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November 2014

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Anti-Aging Symposium
In Sochi, Russia**

George
HAMILTON

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Contains soybeans.

References

1. *Mol Nutr Food Res.* 2012 Sep;56(9):1385-97.
2. *Eur J Pharm Sci.* 2003 Jul;19(4):299-304.
3. *Int J Pharm.* 2011 June 30; 412(1-2):99-105.



Item # 01720

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

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Since 2001, **Life Extension®** has been seeking a way to reverse a mechanism of aging that may not be adequately addressed by healthy lifestyles. **NAD+**, a compound found in young cells, turns “off” genes that accelerate degenerative processes. After 13 years of research, an effective and affordable method of boosting cellular **NAD+** is finally available.

34 REVITALIZING SKIN FROM THE INSIDE OUT

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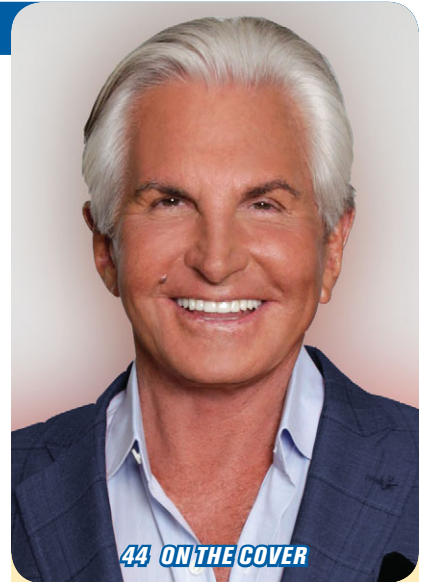
Despite billions spent on cholesterol-lowering drugs, cardiovascular disease remains the leading cause of death. Mainstream medicine overlooks the critical role of the **endothelium** (inner arterial lining) in maintaining vascular health. Studies continue to reveal that **pomegranate** protects the endothelium via multiple mechanisms.

64 EXCLUSIVE GENETICS AND LONGEVITY CONFERENCE REPORT

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74 REJUVENATE AGING HANDS

The skin on the top of the hands reveals your real age. But it's possible to turn back “the hands of time” with a new, topical serum that comprises **six** novel compounds that reduce hyperpigmentation, restore plumpness, and smooth wrinkles.



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GEORGE HAMILTON: SECRETS FROM ONE OF HOLLYWOOD'S LEADING MEN

In an exclusive interview, 75-year-old Hollywood legend George Hamilton reveals his plan to live 120 years or more. He discusses not only his incredible career, but also his dedication to a healthier lifestyle that includes calorie restriction, nutrient-rich foods, meditation, exercise, cleanses, and supplements.

DEPARTMENTS

7 AS WE SEE IT: CREATING IMMORTAL GENES

When aging bodies lose their ability to **repair DNA damage**, the result is illness and death. In a recent study, scientists cultured **E. coli** bacteria to resist high-intensity radiation, enabling **DNA repair** to increase to the point it could withstand **1,000 times** the radiation that would kill humans. This study indicates how we may be able to engineer our own human genes to ward off degenerative aging processes.

15 IN THE NEWS

Omega-3 decreases ALS risk; vitamin D cuts colon cancer deaths; lower bone density increases odds of heart failure; lycopene enhances endothelial health; calorie restriction doubles animal life span; and more.

83 WELLNESS PROFILE

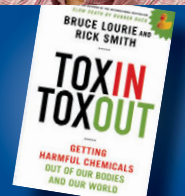
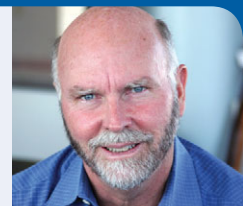
Billionaire scientist and businessman **J. Craig Venter** plans to collect the **genomes** of 40,000 patients per year. Venter wants to create a database to offer insight into the secrets of aging and change the way medicine is practiced.

89 ASK THE DOCTOR

Life Extension's own Dr. Michael A. Smith discusses alternative mammogram screening options, including ultrasound and MRI.

95 AUTHOR INTERVIEW

In their book, **Toxin, Toxout**, leading environmentalists and best-selling authors Rick Smith and Bruce Lourie lay out practical and often surprising advice for removing dangerous environmental chemicals from our homes—and ourselves.





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Item # 01733

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3. BioPQQ[®]

PQQ activates genes that promote the formation of new mitochondria while boosting mitochondrial antioxidant defenses.^{3,4}

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Ubiquinol (as Kaneka QH Ubiquinol[®])	100 mg
PrimaVie[®] Shilajit fulvic acid complex	100 mg
BioPQQ[®] Pyrroloquinoline quinone disodium salt	10 mg

A bottle of 30 softgels of **Super Ubiquinol CoQ10 with BioPQQ[®]** retails for \$54. If a member buys four bottles, the price is reduced to **\$37.50** per bottle.

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3. *J Biol Chem.* 2010 Jan 1;285:142-52.
4. *Alt Med Rev.* 2009;14(3):268-77.

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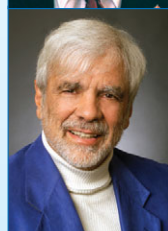
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Boron (calcium fructoborate as patented FruiteX B[®] OsteoBoron[®])	1.5 mg

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

References

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Creating Immortality Genes



BY WILLIAM FALOON

When we talk about radically extending the human life span, few scientists understand how easy it may be to accomplish this.

A new study done on the *E. coli* bacteria provides a fascinating insight as to how humans could be transformed into virtually invulnerable super-beings.

Radiation is incredibly dangerous to living processes. It can kill acutely¹ or damage DNA and later cause cancer² and atherosclerosis.³

Through a relatively simple process, *E. coli* were cultured to resist destruction caused by high-intensity **radiation**. By the end of the study, these bacteria could withstand **1,000 times** the radiation dose that kills most **humans**.⁴

What excites us is the **mechanism** by which these bacteria were able to avoid radiation destruction.

The bacteria in this study were able to elude death from extreme radiation by dramatically *accelerating* their **DNA repair processes**.⁴

The significance of this finding is profound. Cellular DNA suffers relentless injury through internal and external factors.⁵ A fundamental problem with pathological **aging** is faulty DNA repair.⁶ When we lose our ability to repair DNA damage, illness and death ensues.

If we can amplify our **DNA repair genes**, we could become as invulnerable to **degenerative diseases** as the *E. coli* bacteria were to **radiation**.

By genetically engineering humans to accelerated **DNA repair** capability (as was done in the *E. coli* bacteria), humans could theoretically be **1,000 times** more resistant to **aging** and **death**.

We at **Life Extension®** are not the only proponents of this ambitious concept. As we report in this month's issue, still another billionaire has set up a new company to figure a way to genetically engineer humans to live longer. We say "*still another billionaire*" because there are already a number of wealthy individuals pouring money into research aimed at markedly extending healthy life spans.



In a landmark study emanating from the **University of Wisconsin**, *E. coli* bacteria were made invulnerable to extreme radiation. What intrigues us is that only a handful of favorable genetic changes were required to enable dramatically accelerated DNA repair, which is how the *E. coli* were able to survive the radiation onslaught.

What the scientists who conducted this study did was remarkably simple. They exposed a colony of *E. coli* to a dose of ionizing radiation that killed **99%** of the bacteria. The **1%** that survived were cultured and then exposed to a still higher dose of ionizing radiation.⁴ This process was repeated 20 more times until a strain of *E. coli* emerged that was able to withstand what would be the equivalent of about **1,000 times** the median **lethal human dose** of ionizing radiation (assuming whole body exposure).

Magnitude Of The Radiation Dose

Ionizing radiation causes damage to DNA and increases cancer risk.⁷ At high doses, it is acutely lethal. The absorbed dose of ionizing radiation on biological tissue is measured in a unit called the **gray (Gy)**.⁸

The median **human lethal dose** of whole body ionizing radiation is calculated based upon young adults inside reinforced concrete buildings that remained standing in **Nagasaki** after detonation of the atomic bomb. Exposure to about **3 Gy** caused acute death.⁹

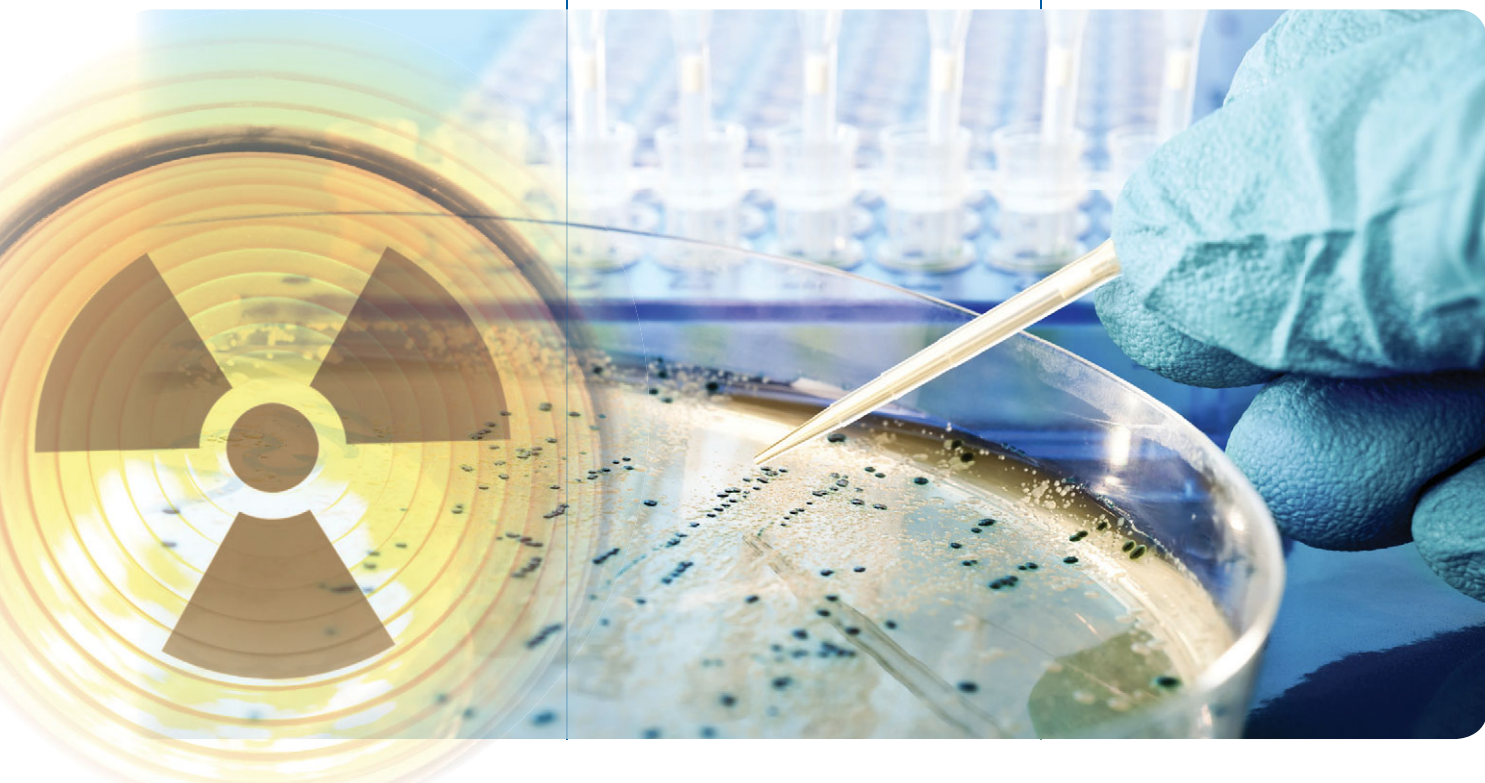
To understand the magnitude of protection conferred on the *E. coli* bacteria by University of Wisconsin researchers, the strain of *E. coli* they created was resistant to an ionizing radiation dose of an astounding **3,000 Gy**, which equates to **1,000 times** the median **human lethal dose**.

To place into context the type of extreme radiation resistance exhibited by this strain of *E. coli*, the dose of **3,000 Gy** is about **1 million times** the breast tissue exposure of a mammogram, **150,000 times** the stomach tissue exposure of an abdominal CT scan, and about **200,000 times** the tissue exposure to the colon from a Barium enema.^{10,11}

How These Findings Pertain To Humans

The genes that allow some organisms to survive extreme radiation doses are important because several of the **DNA repair** pathways found in microbes also exist in humans.¹²⁻¹⁴

A remarkable amount of research is being done on the **human genome** with the objective of discovering cures for today's killer diseases. But this science is still in relative infancy.



Compounds That Facilitate DNA Repair

Fish Oil²⁶⁻²⁸
Vitamin B12²⁹
Vitamin E³⁰
Vitamin C³¹
Nicotinamide³²
CoQ10³³
Zinc³⁴
Magnesium^{35,36}
Selenium³⁷
Polyphenols³⁸⁻⁴⁰
Grape Seed Extract^{41,42}
Curcumin^{43,44}
Carotenoids⁴⁵⁻⁴⁷
Vitamin B6 (pyridoxine)^{48,49}
Aspirin^{50,51}

AS WE SEE IT



It may only require, however, a small advance in our understanding of the genome to create humans with virtual immortality genes. An argument can be made that finding a way to reverse aging by turning on **DNA repair** genes may be simple compared to creating bacteria that can withstand **1,000 times** the lethal human dose of ionizing radiation.

What Can Be Done Today To Facilitate DNA Repair?

People seeking to extend their life spans today avoid toxins (such as tobacco smoke and overcooked food) that damage DNA.

Vitamin D has been shown to play an important role in **DNA repair**, which helps explain why people with higher levels of vitamin D show lower rates of most degenerative diseases.¹⁵⁻¹⁸ **Folic acid** is also critical in maintaining **DNA repair** mechanisms.¹⁹⁻²⁵

Many of the supplements we take daily have been shown to help facilitate DNA repair. The box on

this page provides a partial listing. Until recently, however, there has been relatively little we can do to facilitate the meaningful **DNA repair** needed to completely stave off age-related disease.

No therapy today can *accelerate DNA repair* to the magnitude that was shown in the **University of Wisconsin** study on *E. coli*. Yet we may be only a few breakthroughs away from being able to engineer our genes to transform us into super-beings, capable of warding off all degenerative aging processes.

The first article in this month's issue describes a new way to accelerate DNA repair by increasing the amount of **nicotinamide adenine dinucleotide** (NAD+) in our cells.^{53,54}

Creating Immortality Genes

Before the successful study at the University of Wisconsin, it was hard to point to an example of genetic manipulation that resulted in the creation of living matter

resistant to something as deadly as high-intensity **radiation**. Skeptics challenged our assertions that finding a way to slow and reverse human aging may be as simple as identifying and correcting adverse **gene expression** changes that occur as we age.

By way of analogy, newborn humans usually remain in a stable healthy state for close to **25 years** before outward senescent changes manifest. This means that the mere passage of time does not automatically condemn humans to degenerative aging.

When we can program our genes as easily as we do computers, humans might not need to suffer degenerative aging. They could possibly live in a long-term state of robust biological youth.

Your support has enabled **Life Extension®** to fund novel gene expression research. The encouraging news is that others (such as the founders of **Google**) are recognizing the importance of this field of study and are contributing their own money and resources to advance the science.

In this month's issue, we profile Dr. J. Craig Venter, a billionaire who is building the largest human DNA sequencing operation in the world, capable of processing 40,000 human genomes a year. Dr. Venter is seeking to use DNA sequencing to identify the molecular causes of aging and age-related illnesses so that humans can live longer and healthier.

For longer life,



William Faloon

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How Radiation Doses Are Measured

To understand the dose impact of ionizing radiation upon tissue, scientists utilize a unit of measurement called the "gray," named in honor of British physicist Louis Harold Gray. The "gray" is abbreviated as "Gy," which is the international system unit of radiation dose expressed in terms of absorbed energy per unit mass of tissue.

For perspective, the median lethal dose in humans of whole body ionizing radiation calculated from data based upon young adults inside reinforced concrete buildings that remained standing in Nagasaki after detonation of the atomic bomb in World War II is about **3 Gy**.⁹ For comparison with medical diagnostic imaging procedures, the organ/local tissue dose to the breast from routine mammography is about **3 mGy (3 milligray, or 3/1,000 of a gray)**, to the stomach from a typical abdominal CT scan is about **20 mGy**, and to the colon from a Barium enema is about **15 mGy**.⁵²

In the recent study that exposed multiple generations of the bacteria *Escherichia coli* (*E. coli*) to potent, lethal doses of ionizing radiation, the researchers created a strain of *E. coli* that exhibited a substantial increase in resistance to ionizing radiation at a dose of **3,000 Gy**.¹

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- ▶ **Alpha-Glycerol Phosphoryl Choline:** boosts levels of acetylcholine, which enables brain cells to communicate.
- ▶ **Gastrodin:** a brain shield that supports healthy levels of blood flow.
- ▶ **Grape Seed Extract:** boosts brain oxygen flow.
- ▶ **Vinpocetine:** increases circulation and brain cell conductivity.
- ▶ **Phosphatidylserine:** encourages improved concentration.
- ▶ **Pregnenolone:** a vital hormone that promotes mental energy.

Cognitex® with Pregnenolone & Brain Shield® is the most advanced neuro-enhancing formula on the market.

The retail price for 90 softgels of **Cognitex® with Pregnenolone & Brain Shield®** is \$62. If a member buys four bottles, the price is reduced to **\$39.75** per bottle. If eight bottles are purchased, the price is reduced to **\$37.50**.

Cognitex® is also available without pregnenolone at a slightly lower cost. **Item # 01896**

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Just three softgels of Cognitex® provide the following nutrients:

Alpha-Glycerol Phosphoryl Choline (A-GPC)	600 mg
Phosphatidylserine (from Sharp-PS®)	100 mg
Brain Shield® (Gastrodin)	50 mg
Vinpocetine	20 mg
Leucoslect® Grape Extract (seed)	150 mg
Wild Blueberry Extract	150 mg
Sensoril® Ashwagandha Extract	125 mg
Uridine-5'-Monophosphate (disodium)	50 mg
Proprietary NeuroProtection Complex Blend	125 mg
Perluxan® Hops Extract, Rosemary Extract	
Pregnenolone	50 mg

Contains soybeans.

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- ▶ **Lutein:** This carotenoid helps maintain healthy cell division, supports eye health, and protects the endothelial lining of the arteries.
- ▶ **Gamma tocopherol:** Taking only **alpha** tocopherol displaces the critically important gamma tocopherol from cells in the body. **Gamma tocopherol** also quenches a dangerous free radical (peroxynitrite) that plays a major role in age-related decline. It is vital that those taking vitamin E supplements also consume at least **200 mg** a day of gamma tocopherol.
- ▶ **Sesame lignans:** Help boost tissue levels of **gamma tocopherol** via several different mechanisms.
- ▶ **Lycopene:** Evidence suggests those who ingest this carotenoid enjoy healthier prostate function. **Lycopene** also helps guard against LDL oxidation.
- ▶ **Ginkgo:** Hundreds of studies substantiate how **Ginkgo biloba** promotes healthy circulation and brain function.
- ▶ **Chlorophyllin:** Scientific studies indicate **chlorophyllin** may protect against environmentally induced DNA damage.



Just one softgel of Super Booster supplies:

Vitamin K1 (as phytonadione)	1,000 mcg
Vitamin K2 (as menaquinone-4)	1,000 mcg
Vitamin K2 (as menaquinone-7)	200 mcg
Gamma Tocopherol	245 mg
Ginkgo extract	120 mg
Chlorophyllin	100 mg
Sesame lignans	20 mg
Lycopene	10 mg
Lutein	2 mg
Vitamin B12	300 mcg
Vitamin C	95 mg

Super Booster saves consumers big money by combining a variety of costly nutrients into one softgel. If you add up the price of the individual ingredients in **Super Booster**, you would spend **two to three** times more.

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Caution: If you are taking anticoagulant or antiplatelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

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Advanced Bio-Curcumin® with Ginger & Turmerones contains **BCM-95®**, a patented, bioenhanced preparation of curcumin that has been shown to reach up to **7 times higher** concentration in the blood than standard curcumin.⁸ In addition to the benefits of **BCM-95®** this advanced formula provides:

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The suggested daily dosage of one softgel of **Advanced Bio-Curcumin® with Ginger & Turmerones** provides:

Turmeric Phospholipid Blend	630 mg
BCM-95® Bio-Curcumin Turmeric 25:1 extract (rhizome) [total curcuminoids complex with essential oils (380 mg)], Turmeric oil (rhizome) [providing 60 mg total turmerones], Phospholipids	
Ginger CO₂ extract (root) [providing 60 mg gingerols]	200 mg

Each softgel of **Advanced Bio-Curcumin® with Ginger & Turmerones** provides **400 mg** of **BCM-95® Super Bio-Curcumin**, plus an array of turmerones and phospholipids.

A bottle of 30 softgels of **Advanced Bio-Curcumin® with Ginger & Turmerones** retails for \$30. If a member buys four bottles, the price is reduced to **\$20.25** per bottle.

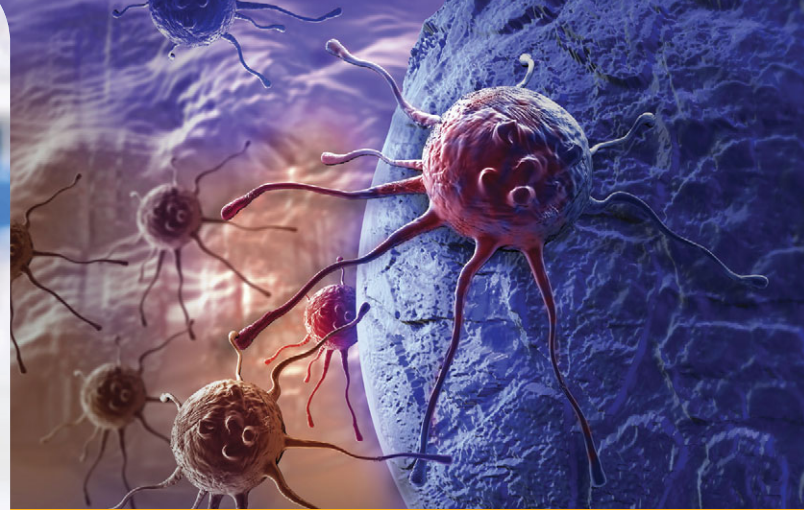
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IN THE NEWS

Omega-3s May Reduce Risk Of Lou Gehrig's Disease

An article published in the *Journal of the American Medical Association Neurology* reports that those who consumed high levels of omega-3 fatty acids had a dramatically reduced risk of developing amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease) in a meta-analysis of five large studies.*

The researchers analyzed the diets of over a million participants for a period of nine to 24 years. During this time, 995 individuals were detected with ALS. Omega-3 fatty acids have been shown to reduce inflammation and oxidative stress on cells and both of those processes damage nerve tissue and have been linked with ALS.

In the study, "individuals with higher dietary intakes of total omega-3 fatty acids had a reduced risk for ALS," said lead researcher Kathryn Fitzgerald, of the Harvard School of Public Health in Boston.

Those in the top **20%** in terms of their omega-3 fatty acid consumption reduced their risk of developing ALS by one-third, compared to those in the bottom **20%**.

Editor's Note: "We also found that higher dietary intake of alpha-linolenic acid, a type of omega-3 fatty acid found in vegetable oils and nuts, is associated with lower ALS risk," Kathryn Fitzgerald added.

* *JAMA Neurology* 2014 Jul 14.

Vitamin D Boosts Survival Rates Of Colon Cancer Patients

The results of a study reported in the *Journal of Clinical Oncology* found that colon cancer patients with the highest levels of vitamin D in their blood had half the risk of dying when compared with patients with the lowest levels.*

Researchers at the Medical Research Council Human Genetics Unit at the University of Edinburgh studied almost 1,600 patients who had surgery for colorectal cancer.

The study is the first to link long-term survival predictions of colon cancer patients after diagnosis with total blood levels of vitamin D. Vitamin D is known to boost calcium absorption and bone growth. Previous studies have suggested a correlation between low vitamin D levels and an increased risk of many diseases including osteoporosis, cancer, and cardiovascular diseases.

The researchers, led by Professor Malcolm Dunlop of the University of Edinburgh and Western General Hospital, UK, tested blood samples from almost 1,600 patients after surgery for colon cancer. They found the greatest benefit of vitamin D in patients with stage II cancers, when the tumor is large, but hasn't yet spread.

Three-quarters of the patients with the highest vitamin D levels were still alive after five years, compared with less than two-thirds of those with the lowest levels, they found.

Editor's Note: A 2011 study published in the *Anticancer Research* journal by researchers at the Department of Family and Preventive Medicine, University of California, San Diego, found that breast cancer patients with high blood levels of vitamin D are twice as likely to survive the disease as women with low levels.

* *J Clin Oncol* 2014 Jul 7.



Increased Fiber Intake Linked To Lower Risk Of Premature Mortality In Heart Attack Survivors

An article published on April 29, 2014, in the *British Medical Journal* reveals an increase in the number of years lived by heart attack survivors who consumed a greater amount of fiber.*

Shanshan Li and colleagues of Harvard School of Public Health, Boston, utilized data from 1,840 men enrolled in the Health Professional Follow-Up Study and 2,258 women from the Nurses' Health Study who had survived an initial adverse heart event of myocardial infarction (MI) during the studies' follow-up periods. Dietary questionnaires, completed every four years, provided information on fiber intake before and after MI. In a pooled analysis of all subjects, those whose post-MI intake of fiber was among the top one-fifth of participants had a **25%** lower risk of dying from any cause in comparison with those whose intake was among the lowest fifth over a nine-year average follow-up.

Editor's Note: When fiber was analyzed by source, cereal fiber emerged as significantly protective.

* *BMJ*. 2014 Apr 29.



Low Bone Mineral Density Linked To Heart Failure

An analysis published in the *Journal of the American College of Cardiology* suggests that lower bone mineral density may lead to a higher risk of developing heart failure.*



The study, which measured bone mineral density in the heel as broadband ultrasound attenuation (BUA) in over 13,000 healthy individuals, saw a **23%** drop in heart failure risk with every one-standard-deviation rise in BUA, even after adjusting for factors such as age, sex, physical activity, blood pressure, diabetes, smoking, alcohol consumption, and body mass index.

"Our findings give support for cardiac assessment in people with reduced bone mineral density and warrant further exploration of underlying biological mechanisms," said lead author, Dr. Roman Pfister of the Heart Center of the University of Cologne, Germany. "This is of major clinical interest because osteoporosis and low bone density are common, particularly in the elderly, affecting approximately 52 million persons in the United States, and screening for osteoporosis is recommended for all women 65 years of age or older and all younger women with a similar disease risk."

Editor's Note: Vitamin K2 may also decrease osteoporosis risk and thereby lower heart failure risk. Vitamin K2 helps promote strong bones by binding calcium and other minerals to bone. A two-year Japanese study published in the *Journal of Bone and Mineral Research* in 2000 found that patients supplemented with vitamin K2 (MK-4) had **52%** fewer incidences of vertebral fractures, compared with patients who did not receive this nutrient.

* *J Am Coll Cardiol*. 2014 Jul 2.

Omega-3 Supplements Ease Osteoarthritis Pain In Mice

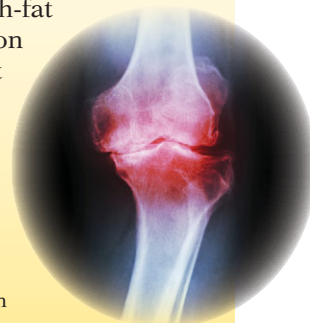
A study by Duke University researchers published in the *Annals of the Rheumatic Diseases* found that mice fed omega-3 fatty acid supplements had healthier joints than those fed diets high in saturated fats and omega-6 fatty acids, suggesting that certain dietary fats, and not simply body weight, can lead to osteoarthritis.*

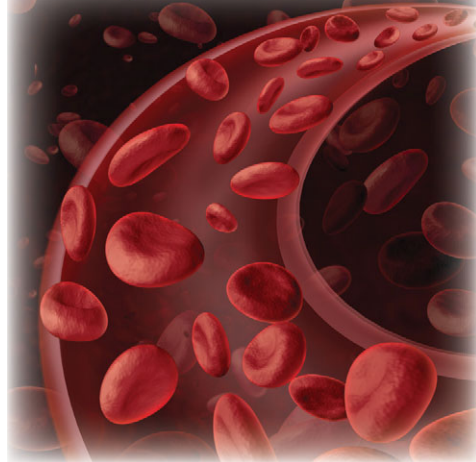
Four-week-old mice were fed a low-fat diet or one of three high-fat diets: a diet high in saturated fat, a diet high in omega-6 fatty acids, or a diet high in omega-6 fatty acids plus a supplement of omega-3 fatty acids. At 16 weeks, the mice had surgery to induce osteoarthritis of the knee. The animals that ate an unhealthy high-fat diet developed severe arthritis and joint inflammation compared to mice fed the regular diet or the high-fat diet supplemented with omega-3 fatty acids.

"Our results suggest that dietary factors play a more significant role than mechanical factors in the link between obesity and osteoarthritis," said Farshid Guilak, senior study author.

Editor's Note: The researchers also tested the mice for how quickly small ear punch wounds healed. The wounds healed much more quickly in the mice given omega-3 fatty acids than they did in the mice that did not receive the supplement.

* *Ann Rheum Dis*. 2014 Jul 10.





Lycopene Supplementation Aids Blood Vessel Function In Heart Disease Patients

On June 9, 2014, *PLOS One* reported a benefit for lycopene in improving endothelial function in cardiovascular disease patients.* In a double-blind trial, Joseph Cheriyan and colleagues randomized 36 cardiovascular disease patients treated with statin drugs and an equal number of healthy control subjects to receive either **7 mg** oral lycopene or a placebo daily for two months. Forearm blood flow assessments of endothelium dependent and independent vasodilation, as well as basal nitric oxide synthase activity, were conducted before and after treatment.

In the cardiovascular disease group, endothelial-dependent vasodilation improved by **53%** in those who received lycopene compared to those who received placebo. Although it averaged **30%** lower in cardiovascular disease patients in comparison with healthy volunteers at the beginning of the study, by the end of the treatment period the endothelial-dependent vasodilation of participants with cardiovascular disease who received lycopene was comparable to that of the healthy subjects at the study's onset.

Editor's Note: Lycopene is an antioxidant that is found in tomatoes, watermelon, and other red fruits, in addition to being available as an over-the-counter supplement.

* *PLOS One*. 2014 Jun 9.

Low-Dose Aspirin Associated With Pancreatic Cancer Risk Reduction

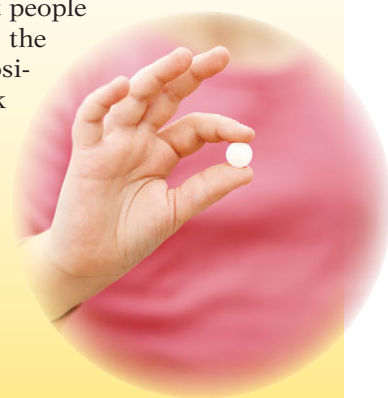
A study described in *Cancer Epidemiology, Biomarkers & Prevention* uncovered an association between long-term use of low-dose aspirin and a decreased risk of pancreatic cancer.*

Utilizing data from 362 men and women with pancreatic cancer matched to 690 control subjects enrolled in the Connecticut Pancreas Cancer Case-Control Study, researchers at Yale University determined that regular use of aspirin was associated with a **48%** lower risk of cancer of the pancreas in comparison with nonuse. Each increasing year of regular aspirin use was associated with a **2%** lower risk of the disease and each year of low-dose use with a **6%** lower risk.

"There seems to be enough evidence that people who are considering aspirin use to reduce the risk for cardiovascular disease can feel positive that their use might also lower their risk for pancreatic cancer, and quite certainly wouldn't raise it," researcher Harvey A. Risch commented.

Editor's Note: "Because about one in 60 adults will get pancreatic cancer and the five-year survival rate is less than **5%**, it is crucial to find ways to prevent this disease," Dr. Risch observed."

* *Cancer Epidemiol Biomarkers Prev*. 2014 Jun 26.



Severe Calorie Restriction Suspends Worm Development

The journal *PLOS Genetics* published the discovery of researchers from Duke University about an arrest in the development of the roundworm *C. elegans* when its calories were severely restricted.* Although the semi-starved worm continued to forage, its cells and organs entered a quiescent state during which development paused. Upon regaining access to food, development was resumed, yet life span can be twice as long as that of normal worms.

Acting on previous findings in *C. elegans*, David R. Sherwood and colleagues discovered that severely restricting food during the final two stages of larval development resulted in pauses at specific stages, but not between those stages. The pauses appear to occur at checkpoints that allow the organism to assess its viability before proceeding to the next stage. If the worm has failed to accumulate sufficient nutrients, development was arrested until the need was met.

Editor's Note: "It is possible that low-nutrient diets set off the same pathways in us to put our cells in a quiescent state," speculated Dr. Sherwood, who is an associate professor of biology at Duke. "The trick is to find a way to pharmacologically manipulate this process so that we can get the anti-aging benefits without the pain of diet restriction."

* *PLOS Genetics*. 2014 June 19.



Cognitive Function Improved With Vitamin B Supplementation In Those With Elevated Homocysteine

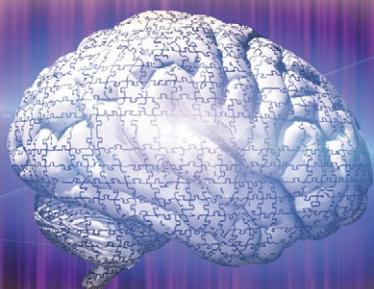
On June 18, 2014, the journal *Nutritional Neuroscience* reported the findings of a clinical trial of middle-aged and older men and women who experienced a reduction in homocysteine and better cognition in association with B vitamin supplementation.*

The trial included 104 subjects aged 55 to 94 with hyperhomocysteinemia. Participants received **800 micrograms** folate, **10 mg** vitamin B6, and **25 micrograms** vitamin B12, or a placebo daily for 14 weeks. Cognitive aptitude tests and serum analysis of total homocysteine, folate, vitamin B6, and vitamin B12 were conducted before and after treatment.

Not surprisingly, B vitamin levels improved among those who were supplemented with them. Homocysteine slightly increased in the control group while declining by an average of **3.3 micromoles** per liter in those that received B vitamins. Cognitive function significantly improved among those in the vitamin group.

Editor's Note: "We recommend that all elderly should take B vitamin supplements regularly if the blood test results indicate that the homocysteine concentrations are abnormal," authors Daomei Cheng and colleagues concluded.

* *Nutr Neurosci*. 2014 Jun 18.



Cinnamon Could Stop Parkinson's In Its Tracks

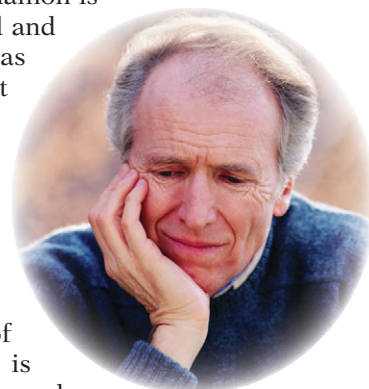
An article appearing in the *Journal of Neuroimmune Pharmacology* indicates that cinnamon could one day be used by Parkinson's disease patients to prevent the disease from progressing.*

Saurabh Khasnavis and Kalipada Pahan, PhD, of Rush University Medical Center, studied the effects of the spice in a mouse model of Parkinson's disease. They found that when cinnamon is metabolized into sodium benzoate in the blood and brain, the loss of beneficial proteins known as Parkin and DJ-1 was halted, while neurons that produce dopamine, a neurotransmitter that is reduced in Parkinson's, were protected. Motor function, which can be significantly impaired by the disease, was improved in animals that received cinnamon.

"Understanding how the disease works is important to developing effective drugs that protect the brain and stop the progression of Parkinson's disease," Dr. Pahan remarked. "It is known that some important proteins like Parkin and DJ-1 decrease in the brain of Parkinson's disease patients."

Editor's Note: "If these results are replicated in Parkinson's disease patients, it would be a remarkable advance in the treatment of this devastating neurodegenerative disease," Dr. Pahan added.

* *J Neuroimmune Pharmacol*. 2014 Jun 20.



Calcium+Collagen Combo = Better Bone Benefits

The Experimental Biology 2014 Annual Scientific Meeting was the site of a presentation of research that suggests a superior effect for a combination of calcium, collagen, and vitamin D in preventing a decline in bone mineral density among older women.*

Bahram H. Arjmandi, PhD, and colleagues from the Department of Nutrition, Food, and Exercise Sciences at Florida State University, evaluated the long-term effects of a calcium-collagen chelate dietary supplement known as KoACT® in 39 postmenopausal women with osteopenia (bone mineral density that is lower than normal but not as low as in osteoporosis). Participants received an amount of KoACT® that contained **500 mg** elemental calcium and **200 IU** vitamin D3 per day, or a control supplement that provided equal amounts of vitamin D and calcium for one year. Total body, lumbar spine, and hip bone mineral density were measured, and markers of bone turnover were assessed at the beginning at the trial, and at six and 12 months.

At the study's conclusion, women receiving KoACT® had significantly less bone mineral density loss than the control subjects.

Editor's Note: Tartrate-resistant acid phosphatase (a marker of bone resorption; increased levels of this enzyme indicate increased bone loss) and sclerostin (a protein that has anti-anabolic effects on bone formation) were lower and the ratio of bone specific alkaline phosphatase (a marker of bone formation) to tartrate-resistant alkaline phosphatase was higher after six months in the KoACT® group, while the control group experienced no change.

* *Experimental Biology* 2014 Annual Scientific Meeting. 2014 Apr.

Enhanced Absorption With Phospholipids!

EYE PROTECTION FORMULA



Ocular Circulation Support

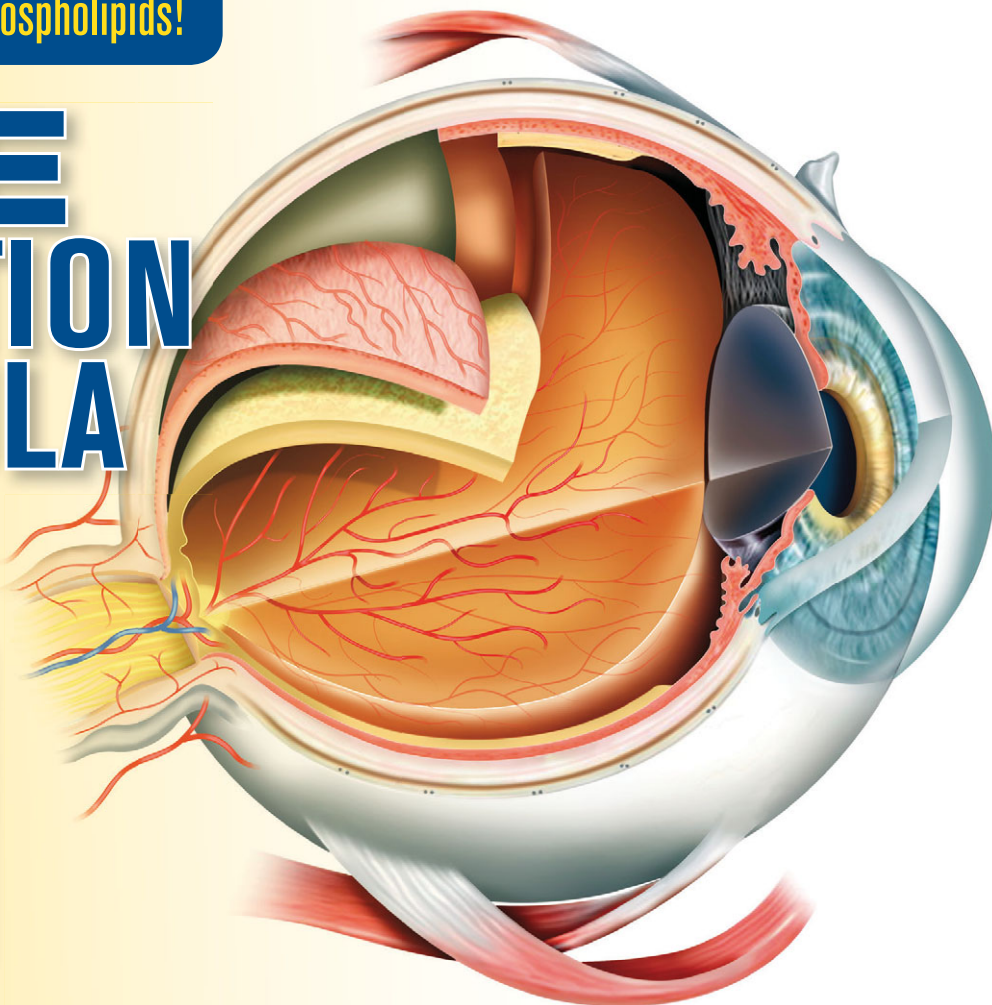
Lutein is one of the major components of **macular pigment** and it is essential to proper vision.¹ Eating large quantities of **lutein**- and **zeaxanthin**-containing vegetables can help provide the nutritional building blocks necessary to maintain the structural integrity of the macula. It's difficult, however, to increase systemic circulation of these important nutrients through food alone.² Now there is an easier way to bolster your eye integrity.

MacuGuard™ Ocular Support contains **phospholipids**, which are an integral part of the cell membrane. In addition to mixing well with other important fat-soluble components of the eye such as **lutein**, **phospholipids** have been shown to help support efficient **absorption** of dietary lutein in the blood stream as well.²⁻⁷

Phospholipids have been shown in scientific research to improve systemic circulation and accumulations of lutein in the retina of the eyes, making them a potent all-around weapon in your arsenal for eye health.^{6,7}

MacuGuard™ Ocular Support offers TRIPLE EYE PROTECTION:

- Supports concentration of **lutein** in the eye.
- Supports efficient **absorption** of lutein in the blood stream.
- Phospholipids enhance lutein in the cell membrane.
- Supports **zeaxanthin** concentrations in eye.
- Provides **meso-zeaxanthin** which is difficult to obtain from dietary sources.



Comprehensive Ocular Protection in One Daily Softgel

This formula provides ingredients that have been shown to promote healthy eyesight. Just one softgel of **MacuGuard™ Ocular Support** provides:

MacuGuard™ Carotenoid Phospholipid Blend	145 mg
Phospholipids, marigold extract (flower) [providing 10 mg free lutein, 4 mg <i>meso</i> -zeaxanthin & <i>trans</i> -zeaxanthin]	
C3G (Cyanidin-3-glucoside)	2.2 mg
[from European black currant extract (fruit)]	

The retail price for a bottle containing 60 softgels of **MacuGuard™ Ocular Support** is \$22. If a member buys four bottles, the price is reduced to **\$14.85** per bottle.

Contains soybeans.

LuteinPlus® and MZ® are registered trademarks of Nutriproducts Ltd., UK, licensed under US Patents 6,218,436 & 6,329,432.

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To order MacuGuard™ Ocular Support call 1-800-544-4440 or visit www.LifeExtension.com



Validated in Huge New Study: Vascular Benefits of a Mediterranean Diet

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 tablespoons** of polyphenol-rich extra-virgin **olive oil** a day.¹

Life Extension® Members Benefited Long Ago

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.

Olive oil contains polyphenol nutrients that have demonstrated wide-ranging health benefits.²⁻⁴ 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**.

This supplement also provided standardized **sesame lignans** to support the beneficial effect of omega-3 fatty acids in the body.⁵

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CAUTION: If you are taking anticoagulant or antiplatelet 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.

The **sesame lignans** not only direct the omega-3s fatty acids toward more effective pathways in the body, but guard the delicate fish oil from oxidation.^{5,6}

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

A bottle containing 120 softgels of **Super Omega-3 EPA/DHA with Sesame Lignans & 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
Typical DPA (docosapentaenoic acid)	156 mg
Olive Extract (fruit and leaf) providing [39 mg polyphenols, 10.4 mg hydroxytyrosol/ tyrosol, 8.8 mg verbascoside/oleuropein]	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

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.

Magnesium and Brain Health

Profound loss of connections between nerve cells in the brain is one of the major hallmarks associated with **neurodegeneration** and memory impairment. Previous research has shown that **magnesium** is a critical factor in controlling **synaptic density**.¹

To combat this, an innovative form of magnesium called **Neuro-Mag™** has been developed. The *magnesium-L-threonate* contained in **Neuro-Mag™** has been shown to specifically target multiple areas of the aging brain. In fact, pre-clinical models show that the *magnesium-L-threonate* contained in **Neuro-Mag™** boosted levels of magnesium in spinal fluid by **15%** versus no increase from conventional magnesium.²

New Cognitive Benefits Revealed!

Although research into the role of magnesium in the brain dates back 70 years, scientists continue to uncover its comprehensive benefits for cognitive function.^{1,3} Studies using **magnesium-L-threonate** show this unique form of magnesium maintains the quantity of synaptic connections between brain cells and inhibits the dysregulation of signaling pathways.¹

Capsules or Powder...Value Priced

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

This same brain-health supporting magnesium is also available in a natural lemon flavor called **Neuro-Mag™ Magnesium-L-Threonate with Calcium and Vitamin D3 Powder**. In addition to its fresh lemon flavor, the one-scoop per day serving supplies the same amount of magnesium as the capsules plus **500 mg** of highly soluble calcium and **1,000 IU** of vitamin D3.

A bottle containing 90 vegetarian capsules of **Neuro-Mag™ Magnesium-L-Threonate** or a jar containing **30** scoops of **Neuro-Mag™ Magnesium-L-Threonate with Calcium and Vitamin D3 Powder** retails for \$40. If a member buys 4 units, the price is reduced to **\$27** per unit.

References

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

Magtein™ is a registered trademark of Magceutics, Inc, distributed exclusively by AIDP, Inc. Magtein™ is covered by registered and pending US patents. Neuro-Mag™ Magnesium-L-Threonate- Item #01603 Neuro-Mag™ Magnesium-L-Threonate with Calcium and Vitamin D3 Powder Item #01602



Item # 01602



Item # 01603



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

BY SCOTT RAHWAY

The **YOUTH** **RESTORING** *Benefits Of* **NAD+**

BENEFITS OF NAD+

Since the year 2001, **Life Extension**[®] has been seeking a way to reverse a mechanism of aging that may not be adequately addressed by the healthy lifestyle choices most members currently follow.

Normal aging is accompanied by a noticeable increase in **fatigue** and **loss of motivation**. The tiredness we outwardly feel reflects inward impairment of cellular functions critical to sustaining life.

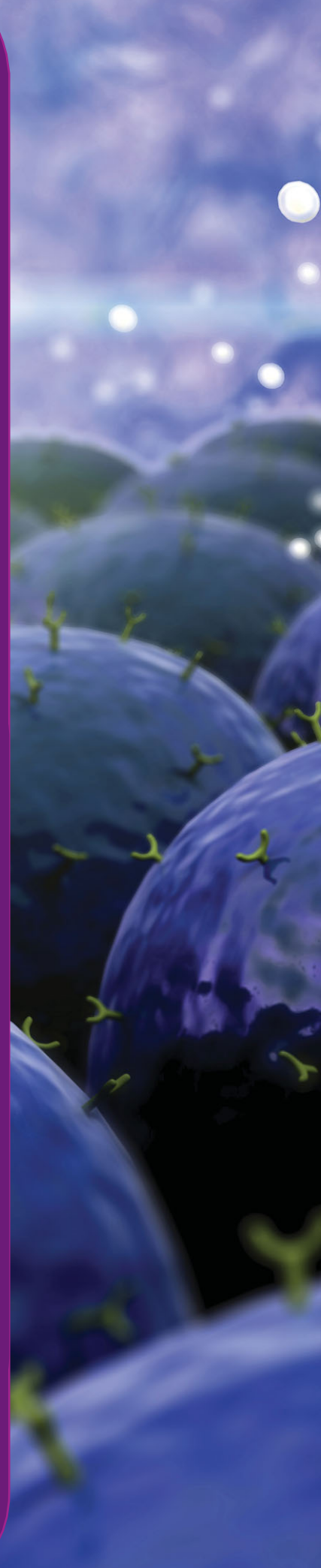
NAD+ is the term used in the scientific literature to describe a cellular compound called **nicotinamide adenine dinucleotide**.

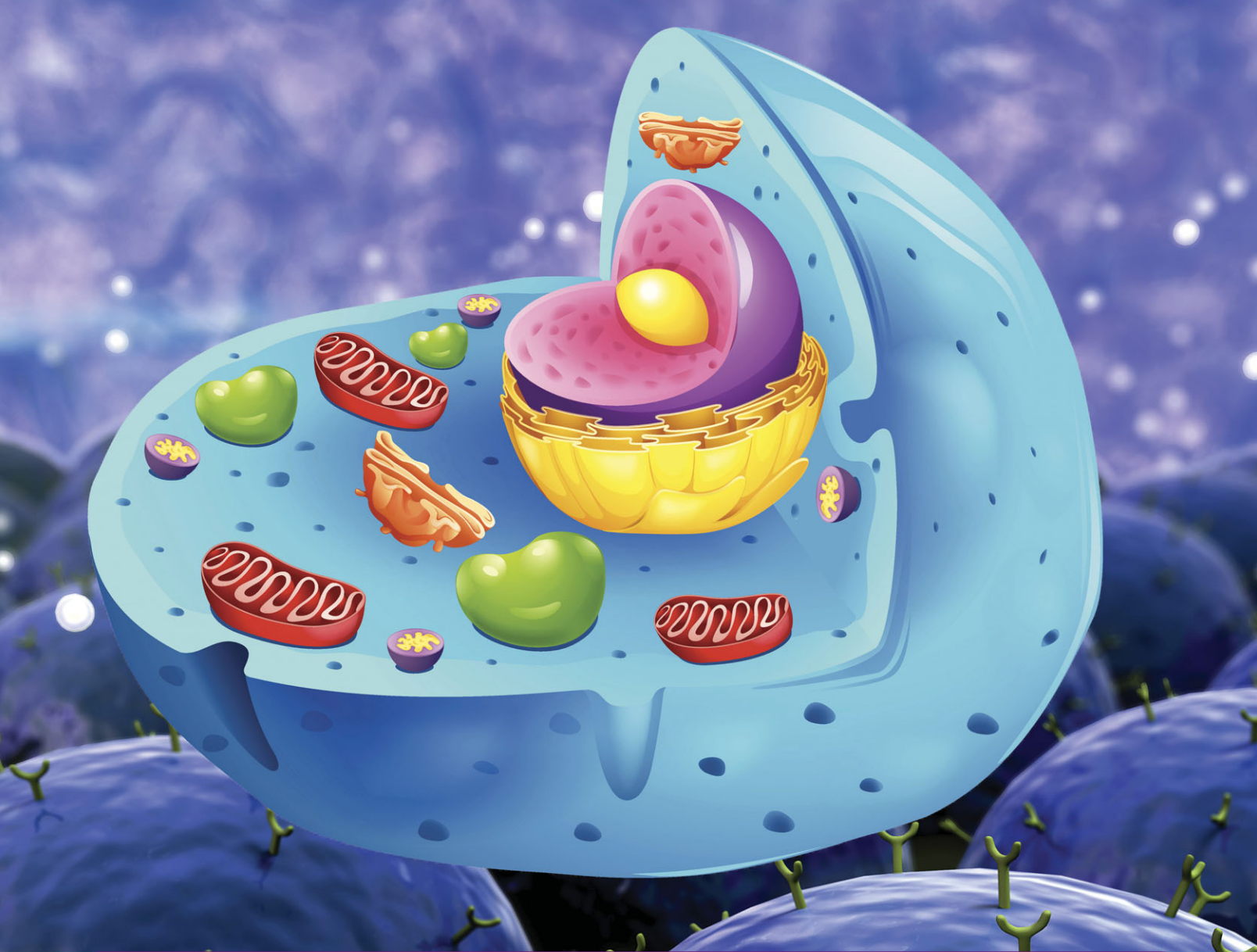
NAD+ is found in every cell in the body and is essential to life.^{1,2} **NAD+** enables the transfer of energy from the foods we eat to vital cell functions. It is also required to “turn off” genes that accelerate degenerative aging processes.^{3,4}

As NAD+ levels decline, mitochondrial function is impaired, resulting in fewer mitochondria surviving.^{3,5} This vicious cycle of mitochondrial depletion results in many of the physical symptoms of aging.

The challenge we at **Life Extension** have faced over the past 13 years is finding an efficient way for aging humans to affordably boost their NAD+ cellular levels.

In **2001**, one of our researchers developed an effective NAD+ boosting sublingual lozenge, but it only maintained stability for a short time period. As you'll read in this article, an effective **NAD+** cell boosting technology has finally become available.





Prominent universities have been investigating **NAD⁺** as a potential therapy for age-related degenerative disease.⁶ Compelling research shows that **NAD⁺** has a unique ability to protect tissues, induce DNA repair, and increase life span.^{2,7,8}

It has long been known that **NAD⁺** plays an important role in transferring energy released from glucose and fatty acids to the mitochondria so that it can be converted into cellular energy.^{2,9} Without sufficient **NAD⁺**, energy transfer in the cells breaks down, resulting in age-accelerating **mitochondrial dysfunction**.^{5,10,11}

NAD⁺ is an essential cofactor of key **enzymes** responsible for longevity called **sirtuins**.^{5,12,13} While **resveratrol** is well known for sirtuin activation, evidence indicates it does so *indirectly*,^{14,15} whereas **NAD⁺** *directly* activates sirtuins to regulate the genes of aging.^{2,16}

Sirtuins, specifically **SIRT1** and **SIRT3**, are intimately related to longevity through their control of gene expression and require **NAD⁺** for their activity.^{2,3,10,17-19}

Research into the sirtuins continues to yield substantial information on how to control aging. By activating these sirtuins, we're able to gain control over one of our body's anti-aging "switches." SIRT enzymes "turn off" certain genes that promote aging, such as those involved in inflammation,^{20,21} in fat synthesis and storage,^{22,23} and in blood sugar management.^{3,22,23}

SIRT enzymes are activated by **calorie restriction**, the proven means of reliably extending life span in all organisms.^{2,24} The way **calorie restriction** activates anti-aging **sirtuins** is by increasing cellular **NAD⁺**.^{2,25,26}

Consequences Of Falling NAD⁺ Levels

NAD⁺ is found in every single cell in the body,¹ and is essential for efficient energy transfer from foods to tissues. NAD⁺ is also required for turning off genes that accelerate aging.⁴

From a cellular energy standpoint, lower levels of NAD⁺ reduce mitochondrial function, with fewer energy-rich ATP molecules being produced, and fewer mitochondria produced.^{5,11} This vicious cycle results in many of the physical symptoms of aging.

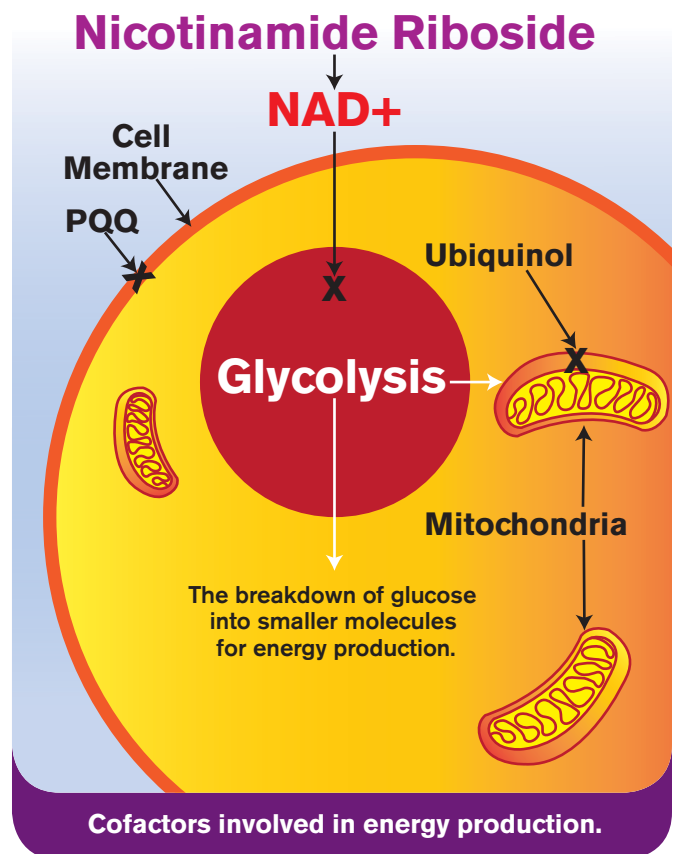
The age-related decrease in NAD⁺ causes defects in both energy- and gene-related functions to accumulate. These defects feed on one another to produce the disorders we typically identify as aging.¹⁰ The consequences of a decline in NAD⁺ levels and subsequent reduction in **SIRT 1** and **SIRT 3** enzymes are:

- **Neurodegeneration** in the brain,^{10,27,28}
- **Vascular inflammation**, producing damage to blood vessels that can result in stroke or heart attack,^{27,29,30}
- **Increased fat storage** in the liver, which can lead to nonalcoholic fatty liver disease (NAFLD),³¹⁻³³
- **Increased fat production and deposition** in white adipose tissue, the primary fat storage form found in dangerous belly fat,^{34,35}
- **Insulin resistance**, preventing cells from appropriately removing glucose from blood, producing higher blood sugar levels and leading directly to metabolic syndrome,^{30,36,37}
- **Fatigue, loss of muscle strength, and fatty infiltration of muscles**, resulting in reduced fatty acid oxidation (“burning”), thereby depriving muscles of their normal sources of energy.^{38,39}

To avoid these degenerative processes, it is essential that steps be taken to optimize the amount of NAD⁺ in our bodies.

By increasing intracellular **NAD⁺** levels, age-related **mitochondrial dysfunction** can be reversed.⁵ One of the ways to accomplish this is by engaging in major **calorie restriction**, which has been proven to raise NAD⁺ levels and in experimental organisms tested to date, to extend life span.^{5,25} But most people find significant **calorie restriction** to be nearly impossible in practice.

Fortunately, a method has been developed to increase **NAD⁺** levels without having to alter dietary patterns, though **Life Extension** remains a strong advocate of **calorie restriction** for those able to consistently do it.



A Natural NAD⁺ Booster

Researchers have discovered a form of **vitamin B3** that converts in the body to **NAD⁺**.^{40,41}

Vitamin B3 is involved in over 400 enzymatic reactions throughout the body and is essential for production and management of cellular energy.⁴² A new patented form of this vitamin called **nicotinamide riboside** has been found to increase **NAD⁺** levels and in the process, provide an extraordinary range of longevity benefits that promises to change how we combat aging.

Directly boosting NAD⁺ with **nicotinamide riboside** presents a new and effective strategy for preventing the natural decline in cellular energy as we age by promoting youthful vitality.

Studies have shown that **nicotinamide riboside** switches “off” the genes of aging, extends life span, increases endurance, improves cognitive function, activates sirtuins, and enhances cellular energy.^{3,43} These benefits add up to a system-wide slowing and reversal of certain aging processes. **Nicotinamide riboside** accomplishes this NAD⁺ boosting effect without the irritating skin flushing and rash caused by the standard forms of vitamin B3.⁴¹

Initial Studies On Nicotinamide Riboside

In their investigations into the effects of **nicotinamide riboside** on life span, scientists used a strain of yeast known to have a relatively short average life span of about **8.3** generations.^{3,44} When the yeast was treated with **nicotinamide riboside**, the average life span nearly doubled, to **16.1** generations. On this model of life span extension, ordinary vitamin B3 had no effect compared to the dramatic longevity benefit shown with **nicotinamide riboside**.³

Nicotinamide riboside is a dynamic compound that works through multiple mechanisms to promote life extension. Most dramatic are its effects on longevity and metabolism, as shown by recent laboratory studies.

One critical mechanism in oxygen-consuming organisms is mitochondrial function.⁴⁵ Mitochondria, the tiny, intracellular “furnaces” that power cellular processes, are sites of intense electrical and chemical activity.^{46,47} They can readily “burn out,” contributing to the aging of tissues, and hence, of organs and entire organisms.

In a model commonly used to study life span modifications, the roundworm *C. elegans* could be made to survive as much as **16%** longer when supplemented with **nicotinamide riboside**. This life span extension was demonstrated to result from a roughly **50%** increase in healthy mitochondrial oxygen consumption, a measure of mitochondrial efficiency.⁴⁸

These benefits are what one would predict from **nicotinamide riboside** supplementation, which raises levels of the NAD⁺ needed to safely move electrons through the mitochondria.⁴³ We have long known that ineffective mitochondrial electron transport is an age-accelerating process.^{43,49,50}

When pursuing additional lab studies, scientists found that supplementing mice with **nicotinamide riboside** reduced many dangerous factors of aging. The mice showed increased energy and improved insulin sensitivity, both factors indicating optimal vitality. In this study, scientists also demonstrated that nicotinamide riboside supplementation increased energy metabolism while protecting the animals against the metabolic abnormalities induced by a high-fat diet.⁴³ For the study, the mice were fed a high-fat diet with either no supplementation (control), or nicotinamide riboside for **12** or **16** weeks.

On a treadmill test, the supplemented animals fed a high-fat diet ran more than **33%** further than the control mice, demonstrating a dramatic increase in muscle endurance and performance.⁴³

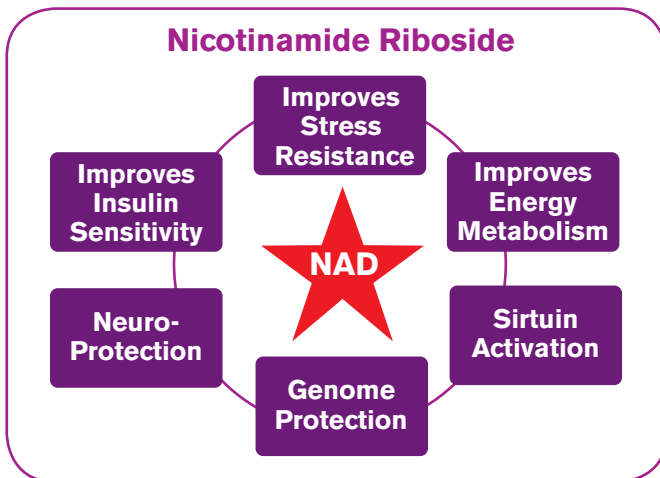
The supplemented mice also gained significantly less weight while on the high-fat diet compared to control animals. And in supplemented animals fed



What You Need To Know

Systemic Anti-Aging Protection

- A major advance in “systemic anti-aging medicine” is now available for supplementation in humans.
- Nicotinamide riboside is a “next-generation” form of vitamin B3 that supports the vitamin’s functions throughout the body by boosting levels of a key metabolic cofactor called NAD⁺.
- NAD⁺ is found in every single cell in the body, and is an absolute requirement for normal, efficient, and safe energy transfer from food to tissues.
- New discoveries show that NAD⁺ is also essential for silencing genes for proteins that accelerate aging, such as those involved in inflammation, in fat synthesis and storage, and in blood sugar management.
- Supporting NAD⁺ levels with nicotinamide riboside supplementation extends life span in laboratory organisms, while boosting energy, physical performance, and cognition in aging animals.
- To fight aging throughout your body by restoring youthful function of basic life-sustaining processes in every single cell, begin regular supplementation today with nicotinamide riboside.



either the high-fat or a normal diet, insulin sensitivity (the ability to remove sugar efficiently from the blood) was greatly improved, compared with control animals.

Remarkably, these results were all attained *without any differences* in food intake or total physical activity between supplemented and control mice.⁴³ The supplemented animals lost weight, performed better at exercise, and managed their blood glucose better purely as a result of **nicotinamide riboside**-induced increases in calorie-burning (measured by increased oxygen consumption rates). This was confirmed by the observation that when the supplemented mice were exposed to prolonged cold conditions, they had significantly less body temperature loss compared to controls, the result of increased conversion of calories to heat.

Detailed analysis of the mice in this study revealed that supplementation with **nicotinamide riboside** had produced a significant increase in essential **NAD+** levels, resulting in the activation of the critical life span-extending enzymes **SIRT1** and **SIRT3**.⁴³ Supplementation with nicotinamide riboside also improved the numbers and function of **mitochondria**, the intracellular powerhouses that release energy from food; poor mitochondrial function is a known age-accelerator.

Nicotinamide Riboside Protects Brain Cells

As cases of dementia and Alzheimer's reach epidemic proportions in the aging population, pharmaceutical companies are aggressively researching brain protective compounds.^{51,52} **Nicotinamide riboside** with its ability to directly increase **NAD+** is providing promising brain benefits.

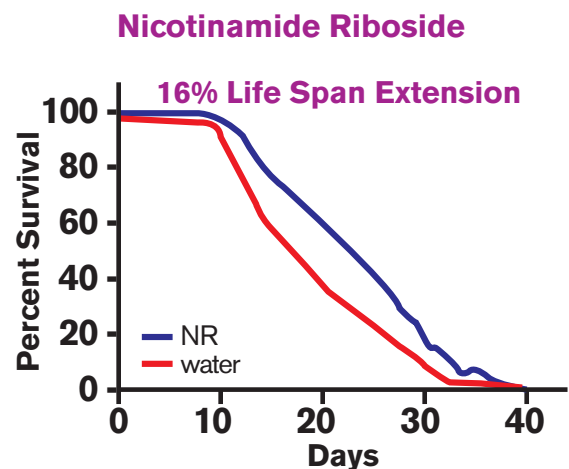
A recent lab study demonstrated the ability of nicotinamide riboside to protect brain cells in advanced age.⁹ For the study, mice engineered to develop

Alzheimer's disease were treated with **nicotinamide riboside** beginning at middle age (5 to 6 months) and lasting into old age (10 to 11 months).

The supplemented animals had significant improvements in their **cognitive function** in challenging laboratory tests of exploring new objects.⁹ This improvement was shown to be associated with significantly reduced brain levels of *beta-amyloid plaques*, the abnormal protein that triggers much of the neuronal death and dysfunction in Alzheimer's disease. Intriguingly, supplementation had the added benefit of raising levels of the metabolic regulatory complex called **PGC-1-alpha**. Studies have shown that low levels of PGC-1-alpha have been associated with increased dangerous beta-amyloid deposition.⁹

The mechanisms by which these effects were achieved were found to include significant increases in brain levels of **NAD+** (the result of supplementation with nicotinamide riboside), and consequently activated enzymes involved in cellular energy production and energy release from glucose.⁹

In a similar study of neuroprotection, nicotinamide riboside was shown to delay the degeneration of axons, the "communication cables" of nerve cells that carry impulses over long distances.^{53,54} When these communication cables deteriorate, tingling, weakness, numbness, and loss of motor function can occur as a result.⁵⁵⁻⁵⁷ The mechanism behind this



MOA: More efficient **NAD+** production

- NAD+ modulation augments mitochondrial stress signaling, improving mitochondrial function and preventing age-associated decline.⁶⁴
- Genetic or pharmacological restoration of NAD+ prevents age-associated metabolic decline and promotes longevity in *C. elegans*.⁴⁸



benefit was shown to be a significant **20-fold** increase in the enzyme that converts **nicotinamide riboside** to **NAD+**.⁵⁴

Other studies in mammalian cells in culture demonstrate that nicotinamide riboside treatment increases NAD⁺ concentrations inside of cells by up to **2.7-fold**,⁵⁸ and that administering nicotinamide riboside can improve NAD⁺ related deficiencies in animal and yeast cells.²⁴

Studies have shown that **nicotinamide riboside** switches “off” the genes of aging, extends life span, increases endurance, improves cognitive function, activates sirtuins, and enhances cellular energy.

As we age, and our **NAD+** levels dramatically decline, we begin to experience fatigue and are more susceptible to neurodegeneration and cellular dysfunction. What makes the **nicotinamide riboside** form of vitamin B3 so unique is that once it is processed by the body it immediately converts into the powerful molecule **NAD+**.

Nicotinamide riboside accomplishes this **NAD+ boosting** effect without the irritating skin flushing and rash caused by the standard forms of vitamin B3.

If you feel increasingly lethargic or unmotivated as you age, you can probably blame your falling **NAD+** levels, which result in reduced cellular energy production.

Directly boosting NAD⁺ with **nicotinamide riboside** presents a new and effective strategy for preventing the natural decline in cellular energy as we age by promoting youthful vitality. ●

“Restoring NAD⁺ by supplementing NAD⁺ intermediates can dramatically ameliorate these age-associated functional defects, counteracting many diseases of aging, including neurodegenerative diseases. Thus, the combination of sirtuin activation and NAD⁺ intermediate supplementation may be an effective anti-aging intervention, providing hope to aging societies worldwide.”¹⁰

Summary

Researchers have discovered and patented a no-flush form of vitamin B3 that is revolutionizing the field of aging research.

Unlike earlier forms of this vitamin, **nicotinamide riboside** has been found to provide an extraordinary range of impressive **longevity benefits** that promise to change how science approaches the reduction of aging.

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

How NAD⁺ Drives Longevity-Promoting SIRT Enzymes

SIRT enzymes regulate how genes are expressed from the DNA on our chromosomes in part by influencing chromosomal proteins called **histones**.^{59,60} Research indicates SIRT enzymes have a “slot” capable of binding to one NAD⁺ molecule and one chemical acetyl (AC) group from the histone.⁶¹ This binding triggers the SIRT enzyme to remove the acetyl group and bind the histone proteins more closely to their DNA strands, thereby regulating the expression of genes.^{4,17,31,62} This is shown schematically below.

So, just as a coin in a parking meter slot adds time to the meter with each turn of the handle, a NAD⁺ molecule binding to a SIRT enzyme, with each “turn” of the enzymatic cycle, manipulates DNA expression in a way that adds time to one’s life!

NAD⁺ levels decline with aging and represent a fundamental, systemic cause of aging.⁵ Falling NAD⁺ levels mean fewer “coins” in the “parking meter” represented by SIRT enzymes, which in turn means reduced life

span, as age-accelerating genes are expressed without regulation.

Nicotinamide riboside has been scientifically proven to maintain robust levels of NAD⁺ in cells, thereby **both** supporting vital cellular energy functions **and** activating the anti-aging enzymes SIRT1 and SIRT3.^{43,63} Research has demonstrated that nicotinamide riboside supplementation is capable of reversing many of the age-accelerating changes induced by falling NAD⁺ levels.⁴³ This is why the discovery nicotinamide riboside is so essential for any serious longevity regimen.



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WE ARE RECRUITING FOR STUDY PARTICIPANTS!

LifeExtension®
CLINICAL RESEARCH, INC.

MALE SEXUAL HEALTH STUDY

Life Extension® Clinical Research, Inc. is conducting a trial to assess the effect of a nutritional supplement in supporting erectile function and sexual health in men who are 50-70 years of age.

If you or someone you know:

- Is able to travel to the Broward County research facility for the scheduled visits over a 30-day period,
- Is in a stable sexual relationship for at least six or more months, 50-70 years of age, and able to comply with all study procedures and visits, then
- Please contact us for further information and to see if you qualify.

Qualified participants receive:

- Blood pressure evaluations and blood tests, including a male hormone panel at no cost to you during the trial.
- Compensation for time and travel up to \$100 upon successful completion of the trial.

OVERWEIGHT AND MILDLY ELEVATED BLOOD SUGAR STUDY

Life Extension® Clinical Research, Inc. is conducting a trial to measure the effects of nutritional supplementation on blood sugar and blood vessel health.

If you or someone you know:

- Is able to travel to the Broward County research facility for the scheduled visits over a 90-day period,
- Is overweight, 25-65 years of age, and has mildly elevated blood sugar with no previous diagnosis of diabetes, then
- Please contact us for further information and to see if you qualify.

Qualified participants receive:

- Blood tests and blood vessel health evaluations at no cost to you during the trial.
- Compensation of \$200, a Life Extension® \$100 gift card and up to \$50 for travel expenses upon successful completion of the trial.

REGISTER OR CONTACT US FOR MORE INFORMATION

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Advanced Defense Against Cellular Aging

NAD⁺ Cell Regenerator

If you are experiencing fatigue and lack of motivation, it may be due to the age-related decline in **NAD⁺** levels¹ and subsequent impairment of healthy cellular metabolism.²

NAD⁺ (*nicotinamide adenine dinucleotide*) promotes systemic youthful functions and is found in every cell in the body.³ In addition, **NAD⁺** plays an essential role in regulating **genes**^{4,5} that control aging.⁶

How To Boost NAD⁺ Levels Within Your Cells

Newly patented **nicotinamide riboside** increases cellular levels of **NAD⁺** in the body.^{7,8}

For the first time, aging humans have an effective and affordable method to boost the critical **NAD⁺** enzyme for refreshed vitality.

Nicotinamide riboside represents an innovative advance to combat aging that functions via unique mechanisms not found in typical dietary supplements. It has emerged as a front-line weapon in **Life Extension's** ongoing war against premature aging.

The name of this new **nicotinamide riboside** formulation is **NAD⁺ Cell Regenerator™**.

Multiple Benefits Of Increasing NAD⁺ Cellular Levels

Nicotinamide riboside has been documented to help replenish cellular **NAD⁺** and in the process:

- Promote sirtuin (SIRT1 and SIRT3) gene activation,⁶
- Enhance growth and efficiency of mitochondria—supporting energy levels and physical performance,⁶
- Favorably modulate metabolism,⁶
- Contribute to neuronal health—supporting cognitive function during aging,⁹⁻¹¹
- Promote insulin activity—supporting healthy blood sugar in those within the normal range.⁶

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Life Extension® **NAD⁺ Cell Regenerator™** contains the patented ingredient **NIAGEN™**, the first commercially available form of **nicotinamide riboside**.

The suggested daily dose of one **NAD⁺ Cell Regenerator™** capsule provides:

NIAGEN™ Nicotinamide Riboside 100 mg

Advanced NAD⁺ Technology At A Low Price

A bottle of 30 vegetarian capsules of **NAD⁺ Cell Regenerator™** retails for \$34. If a Life Extension member buys four bottles, the price is reduced to **\$19.50** per bottle—a **43% savings** over the retail price. The suggested dose is just one small capsule daily.

NIAGEN™ is a trademark of ChromaDex, Inc.



Item # 01904

To order
NAD⁺ Cell Regenerator™,
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or visit www.LifeExtension.com

FlorAssist® Heart Health Probiotic

Enhances Healthy Cardiovascular Factors

Researchers are discovering how important **probiotics** are to overall health. Beyond improving digestive health, probiotics provide a broad spectrum of benefits throughout the body.

FlorAssist® Heart Health Probiotic contains a novel probiotic—*Lactobacillus reuteri* 30242—that has been shown in clinical trials to safely support healthy cholesterol in adults already within the normal range.^{1,2}

Additionally, *L. reuteri* 30242 has been shown to support healthy CRP (a marker for inflammation), fibrinogen (involved in clot formation), apoB-100 (a marker for LDL particle size, a known cardiovascular risk factor), and vitamin D levels (important for cardiovascular health) for those within normal range.³

FlorAssist® Heart Health Probiotic has been carefully formulated for convenient use as a safe, easy-to-swallow capsule with no unpleasant aftertaste. One capsule with food twice daily is the perfect addition to a heart-healthy lifestyle.

The suggested daily dose of **two** vegetarian capsules of **FlorAssist® Heart Health Probiotic** provides:

FlorAssist® <i>Lactobacillus reuteri</i> (NCIMB 30242)	5 Billion CFU*
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* Colony Forming Units



Item # 01821

A bottle of 60 vegetarian capsules of **FlorAssist® Heart Health Probiotic** retails for \$32. If a member buys four bottles, the price is reduced to **\$21** per bottle.

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To order **FlorAssist® Heart Health Probiotic**,
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STANDARDIZED **TART CHERRY** EXTRACT

Powerful Support For Muscles And Exercise Recovery

Tart cherries are packed with unique compounds that have been shown to block the COX-1 and COX-2 inflammatory enzymes.¹ The benefits of tart cherry include rapid muscle recovery after exercise²⁻⁵ and fast relief from the minor aches, discomfort, and stiffness that can follow everyday muscle exertion.^{2,3}

Clinically Proven

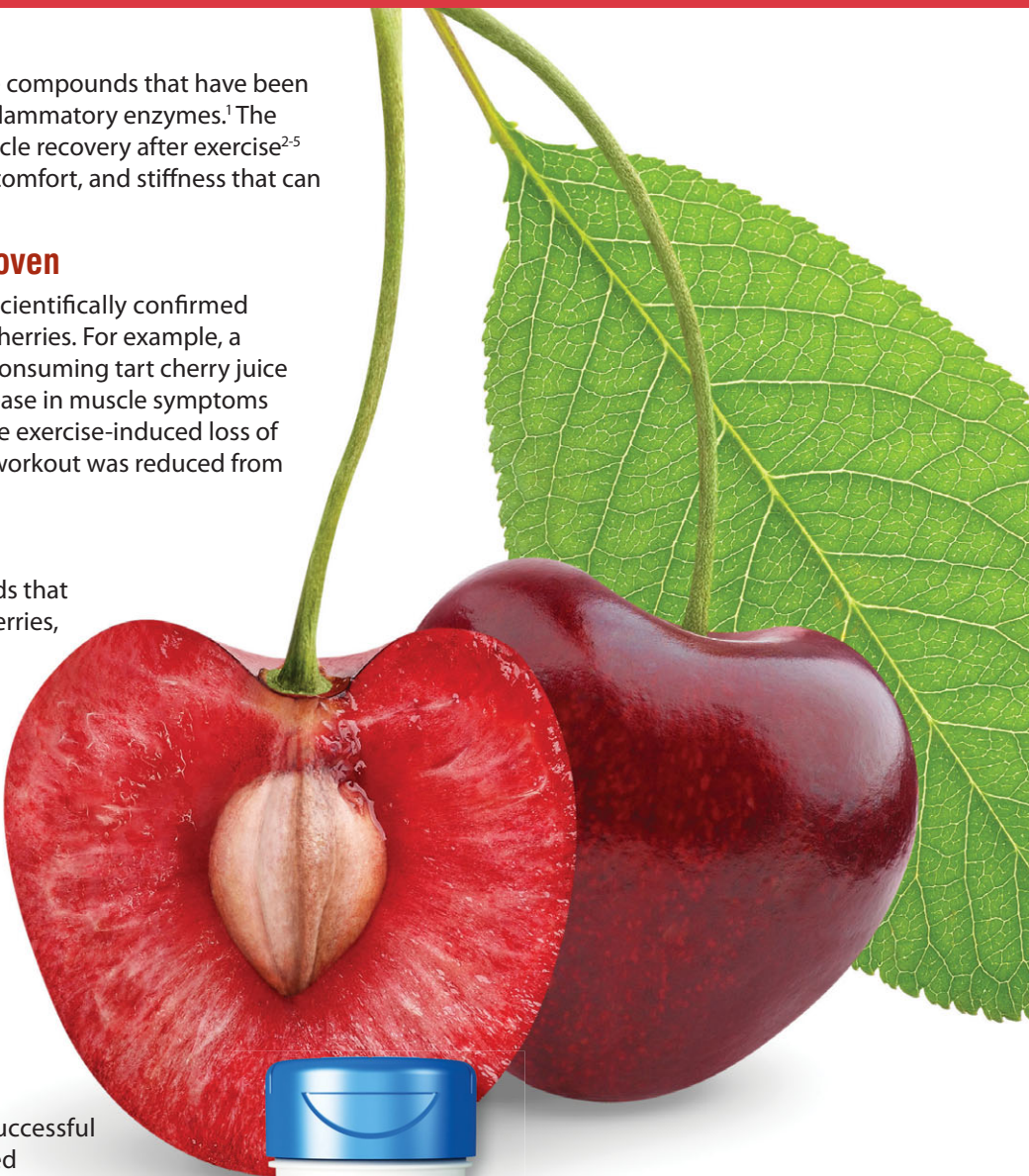
In human studies, researchers have scientifically confirmed the muscle-supporting benefits of tart cherries. For example, a randomized controlled trial found that consuming tart cherry juice twice daily produced a substantial decrease in muscle symptoms related to exercise. In the same study, the exercise-induced loss of strength over the four days following a workout was reduced from **22%** to only **4%**.⁴

Anthocyanins

Anthocyanins are powerful flavonoids that provide the dark pigmentation in blueberries, raspberries, and bilberries.^{5,6} What has drawn the attention of scientists is that tart cherries contain a higher content of anthocyanins than other fruits.¹

Anthocyanins have been extensively studied for their numerous advantages that include heart, cellular, and cognitive health.⁶⁻⁸

Life Extension® now offers **100%** natural **Tart Cherry Extract**, a supplement that opens the door to the remarkable benefits of continued physical activity—**at any age!** This formulation provides all the muscle-supporting benefits of tart cherries and mimics the anthocyanin dose used in successful clinical trials by providing a standardized **40 mg** dose of anthocyanins in each capsule.^{2,4}



The serving size of one vegetarian capsule of Tart Cherry Extract with Standardized CherryPURE® contains:

CherryPURE® Tart cherry (*Prunus cerasus*) extract (skin) 615.5 mg
[std to 6.5% anthocyanins (40 mg)]

A bottle of 60 vegetarian capsules of **Tart Cherry Extract with Standardized CherryPURE®** retails for \$22. If a member buys four bottles, the price is reduced to **\$15** per bottle.

CherryPURE® is a registered trademark of Shoreline Fruit, LLC.



Item #01723

To order Tart Cherry Extract with Standardized CherryPURE®, call 1-800-544-4440 or visit www.LifeExtension.com

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BY MICHAEL DOWNEY

PHYTOCERAMIDES

Phytoceramides

Skin
Rejuvenation
From
The Inside Out

As you age, your skin progressively loses natural lipids called **ceramides**.¹⁻⁴ The result is visible aging that includes wrinkles, age spots, and rough, uneven skin.⁵⁻⁸

Ceramides are major skin components that help form the “glue” that holds surface cells together.^{9,10} Depletion of these molecules not only causes skin to wrinkle, but also makes it more susceptible to moisture loss, environmental allergens, skin diseases such as atopic dermatitis, and possibly cancer.^{5,11-13}

For these reasons, ceramides have long been a key ingredient in expensive skin creams. The problem is that topical application may not penetrate deeply enough into the skin to effectively block wrinkle formation and skin aging.

Fortunately, plant-derived ceramides—or **phytoceramides**—have been developed that can be taken *orally*, ensuring that these potent molecules are absorbed into the bloodstream.¹⁴ Once absorbed, they are carried to the cells of the inner layer of the skin and subsequently seep to the outermost layer.^{14,15} These rejuvenating molecules reach skin all over the body, not just where creams are applied.

Oral phytoceramides effectively work from the inside out to hydrate, smooth, and rejuvenate aging and wrinkled skin.^{14,15}



Your Skin's Natural Regeneration Molecules

As the years pass, ceramide production declines dramatically. Without substantial replenishment of ceramides, the mortar that holds the skin-cell bricks together deteriorates, and the skin moisture barrier becomes greatly compromised.^{9,14,16}

The result is a thinning of your skin—with noticeable wrinkles, dryness, roughness, and even infection.^{14,17-19}

Although ceramides are present in many of the foods we eat, including rice and wheat, they do not naturally occur in sufficient quantities to optimally rejuvenate aging skin.¹⁴ This means that slowing and reversing skin aging requires effective supplementation.

The Phytoceramide Breakthrough

To help prevent skin infections, skin dryness, and wrinkling, researchers have investigated the effectiveness of **topically** applying ceramides to the skin surface. What they discovered is that adding lipids such as ceramides directly to the skin can improve the moisture barrier function—but only modestly.^{14,20,21} The problem is that a topical ceramide application is not the body's natural route for infusing the skin's outer layer with ceramide molecules—that occurs from the inside out.

That's why creams and lotions, applied to the outer surface of the skin, simply can't match the steady supply of ceramides that naturally comes from healthy, youthful skin.

To solve this problem, researchers turned their attention to **oral** ceramides. Initially, research focused on identifying potentially useful oral ceramides only from animal sources.¹⁴ Then scientists switched to using a number of different ceramides available in grains such as rice, corn, and wheat.^{14,21} These plant-based ceramides are called **phytoceramides**.

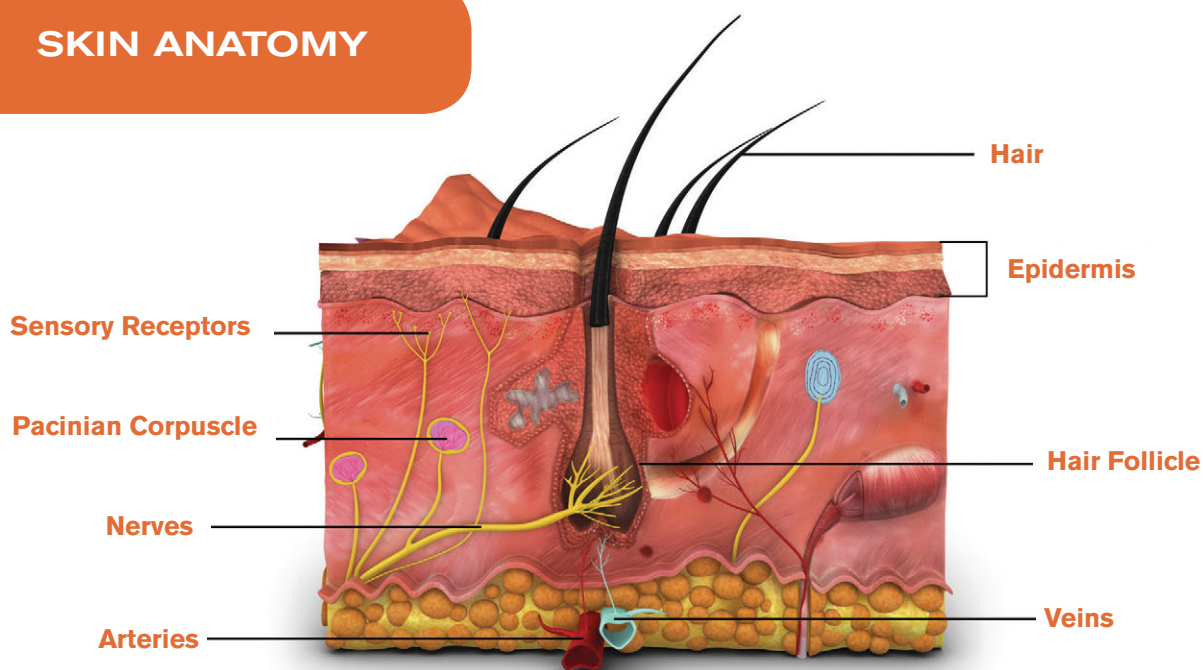
In an important breakthrough, scientists developed a proprietary **wheat-derived phytoceramide extract**. Taken orally, it can reach the skin's outer layer through the natural route—delivery by the bloodstream to the deepest skin-cell layers, then gently nudged into the extracellular matrix.¹⁴ There, it restores the barrier function.¹⁴

This innovation was achieved by using natural, nongenetically modified wheat as the raw material and producing an extract containing only purified oils.¹⁴ This extract is so purified it is classified as gluten-free by current government standards. A number of studies now validate the effectiveness of this novel phytoceramide.^{14,15,22}

In a laboratory cell study, this wheat-derived extract was shown to hydrate human skin and restore its youthful structure after the skin cells' protective barrier function had been disrupted.²²

This study also found that wheat phytoceramides reduced levels of free radicals in the skin and inhibited elastase enzymes, which would ordinarily destroy elastin and contribute to loss of skin flexibility and increased wrinkling.²³

SKIN ANATOMY



Ceramides have also been shown to inhibit *melanogenesis*, the process by which the skin produces the hyperpigmentation behind age spots and other discolorations of the skin. This suggests that by replacing ceramides from the inside out, oral wheat-derived phytoceramides may inhibit or reverse the uneven pigmentation of skin aging.^{7,8,24}

Scientists realized that if clinical trials validated these effects in humans, it would at last be possible to rejuvenate aging skin—simply by swallowing a capsule.

Phytoceramides' Effectiveness Validated In Clinical Trials

To demonstrate wheat-derived phytoceramides' effectiveness, investigators conducted experiments of the scientifically most rigorous type: double-blind, placebo-controlled, clinical studies.

In the first study, women with dry to very dry skin were given **200 mg** daily of either a placebo or a powdered phytoceramide extract for three months. Skin hydration was then evaluated using three distinct methods: a special testing machine, a dermatologist's examination, and the subjects' own subjective scores.¹⁵

The women taking the phytoceramide extract experienced significant **improvement in skin hydration** as assessed by all three of these testing methods. Additionally, in the **ceramide** group, participants experienced significantly reduced dry patches, roughness, and itching.¹⁵ These changes were not seen in the placebo arm of the study. This placebo-controlled human data provided scientists with a clear indication that the phytoceramides had made their way through the bloodstream to the skin cells, where they provided a powerful rehydrating and rejuvenating effect.¹⁵

To confirm these remarkable results, another clinical trial evaluated the wheat-derived phytoceramide extract in its oil form.¹⁴ For the study, women with dry to very dry skin took **350 mg** daily of the wheat ceramide oil, or a placebo, in a double-blind trial. Results were assessed after just three months of supplementation.¹⁴

First, researchers objectively measured skin hydration using a special technique known as *corneometry*. The supplement, but not the placebo, was shown to significantly **increase skin hydration** of the arms, legs, and the body overall. On the arms, skin hydration increased by more than **35%**, compared to less than **1%** in the placebo group.¹⁴

Second, researchers asked participants to rate their own perceptions of the effects of the supplement or placebo treatments. At all points of measurement



What You Need To Know

Rejuvenate Skin From The Inside Out

- Natural skin-based lipid molecules—called **ceramides**—have shown critical capacity to preserve youthful-looking skin and strong defenses against certain skin diseases and infections.
- They critically maintain the water-retaining properties of the skin by blocking water loss from aging or physical trauma.
- As we age, the skin content of ceramides substantially decreases, and topically applied ceramide-containing creams have shown limited effectiveness.
- Natural phytoceramides can be taken orally, allowing them to enter the bloodstream where they are naturally transported through all layers of the skin, working from the inside out.
- Placebo-controlled, clinical studies show that oral wheat-derived phytoceramides boost skin hydration, smoothness, suppleness, and other measures of youthful skin. Ceramides also defend against skin-based infections and diseases.

in the study, the wheat phytoceramide oil extract provided greater improvement in all factors—facial skin hydration, leg skin hydration, suppleness, roughness, uniformity of complexion, itchiness, and overall state of the skin—without any significant adverse effects and with a superior level of acceptability.¹⁴

These controlled clinical trials delivered clear confirmation that orally taken wheat-derived phytoceramides substantially boost skin hydration, smoothness, suppleness, and other levels—reflecting reversal of age-related skin wrinkling, drying, and decline.¹⁴

Why You Need To Replace Age-Diminished Ceramides

Because ceramides are bioactive lipids,²⁵ they are involved in much more than the appearance of the skin—and their age-related decline represents more than a mere cosmetic problem. Full functionality of the skin—which requires adequate ceramides and intact barrier function—helps regulate body temperature, synthesize optimum amounts of vitamin D, and provide critical sensory input from the environment.²⁶⁻²⁸

By contrast, falling ceramide levels expose one to health risks due to greater susceptibility to contact dermatitis from environmental chemicals, infectious microorganisms, and altered permeability to topically administered drugs.^{4,18,29} As shown in research, the

outer layer (*stratum corneum*) in aging human skin has decreased moisture content^{17,30,31} with greater susceptibility to inflammation³² and infection.¹⁹

Scientists have also determined that as humans age, their skin's diminished lipid content—mostly a decreased level of ceramides⁴—results in reduced structural integrity.^{10,17,33} This loss of structural integrity exposes the skin to a greater threat from environmental assaults, such as low humidity, solvents, and detergents, and a much lower capacity to recover from them.¹¹



What Are Ceramides?

Ceramides are components of specialized lipid molecules called *sphingolipids*, an essential element of human skin.⁴¹

The presence of ceramides as a category within sphingolipids was first discovered in the human brain in 1884.⁴² The ceramides that are found in both plants and the human body are now known to be structurally similar.¹⁹

All four layers of the epidermis contain ceramides, and they play a critical role in skin health by creating a barrier that reduces infection and helps to retain the skin's moisture and smoothness.¹⁹

Over a period of four weeks, new cells created at the deepest epidermal layer migrate upwards to form the top layer of the skin (the *stratum corneum*) where extracellular matrix lipids inhibit loss of water.⁴³ By the time skin cells reach the skin's surface, they become *cornified* or horn-like, transforming into protein-rich bricks tightly bound together by a layer of mortar composed of various lipids, up to **50%** of which are ceramides.⁴⁴

The primary function of the epidermis is to generate a relatively impermeable layer to protect the skin from dehydration and environmental stress.⁴⁴ Ceramides play a critical role in this barrier function and in the retention of water by the *stratum corneum*.⁴⁴

The aging process reduces the content of ceramides in the epidermal skin layers. This contributes to dry skin and dermatitis, and is a major cause of skin wrinkling.^{1-6,9-12}

Research has shown that optimal amounts of ceramides, in relation to other lipids, in the top layer of the skin are required to maintain youthful and healthy skin.^{12,44}

Wrinkled, dry, irritated, and sensitive skin often lacks ceramides. Topical application of ceramides has shown limited benefit. However, orally taken wheat-derived phytoceramides—both in powdered and oil form—have been clinically demonstrated to hydrate skin and promote more youthful appearance and smoothness.^{14,15}

Research suggests that the decline in ceramide content in mature skin⁴ may stem from a decline in the enzyme activity that normally promotes the delivery of ceramides in a usable form to the skin.³⁴

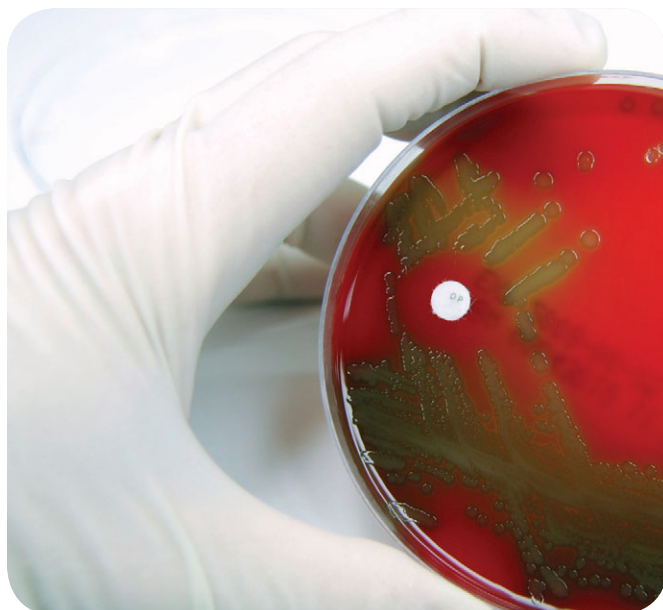
To inhibit the loss of skin ceramides—and the wrinkling, moisture loss, and multiple health risks that occur as a result—it is essential to boost ceramide levels not just on the surface where lotions sit, but deep inside the skin cells beneath the stratum corneum.

In addition, maintaining youthful levels of ceramides in all layers of the skin promotes more than better appearance and feel—it powerfully blocks skin infections¹⁸ and other skin diseases.^{4,11}

Protection Against Skin Infections And Diseases

Lipids at the skin's surface, including ceramides, comprise a major part of an antimicrobial barrier, the first line of defense against infection. Age-related deterioration of this barrier raises the risk of numerous health conditions.¹¹

For example, atopic dermatitis is characterized by reduced ceramide concentrations in the stratum corneum.^{12,35} Scientists suggest a correlation between this reduction and higher concentrations and colonization of *Staphylococcus aureus* in atopic dermatitis.^{12,36,37} This can be especially concerning because when skin barrier function is disrupted—as it is with diminished ceramide content—*S. aureus* has an increased potential for causing infections.³⁸ In addition, disruption of skin barrier function is a risk factor for infection with various microorganisms including *Streptococcus pyogenes*.³⁹



The Skin's Structure

The outer layer of your skin (*epidermis*) plays a key role in maintaining homeostasis,⁴⁵ the internal process that automatically modulates internal conditions to keep them constant and stable throughout your body. The skin surface, or *stratum corneum*, serves as a barrier between the external environment and the internal body. This barrier prevents water loss due to evaporation and inhibits foreign insults.^{9,45}

Scientists often describe the structure of the stratum corneum as “bricks and mortar.”⁴⁵ About **90%** of the stratum corneum surface is made up of cells called *keratinocytes*.⁴⁶ These are the “bricks” of the skin barrier.

Between those cells are intercellular lipids that are made up of ceramides, free fatty acids, and cholesterol, all of which constitute the “mortar” that holds the “bricks” of your stratum corneum together.⁹ Ceramides comprise up to **50%** of this vital intercellular material.⁴⁴

This brick-and-mortar structure effectively prevents transepidermal water loss,⁹ unless impaired by damage to the stratum corneum, a tragic effect of skin aging.

A scientific investigation into the pathogenesis of allergic contact dermatitis and other inflammatory skin conditions found that repairing the breakdown in the ceramide barrier, while continuing topical medications, could greatly alleviate atopic dermatitis.⁴⁰ This is especially significant, because the topical corticosteroids and other immunosuppressive agents of mainstream therapy involve toxicity risks.

Summary

Ceramides are natural skin-based lipid molecules that have shown critical importance in preserving skin's youthful appearance and texture, as well as providing strong defenses against skin diseases.

Their essential role is in the maintenance of water-retaining properties of the skin, protecting against water loss of both physical trauma and aging.

With age, the presence of ceramides in the skin decreases. However, topical creams that contain ceramides have shown only modest effectiveness.

When taken **orally**, phytoceramides are transported deep into the cells of all layers of the skin and work from the inside out.

Rigorous clinical studies show that oral wheat-derived phytoceramides increase skin hydration, smoothness, suppleness, and other measures of youthful skin. Ceramides may also protect against skin-based infections and diseases. ●

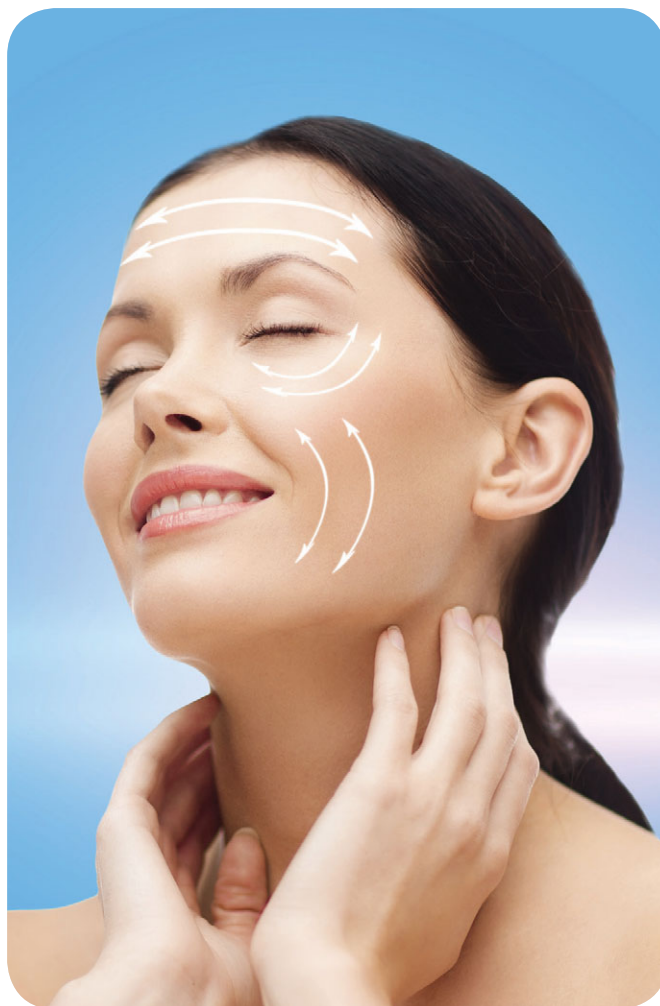
If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.

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UTIRose[™] is derived from *Hibiscus sabdariffa*, a species native to Europe, Asia, and Africa. Scientific analysis has shown that this species' flower and calyx (the green floral envelope surrounding the blossom) are rich in active polyphenols, including **flavonoids**, **sambubiosides**, and **anthocyanins**.

Life Extension[®] uses a unique, patented process in the manufacture of Optimized Cran-Max[®] with UTIRose[™]. Each daily serving supplies the complete phenolic profile of the whole cranberry *plus* hibiscus polyphenols in a standardized, highly absorbable, *concentrated* form. Two capsules of Optimized Cran-Max[®] with UTIRose[™] contain:

UTIRose[™] Hibiscus extract (flower, calyx) [std to 45% total phenolics (45 mg)]	200 mg
Cranberry whole fruit concentrate	500 mg

The suggested daily amount of Cran-Max[®] in this formula alone (**500 mg**) was demonstrated to provide the **anthocyanin** equivalent of seven 8-oz glasses of Ocean Spray[®] Cranberry Juice Cocktail.⁹

The price for one bottle of **Optimized Cran-Max[®] with UTIRose[™]** containing 60 vegetarian capsules is \$18. If a member buys four bottles, the price is reduced to **\$12 per bottle**.

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Ceramides are essential for preserving healthy-looking skin.^{1,2} They play an important role in maintaining the skin's moisture balance and protecting the skin's surface.³

Unfortunately, your body's production of ceramides declines with age.⁴ Many anti-aging face creams include ceramides. The problem is that **topical application** cannot penetrate deeply enough into the skin to have a long-term impact on your skin's appearance.

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BY DONNA CARUSO

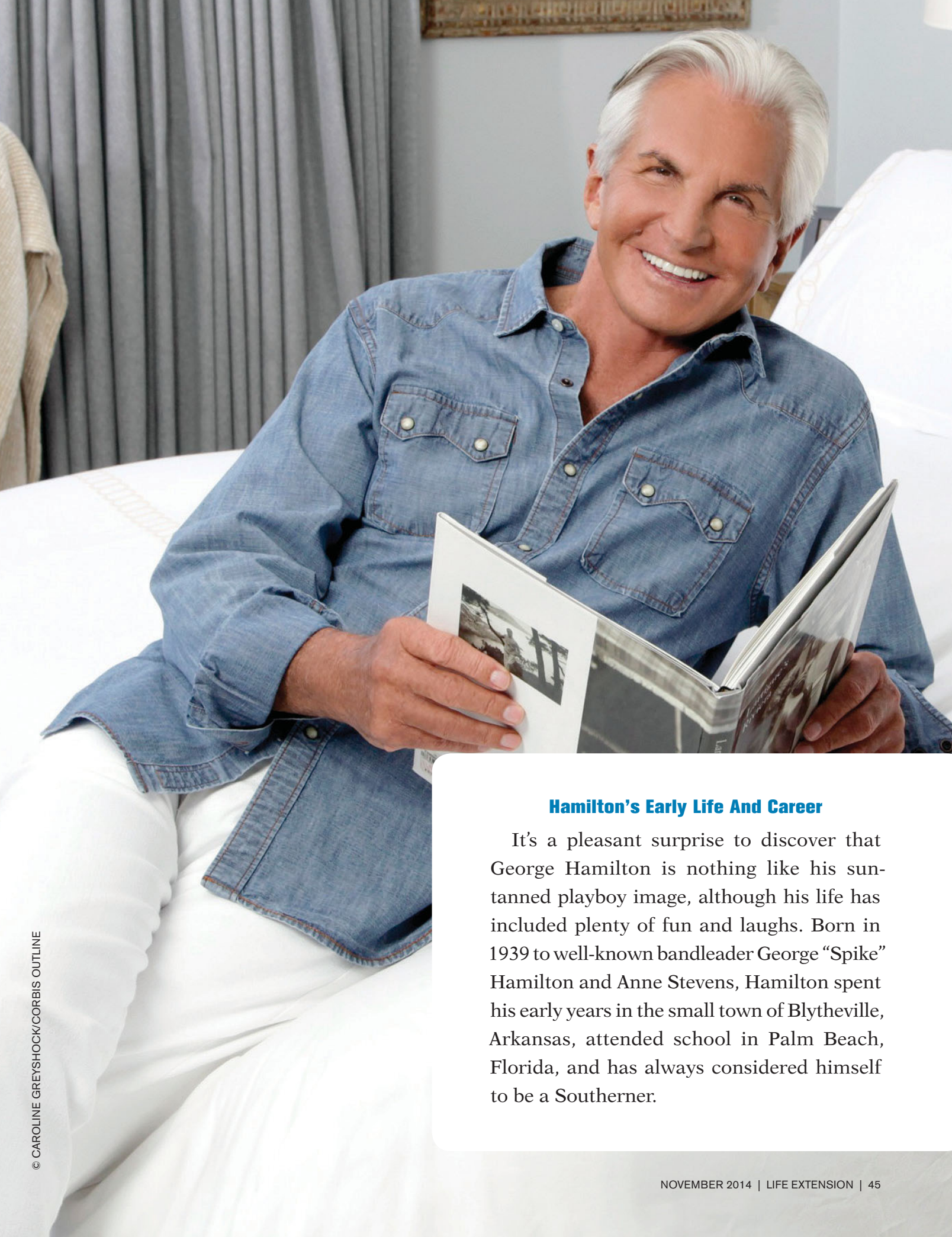
George **HAMILTON**

*Secrets From One Of
Hollywood's Leading Men*

When veteran actor George Hamilton says, “Health is my passion,” he really means it. In an exclusive interview with *Life Extension*® Magazine, the 75-year-old star reveals his extensive and highly impressive knowledge regarding diet, supplements, exercise, longevity—and his strategy to live a natural life span of at least 120 years.

GEORGE HAMILTON





Hamilton's Early Life And Career

It's a pleasant surprise to discover that George Hamilton is nothing like his sun-tanned playboy image, although his life has included plenty of fun and laughs. Born in 1939 to well-known bandleader George "Spike" Hamilton and Anne Stevens, Hamilton spent his early years in the small town of Blytheville, Arkansas, attended school in Palm Beach, Florida, and has always considered himself to be a Southerner.

Hamilton's extensive resume started in 1952 when he was 13. While many of his movies weren't box office smashes, he has had his share of critical acclaim, beginning with the teenage classic *Where The Boys Are* (1960), which led to a Golden Globe Award as Most Promising Newcomer (male).

This was followed by *Your Cheatin' Heart* in 1964, in which Hamilton portrayed country music legend Hank Williams (and which was linked to his very public relationship with President Lyndon Baines Johnson's daughter Lynda Bird Johnson). In 1990, Hamilton was cast in the coveted role as the Corleone family lawyer in *The Godfather, Part III*. Hamilton's box office successes, *Love at First Bite* (1979) and *Zorro*, *The Gay Blade* (1981), presented the star significant opportunities to display a notable talent for comedy.

Hamilton has worked with such prestigious directors as Vincente Minnelli and Louis Malle and had friendships with many Hollywood elite, including Elizabeth Taylor, Cary Grant, Brigitte Bardot, Judy Garland, and Sammy Davis, Jr.

Beginning in 1959 with an appearance on *The Donna Reed Show*, Hamilton's long career in television continues to the present. In his 2008 book, *Don't Mind If I Do*, he writes with great humor about coming

in fifth place during his 2006 appearance in "Dancing With the Stars," despite leg injuries that seriously hampered his mobility.

Theatrical appearances include several runs in the Broadway smash *Chicago* and a recent national tour of *La Cage Aux Folles*. He has also performed one-man shows and plans to tour in another in the near future, with performances in England and across the US.

Hamilton's extensive resume is a tribute to his unusual energy, which he attributes to his constantly evolving health program.

A Passion For Health

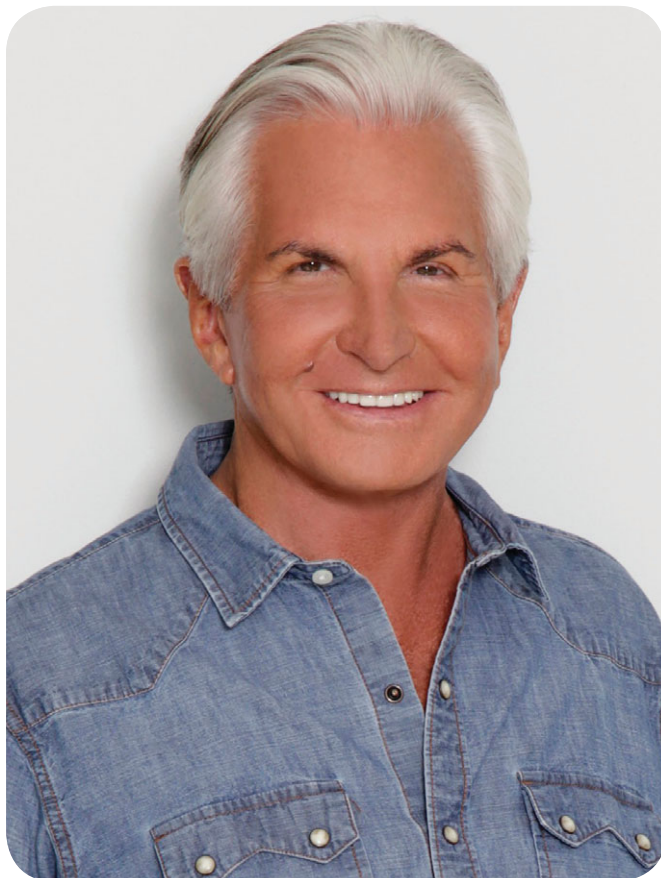
At an age when most actors lack the energy and desire to continue working, Hamilton stands out as youthful, energetic, and eager to try new projects. He ascribes much of his zest for life to long-term healthy practices and a keen desire to learn everything he can about natural health and longevity.

"I grew up in a small Southern town where my grandfather was the town doctor," he explains. "I was fascinated by him and even from a very young age, he would take me with him on house calls. I watched what he did and he also showed me the basics of how to assess someone's health. He'd point out specific things to look for, such as puffiness under the eye or a thyroid band around the neck, that were quick clues to what was wrong. And then, without exception, after we left the patient, he would ask me 'What do you think is wrong?'"

These diagnoses included social and psychological aspects, since doctors at that time were also therapists, which taught Hamilton that maintaining good health can be a very complex science.

As he grew up and began working in Hollywood, Hamilton was influenced by many well-known experts, including nutritionist and naturopathic physician Paavo Airola, nutritional experts Carlton Fredericks and Adelle Davis, Henry Bieler, MD, author of *Food Is Your Best Medicine*, Swiss physician and cellular therapy pioneer Paul Niehans, and Roy Walford, MD, an early advocate of caloric restriction (CR). Hamilton also learned much from fellow actors Gloria Swanson and Merle Oberon, both of whom were involved in innovative health therapies early on.

In his book, Hamilton writes, "Merle, like Gloria Swanson, was a health nut, and she got me interested in alternative medicine... It was Gloria who got me one step further, out into the twilight zone of longevity. No one treasured youth more than Gloria Swanson, whose Rolls-Royce was filled with health foods, vitamin supplements, and blenders that she was constantly buying."



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George Hamilton's Supplements

Vitamin E
Vitamin C
Vitamin A
Vitamin D
B Complex With Minerals
Vitamin B12
Vitamin B6
Zinc
CoQ10
Folic Acid
TMG
Rutin
Selenium
Fish Oil
Flaxseed
Melatonin

Health Practices

Hamilton meditates every day. “The minute you meditate,” he says, “you go back into homeostasis and can check yourself,” and see if you are agitated, angry, or in any other state of imbalance. Hamilton feels the benefits of meditation are both spiritual and physical, and allow him to achieve an awareness of what is going on in both body and mind.

When it comes to his health, Hamilton again refers to his grandfather's words of wisdom: “In many cases, doctors administer things that are basically poisonous to the health. The body, when allowed to heal, will correct itself. If you have an offending substance, remove it and the body will heal itself.” Hamilton says he has tried to follow this advice by never allowing anything to get to the point where “the insult or offense to the body is irreversible.”

His health program is multilevel and complex, but there's every sign it is working exceptionally well. His physical exercise includes regular half-hour walks and stretching exercises to prevent injuries, maintain balance, and keep ligaments, cartilage, and tendons from deteriorating—practices he recommends for everyone.

When it comes to diet, Hamilton has maintained his svelte appearance all his life by following healthy eating habits. He refers to CR advocate Roy Walford's ideas, saying, “The only thing that we know that slows down aging is systematic undereating. It's interesting that gluttony, and any excess, creates much more strain on the system and there's more for the body to do. We're not in sync with our appetat when we eat,

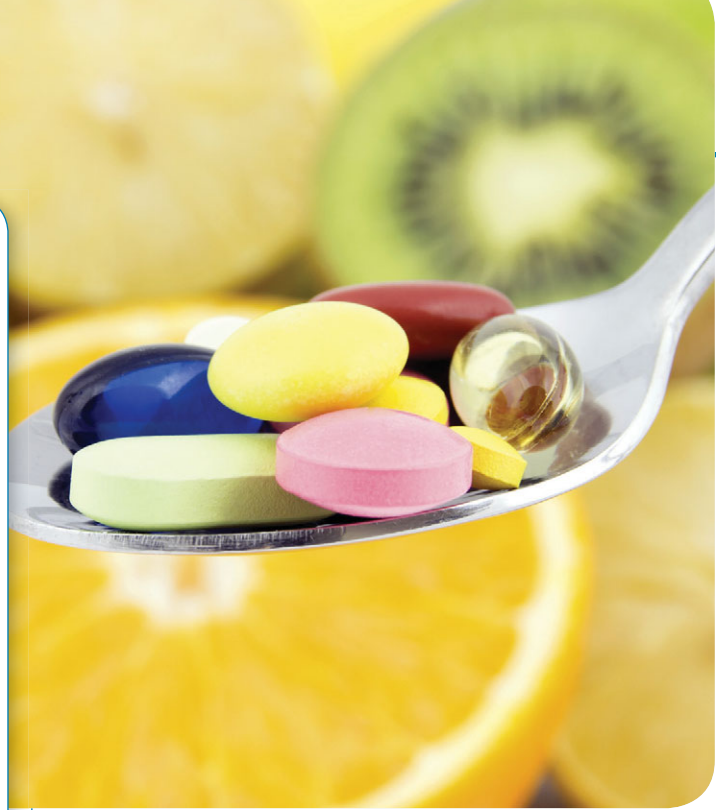
and we don't allow the body to catch up.” He adds that many people eat for emotional needs, but such habits can be changed.

“The worst offender is sugar,” Hamilton emphasizes. “Sugar is a terrible thing for us and getting rid of sugar is the single most important thing you can do.” He tries to eat as much as possible of greens, berries, fruits, and brightly colored vegetables, making a daily shake with such ingredients as kale, goji berries, almonds, bananas, and anything else he needs to ensure he's getting the necessary vitamins and enzymes. Hamilton also eats a lot of fish, which he says “will regrow white and gray matter” in the nerves and brain. He uses only organic produce, citing problems with soil depletion, pesticides, and GMOs (Genetically Modified Organisms), which we should all avoid.

Don't Mind If I Do chronicles a life of heavy drinking and all-night parties, but today Hamilton has very different ideas. “I don't think drinking is good,” he explains. “It's a form of poison, a nerve toxin, and I had to learn to change my ways. The latest research shows alcohol is damaging to the brain. I looked at it and realized I've had all I need.”

Hamilton's list of supplements is very long, including some taken daily and others as needed when there is a specific problem that needs short-term treatment. His regular supplements include vitamins E, C, A, D, B12, B6, B complex with minerals, rutin, folic acid, selenium, zinc, TMG, CoQ10, fish oil, flaxseed, and melatonin.

While he recognizes the importance of all the supplements on his list, Hamilton feels that “the most important vitamin is vitamin E, especially for the





elderly,” citing its positive effects on circulation, clot prevention, and neutralizing free radicals.

Keeping up with the latest research is another passion for Hamilton. He credits *Life Extension® Magazine* for its enormous contributions in this area.

Hamilton is also a devoted advocate of fasting. “I stop everything four times a year, and I’ve gone from three to nine days on a form of fast,” he explains. He believes it is a way to get rid of toxins that have built up inside the body.

Keeping the liver clean is also important to Hamilton. “The liver is such an important organ,” he says, crediting Dr. Bieler, who advised such things as alkaline juices, string beans, and zucchini for cleansing. “Let that liver have nothing to clean or work on—you work on the liver. When you do that, it’s amazing how problems, such as bad headaches, resolve.” Cleansing the liver, he adds, gives you a sense of euphoria and can even help longtime alcoholics.

Hamilton also cleanses his colon four times a year by detoxing with herbs. “I try to keep myself as squeaky clean as I can,” he explains. He adds that most people eat the same foods day after day and may be seriously lacking in nutrients. “They are basically gaining weight and starving to death at the same time,” he says, but due to habit and lack of knowledge, most people continue these practices for a lifetime. And even when they gain some knowledge, he states, “it’s very hard to get off this system that we have, which is all done for profit.”

It’s also vital to keep the brain active, and here Hamilton recommends such methods as solving daily crossword puzzles and doing new things you are not used to. “I’m studying Spanish right now,” he explains,

“and I also make it my habit every morning when I wake up to get out on the other side of the bed. If I usually brush my teeth first, instead I take my shower first. I do my rituals backwards and forwards.” Hamilton emphasizes that it’s urgent to not only keep your brain alert, but to develop and nurture a sense of humor, which he demonstrated with hearty laughter throughout the interview. “The first sign of a declining brain,” he notes, “is when there’s no humor.”

Another key factor is sleep. “I try to get seven to eight hours sleep each night,” he says, “which is essential. I believe it’s anticancer and anti-Alzheimer’s.” Hamilton mentions that regular use of melatonin from *Life Extension®* helps him attain uninterrupted sleep each night.

A Story Of Healing

Although it’s not widely known, Hamilton lost the hearing in his left ear as a result of childhood measles, (even though his grandfather gave him penicillin). At 40, Hamilton was informed by a traditional doctor that he had damaged his auditory nerve and would not hear in that ear again.

Hamilton’s good friend Gloria Swanson advised him to go to Switzerland and see Dr. Niehans, who administered 11 syringes of an early form of organ-specific stem cells. A month later, his hearing improved and today, Hamilton has **95%** hearing in this ear.

Hamilton mentions that when he was at Dr. Niehans’ cellular therapy clinic, a number of well-known people were also being treated, adding strength to his belief that alternative medicine, in the right hands, may often work where traditional medicine fails.

Recent And Current Projects

In 1971, Hamilton starred in a film about daredevil Evel Knievel and is now one of the producers of a documentary about him. Currently preparing his upcoming one-man show, Hamilton looks forward to traveling in Europe and throughout the US performing it.

Continuing offers keep coming in for Hamilton to star in various reality shows or situation comedies, and he carefully considers all of them. It's likely he may soon be on the small screen with a new series.

"I'm at an age where if I don't want to work, I don't work," explains Hamilton. "I will work at the things that excite me, but you also have to spark these things yourself. You can't wait for someone else to call you."

But Hamilton's main focus at the moment is on two films, one a documentary and the other a fictionalized version of the life of his close friend Sean Flynn, son of swashbuckling film star Errol Flynn. Sean Flynn was a photojournalist who disappeared in Cambodia in 1970 during the Vietnam War. A known daredevil and legendary character of the time, Flynn's body was never found, but many people who knew him have never forgotten his charismatic personality and willingness to risk his life to get a story and photos, especially in dangerous situations.

What Makes Life Worthwhile

As a lifelong student of health, Hamilton notes, "I feel like I'm a doctor in that I'm always researching. I read so much on health and medicine that many friends call to ask me to help them find the best doctors in the world or doctors who might help them with specific conditions. I feel like it's my calling [and] that I would have been a doctor if I hadn't become an actor."

"My advice is to find a practitioner who knows and can diagnose your deficiencies and start balancing everything out. We're not meant to die at 100; we're meant to die at 120, so there's no reason not to extend [life], no reason as long as you stay healthy."

He adds, "My life has been blessed."

At the age of 75, Hamilton loves spending time with his two sons, Ashley, 38, from his marriage to Alana Collins, and George Thomas, 14, from a relationship with Kimberly Blackford. When it comes to assessing his life so far, nothing seems to give him more joy.

"I may win by default," jokes Hamilton. "There may not be any other actors around and I may get the role. Most of the guys I know flame out around this period or earlier. They don't look good, they don't feel good, and they close up shop. But I listen to myself and do physically what I know is necessary to make everything work."

"My life is wonderful," he says in conclusion. "I'm really delighted."

Summary

George Hamilton's long career began in 1952 when he was only 13 years old and continues today. Noteworthy films include *Where the Boys Are*, *Love Bites*, and *The Godfather, Part III*. He has two new projects in the pipeline, a documentary and a fictionalized version of the life of his close friend Sean Flynn, son of swashbuckling film star Errol Flynn. A lifelong student of health, the 75-year-old star takes numerous supplements, believes in caloric restriction and meditation, and plans to live to the age of 120. ●

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



A SUPERIOR WHEY PROTEIN

From Grass-Fed, Free Range Cows not treated with Growth Hormone (rBST)

As people age, they become more susceptible to muscle deterioration and a declining immune system.^{1,2} Fortunately, **whey protein** can have a positive impact on muscle construction and immunity due to its *branched-chain amino acid profile* (BCAAs) and naturally occurring *lactoferrin* and *immunoglobulins*.³⁻⁵

Unlike many commercial brands on the market, **New Zealand Whey Protein Concentrate** is uniquely derived from **grass-fed, free-range cows** living healthy lives in New Zealand and not treated with growth hormone (rBST).

Life Extension®'s New Zealand Whey Protein Concentrate offers the following:

- **Non-GMO Whey Protein Concentrate!**
- **Naturally high levels of essential branched-chain amino acids!**
- **High-quality muscle-building protein!**
- **Easily mixes into water or milk!**
- **Great Taste!** – Available in both **natural chocolate** and **natural vanilla** flavors.

The retail price for an 18.34 ounce container of **New Zealand Vanilla Flavored Whey Protein Concentrate** (Item # 01770) or for a 23.28 ounce container of **New Zealand Chocolate Flavored Whey Protein Concentrate** (Item # 01771) is \$30. If a member purchases four bottles, the price is reduced to **\$19.95** per bottle. Contains milk.

To order New Zealand Whey Protein Concentrate, call 1-800-544-4440 or visit www.LifeExtension.com



Item # 01770



Item # 01771

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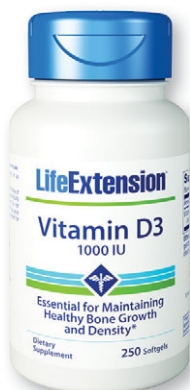
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D₃

VITAMIN D3 SOFTGELS

For Superior Absorption

New research on the vital benefits of **vitamin D** emerges on a daily basis. Studies confirm that **optimal** levels of vitamin D are in the range of **50-80 ng/mL** of **25-hydroxyvitamin D**. **Life Extension®** has created a large selection of highly *absorbable* **vitamin D** supplements in softgels to help you to achieve your individual **vitamin D goals**. Keep in mind that you may already be getting **1,000-3,000 IU** of **vitamin D** in your current multi-nutrient formulas.

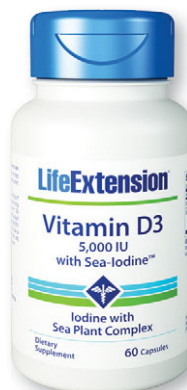


Vitamin D3 • 1,000 IU

250 softgels • Retail: \$12.50

Four-bottle Member Price: **\$8.44 ea.**

For most people, a **1,000 IU** potency is insufficient to attain optimal **vitamin D** blood levels. However, this potency may be suitable for smaller individuals who obtain **2,000-3,000 IU** in their multi-nutrient formulas (and children). **Item # 01751**

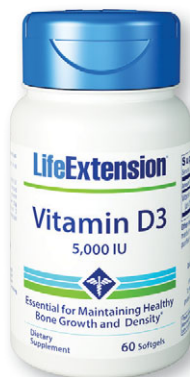


Vitamin D3 • 5,000 IU With Sea-Iodine™*

60 capsules (non-softgel) • Retail: \$14

Four-bottle Member Price: **\$9.38 ea.**

Most people, especially those seeking to reduce their salt intake, do not ingest enough iodine. Combining **5,000 IU** of **vitamin D3** with **1,000 mcg** of **iodine** into one capsule makes taking these two nutrients economical and convenient. *Due to the source of kelp, this product may contain fish and shellfish.* **Item # 01758**

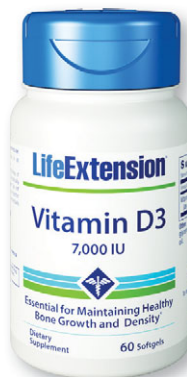


Vitamin D3 • 5,000 IU

60 softgels • Retail: \$11

Four-bottle Member Price: **\$7.43 ea.**

For those already obtaining **1,000-3,000 IU** of **vitamin D** in their multi-nutrient formulas, this **5,000 IU** potency is what may be needed to achieve optimal blood levels. **Item # 01713**



Vitamin D3 • 7,000 IU

60 softgels • Retail: \$14

Four-bottle Member Price: **\$9.45 ea.**

Some people (such as those weighing more than 180 pounds) may require even more **vitamin D**. When combined with **1,000-3,000 IU** taken in a multi-nutrient formula, this **7,000 IU** softgel should enable these individuals to attain blood levels above **50 ng/mL**. **Item # 01718**



Vitamin D3 Liquid • 2,000 IU (Natural Mint Flavor)

1 ounce • Retail: \$28

Four-bottle Member Price: **\$18.75 ea.**

Great for travel and for those individuals who have difficulty absorbing enough vitamin D3 from softgels, this liquid vitamin D is ideal. **Item # 01732**

Also available without mint. (Item # 00864)

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

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

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

BY JAMES HARRISON

Enhance **ENDOTHELIAL HEALTH**

How Pomegranate Protects Against Atherosclerosis

Despite billions of dollars spent every year on cholesterol-lowering statin drugs like **Lipitor®** and **Crestor®**, cardiovascular disease continues to be the leading killer worldwide.^{1,2} Clearly, just lowering your cholesterol is not the entire solution, otherwise, the epidemic of heart disease would be over.

Overlooked by mainstream medical practice is the essential role that the **endothelium** plays in protecting cardiovascular health. The endothelium is the one-cell-thick layer that lines all of your blood vessels, down to the smallest capillaries.^{3,4}

Pomegranate extracts are proving to be an effective means of protecting our delicate endothelium. Studies show that pomegranate works on a number of levels to ensure cardiac health by reducing cellular cholesterol accumulation, protecting LDL from oxidation, and in lab studies, shrinking atherosclerotic plaque.⁵⁻⁷ In addition, pomegranate promotes supple arteries that maintain healthy blood flow and pressure to all of your tissues and organs.^{7,8}

Best of all, research concludes that by improving **endothelial** health, pomegranate supplementation lowers risk factors for heart attacks, strokes, and other cardiovascular events.⁸⁻¹⁰





The Importance Of Endothelial Health

Your chances of having a heart attack or a stroke depend a great deal on the health of your **endothelium**.^{3,4} The endothelial cells use **nitric oxide** to signal the need for relaxation to arterial muscle cells.

As we age and develop pathological conditions such as atherosclerosis, our ability to produce and respond to **nitric oxide** rapidly diminishes.¹¹⁻¹³ Aging humans generate more oxidative and inflammatory molecules that deplete nitric oxide production.^{13,14}

The result is **endothelial dysfunction**, a serious condition that leads to arteries “stiffening” and losing their ability to respond to changes in blood flow and pressure. Endothelial dysfunction is often initiated as a result of oxidative stress.³ A major cause of damage in arterial walls is **oxidation** of **LDL** (low-density lipoprotein).¹⁵ Oxidized LDL is taken up by specialized receptors on endothelial cells to form atherosclerotic plaques.^{11,12}

In a vicious cycle, chronic *inflammatory* reactions cause further oxidant damage, which results in further reduction in nitric oxide availability, and finally, further reduction of endothelial control over blood flow and pressure.³ This cycle sets the stage for high blood pressure and all the cardiac events that can result from this condition.³

Statin drugs are prescribed by physicians to reduce overall cholesterol production, thereby lowering LDL levels and helping to prevent further growth of plaques and inflammatory changes.^{16,17} Too often, however, statin therapy is initiated *after* dangerous changes have occurred in the endothelium and muscular walls of arteries.

Fortunately, extensive research demonstrates that **pomegranate** extracts enhance the body's natural protective responses to prevent endothelial dysfunction, promote healthy mechanisms, and even remove oxidized LDL from arterial walls.

Factors Of Reduced Endothelium-Dependent Dilation^{13,18}

Listed below are the factors that contribute to impaired endothelial-dependent dilation, resulting in arteries that are stiff and relatively unresponsive to changes in blood flow and pressure, which ultimately triggers stroke and heart attack.

- Increased production of superoxide and other reactive oxygen species in aging
- Upregulation of oxidant-producing enzymes (e.g., NADPH oxidase)
- Increased bioactivity of artery-constricting endothelin-1
- Reduced endothelial production of/ responsiveness to artery-dilating compounds
- Development of vascular inflammation
- Formation of advanced glycation endproducts (AGEs)
- Increased rate of endothelial cell apoptosis (programmed cell death)
- Reduced expression of estrogen receptor alpha (in postmenopausal women)

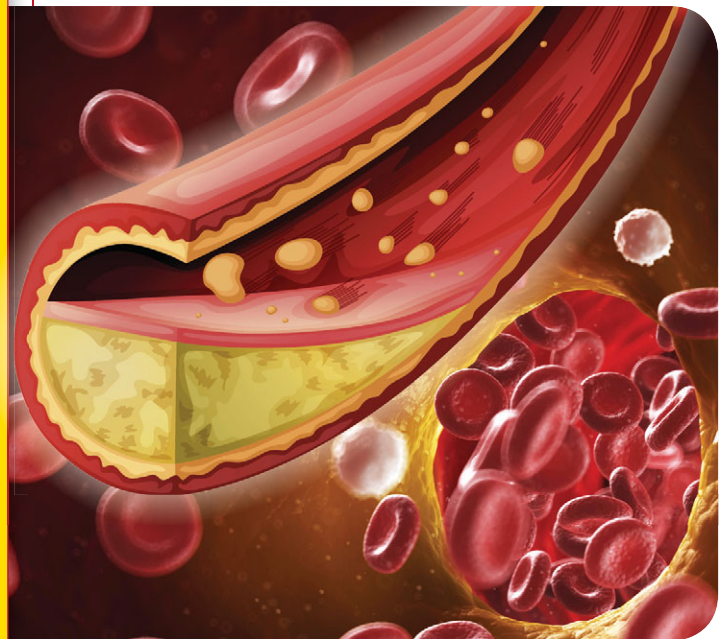
Pomegranate Boosts Your Body's Defenses

Your body has natural mechanisms to protect your cardiovascular health, but they become weakened and ineffective over time.

For example, your body is equipped with specialized mechanisms that move cholesterol from tissues back to the liver for clearance.¹⁹ It also has specialized protein complexes that protect cholesterol from oxidizing to cause plaques. It even has its own specialized mechanisms for mopping up destructive free radicals like superoxide that promote oxidation and inflammation, and reduce vital supplies of artery-dilating nitric oxide.²⁰⁻²⁴

Pomegranate extracts directly aid your own body's defense mechanisms and prevent catastrophic outcomes. Pomegranate extracts:

- *Enhance* cholesterol outflow from inflammatory white blood cells, helping to reduce the risk of plaque formation.^{5,6,25}
- *Protect* vulnerable LDL molecules from the oxidation that leads to arterial wall inflammation and promotes plaque generation.^{6,7}
- *Boost* natural antioxidant systems, particularly *superoxide dismutase* (SOD), protecting vital nitric oxide and allowing the endothelium to recover from the effects of chronic oxidative and inflammatory stresses.²⁶⁻²⁸ (See **sidebar on page 56** for additional benefits of supplementing directly with SOD.)



Pomegranate's Endothelial Defense Mechanisms

Pomegranate contains a number of extremely potent antioxidant molecules including *tannins* and *anthocyanins*, which have been shown to exert important endothelial-protective, anti-atherosclerosis effects.^{7,29} Pomegranate's multiple therapeutic targets include those dangerous oxidized LDL particles and the inflammatory white blood cells that stream into developing plaques, eventually causing them to block arteries and cause heart attacks or strokes.^{5,7,29}

Pomegranate contains particularly potent polyphenols that protect against LDL and HDL oxidation, which helps minimize **endothelial dysfunction** in its earliest stages.⁷

A unique property of pomegranate is its ability to boost activity of a beneficial enzyme called *paraoxonase-1* (PON-1), which is found in beneficial HDL and accounts for many of its "good cholesterol" features by breaking down oxidized lipids, even those that have already been taken up into plaques.^{5,7}

In a mouse model of coronary heart disease, treatment with pomegranate extract had a number of benefits to reduce atherosclerotic plaque.³⁰ The size of atherosclerotic plaques in the animals' aortas shrank, and the proportion of coronary arteries clogged with plaques was markedly reduced. Inside the plaques, researchers found substantial reduction in oxidative stress, inflammatory signaling molecules, and inflammatory white blood cells. And treated animals' hearts remained normal in size, not enlarging and developing electrocardiogram (ECG) abnormalities as in control animals.³⁰

In a rat study, researchers administered the cancer chemotherapy drug *doxorubicin*, which has cardiotoxic effects that mimic some of the damage seen following a heart attack. Doxorubicin also produces intense oxidative stress.^{31,32} The group given doxorubicin plus a whole-fruit extract of pomegranate had less pronounced ECG abnormalities and beneficial reductions in heart rate compared to the group that was only given the drug. Chemical analysis of their blood revealed significant decreases in the markers of muscle damage *creatine kinase* (CK-MB) and *lactate dehydrogenase* (LDH). Levels of the beneficial antioxidant *glutathione* rose significantly in treated animals as well. Microscopic examination of heart tissue demonstrated protection against muscle cell damage caused by the drug.

The previous two studies show pomegranate's great promise in preventing atherosclerosis and protecting heart muscle from oxidant damage. A third study, however, illustrates that pomegranate juice can, in fact, slow development of even advanced athero-



What You Need To Know

Endothelial Dysfunction

- Your endothelium is a super-thin layer of cells lining the arteries that control blood flow and pressure.
- But the endothelium's regulatory abilities fade with age, the victims of ever-present oxidant stress and inflammation.
- Poor endothelial health is the primary factor in the development of stiff, unresponsive, atherosclerotic arteries, which leads to heart attacks and strokes.
- Pomegranate extracts contain a host of natural molecules that gently assist your body in restoring its own natural endothelial defense mechanisms.
- Pomegranate extracts protect LDL cholesterol from dangerous oxidation, and enhance activity of the body's antioxidant mechanisms.
- Studies show that pomegranate supplementation improves endothelial health, which may reduce the risk for heart attacks, strokes, and other cardiovascular events.
- Adding an oral superoxide dismutase (SOD) supplement further promotes endothelial defense by bolstering natural antioxidant mechanisms.
- Some members use formulas that provide standardized pomegranate and a special SOD-boosting compound that is protected against degradation in the digestive tract.

sclerosis. Here, scientists used young mice genetically programmed to develop atherosclerosis, treating them with pomegranate juice or placebo for two months.⁵ Pomegranate juice intake led to increased **PON-1** activity, which protects the function of HDL in transporting cholesterol out of arteries and back to the liver for disposal. PON-1 also reduced the amount of oxidized LDL taken up by **31%** in certain inflammatory white blood cells compared with controls.

Remarkably, pomegranate supplementation also increased the rate of cholesterol flow out of those immune cells by **39%**. Compared with placebo-treated mice, supplemented animals had a reduction in the size of plaques in their arteries of **17%**. This is the first study to show so clearly that pomegranate juice supplementation is capable of attenuating the development of even advanced atherosclerosis.⁵

A late 2013 study reveals still more about the potential role of pomegranate juice and extracts in protecting endothelial health. An early stage in the development of atherosclerosis is the accumulation of oxidized LDL in inflammatory cells called *macrophages*. Israeli scientists found that by adding pomegranate juice to such inflammatory cells in combination with a statin drug (*simvastatin*), they could significantly improve the statin's ability to block production of cholesterol in the cells.³³ Moreover, pomegranate increased the statin's ability to diminish oxidative stress. These results reveal the tremendous potential for pomegranate to supplement existing benefits of statins, perhaps allowing lower doses of these synthetic drugs.³³



Superoxide Dismutase For Supercharged Antioxidant Protection

Your body is equipped with many self-defense mechanisms to protect itself from endothelial dysfunction. Among these is a set of antioxidant enzyme systems that can help convert dangerous reactive oxygen species into water and oxygen molecules.³⁹ Among the most prominent of these enzymes is *superoxide dismutase*, or SOD. SOD is found throughout the body, especially in tissues exposed to the most extreme oxidant stresses, but it is used up in the process of fighting those stresses.^{40,41}

Pomegranate supplementation can boost SOD levels as part of its self-healing actions, but you can also supplement directly with SOD.

SOD has been used for years as an injection to benefit people with joint disorders, such as arthritis, and those receiving radiation therapy for cancer.⁴²⁻⁴⁷ Oral supplementation with SOD was not practical until recently, because the enzyme is rapidly digested in the stomach.

A form of the SOD enzyme has been invented that protects it from stomach digestion. This form is known as GliSODin[®], since it contains grain-derived *gliadin* proteins that envelop the SOD and keep it from destruction.⁴⁸

Studies show that oral supplementation with GliSODin[®] significantly elevates circulating antioxidant enzyme activities and increases cellular resistance to oxidative damage.³¹ At the same time, GliSODin[®] prevented oxidative destruction of mitochondria, the cellular energy sources.⁴⁸

In human studies, GliSODin[®] was effective in controlling the intima-media thickness of the carotid artery (the main artery to the brain and an important predictor of cardiovascular risk) and in boosting antioxidant activity and controlling inflammation in athletes during a high-intensity workout.^{49,50} And in mice undergoing restraint stress (a model of the impact of stress on endothelial function), animals treated with GliSODin[®] had better spatial learning memory than control animals, demonstrating the value of controlling oxidant stress throughout the body.⁵¹

Human Studies Support Pomegranate

Pomegranate's ability to mobilize the body's own self-defense forces against endothelial dysfunction are validated by human studies. A dose of **150 mL** of fresh pomegranate juice once daily for two weeks in patients with hypertension demonstrated reductions in both systolic (top number) and diastolic (bottom number) blood pressures. These changes were accompanied by significant decreases in levels of *vascular cell adhesion molecule-1* (VCAM-1), an important endothelial-produced inflammatory protein.^{8,34} These changes after such a short period indicate the potential for long-term benefit of pomegranate supplementation on blood pressure and the inflammation that raises risk for heart attack and stroke.⁸

One common way of determining endothelial function and early atherosclerosis risk is to measure the thickness of inner and middle layers of the arterial wall, where the endothelium and muscle layers lie, respectively.³⁵ This measure, called *intima-media thickness* (IMT) after the names of those layers, is an excellent predictor of future cardiovascular events.³⁶ Increased IMT is associated with vascular risk factors and cardiovascular diseases.³⁶

In a study of pomegranate juice supplementation in a group of people who already had increased IMT, the results showed those who did not consume the pomegranate had a **9% increase** in IMT over one year. Those who did drink pomegranate juice had an average reduction in IMT of up to **30%.**⁹ This was

Enhancing HDL's Ability To Remove Arterial Plaque

Scientists long ago documented the ability of **HDL** (high-density lipoprotein) to remove **cholesterol** affixed to arterial walls and **transport** it to the liver for safe disposal.

This is why it is so important to maintain **HDL** levels above **50 mg/dL** of blood and follow steps **Life Extension®** has outlined to ensure optimal **reverse cholesterol transport** of lipids away from the arterial wall.

HDL does more than just **cleanse** arterial walls of plaque. It also protects **LDL** against **oxidation**, while inhibiting **chronic inflammation**, **vascular adhesion molecules**, and **platelet activation**—factors that can all lead to **atherosclerosis**.

For **HDL** to perform its vital functions, an enzyme called **paraoxonase-1** (**PON-1**) is attached to its surface.

As humans age, **PON-1** levels markedly decline, thereby **reducing** the ability of HDL to protect against **heart attack** and **stroke**. This phenomenon helps explain the onset of **accelerated** atherosclerosis, where within a period of only a few years, an aging person's healthy arteries rapidly **occlude** with plaque.

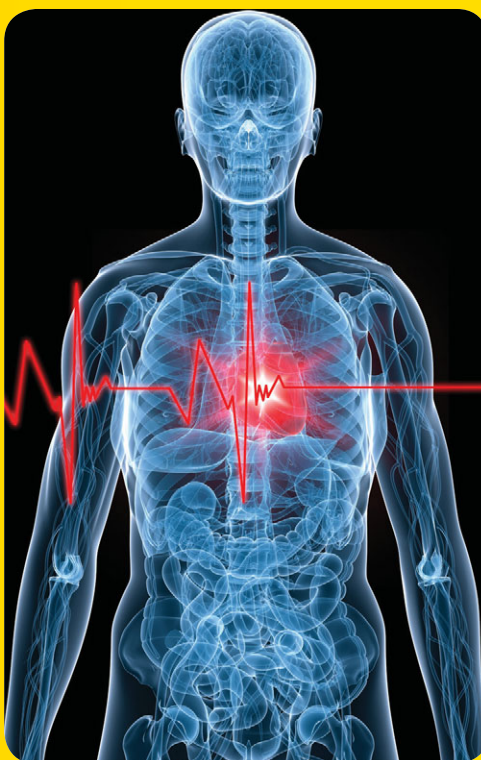
The age-related reduction in **PON-1** may also explain studies showing that **statin drugs** lose their benefit in certain aging populations, since the effects of statins are no longer sufficient to protect against the **multiple factors** involved in the development of **atherosclerosis** in the elderly.⁵²⁻⁵⁴

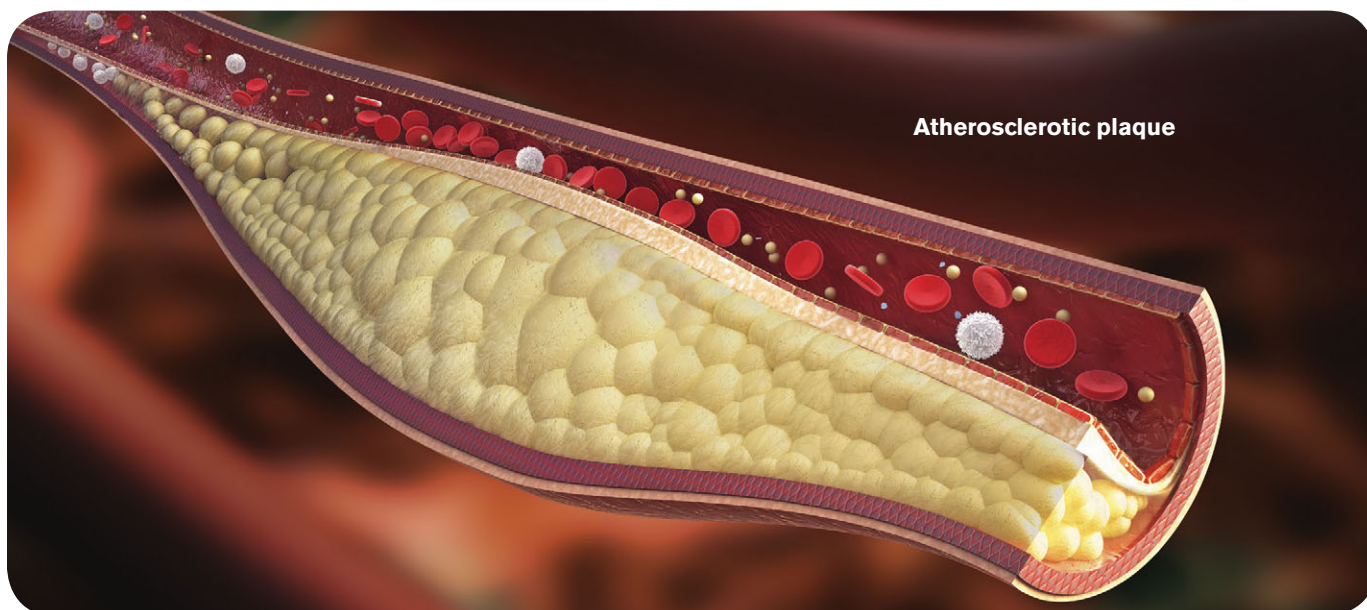
Lipid peroxidation is a **free-radical reaction** that severely damages cell membranes and is implicated in a host of degenerative diseases. **PON-1** blocks destructive **lipid peroxidation** reactions,⁵⁵⁻⁵⁸ making it a crucial **enzyme** for aging humans to maintain.

PON-1 is anchored to the surface of **HDL** and is emerging as a formidable defense against **atherosclerosis**, **diabetes**, **stroke**, **arthritis**, and certain forms of **cancer**.

Pharmaceutical companies would pay a king's ransom for a drug that elevates **PON-1** levels in the body. Fortunately, scientists have discovered

low-cost **natural** methods to elevate **PON-1**, such as consuming **pomegranate**.





accompanied by an **83%** increase in the patients' levels of the beneficial antioxidant enzyme PON-1. Additionally, levels of oxidized LDL dropped by **90%**, further reducing risk of heart attack or stroke, probably related to the fact that total antioxidant status was increased by **130%** after a year of pomegranate supplementation. These beneficial changes were accompanied by a **12% reduction** in systolic blood pressure over one year.⁹

A subsequent study revealed that pomegranate supplementation also reduced progression of IMT thickening in those subjects with the worst oxidative stress and highest triglyceride/lowest HDL groups.¹⁰ These studies provide direct evidence of how pomegranate ramps up the body's protective responses to reduce the risk of cardiovascular disease.

In a remarkable **2014** study, researchers found that adding pomegranate extract to the cholesterol-lowering drug *simvastatin* lowered dangerous production of *reactive oxygen species* in white blood cells from patients with high cholesterol by **30%**, compared with only an **18%** decrease in those on the drug only.³⁷ Similarly, the pomegranate-plus-*simvastatin* group saw a significant **48%** reduction in triglyceride levels, which did not fall in the drug-only group.³⁷

Pomegranate seed oil contains *punicic acid*, a beneficial fatty acid unique to pomegranate. Lab studies have shown it to have powerful anti-atherogenic effects.³⁸ A human study demonstrated that after four weeks of pomegranate seed oil, **400 mg** twice daily in people with high cholesterol, their triglyceride levels fell from **306 mg/dL** to **244 mg/dL**, and their ratios of triglyceride to HDL cholesterol (an important measure of cardiovascular risk) fell from **7.5** to a safer **5.7**.

Supplemented patients also had a beneficial increase of **5 mg/dL** in HDL-cholesterol, which fell by **0.77 mg/dL** in placebo recipients.³⁸

Editor's note: Triglyceride levels should optimally be below **100 mg/dL**. **Fish oil** and the prescription drug **metformin** can sharply lower triglyceride levels.

Summary

Your **endothelium**, the thin layer of cells lining your blood vessels, is the major regulator of blood flow and pressure, communicating with the smooth muscle cells via signaling molecules including **nitric oxide**.

Aging increases oxidant stresses that destroy **nitric oxide**, while simultaneously reducing protective antioxidant mechanisms. This leads to **atherosclerosis**, formerly known as "hardening of the arteries," which in turn, is the major cause of **heart attack** and **stroke**.

Pomegranate extracts act via several different, but complementary mechanisms to restore the body's endothelial defenses, lowering risk factors for a cardiovascular event, and helping to keep arteries supple and youthful. Pomegranate extracts have been shown to promote cholesterol outflow from macrophages, to enhance natural antioxidant systems like superoxide dismutase (SOD), and to directly protect LDL from oxidant damage and resulting inflammation.

A robust form of the antioxidant enzyme SOD has been developed that enhances SOD activity beyond what is provided by pomegranate. Studies show that this product, **GliSODin®**, survives passage through the stomach to boost SOD levels, which may reduce cardiovascular risk by improving endothelial health.⁴⁸ ●

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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Olive Leaf

WITH CELERY SEED EXTRACT

Advanced Vascular Support Formula

Advanced Olive Leaf Vascular Support with Celery Seed Extract is a unique, *dual-action* formulation containing two *bioactive compounds* that support optimal cardiovascular health.

1. **Olive Leaf extract** contains **oleuropein**, a natural compound that supports healthy blood pressure already within the normal range.

Researchers using **1,000 mg** per day of **olive leaf extract** in a controlled clinical trial documented an average **11 mm Hg** decline in systolic readings and a **4.8 mm Hg** drop in diastolic readings within eight weeks!¹

2. **Celery seed extract** contains **3-n-butylphthalide (3nB)**, which supports a healthy inflammatory response that is critical to maintaining a healthy circulatory system.² **Celery seed** also helps minimize the flow of calcium into the muscle cells lining blood vessels, promoting healthy blood pressure already within the normal range.^{3,4}

In a controlled clinical trial, researchers using an equivalent amount of active compounds as found in this **celery seed extract** documented an average **8.2 mm Hg** decline in systolic readings and **8.5 mm Hg** drop in diastolic readings—in just six weeks!⁵

While **olive leaf** and **celery seed extracts** show impressive support individually, **Advanced Olive Leaf Vascular Support with Celery Seed Extract** combines two bioactive compounds to provide **dual-action** vascular support.



The suggested daily dose of **two vegetarian capsules** of **Advanced Olive Leaf Vascular Support with Celery Seed Extract** provides:

Benolea® Olive extract (leaf)	1,000 mg
[standardized to 16% oleuropein (160 mg)]	
Celery3nB™ Celery seed extract	300 mg
[standardized to 42.5% phthalides (butylphthalide and sedanolide (127.5 mg)]	

A bottle of 60 vegetarian capsules of **Advanced Olive Leaf Vascular Support with Celery Seed Extract** retails for \$36. If a member buys four bottles, the price is reduced to **\$24** per bottle.

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Benolea® is a registered trademark of Frutarom Netherlands B.V.
Celery3nB™ is a trademark of Anderson Global Group, LLC.

To order **Advanced Olive Leaf Vascular Support with Celery Seed Extract**, 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.

COMPREHENSIVE VITAMIN K FORMULA



Item # 01724

To Support Arterial Health And Bone Support

There are **three** forms of **vitamin K** that are key factors to promoting arterial health and bone support.¹⁻⁸

Life Extension® Super K with Advanced K2 Complex provides this dynamic trio of **vitamin K1**, **vitamin K2 (MK-4)**, and **vitamin K2 (MK-7)** in one softgel.

Vitamin K1 is the form of vitamin K found in green vegetables, but only a fraction is absorbed into the bloodstream. Supplementation ensures ample K1 blood levels.

Vitamin K2 can be found in meats, dairy, and egg yolks. If you are avoiding these foods for health reasons, it is *essential* to ingest a K2 supplement. **MK-4** is the most rapidly absorbed form of K2, while **MK-7** boasts a very long half-life in the body. This makes both forms the perfect complement to any vitamin K regimen.⁹

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

Just one daily softgel of Super K formula provides:

Vitamin K2 (MK-7)	200 mcg
Vitamin K2 (MK-4)	1,000 mcg
Vitamin K1	1,000 mcg

The retail price for a bottle containing **90 softgels** is \$30. If a member buys four bottles, the price is reduced to **\$20.25 per bottle**. Each bottle lasts for three months.

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

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

ENHANCE HEART HEALTH

SUPPORT ENDOTHELIAL FUNCTION

Optimal heart health, including circulation, depends on the functioning of our **endothelium**—the thin layer of cells that lines the heart and its blood vessels.

Research has shown that **pomegranate** and **superoxide dismutase** can help maintain healthy endothelial function and circulation.

POMEGRANATE POWER—THE NEXT GENERATION

Endothelial Defense™ provides *Full-Spectrum Pomegranate™* with active constituents of seed, flower, and fruit along with a proprietary **superoxide dismutase (SOD)** that survives stomach acids for absorption into the bloodstream.¹⁻⁸

The unique blend of **pomegranate** polyphenols in **Endothelial Defense™** promotes youthful lipid and glucose metabolism while regulating inflammatory factors.⁹

A bottle containing 60 softgels of **Endothelial Defense™ with Full-Spectrum Pomegranate™** retails for **\$56**. If a member buys four bottles, the price is reduced to **\$39** per bottle. Contains soybeans and wheat.

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POMELLA® Extract is covered under U.S. Patent 7,638,640. POMELLA® Extract is a registered trademark of Verdure Sciences, Inc. Isocell SA, France is the owner of US Patents Nos. 6,045,809 and 6,426,068B1 and the registered trademark of GliSODin®.



A daily serving of two softgels of Endothelial Defense™ with Full-Spectrum Pomegranate™ contains:

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

To Order Endothelial Defense™ with Full-Spectrum Pomegranate™, call 1-800-544-4440 or visit www.LifeExtension.com

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

THE 2014 *GENETICS OF AGING AND LONGEVITY* CONFERENCE Held in Sochi, Russia

The 2014 Genetics of Aging and Longevity conference was held in Sochi, Russia, shortly after the 2014 Winter Olympics had been held in that city. The conference attracted many of the world's leading researchers whose work is devoted to fighting the **disease** known as **aging**.





Inflammaging

Claudio Franceschi, MD, (Professor, University of Bologna, Bologna, Italy) is noteworthy in aging research for promoting the inflammation theory of aging and for coining the term “inflammaging.” Acute inflammation can repair injured tissues and eliminate attacking microorganisms. But aging is too often characterized by **chronic inflammation** that is damaging rather than beneficial.



In his presentation, Dr. Franceschi provided evidence for the use of inflammation symptoms as a means of determining biological age, as distinct from chronological age: a **biomarker of aging**. A biomarker of aging would be useful for determining if drugs or other interventions intended to slow aging are effective.¹

Dr. Franceschi has conducted many studies on people of many ages, but particularly has studied people who have lived extremely long lives. He and others have found that **glycosylation** (linkage of sugars to proteins) is a biomarker of aging that contributes to inflammation.¹⁻³ Other biomarkers of aging that he has found are epigenetic changes (certain changes in gene expression)⁴ and changes in amino acids and blood lipids.^{5,6} Concerning the latter, Dr. Franceschi cited a study showing that a vegetarian, high-fiber diet can reduce cardiovascular disease.⁷



Frailty Index

Arnold Mitnitski, PhD, (Professor, Dalhousie University, Halifax, Canada) has spent much of his career seeking to study and validate a quantitative measure similar to biological age: a **frailty index**. A high frailty index would indicate a high probability of increasing health problems and a high probability of becoming institutionalized.⁸



Although people are living longer, their health span has not increased to the same extent. In Europe, men spend about one-fifth and women spend about one-quarter of their lives in a state of disability.⁹ In the United States, **95%** of Medicare costs are spent treating persons with two or more chronic diseases.¹⁰

Dr. Mitnitski's frailty index is a quantified composite of scores related to strength, mobility, cognition, nutrition, sleep, emotion, etc.¹¹ He found that the first activities of daily living to become impaired with increasing frailty are bathing, cooking, and managing medication.¹² He also found that for any frailty index value, the mortality rate among men is higher than the mortality rate among women.¹¹ Women tolerate stress resulting from health deficits better than men. Long-lived males are those who do not accumulate health deficits.¹³

Low Temperature Organ Preservation

Gregory Fahy, PhD, (Vice President and Chief Scientific Officer, 21st Century Medicine, Fontana, California) is one of the world's leading authorities on preserving organs at extremely low temperatures. Many people who are otherwise healthy die because of the failure of a single bodily organ—most often the heart, lung, kidney, or liver. Dr. Fahy believes that replacement of failed cells, tissues, or organs could cause over **30%** of all deaths in the United



States to be substantially postponed—increasing the chance of living to age 90 by more than **10 times**.¹⁴

Unfortunately, the supply of transplantable organs is much less than the demand. There are long waiting lists of potential organ transplant recipients, most of whom die before an organ becomes available. In the United States, it is estimated that only about **2%** of the potentially needed organ transplants are carried out.¹⁴ Even when organs are transplanted, they may be poorly matched to the recipient, requiring immune suppression measures that decrease the quality and quantity of life of the recipient.¹⁵

Dr. Fahy mentioned progress in tissue engineering, which should result in creation of organs from recipient stem cells.¹⁶ This would eliminate problems with immune system compatibility. Transplantable organs are highly perishable—having a four- to 48-hour storage limit.¹⁷

Many organs deteriorate too much before they can be used. Dr. Fahy's work is devoted to developing means to preserve transplantable organs for decades (if not centuries) by cooling to extremely low temperatures.

Freezing normally occurs when tissues or organs become too cold, but since 1984, Dr. Fahy has pioneered the use of **cryoprotectant** (medical-grade antifreeze) solutions that result in **vitrification** (glass) rather than freezing (ice).¹⁸ His first success was vitrification of mouse embryos.¹⁹ Unfortunately, many cryoprotectants are too toxic to be of use for preserving animal tissues or organs.²⁰

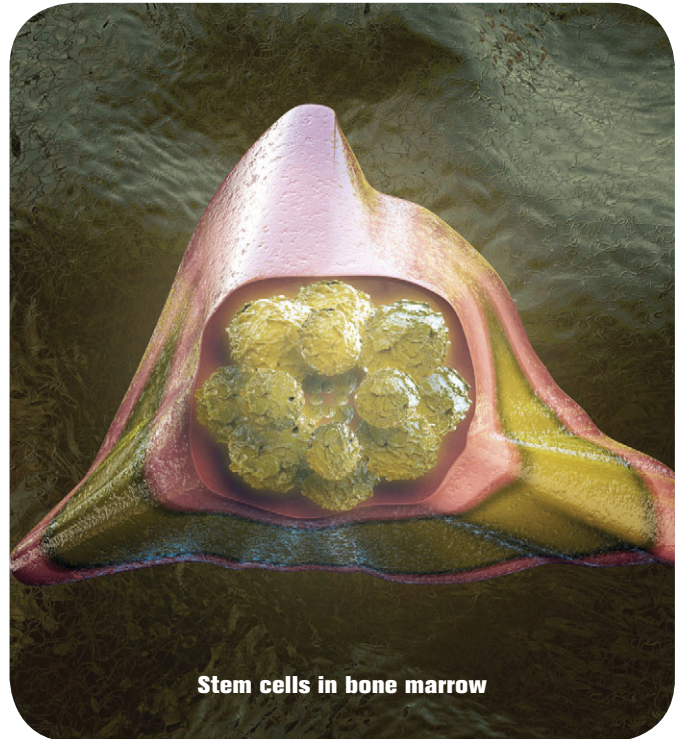
After nearly 20 years of research, Dr. Fahy and his colleagues were able to develop a vitrifying cryoprotectant solution that is nontoxic enough for preserving large organs.²¹ Using his new cryoprotectant solution, Dr. Fahy's team was able to cool a rabbit kidney to -130°C (-200°F), rewarm the kidney, and transplant the kidney back into the rabbit such that the rabbit was able to survive with only the rewarmed kidney.²² The kidney was not completely undamaged, however. Blood flow rates in the inner part of the kidney are much less than in the outer part, which means there will be much less saturation of vitrifying cryoprotectant into the tissue of the inner kidney when the kidney is perfused. Also, ice can form more readily on rewarming than upon cooling.²³ Dr. Fahy described methods he and his team have developed to overcome these problems, such that he is hopeful that they can demonstrate more successful cryopreservation of kidneys in the near future. The **Life Extension Foundation**® has funded much of Dr. Fahy's research.

Organs From Stem Cells

Shay Soker, PhD, (Professor, Wake Forest School of Medicine, Winston-Salem, North Carolina) is attempting to create transplantable artificial organs from stem cells. Creating a scaffold for the stem cells is much less difficult than creating a network of blood vessels within the scaffold. He has nonetheless had some preliminary success in experiments with animal livers.^{24,25}



About one-fifth of human kidneys obtained for transplant become unusable and are disposed of.²⁶



Dr. Soker has experimented with removing cells from pig kidneys to create a scaffold for stem cells. The pig kidneys from which he had removed the pig cells retained functional blood vessels. He hopes that this procedure can be applied to discarded human kidneys because his process removes antigens, thereby reducing problems of immune system incompatibility that usually accompanies transplantation.²⁶ Because of the immune system suppressant drugs that kidney transplant recipients must take, those patients are vulnerable to infection, and **40%** of those who took the immune system suppressants for 20 years developed cancer.²⁷

Dr. Soker has also removed cells from pig pancreases to obtain a pancreas scaffold that can be used for seeding with stem cells. He is hopeful that similar decellularized pig pancreases could be transplanted into human diabetes patients.²⁸ In addition, Dr. Soker has been working to develop a completely artificial cornea—having a scaffold of gelatin, which would eliminate the need to obtain corneas from human cadavers.²⁹

Asymmetric Cell Division

Mikolaj Ogradnik (Graduate student, Newcastle University, United Kingdom) has been studying asymmetric cell division (where cells divide without both sides being the same) as a means of rejuvenation. Single-celled organisms like yeast and bacteria can

rejuvenate when damaged proteins go into one of the new cells created by cell division, allowing the other cell to be rejuvenated.³⁰ More recently it has been shown that stem cells in fruit flies are rejuvenated by a similar method.³¹ Ogradnik was able to determine that this also occurs in mammalian cells.³² Gaining control of this process could facilitate tissue rejuvenation in humans.

Molecular Mechanisms Of Hormesis

Alexey Moskalev, DSc, (Professor, Syktyvkar State University, Syktyvkar, Russia) was one of the conference organizers. His research has been focused on studying the molecular basis of **hormesis**: The fact that a small amount of stress can lead to greater resistance to stress in the future.³³ For example, a person who undergoes the stress of exercise becomes more generally resistant to harmful effects of many forms of stress.³⁴

Dr. Moskalev has shown that low-dose radiation produces a hormesis effect in fruit flies. He has studied the molecular basis of this hormesis, which includes induction of heat shock proteins and improved DNA repair.³⁵ He believes that a stress-induced hormesis response can result in changes in the way genes are expressed, leading to improved likelihood of longevity.³⁶

Databases And Computation For Aging Research

Joao Pedro de Magalhães, PhD, (Senior Lecturer/Associate Professor, University of Liverpool, Liverpool, United Kingdom) is a leading proponent of the use of massive amounts of data and computational resources to understand and prevent aging.^{37,38} He described the Human Ageing Genome Resources website (www.genomics.senescence.info) he and his colleagues created, which is a collection of databases and other resources to assist those researching aging. GenAge is a database of genes related to aging; AnAge is a database of other data related to aging from thousands of species; GenDR is a database of genes associated with calorie restriction; and LongevityMap is a database of human genetic variants associated with longevity.^{39,40}

Dr. de Magalhães has also created a website called www.senescence.info, which has a wide variety of information related to aging, including suggested books and book reviews, advice to students regarding aging research, a Who's Who in gerontology, an anti-aging medicine page, and much more.

Dr. de Magalhães not only collects data, he analyzes it. In one study, he found 56 genes that become increasingly expressed with age, and 17 genes that are decreasingly expressed.⁴¹ He believes that many of the genes that are increasingly expressed with age are an adaptation to aging deficits rather than a cause of aging—such as genes that produce enzymes to degrade the increasing number of malformed proteins that accumulate with age.⁴¹ On the other hand, genes that are less expressed with age are more likely to actually cause aging—such as genes that produce components of the energy-producing mitochondria of cells.⁴¹

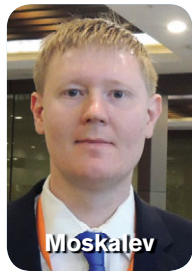
Dr. de Magalhães received a grant from the **Life Extension Foundation®** that enabled him to sequence the genome of the bowhead whale. The bowhead whale is the longest-living mammal, having a life span of 200 years or more.⁴²

Human Artificial Chromosomes

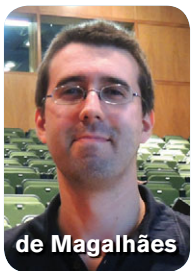
Ksenia Yuryeva, MD, (Research Fellow, Human Stem Cells Institute, Moscow, Russia) has been working on the development of human artificial chromosomes as a means of gene therapy. Gene therapy attempts to correct diseases due to inherited genetic defects.

Gene therapy most often uses viruses to transport desired genes into the cell nucleus of the subject being treated. There are two problems with this approach. First, viruses are unable to carry very much genetic material due to their small size.^{43,44} Second, using a virus to transport a gene into the DNA of the subject's chromosomes reduces control over where in the target chromosome the gene would be inserted. Insertion in the wrong location could cause cancer or have other undesirable consequences.⁴³

The use of human artificial chromosomes overcomes both of these problems by providing a new chromosome in addition to the ones that already exist in the cells of the subject. Dr. Yuryeva reported on the use of artificial human chromosomes to deliver large genes to correct muscular dystrophy in mice that have the disease due to genetic defects.⁴⁵ Human artificial chromosomes have also been used to create induced



Moskalev



de Magalhães



Yuryeva

pluripotent stem cells.^{46,47} The development of human artificial chromosomes creates the possibility of easily delivering to everyone many beneficial genes that could greatly increase health and longevity.

Roundtable Discussions

In addition to the formal presentations, this conference also held roundtable discussions. This was literally a round table of about 30 participants, with an additional 20 or more participants sitting to the side. I will attempt to summarize some of the comments made in these discussions without identifying individual commentators.

Theories Of Aging

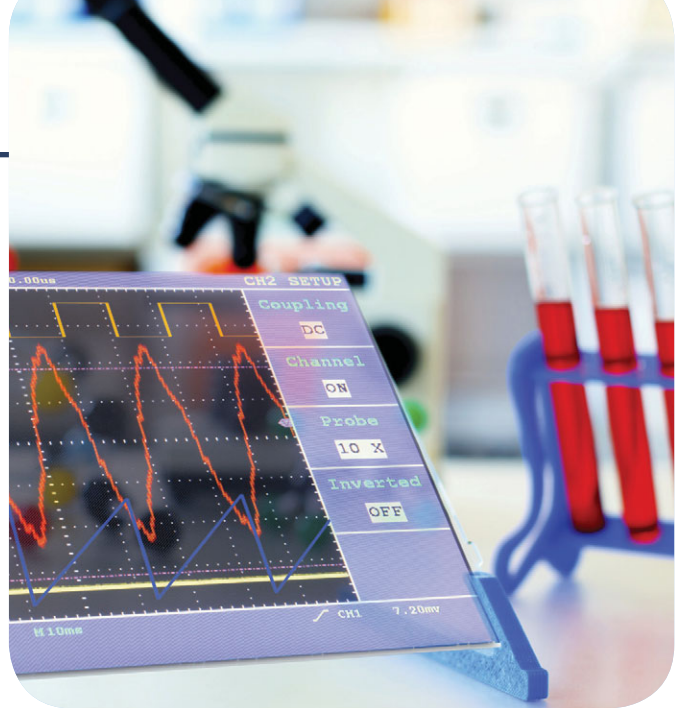
Not surprisingly, there was much discussion about theories of aging. Aging in animals isn't simply a matter of wear-and-tear as with an automobile. Animals, unlike cars, have built-in repair mechanisms, such as DNA repair enzymes or the ability to degrade defective proteins. Aging is as much a matter of defective repair as of wear-and-tear.

One researcher suggested that aging isn't only a loss of function, it is a loss of control, such that some functions become excessive. The chronic inflammation of old age is an example of a beneficial biological response that has gone out of control. Another researcher said that chronic inflammation is due to an increase in garbage in cells and tissues. The inflammatory response to the garbage results in the creation of even more garbage.

Another researcher noted that aging is drying because babies are soft and wet, whereas the elderly are hard and dry. Someone else commented that aging is unpleasant and unattractive, and that anyone claiming otherwise is just attempting to rationalize out of despair. Someone else said that chronic diseases drive the aging process as much as aging results in chronic diseases.

Personalized Medicine

There was also a roundtable on personalized medicine. The phrase "personalized medicine" has recently come to mean genomic information to diagnose and treat patients, as well as to assess probable future risks of disease.⁴⁸ A physician complained that geneticists have hijacked the phrase "personalized medicine" because for him treating his patients has always been a very personal matter. A researcher said that personalized medicine should include not just genetic information, but blood tests along with signs and symptoms.



There was a discussion of the November 2013 letter from the Food and Drug Administration (FDA) to 23andMe (23andMe.com) telling that company to stop marketing their product until receiving FDA approval to do so. 23andMe was providing genetic and health information on the basis of DNA analysis of saliva samples.⁴⁹ Someone said that the FDA's action is contrary to the "My Body, My Rights" campaign by Amnesty International, which states everyone has a right to unrestricted access to information regarding their own health. On this basis, governmental and medical paternalism is interfering with those rights.

The FDA's position is that the 23andMe tests had not been adequately validated, and that the FDA must protect consumers from misinformation that could damage their health.⁴⁹ There was also concern that consumers might misuse information they were receiving in the absence of professional help with medical decisions.⁵⁰ Questions were raised about what people should and should not be told, but no agreement was reached.

"Quantified Self-Improvement" was mentioned in reference to the growing number of health-monitoring devices on the market that are providing increasing amounts of personal health and activity data to consumers, as well as in reference to the fact that there is no stopping consumers from attempting self-diagnosis and treatment on the basis of information they find on the Internet. ●

If you have any questions on the scientific content
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Phospholipids	160 mg
Pygeum extract (bark)	100 mg
Pumpkin seed oil [providing 170 mg total fatty acids]	200 mg
AprèsFlex® Indian frankincense (<i>Boswellia serrata</i>) extract (gum resin) [providing 14 mg AKBA ¹]	70 mg
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¹ 3-O-acetyl-11-keto-β-boswellic acid

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BY ROBERT GOLDFADEN AND GARY GOLDFADEN, MD

Rejuvenate Aging Skin On The Hands

The skin on the top of your hands can reveal your true age. Yet, it often remains an afterthought in most skin-care routines.

Over time, daily activities and unprotected exposure to sunlight and environmental factors wreak havoc on the thin skin on the hands. The resulting damage manifests itself as age spots, wrinkles, dryness, and crepiness that make you look older than you are.¹

Scientists have formulated innovative ingredients that address the underlying causes of these aforementioned tell-tale signs of aging. These topical compounds have been combined in a unique serum to provide an effective, comprehensive approach that can potentially turn back the “hands of time.”



Fade Unsightly Pigmentation

Aging hands often display the cumulative effects of sun exposure, such as hyperpigmentation. Sun-damaged skin stimulates the overproduction of the pigment *melanin*, which leads to discoloration and age spots.² The good news is that two ingredients, **N-acetyl glucosamine** and **retinol**, are clinically proven to defend against the relentless assault of UV rays and help fade unwanted pigmentation.^{3,4}

While glucosamine is well-known for its joint-protective properties, it has gained attention for its ability to inhibit a key processing step in melanin formation.⁵ Since glucosamine is unstable in topical preparations, scientists have turned to a more stable form, **N-acetyl glucosamine**, for human research. In a study involving 50 women aged 25 to 55, topical N-acetyl glucosamine was shown to be superior to a placebo in decreasing hyperpigmentation after eight weeks as assessed by an image analysis technique. The researchers also noted the treatment was well-tolerated.³

Another compound that has shown promise in protecting the skin on the top of the hands is a form of vitamin A called **retinol**. In humans, topical retinol was found to promptly start the repair process of aged skin by reducing matrix metalloproteinases and enhancing collagen synthesis in just seven days.⁴

Longer-term studies are equally impressive. In one study, participants using topical retinol for eight to 12 weeks improved skin brightness and elasticity while decreasing skin roughness compared to base-

line. Additionally, researchers reported that **80%** of the participants experienced marked reductions in hyperpigmentation.⁶

Based on these studies, it is clear that N-acetyl glucosamine and retinol effectively repair sun-damaged skin and lighten hyperpigmented spots to give aging hands a youthful appearance.

Restore Volume And Youthful Plumpness

As we get older, the loss of subcutaneous fat on the top of the hands gives way to a skeletal-like appearance, with increased visibility of tendons and veins. Although procedures exist for transferring fat from one part of the body to the hand, they are not an option for many due to high cost.⁷ Scientists have discovered that two plant-based extracts, **sarsasapogenin** and **macelignan**, work synergistically to favorably target fat cell (*adipocyte*) development in aging hands.

Topical Compounds For Younger-Looking Hands

- N-acetyl glucosamine modulates melanin production to reduce hyperpigmentation and lighten age spots.
- Retinol stimulates collagen synthesis and prevents its degradation to promptly repair sun-damaged skin.
- Sarsasapogenin and macelignan promote fat cell formation in aging hands to restore fullness and plumpness.
- Macadamia oil contains palmitoleic acid, squalene, and vitamin E to hydrate the skin and retain moisture for reducing dryness.
- Acetyl octapeptide-3 attenuates muscle contraction to smooth out skin crepiness and wrinkling on the top of the hands.



Sarsasapogenin is a compound isolated from the roots of the plant *Anemarrhena asphodeloides*. It has a long history of use in traditional Chinese medicine for combating depression and diabetes.^{8,9} In the laboratory, researchers found that sarsasapogenin stimulated the differentiation of adipocytes (fat cells) by **201%** and proliferation by nearly **32%**.¹⁰ This is important in restoring structural support for tissues in the hands.

Macelignan, a polyphenolic compound from nutmeg seeds, has been shown to switch on genes that traffic fatty acids into these newly formed adipocytes for storage.^{11,12} This mechanism increased adipose tissue volume by an average of **12%** compared to a placebo in 30 human volunteers after 28 days.¹³

Together, sarsasapogenin and macelignan promote fat accumulation in newly formed adipocytes. The topical application of these two compounds may restore the fullness and plumpness usually seen in youthful hands.

Hydrate Dry Skin

The top of the hands is a common site for dry and flaky skin. One solution for this condition is macadamia oil, which contains a high concentration of hard-to-find **palmitoleic acid**.¹⁴ This monounsaturated fatty acid is a component of sebum, an oily substance secreted by the sebaceous glands that nourishes and hydrates the skin.¹⁵ Macadamia oil also contains **squalene**, a natural emollient,^{16,17} as well as the potent polyphenol vitamin E, which plays a crucial role in retaining moisture to reduce dryness.^{18,19}

Smooth Out Wrinkles And Crepiness

Peptides, derived from biological molecules, are quickly becoming mainstay ingredients in skin-care products due to their ability to penetrate more deeply into the layers of the skin where they exert a wide range of biological effects.²⁰ Among peptides, **acetyl octapeptide-3** stands out for resolving the issue of wrinkles and crepiness on the top of the hands.

Excessive muscle contractions is one mechanism leading to the formation of wrinkles.²¹ Acetyl octapeptide-3 works by interfering with the function of the SNARE protein complex, which triggers the release of neurotransmitters that signal muscles to contract.²¹ By modulating muscle contraction, this unique peptide smooths out crepiness and diminishes the appearance of wrinkles.

In a clinical trial with 17 volunteers, daily application of acetyl octapeptide-3 for 28 days reduced wrinkle depth by up to **63%**.²²

MACADAMIA OIL



What You Need To Know

Minimize Skin Aging On The Top Of The Hands

- The skin on the top of the hands is an afterthought in most skin-care regimens, but it can actually give away your true age.
- The thin skin on the top of the hands is highly susceptible to the damaging effects of excess sunlight and environmental factors, leading to the formation of age spots, wrinkles, dryness, and crepiness.
- Innovative topical compounds, including N-acetyl glucosamine, retinol, sarsasapogenin, macelignan, and acetyl octapeptide-3 work through multiple mechanisms to relieve the aforementioned tell-tale signs of aging often seen on the top of the hands.

Summary

Scientists have formulated a new serum with all these ingredients to repair skin damage seen on the top of the hands. These topical compounds, including N-acetyl glucosamine, retinol, sarsapogenin, macelignan, macadamia oil, and acetyl octapeptide-3, have been scientifically proven to lighten age spots, reduce dryness and crepiness, and diminish wrinkles, all of which promote the appearance of younger-looking hands. ●

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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EFFERVESCENT VITAMIN C- MAGNESIUM CRYSTALS

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Effervescent Vitamin C-Magnesium Crystals is safe for up to three times per week, since it contains only nutrients that can provide other benefits.

Effervescent Vitamin C-Magnesium Crystals is not a fiber—so it never creates more fecal bulk than you can easily evacuate.^{14,15}

Occasional constipation is one of the most frequent gastrointestinal complaints in the United States, particularly among women and the elderly.¹ To address this issue, Life Extension® offers a dose-adjustable nutritional solution—**Effervescent Vitamin C-Magnesium Crystals**—to provide immediate **relief from occasional constipation**.

THE PROBLEM

A series of rhythmic muscle contractions move food through the digestive tract.² But highly processed foods and a lack of quality nutrition can occasionally result in normal but temporarily ineffective movement of waste through the colon.

NUTRITIONAL SUPPORT

Vitamin C is an antioxidant that scavenges free radicals in the body and protects tissues from oxidative stress.³⁻⁵ Vitamin C is a vital cofactor to the formation of collagen, the connective tissue that supports arterial walls, skin, bones, and teeth.^{4,5}

Magnesium is a cofactor in hundreds of enzymatic processes within cells. It helps maintain healthy blood pressure levels already within normal range, improves the metabolic profile and, beneficially impacts insulin resistance and inflammation. Research shows many Americans do *not* obtain adequate magnesium in their diets.⁶⁻¹¹

Effervescent Vitamin C-Magnesium Crystals has been developed to help provide relief from occasional constipation.

Effervescent Vitamin C-Magnesium Crystals can be used in varying doses depending on individual need. The suggested starting dose should be one (1) level teaspoon of **Effervescent Vitamin C-Magnesium Crystals**, taken on an **empty stomach**, mixed in 8 ounces of water. Follow immediately with drinking 8 additional ounces of water.

Each level teaspoon (approx 6 grams) provides:

- **4,500 mg** of vitamin C (as ascorbic acid)
- **4 mg** of vitamin B6 (as pyridoxine hydrochloride) and
- **250 mg** of magnesium (as magnesium carbonate)

Some people will need to take one teaspoon of **Effervescent Vitamin C-Magnesium Crystals** on an empty stomach up to three times a week. Always follow by drinking an additional 8 ounces of water.

A bottle of 180 grams of Life Extension® **Effervescent Vitamin C-Magnesium Crystals** retails for \$20. If a member buys four bottles, the price is reduced to only **\$13.50 per bottle**.



Item #01736

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Anti-Aging HAND CREAM

Over time, daily activities and unprotected exposure to sunlight and environmental factors wreak havoc on the thin skin on the hands. The damage manifests as unsightly age spots, wrinkles, dryness, and crepiness that make people look older than they are.¹

Cosmesis Advanced Peptide Hand Therapy is a new formulation containing **six** natural compounds that help rejuvenate the appearance of aging hands by *lightening dark spots, minimizing the crepe-like look of wrinkles, hydrating the skin, and correcting skin tone.*

N-ACETYL GLUCOSAMINE AND RETINOL

Aging-increased pigment production causes age spots, discolored patches, and uneven skin tone. **N-acetyl glucosamine** slows down pigment production, and was clinically shown to even out skin tone and soften brown spots in just eight weeks.² **Retinol**, a form of vitamin A, was demonstrated to support skin health after sun exposure.³

SARSASAPOGENIN AND MACELIGNAN

With age, hands lose subcutaneous fat, causing a skeletal-like appearance and increasingly visible tendons and veins. The plant compound **sarsasapogenin** was found to promote factors involved in adipocyte differentiation by **201%**⁴—a process supportive of the formation of subcutaneous adipose tissue and plumping of the skin. The nutmeg compound **macelignan** was shown to increase lipid storage within adipocytes, indicating support for plumping of the skin and minimizing wrinkles.⁵

MACADAMIA OIL

Aging hands are commonly dry and flaky. **Macadamia oil** is among the richest sources of palmitoleic acid⁶—a key component of sebum that supports hydration⁷—enabling it to moisturize and soften dry, mature skin. It also provides natural moisturizers squalene and vitamin E.⁸⁻¹⁰

ACETYL OCTAPEPTIDE-3

Years of hand muscle contractions result in wrinkles. By modulating the neuronal excitability behind muscle contractions, **acetyl octapeptide-3** was shown to reduce wrinkle depth up to **63%**.¹¹

Cosmesis Advanced Peptide Hand Therapy incorporates all six of these compounds into one synergistic formula that noticeably rejuvenates the appearance of aging hands.

A four-ounce bottle of **Cosmesis Advanced Peptide Hand Therapy** retails for \$46. If a member buys two bottles, the price is reduced to **\$29.25** per bottle.



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Recently, scientists have identified one of the main culprits responsible for premature aging: rogue protein galectin-3. When galectin-3 is elevated due to aberrant cell growth, tissue injury, aging, or other factors, it stimulates an imbalanced inflammation response and triggers a cascade of consequences for cellular and cardiovascular function, joint and skin health, and more.^{1-3*}

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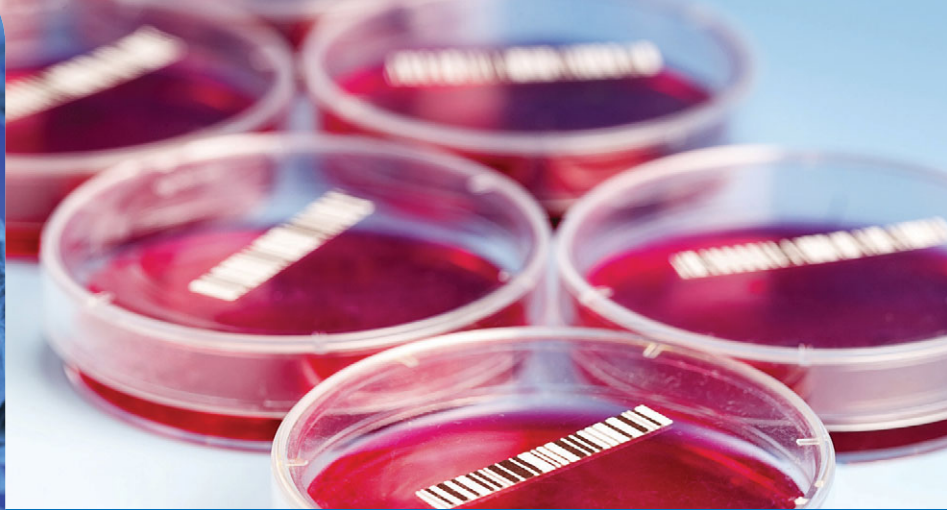
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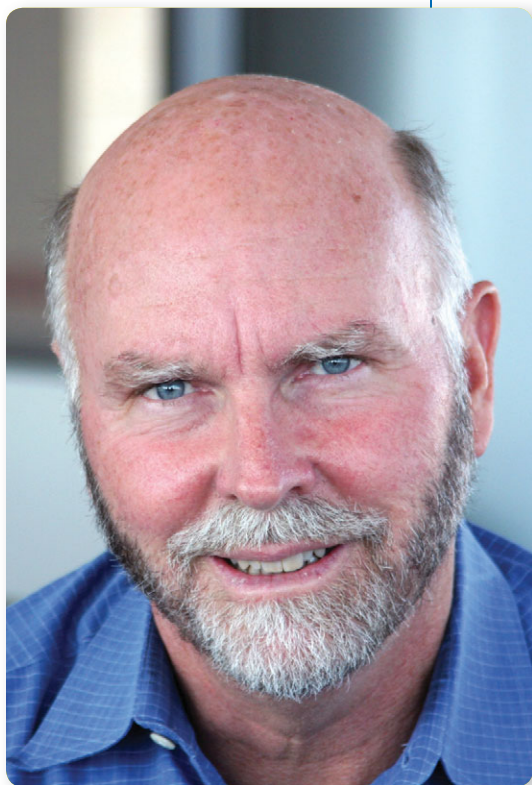
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WELLNESS PROFILE

BY MICHAEL DOWNEY

Massive Database Planned To Crack The Secrets Of Aging



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J. CRAIG VENTER, PhD

Billionaire scientist J. Craig Venter has launched an ambitious and expensive commercial venture to amass and electronically analyze the medical, genomic, microbiomic, and metabolic data of 40,000 individuals every year. And eventually, 100,000 individuals a year. The goal? To identify biologically relevant patterns in these interconnected data—patterns that may eventually reveal different ways to block the complex interactions that trigger age-related diseases and even aging itself.

Revealing The Origins Of Disease And Death

J. Craig Venter, PhD, is best known as the biologist who, with just a fraction of the funding and in far less time, tied the United States government's **Human Genome Project** in mapping the world's first whole genome sequence in the early 2000s. More recently, he laid claim to creating what has been called the first self-replicating synthetic cell.

Thirteen years ago, Venter's own genome was sequenced over a nine-month period at a cost of **\$100 million**. But for the same total amount of money, it is now possible to map the genomes of 100,000 individuals. This astonishing accomplishment—getting the cost of a single genome down to the **\$1,000** price point—has been the Holy Grail of medical research, considered the tipping point in the pace of genetic discovery. Why?

Scientists realize that they will need to sequence hundreds of thousands, maybe even millions, of individuals to truly understand how genes influence disease and aging—so that more specifically targeted drugs, treatments, and preventive strategies can be developed. In order to make such massive sequencing studies financially feasible, \$1,000 genomes are absolutely essential.

Venter's new company, **Human Longevity, Inc.**, is building the largest human genome-sequencing database in the world. By sequencing the genomes of people who are healthy, sick, young, and old, the database is expected to eventually offer insights into the aging process. But even at \$1,000 a genome, that's no easy task.

The reason is that in order to achieve this price point, you need a powerful DNA-scanning sequencer known as the HiSeq X. Each unit costs \$1 million, and the company that makes them, Illumina, won't sell you fewer than 10 of them.

So Human Longevity, Inc. bought 20.

To attain the \$1,000 genome cost, you also need to keep these machines running constantly, which requires a constant volume of human samples to sequence. To that end, Venter has set up a collaborative program with the Moores Cancer Center. Soon, the

genome of every single patient passing through the center—along with the genome of the patient's tumor—will be sequenced at Human Longevity on an opt-out basis. The data will be stored and used to find new therapeutic targets, pathways, and biomarkers. Even this supply of data will only make a dent in the 40,000-genome annual capacity of Venter's new enterprise, and he is actively seeking new individuals for genetic material.

Eventually, the project may be mapping the genomes of 100,000 people a year. How long can the secrets behind cancer's origins continue to hide from this ongoing accumulation of DNA analyses?

Personalized Prevention Of The Diseases Of Aging

Human Longevity, Inc. considers cancer the most likely area of genomic research to deliver immediately actionable results.

"Today, people with cancer must wage war on two fronts, battling their disease and fighting for advanced treatments," said Human Longevity co-founder and stem cell pioneer, Robert Hariri, MD, PhD, at a recent conference. "The oncology field is changing rapidly. Every tumor is different and every patient is different. Human Longevity believes the time is now to incorporate every individual's genetic code as the starting point of care and therapeutic development."

Cancer is just an initial focus. With preliminary funding of \$70 million in hand, mostly from wealthy investors, Human Longevity plans to also concentrate on diabetes, heart disease, dementia, and liver disease—

diseases that the company views as, "some of the most difficult to treat, let alone cure, [the] diseases affecting people as they age."

To jump-start this lofty mission, Venter has hired a panel of scientific luminaries, a diverse crew of experts in genomics, stem cells, cancer, translational medicine, the microbiome, and emerging technologies. He plans to collaborate with companies in the genetics and stem cell arena, with large hospital systems and clinics that will utilize his firm's services, with pharmaceutical companies that can discover and develop new therapeutics, and with academics.

This exciting genome-mapping venture seems extremely ambitious by itself. But it's just one leg of Venter's broader strategic plan.

Matching Genomes, Metabolomes, And Microbiomes To Disease

In addition to sequencing the genomes of an anticipated 40,000 individuals a year, Human Longevity will use mass spectrometry to document individuals' metabolomes—the constantly changing array of small molecules of biochemicals and lipids circulating throughout participants' bodies.

While genome sequencing can reveal information about inherited risk of disease or hint at how long a person will live, metabolic data can clarify how environment, diet, and other factors affect an individual's health and life span. Metabolic data also help researchers interpret genomic information. Pinpointing a particular gene as important in a disease or a normal cellular process does not, in itself, clarify what

that gene actually does. But if a particular metabolite is found to correlate with a particular genetic signal, then researchers can zero in on the function of the gene. The relevance of blood biochemistry is underscored by the fact these metabolites change as we age—to such an extent that an analysis of blood metabolites can reveal a person's specific age.

However, aging and human cell behavior changes are not the only cause of changes in blood metabolites. The microbes in our bodies—which outnumber human cells 10 to one—generate metabolites that can be detected in the blood.

For this reason, Human Longevity will also be mapping at least some participants' microbiomes—the complete makeup of the trillions of bacteria, viruses, and fungi living in each individual's gut, mouth, and other body sites, as well as on the skin.

With aging and disease, the microbiome is believed to alter its composition, leading to changes in what molecules are produced. For instance, an August 2014 online study by Cancer Prevention Research found that analysis of the gut microbiome allowed scientists to distinguish between healthy participants and those with precancerous polyps or invasive colorectal cancer.* By better understanding how each person's microbiome interrelates with his overall genetic and metabolic map, the company hopes to develop better probiotics—as well as better diagnostics and drugs to improve health and wellness.

Bringing hard relevance to these complex genetic, metabolic, and microbiomic data sets, Human Longevity will also collect the clinical medical history of every individual whose genome it sequences. Each participant's complex data

can be intricately compared with critical medical information.

Imagine the engineering feat involved in incorporating each participant's clinical records with the rest of his or her amassed, personal data at the planned rate of over 100 human genome sequences a day. But Venter is looking beyond this technological challenge: He has his eye on nothing less than changing the face of medicine and human biological decline.

Will 100 Be The New 60?

First, Venter plans to deliver predictive and preventive medicine on a revolutionary scale by discovering the very earliest warning signs for susceptibility to chronic illnesses such as cancer, Alzheimer's, and heart disease. Second, he envisions blocking the interconnected pathways of these diseases with specific, new interventions tailored to each individual's distinct profile.

Just one way Venter aspires to accomplish this is by translating a web of personalized data into stem cell therapies. He expects to use techniques developed at his existing company, **Synthetic Genomics**, to rewrite the genetic code of stem cells to correct errors and use stem cell therapy as one of the key adjuvants to changing long-term health and aging outcomes. It's an example of how his mission seems to be based on a granite-like conviction that a host of emerging and complementary fields are ready to mature at once.

While the upfront costs and complexities may seem overwhelming, Venter says, "[Human Longevity] is going to change the way medicine is practiced by helping to shift to a more preventive,

genomic-based medicine model, which we believe will lower health-care costs."

When people reach 100 years of age, they are often suffering from multiple diseases and cannot care for themselves. Venter wants these people to reach 100 years for the simple reason that they remain in good health and are therefore, self-sufficient.

Extending the number of healthy years will require focusing, not on individual diseases, but on aging. Why aging?

"The easiest answer is that aging is a central component of every disease that we want to address therapeutically," said Hariri. "We believe that many of the processes at the cellular and the genomic level that we call **aging** are related and connected."

The sheer volume and diversity of the data being assembled virtually guarantees that this project will yield revolutionary new clues to the mysteries of aging and disease. Optimistically, Dr. Venter and his team expect a lot more. As Human Longevity co-founder and vice-chairman, Peter Diamandis, summarized it:

"Our goal is to make 100 years old the new 60." ●

* Available at: <http://cancerprevention-research.aacrjournals.org/content/early/2014/08/06/1940-6207.CAPR-14-0129.abstract>. Accessed August 21, 2014.

For more information about Human Longevity, Inc., visit www.humanlongevity.com.

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

SUPER OME

Powerfully Enhanced Omega-3 Benefits



Item #01819

Emerging research suggests that different sources of omega-3 fatty acids, such as **fish oil** *and* **krill oil**, provide complementary effects upon cellular targets throughout the body.¹

Scientists suggest that combining **fish oil** *and* **krill oil** may provide *enhanced support* for cardiovascular health and the brain due to the different ways that fish oil and krill oil are taken up by our cells.²

Fish oil and krill oil share many important similarities, such as reducing levels of omega-6 relative to beneficial omega-3 fatty acids.² Most Americans consume too many omega-6 polyunsaturated fatty acids and not enough omega-3s.³

Evidence suggests that by *combining* both fish and krill oil, you can maximize uptake and the protective benefits of a wide spectrum of omega-3 fatty acids.³

To provide enhanced coverage, a new **Super Omega** contains a potent concentration of **fish oil**, **olive fruit**, and **sesame lignans**, plus **krill** and **astaxanthin**.

Combined Benefits Of Fish And Krill Oils

Human studies suggest that omega-3 fatty acids from **fish oil** result in a more rapid uptake into *plasma triglyceride* and *platelet phospholipids*, which specifically benefit the cardiovascular system.¹

GA With Krill & Astaxanthin

The omega-3s found in **krill** appear to be more rapidly incorporated into *red blood cell phospholipids*, which are rapidly absorbed into brain cells.¹

When combined, krill and fish oil appear to offer enhanced benefits for *both* the cardiovascular and nervous system than either form by itself.

Astaxanthin: Super-Antioxidant

Astaxanthin protects cells by controlling free-radical activity and boosting mitochondrial function.⁴ This potent antioxidant carotenoid has been shown to help optimize joint, immune,^{5,6} brain,^{7,8} cardiovascular,^{9,10} DNA,^{11,12} and mitochondrial^{13,14} health. Astaxanthin also supports healthy blood sugar levels for those already in the normal range.^{15,16} And astaxanthin crosses the blood-eye barrier, supporting vascular health within the eye¹⁷ and protecting the eyes' sensitive cells.¹⁸⁻²¹

In **Super Omega with Krill & Astaxanthin**, the natural astaxanthin content of krill is *fortified* with additional astaxanthin for maximum stability and benefit.

Newly Documented Benefits Of Mediterranean Diet

In **2013**, the results of a huge trial of people who followed a Mediterranean diet were published in the ***New England Journal of Medicine***. Those who supplemented this diet either with **olive oil** or **nuts** showed such a huge reduction in primary cardiovascular problems that the trial was stopped early to spare the lives of those on the control diet.²²

The Mediterranean diet—rich in **omega-3** fatty acids, monounsaturated fatty acids found in **olive oil**, and antioxidant-rich fruits, vegetables, and herbs—has long been associated with cardiovascular health and increased life span.²³⁻³¹

To help emulate a Mediterranean diet, **Super Omega** provides a **standardized olive fruit polyphenol extract** to protect normal LDL from oxidation.³²⁻³⁶ Research shows that a combination of **olive oil** and **fish oil** supplements helps with **inflammation** better than a placebo or fish oil alone.³⁷ The daily dose of Super Omega softgels provide the equivalent polyphenol content of **4 to 6 tablespoons of extra virgin olive oil**.

Sesame Lignans Extend Fish Oil's Benefits

The *unstable* nature of fatty acids like fish oil limits their biological efficacy in the body. Scientific studies show that when **sesame lignans** are supplemented with fish oil, the beneficial effects are augmented.^{38, 39}

Sesame lignans help guard against **lipid peroxidation**, thereby extending the stability of **DHA** in the body. These lignans also direct fatty acids toward pathways that can help with inflammatory reactions. **Super Omega** provides standardized **sesame lignans** to enhance the overall benefits of EPA/DHA marine oils.

Experts believe that taking both fish oil and krill oil together offers overlapping coverage to powerfully boost your health—with benefits that add to and amplify those of fish oil alone.

The suggested daily dose of four softgels of Super Omega with Krill & Astaxanthin provides:

Pure+™ Wild Fish Oil Concentrate	4,050 mg
Yielding:	
EPA (eicosapentaenoic acid)	1,400 mg
DHA (docosahexaenoic acid)	1,000 mg
Typical DPA (docosapentaenoic acid)	158 mg
Antarctic Krill (<i>Euphausia superba</i>) oil	300 mg
Polyphen-Oil™ Olive extract (fruit and leaf)	400 mg
[providing 90 mg polyphenols, 20.50 mg verbascoside/oleuropein, 15 mg hydroxytyrosol]	
Sesame seed lignan extract	10 mg
Natural Astaxanthin	4 mg
(from CO2 extract of <i>Haematococcus pluvialis</i> algae)	

Contains crustacean shellfish (krill).

A bottle of 120 softgels of **Super Omega with Krill & Astaxanthin** retails for \$45. If a member buys four bottles, the price is reduced to **\$31.50** per bottle.

Super Omega-3 Still Available

Life Extension members still have access to our premium **Super Omega-3 with Olive Fruit Extract and Sesame Lignans**. This formula costs less since it does not contain krill oil or astaxanthin.

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To order Super Omega with Krill & Astaxanthin, call 1-800-544-4440 or visit www.LifeExtension.com

Four-Food Formula

Target PSA!

Breakthrough Research

A high percentage of men will endure some form of prostate-induced discomfort over the course of their lifetimes.¹

A placebo-controlled, double-blind trial presented **September 2013** reported that a specific blend of **pomegranate, green tea, turmeric, and broccoli**—formulated together in a capsule called **Pomi-T®**—powerfully maintained healthy levels of *prostate specific antigen (PSA)*!²

Life Extension® offers this same capsule for men who are serious about supporting and protecting their prostate as they age—by **targeting PSA**. The four foods in **Pomi-T®** have healthful benefits for your entire body. But their constituent molecules, naturally present in food, have now been shown to concentrate within prostate tissue and provide a rich array of complementary, prostate-supporting, **PSA-modulating** mechanisms.³⁻¹⁹



• POMEGRANATE

- Specifically concentrates in prostate tissue³
- Supports healthy *apoptosis*, your body's system of removing senescent cells when needed⁴⁻⁶
- Promotes healthy levels of inflammatory response, inhibits androgen receptor expression, and inhibits abnormal cell migration.^{5,7,8}



• GREEN TEA

- *EGCG*, a green tea *catechin*, specifically concentrates in prostate tissue where it regulates *PSA (prostate specific antigen)* production to maintain healthy PSA levels^{9,10}
- Helps modulate genetic expression and activity of *androgen receptors*¹¹
- Supports body's natural defenses against oxidation.¹²



• TURMERIC

- Promotes a healthy level of inflammatory response, chiefly due to its main component, *curcumin*¹³
- Helps modulate cell signaling mechanisms, inhibiting abnormal cell adhesion and migration.¹⁴
- Promotes healthy cell proliferation and apoptosis.¹⁵



• BROCCOLI

- Helps regulate enzymes (*phase II detoxifying enzymes*) in gut and liver tissue that helps render harmful dietary molecules harmless¹⁶
- Helps promote healthy PSA levels¹⁷
- Supports regulation of cell growth and transcription factors and normal production of apoptosis-inducing proteins^{18,19}



Item #01797

The novel and scientifically validated blend of food in **Pomi-T®** represents the **next generation** of targeted support for the aging prostate!

The suggested daily dosage of two vegetarian capsules of Pomi-T® provides:

Pomi-T® Super Foods Proprietary Blend	960 mg
Broccoli (florets and stalks) powder, Turmeric (root) powder	
Pomegranate (whole fruit) powder, and Green Tea (leaf) extract 5:1	

A bottle of 60 vegetarian capsules of **Pomi-T®** retails for \$33.33. Members of the Life Extension Foundation pay only **\$25** per bottle.

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ASK THE DOCTOR

BY MICHAEL SMITH, MD

Breast Cancer Screening Alternatives



Q: Are there any other options for breast cancer screening besides mammography? I am concerned about radiation exposure and I'd like to explore alternative imaging techniques.

A: Yes, there are. But doctors are still trying to figure out how to best use alternative breast imaging. So let's take a look at your options.

More and more women are asking about mammography and radiation exposure. It turns out this is a good question to ask. Studies have shown that one mammogram exposes a woman to **0.4 mSv** of radiation, the equivalent of seven weeks of background radiation from the earth and space. Let's compare this to other imaging tests.

A chest X-ray, for instance, exposes you to **0.1 mSv** of radiation. That's the equivalent of 10 days of background radiation. A CT scan of your chest is **7 mSv**, or two years of background radiation.

A CT of your abdomen is **10 mSv**, or the equivalent of three years of background radiation. A CT image of your brain produces **2 mSv** of radiation, or eight months outside. As you can see, a mammogram falls in the lower range of radiation exposure.^{1,2}



ASK THE DOCTOR

But here's the problem: A woman will get anywhere from 25 to 50 mammograms in her lifetime, whereas she'll only get a few chest X-rays and one or two CT scans. This is important because radiation exposure is accumulative. The more radiation you're exposed to over time, the greater the chance for DNA damage—the hallmark of all cancers.

So a lifetime of mammograms, designed to detect breast cancer, could in fact increase the risk of breast cancer later in life. Personally, I don't like when a screening tool raises the risk of the disease that it's trying to detect.

To date, no trial has clearly shown a link between mammography and breast cancer risk,³ however, understanding the risk of ionizing radiation tells me it's something we should continue to investigate.

MRI—A Mammography Alternative

Let's take a look at the first alternative—magnetic resonance imaging. MRI uses magnetic fields rather than ionizing radiation to create an image of the breast. It helps detect malignancies since it provides excellent soft tissue contrast.

Only in the last few years have clinical trial results suggested that MRI may have a role as a first-line technology for detecting breast tumors. These preliminary studies show that MRI is more sensitive at detecting invasive breast cancers than mammography.⁴ However, mammography is still the only imaging method that is proven to decrease mortality from breast cancer.⁵

Although MRI is generally considered more sensitive than mammography, it can produce false-positives. This is when MRI detects a "suspicious mass," which often results in a biopsy that turns out not to be cancer. To be fair, this also happens with mammography.

Mammography + MRI

Currently, breast MRI is not recommended as a routine screening tool for all women. However, it is recommended for screening women who are at high risk for breast cancer, usually due to a strong family history and/or a mutation in genes such as *BRCA1* or *BRCA2*.

Yearly mammograms plus breast MRI screening are typically recommended for women who are at higher-than-average risk of

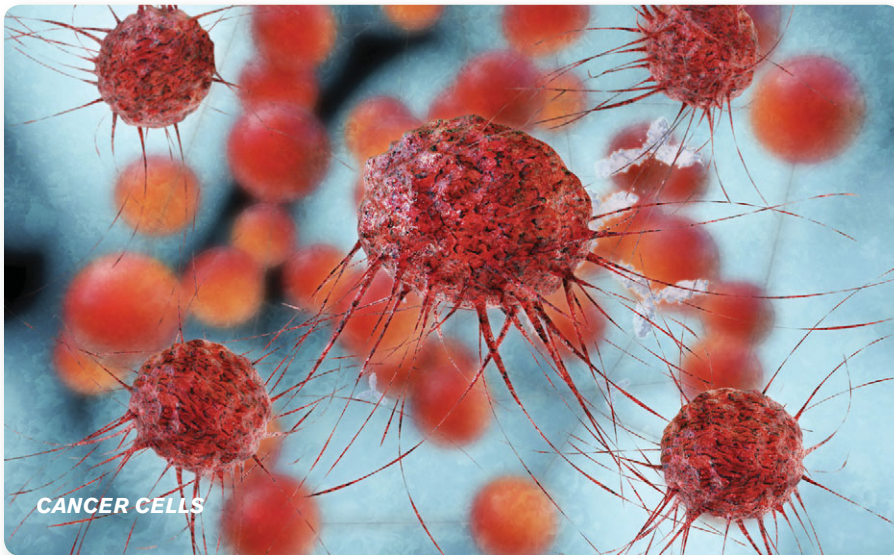
developing breast cancer—greater than the average **13%** lifetime risk for all women. According to the American Cancer Society, a woman is considered high risk if she has a:

- *BRCA1* or *BRCA2* gene mutation,
- First-degree relative with a *BRCA1* or *BRCA2* gene mutation,
- Lifetime risk of breast cancer of **20%** or greater, according to clinical history,
- History of radiation therapy,
- Genetic disease such as Li-Fraumeni syndrome, Cowden syndrome, or Bannayan-Riley-Ruvalcaba syndrome, or has a first-degree relative with one of them.⁶

If you fall into a high-risk category, there's plenty of support for using MRI. In a study published in the *New England Journal of Medicine* in 2004, Dutch researchers followed 1,900 women with a risk of breast cancer greater than **15%** due to genetic mutations or family history. For nearly three years, the women received yearly MRIs as well as semiannual clinical breast exams and yearly mammograms. Mammography detected 18 cancers but missed 22 that were found on MRI. MRI found 32 cancers and missed only eight that showed up on mammograms.⁷

An Italian study showed similar results for a comparable group of high-risk women. In that study, 278 women were given annual clinical breast exams, mammograms, MRIs, and ultrasounds. In the first two years, 18 cancers were found—17 showed up on MRI, including six that all other methods had missed.⁸

A third study, completed at six US medical centers, compared MRI, mammography, and ultrasound in



CANCER CELLS

171 women over age 25 whose lifetime risk of developing breast cancer was very high (20% or more).

Sixteen biopsies were performed and six cancers were diagnosed; MRI detected all six, mammography only two, and ultrasound only one. Neither mammography nor ultrasound found any tumors that MRI missed.⁹

So here's what we know: MRI does not use ionizing radiation; it's established as an effective screening tool for high-risk patients; and it's more sensitive at detecting breast cancer than mammography. So why isn't it considered for first-line screening?

One answer goes back to those "false positives." Breast MRI is sensitive for detecting cancers but not specific for cancers. This means that it can't always tell the difference between a benign and malignant mass. The biggest impediment, however, may be that an MRI costs much more than a mammogram. We checked prices locally in South Florida and found the average out-of-pocket expense for a mammogram is **\$125**, whereas the average price for a breast MRI is

\$760. Some insurance companies pay for mammograms, but not for an MRI when used as a primary screening tool.

Ultrasound And More

A second option is breast ultrasound. Unlike mammography, which has low sensitivity in detecting breast cancer in young women,⁹ ultrasound is primarily used in younger women with dense breast tissue.¹⁰ However, it hasn't been shown to be sensitive enough as a stand-alone screening tool.

Gaining in popularity is a third option called thermography. It detects changes in surface temperatures associated with breast abnormalities. Unfortunately, it has a low sensitivity for detecting breast cancer.¹¹

3D Mammography

Standard mammograms use two beams of radiation to identify suspicious lesions. These are called 2D mammograms.

Newer mammograms are using three beams of radiation and pick

up more lesions while reducing the "false positive" rate. Performed with digital mammography using the same scanner, 3D mammography (breast tomosynthesis) takes multiple images and reconstructs them to create a 3D view of the entire breast. These 3D devices may emit more radiation and they cost an average of **\$200** compared to the standard 2D price of **\$125**.

What I Suggest

So what does all of this mean? We definitely want to minimize our exposure to ionizing radiation. Yet, breast cancer screening is still the best-known preventative strategy we can offer.

It's clear that women at high risk of breast cancer should utilize a combination of mammography and MRI. This will provide the highest sensitivity for detecting suspicious masses and the highest specificity for avoiding false positives.



Young women with dense breast tissue should be screened using ultrasound, with MRI as a secondary screening tool if suspicious masses are identified. Mammography is a poor screening tool for dense breasts, leaving ultrasound and MRI as the best weapons for early detection in this population of women.

But what about women at average risk who have breast tissue that's normal density? Well, the verdict is still out. More sensitivity and specificity research is needed utilizing MRI.

Interestingly, preliminary reports using dynamic MRI imaging (a method that allows analysis of blood vessels generated by a tumor) show promise for improving MRI as an initial screening tool for all women. But we can't draw any definite conclusions at this time.

So here's what I suggest for women concerned about radiation exposure: If you're at average risk for breast cancer and your breast tissue is normal density, use MRI

as an initial screening tool. If a suspicious mass is identified, then use mammography to verify the mass. This way you'll only expose yourself to ionizing radiation if it's absolutely necessary.

Is what I am suggesting feasible? Clinically speaking, yes it is. But is what I suggest cost effective enough to be covered by insurance companies? Well, that's something for you to discuss with your insurance carrier. ●

Dr. Smith, a graduate of the University of Texas Southwestern Medical School, is senior health scientist and online personality for Life Extension®. Often described as "the country doctor with a city education," Dr. Smith is an author, blogger, and lecturer who has created and conducted numerous health-related webinars, as well as scripted and hosted a variety of informative online videos.

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

FOR DNA PROTECTION

Scientists continue to discover healthful benefits—including DNA protection—in **cruciferous vegetables** such as broccoli, cauliflower, cabbage, watercress, and Brussels sprouts. Unfortunately, no matter how healthy you eat, cooking destroys many of these protective plant extracts.

Triple Action Cruciferous Vegetable Extract combines cruciferous plant extracts into a comprehensive formula for optimal DNA protection.

Protective compounds found in cruciferous vegetables like **IBC** (*indole-3-carbinol*) and **DIM** (*di-indolyl-methane*) encourage liver detoxification to help neutralize dangerous xenoestrogens (estrogen-like environmental chemicals that damage the body's hormonal system), as well as beneficially modulate estrogen metabolism.¹⁻⁴

Extracts of **broccoli**, **watercress**, and **rosemary** also provide bioactive compounds that have a multitude of favorable effects on estrogen metabolism and healthy cell division.⁵⁻⁸ **Apigenin**, a powerful plant flavonoid found in plants such as parsley and celery, boosts cell protection.⁹

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 bottle containing 60 vegetarian capsules 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 the added 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. If a member buys four bottles, the price is reduced to **\$22.20 per bottle**.

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

Broccoli Extract [standardized to 4% glucosinolates (16 mg)]	400 mg
Watercress 4:1 extract	50 mg
Indole-3-Carbinol (IBC)	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

BREAST HEALTH FORMULA

Broad-Spectrum Support For Optimal Breast Health

Now more than ever before, women are being proactive about supporting breast health. One of the most important actions you can take is to maintain a healthy balance between "good" and "bad" estrogen.

Women seeking to proactively restore their youthful hormonal balance can take **Breast Health Formula**, Life Extension's phytonutrient-based formula that helps support healthy estrogen activity and detoxification.

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

- **Phytoestrogens** block bad estrogen from exerting its harmful effects.
- **Plant lignans** favorably alter estrogen metabolism.
- **Cruciferous Vegetable Extracts** (such as I3C) increase good estrogen while reducing bad estrogen.
- **Calcium D-Glucarate** safely facilitates the removal of harmful estrogen from the body.
- **Vitamin D** promotes healthy genetic regulatory switching to aging cells.
- *And much more!*



The retail price for 60 capsules of **Breast Health Formula** is **\$34**. If a member buys four bottles, the price is reduced to **\$22.50** per bottle.

Contains soybeans.

To order Breast Health Formula,
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visit www.LifeExtension.com

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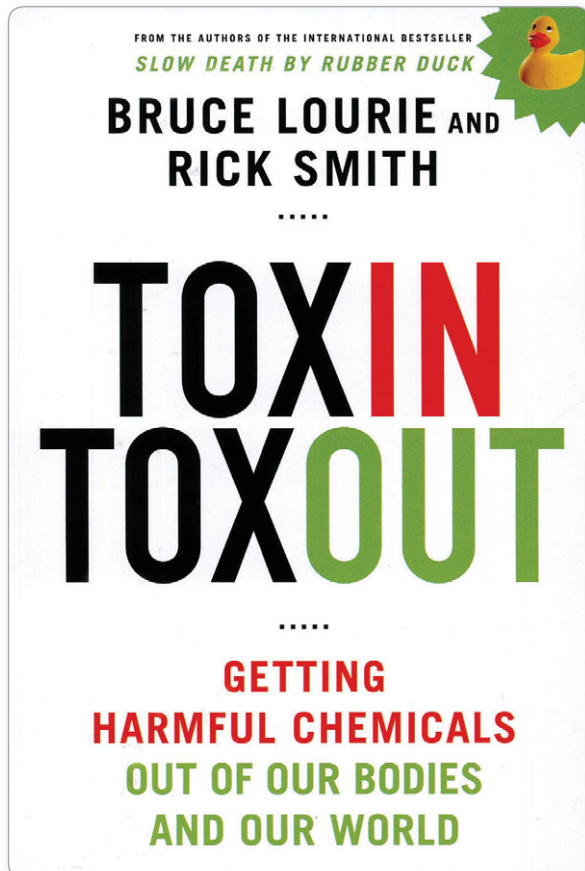
AUTHOR INTERVIEW

WITH RICK SMITH AND BRUCE LOURIE

TOXIN, TOXOUT

Getting Harmful Chemicals Out Of Our Bodies And Our World

BY ASTRID KESSLER



In their 2010 best-selling book *Slow Death by Rubber Duck: How the Toxic Chemistry of Everyday Life Affects Our Health*, authors and leading environmentalists Rick Smith and Bruce Lourie exposed their readers to the dangerous toxins hidden in everyday items by exposing themselves to the chemical compounds lurking in soaps, stain-blockers, plastic containers, and more.

For their next project, the two set out to answer the logical follow-up question: How do we get these toxins out of us? By once again becoming human guinea pigs, as well as researching the data and interviewing experts, the pair set out to prove which detox treatments really work, which don't, and why. Throughout the book, they give practical and often surprising advice for removing toxic chemicals from our bodies and homes.

Here, in an exclusive interview with *Life Extension*®, they discuss their latest book *Toxin, Toxout*.

LE: In your first book, *Slow Death by Rubber Duck*, you discuss the synthetic chemicals that are found in everything from the sofa we sit on to the pots we cook in to the personal care products we put on our bodies. Remind us of the dangers of the more than 80,000 synthetic chemicals that are in so many of our products.

BL and RS: The scientific evidence linking these chemicals to human disease has become even more convincing than it was when *Slow Death* was released. Exposure is widespread. A recent study by the Environmental Working Group found 232 toxic chemicals in the umbilical cord blood of 10 babies. EWG has found 553 different industrial chemicals, pollutants, and pesticides in 149 Americans [they tested in] 27 different states.

LE: Can you give us some examples of these dangerous chemicals?

BL and RS: *BPA* [found in plastic containers that store food and beverages] has been linked with elevated risk of heart disease, infertility, and diabetes-like effects, among others. *Triclosan*, the antibacterial ingredient in everything from personal-care products to footwear, has been linked to increasing rates of allergies.

PFOA, used to make Teflon and other nonstick and stain-resistant coatings, has been linked to pregnancy-induced hypertension, pre-eclampsia, testicular cancer, kidney cancer, ulcerative colitis, thyroid disease, and high cholesterol.

LE: In 2008, Congress permanently banned three types of *phthalates* (DEHP, DBP, BBP) in an amount greater than 0.1% in children's toys and child-care products.

But there are a lot more phthalates than those three, and they're prevalent in the personal-care products we use. What are phthalates and why should we be so concerned?

BL and RS: Phthalates are hormone-disrupting chemicals. Once in our bodies, they're mistaken for estrogen and can create all the changes that estrogen achieves.

LE: There have been a lot of studies recently about phthalates. What health concerns have these studies found?

BL and RS: Given that phthalates surround us every day, virtually every human on the planet has the stuff coursing through their veins. And to further compound the creepiness, elevated levels have been found in breast milk and umbilical cord blood, meaning that moms aren't just polluting themselves; they're passing phthalate pollution on to their fetuses and nursing babies.

Recent science points to negative health effects [like] childhood allergy and asthma, higher occurrence of pregnancy loss, metabolic disorders, behavioral changes, and reproductive disorders in male children and male adults.

LE: You wrote this book following the huge success of the first book and started it while you were on a book tour. What prompted it?

BL and RS: Right off the bat, the need to focus on detox was obvious. Every audience and interviewer quizzed us about the hazards of toxic chemicals and how they're linked to human disease. And all of these people were pre-occupied with the same question: How do we get this stuff out of our bodies? Finding out honest, specific responses became the purpose of *Toxin, Toxout*.

LE: In the third chapter of *Toxin, Toxout*, you go into great detail about the work of Dr. Stephen Genuis, of the University of Alberta, Canada. What impressed you so greatly about his work?

BL and RS: Dr. Genuis is one of the few medical doctors who writes about clinical detox in medical journals. He has conducted what may be the first study that looks simultaneously at the levels of toxic chemicals in the blood, sweat, and urine of the same individuals.

LE: In his research, what has he found that works and doesn't work?

BL and RS: Proven to work are chelation therapy and sauna therapy. Ionic footbaths and colon cleanses have no detox effectiveness.

LE: What role do supplements have in detox treatments?

BL: I was a vitamin skeptic before I began this research, but I'm now convinced that a vitamin C supplement ... is quite likely beneficial for its antioxidant and generic detox properties. Vitamins A, D, E, and K are also important for detoxification, but they need to be taken with greater caution because they're fat soluble. If there was one health supplement all people would benefit from, it's vitamin D. And all the health experts I spoke with recommend taking *n-acetyl cysteine* (NAC) supplements. NAC works by helping our bodies produce *glutathione* (GSH), a powerful antioxidant that neutralizes free radicals. GSH is manufactured in our liver as a natural detoxing agent, and low levels can prevent us from detoxing effectively. In sufficient quantities, it even protects our cells from mercury damage.

LE: I keep reading about detox diets. It seems every celebrity has something to say about eating this or that. What are your thoughts about them?

BL and RS: Skip expensive cleanse diets. There is any number of snake-oil salesman out there waiting to sell you the latest detox fad. Don't buy it. Avoiding further exposure to toxins when possible, and giving your body what it needs to get rid of the toxins already in you is the basis of an effective detox lifestyle. Guaranteed.

LE: You provide 10 easy-to-do tips to start the detox process, like avoiding perfumes and purchasing personal-care products that only use safe ingredients. Can you share some more of these tips?

BL and RS: Drink water—and lots of it. On average, we're made up of two-thirds water by weight. Making sure you're well hydrated helps flush toxins from your body.

Hit the gym and the sauna. When you exercise or take saunas, toxic chemicals like BPA and phthalates leave through your sweat. And because a lot of toxins

are deposited in fat, recent research has shown that exercising and losing weight can speed up the rate at which you excrete pollutants from your body.

Get involved with organizations advocating for a healthy, nontoxic future. Support politicians who believe in a greener economy. Good governments pass laws to reduce pollution, resulting in fewer pollutants in your body. It's as simple as that.

LE: Let's end on a positive note. You believe there's hope for the future.

BL and RS: The speed of debate surrounding environment and health is exciting, and as a consequence of strong recent scientific evidence linking toxic chemicals to serious human disease, there has been a marked and positive change in the public's everyday behavior.

And as a result, governments are acting. Laws governing BPA are a good example. Following a Canadian ban in baby bottles, the European Union followed in 2010, and in 2011 China did as well. In 2013, France banned the use of BPA in plastic food containers.

Though progress is slow on a federal level in the US, BPA bans relating to plastic baby products are now in place in 12 states.

Of course, there's no perfect recipe for being toxin-free. But by following these guidelines, you'll make a huge difference. The key is to start. ●

Life Extension specifies that container suppliers utilize BPA- and phthalate-free bottles with all Life Extension dietary supplement products.

Bruce Lourie is a leading environmentalist, author, and speaker.

He is president of the Ivey Foundation, a private charitable foundation that focuses on environmental policy change; a director of the Ontario Power Authority; a director of the Ontario Trillium Foundation; and a Chair of the Board of Environmental Defence Canada.

Rick Smith is a prominent author and environmentalist. He is currently the executive director of the Broadbent Institute and was the executive director of Canada's Environmental Defence for almost 10 years.

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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1-800-544-4440 or
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LIFE EXTENSION MIX™

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

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

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

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

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

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

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

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

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

Pterostilbene is a compound naturally found in blueberries and grapes that has been shown to have beneficial, anti-aging effects

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

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

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



315 tablets
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490 capsules
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14.81 oz powder
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9 tablets, 14 capsules, or three scoops of powder provide: Vegetable-Fruit Complex

Decaffeinated Green tea extract (45% EGCG)	325 mg
Broccoli sprout concentrate extracts and calcium D-Glucarate (providing sulforaphane, glucosinolates, D-3T, and PEITC)	725 mg
Olive juice extract (providing polyphenols, hydroxytyrosol, tyrosol, oleuropein)	12.5 mg
Grape seed proanthocyanidin extract (Leucoselect®)	25 mg
Grape (proanthocyanidin) extract (BioVin®)	25 mg
Luteolin (from orange extract)	8 mg
Lycopene (natural tomato extract) (Tomat-O-Red®)	3 mg
Lutein (marigold extract) (465 mcg trans-zeaxanthin)	15 mg
Maqui Berry (<i>Aristotelia chilensis</i>) anthocyanin extract	100 mg
Milk thistle extract (85% silymarin)	100 mg
Bromelain (from pineapple)	15 mg
Citrus Bioflavonoids (50% hesperidin)	200 mg
Acerola extract 4:1	300 mg
Bilberry extract (MirtoSelect®)	30 mg
Pomegranate extract (30% punicalagins) (POMELLA®)	85 mg
Sesame seed lignan extract	10 mg
Fruit/Berry Complex blend (proprietary blend of concentrated blackberry, blueberry, cherry, cranberry, elderberry, persimmon, prune powders)	200 mg
Wild Blueberry anthocyanin extract (fruit)	150 mg
trans-Pterostilbene (from pTeroPure™)	0.5 mg
Cyanidin-3-Glucoside (C3G) (from blackcurrant extract)	1.25 mg
CherryPure® Tart Cherry (<i>Prunus cerasus</i>) proanthocyanidin extract	85 mg
Delphinidins (from Delphinol® Maqui berry (<i>Aristotelia chilensis</i>) extract)	2 mg

Water-Soluble Vitamins and Enzymatic Activators

Vitamin C	2000 mg
as: ascorbic acid, calcium, magnesium & niacinamide ascorbates, ascorbyl palmitate, acerola extract	
Natural Folate (from lemon extract)	400 mcg
Biotin	3,000 mcg
Trimethylglycine (TMG)	100 mg
Vitamin B1 (thiamine HCl)	125 mg
Vitamin B2 (riboflavin)	50 mg
Supplying: Riboflavin 5'-phosphate	2 mg
Vitamin B3 (niacinamide and niacinamide ascorbate)	117 mg
Vitamin B3 (niacin)	73 mg
Vitamin B5 (D-calcium pantothenate)	600 mg
Pantethine	5 mg
Vitamin B6 (pyridoxine HCl)	5 mg
Pyridoxal 5'-phosphate (vitamin B6)	100 mg
Vitamin B12 (methylcobalamin)	600 mcg

THE MOST COMPLETE MULTIVITAMIN AVAILABLE TODAY

Published scientific studies document that people who eat the **most fruits and vegetables** have much lower incidences of health problems. Few people, however, consistently eat enough plant foods to protect against common age-related decline, and commercial multivitamins do not provide all of the vital plant components needed to maintain good health.¹⁻³ **Life Extension Mix™** provides a broad array of **vegetable/fruit extracts**.

Life Extension Mix™ now contains an upgraded **vitamin B12** that offers *superior absorption* compared to other forms of B12.

The **new** Life Extension Mix™ also contains a potent **anthocyanin** called **delphinidins**. Delphinidins activate the production of **nitric oxide**, enabling vascular relaxation and supporting blood pressure. **Delphinidins** can also help to control inflammatory processes, stimulate the immune system, and stabilize blood sugar helping to control metabolic balance.

The content of **delphinidins** in the new Life Extension Mix™ is equivalent to 3 1/4 cup of **raspberries** or 5 3/4 cups of dried **plums**.

The full daily dose of Life Extension Mix™ can be obtained for as little as **\$1.49** per day.

Fat-Soluble Vitamins

Vitamin A (as Betatene® natural beta-carotene from dunaliella and acetate)	5,000 IU
Vitamin D3 (cholecalciferol)	2,000 IU
Vitamin C (as calcium ascorbate, ascorbic acid, ascorbyl palmitate, magnesium ascorbate, niacinamide ascorbate, acerola extract)	2,000 mg
Vitamin E (natural D-alpha tocopheryl succinate and D-alpha tocopherol)	100 IU
Natural mixed tocopherols (providing gamma, delta, alpha, and beta tocopherols)	60 mg

Amino Acid Complex

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

Mineral Complex

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

Cholinergic Complex

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

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

The **Life Extension Mix™** utilizes **natural mixed tocopherols** that provide natural vitamin E from alpha tocopherol and a small amount of gamma tocopherol (40 mg). Compared to synthetic vitamin E, the natural form is far more **bioavailable** to the body.

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

Life Extension Mix™ contains the **sodium selenite, selenomethionine, and Se-methyl L-selenocysteine** forms of selenium. Some scientific evidence suggests that consumption of **selenium** may reduce the risk of certain forms of cancer; however, the FDA has determined that this evidence is limited and not conclusive.

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

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

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

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

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

Contains soybeans. Contains fish (Tilapia).

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

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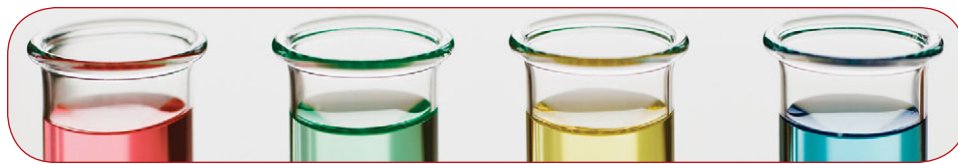
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<p>○ MALE COMPREHENSIVE HORMONE PANEL* (LC100010) \$299 CBC/Chemistry Profile (see description above right), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.</p>	<p>○ HEALTHY AGING PANEL-BASIC† (LC100025) \$149 CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Ferritin, and Insulin.</p> <p>○ VAP™ TEST* (LC804500) \$90 The VAP™ cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.</p> <p>○ VAP™ PLUS* (LC100009) \$330 VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy.</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.

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CBC/Chemistry profile (see description previous page), Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Fibrinogen, Homocysteine.
- ☐ **Lp-PLA2 (PLAC[®] TEST) (LC123240)** **\$125**
This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.
- ☐ **GLYCOMARK (LC500115)** **\$99**
This test measures your average **maximum** glucose over the past two weeks and is an effective tool in monitoring postmeal glucose control.
- CANCER RISK TESTING**
- ☐ **IGF-1 (LC010363)** **\$75**
High levels of IGF-1 (Insulin-like growth factor) are associated with breast and prostate cancer.
- ☐ **NATURAL KILLER CELL SURFACE ANTIGEN (LC505016)** **NEW \$110**
Natural Killer (NK) Cells are highly selective white blood cells found in our immune system. They patrol the body looking for cells that are infected with cancer or other viruses. This test measures the number of natural killer cells but it does not measure their activity.
- ☐ **PSA (PROSTATE SPECIFIC ANTIGEN) (LC010322)** **\$31**
Screening test for prostate disorders and possible cancer.
- ☐ **GALECTIN-3 (LC004110)** **\$299.25**
Increased concentrations of galectin-3 are prevalent in growing cancers such as prostate, ovarian and breast.

- HORMONES**
- ☐ **DHEA-SULFATE (LC004020)** **\$61**
This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.
- ☐ **MALE BASIC HORMONE PANEL (LC100012)** **\$75**
DHEA-S, Estradiol, Free and Total Testosterone, PSA
- ☐ **FEMALE BASIC HORMONE PANEL (LC100013)** **\$75**
DHEA-S, Estradiol, Free and Total Testosterone, Progesterone
- ☐ **DIHYDROTESTOSTERONE (DHT)* (LC500142)** **\$99**
Measures serum concentrations of DHT.
- ☐ **ESTRADIOL (LC004515)** **\$33**
For men and women. Determines the proper amount in the body.
- ☐ **INSULIN FASTING (LC004333)** **\$25**
Can predict those at risk of diabetes, obesity, heart and other diseases.
- ☐ **PREGNENOLONE* (LC140707)** **\$116**
Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.
- ☐ **PROGESTERONE (LC004317)** **\$55**
Primarily for women. Determines the proper amount in the body.
- ☐ **SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)** **\$33**
This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.
- GENERAL HEALTH**
- ☐ **VITAMIN D (25OH) (LC081950)** **\$47**
This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.
- ☐ **FERRITIN (LC004598)** **\$28**
Ferritin levels reflect your body's iron stores and is also a biomarker for insulin resistance.
- ☐ **VITAMIN B12/FOLATE (LC000810)** **\$33**
Measurements of B12 and Folate help evaluate your general health and nutritional status since the B vitamins are important for cardiac health as well as energy production.

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

MEMBER NO.

☐ Male ☐ Female

Name

Date of Birth
(required) / /

Address

City

State

Zip

Phone

Credit Card No.

Expiration Date /

Mail your order form to:

LifeExtension[®]
NATIONAL DIAGNOSTICS, INC.

3600 West Commercial Boulevard
Fort Lauderdale, FL 33309

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

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

PRODUCTS

AMINO ACIDS

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
Branched Chain Amino Acids
D, L-Phenylalanine Capsules
Glycine Capsules
L-Arginine Capsules
Arginine/L-Ornithine Capsules
L-Carnitine Capsules
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®
Pharma GABA®
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™
Dr. Strum's Intensive Bone Formula
Fast Acting Joint Formula
Glucosamine Chondroitin Capsules

BRAIN HEALTH

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
Brain Shield®
Cognitex® with Brain Shield®
Cognitex® with Pregnenolone & Brain Shield®
Cognitex® Basics
Cognizin® CDP Choline Capsules
DMAE Bitartrate
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin Granules
Methylcobalamin Lozenges
Migra-Mag with Brain Shield®
Neuro-Mag™ Magnesium L-Threonate
Optimized Ashwagandha Extract
Phosphatidylserine Capsules
Prevagen®
Rhodiola Extract
Super Ginkgo Extract
Vinpocetine

DIGESTIVE

Bifido GI Balance
Carnosoothe w/PicroProtect
Digest RC™
Esophageal Guardian
Enhanced Super Digestive Enzymes
Extraordinary Enzymes
FlorAssist® Probiotic
Gutzy Chewy Digestive Tablets
Pancreatin
Regimint
Theralac Probiotics

DURK AND SANDY PRODUCTS

Blast™
Inner Power™

EYE CARE

Bilberry Extract
Brite Eyes III
Eye Pressure Support with Mirtogenol®
MacuGuard™ Ocular Support
MacuGuard™ Ocular Support with Astaxanthin
Solarshield Sunglasses

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™ Mung Bean Soup with Turmeric
Rich Rewards® Coffee
(Available in mocha, vanilla and decaffeinated)
Rich Rewards™ Protein Creamer
Rich Rewards® Whole Bean Coffee

HAIR CARE

Dr. Proctor's Advanced Hair Formula
Dr. Proctor's Shampoo
Super-Absorbable Tocotrienols

HEART HEALTH

AppleWise Polyphenol
Advanced Lipid Control
Advance Olive Leaf Vascular Support
w/Celery Seed Extract
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
Natural BP Management
Peak ATP® with GlycoCarn®
PhosphOmega®
Policosanol
PROVINAL® Purified Omega-7
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 Omega with Krill & Astaxanthin
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with BioPQQ®
Super Ubiquinol CoQ10 with Enhanced Mitochondrial™ Support
Theaflavin Standardized Extract
TMG Powder
TMG Liquid Capsules

HERBAL/PHYTO PRODUCTS

Artichoke Leaf Extract
Asian Energy Boost
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
Pycnogenol

Optimized Quercetin
Resveratrol with Synergistic Grape-Berry Actives
Rhodiola Extract
Silymarin
SODzyme™ with GliSODin®
Stevia Extract
Advanced Bio-Curcumin®
with Ginger & Turmerones
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
Liquid Melatonin
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
FlorAssist™ Probiotic
i26 Hyperimmune Egg
Immune Modulator w/Tinofend®
Immune Protect with PARACTIN®
Lactoferrin
Norwegian Shark Liver Oil
Optimized Fucoidan w/Maritech® 926
Peony Immune
ProBoost™ Thymic Protein A
Reishi Extract Mushroom Complex
Vitamin C with Dihydroquercetin
Zinc Lozenges

INFLAMMATORY REACTIONS

Arthro-Immune Joint Support
ArthroMax® with Theaflavins
Boswella
Bromelain (Specially-coated)
Cytokine Suppress™ with EGCG
DHA (Vegetarian Sourced)
Fast Acting Joint Formula
Ginger Force®
Krill Healthy Joint Formula
5-LOX Inhibitor w/AprèsFlex®
Mega EPA/DHA
Mega GLA with Sesame Lignans
MSM
Organic Golden Flax Seed
Serrafazyme
SODzyme™ with GliSODin® and Wolfberry
Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
Tart Cherry w/Standardized CherryPURE®
Zyflamend® Whole Body

LIVER HEALTH

Branch Chain Amino Acids
Certified European Milk Thistle
N-Acetyl Cysteine
Liver Efficiency Formula
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
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
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
L-Tryptophan
Optimized Tryptophan Plus

MOUTH CARE

Advanced Oral Hygiene
Mouthwash w/Pomegranate
Toothpaste
Xyliwhite™ Mouthwash

MULTIVITAMIN

Booster
Children's Formula Life Extension Mix™
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®
PalmettoGuard™ Saw Palmetto w/Beta Sitosterol
Pomi-T®

Super Saw Palmetto/Nettle Root Formula
w/Beta-Sitosterol
Ultra Natural Prostate Formula

SKIN CARE

Advanced Lightening Cream
Advanced Peptide Hand Therapy
Advanced Triple Peptide Serum
Advanced Under Eye Serum with Stem Cells
Amber Self MicroDermAbrasion
Anti-Aging Mask
Anti-Glycation Serum
Anti-Aging Rejuvenating Face Cream with Coffee Extracts
Anti-Aging Rejuvenating Scalp 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
Pigment Correcting Cream
(Ultra) Rejuvenex®
Rejuvenex® Body Lotion
Rejuvenex® Factor Firming Serum
Rejuvenating Serum
Renewing Eye Cream
Resveratrol Anti-Oxidant Serum
Skin Lightening Serum
Skin Restoring Phytoceramides w/Lipowheat®
Skin Stem Cell Serum
Stem Cell Cream w/Alpine Rose
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
Ultra Soy Extract

SPECIAL PURPOSE FORMULA

Anti-Alcohol Antioxidants w/HepatoProtection Complex
Benfotiamine w/Thiamine
Breast Health Formula
Butterbur Extract w/Standardized Rosmarinic Acid
Chlorella
Chlorophyllin
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™
NAD+ Cell Regenerator™
Nicotinamide Riboside
Natural Female Support
Pecta-Sol®
Potassium Iodide
PQQ Caps with BioPQQ®
PteroPure®
Prelox® Natural Sex for Men®
Pyridoxal 5' - Phosphate
Tri Sugar Shield™

SPORTS PERFORMANCE

Creatine Capsules
DMG (N, N-dimethylglycine)
L-Glutamine Capsules
L-Glutamine Powder
Whey Protein Isolate
Whey Protein Concentrate

VITAMINS

Ascorbyl Palmitate Capsules
B12
Beta-Carotene
Biotin Capsules
Buffered Vitamin C Powder
Complete B Complex
Effervescent Vitamin C
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 Lozenges
Vitamin C
Vitamin D3
Vitamin D3 w/Sea-Iodine™
Vitamins D and K w/Sea-Iodine™
Vitamin E
Vitamin K2

WEIGHT MANAGEMENT

Advanced Anti-Adipocyte Formula
w/Meratrim® & Integra Lean®
Advanced Natural Appetite Suppress
CalReduce Selective Fat Binder
CoffeeGenic® Green Coffee Extract
7-KETO DHEA
DHEA® Complete
Fucoxanthin Slim™
Garcinia HCA
Integra-Lean® African Mango Irvingia
Optimized Irvingia w/Phase 3™ Calorie Control Complex
Optimized Saffron with Satiereal®
Natural Glucose Absorption Control
Super Citrimax®
Super CLA Blend w/Guarana and Sesame Lignans
Super CLA Blend w/Sesame Lignans
WellBetX PGX® plus Mulberry

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

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		
01828	ADVANCED LIPID CONTROL - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	ADVANCED ORAL HYGIENE - 60 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		
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/MERATRIM® & 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	17.99	13.49		
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	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
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		
01805	ASIAN ENERGY BOOST - 90 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
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		
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		

SUB-TOTAL OF COLUMN 1

No.		Retail Each	Member Each	Qty	Total
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		
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® - 40 mg, 60 small 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	31.99	25.59		
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	49.99		
70004	BLOOD PRESSURE MONITOR - WRIST (cuff)	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		
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) - 300 caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01726	BONE RESTORE - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01727	BONE RESTORE w/VITAMIN K2 - 120 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01725	BONE STRENGTH FORMULA w/KOACT® - 120 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		
01802	BRAIN SHIELD® - 60 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01253	BRANCHED CHAIN AMINO ACIDS - 90 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.00	12.75		
01699	BREAST HEALTH FORMULA - 60 caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	BRITE EYES III - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		

SUB-TOTAL OF COLUMN 2

No.		Retail Each	Member Each	Qty	Total
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		
***01823	CALREDUCE SELECTIVE FAT BINDER - 120 mint chewable tablets Buy 4 bottles, price each	45.00 38.00	33.75 28.50		
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		
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		
01891	CHILDREN'S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00550	CHLORELLA - 500 mg, 200 tablets	23.50	17.63		
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	35.00	26.25		
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		
01503	CINSULIN® W/INSEA® AND CROMINEX® 3+ - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
01818	CITRIMAX® (SUPER) - 180 veg. caps Buy 4 bottles, price each	40.00 38.00	30.00 28.50		
00818	CLA BLEND w/SESAME LIGNANS (SUPER) - 3,000 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) - 3,000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01896	COGNITEX® w/BRAIN SHIELD® - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	60.00 52.00 48.00	45.00 39.00 36.00		
01897	COGNITEX® w/PREGNENOLONE & BRAIN SHIELD® - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	62.00 53.00 50.00	46.50 39.75 37.50		
01421	COGNITEX® BASICS - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
01659	COGNIZIN® CDP CHOLINE CAPS - 250 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		

SUB-TOTAL OF COLUMN 3

No.		Retail Each	Member Each	Qty	Total
01735	COMPLETE B-COMPLEX - 60 veg. caps Buy 4 bottles, price each	\$10.00 9.00	\$7.50 6.75		
01798	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	9.91	7.43		
00949	COQ10 w/ α-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/ α-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		
01733	COQ10 w/BIOPQQ® (SUPER UBIQUINOL) - 100 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	54.00 50.00 46.00	40.50 37.50 34.50		
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		
80154	COSMESIS LIGHTENING CREAM - 1 oz jar Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80155	COSMESIS ADVANCED PEPTIDE HAND THERAPY - 4 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80152	COSMESIS ADVANCED TRIPLE PEPTIDE SERUM - 1 oz bottle Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80140	COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - .33 oz Buy 2 bottles, price each	49.00 42.00	36.75 31.50		
80139	COSMESIS AMBER SELF MICRODERMABRASION - 2 oz Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80118	COSMESIS ANTI-AGING MASK - 2 oz Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80151	COSMESIS ANTI-AGING REJUVENATING FACE CREAM - 2 oz jar Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80153	COSMESIS ANTI-AGING REJUVENATING SCALP SERUM - 2 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80134	COSMESIS ANTI-GLYCATION SERUM - 1 oz W/BLEUBERRY & POMEGRANATE EXTRACTS Buy 2 bottles, price each	33.00 31.35	24.75 23.51		
80133	COSMESIS ANTIOXIDANT FACIAL MIST - 2 oz Buy 2 bottles, price each	32.00 30.40	24.00 22.80		
80127	COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz Buy 2 jars, price each	45.00 42.80	33.75 32.10		
80128	COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz Buy 2 jars, price each	59.00 51.92	44.25 38.94		

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					
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		
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		
80150	COSMESIS RENEWING EYE CREAM - 1/2 oz	65.00	48.75		
	Buy 2 jars, price each	57.00	42.75		
80142	COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz	46.00	34.50		
	Buy 2 bottles, price each	39.00	29.25		

SUB-TOTAL OF COLUMN 5

NOVEMBER 2014

No.		Retail Each	Member Each	Qty	Total
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		
01808	CURCUMIN® w/GINGER & TURMERONES (ADVANCED BIO)-30 softgels	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01804	CYTOKINE SUPPRESS™ w/EGCG - 30 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
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) - 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		

SUB-TOTAL OF COLUMN 6

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

To order online visit: www.LifeExtension.com

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
00335	DHEA - 25 mg, 100 caps Buy 4 bottles, price each	\$18.00 15.00	\$13.50 11.25		
00454	DHEA - 15 mg, 100 caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
00882	DHEA - 50 mg, 60 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01689	DHEA - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01358	DIGEST RC - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
01671	D,L-PHENYLALANINE CAPSULES - 500 mg, 100 veg. caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
01540	DMAE BITARTRATE - 150 mg, 200 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00059	DMG - 125 mg, 60 tablets Buy 4 boxes, price each	24.80 22.69	18.60 17.02		
01570	DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
00544	DOG MIX - 100 grams powder Buy 4 jars, price each	19.50 16.00	14.63 12.00		
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
E					
01528	ECHINACEA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01498	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels Buy 4 bottles, price each	56.00 52.00	42.00 39.00		
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00625	EPA/DHA (MEGA) - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01737	ESOPHAGEAL GUARDIAN (Berry flavor) - 60 chewable tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01706	EXTRAORDINARY ENZYMES - 60 caps Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
01514	EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
F					
01054	FACE MASTER® PLATINUM	\$199.00	\$199.00		
00965	FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01717	FAST-C® w/DIHYDROQUERCETIN - 120 veg. tabs Buy 4 bottles, price each	26.00 24.00	19.50 18.00		

SUB-TOTAL OF COLUMN 7

No.		Retail Each	Member Each	Qty	Total
20053	FEM DOPHILUS® - 30 caps	\$25.95	\$19.46		
20055	FEM DOPHILUS® - 60 caps	39.95	29.96		
01064	FEMMESENCE MACAPAUSE® - 120 veg. caps	34.99	26.24		
01728	FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED) - 30 veg. caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
01670	FIBER FOOD CAPS - 200 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	16.00 14.00 13.00	12.00 10.50 9.75		
00718	FIBRINOGEN RESIST™ - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
01749	FLAX SEED (ORGANIC GOLDEN GROUND) - 14 oz.	11.67	8.75		
01821	FLORASSIST® HEART HEALTH PROBIOTIC - 60 caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01825	FLORASSIST® PROBIOTIC - 30 liquid caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01439	FOLATE (OPTIMIZED) (L-METHYLFOLATE) 1,000 mcg - 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01641	FOLIC ACID + B12 CAPSULES - 200 veg. caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01544	FORSKOLIN - 10 mg, 60 veg. caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
01513	FUCOIDAN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
00993	FUCOXANTHIN-SLIM™ - 90 softgels Buy 4 bottles, price each	44.00 39.00	33.00 29.25		
G					
00559	GAMMA E TOCOPHEROL/TOCOTRIENOLS - 60 softgels Buy 4 bottles, price each	\$42.00 37.00	\$31.50 27.75		
00759	GAMMA E TOCOPHEROL w/SESAME LIGNANS - 60 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01394	(OPTIMIZED) GARLIC - 200 veg. caps Buy 4 bottles, price each	24.95 21.00	18.71 15.75		
01301	GH PITUITARY SUPPORT DAY FORMULA - 120 tabs Buy 4 bottles, price each	48.00 44.00	36.00 33.00		
01302	GH PITUITARY SUPPORT NIGHT FORMULA - 120 veg. caps Buy 4 bottles, price each	25.00 22.50	18.75 16.88		
***01228	GINGER FORCE® - 60 softgels	31.95	23.96		
01658	GINKGO BILOBA CERTIFIED EXTRACT™ - 120 mg, 365 veg. caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
01648	GINKGO EXTRACT 28/7 (SUPER) - 120 mg, 100 veg. caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
00756	GLA WITH SESAME LIGNANS (MEGA) - 60 softgels Buy 4 bottles, price each	19.50 18.00	14.63 13.50		
00345	(L) GLUTAMINE CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00141	(L)-GLUTAMINE POWDER - 100 grams Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00522	GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps Buy 4 bottles, price each	38.00 32.00	28.50 24.00		
01541	GLUTATHIONE, CYSTEINE & C - 100 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00314	L-GLUTATHIONE (MEGA) - 250 mg, 60 caps	39.64	29.73		
01731	GLYCEMICPRO™ TRANSGLUCOSIDASE - 60 veg. caps Buy 4 bottles, price each	48.00 42.00	36.00 31.50		

SUB-TOTAL OF COLUMN 8

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					
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	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01620	GREEN COFFEE EXTRACT COFFEEGENIC® - 400 mg, 90 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00953	GREEN TEA EXTRACT (MEGA) - lightly caffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	24.00	18.00		
00954	GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	24.00	18.00		
01545	GUTSY CHEWY DIGESTIVE (CITRUS FLAVOR) - 8 tablets	11.50	8.63		
01546	GUTSY CHEWY DIGESTIVE (WILD BERRY FLAVOR) - 8 tablets	11.50	8.63		
H					
01074	5 HTP - 100 mg, 60 caps	\$27.95	\$20.96		
01738	HCA (GARCINIA) - 90 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
01393	HEPATOPRO - 900 mg, 60 softgels	50.00	37.50		
	Buy 4 bottles, price each	46.00	34.50		
01435	HOMOCYSTEINE RESIST - 100 veg 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™ - 530 grams powder	42.00	31.50		
01674	INOSITOL CAPSULES - 1,000 mg, 360 veg. caps	62.00	46.50		
	Buy 4 bottles, price each	58.00	43.50		
01292	INTEGRA-LEAN® AFRICAN MANGO IRVINGIA - 150 mg, 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01248	IODINE COMPLETE (ADVANCED) - 180 tablets	46.00	36.50		
01677	IRON PROTEIN PLUS - 300 mg, 100 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		
J, K					
00056	JARRO-DOPHILUS EPS™ - 60 veg. caps	\$22.95	\$17.21		
01759	JARRO-DOPHILUS EPS™ - 30 caps	39.95	29.96		
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	KRILL OIL PHOSPHOMEAGA™ - 60 softgels	33.95	25.46		

SUB-TOTAL OF COLUMN 9

NOVEMBER 2014

No.		Retail Each	Member Each	Qty	Total
00316	KYOLIC® GARLIC FORMULA 102 - 200 veg. caps	\$26.45	\$19.84		
00214	KYOLIC® GARLIC FORMULA 105 - 200 caps	27.45	20.59		
00789	KYOLIC® RESERVE - 600 mg, 120 caps	27.95	20.96		
L					
01681	LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps	\$52.00	\$39.00		
	Buy 4 bottles, price each	48.00	36.00		
00020	LECITHIN - 16 oz. granules	15.00	11.25		
	Buy 4 jars, price each	12.50	9.38		
01855	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		
01857	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		
01854	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		
01856	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		
01865	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		
01867	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		
01864	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		
01866	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		
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		
00455	LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels	35.00	26.25		
	Buy 4 bottles, price each	30.00	22.50		
M					
01885	MACUGUARD™ OCULAR SUPPORT - 60 softgels	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
01886	MACUGUARD™ OCULAR SUPPORT w/ASTAXANTHIN - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01459	MAGNESIUM CAPS - 500 mg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	10.00	7.50		
01682	MAGNESIUM CITRATE - 160 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	7.50	5.63		
01668	MELATONIN - 300 mcg, 100 veg. caps	5.75	4.31		
	Buy 4 bottles, price each	5.00	3.75		
01083	MELATONIN - 500 mcg, 200 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		

SUB-TOTAL OF COLUMN 10

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

To order online visit: www.LifeExtension.com

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
00329	MELATONIN - 1 mg, 60 caps	\$5.00	\$3.75		
	Buy 4 bottles, price each	4.63	3.47		
00330	MELATONIN - 3 mg, 60 caps	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01786	MELATONIN TIME RELEASE - 3 mg, 60 veg. tabs	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
00331	MELATONIN - 10 mg, 60 caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
00332	MELATONIN - 3 mg, 60 veg. lozenges	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01734	MELATONIN (Fast Acting Liquid) - 3 mg (Natural Citrus-Van)	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
01787	MELATONIN TIME RELEASE - 300 mcg, 100 veg. tabs	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
01788	MELATONIN TIME RELEASE - 750 mcg, 60 veg. tablets	8.00	6.00		
	Buy 4 bottles, price each	7.00	5.25		
01536	METHYLCOBALAMIN - 1 mg, 60 veg. lozenges (vanilla)	9.95	7.46		
	Buy 4 bottles, price each	8.00	6.00		
01537	METHYLCOBALAMIN - 5 mg, 60 veg. lozenges (vanilla)	32.00	24.00		
	Buy 4 bottles, price each	25.00	18.75		
	Buy 10 bottles, price each	23.00	17.25		
00709	MIGRA-EZZE™ (BUTTERBUR) - 60 softgels	29.50	22.13		
	Buy 4 bottles, price each	26.33	19.75		
01800	MIGRA-MAG w/BRAIN SHIELD® - 90 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01522	MILK THISTLE (EUROPEAN) - 60 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
01822	MILK THISTLE (EUROPEAN) - 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01817	MILK THISTLE (EUROPEAN) - 120 softgels	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01698	MIRAFORTE w/STANDARDIZED LIGNANS (SUPER) - 120 caps	62.00	46.50		
	Buy 4 bottles, price each	56.00	42.00		
01769	MITOCHONDRIAL BASICS w/BIOPQQ® - 30 caps	52.00	39.00		
	Buy 4 bottles, price each	46.00	34.50		
01768	MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ® - 120 caps	94.00	70.50		
	Buy 4 bottles, price each	84.00	63.00		
00065	MK-7 - 90 mcg, 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01279	MOUTHWASH W/POMEGRANATE - 16 oz	18.50	13.88		
	Buy 4 bottles, price each	17.00	12.75		
00451	MSM (METHYLSULFONYLMETHANE) - 1,000 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	11.95	8.96		
N					
01534	N-ACETYL-L-CYSTEINE - 600 mg, 60 veg. caps	\$14.00	\$10.50		
	Buy 4 bottles, price each	13.50	10.13		
01904	NAD+ CELL REGENERATOR™ - 100 mg, 30 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	26.00	19.50		
00066	NATTOKINASE - 60 softgels	25.50	19.13		
01807	NATURAL APPETITE SUPPRESS (ADVANCED) - 60 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
00984	NATURAL BP MANAGEMENT - 60 tablets	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		

SUB-TOTAL OF COLUMN 11

No.		Retail Each	Member Each	Qty	Total
01892	NATURAL ESTROGEN - 60 veg. tabs	\$38.00	\$28.50		
	Buy 4 bottles, price each	34.00	25.50		
01221	NATURAL FEMALE SUPPORT - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01471	NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01626	NATURAL SEX FOR WOMEN ® 50+ (ADVANCED) - 90 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	45.33	34.00		
01444	NATURAL SLEEP® - 60 veg. caps	13.00	9.75		
	Buy 4 bottles, price each	10.00	7.50		
01551	NATURAL SLEEP® w/ MELATONIN (ENHANCED) - 30 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01511	NATURAL SLEEP® w/o MELATONIN (ENHANCED) - 30 caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01445	NATURAL SLEEP® MELATONIN - 5 mg, 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00987	NATURAL STRESS RELIEF - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01603	NEURO-MAG™ MAGNESIUM L-THREONATE - 90 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01602	NEURO-MAG™ L-THREONATE W/CALCIUM & VITAMIN D 225 grams - Lemon flavor	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00373	NO-FLUSH NIACIN - 800 mg, 100 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
O					
01824	OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRAT(ADVANCED)	\$36.00	\$27.00		
	500 mg, 60 veg. caps • Buy 4 bottles, price each	32.00	24.00		
01819	OMEGA WITH KRILL & ASTAXANTHIN (SUPER) - 120 softgels	45.00	33.75		
	Buy 4 bottles, price each	42.00	31.50		
	Buy 10 bottles, price each	38.00	28.50		
01483	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
	Buy 10 bottles, price each	14.00	10.50		
01482	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		
01484	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 enteric coated softgels	34.00	25.50		
	Buy 4 bottles, price each	31.00	23.25		
	Buy 10 bottles, price each	28.00	21.00		
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		
01801	ONE-PER-DAY - 60 tablets	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01328	ONLY TRACE MINERALS - 90 veg. caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		

SUB-TOTAL OF COLUMN 12

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

NOVEMBER 2014

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
P					
01789	PALMETTOGUARD™ SAW PALMETTO w/BETA SITOSTEROL - 30 softgels	\$15.00	\$11.25		
	Buy 12 bottles, price each	12.00	9.00		
00073	PANCREATIN - 500 mg, 50 caps	13.22	9.92		
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	109.95	82.46		
01080	PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps	79.95	59.96		
01811	PEONY IMMUNE - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
00673	PGX™ PLUS MULBERRY (WELLBETX®) -180 veg. caps	34.95	26.21		
00865	PHARMA GABA® - 60 chewable tablets	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01676	PHOSPHATIDYL SERINE 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		
01436	POLICOSANOL - 10 mg, 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	15.00	11.25		
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		
01797	POMI-T® - 60 veg. caps	33.33	25.00		
	Buy 4 bottles, price each	30.00	22.50		
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		
***01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
01576	PREVAGEN® - 10 mg, 30 caps	60.00	45.00		
01577	PREVAGEN® ES - 20 mg, 30 caps	70.00	52.50		
00525	PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets	59.95	44.96		
01441	PROGESTACARE FOR WOMEN - 4 oz cream	35.00	26.25		
	Buy 4 bottles, price each	32.00	24.00		
01898	PROSTATE FORMULA (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		
01770	PROTEIN CONCENTRATE (New Zealand Whey) Vanilla - 520 gr	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		
01771	PROTEIN CONCENTRATE (New Zealand Whey) Chocolate - 660 gr	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		

SUB-TOTAL OF COLUMN 13

NOVEMBER 2014

No.		Retail Each	Member Each	Qty	Total
01812	PROVINAL® PURIFIED OMEGA-7 - 30 softgels	\$27.00	\$20.25		
	Buy 4 bottles, price each	24.00	18.00		
01508	PTEROPURE® - 50 mg Pterostilbene 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01587	PURE PLANT PROTEIN - Veg. Vanilla 540 grams powder	38.00	28.50		
	Buy 4 jars, price each	35.00	26.25		
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	16.95	13.56		
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		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	41.33	31.00		
00889	RHODIOLA EXTRACT - 250 mg, 60 veg. caps	11.75	8.81		
	Buy 4 bottles, price each	10.58	7.94		
00972	(D) RIBOSE POWDER - 150 grams	27.50	20.63		
	Buy 4 jars, price each	24.75	18.56		
01473	(D) RIBOSE TABLETS - 100 veg. tabs	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
01609	RICH REWARDS® BREAKFAST GROUND COFFEE - 12 oz. bag	13.00	9.75		
01730	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag	15.00	11.25		
	Natural Mocha				
01729	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag	15.00	11.25		
	Natural Vanilla				
01612	RICH REWARDS® BREAKFAST BLEND WHOLE BEAN 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	13.00	9.75		
	Buy 6 bottles, price each	12.25	9.19		
01530	RICH REWARDS™ CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle	11.95	8.96		
	Buy 6 bottles, price each	11.25	8.44		

SUB-TOTAL OF COLUMN 14

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
01531	RICH REWARDS™ (SPICY) CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle	\$11.95	\$8.96		
	Buy 6 bottles, price each	11.25	8.44		
01705	RICH REWARDS™ LENTIL VEGETABLE SOUP - 32 oz. bottle	13.00	9.75		
	Buy 6 bottles, price each	12.25	9.19		
01810	RICH REWARDS™ MUNG BEAN SOUP W/TURMERIC - 32 oz. bottle	13.00	9.75		
	Buy 6 bottles, price each	12.25	9.19		
01820	RICH REWARDS™ PROTEIN COFFEE CREAMER - Vanilla - 270 grams	26.00	19.50		
	Buy 4 jars, price each	23.00	17.25		
01208	R-LIPOIC ACID (SUPER) - 240 mg, 60 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	45.00	33.75		
00070	RNA CAPSULES - 500 mg, 100 caps	17.95	13.46		
	Buy 4 bottles, price each	16.16	12.12		
S					
01432	SAFFRON w/SATIREAL® (OPTIMIZED) - 60 veg. caps	\$36.00	\$27.00		
	Buy 4 bottles, price each	32.00	24.00		
00358	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets	16.00	12.00		
	Buy 8 boxes, price each	14.00	10.50		
00453	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
00557	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets	28.00	21.00		
	Buy 6 boxes, price each	24.00	18.00		
01055	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets	66.00	49.50		
	Buy 4 bottles, price each	60.00	45.00		
01740	SEA-IODINE™ - 1,000 mcg, 60 veg. caps	8.00	6.00		
	Buy 4 bottles, price each	7.20	5.40		
00046	SELENIUM - 2 oz dropper bottle	11.95	8.96		
01679	SE-METHYL L-SELENOCYSTEINE - 200 mcg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
00318	SERRAFLAZYME - 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00284	SHARK LIVER OIL (NORWEGIAN) - 1,000 mg, 30 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01684	SILYMARIN - 100 mg, 50 veg. caps	9.25	6.94		
	Buy 4 bottles, price each	8.25	6.19		
01596	SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT® - 30 veg. liquid caps	25.00	18.75		
	Buy 4 bottles, price each	23.00	17.25		
00961	SODZYME® w/GLISODIN® AND WOLFBERRY - 90 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
00657	SOLARSHIELD SUNGLASSES - 1 pair smoke color	12.99	9.74		
	Buy 2 pairs, price each	11.50	8.63		
01097	SOY EXTRACT (ULTRA) - 150 veg. caps	87.00	65.25		
	Buy 4 bottles, price each	78.00	58.50		
00432	STEVIA™ EXTRACT (BETTER) - 100 packets, 1 gram each	9.95	7.46		
00438	STEVIA™ ORGANIC LIQUID EXTRACT (BETTER) - 2 oz liquid	11.00	8.25		
01476	STRONTIUM - 750 mg, 90 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01649	SUPER ABSORBABLE SOY ISOFLAVONES - 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01790	SUPER SAW PALMETTO/NETTLE ROOT w/BETA-SITOSTEROL - 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
	Buy 12 bottles, price each	24.00	18.00		
01778	SUPER SELENIUM COMPLEX - 200 mcg, 100 veg. caps	14.00	10.50		
	Buy 4 bottles, price each	12.00	9.00		
	Buy 12 bottles, price each	11.00	8.25		

SUB-TOTAL OF COLUMN 15

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

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T					
01723	TART CHERRY EXTRACT w/STANDARDIZED CHERRYPURE® - 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
00199	TAURINE - 1,000 mg, 50 caps	8.95	6.71		
	Buy 4 bottles, price each	8.00	6.00		
00133	TAURINE POWDER - 300 grams	20.00	15.00		
	Buy 4 bottles, price each	16.88	12.66		
01304	THEAFLAVIN STANDARDIZED EXTRACT - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01683	(L) THEANINE - 100 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	20.50	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	14.00	10.50		
	Buy 4 bottles, price each	11.00	8.25		
01859	TMG - 1,000 mg, 60 veg. liquid caps	13.00	9.75		
	Buy 4 bottles, price each	12.00	9.00		
00781	TOCOTRIENOLS WITH SESAME LIGNANS - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	36.00	27.00		
01400	TOCOTRIENOLS (SUPER-ABSORBABLE) - 60 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01278	TOOTH PASTE - 4 oz (Mint)	9.50	7.13		
	Buy 4 tubes, price each	8.67	6.50		
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT w/RESVERATROL - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.60	22.20		
01803	TRI SUGAR SHIELD™ - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01386	TRUFIBER® - 180 grams	32.95	24.71		
01389	TRUFLOA PROBIOTICS - 32 veg. caps	42.95	32.21		
01722	L-TRYPTOPHAN - 500 mg, 90 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01721	TRYPTOPHAN PLUS (OPTIMIZED) - 90 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01816	TWO-PER-DAY - 60 tablets	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01815	TWO-PER-DAY - 120 tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01814	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		
V					
00213	VANADYL SULFATE - 7.5 mg, 100 veg. 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		
00372	VITAMIN B3 Niacin - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		

SUB-TOTAL OF COLUMN 16

NOVEMBER 2014

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T CONTINUED					
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 - 1,000 mg, 60 veg. tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	VITAMIN C w/ DIHYDROQUERCETIN - 1,000 mg, 250 veg. 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		
01736	(EFFERVESCENT) VITAMIN C-MAGNESIUM CRYSTALS - 180 grams	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01732	VITAMIN D3 - 2,000 IU, 1 fl oz, Mint flavor	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	VITAMIN D3 - 1,000 IU, 90 softgels	7.00	5.25		
	Buy 4 bottles, price each	6.00	4.50		
01751	VITAMIN D3 - 1,000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	VITAMIN D3 - 5,000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	VITAMIN D3 - 7,000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01758	VITAMIN D3 w/SEA-IODINE™ - 5,000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
00864	VITAMIN D3 Liquid Emulsion - 2,000 IU, 1 oz.	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01741	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		
X					
00409	XYLIWHITE™ MOUTHWASH - 16 oz	\$10.00	\$7.50		
Z					
01813	ZINC HIGH POTENCY - 50 mg, 90 veg. caps	\$7.95	\$5.96		
	Buy 4 bottles, price each	7.00	5.25		
01561	ZINC LOZENGES - 60 veg. lozenges	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
***01051	ZYFLAMEND® WHOLE BODY - 120 softgels	64.95	48.71		

SUB-TOTAL OF COLUMN 17

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SUB-TOTAL COLUMN 8	
SUB-TOTAL COLUMN 9	
SUB-TOTAL COLUMN 10	
SUB-TOTAL COLUMN 11	
SUB-TOTAL COLUMN 12	
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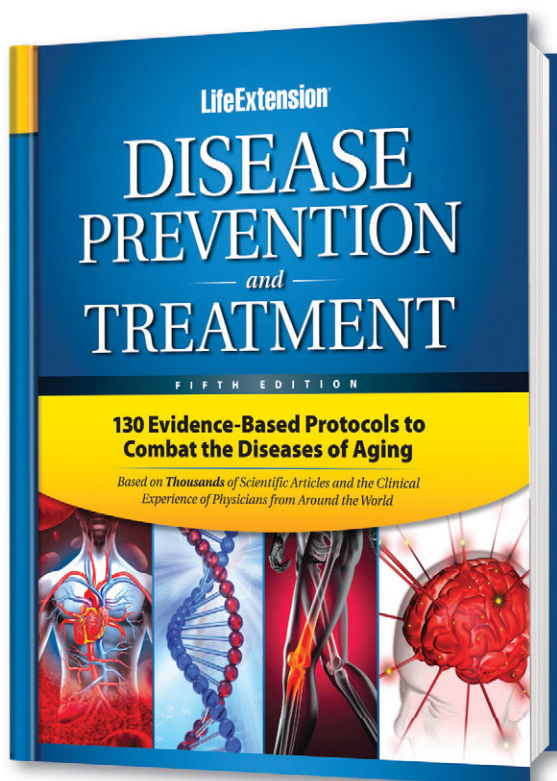
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Vitamin B1	75 mg	1.5 mg
Vitamin B2	50 mg	1.7 mg
Vitamin B6	75 mg	3 mg
Vitamin B12 (as methylcobalamin)	300 mcg	25 mcg
Niacin (as niacinamide)	50 mg	20 mg
Pantothenic acid	100 mg	10 mg
Vitamin E	100 IU (natural)	50 IU (synthetic)
Natural Folate	400 mcg	400 mcg (synthetic)
Zinc	30 mg	11 mg
Selenium	200 mcg	55 mcg
Lutein	5,000 mcg	250 mcg
Lycopene	2,000 mcg	300 mcg
Biotin	300 mcg	30 mcg
Boron	3,000 mcg	150 mcg
Chromium	200 mcg	45 mcg
Molybdenum	100 mcg	45 mcg
Magnesium	100 mg	50 mg
Manganese	2 mg	2.3 mg
Iodine	150 mcg	150 mcg
Potassium	25 mg	80 mg
Vitamin A (as beta-carotene)	4,500 IU	1,000 IU
Vitamin A (preformed)	500 IU	1,500 IU
Choline (as bitartrate)	20 mg	(none)
Inositol	50 mg	(none)
Calcium	12 mg	220 mg
Alpha Lipoic Acid	25 mg	(none)
Natural Mixed Tocopherols (providing gamma, delta, alpha, and beta tocopherols)*	20 mg	(none)

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

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

When compared to conventional "one-a-day" products, Life Extension Two-Per-Day contains up to 50 times more potency of specific nutrients.

Commercial supplements often contain the cheapest form of nutrients that fail to provide optimal benefits. For example, the 50 IU of synthetic vitamin E contained in **Centrum® Silver® Adults 50+** may provide relatively little vitamin E to the bloodstream compared to the 100 IU of natural vitamin E in **Two-Per-Day**.

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



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

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

A bottle containing 120 tablets of **Two-Per-Day Tablets** retails for \$20. If a member buys four bottles, the price is reduced to **\$13.50** per bottle. (Item #01815)

A bottle containing 120 capsules of **Two-Per-Day Capsules** retails for \$22. If a member buys four bottles, the price is reduced to **\$15** per bottle. (Item #01814)

Each bottle of **Two-Per-Day** lasts **60 days**, so members can obtain the benefits of this high-potency formula for as little as **\$6.75 per month**.

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

Caution: Individuals consuming more than 2,000 IU/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxy vitamin D measurement. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

* The new two-per-day provides a small amount of gamma tocopherol as part of natural mixed tocopherols which includes natural vitamin E.



Ratings based on results of the 2013 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com.

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



WHAT'S INSIDE

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LifeExtension® Magazine



7 CREATING IMMORTAL GENES

Extending the human life span may be easier than previously believed. Recently, scientists enabled enhanced **DNA repair** so that *E. coli* bacteria can withstand **1,000 times** the radiation dose that kills humans. We may soon be able to engineer our own DNA genes to ward off **degenerative aging**.



22 "TURN OFF" GENES THAT ACCELERATE AGING

Since 2001, Life Extension® has been seeking a method to "turn off" genes that accelerate degenerative processes. After 13 years of research, an effective method of boosting cellular **NAD+** is finally available to restore youth-sustaining life functions.



34 REVITALIZE SKIN FROM THE INSIDE OUT

Ceramide loss with age results in wrinkles and age spots, but studies verify that an *oral ceramide* extract enters the bloodstream to produce moist, supple, and more youthful appearing skin.



44 GEORGE HAMILTON'S LONGEVITY SECRETS

Hollywood legend George Hamilton reveals his plan to live 120 years or more with his lifestyle that includes calorie restriction and aggressive attention to detail.



52 POMEGRANATE PROTECTS ENDOTHELIAL HEALTH

Mainstream medicine overlooks the critical role the *endothelium* (inner arterial lining) plays in maintaining vascular health. Studies show that **pomegranate** protects the endothelium via multiple mechanisms.



74 HELP FOR AGING HANDS

A new, topical serum containing *six novel compounds* reduces hyperpigmentation, and smooths wrinkles in aging hands.