Vitamin D 25- hydroxy Total Testosterone</p> <p>Hemoglobin A1c PSA (prostate-specific antigen)</p>	<p>○ THE CBC/CHEMISTRY PROFILE (LC381822) \$35</p> <p>Note: This CBC/Chemistry Profile is included in many Life Extension panels. Please check panel descriptions.</p> <p>CARDIOVASCULAR RISK PROFILE</p> <p>Total Cholesterol Cholesterol/HDL Ratio</p> <p>HDL Cholesterol Estimated CHD Risk</p> <p>LDL Cholesterol Glucose</p> <p>Triglycerides Iron</p> <p>LIVER FUNCTION PANEL</p> <p>AST (SGOT) Total Bilirubin</p> <p>ALT (SGPT) Alkaline Phosphatase</p> <p>LDH</p>
<p>○ FEMALE LIFE EXTENSION PANEL (LC322535) \$269</p> <p>Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes:</p> <p>DHEA-S C-Reactive Protein</p> <p>TSH for thyroid function Homocysteine</p> <p>Estradiol Free Testosterone</p> <p>Progesterone Total Testosterone</p> <p>Hemoglobin A1c Vitamin D 25- hydroxy</p>	<p>KIDNEY FUNCTION PANEL</p> <p>BUN BUN/Creatinine Ratio</p> <p>Creatinine Uric Acid</p> <p>BLOOD PROTEIN LEVELS</p> <p>Total Protein Globulin</p> <p>Albumin Albumin/Globulin Ratio</p> <p>BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE</p> <p>Red Blood Cell Count Monocytes</p> <p>White Blood Cell Count Lymphocytes</p> <p>Eosinophils Platelet Count</p> <p>Basophils Hemoglobin</p> <p>Polys (Absolute) Hematocrit</p> <p>Lymphs (Absolute) MCV</p> <p>Monocytes (Absolute) MCH</p> <p>Eos (Absolute) MCHC</p> <p>Baso (Absolute) Polynucleated Cells</p> <p>RDW</p>
<p>○ MALE WEIGHT LOSS PANEL (LCWLM) \$299</p> <p>Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes:</p> <p>DHEA-S C-Reactive Protein</p> <p>SHBG Insulin</p> <p>Estradiol Free Testosterone</p> <p>Free T3 Total Testosterone</p> <p>TSH for thyroid function Free T4</p> <p>PSA (prostate-specific antigen)</p>	<p>BLOOD MINERAL PANEL</p> <p>Calcium Sodium</p> <p>Potassium Chloride</p> <p>Phosphorus Iron</p>
<p>○ FEMALE WEIGHT LOSS PANEL (LCWLF) \$299</p> <p>Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes:</p> <p>DHEA-S C-Reactive Protein</p> <p>Progesterone Insulin</p> <p>Estradiol Free Testosterone</p> <p>Free T3 Total Testosterone</p> <p>TSH for thyroid function Free T4</p> <p>SHBG</p>	<p>○ COMPREHENSIVE THYROID PANEL (LC100018) \$199</p> <p>TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA</p>
<p>○ MALE HORMONE ADD-ON PANEL (LCADDM)* \$155</p> <p>Pregnenolone and Dihydrotestosterone (DHT)</p> <p>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.</p>	<p>○ FOOD SAFE ALLERGY TEST** (LCM73001) \$198</p> <p>This test measures delayed (IgG) food allergies for 95 common foods.</p>
<p>○ FEMALE HORMONE ADD-ON PANEL (LCADDF)* \$125</p> <p>Pregnenolone and Total Estrogens</p> <p>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.</p>	<p>○ ADRENAL FUNCTION PANEL (LC100021) \$136</p> <p>DHEA-S, AM/PM Cortisol, Glucose, Insulin, Lipid Panel, RBC magnesium</p>
<p>○ LIFE EXTENSION THYROID PANEL (LC304131) \$75</p> <p>TSH, T4, Free T3, Free T4.</p>	<p>○ OMEGA SCORE™*** (LCOMEGA) \$131.25</p> <p>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.</p>
<p>○ FEMALE COMPREHENSIVE HORMONE PANEL* (LC100011) \$299</p> <p>CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.</p>	<p>○ MITOCHONDRIAL FUNCTION PANEL (LC100020) \$159</p> <p>Carnitine (Free with Total), CoQ10, Glucose</p>
<p>○ MALE COMPREHENSIVE HORMONE PANEL* (LC100010) \$299</p> <p>CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.</p>	<p>○ VAP™ TEST* (LC804500) \$90</p> <p>The VAP™ cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.</p>

* 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.



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<input type="radio"/> ENERGY PROFILE (LC100005) CBC/Chemistry Profile (see description), Epstein –Barr Virus antibodies (IgG and IgM), Cytomegalovirus Antibodies (IgG and IgM), Ferritin, Total and Free Testosterone, DHEA-S, Free T3, Free T4, Cortisol, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Insulin.	\$375	<input type="radio"/> HORMONES DHEA-SULFATE (LC004020) This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.	\$61
<input type="radio"/> ANEMIA PANEL (LC100006) CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.	\$86	<input type="radio"/> DIABESITY PANEL (LC100019) Glucose, Insulin, HbA1c, VAP™, Cortisol, C-Reactive Protein	\$159
<input type="radio"/> INFLAMMATION PANEL (LC100007) CBC/Chemistry Profile (see description above), C-Reactive Protein (high sensitivity), Sedimentation Rate, Rheumatoid (RA) Factor, Antinuclear Antibodies (ANA) Screen.	\$135	<input type="radio"/> MALE BASIC HORMONE PANEL (LC100012) DHEA-S, Estradiol, Free and Total Testosterone, PSA	\$75
<input type="radio"/> THYROID ANTIBODY PROFILE (LC100004) Thyroid Antithyroglobulin Antibody (ATA) and Thyroid Peroxidase Antibody (TPO).	\$99	<input type="radio"/> FEMALE BASIC HORMONE PANEL (LC100013) DHEA-S, Estradiol, Free and Total Testosterone, Progesterone	\$75
<input type="radio"/> CARDIAC PLUS* (LC100008) CBC/Chemistry profile (see description), Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Fibrinogen, Homocysteine.	\$145	<input type="radio"/> DIHYDROTESTOSTERONE (DHT)* (LC500142) Measures serum concentrations of DHT.	\$99
<input type="radio"/> VAP™ PLUS* (LC100009) VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy.	\$330	<input type="radio"/> ESTRADIOL (LC004515) For men and women. Determines the proper amount in the body.	\$33
<input type="radio"/> CARDIAC RISK 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.	\$99	<input type="radio"/> INSULIN FASTING (LC004333) Can predict those at risk of diabetes, obesity, and heart and other diseases.	\$42
<input type="radio"/> Lp-PLA2 (PLAC® TEST)* (LC123240) This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.	\$125	<input type="radio"/> PREGNENOLONE* (LC140707) Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.	\$116
<input type="radio"/> C-REACTIVE PROTEIN (HIGH-SENSITIVITY) (LC120766) 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.	\$42	<input type="radio"/> PROGESTERONE (LC004317) Primarily for women. Determines the proper amount in the body.	\$55
<input type="radio"/> FIBRINOGEN* (LC001610) High levels of this blood-clotting factor increase the risk of heart attack and stroke.	\$31	<input type="radio"/> SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016) This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.	\$33
<input type="radio"/> HOMOCYSTEINE (LC706994) 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.	\$64	<input type="radio"/> BONE HEALTH VITAMIN D (25OH) (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.	\$47
<input type="radio"/> MALE HEALTH PSA (PROSTATE-SPECIFIC ANTIGEN) (LC010322) Can provide an early warning sign for prostate disorders and possible cancer.	\$31	<input type="radio"/> OSTEOCALCIN* (LC010249) 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.	\$91
<input type="radio"/> FREE-PSA (INCLUDES TOTAL PSA)* (LC480780) Recommended to determine if an elevated PSA is indicative of prostate cancer.	\$61	<input type="radio"/> DPD CROSS LINK URINE TEST (LC511105) The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis.	\$79

This is NOT a complete listing of LE blood test services. Call 1-800-208-3444 for additional information.

Blood tests available only in the continental United States. Not available in Maryland.

For non-member prices call 1-800-208-3444

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

TERMS AND CONDITIONS

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

Signature of Life Extension Member

X

Life Extension Foundation Members only

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☐ Male ☐ Female

Name

Date of Birth
(required) / /

Address

City

State

Zip

Phone

Credit Card No.

Expiration Date /

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LifeExtension®
NATIONAL DIAGNOSTICS, INC.

3600 West Commercial Boulevard
Fort Lauderdale, FL 33309

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

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

PRODUCTS

AMINO ACIDS

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
Branched Chain Amino Acids
D, L-Phenylalanine Capsules
Glycine Capsules
L-Arginine Capsules
Arginine/L-Ornithine Capsules
L-Carnitine Capsules
L-Carnitine Powder Natural Lemon Flavor
L-Glutathione, L-Cysteine & C
L-Glutamine Capsules
L-Glutamine Powder
L-Lysine Capsules
L-Tyrosine Tablets
Mega L-Glutathione Capsules
N-Acetyl-L-Cysteine Capsules
Optimized Carnitine with GlycoCarn®
PharmaGABA
Super Carnosine Capsules
Taurine Capsules

BONE & JOINT HEALTH

ArthroMax™ with Theaflavins and AprèsFlex®
ArthroMax™ Advanced with UC-II® and
AprèsFlex®
Bone-Up™
Bone Restore
Bone Restore w/Vitamin K2
Bone Strength Formula w/KoAct™
Fast Acting Joint Formula
Glucosamine Chondroitin Capsules

BRAIN HEALTH

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
CDP Choline Capsules
Cognitex® with NeuroProtection Complex
Cognitex® with Pregnenolone &
NeuroProtection Complex
Cognitex® Basics
DMAE Bitartrate
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin Granules
Methylcobalamin Lozenges
Neuro-Mag™ Magnesium L-Threonate
Optimized Ashwagandha Extract
Phosphatidylserine Capsules
Rhodiola Extract
Super Ginkgo Extract
Vinpocetine

DIGESTIVE

Bifido GI Balance
Carnosoothe w/PicroProtect
Digest RC™
Enhanced Super Digestive Enzymes
Extraordinary Enzymes
Life Flora™
Natural EsophaGuard
Pancreatin
Probiotic All-Flora®
Probiotic Anti-Aging
Regimint
Theralac Probiotics

DURK AND SANDY PRODUCTS

Blast™
Inner Power™

EYE CARE

Bilberry Extract
Brite Eyes III
Eye Pressure Support with Mirtogenol®
Overcast Polarized Sunglasses
Solarshield Sunglasses
Super Zeaxanthin with Lutein &
Meso-Zeaxanthin Plus Astaxanthin and C3G
Super Zeaxanthin with Lutein &
Meso-Zeaxanthin and C3G

FIBER

AppleWise Polyphenol
Fiber Food
TruFiber®
WellBetX PGX® plus Mulberry

FOOD

Rich Rewards™ Black Bean Vegetable Soup
Rich Rewards™ Spicy Cruciferous Vegetable Soup
Rich Rewards™ Cruciferous Vegetable Soup
Rich Rewards™ Lentil Soup
Rich Rewards® Coffee

HAIR CARE

Dr. Proctor's Advanced Hair Formula
Dr. Proctor's Shampoo
Super-Absorbable Tocotrienols

HEART HEALTH

AppleWise Polyphenol
Advanced Lipid Control
Aspirin (Enteric Coated)
Cardio Peak™ w/Standardized Hawthorn and Arjuna
Cho-Less™
D-Ribose Tablets
D-Ribose Powder
Endothelial Defense™ with
Full-Spectrum Pomegranate™
Fibrinogen Resist
Forskolin
Homocysteine Resist
Krill Healthy Joint Formula
Natural BP Management
Olive Leaf Vascular Support
Peak ATP® with GlycoCarn®
PhosphOmega®
Policosanol
Pycnogenol® French Maritime Pine Bark Extract
Red Yeast Rice
Super Absorbable CoQ10™ with d-Limonene
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with Enhanced
Mitochondrial™ Support
Theaflavin Standardized Extract
TMG Powder
TMG Tablets

HERBAL/PHTO PRODUCTS

Artichoke Leaf Extract
Astaxanthin w/Phospholipids
Berry Complete
Blueberry Extract
Blueberry Extract w/Pomegranate
Butterbur Extract w/Standardized
Rosmarinic Acid
Calcium D-Glucarate
Enhanced Berry Complete with Acai
Full-Spectrum Pomegranate™
Grapeseed Extract with Resveratrol &
Pterostilbene
Huperzine A
Kyolic® Garlic Formula 102 + 105
Kyolic® Reserve
Mega Green Tea Extract
Mega Green Tea Extract (Decaffeinated)
(also w/CoffeeGenic® Green Coffee Extract)
Mega Lycopene Extract
Optimized Ashwagandha Extract
Optimized Garlic
Pomegranate Extract
Pomegranate Juice Concentrate
Pycnogenol
Optimized Quercetin
Resveratrol with Synergistic Grape-Berry Actives
Rhodiola Extract
Silymarin
SODzyme™ with GliSODin®
Stevia Extract

Super Bio-Curcumin®
Super Ginkgo Extract
Triple Action Cruciferous Vegetable Extract
Venotone
Whole Grape Extract

HORMONES

Advanced Natural Sex for Women® 50+
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
Super Miraforte with Standardized Lignans

IMMUNE ENHANCEMENT

AHCC® (Active Hexose Correlated Compound)
Black Cumin Seed Oil
Black Cumin Seed Oil w/Bio-Curcumin®
Buffered Vitamin C Powder
Echinacea Extract
i26 Hyperimmune Egg
Immune Modulator w/Tinofend®
Immune Protect with PARACTIN®
Lactoferrin
Norwegian Shark Liver Oil
Optimized Fucoidan w/Maritech® 926
ProBoost™ Thymic Protein A
Reishi Extract Mushroom Complex
Vitamin C with Dihydroquercetin
Zinc Lozenges

INFLAMMATORY REACTIONS

Arthro-Immune Joint Support
ArthroMax™ with Theaflavins
Boswellia
Bromelain (Specially-coated)
DHA (Vegetarian Sourced)
Fast Acting Joint Formula
Ginger Force
Krill Oil
5-LOX Inhibitor w/AprèsFlex®
Mega EPA/DHA
Mega GLA with Sesame Lignans
MSM
Natural Relief 1222™ Cream
Omega-3 Whirl
Serrafazyme
SODzyme™ with GliSODin® and Wolfberry
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Tart Cherry
Tart Cherry w/Standardized CherryPURE®
Zyflamend® Whole Body

LIVER HEALTH

Branch Chain Amino Acids
N-Acetyl Cysteine
Liver Efficiency Formula
Certified European Milk Thistle
Hepatopro
SAME
Silymarin

MINERALS

Biosil
Bone Restore
Bone Strength Formula w/KoAct®
Bone-Up™
Boron Capsules
Calcium Citrate with D3
Chromium Ultra
Copper
Iodoral
Iron Protein Plus

Magnesium
Magnesium Citrate
Only Trace Minerals
Optimized Chromium w/Crominex® 3+
OptiZinc
Sea-Iodine™
Selenium
Se-Methyl L-Selenocysteine
Strontium
Vanadyl Sulfate
Zinc Lozenges

MISCELLANEOUS

Blood Pressure Monitor Arm Cuff
Cell Sensor Gauss Meter™
CR Way Edition Advanced Dietary Software

MITOCHONDRIAL SUPPORT

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
Mitochondrial Basics w/BioPQQ®
Mitochondrial Energy Optimizer w/BioPQQ®
Optimized Carnitine with GlycoCarn®
Super Absorbable CoQ10™ with d-Limonene
Super Alpha Lipoic Acid with Biotin
Super R-Lipoic Acid
Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

MOOD RELIEF

Adrenal Energy Formula
Bioactive Milk Peptides
L-Theanine
5 HTP
Enhanced Natural Sleep® w/ Melatonin
Enhanced Natural Sleep® w/o Melatonin
Natural Stress Relief
SAME
St. John's Wort Extract
L-Tryptophan
Optimized Tryptophan Plus

MOUTH CARE

Advanced Oral Hygiene
Mouthwash w/Pomegranate
Toothpaste

MULTIVITAMIN

Booster
Children's Formula Life Extension Mix™
Comprehensive Nutrient Packs Basic
Comprehensive Nutrient Packs Advanced
Life Extension Mix™ Capsules
Life Extension Mix™ Powder
Life Extension Mix™ Tablets
Life Extension Mix™ w/o Copper Capsules
Life Extension Mix™ w/o Copper Tablets
Life Extension Mix™ w/Extra Niacin
Life Extension Mix™ w/Extra Niacin w/o Copper
Life Extension Mix™ w/Stevia Powder
Life Extension Mix™ w/Stevia w/o Copper Powder
Life Extension One-Per-Day
Life Extension Two-Per-Day
Super Booster Softgels w/Advanced K2 Complex

PET CARE

Cat Mix
Dog Mix

PROSTATE & URINARY HEALTH

Optimized Cran-Max® with UTIRose™
5-LOXIN®
(Water-Soluble) Pumpkin Seed Extract
Super Saw Palmetto with Beta-Sitosterol
Super Saw Palmetto/Nettle Root Formula
w/Beta-Sitosterol
Ultra Natural Prostate Formula

SKIN CARE

Advanced Under Eye Serum with Stem Cells
Amber Self MicroDermAbrasion
Anti-Aging Mask
Anti-Glycation Serum
Antioxidant Rejuvenating Foot Cream
Antioxidant Rejuvenating Foot Scrub
Antioxidant Rejuvenating Hand Cream
Antioxidant Rejuvenating Hand Scrub
Anti-Redness & Blemish Lotion
Bio-Collagen w/Patented UC-II®
Bioflavonoid Cream
Broccoli Sprout
Corrective Clearing Mask
DNA Repair Cream
Dual-Action MicroDermAbrasion
Essential Plant Lipids Reparative Serum
Face Master® Platinum
Face Rejuvenating Antioxidant Cream
Enhanced FernBlock® with Red Orange Complex
Fine Line-Less
Hair Suppress Formula
Healing Formula All-in-One Cream
Healing Mask
Hyaluronic Facial Moisturizer
Hydrating Anti-oxidant Face Mist
Hydroderm®
Lifting & Tightening Complex
Lycopene Cream
Melatonin Cream
Mild Facial Cleanser
Neck Rejuvenating Antioxidant Cream
Peel Off Cleansing Mask
Pigment Correcting Cream
(Ultra) Rejuvenex®
Rejuvenex® Body Lotion
Rejuvenex® Factor Firming Serum
Rejuvenating Serum
Resveratrol Anti-Oxidant Serum
Skin Lightening Serum
Skin Restoring Phytoceramides w/Lipowheat®
Skin Stem Cell Serum
Stem Cell Cream w/Alpine Rose
Supercritical Omega 7™
Ultra Rejuvenex®
Ultra RejuveNight® w/o Progesterone
Ultra Lip Plumper
Ultra Wrinkle Relaxer
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Serum
Vitamin D Lotion
Vitamin E-ssential Cream
Vitamin K Healing Cream
Youth Serum

SOY

Natural Estrogen w/Pomegranate
Super Absorbable Soy Isoflavones

SPECIAL PURPOSE FORMULA

Anti-Alcohol Antioxidants w/HepatoProtection Complex
Benfotiamine w/Thiamine
Breast Health Formula
Butterbur Extract w/Standardized Rosmarinic Acid
Chlorella
Chlorophyllin
Green Coffee Extract CoffeeGenic® (also w/Glucose control)
Coriolus Super Strength
CR Mimetic Longevity Formula
Cinsulin® w/InSea2® and Crominex® 3+
European Leg Solution Diosmin 95
Fem Dophilus
Femmenessence MacaPause®

GlycemicPro™ Transglucosidase
Migra-eeze™
Natural Female Support
Organic Total Body Cleanse
Pecta-Sol®
Potassium Iodide
PQQ Caps with BioPQQ®
PteroPure™
Prelox® Natural Sex for Men®
Pyridoxal 5' - Phosphate
Ultra Natural Prostate w/AprèsFlex® and Standardized Lignans

SPORTS PERFORMANCE

Creatine Capsules
DMG (N, N-dimethylglycine)
L-Glutamine Capsules
L-Glutamine Powder
Whey Protein Isolate

VITAMINS

Ascorbyl Palmitate Capsules
B12
Beta-Carotene
Biotin Capsules
Buffered Vitamin C Powder
Complete B Complex
Fast-C®
Folic Acid + B12
Gamma E Tocopherol w/Sesame Lignans
Gamma E Tocopherol/Tocotrienols
Inositol Capsules
Mega Lycopene Extract
Methylcobalamin
MK-7
No-Flush Niacin
Optimized Folate
Super Ascorbate C Capsules
Super Ascorbate C Powder
Super K w/Advanced K2 Complex
Tocotrienols w/Sesame Lignans
Vitamin B3 (Niacin) Capsules
Vitamin B6
Vitamin B12 Tablets
Vitamin C
Vitamin D
Vitamin D3
Vitamin D3 w/Sea-Iodine™
Vitamins D and K w/Sea-Iodine™
Vitamin E
Vitamin K1

WEIGHT MANAGEMENT

Alli® Refill Pack
Advanced Anti-Adipocyte Formula w/AdipoStat & Integra Lean®
Calorie Control Weight Management™ Formula w/CoffeeGenic® Green Coffee Extract
CoffeeGenic® Weight Management™ with Green Coffee Extract
7-Keto DHEA
DHEA® Complete
Fucoxanthin Slim™
HCA
Integra-Lean® Irvingia
LuraLean® Caps Special Propolmannan Particle Size
Optimized Irvingia w/Phase 3™ Calorie Control Complex
Optimized Saffron with Satiereal®
Natural Appetite Control
Natural Glucose Absorption Control
Super CLA Blend w/Guarana and Sesame Lignans
Super CLA Blend w/Sesame Lignans
WellBetX PGX® plus Mulberry

Buyers Club Order Form

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No.		Retail Each	Member Each	Qty	Total
A					
01524	ACETYL-L-CARNITINE - 500 mg, 100 veg. caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
01525	ACETYL-L-CARNITINE ARGINATE - 100 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01628	ADRENAL ENERGY FORMULA - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01630	ADRENAL ENERGY FORMULA - 120 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	42.00	31.50		
01308	ADVANCED LIPID CONTROL - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	ADVANCED ORAL HYGIENE - 60 veg. mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	AHCC - 500 mg, 30 caps	59.98	44.99		
	Buy 4 bottles, price each	53.33	40.00		
*46925	ALLI® REFILL PACK - 120 caps	69.95	58.00		
00457	ALPHA-LIPOIC ACID w/BIOTIN (SUPER) - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01440	ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01509	ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT & INTEGRA LEAN®(ADVANCED) - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01625	APPLEWISE POLYPHENOL EXTRACT - 600 mg, 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	ARGININE/ORNITHINE - 500/250, 100 caps	16.00	12.00		
	Buy 4 bottles, price each	14.50	10.88		
00038	ARGININE/ORNITHINE POWDER - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	(L)-ARGININE CAPS - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01617	ARTHRONAX™ w/THEAFLAVINS & APRESFLEX® - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01618	ARTHRONAX™ ADVANCED w/UC-II® & APRESFLEX® - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01404	ARTHRO-IMMUNE JOINT SUPPORT - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00919	ARTICHOKE LEAF EXTRACT - 500 mg, 180 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.38	19.04		
01533	ASCORBYL PALMITATE - 500 mg, 100 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
00888	ASHWAGANDHA EXTRACT (OPTIMIZED) - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
01066	ASPIRIN - 81 mg, 300 enteric coated tablets	6.00	4.50		
	Buy 4 bottles, price each	5.33	4.00		
01720	ASTAXANTHIN WITH PHOSPHOLIPIDS - 4 mg, 30 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		

SUB-TOTAL OF COLUMN 1

JULY 2013

No.		Retail Each	Member Each	Qty	Total
B					
00920	BENFOTIAMINE w/ THIAMINE - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	BENFOTIAMINE (MEGA) - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01206	BERRY COMPLETE - 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	18.67	14.00		
01496	BERRY COMPLETE w/ACAI (ENHANCED) - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	BETA-CAROTENE - 25,000 IU, 100 softgels	11.25	8.44		
	Buy 4 bottles, price each	10.13	7.60		
01622	BIFIDO GI BALANCE - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	BILBERRY EXTRACT - 100 mg, 100 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01512	BIOACTIVE MILK PEPTIDES - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	BIO-COLLAGEN w/PATENTED UC-II® - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	BIOSIL™ - 5 mg, 30 veg. caps	18.95	15.16		
*01007	BIOSIL™ - 1 fl oz	29.99	23.99		
00102	BIOTIN - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
01709	BLACK CUMIN SEED OIL - 60 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01710	BLACK CUMIN SEED OIL w/BIO-CURCUMIN® - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01008	BLAST™ - 600 grams of powder	26.95	20.21		
70000	BLOOD PRESSURE MONITOR - ARM CUFF (medium)	99.95	64.97		
70004	BLOOD PRESSURE MONITOR - WRIST (travel size)	69.95	52.46		
01214	BLUEBERRY EXTRACT - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	BLUEBERRY EXTRACT w/ POMEGRANATE - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01726	BONE RESTORE - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01711	BONE RESTORE w/VITAMIN K2 - 150 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01725	BONE STRENGTH FORMULA w/KOACT® - 120 veg. caps	45.00	33.75		
	Buy 4 bottles, price each	40.00	30.00		
00313	BONE-UP® - 240 caps	28.95	21.71		
	Buy 4 bottles, price each	27.21	20.41		
01379	BOOSTER - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01680	BOOSTER w/ADVANCED K2 COMPLEX (SUPER) - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01661	BORON - 3 mg, 100 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		
00202	BOSWELLA - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	30.00	22.50		

SUB-TOTAL OF COLUMN 2

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

No.		Retail Each	Member Each	Qty	Total
01253	BRANCHED CHAIN AMINO ACIDS - 90 veg. caps Buy 4 bottles, price each	\$19.50 17.00	\$14.63 12.75		
01699	BREAST HEALTH FORMULA - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
00893	BRITE EYES III - 2 vials, 5 ml each Buy 4 boxes, price each	34.00 32.00	25.50 24.00		
01203	BROMELAIN (SPECIALLY-COATED) - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	21.00 19.00	15.75 14.25		
00884	BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
C					
01653	CALCIUM CITRATE w/VITAMIN D - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
01651	CALCIUM D-GLUCARATE - 200 mg, 60 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
01693	CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC® GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 414 grams powder Buy 4 jars, price each Buy 8 jars, price each	60.00 54.00 50.00	45.00 40.50 37.50		
01694	CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC® GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 60 individual packs Buy 4 boxes, price each Buy 8 boxes, price each	64.00 60.00 56.00	48.00 45.00 42.00		
01700	CARDIO PEAK™ w/STANDARDIZED HAWTHORN & ARJUNA - 120 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00916	CARNITINE w/GLYCOCARN® (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01532	L-CARNITINE - 500 mg, 30 veg. caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01719	L-CARNITINE POWDER NATURAL LEMON FLAVOR - 114 grams Buy 4 jars, price each	28.00 24.00	21.00 18.00		
01258	CARNOSOOTHE w/PICROPROTECT™ - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01687	CARNOSINE (SUPER) - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	CAT MIX - 100 grams powder Buy 4 jars, price each	15.00 12.00	11.25 9.00		
01659	CDP CHOLINE CAPS - 250 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
00998	CELL SENSOR-EMF DETECTION METER	39.95	29.95		
01370	CHILDREN'S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00550	CHLORELLA - 500 mg, 200 tablets Buy 4 bottles, price each	23.50 21.00	17.63 15.75		
01571	CHLOROPHYLLIN - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	CHO-LESS™ - 90 capsules	32.50	24.38		
01477	CHROMIUM ULTRA - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	CHROMIUM W/CROMINEX® 3+ (OPTIMIZED) - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		

SUB-TOTAL OF COLUMN 3

No.		Retail Each	Member Each	Qty	Total
01503	CINSULIN® W/INSEA® AND CROMINEX® 3+ - 90 veg. caps Buy 4 bottles, price each	\$38.00 34.00	\$28.50 25.50		
00818	CLA BLEND w/SESAME LIGNANS (SUPER) - 1000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	CLA BLEND w/GUARANA & SESAME (SUPER) -1000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01707	COFFEEGENIC® WEIGHT MANAGEMENT™ w/GREEN COFFEE EXTRACT - 90 veg. caps Buy 4 bottles, price each	48.00 42.00	36.00 31.50		
01697	COGNITEX® w/PREGNENOLONE & NEUROPROTECTION COMPLEX - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	74.00 66.60 58.89	55.50 49.95 44.17		
01696	COGNITEX® w/o PREGNENOLONE w/NEUROPROTECTION COMPLEX - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	72.00 64.00 56.96	54.00 48.00 42.72		
01421	COGNITEX® BASICS - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
01542	COMPLETE B-COMPLEX - 60 veg. caps Buy 4 bottles, price each	10.00 9.00	7.50 6.75		
01795	COMPREHENSIVE NUTRIENT PACKS BASIC - 30 packs Buy 4 boxes, price each	48.00 44.00	36.00 33.00		
01796	COMPREHENSIVE NUTRIENT PACKS ADVANCED - 30 packs Buy 4 boxes, price each	90.00 82.00	67.50 61.50		
00119	COPPER CAPSULES - 2 mg, 100 caps Buy 4 bottles, price each	9.91 8.96	7.43 6.72		
00949	COQ10™ w/ #LIMONENE (SUPER ABSORBABLE) - 50 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	25.00 22.00 20.00	18.75 16.50 15.00		
00950	COQ10™ w/ #LIMONENE (SUPER ABSORBABLE) - 100 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	66.00 60.00 56.00	49.50 45.00 42.00		
01226	COQ10 (SUPER UBIQUINOL) - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	56.00 52.00 48.00	42.00 39.00 36.00		
01426	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
01425	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 53.00 50.00	43.50 39.75 37.50		
01427	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 30 softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01431	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -200 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
01053	CORIOLUS SUPER STRENGTH - 600 mg, 150 veg. caps	99.95	74.96		

SUB-TOTAL OF COLUMN 4

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
C CONTINUED					
80140	COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - .33 oz	\$49.00	\$36.75		
	Buy 2 bottles, price each	42.00	31.50		
80139	COSMESIS AMBER SELF MICRODERMABRASION - 2 oz	49.00	36.75		
	Buy 2 jars, price each	42.00	31.50		
80118	COSMESIS ANTI-AGING MASK - 2 oz	72.00	54.00		
	Buy 2 bottles, price each	63.36	47.52		
80134	COSMESIS ANTI-GLYCATION SERUM - 1 oz	33.00	24.75		
	W/BLEUBERRY & POMEGRANATE EXTRACTS				
	Buy 2 bottles, price each	31.35	23.51		
80133	COSMESIS ANTIOXIDANT FACIAL MIST - 2 oz	32.00	24.00		
	Buy 2 bottles, price each	30.40	22.80		
80127	COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz	45.00	33.75		
	Buy 2 jars, price each	42.80	32.10		
80128	COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz	59.00	44.25		
	Buy 2 jars, price each	51.92	38.94		
80117	COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz	64.00	48.00		
	Buy 2 jars, price each	57.49	43.12		
80121	COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz	58.00	43.50		
	Buy 2 jars, price each	51.04	38.28		
80105	COSMESIS ANTI-REDNESS & ADULT BLEMISH LOTION - 1 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80147	COSMESIS BIOFLAVONOID CREAM - 1 oz jar	46.00	34.50		
	Buy 2 jars, price each	39.00	29.25		
80144	COSMESIS BROCCOLI SPROUT CREAM - 1 oz	46.00	34.50		
	Buy 2 jars, price each	39.00	29.25		
80120	COSMESIS CORRECTIVE CLEARING MASK - 2 oz	64.50	48.38		
	Buy 2 jars, price each	56.76	42.57		
80141	COSMESIS DNA REPAIR CREAM - 1 oz jar	49.00	36.75		
	Buy 2 jars, price each	42.00	31.50		
80108	COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz	74.95	56.21		
	Buy 2 bottles, price each	65.95	49.46		
80123	COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz	69.50	52.13		
	Buy 2 jars, price each	61.16	45.87		
80107	COSMESIS FINE LINE-LESS - 1 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80131	COSMESIS HAIR SUPPRESS FORMULA - 4 oz	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80137	COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz	53.00	39.75		
	Buy 2 jars, price each	45.43	34.07		
80115	COSMESIS HEALING MASK - 2 oz	64.50	48.38		
	Buy 2 bottles, price each	56.76	42.57		
80102	COSMESIS HEALING VITAMIN K CREAM - 1 oz	79.50	59.63		
	Buy 2 bottles, price each	69.96	52.47		
80109	COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80110	COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80138	COSMESIS HYDRATING ANTIOXIDANT FACE MIST - 4 oz	39.95	29.96		
	Buy 2 bottles, price each	38.00	28.50		
80103	COSMESIS LIFTING & TIGHTENING COMPLEX - 1 oz	74.50	55.88		
	Buy 2 tubes, price each	65.56	49.17		

SUB-TOTAL OF COLUMN 5

No.		Retail Each	Member Each	Qty	Total
80146	COSMESIS LYCOPENE CREAM - 1 oz jar	\$28.00	\$21.00		
	Buy 2 jars, price each	25.40	19.05		
80135	COSMESIS MELATONIN CREAM - 1 oz	33.00	24.75		
	Buy 2 jars, price each	27.10	20.33		
80114	COSMESIS MILD FACIAL CLEANSER - 8 oz	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80122	COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz	64.00	48.00		
	Buy 2 jars, price each	56.32	42.24		
80111	COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz	74.00	55.50		
	Buy 2 bottles, price each	65.12	48.84		
80106	COSMESIS REJUVENATING SERUM - 1 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80142	COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz	46.00	34.50		
	Buy 2 bottles, price each	39.00	29.25		
80112	COSMESIS SKIN LIGHTENING SERUM - 1/2 oz	85.00	63.75		
	Buy 2 bottles, price each	74.80	56.10		
80130	COSMESIS SKIN STEM CELL SERUM - 1 oz	74.00	55.50		
	Buy 2 bottles, price each	69.00	51.75		
80143	COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar	66.00	49.50		
	Buy 2 jars, price each	58.00	43.50		
80148	COSMESIS TIGHTENING & FIRMING NECK CREAM - 2 oz jar	39.00	29.25		
	Buy 2 jars, price each	35.00	26.25		
80116	COSMESIS ULTRA LIP PLUMPER - 1/3 oz	64.00	48.00		
	Buy 2 bottles, price each	56.32	42.24		
80101	COSMESIS ULTRA WRINKLE RELAXER - 1 oz	89.95	67.46		
	Buy 2 bottles, price each	79.76	59.82		
80113	COSMESIS UNDER EYE REFINING SERUM - 1/2 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80104	COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80129	COSMESIS VITAMIN C SERUM - 1 oz	85.00	63.75		
	Buy 2 bottles, price each	74.80	56.10		
80136	COSMESIS VITAMIN D LOTION - 4 oz	36.00	27.00		
	Buy 2 bottles, price each	33.66	25.25		
80145	COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz	28.00	21.00		
	Buy 2 jars, price each	26.00	19.50		
80149	COSMESIS YOUTH SERUM - 1 oz	65.00	48.75		
	Buy 2 bottles, price each	57.00	42.75		
00862	CRAN-MAX® - 500 mg, 60 veg. caps	17.50	13.13		
	Buy 4 bottles, price each	15.00	11.25		
01424	CRAN-MAX® with UTI-ROSE™ (OPTIMIZED) - 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01529	CREATINE CAPSULES - 120 veg. caps	10.95	8.21		
	Buy 4 bottles, price each	9.25	6.94		
01746	CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla)	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01429	CR MIMETIC LONGEVITY FORMULA - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
*33840	CRWAY GREAT GLUCOSE CONTROL CD	98.00	82.00		
**CRWAY	CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE	195.00	195.00		
00407	CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		

SUB-TOTAL OF COLUMN 6

To order online visit: www.LifeExtension.com

No.		Retail Each	Member Each	Qty	Total
D					
00658	7-KETO® DHEA METABOLITE - 25 mg, 100 caps	\$28.00	\$21.00		
	Buy 4 bottles, price each	24.00	18.00		
01479	7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01640	DHA (VEGETARIAN SOURCED) - 200 mg, 30 veg. softgels	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00607	DHEA - 25 mg, 100 tablets (dissolve in mouth)	14.00	10.50		
	Buy 4 bottles, price each	11.75	8.81		
01478	DHEA COMPLETE - 60 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	43.20	32.40		
00335	DHEA - 25 mg, 100 caps	18.00	13.50		
	Buy 4 bottles, price each	15.00	11.25		
00454	DHEA - 15 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	12.00	9.00		
00882	DHEA - 50 mg, 60 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
01689	DHEA - 100 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01358	DIGEST RC - 30 tablets	19.95	14.96		
	Buy 4 boxes, price each	17.00	12.75		
01272	DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01671	D,L-PHENYLALANINE CAPSULES - 500 mg, 100 veg. caps	18.75	14.06		
	Buy 4 bottles, price each	16.00	12.00		
01540	DMAE BITARTRATE - 150 mg, 200 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	15.00	11.25		
00059	DMG - 125 mg, 60 tablets	22.80	17.10		
	Buy 4 boxes, price each	21.00	15.75		
01570	DNA PROTECTION FORMULA - 60 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	32.00	24.00		
00544	DOG MIX - 100 grams powder	19.50	14.63		
	Buy 4 jars, price each	16.00	12.00		
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz	39.95	29.96		
	Buy 4 bottles, price each	32.00	24.00		
00320	DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz	24.95	18.71		
	Buy 4 bottles, price each	22.00	16.50		
00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz	39.95	29.96		
	Buy 4 jars, price each	38.95	29.21		
E					
01528	ECHINACEA EXTRACT - 250 mg, 60 veg. caps	\$14.35	\$10.76		
	Buy 4 bottles, price each	12.50	9.38		
01498	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels	56.00	42.00		
	Buy 4 bottles, price each	52.00	39.00		
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps	52.00	39.00		
	Buy 4 bottles, price each	46.00	34.50		
00625	EPA/DHA (MEGA) - 120 softgels	19.95	14.96		
	Buy 4 bottles, price each	18.00	13.50		
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01706	EXTRAORDINARY ENZYMES - 60 caps	26.00	19.50		
	Buy 4 bottles, price each	24.00	18.00		
01514	EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		

SUB-TOTAL OF COLUMN 7

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
F					
01054	FACE MASTER® PLATINUM	\$199.00	\$199.00		
00965	FAST-ACTING JOINT FORMULA - 30 caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01717	FAST-C® w/DIHYDROQUERCETIN - 120 veg. tabs	26.00	19.50		
	Buy 4 bottles, price each	24.00	18.00		
20053	FEM DOPHILUS® - 30 caps	25.95	19.46		
20055	FEM DOPHILUS® - 60 caps	39.95	29.96		
01064	FEMMENESSENCE MACAPAUSE® - 120 veg. caps	34.99	26.24		
01728	FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED) - 30 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01670	FIBER FOOD CAPS - 200 veg. caps	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
	Buy 10 bottles, price each	13.00	9.75		
00718	FIBRINOGEN RESIST™ - 30 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	44.00	33.00		
01439	FOLATE (OPTIMIZED) (L-METHYL-FOLATE) 1000 mcg - 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01641	FOLIC ACID + B12 CAPSULES - 200 veg. caps	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
00300	FORSKOLIN - 10 mg, 60 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
01513	FUCOIDAN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	33.00	24.75		
00993	FUCOXANTHIN-SLIM™ - 90 softgels	44.00	33.00		
	Buy 4 bottles, price each	39.00	29.25		
G					
00559	GAMMA E TOCOPHEROL/TOCOTRIENOLS - 60 softgels	\$42.00	\$31.50		
	Buy 4 bottles, price each	37.00	27.75		
00759	GAMMA E TOCOPHEROL w/SESAME LIGNANS - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01394	(OPTIMIZED) GARLIC - 200 veg. caps	24.95	18.71		
	Buy 4 bottles, price each	21.00	15.75		
01301	GH PITUITARY SUPPORT DAY FORMULA - 120 vegetarian tabs	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01302	GH PITUITARY SUPPORT NIGHT FORMULA - 120 veg. caps	25.00	18.75		
	Buy 4 bottles, price each	22.50	16.88		
01228	GINGER FORCE - 60 softgels	29.95	22.46		
01658	GINKGO BILOBA CERTIFIED EXTRACT™ - 120 mg, 365 veg. caps	46.00	34.50		
	Buy 2 bottles, price each	43.50	32.63		
01648	GINKGO EXTRACT 28/7 (SUPER) - 120 mg, 100 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.50	19.88		
00756	GLA WITH SESAME LIGNANS (MEGA) - 60 softgels	19.50	14.63		
	Buy 4 bottles, price each	18.00	13.50		
00345	(L) GLUTAMINE CAPSULES - 500 mg, 100 caps	14.95	11.21		
	Buy 4 bottles, price each	13.50	10.13		
00141	(L)-GLUTAMINE POWDER - 100 grams	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00522	GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	32.00	24.00		
01541	GLUTATHIONE, CYSTEINE & C - 100 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		

SUB-TOTAL OF COLUMN 8

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

JULY 2013

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
G CONTINUED					
00314	L-GLUTATHIONE (MEGA) - 250 mg, 60 caps	\$39.64	\$29.73		
	Buy 4 bottles, price each	35.68	26.76		
01731	GLYCEMICPRO™ TRANSGLUCOSIDASE - 60 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	50.00	37.50		
01669	GLYCINE - 1,000 mg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	10.80	8.10		
01091	GRAPE EXTRACT w/RESVERATROL (WHOLE) - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01411	GRAPE SEED EXTRACT w/RESVERATROL & PTEROSTILBENE - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01604	GREEN COFFEE EXTRACT COFFEEGENIC® - 200 mg, 90 veg. caps	25.00	18.75		
	Buy 4 bottles, price each	22.00	16.50		
01620	GREEN COFFEE EXTRACT COFFEEGENIC® - 400 mg, 90 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
00953	GREEN TEA EXTRACT (MEGA) - lightly caffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
00954	GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
H					
01074	5 HTP - 100 mg, 60 caps	\$27.95	\$20.96		
01675	HCA - 90 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	15.50	11.63		
01393	HEPATOPRO - 900 mg, 60 softgels	50.00	37.50		
	Buy 4 bottles, price each	46.00	34.50		
01435	HOMOCYSTEINE RESIST - 100 caps	24.00	18.00		
	Buy 4 bottles, price each	21.60	16.20		
01527	HUPERZINE A - 200 mcg, 60 veg caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00661	HYDRODERM® - 1 oz	79.95	59.96		
	Buy 2 bottles, price each	65.33	49.00		
I					
*01060	i26® HYPERIMMUNE EGG - 140 grams powder	\$54.99	\$46.75		
01704	IMMUNE MODULATOR W/TINOFEND® - 60 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
00955	IMMUNE PROTECT W/PARACTIN® - 30 veg. caps	29.50	22.13		
	Buy 4 bottles, price each	26.55	19.91		
01049	INNERPOWER™ - 555 grams powder	42.00	31.50		
01674	INOSITOL CAPSULES - 1000 mg, 360 veg. caps	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
01292	INTEGRA-LEAN® AFRICAN MANGO IRVINGIA - 150 mg, 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01002	IODORAL® - 180 tabs	50.00	37.50		
01677	IRON PROTEIN PLUS - 300 mg, 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
01492	IRVINGIA W/PHASE 3™ - 120 veg. caps	56.00	42.00		
	CALORIE CONTROL COMPLEX (OPTIMIZED AFRICAN MANGO)				
	Buy 4 bottles, price each	48.00	36.00		

SUB-TOTAL OF COLUMN 9

JULY 2013

No.		Retail Each	Member Each	Qty	Total
J, K					
00056	JARRO-DOPHILUS EPS™ - 60 veg. caps	\$22.95	\$17.21		
01387	JARRO-DOPHILUS ORAL PROBIOTIC GUM - Pom-Berry flavor, 8 pieces	4.95	3.71		
01388	JARRO-DOPHILUS ORAL PROBIOTIC LOZENGE - Pom-Berry flavor, 8 pieces	4.95	3.71		
01724	K w/ADVANCED K2 COMPLEX (SUPER) - 90 softgels	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01600	KRILL HEALTHY JOINT FORMULA - 30 softgels	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01050	(NKO) KRILL OIL PHOSPH OMEGA - 60 softgels	33.95	25.46		
00316	KYOLIC® GARLIC FORMULA 102 - 200 caps	26.45	19.84		
	Buy 4 bottles, price each	23.00	17.25		
00214	KYOLIC® GARLIC FORMULA 105 - 200 caps	27.45	20.59		
	Buy 4 bottles, price each	25.00	18.75		
00789	KYOLIC® RESERVE - 600 mg, 120 caps	27.95	20.96		
	Buy 4 bottles, price each	25.00	18.75		
L					
01681	LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps	\$48.00	\$36.00		
	Buy 4 bottles, price each	44.00	33.00		
00020	LECITHIN - 16 oz. granules	15.00	11.25		
	Buy 4 jars, price each	12.50	9.38		
01755	LIFE EXTENSION MIX™ - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01757	LIFE EXTENSION MIX™ W/EXTRA NIACIN - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01754	LIFE EXTENSION MIX™ - 490 caps	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01756	LIFE EXTENSION MIX™ POWDER - 14.81 oz	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
01765	LIFE EXTENSION MIX™ - 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01767	LIFE EXTENSION MIX™ W/EXTRA NIACIN 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01764	LIFE EXTENSION MIX™ - 490 caps w/o copper	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01766	LIFE EXTENSION MIX™ POWDER - 14.81 oz w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
00263	LIFE FLORA™ - 300 mg, 120 caps	20.50	15.38		
	Buy 4 bottles, price each	18.75	14.06		
01608	LIVER EFFICIENCY FORMULA - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01639	5-LOX INHIBITOR W/APRESFLEX® - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01678	L-LYSINE - 620 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		

SUB-TOTAL OF COLUMN 10

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

To order online visit: www.LifeExtension.com

No.		Retail Each	Member Each	Qty	Total
01470	LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE - 120 veg. caps Buy 4 bottles, price each	\$28.00 25.00	\$21.00 18.75		
00455	LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels Buy 4 bottles, price each	35.00 30.00	26.25 22.50		
M					
01459	MAGNESIUM CAPS - 500 mg, 100 veg. caps Buy 4 bottles, price each	\$10.00 9.00	\$7.50 6.75		
01682	MAGNESIUM CITRATE - 160 mg, 100 veg. caps Buy 4 bottles, price each	9.00 7.50	6.75 5.63		
01668	MELATONIN - 300 mcg, 100 veg. caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		
01083	MELATONIN - 500 mcg, 200 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00329	MELATONIN - 1 mg, 60 caps Buy 4 bottles, price each	5.00 4.63	3.75 3.47		
00330	MELATONIN - 3 mg, 60 caps Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01786	MELATONIN TIME RELEASE - 3 mg, 60 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00331	MELATONIN - 10 mg, 60 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00332	MELATONIN - 3 mg, 60 veg. lozenges Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01787	MELATONIN TIME RELEASE - 300 mcg, 100 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01788	MELATONIN TIME RELEASE - 750 mcg, 60 veg. tablets Buy 4 bottles, price each	8.00 7.00	6.00 5.25		
01536	METHYLCOBALAMIN - 1 mg, 60 lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
01537	METHYLCOBALAMIN - 5 mg, 60 lozenges (vanilla) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 25.00 23.00	24.00 18.75 17.25		
00709	MIGRA-EZE™ (BUTTERBUR) - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		
01522	MILK THISTLE (CERTIFIED EUROPEAN) - 750 mg, 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
01517	MILK THISTLE (CERTIFIED EUROPEAN) - 120 veg. caps Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
01698	MIRAFORTE w/STANDARDIZED LIGNANS (SUPER) - 120 caps Buy 4 bottles, price each	62.00 56.00	46.50 42.00		
01579	MITOCHONDRIAL BASICS w/BIOPQQ® - 30 caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
01768	MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ® - 120 caps Buy 4 bottles, price each	94.00 84.00	70.50 63.00		
00065	MK-7 - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01279	MOUTHWASH w/POMEGRANATE - 16 oz Buy 4 bottles, price each	18.50 17.00	13.88 12.75		
00451	MSM (METHYLSULFONYLMETHANE) - 1000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		

SUB-TOTAL OF COLUMN 11

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

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
N					
01534	N-ACETYL-L-CYSTEINE - 600 mg, 60 veg. caps Buy 4 bottles, price each	\$14.00 13.50	\$10.50 10.13		
00066	NATTOKINASE - 60 softgels	25.50	19.13		
00891	NATURAL APPETITE CONTROL - 90 softgels Buy 4 bottles, price each	28.00 25.20	21.00 18.90		
00984	NATURAL BP MANAGEMENT - 60 tablets Buy 4 bottles, price each	42.00 37.80	31.50 28.35		
00913	NATURAL ESOPHAGUARD - 10 softgels Buy 2 boxes, price each	19.95 19.00	14.96 14.25		
01692	NATURAL ESTROGEN w/POMEGRANATE EXTRACT - 60 caplets Buy 4 bottles, price each	38.00 33.00	28.50 24.75		
01221	NATURAL FEMALE SUPPORT - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
00698	NATURAL RELIEF 1222™ - 2 oz Buy 4 tubes, price each	28.00 25.00	21.00 18.75		
01626	NATURAL SEX FOR WOMEN® 50+ (ADVANCED) - 90 veg. caps Buy 4 bottles, price each	59.00 45.33	44.25 34.00		
01444	NATURAL SLEEP® - 60 veg. caps Buy 4 bottles, price each	13.00 10.00	9.75 7.50		
01551	NATURAL SLEEP® w/ MELATONIN (ENHANCED) - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	NATURAL SLEEP® w/o MELATONIN (ENHANCED) - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01445	NATURAL SLEEP® MELATONIN - 5 mg, 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00987	NATURAL STRESS RELIEF - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01603	NEURO-MAG™ MAGNESIUM L-THREONATE - 90 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01602	NEURO-MAG™ L-THREONATE w/CALCIUM & VITAMIN D 225 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00373	NO-FLUSH NIACIN - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
O					
01623	OLIVE LEAF VASCULAR SUPPORT - 500 mg, 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01483	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	18.00 16.00 14.00	13.50 12.00 10.50		
01482	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 24.90	24.00 21.00 18.68		
01484	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) Buy 4 bottles, price each Buy 10 bottles, price each	34.00 31.00 28.00	25.50 23.25 21.00		

SUB-TOTAL OF COLUMN 12

JULY 2013

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
O CONTINUED					
01485	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 enteric coated softgels	\$20.00	\$15.00		
	Buy 4 bottles, price each	18.00	13.50		
	Buy 10 bottles, price each	16.00	12.00		
01619	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL)	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		
01632	OMEGA-3 LEMON WHIRL - 16 oz bottle	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01633	OMEGA-3 TROPICAL WHIRL - 16 oz bottle	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01701	ONE-PER-DAY - 60 tablets	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01328	ONLY TRACE MINERALS - 90 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
00915	OPTIZINC® - 30 mg, 90 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.00	3.75		
01070	ORGANIC TOTAL BODY CLEANSE™ - 14-day supply	34.99	26.24		
P					
00073	PANCREATIN - 500 mg, 50 caps	\$13.22	\$9.92		
	Buy 4 bottles, price each	12.12	9.09		
01323	PEAK ATP® WITH GLYCOCARN® - 60 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	50.00	37.50		
00342	PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder	99.95	74.96		
	Buy 4 jars, price each	95.70	71.78		
01080	PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps	69.95	52.46		
00673	PGX™ PLUS MULBERRY (WELLBETX®) -180 caps	34.95	26.21		
00865	PHARMAGABA™ - 60 chewable tablets	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01676	PHOSPHATIDYLSERINE CAPS - 100 mg, 100 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
01390	PHOSPHOMEGA® - 60 softgels	39.95	26.96		
00561	POLICOSANOL - 10 mg, 60 tablets	24.00	18.00		
	Buy 6 bottles, price each	18.00	13.50		
01423	POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels	24.00	18.00		
	Buy 4 bottles, price each	21.00	15.75		
00956	POMEGRANATE EXTRACT - 30 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.55	13.16		
00957	POMEGRANATE JUICE CONCENTRATE - 16 oz. liquid	25.95	19.46		
	Buy 4 bottles, price each	24.00	18.00		
00577	POTASSIUM IODIDE - 1 box, 14 tablets	6.95	5.21		
	Buy 4 boxes, price each	5.25	3.94		
01500	PQQ CAPS W/BIOPQQ® - 10 mg, 30 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01647	PQQ CAPS W/BIOPQQ® - 20 mg, 30 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00302	PREGNENOLONE - 50 mg, 100 caps	26.00	19.50		
	Buy 4 bottles, price each	22.00	16.50		
00700	PREGNENOLONE - 100 mg, 100 caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		

SUB-TOTAL OF COLUMN 13

JULY 2013

No.		Retail Each	Member Each	Qty	Total
***01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets	\$52.00	\$39.00		
	Buy 4 bottles, price each	48.00	36.00		
01329	PROBIOTIC ALL-FLORA® - 60 veg. caps	25.95	19.46		
01326	PROBIOTIC ANTI-AGING™ - 90 veg. caps	30.95	23.21		
00525	PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets	59.95	44.96		
01441	PROGESTACARE FOR WOMEN - 4 oz cream	34.95	26.21		
01695	PROSTATE FORMULA W/APRESFLEX® STAND. LIGNANS (ULTRA NAT) 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
	Buy 12 bottles, price each	32.00	24.00		
01742	PROTEIN-ISOLATE (WHEY) VANILLA - 1 lb. powder	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01743	PROTEIN-ISOLATE (WHEY) CHOCOLATE - 1 lb. powder	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01508	PTEROPURE™ - 50 mg Pterostilbene 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01075	PURE PLANT PROTEIN - Natural Vanilla 450 grams powder	36.00	27.00		
	Buy 4 jars, price each	33.00	24.75		
01209	PUMPKIN SEED EXTRACT (WATER-SOLUBLE) - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01210	PUMPKIN SEED EXT w/SOY ISOFLAVONES (WATER-SOLUBLE) - 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01637	PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT -100 mg, 60 veg. caps	64.00	48.00		
	Buy 4 bottles, price each	60.00	45.00		
01217	PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
Q, R					
01309	QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01030	RED YEAST RICE (Bluebonnet)- 600 mg, 60 veg. caps	17.50	13.13		
00979	RED YEAST RICE (Nature's Plus)- 600 mg, 60 veg. caps	23.95	17.96		
00060	RED YEAST RICE EXTENDED RELEASE - 30 veg. tablets	21.50	16.13		
00605	REGIMINT - 60 enteric-coated caps	19.95	14.96		
	Buy 4 bottles, price each	18.67	14.00		
01708	REISHI EXTRACT MUSHROOM COMPLEX - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01448	REJUVENEX® BODY LOTION - 6 oz	24.00	18.00		
	Buy 4 tubes, price each	19.80	14.85		
	Buy 8 tubes, price each	17.00	12.75		
01621	REJUVENEX® FACTOR FIRMING SERUM - 1.7 oz	65.00	48.75		
	Buy 2 bottles, price each	50.66	38.00		
	Buy 6 bottles, price each	38.52	28.89		
01220	REJUVENEX® (ULTRA) - 2 oz	52.00	39.00		
	Buy 2 jars, price each	48.00	36.00		
	Buy 4 jars, price each	44.00	33.00		
	Buy 8 jars, price each	39.93	29.95		
00676	REJUVENIGHT® (ULTRA) - 2 oz	39.95	29.96		
	Buy 4 jars, price each	36.00	27.00		
01413	RESVERATROL W/PTEROSTILBENE - 20 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		

SUB-TOTAL OF COLUMN 14

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

No.		Retail Each	Member Each	Qty	Total
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$46.00 41.33	\$34.50 31.00		
00889	RHODIOLA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	11.75 10.58	8.81 7.94		
00972	(D) RIBOSE POWDER - 150 grams Buy 4 jars, price each	27.50 24.75	20.63 18.56		
01473	(D) RIBOSE TABLETS - 100 veg. tabs Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01609	RICH REWARDS® BREAKFAST GROUND COFFEE - 12 oz. bag	13.00	9.75		
01610	RICH REWARDS® DECAFFEINATED ROAST GROUND COFFEE - 12 oz. bag	14.00	10.50		
01712	RICH REWARDS™ BLACK BEAN VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01530	RICH REWARDS™ CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01531	RICH REWARDS™ (SPICY) CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01705	RICH REWARDS™ LENTIL VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01208	R-LIPOIC ACID (SUPER) - 300 mg, 60 veg. caps Buy 4 bottles, price each	49.00 45.00	36.75 33.75		
00070	RNA CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	17.95 16.16	13.46 12.12		
S					
01432	SAFFRON w/SATIAREAL (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
00358	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets Buy 8 boxes, price each	16.00 14.00	12.00 10.50		
00453	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00557	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets Buy 6 boxes, price each	28.00 24.00	21.00 18.00		
01055	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01543	SEA-IODINE™ - 1000 mcg, 60 caps Buy 4 bottles, price each	8.00 7.20	6.00 5.40		
00046	SELENIUM - 2 oz dropper bottle Buy 4 bottles, price each	9.95 9.45	7.46 7.09		
01679	SE-METHYL L-SELENOCYSTEINE - 200 mcg, 100 veg. caps Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00318	SERRAFLAZYME - 100 tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00284	SHARK LIVER OIL (NORWEGIAN) - 1000 mg, 30 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01684	SILYMARIN - 100 mg, 50 veg. caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01596	SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT® - 30 veg. liquid caps Buy 4 bottles, price each	25.00 23.00	18.75 17.25		
00961	SODZYME® w/GLISODIN® AND WOLFBERRY - 90 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00657	SOLARSHIELD SUNGLASSES - 1 pair smoke color Buy 2 pairs, price each	12.99 11.50	9.74 8.63		

SUB-TOTAL OF COLUMN 15

No.		Retail Each	Member Each	Qty	Total
00432	STEVIA EXTRACT - 100 packets, 1 gram each Buy 4 boxes, price each	\$9.95 9.00	\$7.46 6.75		
01396	ST. JOHN'S WORT EXTRACT - 300 mg, 60 veg. caps Buy 4 bottles, price each	10.98 10.00	8.24 7.50		
01476	STRONTIUM - 750 mg, 90 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00747	SUNGLASSES (OVERXCAST POLARIZED) - gray color, large Buy 2 pairs, price each	27.00 21.00	20.25 15.75		
01649	SUPER ABSORBABLE SOY ISOFLAVONES - 60 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01408	SUPER SAW PALMETTO/NETTLE ROOT w/BETA-SITOSTEROL - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	28.00 26.00 24.00	21.00 19.50 18.00		
01407	SUPER SAW PALMETTO w/BETA-SITOSTEROL - 30 softgels Buy 12 bottles, price each	15.00 12.00	11.25 9.00		
01778	SUPER SELENIUM COMPLEX - 200 mcg, 100 veg. caps Buy 4 bottles, price each Buy 12 bottles, price each	14.00 12.00 11.00	10.50 9.00 8.25		
T					
01723	TART CHERRY EXTRACT w/STANDARDIZED CHERRYPURE® - 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
00199	TAURINE - 1000 mg, 50 caps Buy 4 bottles, price each	8.95 8.00	6.71 6.00		
00133	TAURINE POWDER - 300 grams Buy 4 bottles, price each	20.00 16.88	15.00 12.66		
01304	THEAFLAVIN STANDARDIZED EXTRACT - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01683	(L) THEANINE - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 20.50	18.00 15.38		
**01038	THERALAC PROBIOTICS - 30 caps	47.95	35.96		
00668	THYROID FORMULA™ (METABOLIC ADVANTAGE) - 100 caps	21.95	16.46		
00349	TMG POWDER - 50 grams Buy 4 bottles, price each	14.00 11.00	10.50 8.25		
01559	TMG - 500 mg, 60 veg. tablets Buy 4 boxes, price each	11.00 10.00	8.25 7.50		
00781	TOCOTRIENOLS WITH SESAME LIGNANS - 60 softgels Buy 4 bottles, price each	38.00 36.00	28.50 27.00		
01400	TOCOTRIENOLS (SUPER-ABSORBABLE) - 60 softgels Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
01278	TOOTHPASTE - 4 oz (Mint) Buy 4 tubes, price each	9.50 8.67	7.13 6.50		
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT - 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT w/RESVERATROL - 60 veg. caps Buy 4 bottles, price each	32.00 29.60	24.00 22.20		
01386	TRUFIBER® - 180 grams	32.95	24.71		
01389	TRUFLOA PROBIOTICS & ENZYMES - 32 veg. caps	42.95	32.21		
01722	L-TRYPTOPHAN - 500 mg, 90 veg. caps Buy 4 bottles, price each	33.00 30.00	24.75 22.50		

SUB-TOTAL OF COLUMN 16

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T CONTINUED					
01721	TRYPTOPHAN PLUS (OPTIMIZED) - 90 veg. caps	\$32.00	\$24.00		
	Buy 4 bottles, price each	29.00	21.75		
01716	TWO-PER-DAY - 60 tablets	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01715	TWO-PER-DAY - 120 tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01714	TWO-PER-DAY - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00326	L-TYROSINE - 500 mg, 100 tablets	12.98	9.74		
	Buy 4 bottles, price each	11.81	8.86		
V					
00213	VANADYL SULFATE - 7.5 mg, 100 tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00408	VENOTONE - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	VINPOCETINE - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
01526	VITAMIN B3 NIACIN - 1,000 mg, 100 veg. caps	12.75	9.56		
	Buy 4 bottles, price each	12.00	9.00		
00372	VITAMIN B3 NIACIN - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	VITAMIN B5 - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
01535	VITAMIN B6 - 250 mg, 100 veg. caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	VITAMIN B12 - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	VITAMIN C w/ DIHYDROQUERCETIN - 1000 mg, 60 tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	VITAMIN C w/ DIHYDROQUERCETIN - 1000 mg, 250 tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	VITAMIN C (BUFFERED) POWDER - 454.6 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
00864	VITAMIN D3 - 2000 IU, 1 fl oz	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	VITAMIN D3 - 1000 IU, 90 softgels	7.00	5.25		
	Buy 4 bottles, price each	6.00	4.50		
01751	VITAMIN D3 - 1000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	VITAMIN D3 - 5000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	VITAMIN D3 - 7000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01573	VITAMIN D3 w/SEA-IODINE™ - 5000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
01572	VITAMINS D AND K w/SEA-IODINE™ - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01763	VITAMIN E (NATURAL) - 400 IU, 100 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	26.00	19.50		
01225	VITAMIN K2 (LOW-DOSE) - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		

SUB-TOTAL OF COLUMN 17

No.		Retail Each	Member Each	Qty	Total
Z					
01686	ZEAXANTHIN w/LUTEIN & MESO-ZEAXANTHIN PLUS ASTAXANTHIN AND C3G (SUPER) - 60 softgels	\$42.00	\$31.50		
	Buy 4 bottles, price each	38.00	28.50		
01685	ZEAXANTHIN w/LUTEIN & MESO-ZEAXANTHIN AND C3G (SUPER) - 60 softgels	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
00061	ZINC LOZENGES - 75 lozenges	9.50	7.13		
	Buy 4 bottles, price each	6.75	5.06		
01051	ZYFLAMEND® WHOLE BODY - 120 softgels	60.95	45.71		

* These products are not 25% off retail price.

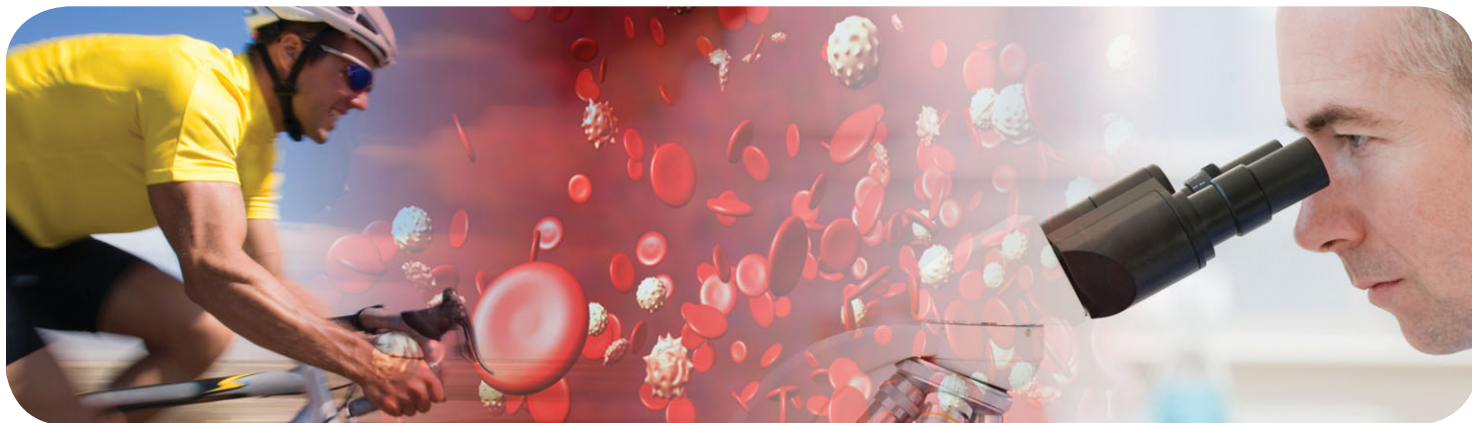
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A Partnership in Heart Health

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.*



Super Omega-3
120 Softgels Item #01482
Retail Price: ~~\$32.00~~
Member Price: **\$24.00**

Zyflamend
120 Softgels Item #01051
Retail Price: ~~\$60.95~~
Member Price: **\$45.71**

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.¹ 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.^{2**}

1. *Biochem Biophys Acta*. 2004 Jun 1;1682(1-3):80-91.
2. *Nutrition*. 2005 Feb;21(2):131-6.

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* According to 2012 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.

To order Zyflamend or Super Omega-3, call
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 **NEWCHAPTER®**

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TruFiber®:
Powerful prebiotic fiber that works synergistically with Theralac®.



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Item# 01389
Retail: \$42.95

Theralac®: 30 caps
Item# 01038
Retail: \$47.95

TruFiber®: 6.2 OZ
Item# 01386
Retail: \$32.95

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Item# 01695

Ultra Natural Prostate combines cutting-edge ingredients that have been scientifically substantiated to protect the prostate gland and maintain its healthy function.*

AprèsFlex® is an extract of *Boswellia serrata* that has **two times the bioavailability** of the leading boswellia extract. AprèsFlex® inhibits the enzyme *5-lipoxygenase*. **Boron** is included because of studies showing it may help slow elevation of prostate-specific antigen (PSA).

The formula provides **saw palmetto extract** and **Graminex® Flower Pollen Extract™** to interfere with DHT activity and help regulate inflammatory reactions in the prostate.* **Lycopene** is a carotenoid that is included in the formula to help maintain healthy DNA gene function in prostate cells.

In order to boost its anti-estrogen capabilities, **Ultra Natural Prostate** incorporates **HMRlignan™**, derived from Norway spruce, **flax lignans**, and **nettle root extract**.

Since normal aging can lead to potentially unsafe levels of prostaglandins in the prostate, **Pygeum africanum** extract is included to help suppress prostaglandins and thereby promote prostate comfort.* **Beta-sitosterol** has been added because it is the most biologically active component of *Pygeum* and enhances its protective effects.

The retail price for one bottle of **Ultra Natural Prostate with AprèsFlex® and Standardized Lignans** is \$38. If a member buys four bottles, the price is reduced to **\$26.25** per bottle. If a member buys 12 bottles, the price is reduced to **\$24** per bottle.

AprèsFlex® is a registered trademark of Laila Nutraceuticals exclusively licensed to PL Thomas—Laila Nutra LLC. International patents pending. ActiFlax™ is a trademark of Pharma Science Nutrients, Inc., all rights reserved. HMRlignan™ is a trademark used under sublicense from Linnea S.A. USPlus® and DeepExtract™ are trademarks of Valensa International and are used under license. US Patents 6,319,524 & 6,669,968. Not available for export.

The daily dose of two softgels of **Ultra Natural Prostate with AprèsFlex® and Standardized Lignans Formula** provides:

USPlus® Saw Palmetto (CO ₂ DeepExtract™) (std to 85%-95% total fatty acids and sterols)	320 mg
Graminex® Flower Pollen Extract™	252 mg
AprèsFlex® (<i>Boswellia serrata</i>) extract	70 mg
Pumpkin seed oil (<i>Cucurbita pepo</i>) extract (standardized to 85% total fatty acids)	200 mg
Stinging and Dwarf nettle root extracts (<i>Urtica dioica</i>)	240 mg
Pygeum extract	100 mg
Lycopene	10 mg
Phytosterol complex (standardized to 26.6% free beta-sitosterol)	678 mg
Proprietary blend of HMRlignan™ Norway Spruce and ActiFlax™ Flax Lignan extracts	20.15 mg
Boron	3 mg

Contains soybeans.

To order **Ultra Natural Prostate with AprèsFlex® and Standardized Lignans**, 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.



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LifeExtension® Magazine



28 BLOCK STARCH-INDUCED GLUCOSE SURGES

Researchers have discovered an *enzyme* that **blocks** the conversion of **starch** into **sugar** in the digestive tract—thereby reducing after-meal **glucose** and **insulin** spikes.



42 \$13 MILLION INHERITANCE DONATED TO AGING RESEARCH

Increasing numbers of influential people are recognizing the importance of aging research and donating large sums of money. In this case, the bulk of a one-time inheritance was contributed to support aggressive anti-aging research.



52 SHIELD YOURSELF AGAINST SOLAR RADIATION

A botanical extract taken internally can protect your entire skin surface from the damaging effects of sun exposure, including DNA mutations, wrinkling, and collagen degradation.



62 BROAD-SPECTRUM PROTECTION OF ANTHOCYANINS

Anthocyanin-rich dark berries provide superior benefits against aging and age-related diseases, including cognitive decline, diabetes, and cancer.



78 A SAFER ALTERNATIVE FOR MANAGING DEPRESSION

Compelling new findings indicate that **saffron** is equally as effective as certain medications in treating depression and certain mood disorders—without the unwanted side effects.



91 AUBREY DE GREY: CUTTING-EDGE LONGEVITY RESEARCH

Life Extension Foundation® welcomes biomedical gerontologist **Dr. Aubrey de Grey** to our Scientific Advisory Board. Read about his seven strategies for ending aging.