

**REBUTTAL TO ATTACK ON CARNITINE**

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August 2013

## **Three-Step Strategy To Reverse Mitochondrial Aging**

**Why Medical Advances  
Aren't Occurring Faster**

**Coffee's Surprising  
Heart Benefits**

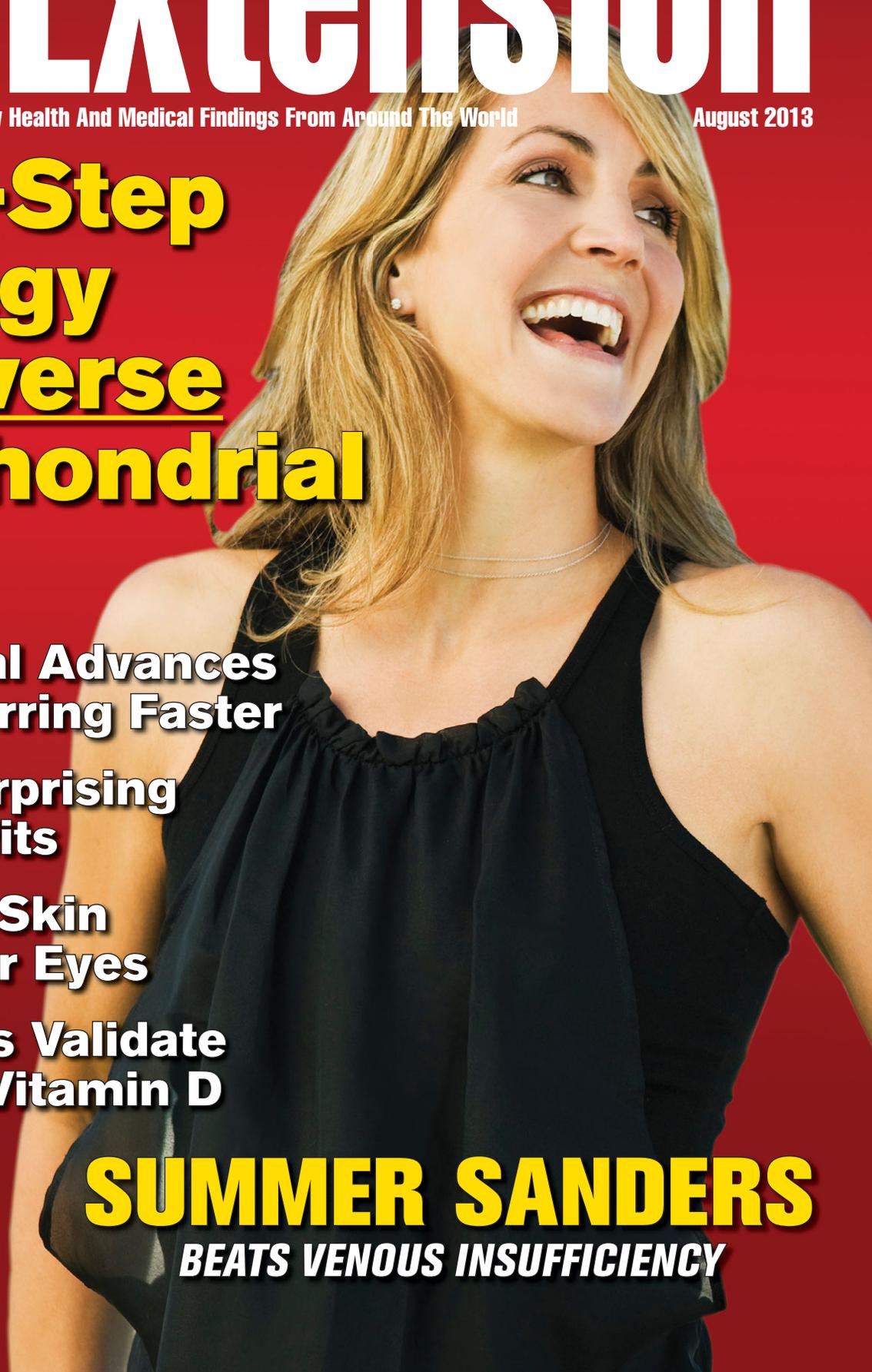
**Rejuvenate Skin  
Around Your Eyes**

**New Studies Validate  
Efficacy of Vitamin D**



## **SUMMER SANDERS**

**BEATS VENOUS INSUFFICIENCY**



# PROTECT SKIN AGAINST DAMAGE FROM INSIDE OF YOUR BODY

Sunscreens do not always offer complete protection against ultraviolet exposure.<sup>1,2</sup>

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

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

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

## Oral Sun Defense

**FernBlock®** has shown remarkable effectiveness in promoting skin defenses against harmful solar radiation.<sup>3,6-9</sup>

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

## Enhanced FernBlock® Formula

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

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

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

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

Note: This product is not a sunscreen.

### References

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14. *Nat Prod Res.* 2010 September 20;24(15):1469-80.
15. *BioFactors.* 2007;30:129-38.

## More Comprehensive Sun Protection

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

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

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



Item #01728

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

To order **Enhanced FernBlock® with Red Orange Complex**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://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.

## REPORTS

### 24 THREE-STEP STRATEGY TO REVERSE MITOCHONDRIAL AGING

According to cell biologists, the health of your mitochondria determines how long you will live. Research confirms how *three compounds* not only reduce damage to mitochondrial DNA but generate new, healthy mitochondria.

### 38 NEW STUDIES VALIDATE VITAMIN D

Nearly every tissue and cell type in your body has receptors for vitamin D, thereby increasing the amounts needed for optimal health. No longer known as just the “bone vitamin”, vitamin D also protects against cancer, heart disease, Alzheimer’s, and diabetes. Knowing your vitamin D levels based on blood testing is one of the most important health investments you can make.

### 58 COFFEE’S SURPRISING HEART BENEFITS

If you’re one of the 150 million Americans who drink coffee, two new studies show that coffee can reduce the risk of stroke by **36%** by improving **endothelial function** and lowering your chances of heart failure. Beyond heart health, coffee shows benefits in reducing occurrences of diabetes, cancer, and neurodegeneration.

### 70 MEDIA BIAS IN REPORTING CARNITINE’S BENEFITS

A study at the Mayo Clinic found that carnitine supplementation was associated with a **27% reduction** in all-cause mortality, a **65% reduction** in ventricular arrhythmias, and a **40% reduction** in angina symptoms in heart attack patients. Yet recent media headlines would have consumers believe that L-carnitine is detrimental to vascular health! This meticulous rebuttal exposes the media’s deception and reveals the truth about carnitine’s heart health benefits.

### 84 REJUVENATE THE SKIN AROUND YOUR EYES

The delicate skin around the eyes is constantly exposed to environmental oxidative stresses that break down the fibrous network composed of proteins elastin and collagen. In a remarkable clinical study, three unique ingredients *reduced* wrinkle depth around the eyes by **17%** in 28 days—equaling a skin rejuvenation effect of **6 years in just 4 weeks!**

## DEPARTMENTS

### 7 AS WE SEE IT: Why Medical Advances Aren’t Occurring Faster!

Cancer patients are often treated with technologies developed during the first part of *last* century. Innovative treatments remain bogged down in regulatory quagmire. Those who dare to bring them to the surface risk financial ruin and incarceration by regulators protecting pharmaceutical interests. **Life Extension®** has long sought to persuade Congress to allow individuals to try drugs shown to be safe but not yet approved. In a free-market environment, lethal diseases will succumb to less expensive cures and greater competition will eliminate today’s health care cost crisis.

### 17 IN THE NEWS

Folate and B12 reduce macular degeneration risk; calorie-restricted diets delay neurodegeneration; preoperative supplemental omega-3 protects against atrial fibrillation; ginger benefits asthmatic patients; fish oil reduces mental stress; antioxidants improve breast cancer survival; and more.

### 93 ASK THE DOCTOR: IMPROVE VEIN HEALTH

Varicose veins are not just a cosmetic issue but can indicate more serious circulation problems such as chronic venous insufficiency. Ariel Soffer, MD, talks about specific supplements available for vein problems, as well as the latest non-surgical treatments, including lasers and sclerotherapy.

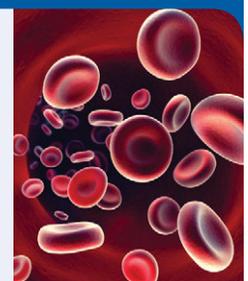
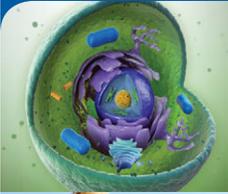


**52 ON THE COVER**

### SUMMER SANDERS BEATS VENOUS INSUFFICIENCY

Former US Olympic Champion Summer Sanders discovered that varicose veins can happen at any age.

Not just a cosmetic problem, early medical treatment, supplements, and lifestyle changes can prevent serious consequences such as a pulmonary embolism.





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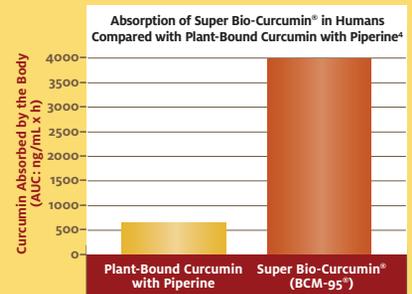
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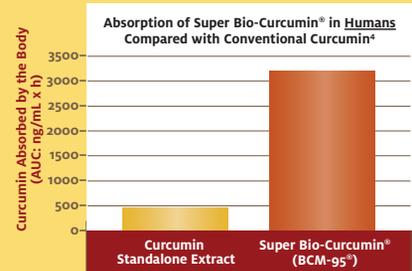
# ARE YOU GETTING Curcumin's BENEFITS?



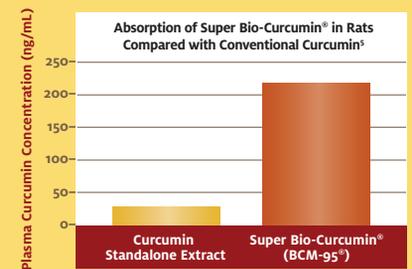
## How Much Curcumin Are You Absorbing?



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



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



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

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

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

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

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

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

In recent studies comparing the effects of standard curcumin against turmeric extracts comparable to **Super Bio-Curcumin®**, researchers observed:<sup>1,2</sup>

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

A separate study indicated that an antioxidant-rich curcumin extract<sup>3</sup> provided powerful support for heart health.

## Unrivalled Potency and Absorbability with BCM-95®

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

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

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

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



Item # 00407

### References

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5. Bioavailability study of BCM-95® in rats. Orcas International Inc. 2006.

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

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

To order Super Bio-Curcumin®  
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# SCIENTIFIC ADVISORY BOARD



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



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



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



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



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



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



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



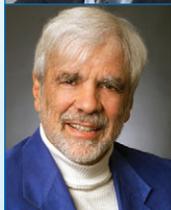
**Ralph W. Moss, PhD**, is the author of books such as *Antioxidants Against Cancer*, *Cancer Therapy*, *Questioning Chemotherapy*, and *The Cancer Industry*, as well as the award-winning PBS documentary "The Cancer War." Dr. Moss has independently evaluated the claims of various cancer treatments and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



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



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



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

# Advanced RESVERATROL Formula

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

Since then, we have identified additional compounds that simulate calorie restriction's ability to trigger youthful **gene expression**—the process by which genes transmit signals that slow certain aspects of aging.

Compelling evidence reveals that certain compounds found in berries, such as **pterostilbene** and **fisetin**, possess potent “longevity gene” activators that work in synergy with **resveratrol**. For example, **fisetin** (found in strawberries) has been shown to **stabilize** resveratrol in the body by shielding it from metabolic breakdown,<sup>1-10</sup> thus extending its beneficial effects.

## High-Potency Resveratrol with Synergistic Activators

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

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

<b>Trans-Resveratrol</b>	<b>250 mg</b>
<b>Grape-Berry Actives</b>	<b>85 mg</b>
<b>Quercetin</b>	<b>60 mg</b>
<b>Trans-Pterostilbene</b>	<b>0.5 mg</b>
<b>Fisetin</b>	<b>10 mg</b>

Item # 01430



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

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Grape-Berry Actives, call 1-800-544-4440  
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# When “RULES” Are Broken



BY WILLIAM FALOON



Former Vice-President **Nelson Rockefeller** died at age 70 from a heart attack. Former President **Gerald Ford** died at age 93 from arteriosclerotic cerebrovascular disease and diffuse arteriosclerosis. Former Speaker of the House **Carl Albert** died at age 91 probably of vascular disease based on his history of multiple heart attacks and triple bypass surgery.

PHOTO COURTESY GERALD R. FORD PRESIDENTIAL LIBRARY

The people you see throughout this article were the most powerful group in the world.

They now share one common problem...they're all **dead**.

These individuals are partially responsible for their demise because they inadvertently created and maintained **rules** that interfere with **medical progress**.

The catastrophic result has been needless suffering and deaths of **tens of millions** of Americans.

This article describes the development of what was considered a technological impossibility. The only reason this breakthrough happened was the willingness of an individual to **break the rules**, which put his personal liberty in jeopardy.

This **rule breaker** is now a **hero** and is credited for **saving lives**.

The dilemma is that most brilliant individuals today lack the confidence to risk **prison** and lose everything they have. They instead adhere to **rules** that strangle the kind of advances humans need to reverse age-related disease.

We will send this article to every member of Congress. Our objective is to persuade Representatives/Senators to recognize their power to **amend** archaic **rules** that impede scientists from **curing old age disease**.

## Jet Engine Controversy

When World War II broke out, nations rushed to develop weapons that would give them a tactical advantage. When a group of British scientists proposed expending research funds to develop a jet engine for aircraft, the consensus of their opposition was that this was **impossible** and would be a waste of scarce wartime resources.<sup>1</sup>

What the British did not know was that the Germans were already pursuing jet engine technology. Fortunately, it came to fruition too late in the war to produce a Nazi victory.

As you'll read next, narrow-minded limitations on this kind of technology are not limited to the 1930s.

## The Battle to Build Iron Dome

Israel is a tiny country surrounded by enemies that routinely fire rockets and missiles into it. Israel responds to these attacks

with its own bombs and missiles, along with land invasions that cost many lives.

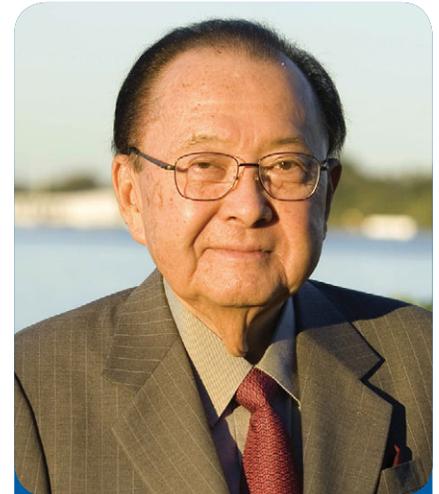
In late 2012, thousands of missiles and rockets were fired into Israeli population centers from the Gaza strip. While not particularly accurate, the volume of this weaponry would normally inflict many Israeli injuries and deaths.<sup>2</sup>

This time around something unexpected happened. A new technology called **Iron Dome** resulted in 84% of these deadly projectiles destined to hit Israeli population centers being destroyed in mid-air.<sup>1</sup>

If you are not impressed by what **Iron Dome** accomplished, what you read in this article will enlighten you to a scientific achievement the world has never witnessed.

Perhaps the most fascinating aspect of **Iron Dome** is that it would have never been developed had an Israeli general and defense minister not **broken bureaucratic rules**.<sup>2</sup>

We at *Life Extension* contend these same kinds of advances



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Senator **Daniel Inouye** died at age 88 of respiratory complications.

would occur in the **medical** arena if Congress would abolish **rules** restricting the development of life-saving medical therapies.

## Bureaucratic Opposition to Iron Dome

The Israeli military establishment did not believe **Iron Dome** had a chance of working and was vehemently opposed to it. So-called "experts" at the US Pentagon voiced similar opposition and dismissed **Iron Dome** as doomed to fail.

Despite these bureaucratic obstacles, a lone Israeli general pushed the project through, breaking laws and rules in the process that could have landed him and others in serious personal trouble.<sup>2</sup>

## Technical Challenges

The pessimism of the military bureaucrats was nothing compared to the technological difficulties faced by the Iron Dome creators.



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Senator **Arlen Specter** died at age 82 from complications of non-Hodgkin's lymphoma.

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Senator **Warren Rudman** died at age 82 from cancer.

Rockets and missiles of all types are fired into Israel from only a few miles away. They fly erratically and can hit Israeli communities within seconds. Most are just a few feet long and a few inches wide. In some years thousands rain down (over 4,000 in the year 2008 alone).<sup>2</sup>

To counter this armada of rockets, a system had to be developed that could continuously scan enemy territory, detect a rocket the instant it was fired no matter how big or small, pinpoint its likely strike location and calculate if it was likely to hit a population center, and finally, if it was going to hit a city, blast it out of the sky with a missile. The system needed to do all that within about **15 seconds**.

Additionally, interceptor missiles would need to cost about one-tenth of an average air-to-air missile, or else Israel's rocket-flinging foes would be able to bankrupt Israel. And instead of taking 10 years or more to develop, typical for new weapons systems, Iron Dome needed to deploy in half that.

These daunting challenges deterred most from even considering this project, but not **General Daniel Gold**, who was director of Israel's new weapon's research department. General Gold has a PhD in mathematics and took up the rocket's challenge with enthusiasm seen in very few individuals.

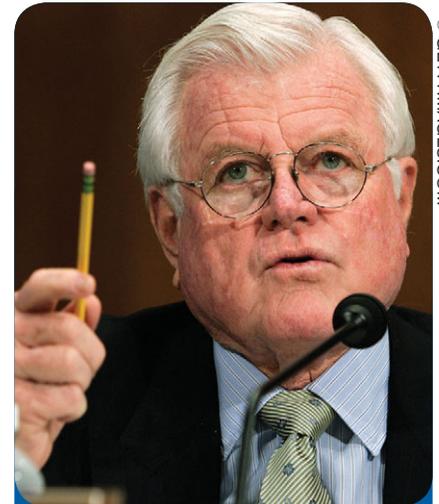
### *Bypassing the Establishment*

Almost none of Israel's military experts believed this kind of rocket defense could work. Enemy rockets of varying sizes fly erratically and rapidly hit nearby Israeli communities.

Drawing inspiration from other types of weapons defense systems, General Gold and his team in **March 2005** agreed on a patched-together concept for what would become the **Iron Dome**.<sup>2</sup>

General Gold called up an Israeli weapons maker to head the project, bypassing required approvals from the military's general staff, the defense minis-

ter, and the Israeli government. An audit by the Israeli state comptroller criticized this step, which led to years of heated condemnation of the project. If regulatory or criminal actions had been taken against General Gold, the highly controversial **Iron Dome** missile defense system would have likely never happened.



Senator **Ted Kennedy** died at age 77 from glioblastoma multiforme (brain tumor).

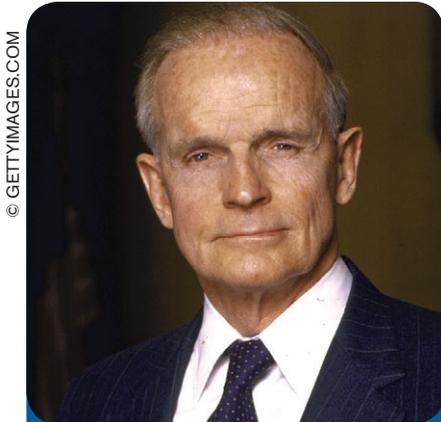
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Senator **Jesse Helms** died at age 86 of vascular dementia.

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General Gold disputed allegations that he broke rules, saying he simply sidestepped red tape. Said the General, ***“I just canceled all the unnecessary bureaucracy...I left only the most crucial bureaucracy needed for success.”***<sup>2</sup>



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Senator **William Proxmire** died at age 90 from Alzheimer's disease.

Another problem was that no one in government agreed to pay for the project. That left General Gold once again having to think outside the box. By using funds from his research budget and others in the private sector, he secured enough monies to cover early stage development costs.

Even after war with Hezbollah broke out in Lebanon, resulting in thousands of rockets being fired into northern Israel, the military establishment and Israel's prime minister refused to divert government funds for **Iron Dome**.<sup>2</sup>

## General Gold Breaks More Rules

Without government funding, it is difficult to imagine a military project continuing. Instead of scaling back, General Gold directed a private Israeli defense

contractor to begin full-scale development of the **Iron Dome** project when there was no order or appropriation to do so. According to the Israeli comptroller's audit report, ***“The directive was not under his (Dr. Gold's) authority.”***<sup>2</sup>

The defense contractor agreed that there was no legal basis to advance this system's development and was quoted, ***“But if you want to achieve something in a very short time...you have sometimes to bypass the bureaucracy.”***<sup>2</sup>

The risk taken by General Gold and a handful of others paid off. The Ministry of Defense finally committed some funding to keep Iron Dome alive. (Government auditors later found the Ministry of Defense violated regulations by committing these funds without military or government approval for the project.)

Despite engineering miracles in the developmental process, Israel did not have the funding to quickly move Iron Dome forward. Israel sought out aid from the United States. After US military experts thoroughly reviewed the project, the American team concluded that, ***“This is something that cannot be done.”***<sup>2,3</sup>

Finally, the Israeli government became convinced enough to provide the first large cash infusion to Iron Dome with more funds likely to be appropriated later. This event, however, set off another attack against General Gold, mainly by rivals who feared losing out to the improved technology General Gold had expeditiously pushed through.

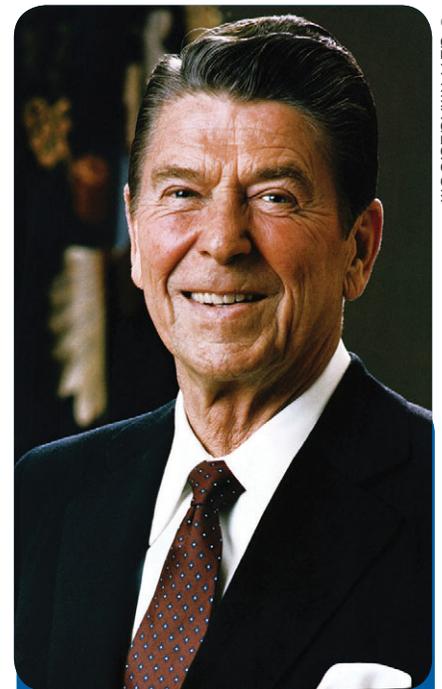
## General Gold Investigated Again by Israeli Authorities

In response to increasing recognition that General Gold had pioneered a breakthrough tech-

nology, Israel's government auditors initiated a new investigation of the project and issued a report accusing General Gold of launching a billion-dollar project without the necessary approvals. According to the auditor's report:

***“Brigadier General Gold decided on the development of Iron Dome, determined the timetables and ordered predevelopment and full development before the relevant authorities had approved the project.”***<sup>2</sup>

Fortunately for General Gold, **Iron Dome** was making rapid progress. A team of engineers assembled from across Israeli defense companies worked around the clock. Even pensioners were called out of retirement. In **2009**, during the first field test, an **Iron Dome** prototype successfully intercepted an incoming rocket.<sup>2</sup>

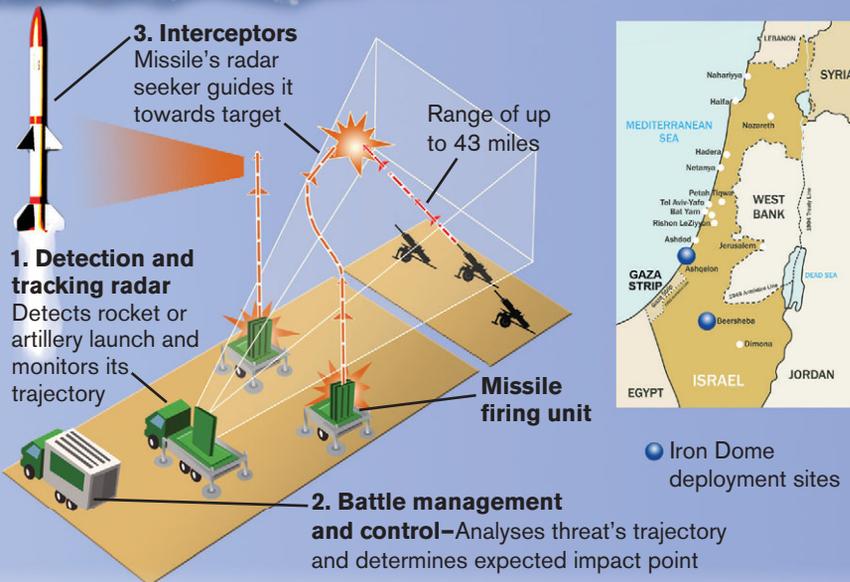


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Former President **Ronald Reagan** died at age 93 from pneumonia after suffering systemic degeneration brought on by Alzheimer's disease.

## ISRAEL'S MISSILE DEFENSE

### How Iron Dome system works



### Iron Dome Revolutionizes Military Defense... But Still No Cancer Cure Breakthrough

Intercepting supersonic projectiles in midflight was once considered science fiction. Engineers pulled off the feat by combining cutting-edge tracking radar with electro-optic sensors and mounting them on highly mobile, all-weather air defense systems. Iron Dome can hit multiple types of rockets and missiles at ranges up to 43 miles.<sup>4</sup> It can be relocated quickly to new sites with totally different terrain. Iron Dome determines within split seconds whether an incoming rocket will land in an open field or a population center.

From drawing board to deployment, Iron Dome was completed in a few brief years. If you wonder why these kinds of breakthroughs aren't happening in the medical field, look no further than an archaic **regulatory** system that suffocates innovation. That's unfortunate for about **577,000 Americans** who die from **cancer** alone each year.<sup>5</sup>

### United States Finally Recognized Iron Dome

The Pentagon sent a team of experts to Israel in late 2009 to re-evaluate Iron Dome—a concept they earlier deemed as something *“that cannot be done.”*<sup>3</sup>

In its final report, the Pentagon team declared **Iron Dome** a success. Field tests showed it was hitting **80%** of the targets, up from

the low teens in the earlier US assessment. This prompted the United States to provide roughly **\$200 million** in Iron Dome funding.<sup>2</sup>

### Lives Saved

Iron Dome went operational in March 2011. It shot down its first Palestinian rocket on April 7.

Within three days it shot down eight more rockets. It wasn't until the Gaza flare-up in late **2012** that Iron Dome made its mark on the public consciousness.<sup>2</sup>

The result was a quick ending to this conflict, where **Iron Dome** knocked down **421 rockets** launched from Gaza and bound for Israeli cities, an **84%** success rate, according to the Israeli military.<sup>2</sup>

Iron Dome limited Israeli casualties to six during the seven days of intense bombardment. As a result, there was markedly less political pressure on Israel's decision makers to invade, and a cease fire was implemented.<sup>2</sup>

There would be no Iron Dome had **General Gold** not **broken rules** that enabled him to push the system's development forward.

Regrettably, there are few heroes in the **medical arena** today willing to risk their personal liberty to bring these kinds of technological breakthroughs to those dying of chronic degenerative diseases.

### Missiles That Shoot Down Missiles... But No Cure for Cancer

Every day in America, more than **1,500** people perish from cancer.<sup>5</sup> Many of these patients are treated with surgery and radiation, technologies developed during the first half of last century. Others receive toxic chemotherapy drugs approved in the **1970s, '80s, or '90s.**

While more Americans are being cured of cancer, they often are left with horrific side effects, and the survival rate for certain cancers has not appreciably improved since the **1950s.**<sup>13-18</sup>

We have today, advanced imaging techniques (e.g., PET/CT scans) that can detect exactly where tumors are throughout a patient's body. Genetic testing of tumor cells enables us to know what enables them to uncontrollably proliferate and how they may be evading therapeutic eradication. Yet about **577,000** of these patients die each year surrounded by oncology experts.<sup>5</sup>

Effective treatments remain bogged down in regulatory quagmire.<sup>19,20</sup> Those who risk bringing them to the surface prematurely risk financial decimation and incarceration by regulators determined to protect gigantic pharmaceutical interests.

The corrupt influence of pharmaceutical behemoths is so widespread that innovators fear the only way to get new therapy approved is to meticulously follow regulatory channels that were long ago proven inefficient. In this process that can take a decade and countless millions of dollars,

potentially effective therapies are lost forever in a bureaucratic labyrinth.

## Real-World Solutions

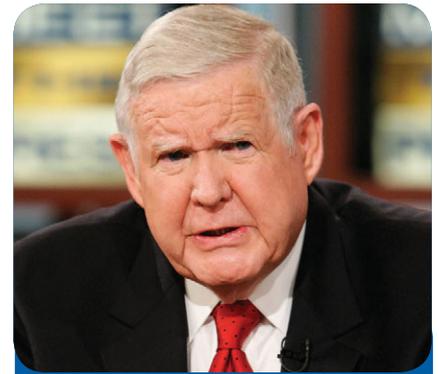
This article has been laced with depictions of former members of Congress and presidents who share a common tragedy of all *dying* before technology could evolve to prevent their death.

*Life Extension* has long sought to persuade **Congress** to amend the **Food, Drug and Cosmetic Act** to allow individuals to “*opt-out*” of **FDA’s** regulatory stranglehold and allow companies to provide innovative products that are clearly marked, “**Not approved by the FDA—Use at your own risk.**”

This approach will allow companies to offer drugs that have demonstrated safety and a reasonable likelihood of effectiveness, which are labeled “**Not Approved by the FDA.**” Patients who wish can still use only FDA-approved drugs, while those willing to take a risk, in consultation with their doctors, will be allowed to try drugs shown to be safe that are still not approved.

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

Today’s broken system results in terminally ill people learning of scientific discoveries that might well cure their disease, but sadly hearing their newscaster say the therapy is years away from FDA



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Congressman **John Murtha** died at age 77 due to complications from **gallbladder surgery**. This egregious act of hospital incompetence occurred because the surgeon nicked Murtha’s intestine during the surgery, resulting in death from peritonitis. This occurred in one of the federal government’s top military hospitals, and Murtha was one of the military’s best friends from an appropriations standpoint.<sup>10-12</sup>

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

Outside-the-box thinkers like **General Gold** are repressed in today’s hostile regulatory environment because Congress has failed to amend the law.

Americans should not face **prison** for accelerating medical progress, yet that is how the law is written and the reason why so few **cures** for lethal diseases have been found over the past 60+ years.

We at *Life Extension* have long contended that any person with a serious illness should have the individual right to choose therapies that have not yet received official approval.

Under this personal choice initiative, the **marketplace**, rather than **government regulators**, would determine which medical technologies are safe, efficacious, and cost effective.



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Senator **Daniel Patrick Moynihan** died at age 76 after complications (infection) suffered from an emergency appendectomy. (This is an example of hospital incompetence that is likely to worsen under the Affordable Care Act.)<sup>6-9</sup>



Senators **Ted Kennedy, Mike Mansfield, and Robert Byrd** all died of natural causes that could have been prevented or treated if medical research had been unshackled from bureaucratic over-regulation. These men had long-serving careers with plenty of opportunities to change laws that constrain scientific progress before they personally became victims of the regulatory stranglehold this country's healthcare system has suffered since the early 1960s.

The result will be the rapid emergence of medical therapies analogous to the **Iron Dome** missile defense system that came into existence because of **General Gold's** willingness to break rules that made no sense.

For longer life,

William Faloon

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# VASCULAR BENEFITS OF A Mediterranean Diet

## VALIDATED IN HUGE NEW STUDY

A large, rigorous study published in the *New England Journal of Medicine* confirmed the health benefits of those who switch to a **Mediterranean diet** rich in **omega-3 fish oil** as well as protective nutrients called polyphenols found in **olive oil**, fruits, vegetables, nuts like walnuts, and wine.<sup>1</sup> 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.<sup>1</sup>

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.<sup>1</sup>

### LIFE EXTENSION® MEMBERS LONG AGO BENEFITED

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

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

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

Supportive but not conclusive evidence shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease. IFOS™ certification mark is a registered trademark of Nutrasource Diagnostics, Inc. These products have been tested to the quality and purity standards of the IFOS™ program conducted at Nutrasource Diagnostics, Inc.

### SUPER OMEGA-3 WITH SESAME LIGNANS AND OLIVE FRUIT EXTRACT

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

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

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

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



Item #01482

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

# SUPPORT ENDOTHELIAL HEALTH FOR MAXIMUM SEXUAL PERFORMANCE

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

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

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

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

## A Powerful Synergy to Support Sexual Health

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

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

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

<b>Prelox® Proprietary Blend</b> L-Arginine HCl, Aspartic Acid, Pycnogenol® Dried French Maritime Pine ( <i>Pinus pinaster</i> ) Extract (bark)	<b>1440 mg</b>
<b>ICARIIN</b> [Natural Sex® <i>Epimedium sagittatum</i> Extract (aerial parts)]	<b>60 mg</b>

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

### References

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Item # 01373

To order Prelox® Natural Sex For Men®, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

# Tart Cherry Extract with Standardized *CherryPURE*<sup>®</sup>

*Potent Support for Muscles and Exercise Recovery*

With nearly 40 scientific studies published on the wide-ranging benefits of tart cherries, scientists are now discovering important new health applications for this American fruit.

**Tart cherries** are packed with unique beneficial compounds that have been shown to block COX-1 and COX-2 enzymes,<sup>1</sup> as well as maintain muscle function and promote rapid **muscle recovery** after exercise,<sup>2-5</sup> bringing faster relief from the minor aches, discomfort, and stiffness that can follow everyday muscle exertion.<sup>2,3</sup>

## 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%**.<sup>4</sup>

In another randomized controlled trial, marathon runners given tart cherry juice for 5 days before a race, on race day, and for 2 days after a race experienced significantly **faster recovery of isometric strength and muscle function**.<sup>3</sup>

And in yet another controlled trial, tart cherry juice taken twice daily for 7 days prior to a race produced a significantly **smaller increase in post-race pain**, according to a standard pain assessment scale, compared to the placebo group.<sup>2</sup>

## Anthocyanins

**Anthocyanins** are powerful flavonoids that provide the dark pigmentation to blueberries, raspberries, and bilberries.<sup>6,7</sup> In addition to being potent antioxidants, **anthocyanins** have been extensively studied for their numerous health benefits that include heart, cellular, and cognitive health.<sup>6-8</sup>

What has drawn the attention of scientists is the fact that tart cherries contain a **higher content of anthocyanins** than other fruits.<sup>1</sup>

To allow members to take full advantage of these discoveries, **Life Extension**<sup>®</sup> 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** anthocyanins per capsule!<sup>2,4</sup>

**The serving size of one vegetarian capsule of Tart Cherry Extract with Standardized CherryPURE<sup>®</sup> contains:**

<b>CherryPURE<sup>®</sup> Tart cherry (<i>Prunus cerasus</i>) extract (skin)</b>	<b>615.5 mg</b>
<small>[std to 6.5% anthocyanins (40 mg)]</small>	

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



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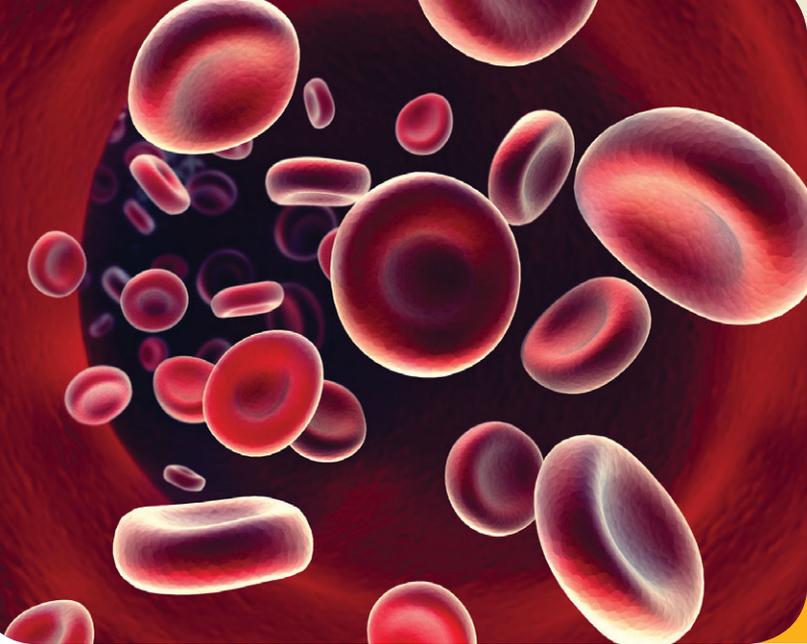


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CherryPURE<sup>®</sup> is a registered trademark of Shoreline Fruit, LLC.

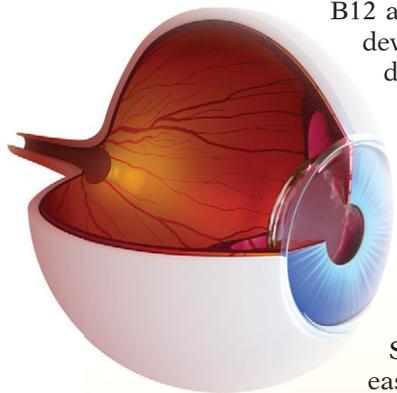
**To order Tart Cherry Extract with Standardized CherryPURE<sup>®</sup>, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**



## IN THE NEWS

### High Homocysteine, Low Folate, and B12 Predict Macular Degeneration

An article published in the *American Journal of Clinical Nutrition* reports the finding of a protective effect for higher levels of vitamin B12 and folate against the risk of developing age-related macular degeneration (AMD).\* The study also revealed a greater risk of AMD in association with higher levels of homocysteine.



Paul Mitchell and his colleagues analyzed data from 1,390 participants in the Blue Mountains Eye Study of common eye diseases. Eye examinations were conducted upon enrollment and at five, ten, and fifteen years. Serum homocysteine, folate, and vitamin B12 levels were measured and dietary questionnaires were completed at the five-year follow-up visit.

From the five-year through the fifteen-year follow-up visit, 219 subjects were diagnosed with AMD. In comparison with those with lower homocysteine levels, participants whose levels were greater than 15 micromoles per liter had an up to **56%** greater risk of AMD.

**Editor's Note:** Among those with deficient folate levels, the risk of AMD was up to **89%** higher in comparison with the risk experienced by subjects with greater levels. Vitamin B12 deficiency also increased risk.

—D. Dye

\* *Am J Clin Nutr.* 2013 May 1.

### Critically Ill Have Reduced Levels of CoQ10

An article published in the *Journal of Critical Care* revealed lower levels of coenzyme Q10 (CoQ10) in critically ill patients in comparison with healthy men and women.\*

The study compared 36 adult intensive care unit patients with 18 healthy controls. Septic shock was present in 12 of the critically ill subjects. While the lowest levels of plasma CoQ10 occurred in septic shock patients, levels were lower in critically ill patients both with and without septic shock in comparison with healthy subjects. Reduced levels of CoQ10 were also associated with increased age and with a decline in the ability to perform activities of daily living after hospital discharge. Authors Andrea Coppadoro and colleagues remark that CoQ10 supplementation has been associated with improvement in activities of daily living scores, neuromuscular function, and other long-term outcomes in certain groups, suggesting that supplementation could also benefit the outcome of the critically ill.

**Editor's Note:** The authors conclude that, "The data provide a rationale for further...clinical studies to define CoQ10 insufficiency and evaluate the safety and efficacy of CoQ10 supplementation in critically ill patients."

—D. Dye

\* *J Crit Care.* 2013 Apr 22.



## Activation of SIRT1 Through Calorie Restriction or Drug Treatment Delays Neurodegeneration in Experimental Model

A recent issue of the *Journal of Neuroscience* reports an association between a calorie-restricted diet and a delay in the decline in brain function that occurs in a mouse model of neurodegeneration.\*

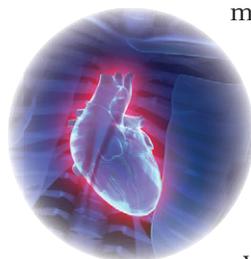
The study utilized a breed of mice in which neurodegeneration is induced by administration of the drug doxycycline. Li-Huei Tsai, PhD, and associates fed the animals a diet that reduced by 30% the amount of calories that would have been normally consumed by mice given unlimited food access. A control group of the same breed was allowed unlimited feeding.

After three months on the diet, tests revealed not only less neurodegeneration but better cognitive function in the mice that received restricted diets. Examination of the animals' brains revealed a reduction in the loss of neurons and greater brain mass and synaptic density in the restricted animals in comparison with those provided with unrestricted diets.

**Editor's Note:** The researchers found an increase in the expression of a protein believed to regulate life span known as SIRT1 in the hippocampus area of the calorie restricted animals' brains as well as an increase in SIRT1 activity, which is consistent with other studies involving calorie restriction. When a separate group of mice were given a SIRT1-activating compound, benefits similar to those elicited by calorie restriction were observed.

—D. Dye

\* *J Neurosci.* 2013 May 22;33(21):8951-60.



## Gamma-Tocopherol Supplementation Boosts Smoking Cessation Benefits

The results of a study reported at the annual *Experimental Biology* meeting suggest a cardiovascular benefit for the form of vitamin E known as gamma-tocopherol among individuals who had recently given up smoking.\*

The study included 30 participants who had smoked at least 10 cigarettes per day for one year. Subjects were randomized to receive a solution containing 500 mg of gamma-tocopherol or a placebo for seven days. Ultrasound evaluation of brachial artery flow-mediated dilation (a measure of blood vessel function) was conducted, and plasma levels of cotinine, vitamin E, malondialdehyde, and pro-inflammatory mediators were measured before and after the treatment period.

Flow-mediated dilation responses increased significantly among those receiving the supplement in comparison with subjects who received a placebo. While the placebo group experienced a 2.8% average increase in flow-mediated dilation by the end of one week, supplementation with gamma-tocopherol resulted in a 4.2% increase.

**Editor's Note:** Subjects who received gamma-tocopherol also experienced a decline in myeloperoxidase and tumor necrosis factor-alpha, indicating a reduction in inflammation.

—D. Dye

\* *Experimental Biology Meeting* 2013.

## Hypothalamus Found to Play Important Role in Aging

A small gland in the brain appears to have a powerful role in the aging process, according to research reported online in the journal *Nature*.\*

Dongsheng Cai, MD, PhD, and his colleagues at Yeshiva University evaluated inflammatory changes in the hypothalamus that have been associated with metabolic syndrome, a cluster of symptoms including glucose intolerance and central obesity. They found that activation in the hypothalamus of a protein known as nuclear factor kappa-beta (NF-kB), which is involved in inflammation, accelerated aging in mice.

The researchers determined that activation of NF-kB reduced the synthesis of gonadotropin-releasing hormone (GnRH, which is involved with reproduction) by the gland. By injecting GnRH into the hypothalamus of older mice, the animals were protected from age-related impairment of neurogenesis. Long-term peripheral administration of the hormone resulted in a reduction in some of the signs of aging, including cognitive decline.

**Editor's Note:** In another experiment with mice in which the NF-kB pathway was inhibited, signs of aging were slowed in comparison with normal mice, and the modified animals experienced a 23% longer median life span and a 20% longer maximum life span in comparison with normal animals. Curcumin is a popular nutrient that inhibits NF-kB.

—D. Dye

\* *Nature.* 2013 May 1.





### Meta-Analysis Reaffirms Protective Effect of Preoperative Omega-3 Fatty Acids Against Postoperative Atrial Fibrillation

The results of an updated meta-analysis published in the *Journal of Thoracic and Cardiovascular Surgery* indicate that preoperative supplementation with omega-3 fatty acids provides significant protection against atrial fibrillation in open heart surgery patients.\*

The analysis included eight clinical trials evaluating the efficacy of omega-3 fatty acids for the prevention of atrial fibrillation following coronary artery bypass graft surgery and/or heart valve surgery in 2,687 men and women. A total of 398 atrial fibrillation events were documented postoperatively. Among subjects who received omega-3 fatty acids, there was a **16%** lower risk of atrial fibrillation in comparison with those who received a placebo. When the analysis was limited to coronary artery bypass graft surgery patients, the reduction in risk associated with omega-3 supplementation increased to **34%**.

The authors remark that the benefit of omega-3 fatty acids observed in this study could be due to their anti-inflammatory property or a direct antiarrhythmic effect.

**Editor's Note:** Atrial fibrillation is the most common type of heart arrhythmia that occurs after heart surgery and can result in longer hospitalization and an increased risk of postoperative mortality.

—D. Dye

\* *J Thorac Cardiovasc Surg.* 2013 Apr 12.

### Ginger May Benefit Asthmatic Patients

The American Thoracic Society's 2013 International Conference in Philadelphia was the site of a presentation concerning the ability of compounds that occur in ginger to relax airway smooth muscle tissue, which is constricted during asthma attacks.\*

Elizabeth Townsend, PhD, of Columbia University and her colleagues studied the effects of 6-gingerol, 8-gingerol and 6-shogaol in human airway smooth muscle tissue samples treated with acetylcholine, a neurotransmitter that causes bronchoconstriction. The compounds or a control substance were combined and administered with the beta-agonist bronchodilator drug isoproterenol.

Combining the drug with ginger compounds resulted in greater airway tissue relaxation than administering the drug alone. The ginger compound 6-shogaol elicited the strongest effect. The researchers determined that the compounds help inhibit phosphodiesterase 4D (PDE4D, an enzyme that negatively impacts processes involved in the relaxation of airway smooth muscle tissue). Additionally, 6-shogaol was found to dissolve F-actin filaments that are involved in bronchoconstriction.

**Editor's Note:** Dr. Townsend concluded that, "These data show that ginger constituents 6-gingerol, 8-gingerol and 6-shogaol act synergistically with the beta-agonist in relaxing airway smooth muscle, indicating that these compounds may provide additional relief of asthma symptoms when used in combination with beta-agonists."

—D. Dye

\* American Thoracic Society 2013 International Conference, Philadelphia, Pennsylvania.



### Phosphatidylserine Holds Promise for Brain Disorders

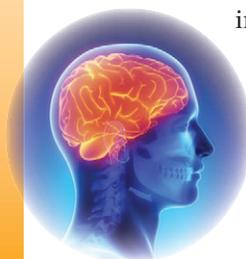
In an article published in the journal *Human Molecular Genetics*, researchers at Tel Aviv University report that phosphatidylserine could be of benefit to individuals with familial dysautonomia, a disorder that occurs in Ashkenazi Jewish men and women. Familial dysautonomia is caused by a mutation that results in the inhibition of the manufacture of I B kinase complex-associated protein (IKAP), which is believed to be involved in genetic transcription.\*

Gil Ast and colleagues administered phosphatidylserine to cells derived from familial dysautonomia patients and observed an increase in gene function as well as higher levels of IKAP. The team then fed the supplement every two days for three months to mice genetically engineered with the mutation that causes the disease in humans. "We found a significant increase of the protein in all the tissues of the body, including an eight-fold increase in the liver and **1.5-fold** increase in the brain," reported Dr. Ast.

**Editor's Note:** In addition to the gene associated with familial dysautonomia, the team observed alterations in 2,400 other genes, many of which have been associated with Parkinson's disease, in association with the administration of phosphatidylserine. The finding suggests that phosphatidylserine could be helpful for other neurodegenerative disorders.

—D. Dye

\* *Hum Mol Genet.* 2013 Mar 20.



## Fish Oil Supplementation Could Lower Stress Response

The *American Journal of Physiology—Regulatory, Integrative, and Comparative Physiology* published the results of a trial that found a reduction in the response to mental stress in men and women given fish oil.\*

The study included 67 men and women whose age averaged 24 years. The participants were divided to receive **9 grams** of fish oil or **9 grams** of olive oil daily for eight weeks. Before and after the treatment period, the subjects underwent assessment of resting heart rate, blood pressure, muscle sympathetic nerve activity, and forearm and calf blood flow, followed by reassessment during a situation created to induce mental stress.

While resting assessments did not differ significantly between the groups by the end of the study, those who received fish oil experienced reductions in heart rate reactivity and total muscle sympathetic nerve activity in response to stress in comparison with the olive oil group.

**Editor's Note:** The finding suggests that fish oil could help protect the cardiovascular system during stress and may be one of several reasons why it helps maintain heart health.

—D. Dye

\* *Am J Physiol Regul Integr Comp Physiol.* 2013 Apr 1;304(7):R523-30.



## Study Results Indicate Benefits of Antioxidants Following Breast Cancer Therapy

An article published in *Breast Cancer Research and Treatment* reports that supplementation with antioxidants after treatment for breast cancer is not only safe, but may help improve survival.\*

Elizabeth M. Poole of Harvard University and her associates analyzed data from 12,019 breast cancer survivors enrolled in one of four studies included in the After Breast Cancer Pooling Project. The analysis examined the use of supplements at least one year after diagnosis. Over follow-up, 1,298 deaths occurred, of which **65%** were due to breast cancer.

Sixty percent of the women reported using supplements from one-to-five years following diagnosis. The use of any antioxidant supplement, categorized as vitamins C, E, or a multivitamin supplement in this study, was associated with a **16%** lower adjusted risk of dying from any cause over follow-up, and for those who used all three supplements, the risk was **21%** lower.

The risk of breast cancer recurrence was **36%** lower in association with the use of vitamin D among women with estrogen receptor-positive tumors.



—D. Dye

\* *Breast Cancer Res Treat.* 2013 May 10.

## Vitamin D May Protect Against the Development of Uterine Fibroids

A recent issue of *Epidemiology* published an article that reports the finding of vitamin D researcher Bruce W. Hollis and his colleagues of a lower risk of uterine fibroid tumors in women with sufficient levels of vitamin D.\*

The study evaluated 620 African American women and 416 Caucasian women between the ages of 35 to 49 who were enrolled in the National Institute of Environmental Health Sciences Uterine Fibroid Study. Serum 25-hydroxyvitamin D levels were measured in blood samples collected upon enrollment, and ultrasound examinations ascertained the presence and size of fibroids.

Subjects with sufficient serum levels of the vitamin, which the researchers classified as **20 ng/mL** or higher, had a **32%** lower risk of having fibroids in comparison with those whose levels were sufficient. Each **10 ng/mL** increase in vitamin D was associated with a **20%** reduction in fibroid risk.

**Editor's Note:** The authors remark that treatment of cultures of human uterine fibroid tissue with a form of vitamin D results in decreased cell proliferation accompanied by inhibition of molecular pathways for fibrosis. They conclude that the current findings provide evidence for a causal relationship between sufficient vitamin D and protection against fibroids that warrants further investigation.

—D. Dye

\* *Epidemiology.* 2013 May;24(3):447-53.

# ARE YOU TAKING THE OPTIMAL FORMS OF VITAMIN E?

According to the *Proceedings of the National Academy of Sciences*, alpha tocopherol (vitamin E) displaces critically important gamma tocopherol in the cells.<sup>1</sup> While **alpha tocopherol** inhibits free-radical production, **gamma tocopherol** is required to trap and neutralize existing free radicals.<sup>2</sup>

Prestigious scientific journals have highlighted **gamma tocopherol** as one of the most critically important **forms of tocopherols**, which includes d-alpha tocopherol (natural vitamin E) for those seeking optimal health benefits.

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

## SESAME LIGNANS: THE NATURAL VITAMIN E BOOSTER

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

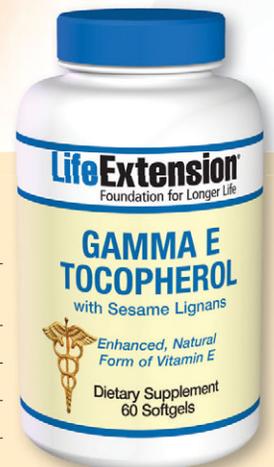
In a human study that combined **gamma tocopherol** with **sesame lignans**, gamma tocopherol/ sesame was **25% more effective** than gamma tocopherol/ tocotrienols in suppressing tissue measurements for free-radical and inflammatory damage.<sup>4,5</sup> Since tocotrienols are considered nature's most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

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

## WORLD'S MOST COMPREHENSIVE VITAMIN E FORMULA!

The **Gamma E Tocopherol with Sesame Lignans** formula provides potent doses of critically important gamma tocopherol along with **sesame lignans** to augment its antioxidant effects. Suggested dose is one softgel once or twice daily.

The retail price for 60 softgels of **Gamma E Tocopherol with Sesame Lignans** is **\$32**. If a member buys four bottles, the price is reduced to only **\$21.75 per bottle**.



### Each softgel of Gamma E Tocopherol with Sesame Lignans provides:

<b>Gamma tocopherol</b>	<b>197.45-269.25 mg</b>
<b>Delta tocopherol</b>	<b>71.8-107.7 mg</b>
<b>Alpha tocopherol</b>	<b>30.52-43.08 mg</b>
<b>Beta tocopherol</b>	<b>&lt;17.95 mg</b>
<b>Sesame seed</b>	<b>20 mg</b>
<i>(Sesamum indicum)</i> lignan extract	

Item # 00759

### Contains soybeans.

Antioxidant Vitamins & Cancer. Some scientific evidence suggests that consumption of antioxidant vitamins may reduce the risk of certain forms of cancer. However, the FDA does not endorse this claim because this evidence is limited and not conclusive.

NOTE: Those taking Super Booster do not usually require additional gamma tocopherol.

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

### References

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**To order Gamma E Tocopherol  
with Sesame Lignans, call 1-800-544-4440  
or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

# Life Extension® **BREAKTHROUGH!**

LIMIT THE RELEASE OF SUGAR FROM STARCHY FOODS

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

Hundreds of studies document the importance of protecting against blood **glucose** surges.<sup>1</sup>

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

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

### COMPELLING HUMAN RESEARCH DATA

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

**Contains soybeans. Contains tree nuts (coconut).**

**CAUTION:** If you are taking blood glucose lowering medication, consult your healthcare provider before taking this product.

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

### SHIELD AGAINST AFTER-MEAL GLUCOSE SURGES

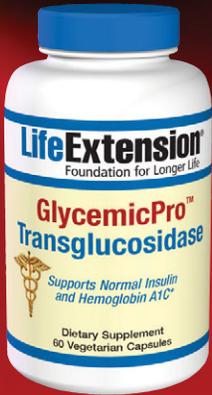
Each vegetarian capsule of the new **Glycemic-Pro™ Transglucosidase** contains a full **450,000 TG** (transglucosidase activity units) of **transglucosidase**.

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

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

#### References

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Item # 01731

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

BY MICHAEL DOWNEY

# Three-Step Strategy to **Reverse** **Mitochondrial** **Aging**

Have you ever wondered how long you're going to live? The potential answer can be found in the energy-producing cellular powerhouses called **mitochondria**.

According to a growing number of cell biologists, the number and functionality of the mitochondria specifically determine an individual's life span.<sup>1-3</sup>

When we're young, we are relatively protected against mitochondrial deterioration. As we age, however, changes within our cells lead to the destruction of mitochondria—paving the way for aging and disease.<sup>4-8</sup>

In **2007** scientists made a remarkable **age-reversal** discovery:

Damage to mitochondrial DNA becomes **permanent** a decade after **mitochondrial dysfunction** begins—and in the early stages, this damage remains **reversible**.<sup>9</sup>

In this article, you'll learn about a 3-step program aimed at **restoring** your body's vital mitochondrial health:

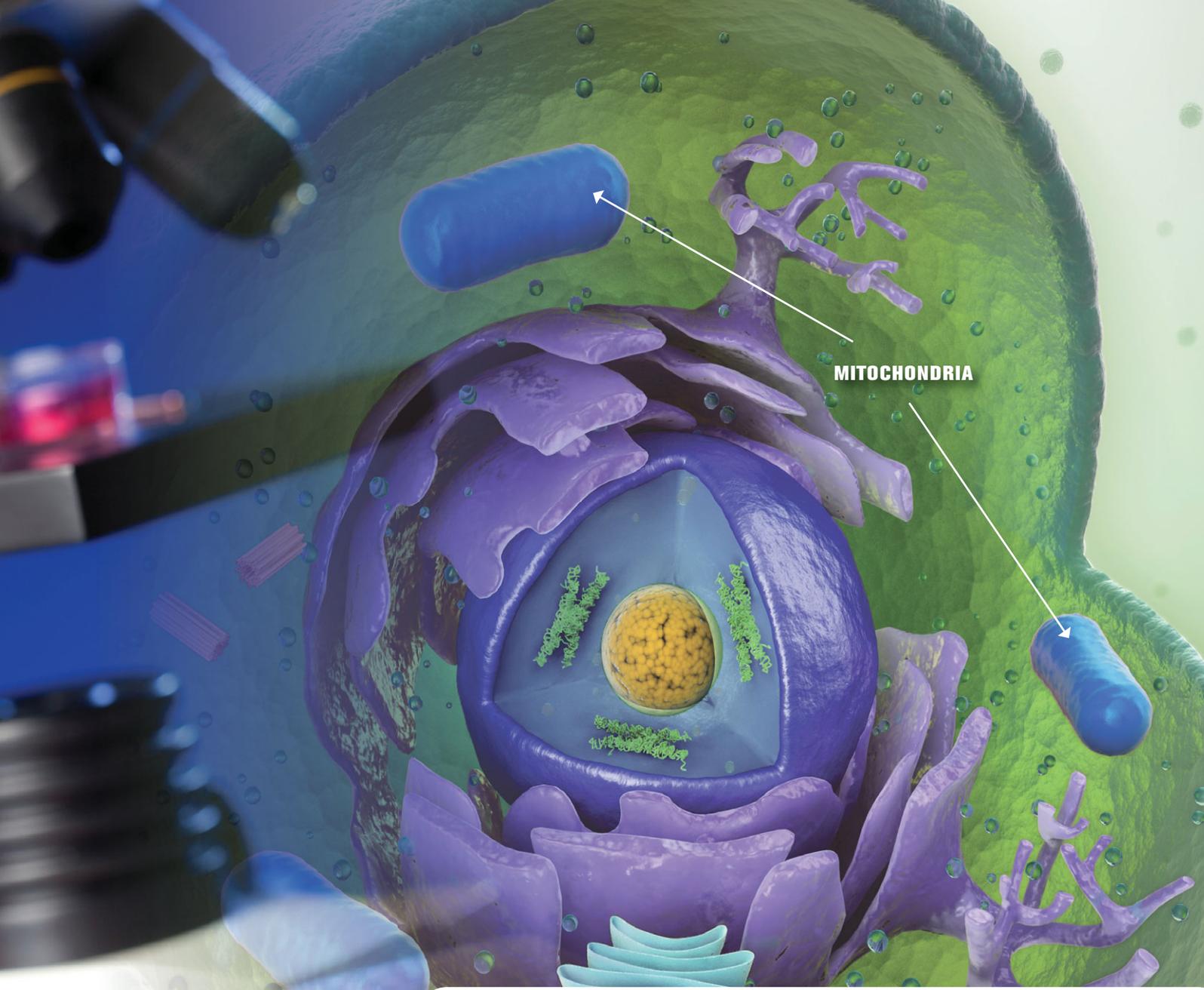
Step 1: Boost your body's natural mitochondrial-DNA defenses with **CoQ10**.

Step 2: Stimulate the creation of new mitochondria with **PQQ**.

Step 3: Support your body's mitochondrial defense system with **shilajit**.

This strategy to reduce damage to **existing** mitochondrial DNA and **create new** mitochondria—is essential to inhibit a destructive cycle believed to be a **root cause of aging**. >





**MITOCHONDRIA**

### Why We Need Mitochondria

Found inside the body's cells, mitochondria are responsible for producing our primary source of energy, *adenosine triphosphate (ATP)*. ATP provides at least **95%** of the cellular energy that powers all living functions.

Unfortunately, a byproduct of this energy generation is the formation of a huge stream of **free radicals**.<sup>4,7</sup> Free radicals are molecules that possess a free electron—a property that makes them react with other molecules in volatile and highly destructive ways.<sup>10-12</sup>

Free radicals attack the structure of our cell membranes, creating metabolic waste products that disturb DNA and RNA production, interfere with the synthesis of protein, and destroy important cellular enzymes. Vital tissues and molecules **decay** under the assaults of free radicals.<sup>10-14</sup> In addition, free-radical disruption of cell mechanics creates **mutant** cells, which are linked to cancer and cellular aging.<sup>15,16</sup>

Mitochondria are the easiest targets of free-radical injury for two reasons:

1. They are located *exactly* where these free radicals are produced, and
2. They lack most of the antioxidant defenses found in other parts of the cell.<sup>17,18</sup>

Evidence strongly indicates that over time, accumulated damage to the DNA of the **mitochondria** in particular leads directly to metabolic disorders (such as diabetes) and degenerative disorders (such as Alzheimer's).<sup>4-8,19-23</sup>

Mitochondrial dysfunction is primarily seen in organs and tissues that have a high demand for **energy**—explaining why cardiovascular tissue and brain neurons are among the most susceptible.<sup>24</sup>

When we're young, we are largely protected against mitochondrial deterioration because our bodies produce substances to defend mitochondria from the onslaught of free radicals. However, as we age, that protection wanes, setting us up for a destructive cycle that accelerates aging and disease. As a result of this rapidly accelerating process, mitochondria in the cells of elderly people are mostly dysfunctional, whereas young individuals have virtually no mitochondrial damage.<sup>8,25-27</sup>

### The Mitochondrial Theory of Aging

Over time, there are **three** devastating changes within our cells that lead to the destruction of mitochondria—paving the way for aging and disease:<sup>4-7</sup>

- The rate of cellular production of two free radicals—**superoxide anions** and **hydrogen peroxide**—significantly increases, attacking mitochondria the most.
- At the same time, intracellular levels of endogenous **antioxidants** that help prevent the harmful *effects* of free radicals decrease. There's also a reduction in activities of **free radical-scavengers** that neutralize free radicals *before* they can attach themselves to other molecules. These decreases diminish the mitochondria's normal defenses.
- The accumulated oxidative damage to the mitochondrial DNA and other mitochondrial components (as well as the cell as a whole) leads to decay of the mitochondria—and from that decay, the **release of even more free radicals!**

According to the mitochondrial theory of aging, this ever-increasing spiral is—in itself—an **aging** process.<sup>4-8, 25,26</sup> In fact, a growing number of cell biologists have suggested that the number and functionality of the mitochondria can specifically determine an individual's longevity.<sup>1-3</sup>



Based on this body of scientific evidence, scientists determined that a key to slowing—and even *reversing*—a “natural” aging process would be a substance aimed at revitalizing youthful mitochondrial protection from free radicals.<sup>27</sup>

They discovered this mitochondrial solution in a substance that may already be in your nutrient regimen...*coenzyme Q10*.

### Coenzyme Q10 Protects Mitochondria

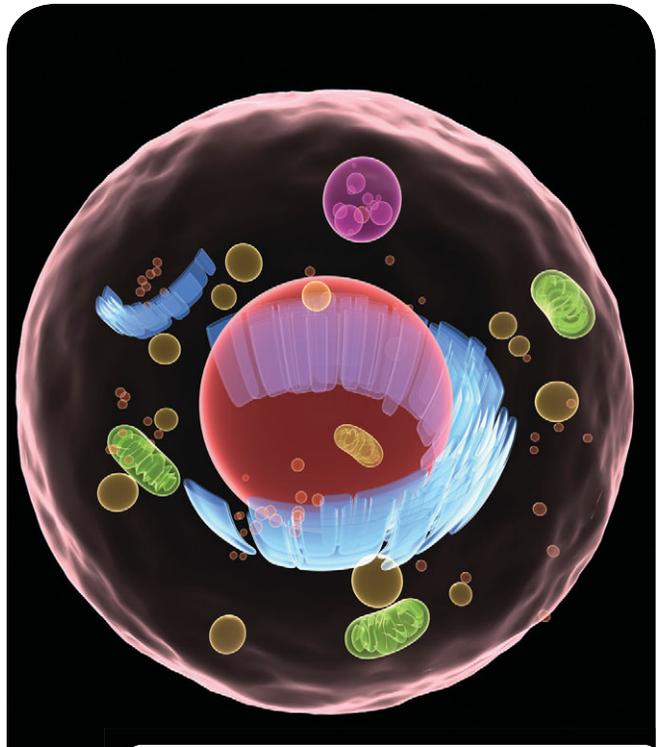
Scientists have established that **coenzyme Q10** (CoQ10) is an essential nutrient for normal mitochondrial function (namely, the production and transfer of **energy**).<sup>28-30</sup> When CoQ10 levels fall, mitochondrial **dysfunction** skyrockets.<sup>28</sup> Studies have found that boosting CoQ10 levels via supplementation increases mitochondrial *electron transport*—whether the cells are deficient in CoQ10 or not.<sup>29,30</sup>

CoQ10’s ability to protect the vital mitochondria helps put an end to the vicious cycle that underscores a critical aspect of pathological aging. In fact, research with laboratory models has suggested that CoQ10 may be one of our most potent **anti-aging** nutrients. Studies have found that when cells or organisms are deficient in CoQ10, mitochondrial oxidative stress increases and aging is accelerated.<sup>28,31</sup> However, supplementation triggers a significant slowing down of the aging process and an extended life span.<sup>32,33</sup>

One study showed that rats supplemented with CoQ10 experience a **24%** increase in maximum life span and an **11.7%** increase in average life span.<sup>34</sup> In human terms, based on today’s life expectancy of **78.5** years, this mean increase translates to a more than **9-year increase in life span!**<sup>35</sup>

CoQ10 also seems to work via a multi-targeted set of **epigenetic** mechanisms that not only slow aging—but that also protect against a variety of mitochondria-related diseases.<sup>36-38</sup> Epigenetic mechanisms involve changes in **gene function** that do not relate to changes in **gene structure**.<sup>39</sup> Studies have shown that CoQ10 protects against **neurodegenerative** diseases<sup>40-42</sup> and **mental health** disorders,<sup>43</sup> enhances **lung** function,<sup>44,45</sup> guards against the effects of elevated glucose in **diabetes** and **metabolic syndrome**,<sup>46-48</sup> and offers impressive defense against **cardiovascular** disease, one of the primary diseases of aging.<sup>49-51</sup>

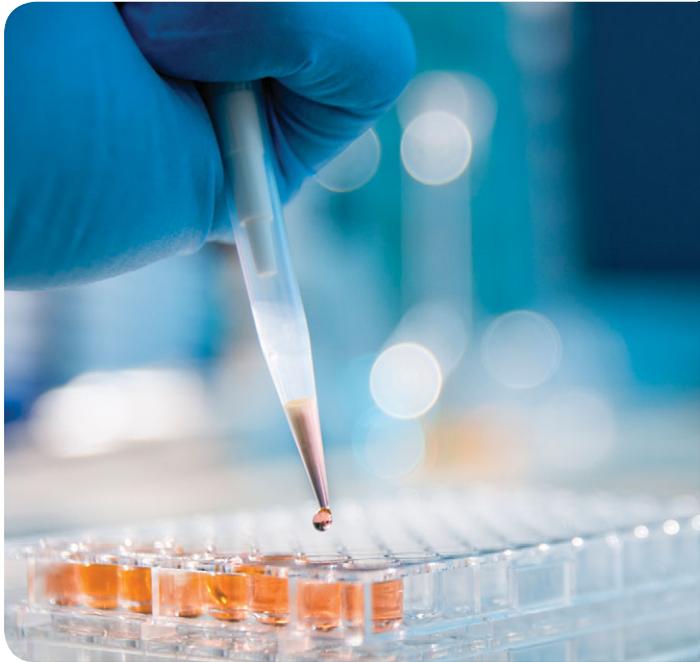
Animal studies demonstrate that supplementation with CoQ10 reduces oxidative stress and reduces the buildup of **amyloid-beta** plaque (associated with Alzheimer’s disease)<sup>40-42,52,53</sup>—resulting in a significant improvement in cognitive performance and memory.<sup>53</sup>



### What You Need to Know

#### Block Mitochondrial Aging

- Daily damage to mitochondrial DNA appears to be a **root** mechanism of aging.
- If caught before it becomes permanent, early stage mitochondrial dysfunction can be **reversed!**
- Levels of **CoQ10**—the body’s natural mitochondrial defense—decline rapidly with age. But breakthrough research has found that supplemental CoQ10 blocks mitochondrial aging.
- **Shilajit** works synergistically with CoQ10 by replenishing its electron supply and increasing CoQ10 levels.
- **PQQ** powerfully supports the protection afforded by CoQ10 and shilajit by triggering the creation of **new** mitochondria.
- Taken together, CoQ10, PQQ, and shilajit offer a **potent** program to inhibit the intensely destructive cycle believed to be one of the **root sources of aging!**



In human studies, 4 weeks to 6 months of CoQ10 supplementation at **60-300 milligrams a day** was shown to improve cardiac systolic function and ejection fraction.<sup>49,50</sup> One study showed that 8 weeks of CoQ10 supplementation at **300 milligrams a day** improved heart-muscle systolic function by enhancing both mitochondrial performance and endothelial function.<sup>50</sup> And in a 5-year, randomized, double-blind, placebo-controlled trial among elderly individuals, CoQ10 combined with selenium slashed the death rate from cardiovascular disease by more than **half!**<sup>54</sup> In fact, the authors of one study recognized CoQ10 as a “**scientific breakthrough** in the management of chronic heart failure.”<sup>55</sup>

CoQ10 offers a powerful way to help slow—or even **reverse**—a natural aging process by restoring youthful mitochondrial protection from free radicals.<sup>27,56</sup>

### **PQQ Creates New Mitochondria**

While **coenzyme Q10** optimizes mitochondrial function and protects them from free radical damage, scientists have found another coenzyme that triggers the creation of new mitochondria altogether.

A huge research advance in **2012** showed that the coenzyme **pyrroloquinoline quinone** (or **PQQ**) activates genes that induce **mitochondrial biogenesis**—*the spontaneous formation of new mitochondria in aging cells!*<sup>57</sup>

This represents a major breakthrough in battling the mitochondrial destruction that underlies aging.

### **CoQ10: Potential Therapy for Inherited Mitochondrial Disorder**

Newly released research underscores the vital importance of **coenzyme Q10 (CoQ10)** to mitochondrial health.

A study released ahead of print in **April 2013** by the journal *Mitochondrion* has found that patients with **mitochondrial DNA depletion syndrome (MDS)** have significantly deficient levels of CoQ10.<sup>85</sup> MDS is a hereditary condition characterized by grossly reduced cellular levels of mitochondrial DNA in infancy. MDS involves various progressive disorders that are often **fatal** in childhood.<sup>86</sup>

Currently, there are no effective therapies available for MDS<sup>86</sup>—but this recent finding indicates that CoQ10 could represent a **candidate therapy** for this condition.

The suggestion that CoQ10 may constitute a therapeutic hope for treating this serious mitochondrial-deficiency disorder demonstrates just how powerfully CoQ10 protects mitochondria.

This also underscores CoQ10's vital importance in slowing or reversing the “natural” aging process in **healthy** individuals.

**PQQ deficiency** has a profound effect on your genes—especially those involved in cellular stress, cell signaling, transport of metabolites, and of course, the creation of new mitochondria.<sup>57</sup> Specifically, PQQ deficiency negatively affects the expression pattern of **438 genes**—but research has found that this effect is **reversed** after supplementation with PQQ.<sup>57</sup>

Prior to this breakthrough, some of the only scientifically validated ways to reliably stimulate the creation of new mitochondria were sustained **calorie restriction** or **strenuous physical activity**—both of which are too rigorous and impractical for most aging people.<sup>58,59</sup> PQQ now provides the most practical means of **reversing** the deadly decline in functional mitochondria that is the underlying cause of premature aging and degenerative disease.

Earlier findings repeatedly indicated PQQ's central role as a potent growth factor.<sup>60,61</sup> In preclinical trials, when animals were deprived of dietary PQQ, they exhibited stunted growth, impaired conception rates, and most importantly, **fewer mitochondria**.<sup>62-64</sup> However, re-introducing PQQ into the diet **reversed** these effects—while simultaneously increasing mitochondrial number and energetic efficiency.<sup>62,63</sup>

Like CoQ10, PQQ also actively supports the energy transfer within the mitochondria that supplies the body with most of its bioenergy. Its exceptional stability allows it to carry out thousands of these transfers without undergoing molecular breakdown. PQQ has been proven especially effective in neutralizing two of the most potent free radicals, the superoxide and hydroxyl radicals.<sup>65</sup>

### 5,000 Times More Effective than Vitamin C!

Research demonstrates that PQQ is **30 to 5,000** times more efficient at reducing oxidation than other common antioxidants such as vitamin C.<sup>60</sup>

In a revealing **2010** study, scientists reported that similar protection of mitochondrial function that is seen with some other compounds (such as quercetin, hydroxytyrosol, and resveratrol) at high dietary concentrations measured in **millimoles** occurs with PQQ at dietary concentrations measured in **nanomoles**.<sup>66</sup> In other words, it takes **a million times** more of these other compounds to have a mitochondria-protective effect equivalent to PQQ!

The revelation of its ability to favorably affect system-wide cell development, metabolism, and mitochondrial biogenesis helps explain the wealth of data on PQQ's **neuroprotective** and **cardioprotective** benefits.

PQQ has now been shown to block the development of abnormal proteins linked with neurodegenerative diseases. For example, it prevents cellular damage and demise due to accumulation of **amyloid beta** protein associated with **Alzheimer's** disease,<sup>67,68</sup> and of the **alpha-synuclein** protein that is associated with **Parkinson's** disease.<sup>57,69</sup>

In humans, supplementation with **20 milligrams a day** of PQQ significantly improved cognitive function in middle-aged and elderly people. These results were amplified when the subjects also took **300 milligrams per day** of CoQ10.<sup>70</sup>

In animal studies, researchers investigating its impact on **cardiovascular disease** have demonstrated that PQQ reduces the size of the heart area damaged by acute heart attack and favorably decreases lipid peroxidation.<sup>71</sup> PQQ also helps heart muscle cells resist acute oxidative stress—*specifically by preserving and enhancing mitochondrial function*.<sup>72</sup>

Neither humans nor the bacteria that colonize the human digestive tract have demonstrated the ability to synthesize PQQ,<sup>73</sup> which has led researchers to classify it as an **essential micronutrient**. This means that the body can't make enough of it for good health—and that supplementation is essential.<sup>74</sup>

### Shilajit Revitalizes CoQ10

We've already learned that CoQ10 protects mitochondria from free radical damage. It does this by "depleting" itself—by donating its own electrons to (and thus neutralizing) the flood of free radicals generated during cellular energy production. Of course, this results in depleted stores of active CoQ10.

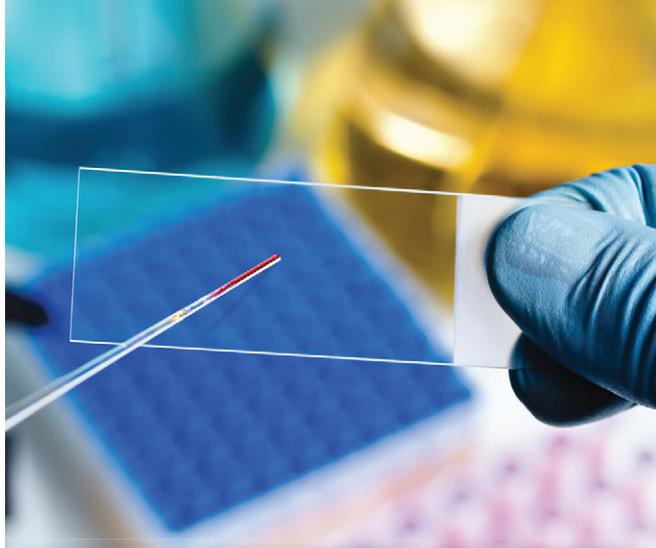
Studies have detailed how **shilajit**, a phyto-mineral pitch substance found in the Himalayas,<sup>75-77</sup> stabilizes, revitalizes, and preserves CoQ10 in its active (**ubiquinol**) form, boosting the levels of CoQ10 available to protect against mitochondrial aging.<sup>78-81</sup>

Cutting-edge scientific evidence has demonstrated that components of **shilajit** serve as **electron reservoirs**, replenishing electrons lost by CoQ10 and allowing this vital coenzyme to remain active longer.<sup>78-80</sup>

Shilajit's potent support of CoQ10's mitochondrial protection against aging was validated when laboratory mice were subjected to strenuous and stressful physical exercise. The combination of shilajit and CoQ10 resulted in **27%** greater ATP energy production in muscle cells—and in **40%** greater energy production in brain cells—than the energy increase measured in these tissues with CoQ10 alone.<sup>80</sup>

In other research, mice were initially supplemented with oral CoQ10 alone. As expected, CoQ10 levels rose in heart, liver, and kidney tissue. Remarkably, when components from shilajit were added to the supplement, CoQ10 levels rose **even further**—as much as **29%** in liver tissue.<sup>81</sup>





## Ubiquinol Provides Superior Bioavailability

Called a “coenzyme” because of its unique ability to participate in chemical reactions but remain at steady-state levels in the cell, coenzyme Q10 plays a central role in energy metabolism.<sup>28-30</sup>

CoQ10's ability to cycle back and forth between ubiquinone and ubiquinol accounts for many of its unique properties. Ubiquinol, with its ability to scavenge free radicals, is an electron donor, while ubiquinone is an electron acceptor. This remarkable ability to cyclically accept and donate electrons, as well as to effect complementary chemical reactions in the mitochondria, accounts for CoQ10's unparalleled value to almost all life forms.

The chemical difference between ubiquinone and ubiquinol is that the ubiquinol compound contains two hydroxyl groups. These two hydroxyl groups enable ubiquinol to be more easily dissolved into water than ubiquinone, thus making it easier to assimilate, which helps explain why it is so much more bioavailable than ubiquinone.

In a side-by-side single-dose human study, ubiquinol absorption was compared directly to conventional CoQ10 (ubiquinone) using the same delivery system. Subjects were given either **100 mg** of ubiquinol or **100 mg** of ubiquinone. The findings showed that in aged test subjects, ubiquinol absorption was **60%** greater in this single-dose side-by-side comparison.<sup>87</sup>

A review of published studies on human subjects reveals that it requires very high doses of ubiquinone CoQ10 to achieve the same levels attainable with modest amounts of ubiquinol CoQ10.<sup>88-92</sup> Clinical studies using **1,200** and **2,400 mg** per day of ubiquinone achieved CoQ10 blood levels similar to **150** and **300 mg** per day respectively of ubiquinol.<sup>88-91</sup>

Another element of shilajit—*fulvic acid*—has been shown to further support this process by channeling other electron-rich shilajit components into the mitochondria to support CoQ10 and electron transfer.<sup>82</sup> Fulvic acid also works independently to stimulate mitochondrial energy metabolism and protect mitochondrial membranes from oxidative damage.<sup>82,83</sup>

In an unpublished study, people who took **200 milligrams** of shilajit **once daily** for 15 days registered an increase in ATP levels in the blood after exercise.<sup>84</sup>

Ultimately, the synergistic effects of **shilajit** plus **CoQ10**—combined with the capacity of **PQQ** to create new mitochondria—offer an unparalleled option to protect mitochondrial DNA and *combat aging!*

## Summary

According to the mitochondrial theory of aging, damage to mitochondrial DNA from the massive free-radical assault of cellular energy production is a root mechanism of aging. The body produces **CoQ10** to protect mitochondrial DNA, but levels decline rapidly with age.

Scientists have discovered that it can take almost a decade for this aging damage to become permanent. The good news is that early stage mitochondrial dysfunction can be *reversed!*

Breakthrough research found that two coenzymes (**CoQ10** and **PQQ**) can work together to protect mitochondria against free radical assaults—and to create new mitochondria in the process.

Supplemental **coenzyme Q10** blocks mitochondrial aging, while **PQQ** triggers the creation of *new* mitochondria. In addition, **shilajit** works synergistically with **CoQ10**, replenishing its electrons and prolonging its antioxidative effectiveness.

Taken together, **CoQ10** and **PQQ** and **shilajit** offer a potent program to inhibit—and *reverse*—the intensely destructive cycle that is believed to be a *root source 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.

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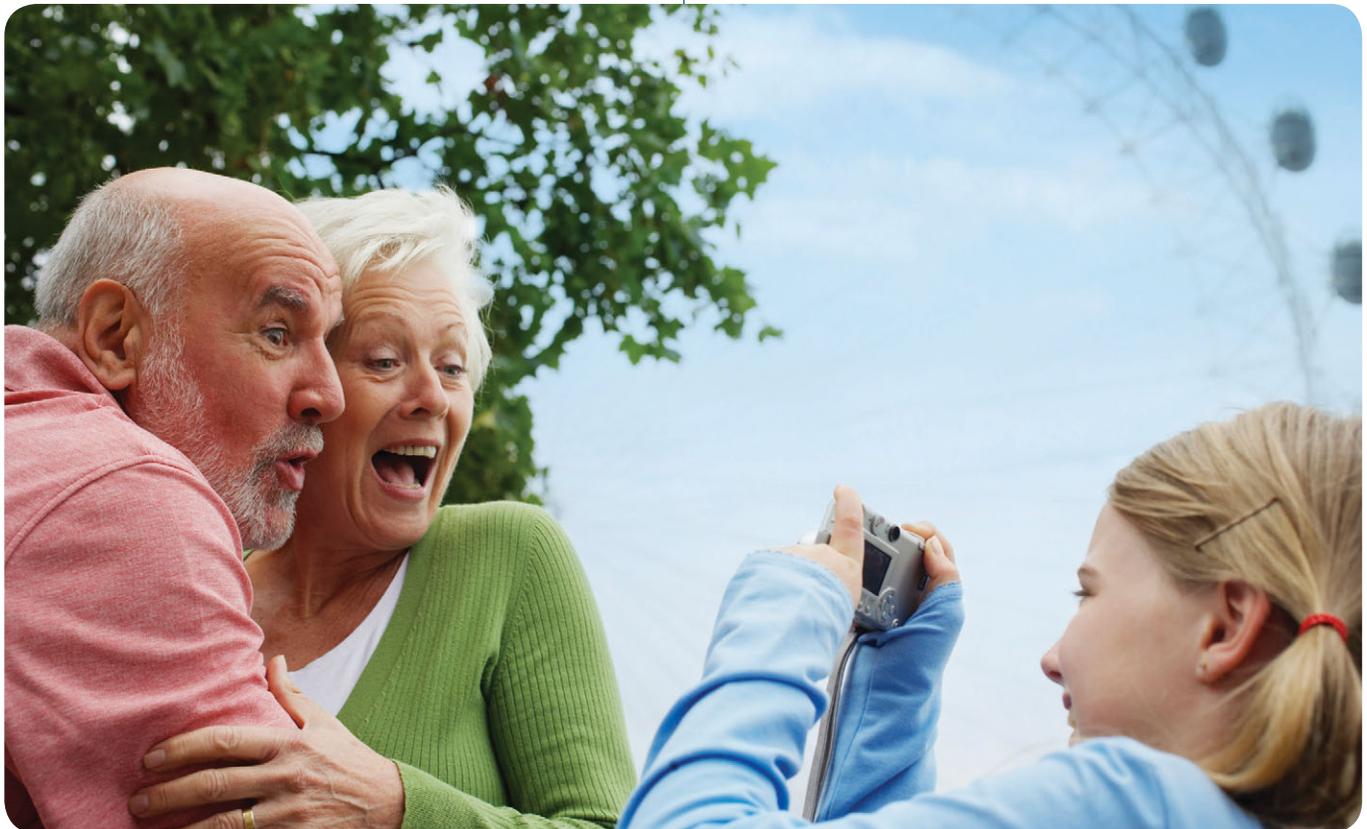
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# BONE RESTORE

NOW WITH VITAMIN K2



**Bone Restore** combines critical **bone boosting** nutrients into one **superior formula**.

**Bone Restore** includes highly **absorbable** forms of **calcium** and **boron**, along with **vitamin D3**, **magnesium**, **zinc**, **manganese**, and **silicon**. **Bone Restore** is now available with or without **vitamin K2** (MK-7).

**Bone Restore** now contains 300 mg of **magnesium**.

The retail price for 120 capsules of **Bone Restore** is \$24.

If a member buys four bottles, the price is reduced to **\$16.50** per bottle. (Item# 01727)

The same **Bone Restore** formula without vitamin K2 (MK-7) is available as well. The retail price for 120 capsules is \$22. If a member buys four bottles, the price is reduced to **\$14.25** per bottle. (Item# 01726)

**Note:** Those who take **Super Booster** or **Super K** usually do not need additional vitamin K2. They should order **Bone Restore** without vitamin K2. Those taking the anti-coagulant drug **Coumadin**® (warfarin) should use **BONE RESTORE** without vitamin K2.

#### Just four capsules of Bone Restore provide:

<b>Highly Absorbable Calcium</b> (as DimaCal® dicalcium malate, TRAACS® calcium glycinate chelate, calcium fructoborate)	<b>700 mg</b>
<b>Vitamin D3</b>	<b>1,000 IU</b>
<b>Vitamin K2</b> (as menaquinone-7)	<b>200 mcg</b>
<b>Magnesium</b> (as magnesium oxide)	<b>300 mg</b>
<b>Boron</b> (calcium fructoborate as patented FruiteX B® OsteoBoron®)	<b>3 mg</b>
<b>Zinc</b> (as zinc amino acid chelate)	<b>2 mg</b>
<b>Manganese</b>	<b>1 mg</b>
<b>Silicon</b>	<b>5 mg</b>

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DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. Patent 6,706,904 and patents pending.

**To order Bone Restore, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

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



# ENHANCED HEART MUSCLE FUNCTION

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

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

## Hawthorn: Peak Cardiotonic Support

Used for centuries in Europe for heart health, the cardiotonic effects of **Hawthorn** extract have been well documented in numerous clinical trials.<sup>1,9-12</sup>

Hawthorn contains specific *bioflavonoid complexes* targeted to help promote normal circulation and efficient heart muscle function.<sup>2,5,13</sup>

Studies indicate that the constituents in Hawthorn powerfully support:

- Strong *contractile force* of human heart muscle.<sup>3</sup>
- Protection for heart muscle cells from oxidant damage.<sup>12</sup>
- Normal gene expression to promote cardiovascular health.<sup>2,4,5</sup>
- Improved cardiovascular performance.<sup>11</sup>

## Arjuna: Boosting Heart-Health Benefits

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

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

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

**To order Cardio Peak™ with Standardized Hawthorn and Arjuna, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

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

**Rejuna™ Arjuna** (*Terminalia arjuna*) **1,500 mg**  
10:1 extract (bark) [std. to 40% polyphenols (600 mg)]

**Hawthorn-Derived Oligomeric Proanthocyanidins (OPCs)** **60 mg**  
[from standardized Hawthorn (*Crataegus monogyna* and *Crataegus laevigata*) extract (leaf and flower)]

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



Item# 01700

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# CoQ10, Shilajit, and PQQ

*Triple-Action Mitochondrial Support!*

Life Extension® continues to develop increasingly potent mitochondria-boosting formulations.<sup>1,4</sup>

The new **Super Ubiquinol CoQ10 With BioPQQ**® contains **shilajit** (which studies have shown doubles CoQ10 levels in the mitochondria), **plus** the breakthrough compound **PQQ** (shown to support the **spontaneous generation of new mitochondria** in aging cells). This represents a **three-way** strategy for enhanced mitochondrial support!

## 1. SUPER UBIQUINOL COQ10

CoQ10 is required to convert the energy from fats and sugars you eat into usable cellular energy. More people are supplementing with CoQ10 than ever before. A key reason is increased awareness that the body's production of CoQ10 declines significantly with advancing age.<sup>5</sup> "Statin" drugs also deplete CoQ10 levels in the blood, and possibly, tissues.<sup>6,7</sup> For example, statin drugs reduce plasma CoQ10 by almost **40%**—but the aging process *itself* reduces CoQ10 levels in the heart muscle wall by **72%**<sup>8</sup>

Scientific studies show that **absorption** of the **ubiquinol** form of CoQ10 is far greater than the conventional

ubiquinone form. In middle-aged mice, **ubiquinol** was shown to be **40% more effective** in slowing measurements of aging, compared to ubiquinone.<sup>9</sup> Life Extension® offers this highly bioavailable ubiquinol form of patented CoQ10 in an advanced delivery system, providing an unparalleled absorption level.<sup>10</sup>

## 2. ENHANCED SUPPORT WITH SHILAJIT

**PrimaVie® shilajit** has been shown to **double** levels of **CoQ10** in mitochondria!<sup>11</sup> Combining CoQ10 and shilajit produced a **56% increase** in energy production in the brain—**40% better** than CoQ10 alone. And in muscle, there was a **144% increase** in energy production—**27% better** than CoQ10 alone.<sup>12</sup>

Shilajit boosts CoQ10's beneficial effects by stabilizing CoQ10 in the superior **ubiquinol** form.<sup>13,14</sup> Additionally, shilajit facilitates more efficient delivery of CoQ10 into the mitochondria, which results in greater cellular energy production.<sup>15-18</sup> Shilajit itself is rich in essential compounds that help the mitochondria convert fats and sugars into **ATP** (adenosine triphosphate), the body's main source of energy.<sup>16</sup>



ITEM # 01733

### 3. PQQ PROMOTES GROWTH OF NEW MITOCHONDRIA!

Supporting mitochondria is one thing. But until recently, the only options for aging individuals to promote replenishment of the declining numbers of mitochondria in their bodies were long-term calorie restriction or exhaustive physical activity—difficult or impractical for most aging people.

Now PQQ offers a viable alternative: PQQ (*pyrroloquinoline quinone*) promotes **spontaneous production of new mitochondria!**<sup>19</sup>

In fact, PQQ promotes youthful cellular function in **three** distinct ways:

- **Promotes mitochondrial biogenesis.** PQQ activates genes that promote the formation of *fresh mitochondria!*<sup>19</sup> It also beneficially interacts with genes directly involved in mitochondrial health. These same genes support *healthy body weight, normal fat and sugar metabolism, and youthful cellular proliferation.*<sup>20</sup>
- **Mitochondrial defense.** Mitochondria possess their *own* DNA, distinct from those contained in the cell nucleus. Unfortunately, compared to nuclear DNA, mitochondrial DNA are relatively unprotected—and yet situated at the *source* of both energy and free-radical production! PQQ's antioxidant potency and favorable gene-expression profile powerfully boost mitochondrial defense.
- **Antioxidant power.** PQQ is a potent antioxidant. Its extraordinary molecular stability enables it to facilitate thousands of antioxidant reactions in the mitochondria—*without breaking down*—for maximum antioxidant and bioenergetic support.<sup>21</sup>

PQQ is an **essential nutrient**, meaning that your body cannot make it on its own. A wealth of research demonstrates that—alone and especially in combination with CoQ10—its unique nutritional profile supports heart health and brain function.<sup>22-24</sup> This should be no surprise, given how much energy these vital organs need.

Life Extension® has identified a purified, highly potent form of PQQ from Japan that is produced through a unique fermentation process. The result is some of the highest quality PQQ available today.

### BREAKTHROUGH WEAPON IN THE BATTLE AGAINST AGING!

Super Ubiquinol CoQ10 With BioPQQ® combines:

- **CoQ10** in a super-absorbable *ubiquinol* form.
- **Shilajit** to synergistically boost mitochondrial CoQ10 levels and youthful cellular energy.
- **PQQ** to support spontaneous generation of new mitochondria in aging people.

The suggested dosage of one (1) softgel daily of Super Ubiquinol CoQ10 With BioPQQ® provides:

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.

The optimal dose of PQQ is **20 mg** each day. Members taking **Mitochondrial Energy Optimizer, Mitochondrial Basics, or PQQ 10 mg caps** obtain this optimal PQQ dose when taking the new **Super Ubiquinol CoQ10 with PQQ**.

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CoQ10 With BioPQQ®**, call **1-800-544-4440**  
or visit **www.LifeExtension.com**

# The Overlooked Importance of **VITAMIN D RECEPTORS**

Just a few years ago, vitamin D was simply known as the “bone vitamin.” Thanks to the hard work of many scientists, especially Michael Holick, MD, a pioneer in vitamin D research, the data show that nearly every tissue and cell type in the body has receptors for vitamin D.<sup>1</sup> As a result of this discovery, much higher doses are required for optimal functioning. This discovery has radically changed how we understand the role of vitamin D in the body.

Unless your body is at optimal levels, you are opening the door to a host of disorders, ranging from heart disease and Alzheimer’s to weak bones and diabetes.<sup>2,3</sup>

In fact, even if you have normal blood sugar today, a vitamin D deficiency makes you **91%** more likely to progress to insulin resistance, or “pre-diabetes,” and it more than doubles your risk for progressing to active, type II diabetes.<sup>4</sup>

Unfortunately, vitamin D deficiency is a global epidemic. An estimated **1 billion people** do not have adequate vitamin D levels.<sup>5</sup> And **64%** of Americans don’t have enough vitamin D to keep all of their tissues operating at peak capacity.<sup>6</sup>

The results of this deficiency are catastrophic. Studies have now shown that vitamin D deficiency is associated with increased risk of a long list of diseases that span all systems in the body. In fact, low levels of vitamin D increase the risk of non-Alzheimer’s dementia *almost 20 times!*<sup>7</sup>

While checking for vitamin D levels is still not standard of care for many physicians, you will realize from reading this article that assessing **vitamin D status** is one of the most important health-protecting steps you can take. Fortunately, achieving optimal levels of vitamin D is easy, inexpensive, and highly protective against a range of lethal diseases. >





### Why Vitamin D is so Vital

While humans can make some vitamin D in their bodies, most of us require additional amounts from our diet, the sun, or from supplements in order to maintain adequate levels.

Once vitamin D has been ingested in the diet or produced in the skin, the liver and kidneys convert it to its active form, called 1,25-dihydroxyvitamin D, or **vitamin D3**.<sup>8,9</sup>

Virtually every tissue type in your body has receptors for vitamin D, meaning that they all require vitamin D for adequate functioning.<sup>8,9</sup> The very presence of specific receptors define vitamin D as a **hormone**, rather than a vitamin.<sup>8</sup> It interacts with receptors throughout the body and has a number of different effects.

It's becoming evident that higher doses of vitamin D are required to support its other activities in tissues such as heart muscle, brain cells, and fat tissue, to name just a few. Additionally, vitamin D regulates genes that control cell growth and development, immune function, and metabolic control.<sup>5,8</sup>

Studies have now shown that vitamin D deficiency is associated with increased risk of numerous chronic disorders, including type II diabetes, cancer, infections, and cardiovascular, autoimmune, and neurological diseases (See the table on page 45 for greater detail).<sup>8,9</sup>

### The Global Vitamin D Deficiency

The problem is that most of us are simply not getting enough vitamin D to allow our bodies to work optimally at all of the functions that vitamin D supports. An estimated **1 billion people** (that's about a seventh of the global population) have inadequate vitamin D supplies in their bodies.<sup>5</sup>

According to mainstream medical standards, there are three levels of vitamin D status: sufficient, insufficient, and deficient.

- People who are considered vitamin D “sufficient” have blood levels of at least **30 ng/mL**. However, optimal vitamin D status is achieved with a minimum of **50 ng/mL**.
- Those considered “insufficient” (meaning their bodies aren't at optimal vitamin D capacity) have levels between **21 and 29 ng/mL**.
- And those who are “deficient” are defined as having levels at or below **20 ng/mL**.<sup>8</sup>



By those criteria, **25%** of Americans are *insufficient*, and **39%** are outright *deficient*.<sup>6</sup> In other words, fully **64%** of Americans don't have enough vitamin D to keep all of their tissues operating at peak capacity. It's hardly any wonder we are plagued with so many chronic diseases.

### Vitamin D Supports Cardiovascular Health

Vitamin D deficiency is common in people with cardiovascular disease; almost all people with heart failure have reduced levels.<sup>10</sup> It is now recognized as an independent predictor for diseases of the heart and blood vessels, including heart attacks and strokes.<sup>11</sup>

One study published this year found that women with vitamin D levels in the top one-third of the population had **68%** lower risk of heart attacks compared with those in the lowest third; men in the top third had a **44%** lower risk.<sup>12</sup>

Conversely, if your vitamin D level is in that lower range, you have a **42%** increased risk of dying of cardiovascular disease and a **49 to 64%** increased risk of a stroke.<sup>13,14</sup> The risk of having clogged coronary arteries (the precursor of a heart attack) is more than **doubled** for people with vitamin D deficiency (less than **20 ng/mL**).<sup>15</sup>

Why does vitamin D deficiency lead to such a dramatic increase in the risk for having America's #1 killer disease?

It's because the heart muscle, blood vessels, and other circulatory system components are rich in **vitamin D receptors**, which means they depend heavily on vitamin D for optimum function.<sup>16</sup>

Animals bred to have no vitamin D receptors have cardiovascular disease at an early age and end up with enlarged, dysfunctional hearts.<sup>10,17,18</sup> These effects are likely due to vitamin D's role in increasing protective signaling pathways in those tissues, while preventing harmful ones.<sup>19</sup> In addition, vitamin D is required to prevent the excessive buildup of collagen and other fibrotic proteins that stiffen heart muscle and artery walls, reducing blood flow and raising blood pressure.<sup>11</sup>

### Human Studies Verify D's Heart Benefits

There's no shortage of compelling human studies of vitamin D and cardiovascular risk. One study found that a daily supplement of **3,320 IU** reduced triglycerides by **13.5%** (vs. a **3%** increase with a standard weight-loss program) and also reduced **tumor necrosis factor-alpha**, a major marker of inflammation that

contributes to atherosclerosis.<sup>20</sup> Supplementation has also been shown to relax blood vessels, helping to reduce blood pressure and improve blood flow.<sup>19</sup>

In a study of African-American teens (a group at very high risk for hypertension and cardiovascular disease), vitamin D supplements of **2,000 IU/day** boosted blood levels into the sufficient range. The supplemented group also saw a significant and beneficial decrease in **aortic stiffness**, a measure of cardiovascular risk.<sup>21</sup>

In another study of African-American adults (also at high risk for cardiovascular disease), **60,000 IU/month** for 4 months (about **2,000 IU/day**) improved **endothelial function**, an essential property of blood vessels that allows them to provide adequate blood flow at safe pressures.<sup>22</sup> Similar effects have been shown in stroke survivors, who really need to optimize their endothelial function.<sup>23</sup>

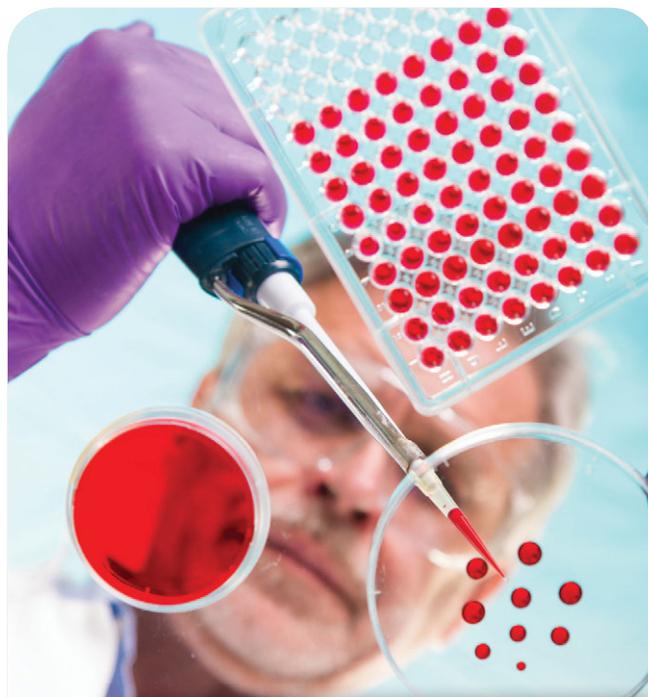
In a study of vitamin D supplementation in obese and overweight women (with an average age of 38 years), supplementing with **1,000 IU/day** significantly raised protective HDL-cholesterol levels and significantly lowered body fat mass after 12 weeks.<sup>24</sup>

Vitamin D deficiency is also implicated in **peripheral arterial disease**, in which hardened, narrowed arteries fail to provide enough blood to the extremities, especially the legs.<sup>25</sup> People with lower vitamin D levels are more likely to develop peripheral artery disease, in direct proportion to how low their levels are. And in fact, amputation, the worst consequence of this condition, is much more likely among those with the lowest levels.<sup>25</sup>

It's clearer than ever that you need vitamin D to maintain your cardiovascular health—but it's important to make sure you're taking the proper dose. Studies of cardiovascular patients who use only **400 to 600 IU/day** in general show no benefits, whereas those using **2,000 IU or more** do.<sup>20,21,26</sup> One study demonstrated that **2,000 IU/day** is the minimum needed to ensure that people reach the minimum target of **30 ng/mL** of vitamin D in their blood.<sup>27</sup>

### Vitamin D Lowers Diabetes Risk

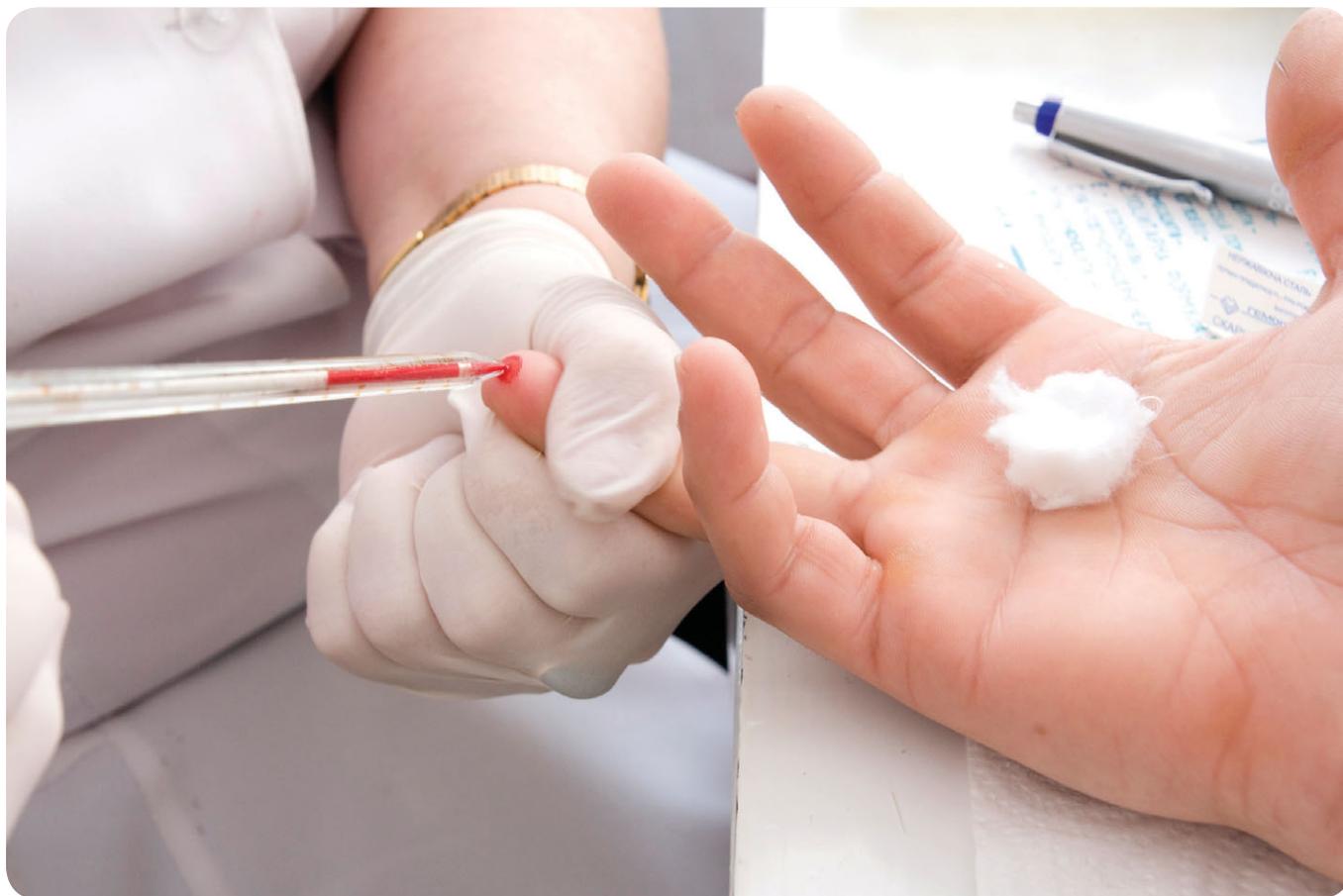
Vitamin D can also play a critical role in diabetes. People with diabetes (both types I and II) have even lower levels of vitamin D than the general population.<sup>28,29</sup> A vitamin D deficiency makes you **91%** more likely to progress to **insulin resistance**, or “pre-diabetes” (even for those with normal blood sugar). Additionally, a vitamin D deficiency more than **doubles your risk** for progressing to full-blown **type II diabetes**.<sup>4</sup>



### What You Need to Know

#### Vitamin D: Essential Hormone

- Most people think of vitamin D as the “bone vitamin,” but recent discoveries show that vitamin D is essential for a tremendous number of normal body processes.
- Virtually every tissue type in the body possesses receptors for the activated vitamin D molecule, defining it as a true hormone.
- Low vitamin D levels are associated with increased risks of cardiovascular and neurological disease, cancer, diabetes, and autoimmune disorders.
- The majority of Americans have vitamin D levels below the minimum recommended concentration of **50 ng/mL**, explaining in part the high prevalence of these diseases.
- Fortunately, supplementation with vitamin D3 has been shown to be protective for all of these conditions, when taken at the dose of at least **2,000 IU/day**. (Most people need **5,000 to 7,000 IU/day** of vitamin D3 to achieve optimal blood levels.)



This close connection between vitamin D and diabetes is due to **vitamin D receptors**, which are found in the pancreas's insulin-producing cells and in liver, fat, and muscle tissue, all of which influence the fate of glucose in your blood.<sup>28</sup>

For example, white blood cells called **macrophages** have vitamin D receptors. When macrophages are taken from diabetics, they display a high level of fat content, which contributes to diabetics' increased cardiovascular risk. However, when those cells are treated in the lab with vitamin D, they stop their pathological fat uptake—ultimately helping reduce cardiovascular risk.<sup>30</sup>

Similarly, compared to healthy controls, diabetic lab animals have decreased numbers of insulin and vitamin D receptors in their brains; they have more body fat and higher levels of inflammation and DNA damage; and they perform poorly on tests of memory and cognition (remember that Alzheimer's disease has been called "diabetes of the brain").<sup>31,32</sup> But vitamin D supplementation **restored** all of those functions to near-normal levels—including improved cognitive performance.<sup>31,33</sup> This is an especially important finding, since it shows the potential of vitamin D to help reverse the process of diabetes.

The inflammatory changes in diabetic animals, as in humans, lead to increased fat in the liver, a condition known as **non-alcoholic fatty liver disease (NAFLD)**. This condition further degenerates due to a vitamin D deficiency.<sup>34</sup> But when human diabetics with similar elevated inflammatory markers are supplemented with **1,000 IU/day** of vitamin D, the inflammation is substantially reduced.<sup>35</sup>

Perhaps the most remarkable news about vitamin D in this context, however, is that *it slows the progression from pre-diabetes to diabetes*. When obese, non-diabetic adults supplemented with **2,000 IU/day** of vitamin D or placebo for 16 weeks, the vitamin D group had significantly improved glucose clearance from their blood, improved insulin secretion from the pancreas, and a trend to lower levels of hemoglobin A1c (the marker of long-term glucose exposure). Control subjects instead saw a worsening of all those parameters.<sup>36</sup>

Vitamin D supplementation also benefits those who already have diabetes. Diabetics receiving **1,000 IU/day** of vitamin D in yogurt saw significant decreases in fasting blood sugar, hemoglobin A1c, insulin resistance, waist circumference, and body mass index, compared with controls receiving no vitamin D.<sup>37</sup>

Studies show that supplementation with vitamin D3 can reduce blood pressure, total cholesterol, and LDL-cholesterol—all risk factors for the heart and kidney diseases for which diabetics are at increased risk.<sup>38</sup> Treatment with active vitamin D3 also significantly reduces protein levels in urine, a marker of kidney disease.<sup>39</sup>

With few exceptions, doses of vitamin D of less than **1,200 IU/day** have not been shown to be as effective as doses of **2,000 IU/day** at lowering blood sugar, hemoglobin A1c, lipid levels, and other disease markers in diabetic patients.<sup>40,41</sup>

### Vitamin D Protects Brain Cells

Vitamin D is especially powerful against neurodegenerative diseases such as Alzheimer's and Parkinson's. Long-term studies show that low vitamin D levels increase the risk of cognitive decline of any kind by **41 to 60%**; increase the risk of Alzheimer's dementia by **77%**; and increase the risk of non-Alzheimer's dementia by *nearly 20-fold*.<sup>7,42,43</sup> And higher vitamin D concentrations are correlated with lower severity in Parkinson's disease.<sup>44</sup>

Even though existing treatments for neurodegenerative diseases can only treat symptoms and temporarily slow their progression,<sup>45</sup> vitamin D has been found to *reverse neurodegenerative decline*. A recent study showed that adding vitamin D to a standard memory drug, memantine, for 6 months in newly diagnosed Alzheimer's patients produced significant *gains* in cognition, suggesting a synergism between vitamin D and the drug.<sup>46</sup>

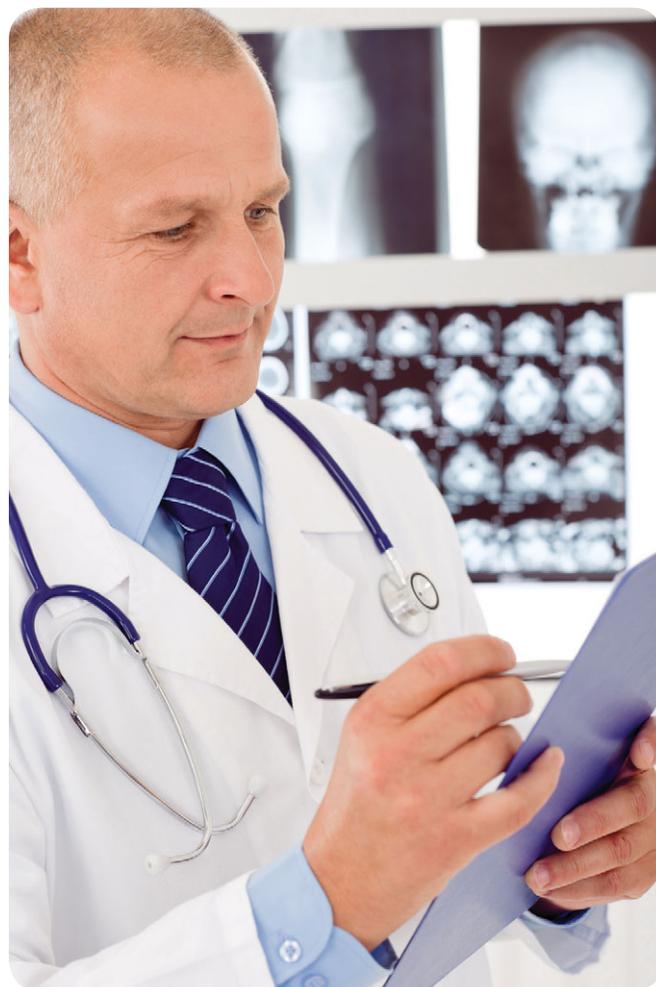
Supplementation with vitamin D has such potent benefits for the brain because the brain relies on **vitamin D receptors** for protection against a variety of destructive processes.<sup>47</sup> Vitamin D has been shown to have a critical role in nerve cell growth and differentiation, nerve transmission, and the "plasticity" of connections that's so essential for normal learning and memory.<sup>48</sup> Without adequate vitamin D, all of those functions suffer, and some fail.

In Alzheimer's disease, that failure is manifested as increased amounts of the abnormal, inflammatory protein called **amyloid beta** (or Abeta). Studies show that when vitamin D is added to cultures of cells from Alzheimer's patients, it speeds the clearance of Abeta.<sup>49</sup>

When laboratory animals bred to spontaneously develop Abeta plaques are supplemented with vitamin D, they show a decrease in brain inflammation, an increase in protective nerve growth factor, and they develop fewer Abeta plaques compared to control animals.<sup>50</sup>

Even normal elderly lab rats (those without Alzheimer's) can experience cognitive benefits from vitamin D supplementation. Older rats have significant difficulty with cognitive testing, along with elevated levels of pro-inflammatory cytokines, decreased levels of anti-inflammatory cytokines, and higher levels of Abeta proteins in their brains.<sup>51</sup> But supplementing with vitamin D for as little as 21 days significantly *reversed* the inflammatory changes and *improved* clearance of Abeta.<sup>51</sup> This shows the potential of vitamin D to prevent the onset of age-related cognitive decline—even when it's not associated with Alzheimer's disease.

Vitamin D can benefit people with Parkinson's disease as well. In humans, it's already known that vitamin D supplementation reduces falls and improves balance in healthy older adults—two problems often faced by patients with Parkinson's.<sup>44</sup> A randomized, placebo-controlled clinical trial has shown that **1,200 IU/day** of vitamin D3 prevents deterioration in Parkinson's disease patients over a 12-month period.<sup>52</sup> Intriguingly, this effect depended on the patients' type of vitamin D receptors in brain tissue.



## Vitamin D Blocks Cancer

Low levels of vitamin D in the blood are strongly associated with elevated cancer risk. Compared to people with higher vitamin D levels, those with low levels have an **83 to 150%** increased risk of developing cancer.<sup>53-55</sup>

This strong correlation is due to **vitamin D receptors**, which regulate a number of signaling pathways involved in inflammation, tumor growth, and immune system surveillance for cancer—especially in the epithelial cells of the skin, breast, prostate, and colon (tissues that are prone to cancer development).<sup>56-58</sup>

The problem is that in cancer cells, the vitamin D receptor is dramatically decreased, leaving cells unregulated and prone to reproduce in an out-of-control fashion.<sup>57</sup> Treating cancer cells in culture with vitamin D, however, produces a number of actions that help fight against cancer: it decreases tumor cell proliferation, quells inflammation, reduces invasiveness, and increases tumor cell death (apoptosis).<sup>57,59,60</sup>

The benefits of these actions are especially seen in cancers of the breast, prostate, and colon.

### Breast Cancer

In animals with experimentally induced breast cancer, for example, these effects of vitamin D reduced the incidence, number, and size of tumors, particularly when vitamin D was combined with EPA and DHA from fish oil.<sup>59,61</sup>

In vivo studies have shown that activated vitamin D3 has some benefits specific to estrogen-dependent

breast cancer. It reduces overall tumor-promoting estrogen effects by decreasing the expression of the *aromatase* enzyme that makes estrogen in breast tissue and by decreasing the expression of the alpha form of estrogen receptor that aggravates certain malignancies.<sup>60</sup>

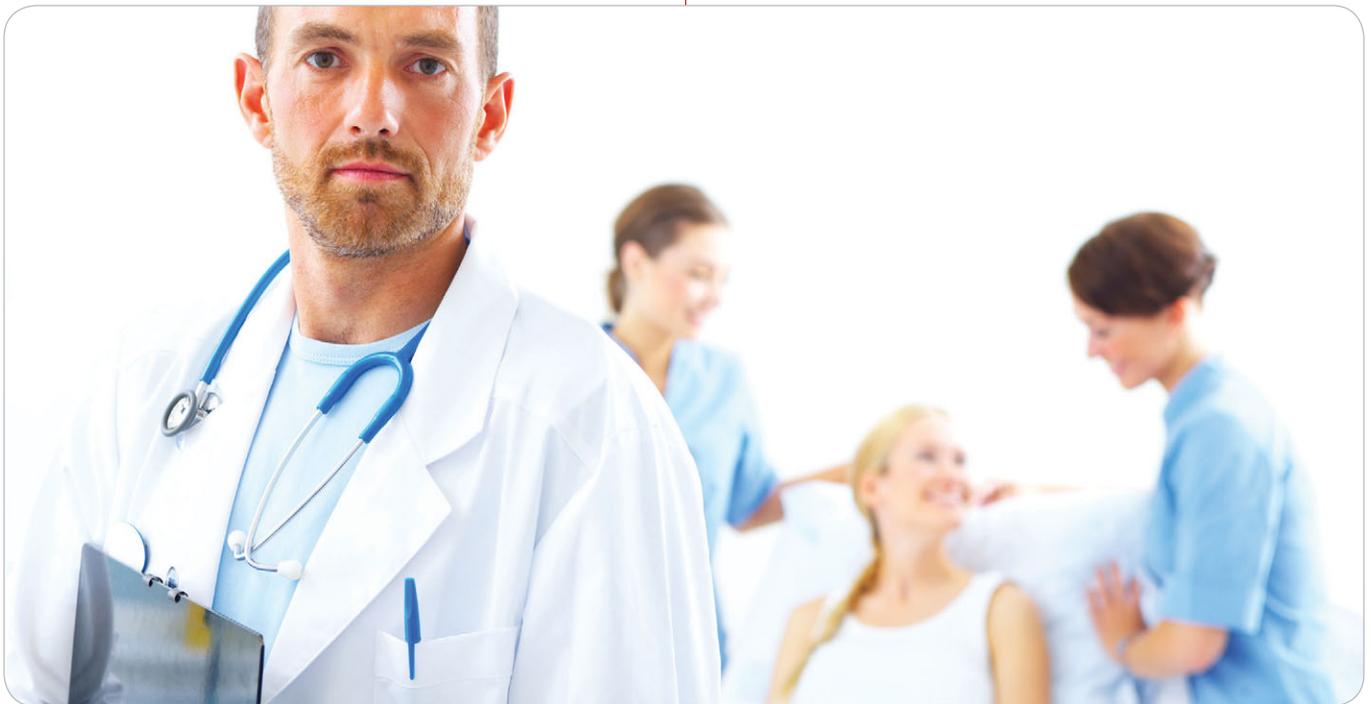
Human studies are now pointing in a similar direction. In the large Women's Health Initiative study, even a low dose of **400 IU/day** of vitamin D combined with calcium was associated with an up to **20%** decrease in breast cancer in women who had not taken supplements previously.<sup>62,63</sup>

### Prostate Cancer

Cancers of the prostate also respond to vitamin D supplementation, as shown by a study in which men with early prostate cancer received **4,000 IU/day** for a year.<sup>64</sup> Fifty-five percent of supplemented subjects showed a decrease in tumor-positive biopsies or a decrease in the **Gleason** tumor score, while an additional **11%** showed no change (meaning the cancer had not progressed). Since prostate cancer is often such a slow-growing malignancy, it is ideal for prevention with vitamin D.<sup>65</sup>

### Colorectal Cancer

Cancers of the colon and rectum usually start as benign polyps (or *adenomas*), which progress to malignancy as a result of chronic inflammation. Colorectal adenoma patients who took **800 IU/day** of vitamin D3 experienced a significant **77%** decrease in



### Increased Disease Risk With Low Vitamin D Levels

CONDITION	RISK INCREASE WITH LOW VITAMIN D LEVELS*
Autoimmune: Multiple Sclerosis <sup>78</sup>	61%
Autoimmune: Psoriasis <sup>79</sup>	189%
Autoimmune: Rheumatoid Arthritis <sup>80</sup>	24% (Patients taking vitamin D supplements had 24% lower risk.)
Cancer, Bladder <sup>54</sup>	83% overall; 494% for invasive tumors
Cancer, Breast <sup>53</sup>	150%
Cancer, Thyroid <sup>55</sup>	100%
Cognitive Decline <sup>7</sup>	41 to 60%
Cardiovascular: (Risk of Heart Attack) <sup>12,13,15</sup>	38 to 192%
Dementia, Alzheimer's <sup>43</sup>	77% increase for lowest vitamin D intake
Dementia, Non-Alzheimer's <sup>7</sup>	Almost 20-fold increase
Infection, Respiratory <sup>81</sup>	36%
Metabolic: Diabetes <sup>4,82</sup>	91% for insulin resistance, 38 to 106% for type II diabetes
Metabolic: Risk of progression from normal blood glucose to diabetes <sup>83</sup>	77%
Stroke <sup>13,84</sup>	22 to 64%

\* Defined either as serum levels less than **30 ng/mL (75 nmol/L)**, or as lowest percentiles vs. highest; risk expressed as percent increased for those with normal or highest levels.

inflammatory markers that can promote cancer development.<sup>56</sup> In a similar group of patients, **800 IU/day** of vitamin D3 produced marked decreases in levels of the tumor promoter *beta-catenin*, with an increase in the tumor suppressor known as *APC*.<sup>66</sup>

### Vitamin D and Autoimmune Disease

Vitamin D is essential for maintaining a balanced immune system. Immune system cells are well-supplied with vitamin D receptors, which along with vitamin D itself, help the system modulate its response: from “attack mode” in the face of pressing threats to “cleanup and wind-down” mode once the threat is past and tissue damage becomes a concern.<sup>67-69</sup>

Vitamin D plays a role in the onset and progression of autoimmune diseases, including type I diabetes, lupus, rheumatoid arthritis, psoriasis, and multiple sclerosis.<sup>68,70-72</sup>

Fortunately, studies show that restoring vitamin D levels to the healthy range through supplementation can help patients with autoimmune diseases. Supplementation has been shown to increase the number of regulatory **T-cells** that restore immune system activity to its normal state, preventing the overactive response characteristic of autoimmune diseases.<sup>73</sup>

The increase in vitamin D levels through supplementation has a number of disease-specific benefits:

- It causes a decline in the disease activity in **rheumatoid arthritis** and **lupus**.<sup>71,72</sup>
- It reduces the risk of developing **type I diabetes** and preserves insulin-producing pancreatic cells once the disease has started.<sup>74</sup>
- It suppresses the development of **multiple sclerosis** in animal models of the disease, and a large human trial has shown that supplementation was associated with a **40%** reduction in the risk of developing multiple sclerosis.<sup>70,75</sup>

## The Vitamin D Solution

With over 1 billion people worldwide faced with insufficient levels of vitamin D, it's easy to see why so many of these life-threatening diseases are skyrocketing to epidemic proportions.

Fortunately, the solution is straightforward. Start by taking a high quality vitamin D3 supplement of at least **2,000 IU** daily (small children need at least **400 to 1,000 IU**).<sup>8,9</sup> Next, get your vitamin D level checked as soon as possible. Be sure the lab tests for "**25-hydroxyvitamin D**," which is the best measure of vitamin D status.<sup>8</sup> To get your blood concentration up to the sufficient level, you'll need to take **100 IU** of additional D3 for each **1 ng/mL** you need to raise it.<sup>8</sup>

So if your level comes in at a low **20 ng/mL**, you'll need to take an additional **3,000 IU (100 IU x 30 ng/mL)** to get yourself up to **50 ng/mL**. Recheck the level in 2 to 3 months. Once you are in the sufficient range, you might be able to maintain that level by taking **2,000 IU** daily, though most people nowadays are taking doses of **5,000 IU** and higher to get their levels closer to high optimal range of **80 ng/mL**. Confirm this with repeat testing at least once a year.<sup>76</sup> Many people, especially those with pre-existing chronic illness, find they need more to boost their levels adequately.<sup>76,77</sup>

## Summary

Despite reams of evidence to the contrary, mainstream medicine continues to mainly regard vitamin D as essential only for healthy bone maintenance. But the discovery that the vitamin D receptor is found in virtually all human tissues has suggested to many that the vitamin (actually a hormone) is vital for most human functions.

Frighteningly, though, the majority of Americans have insufficient vitamin D levels to support good health, resulting in an increase in a host of chronic diseases.

Supplementing with **2,000-8,000 IU/day** of vitamin D3 is the best way to get your levels back to normal and to promote your body's maintenance—not just of bone health, but of robust cardiovascular, metabolic, neurologic, and immune function, while also preventing cancers of the breast, prostate, and colon, and likely many others.

Remember to take your vitamin D with the meal of the day that contains the most fat, as this greatly enhances vitamin D absorption.

You owe it to yourself to get your vitamin D level tested now—but don't wait for the results. Odds are that you haven't got enough vitamin D in your body for optimal health, so you should begin a vitamin D3 supplement today.

On page 49 is a description of a special offer for a **blood test panel** that includes 25-hydroxyvitamin D, glucose, cholesterol, LDL, HDL, triglycerides, and a host of other health markers. The cost of this panel is only **\$56** for **Life Extension** members. ●

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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Item # 01732

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BY JON FINKEL

# SUMMER SANDERS

## The Olympic Champion Carries the Torch for Varicose Vein Awareness

Twenty years ago, in the pristine water of the Bernat Picornell Olympic swimming pool on the mountain of Montjuic, in Barcelona, Spain, the world fell in love with Summer Sanders. It was the 1992 Olympic Games, and as the NBA's Dream Team dominated the headlines on land, Sanders' grit and grace stole headlines in the water.

Fresh off winning an NCAA National Championship with her Stanford University swim team, Sanders won four medals at the 1992 games, including a gold medal in the 200 meter butterfly and the 4 x 100 meter relay. As the most decorated US swimmer of the Barcelona games, almost overnight, she found herself the focus of the national media. Fortunately, she was ready for prime time. >

She used her swimming success as a launch pad to a television career that included an eight-year run as co-host of *NBA Inside Stuff* with Ahmad Rashad, as well as work as a correspondent for *Good Morning America*, *The Rachael Ray Show*, and NBC's Olympic coverage.

Long retired from competitive swimming, Sanders currently hosts the award-winning web series "Elite Athlete Workout for Yahoo! Sports." More importantly, however, is the work that she's doing as a health and fitness advocate, which includes her latest partnership with Rethink Varicose Veins.

### Nobody Is Immune

Sanders' partnership with Rethink Varicose Veins isn't one of those collaborations where a celebrity becomes a hired gun and has no knowledge of the actual cause. In this case, varicose veins were a serious problem for Sanders.

"I was pregnant with my son when I had my first varicose vein," Sanders says. "I had always associated varicose veins with someone older than me, or someone who wasn't active, so when I got mine, I thought, 'Oh my gosh, I've turned into my mother.'"

Following her initial reaction, Sanders did some research and discovered what many women in her shoes have come to understand about what they once thought was a mere 'cosmetic' problem. The basics

were that varicose veins happen when the valves in the leg no longer function, causing blood to pool. While many women are first concerned about the unsightly appearance, a true health risk lurks beneath the surface.

If varicose veins are untreated, they can lead to much more serious forms of venous disease called CVI, which stands for **Chronic Venous Insufficiency**. CVI can snowball into a host of symptoms that can progress over time, including leg fatigue, swelling, restlessness, pain, and in the worst cases, ulcers, skin damage, and an increase in the risk of developing a blood clot called a deep venous thrombosis (DVT). This blood clot can form in the deep veins of the leg and then travel to other parts of the body, including the lungs, resulting in a potentially fatal condition called pulmonary embolism (PE).

"Once I started to learn more about it, I realized that the constant pain I was having in my legs might be CVI," she says. "My tipping point was when I was on my way home from Disneyland with my family and I was driving. We had to stop three times because my calves were so sore. It was just an annoying, annoying ache. You can't help but massage it. When I started to think about it, I realized I was experiencing this kind of pain almost every night."

As a world class athlete, Sanders was conditioned to push through pain, but after reading the literature, she realized this wasn't something you just tough out.

"My mother suffered from varicose veins for most of her life," Sanders says. "She was a flight attendant and was on her feet all the time. She always talked about how much pain she'd be in on long trips. Well, I developed varicose veins 25 years before my mom had hers."

In fact, when Sanders' mother went to have her legs examined by a specialist, that's when Sanders decided to have her legs looked at as well.

"I had myself checked out, and as I was reading the literature, I became more knowledgeable and I started calculating how I felt after long days on my feet and after long flights and I thought my varicose veins might be causing some of my symptoms," she says.





“When Rethink Varicose Veins contacted me to get involved, I thought someone was messing with me because my mom was having a laser procedure the next day!” she says.

### Having a Game Plan

As far as Sanders’ own varicose vein issue, she was determined to nip it in the bud.

“There is a new way to look at varicose veins,” she says. “Don’t wait until your leg is full of varicose veins to have them checked out.

Sanders opted for **Radiofrequency Ablation**, which uses radiofrequency energy to force the vein walls to collapse and seal off.

“In layman’s terms, I had a vein that wasn’t working, so I just shut it off,” she explains.

Other minimally invasive treatments include laser ablation, which uses a focused laser to close off a diseased vein, and sclerotherapy, which involves a chemical injection into a diseased vein.

Natural solutions may include the plant-based nutrient **diosmin**, which is derived from the sweet orange. This extract is delivered rapidly to the blood stream via a vegetarian tablet and may help maintain healthy blood flow as well as vascular tone and elasticity.

Following her procedure, Sanders says she feels **100%**, and after successfully running in this past year’s Chicago Marathon, she hopes to qualify for and run in the prestigious Boston Marathon next year.

“I don’t have any other kinds of veins or an achy feeling anymore,” she says. “My calf feels so much lighter on a daily basis. This is why I think it’s important to be the face of varicose veins. I wanted to show that you can be an active, healthy person.”

In terms of prevention and/or reducing some symptoms, Sanders says that, of all things, her doctor suggested swimming as a fantastic exercise to combat varicose veins.

“My doctor was telling me that swimming is a great exercise to help alleviate varicose veins,” she says. “Exercise is great, but it is hard on your veins. With swimming, you’re not upright and it’s easier on your body.”

Diet, as always, plays a pivotal role in overall health, and when it comes to what Sanders puts in her body, she tries to stick with fruits, vegetables, and protein.

“In our house, we try to look at our plates like they’re an empty canvas and we try to put as much color on them as possible,” she says. “We load it up with reds and greens and oranges and as many fresh vegetables as we can. I also love blueberries. You can add them to anything. They’re chock full of antioxidants, like nature’s little miracle food.”

Sanders also makes fruit smoothies for her and her kids and includes frozen spinach for its high content of vitamins A, K, C, and folate.

“I put it in shakes and you don’t even taste it,” she says.

### Full Circle

With her healthy diet in place and her legs no longer bothering her, Sanders celebrated the 20<sup>th</sup> anniversary of her success at the Barcelona Games with a special honor at the 2012 Olympic Games in London: she represented the United States and carried the Olympic torch through London.

“I was beyond excited when I found out,” she says. “I was chosen by Coca-Cola as one of the athletes and I think I just screamed when I heard the news.”

Last summer, Sanders not only carried the torch for the US, but for all the women who now have the knowledge to overcome varicose veins. ●

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For more information on Rethink Varicose Veins, please visit [www.rethinkvaricoseveins.com](http://www.rethinkvaricoseveins.com).

For more information on Summer Sanders, please visit [www.summersanders.net](http://www.summersanders.net).

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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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As with so many age-related conditions, *inflammation*<sup>3</sup> is the chief culprit behind the presence of unsightly veins.

**European Leg Solution featuring Certified Diosmin 95** offers effective protection by **disrupting this inflammatory response.**

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Item # 01042

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5. Enjoys an outstanding safety record.
6. Produces results in just 1–2 weeks, with a single **600 mg** tablet taken each morning.<sup>2</sup>

\*Product not for sale outside the United States.

**To order European Leg Solution featuring Certified Diosmin 95,  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

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

BY JULIA PACE

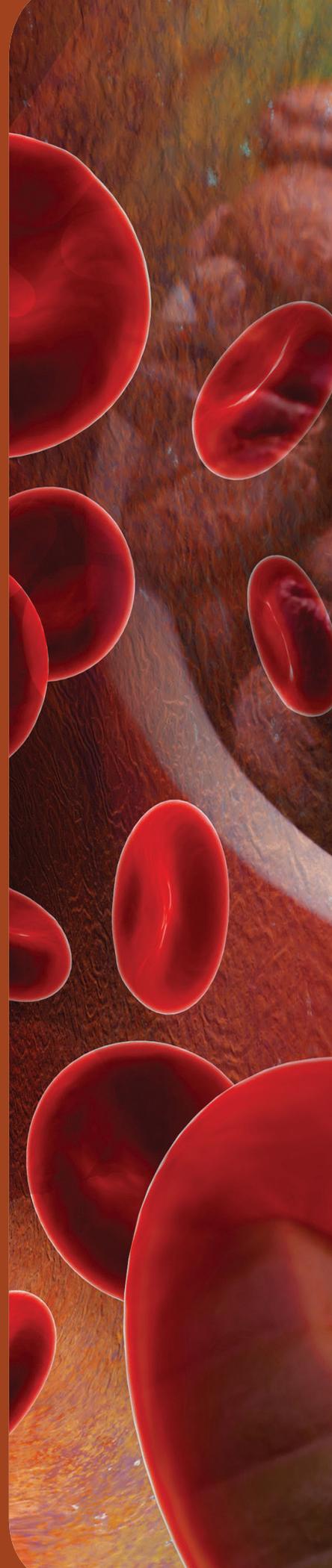
# New Findings on **Coffee's** Cardiovascular **Benefits**

If you're one of the 150 million Americans that drink coffee on a daily basis, we have good news for you.<sup>1</sup> Despite decades of medical advice from organizations like the American Heart Association that coffee may be bad for your heart, breaking research has proven that moderate coffee consumption offers powerful protection against heart failure and stroke.<sup>2,3</sup>

Two exciting new studies provide dramatic insight into coffee's health-giving benefits. Together, these studies show that coffee reduces the risk of both hemorrhagic and ischemic stroke by improving endothelial function (the mechanisms by which blood vessels retain their control over blood flow and pressure).<sup>2,3</sup> Strokes, like heart attacks, are the consequences of disruptions in endothelial function that lead to sudden loss of blood flow, with devastating effects on surrounding tissues.<sup>4</sup>

Stroke is among the top three causes of death in the United States.<sup>5</sup> **Drinking 5 or more** cups of coffee a day has been found to reduce risk of death from a stroke by **36%**.<sup>6</sup> With more than **140,000** people dying from stroke each year, that **36%** risk reduction could *save the lives of more than 50,000 people a year*.<sup>5,6</sup>

But there are plenty of other healthy reasons to have your daily cup of coffee. Coffee reduces your risk of dying from heart disease, prevents diabetes, cuts cancer risk, and even reverses cognitive impairment in Alzheimer's patients.<sup>6,7</sup> >





Despite decades of medical advice that coffee was “bad for your heart,” new evidence is demonstrating just the opposite: Moderate coffee consumption can protect against heart attacks and subsequent heart failure.<sup>6,8</sup>

As with strokes, this is largely due to coffee’s favorable impact on **endothelial function**. Poor endothelial function increases your risk of **heart attack** (when the heart gets too little blood to meet its own needs) and **heart failure** (when the heart can no longer pump out enough blood to meet the body’s needs).<sup>9,10</sup>

Because coffee helps improve endothelial function, it not only helps protect you from a heart attack to begin with—but can also protect you from dying from cardiovascular disease.

A large study of more than 59,000 people conducted over 19 years provides powerful evidence of coffee’s protective effects against heart failure. The study found that women who consumed at least **1 cup** of coffee per day had a reduction in heart failure of roughly **27%** compared to those drinking no coffee.<sup>11</sup> Another study found that **4 cups per day** provides the strongest protection against heart failure in both men and women.<sup>12</sup>

Researchers found among women, drinking at least **2 cups** of coffee per day was associated with protection of up to **25%** against dying from cardiovascular disease.<sup>13</sup> And in a group of patients (men and women) who had suffered the most common kind of heart attack, **96%** of patients who were given coffee during their stay in the coronary care unit had a favorable increase in their heart rate variability, a measure of protection against premature cardiovascular death.<sup>14</sup>

Diabetic patients are at exceptionally high risk for heart attacks, largely because of the poor endothelial function induced by years of exposure to high glucose levels. A study of type II diabetics showed that those who consumed **5 or more cups** of coffee daily were about **31%** less likely to die from all causes and about **30%** less likely to die from cardiovascular diseases, compared to those who drank no coffee.<sup>6</sup>

### Coffee Drinking Slashes Stroke Risk

Endothelial dysfunction is a major risk factor for strokes because it impairs blood flow through the brain's major arteries.<sup>15</sup> Strokes, like heart attacks, are the consequences of disruptions in endothelial function that lead to sudden loss of blood flow, with devastating effects on surrounding tissues. People who've had strokes lose function in the affected brain regions, resulting in disorders of speech, balance, coordination, motor strength, and often cognition.

But recent evidence has indicated that coffee can improve endothelial function, reducing your risk of stroke.<sup>2,3</sup> Studies show that coffee consumption is powerfully associated with reduced risk of both major kinds of stroke, **ischemic** (not enough blood to the affected areas of the brain) and **hemorrhagic** (bleeding from a major brain artery).<sup>3,16</sup>



A study of hemorrhagic stroke, conducted among patients with no prior stroke history, demonstrated that being a coffee drinker was associated with a **36%** reduced risk of hemorrhage, compared with being a non-coffee drinker.<sup>16</sup>

Ischemic stroke is the more common variety.<sup>17</sup> Compared with drinking **0 to 2 cups** daily, people who drink **3 to 4 cups** of coffee per day have a **23%** lower risk of dying from a stroke. That risk reduction climbs to **36%** in those who drink **5 to 6 cups** a day.<sup>6</sup> Similar studies found that women who consume **2 or more cups** of coffee per day (caffeinated or decaf) have an overall **20%** reduction in stroke risk.<sup>8,18</sup>

Animal studies help explain the reason behind this powerful protection against ischemic stroke. When scientists applied coffee-containing water to tiny blood vessels in mice, they discovered that it slows the time it takes for chemically stimulated platelets to block arteries, from just over 12 minutes to 46 minutes.<sup>19</sup> That extra half-hour window could be the time it takes for a stroke victim to reach urgent medical care and avert a catastrophe.

### Coffee Reduces the Risk and Impact of Diabetes

We've already seen that coffee can reduce the risk of cardiovascular disease in diabetics.<sup>6</sup> But there's strong evidence to show that moderate coffee consumption can lower your risk of developing diabetes in the first place.<sup>20-22</sup>

This benefit is especially seen among women. In a recently published study, for example, women consuming regular coffee (**3 or more cups** daily) had a **34%** lower risk of developing diabetes than those who drank less than one cup per day, while men had only a borderline risk reduction.<sup>23</sup>

However, men can benefit from coffee consumption as well. An interventional study of men showed

that drinking **5 cups** of caffeinated coffee daily for 16 weeks decreased after-meal glucose concentrations by an average of **13%** and total exposure to glucose by nearly **8%**, along with a decrease in waist circumference.<sup>24</sup> There were no changes in this study among the decaf or no coffee groups.

Interestingly, both of these studies only showed benefits in the groups drinking caffeinated coffee—and not in the decaf groups. However, at least one large study from researchers at Harvard Medical School found significant risk reductions for diabetes in women who consumed either caffeinated or decaffeinated coffee. This effect was **not** seen in those who consumed caffeinated soft drinks, indicating the protective effect of the components in coffee itself.<sup>25</sup>

Both caffeinated and decaffeinated coffees contain the ingredients that account for coffee's health benefits, namely **chlorogenic acid** and **trigonelline**, a compound related to niacin (vitamin B3). In one study, both substances reduced blood glucose by **9 to 12 mg/dL**; they also lowered insulin concentrations following an oral glucose tolerance test.<sup>26</sup>

Coffee's non-caffeine components are associated with coffee's anti-inflammatory actions, which likely contribute to the decreased diabetes risk. They have been shown, for example, to reduce levels of the inflammatory cytokines IL-18 and 8-isoprostane, while increasing the protective cytokine adiponectin.<sup>20,27</sup>

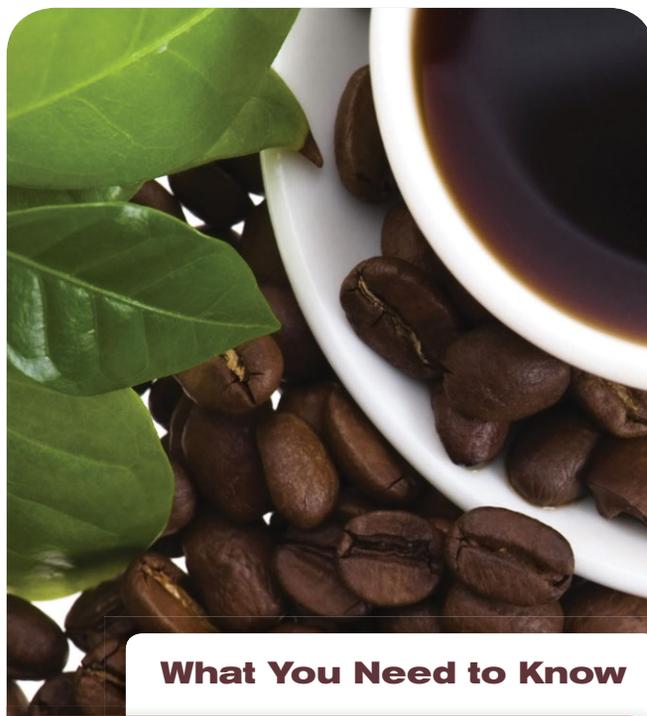
Unfortunately, at this point, there isn't enough information to make a firm recommendation about whether you should drink regular or decaffeinated coffee to lower diabetes risk.

### Coffee Cuts Cancer Risk

Cancer researchers bashed coffee-drinking for years because they believed it contributed to the growth of tumors.<sup>28</sup> But now there's substantial epidemiological evidence showing that coffee consumption in fact reduces the risk of many tumors.<sup>29</sup> This is especially true of breast cancer.

Breast cancer is a very well-studied malignancy in terms of its relationship to coffee, in part because the same liver enzymes are involved in the metabolism of coffee compounds and estrogen, as well as the breast cancer drug tamoxifen.<sup>30,31</sup>

Coffee helps prevent the development of breast cancer by favorably increasing the ratio of estrogen's protective metabolite **2-hydroxyestrone** compared to its more dangerous metabolite called **16-hydroxyestrone**. An increase in **2-hydroxyestrone** and reduction in **16-hydroxyestrone** results in a hormonal environment less favorable to breast cancer development.<sup>32</sup>



### What You Need to Know

#### Health Benefits of Coffee

- Coffee is the most widely-consumed pharmacologically-active beverage in the world.
- Long suspected to be associated with poor health outcomes, coffee has now been shown to have a myriad of health benefits when consumed in moderation.
- Drinking up to five cups of coffee daily can protect you against many chronic, age-related diseases.
- Recent studies highlight coffee's ability to boost endothelial function and reduce the risks of stroke and heart disease.
- Coffee and its components offer protection against diabetes, itself the cause of degraded endothelial function and cardiovascular diseases and cancer.
- Coffee helps protect against cancer and neurodegenerative disorders like Alzheimer's and Parkinson's diseases.
- In today's world, there's every reason to drink coffee liberally, not only without guilt, but secure in the knowledge that you are improving your health and preventing disease with every cup.

## Endothelial Function and Your Health

Studies now show that poor endothelial function is a more accurate predictor of heart attack and stroke risk than most conventional risk markers (like lipid profiles and blood pressure).<sup>15,58-63</sup>

Your arteries are not simple rigid pipes, or even flexible hoses. They are living, dynamic structures that exert active control over the amount of blood that flows through them.

Arteries detect and respond to variations in blood flow and pressure through a complex signaling system that involves the ultra-thin layer of cells that line their inner surfaces: the **endothelium**. In health, the endothelium relays signals to the smooth muscle cells that form the actual walls of the arteries. When the endothelium signals “not enough blood flow,” the arterial wall relaxes, the artery dilates, and more blood flows.

But in cardiovascular disease, the endothelial function is impaired.<sup>4</sup> People with endothelial dysfunction can't relax their blood vessels appropriately, so they can't deliver adequate blood flow to oxygen- and energy-starved tissues.

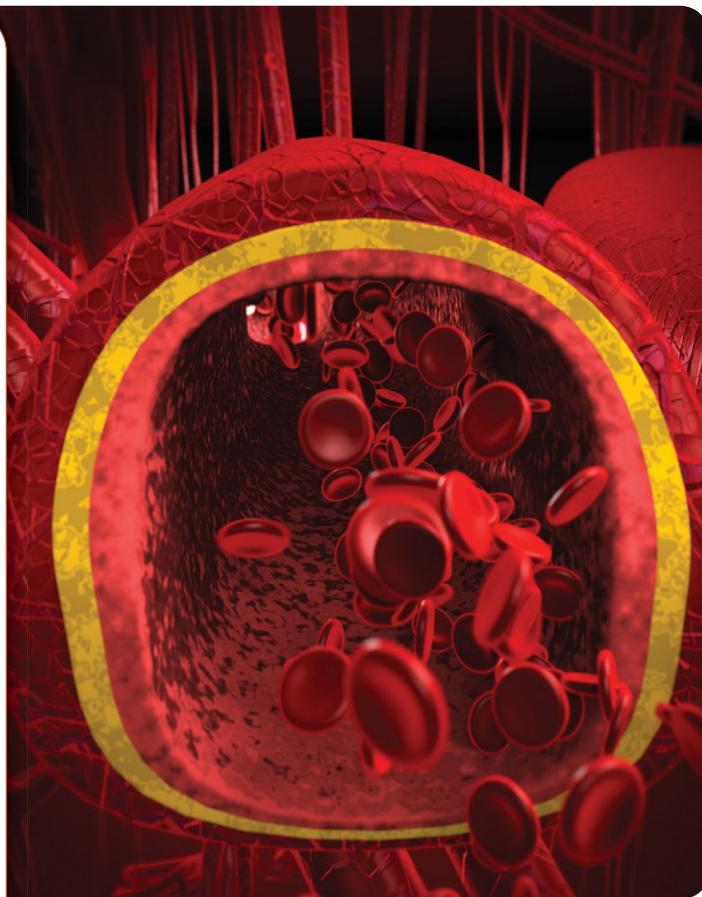
The result can be devastating. Early on, insufficient blood flow produces ischemia, or insufficient oxygenation of tissues. But in a blindingly short period of time, ischemic tissue dies, producing an infarction.

An infarction in the heart is a heart attack. An infarction in the brain is a stroke.

Optimizing your **endothelial function** is one of the best ways to lower your risk of succumbing to a stroke or heart attack. Studies now conclusively demonstrate that coffee, both decaf and regular, have powerful beneficial effects on endothelial function.<sup>2,18,64-68</sup>

Studies have now shown that coffee consumption slows the growth of treatable estrogen receptor-positive breast cancer, resulting in an older age at diagnosis.<sup>33</sup> And among women with known cancer-causing mutations, consumption of caffeinated coffee is associated with a significant reduction in breast cancer risk.<sup>31</sup>

In one study, intake of at least **5 cups** of coffee per day reduced breast cancer risk by **29%**, reduced the risk of difficult-to-treat estrogen receptor-negative tumors by **59%**, and reduced postmenopausal breast cancer by **37%**.<sup>34</sup> This study found no impact of other caffeine-containing beverages, again highlighting the



importance of the non-caffeine components of coffee. Although research into other cancers and their association with coffee drinking is less detailed, the available evidence is still encouraging. Take a look:

- Studies reveal a decrease in the risk of **endometrial cancer** of **up to 39%** in women drinking at least **1 to 2 cups/day**, and **62%** in women drinking **3 or more cups/day**.<sup>35, 36</sup>
- The risk of localized **esophageal cancer** was reduced by **60%** among coffee drinkers in one study.<sup>37</sup>
- People with either hepatitis B or C infections or both (a high-risk population), who drink at least **3 cups** of coffee daily reduce their risk of developing **liver cancer** by up to **39%**.<sup>38</sup>
- Even those without such viral infections have a **44%** lower risk of developing **hepatoocellular carcinoma**, the most common liver cancer, when they drink **3 or more cups/day**.<sup>39</sup>
- And the risk of localized **prostate cancer** has now been shown to decrease by **3% per cup of coffee per day**, with higher risk reductions among overweight or obese men.<sup>40</sup>

## Neurodegenerative Diseases Yield to Coffee

Neurodegenerative diseases in the US are rising at an alarming rate. A study published in April 2013 in the *New England Journal of Medicine* found that nearly **15%** of Americans older than 70 suffer from dementia.<sup>41</sup> The total monetary costs of dementia in the US as a whole is around **\$215 billion** per year.

There's now very strong epidemiological evidence that people who drink more coffee are protected against developing Parkinson's and Alzheimer's diseases, the most common forms of dementia.<sup>42-44</sup> Studies show that coffee consumption lowers the risk for Parkinson's by up to **74%** and cuts the risk of Alzheimer's and general cognitive decline by up to **51%**.<sup>45-49</sup>

Animal studies reveal some of the basic mechanisms behind this powerful protection. One of the most important ways coffee produces this effect is by preventing type II diabetes. Since diabetes is a known risk factor for developing Alzheimer's, preventing diabetes ultimately helps prevent Alzheimer's. One study showed that decaffeinated green coffee improved insulin sensitivity and improved brain energy metabolism, both important factors in Alzheimer's disease prevention.<sup>50</sup>

Caffeine appears to be one of the most important components of coffee that is responsible for this dramatic risk reduction. For example, when mice that were engineered to be at high risk for Alzheimer's disease were given caffeine, they were protected from cognitive impairment.<sup>51</sup> This protective effect was also seen in older mice that were already showing signs of cognitive impairment from Alzheimer's, demonstrating an actual reversal of cognitive impairment and improvement in learning and memory.<sup>52</sup>

Caffeine also reduces both brain and plasma levels of the toxic Abeta protein (sometimes called the "Alzheimer's protein" because it's found in such high concentrations in the brains of Alzheimer's patients).<sup>51-53</sup> Remarkably, in both mice and humans, a single dose of caffeine (equivalent to **5 cups of coffee/day**) quickly reduced both brain and plasma levels of toxic Abeta protein.<sup>43</sup> This finding may represent the first true disease-modifying treatment of Alzheimer's. (Current drug therapies can only reduce symptoms; they don't produce changes in the disease process itself.)

But other components of coffee in addition to caffeine are essential and have been shown to work synergistically with caffeine to protect brain health and function, which means you can't simply take caffeine pills (a bad idea for many reasons). One study demonstrated this dramatically: only caffeinated

coffee—and neither caffeine alone nor decaffeinated coffee—protected against Alzheimer's.<sup>54</sup> Similarly, crude caffeine (a byproduct of coffee decaffeination that still retains non-caffeine components) but not caffeine itself, reduced Abeta levels and microscopic damage to brain memory centers.<sup>55</sup>

**Chlorogenic acid**, a major non-caffeine coffee constituent, protected animals against chemically induced memory impairment—and *also reversed cognitive impairments*.<sup>56</sup> And **eicosanoyl-5-hydroxytryptamide**, another coffee component, has anti-inflammatory and antioxidant activities that can protect against Parkinson's disease in animal models.<sup>57</sup>



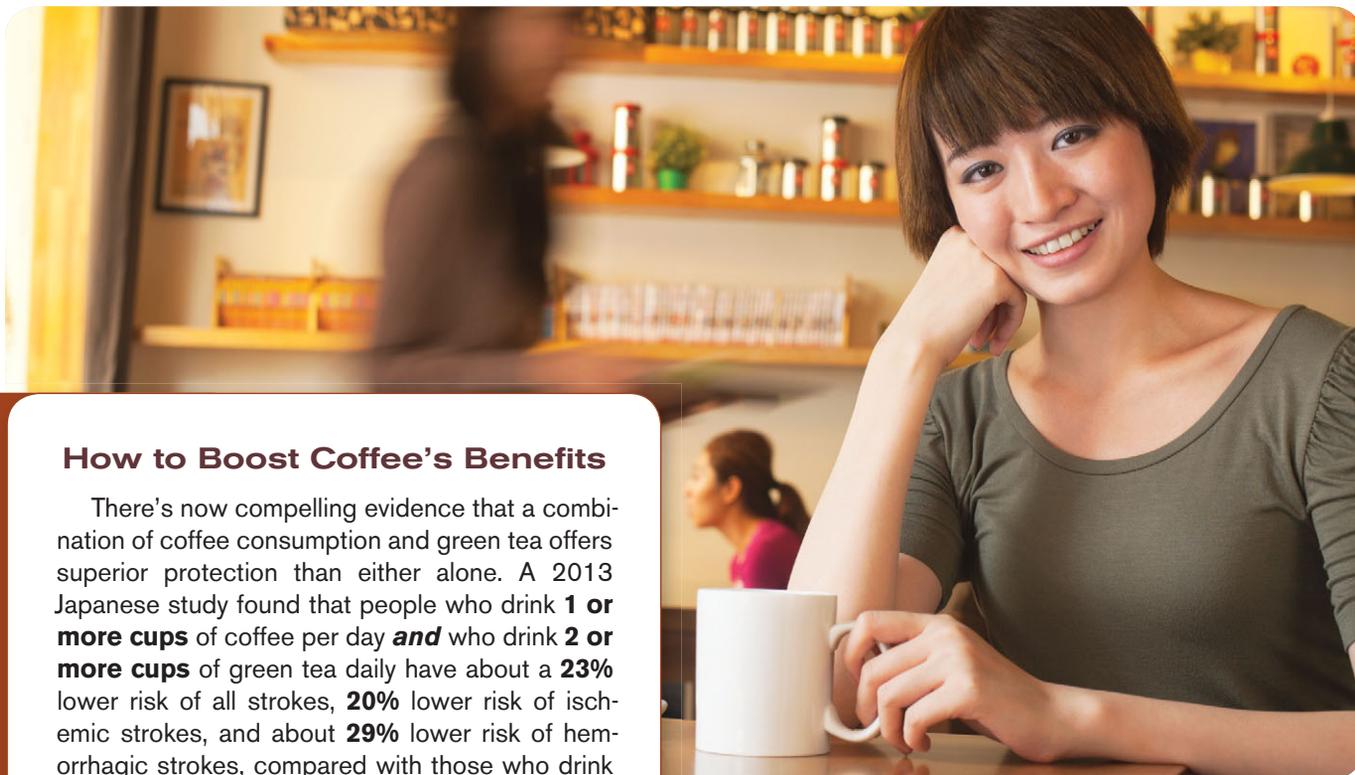
### Can Drinking Coffee Help You Live Longer?

People who live well into their 90s are evidently doing something right, even if they are also blessed with good genes. Several studies have examined the dietary practices of centenarians and those who live to be 90-100 years seeking for clues to their surprising longevity.

Coffee drinking stands out among the dietary practices that correlate with great age.

A study comparing centenarians with sexa- and octogenarians found that centenarians consumed coffee significantly more frequently than the two younger groups.<sup>69</sup> A second study among very elderly people in Rome found that consuming strong espresso coffee more than once a week reduced the risk of dying within 5 years by **79%**; and more than **2 cups/week** reduced that risk by **65%**.<sup>70</sup>

In light of other studies showing that people of all ages who drink more coffee are less likely to die prematurely compared with those who drink less (or none),<sup>8,13</sup> it's hard to put down that coffee cup knowing it could earn you an extra five years of healthy, vigorous life even well into old age!



### How to Boost Coffee's Benefits

There's now compelling evidence that a combination of coffee consumption and green tea offers superior protection than either alone. A 2013 Japanese study found that people who drink **1 or more cups** of coffee per day **and** who drink **2 or more cups** of green tea daily have about a **23%** lower risk of all strokes, **20%** lower risk of ischemic strokes, and about **29%** lower risk of hemorrhagic strokes, compared with those who drink neither beverage.<sup>3</sup>

Fortunately, there are excellent extracts available that contain the green tea polyphenols that confer protection.<sup>71,72</sup>

### Summary

Coffee has undergone a dramatic scientific rehabilitation in the past decade, going from feared pariah to welcome ally in the quest for better health and longer life.

New studies provide dramatic insight into coffee's health-giving benefits, with a special focus on its role in improving **endothelial function**, the mechanisms by which blood vessels retain their control over blood flow and pressure. By improving endothelial function, coffee can reduce your risk for stroke and heart attack.

Other benefits include a reduced risk for developing diabetes, cancer, and neurodegenerative diseases.

Protect yourself from the ravages of aging. Enjoy that next cup of coffee secure in the knowledge that you are not only producing no harm, but in fact are helping your body fend off some of the most dreaded consequences 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.

**CAUTION:** Caffeine consumption can transiently increase blood pressure and heart rate, though most individuals who regularly consume caffeine develop tolerance to these effects. Nevertheless, in very sensitive individuals, caffeine consumption can increase blood pressure significantly (e.g. **10 mmHg** or more). Caffeine appears to have a more pronounced blood pressure effect on overweight people older than age 70 years.<sup>87</sup> To see if caffeine may be raising your blood pressure, check your blood pressure within 30 to 60 minutes of drinking a cup of caffeinated coffee or another caffeinated beverage. If your blood pressure increases by **10 mmHg** or more, you may be sensitive to the blood pressure raising effects of caffeine and may want to cut down on caffeine consumption and substitute decaffeinated coffee.

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## New Polyphenol-Retaining Coffees Boost Health Benefits

In their green, unroasted state, coffee beans are an incredibly rich source of health-promoting polyphenols, particularly chlorogenic acid. However, before these beans are consumed as brewed coffee, they are subjected to varying degrees of roasting—often at very elevated temperatures ranging from 375 to 440 degrees Fahrenheit. These extreme temperatures destroy an enormous amount of the beneficial polyphenols, leaving the standard coffee found on supermarket shelves substantially less healthful than it could be.

In order to preserve the green coffee bean's original polyphenol content, a new, patented technique has been developed. Under controlled temperature conditions, the green coffee beans are first soaked in water and then drained before roasting.

Because many polyphenols, including chlorogenic acid, are water-soluble compounds, soaking the beans before roasting provides an opportunity to “capture” the polyphenols at a controlled temperature before the beans are exposed to polyphenol-destroying high-temperature roasting.<sup>73,74</sup> After roasting, the beans are “quenched,” meaning that they are placed

back in the polyphenol-rich water retained from the pre-soaking phase before roasting. The result is that the beans reabsorb the polyphenols from the water, and much of their original polyphenol content is “rescued.”<sup>74</sup>

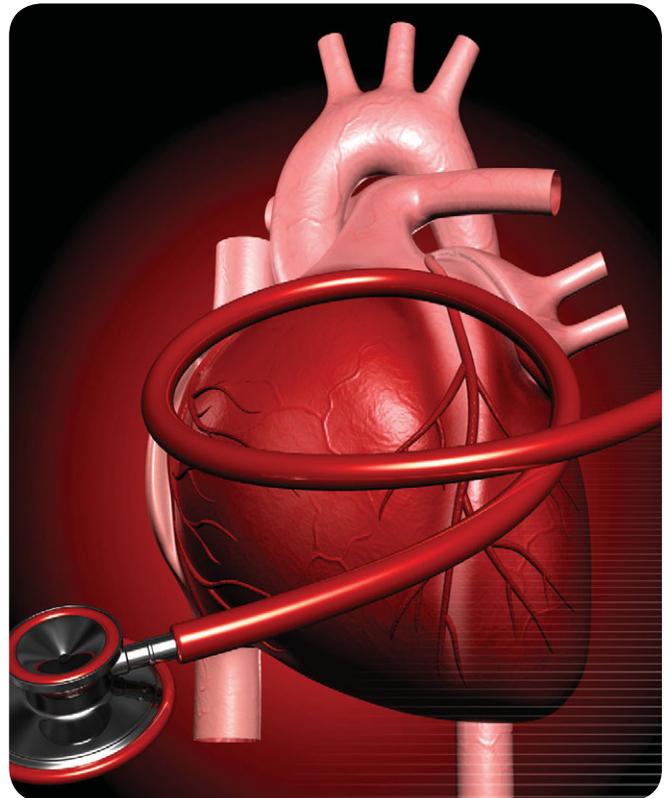
This process results in a roasted coffee bean displaying all the desired flavor and richness of traditional roasted coffee, but with a substantial increase in its content of polyphenols, especially chlorogenic acid. In fact, the final brewed beverage has been found to contain as much as a **120%** increase in polyphenols overall, and up to an astonishing **250%** increase in chlorogenic acid content versus standard roasting procedures.<sup>74</sup>

Studies show that, for maximum health benefit, you would need to drink anywhere from 4 to 12 cups of conventional coffee daily.<sup>75-86</sup> That's a lot of coffee to drink and for many people, consuming that much may result in unpleasant side effects. The advantage of these newer “polyphenol-retaining” coffees, with twice the chlorogenic acid content, is their potential to deliver similar benefits in only half the number of cups.



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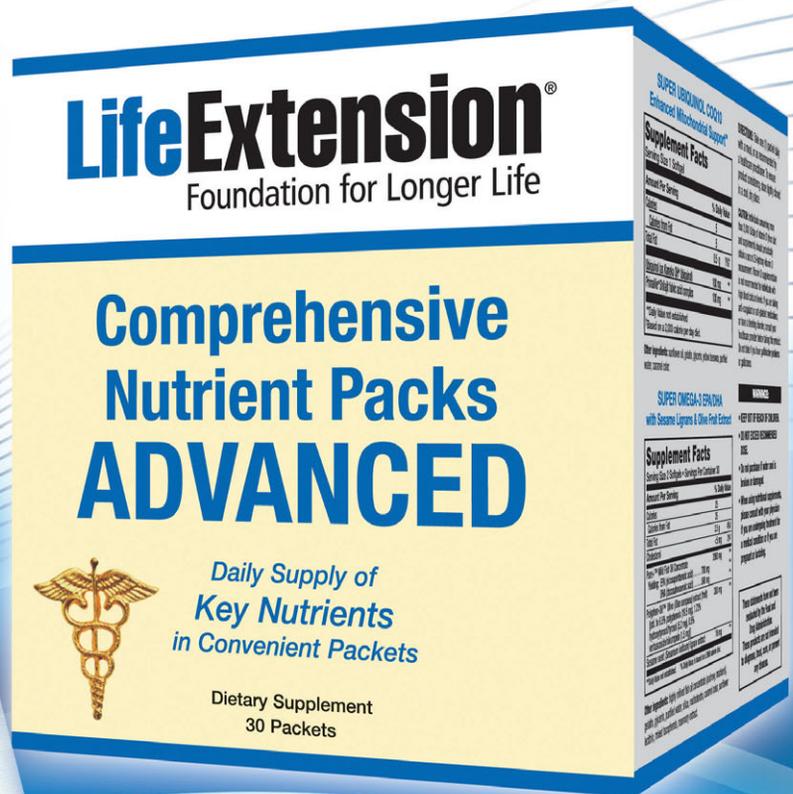


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# Rich Rewards®

## Breakfast Blend Ground Coffee

### TWO NEW DELICIOUS NATURAL FLAVORS!

#### One Smart Cup of Coffee®

In a recently published study, researchers found that those living on the Greek island of Ikaria had a healthier and longer life span due to their daily intake of strong coffee.<sup>1</sup>

The researchers also report that the healthy endothelial function supported by coffee compounds may play a major role in this longevity effect.<sup>1</sup>

#### Polyphenol-Retained Coffee

Not all coffee delivers the same powerful health benefits and longevity dividend.<sup>2-6</sup>

When it comes to obtaining coffee's full range of health benefits, *most people aren't getting their money's worth!*

The reason? Most of the coffee bean's polyphenol content is **destroyed** during the roasting process.

Among the most beneficial of these polyphenols is **chlorogenic acid**, a potent inhibitor of the **glucose-6-phosphatase** enzyme that stimulates **gluconeogenesis**. (Excess **gluconeogenesis** results in too much glucose produced in the liver that can cause elevations of blood glucose.)

Life Extension®'s Rich Rewards® Breakfast Blend is made using a patented, **100% natural** process called **HealthyRoast™**.<sup>7</sup>

This process delivers a more complete nutritional profile of the coffee bean, yielding **chlorogenic acid** levels *far greater* than other premium brands—up to **87% more** chlorogenic acid than conventional coffees!

Handpicked deep in the rainforests of Central America, **Rich Rewards®** consists exclusively of **100% USDA certified organic arabica** coffee beans, gently roasted in small batches and ground for easy brewing.

#### Natural Flavored Options!

To make your morning cup of coffee even more enjoyable, Life Extension® now offers our **Rich Rewards® Breakfast Blend Ground Coffee** in *two* delicious flavors:

- **Natural Vanilla Flavor** and
- **Natural Mocha Flavor**

And like our regular, unflavored **Rich Rewards®** coffee, these flavored ground coffees are roasted using the same **HealthyRoast™** process—which preserves special, naturally occurring compounds in coffee that **soothe your stomach**. This unique process also guarantees a higher content of healthy **polyphenols**.

Now those who prefer a flavored coffee—as well as those who find that ordinary coffee brands upset their stomach—can enjoy the potent **longevity** support that daily coffee consumption delivers!

#### One Smart Cup of Coffee®

Life Extension® **Rich Rewards® Breakfast Blend Ground Coffee** provides it all:

- Savory taste—regular coffee taste or 2 natural flavored options!
- Far higher percentage of **chlorogenic acid** than conventional coffees!
- Certified **100% organic!**
- Special, naturally occurring compounds that **soothe your stomach!**

A 12 oz bag of Life Extension® **Rich Rewards® Breakfast Blend** retails for \$15. Members pay **\$11.25** per bag.



Item #01729



Item #01730

**Note:** Rich Rewards Breakfast Blend Antioxidant Coffee regular caffeinated (Item# 1609) and decaffeinated (Item# 1610) are still available.

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7. US Patent 6,723,368.

To order either of the natural flavored Rich Rewards® Breakfast Blend Ground Coffee options or the regular unflavored Rich Rewards® Breakfast Blend Ground Coffee, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

# REBUTTAL

## *to Attack Against*

# CARNITINE

On **April 13, 2013**, a meta-analysis performed by the **Mayo Clinic** was released that looked at **3,600** patients and found **huge cardiac benefits** in those who supplemented with **L-carnitine**.<sup>1</sup> This study represented the largest, most powerful scientific review of carnitine's cardiovascular benefits to date.

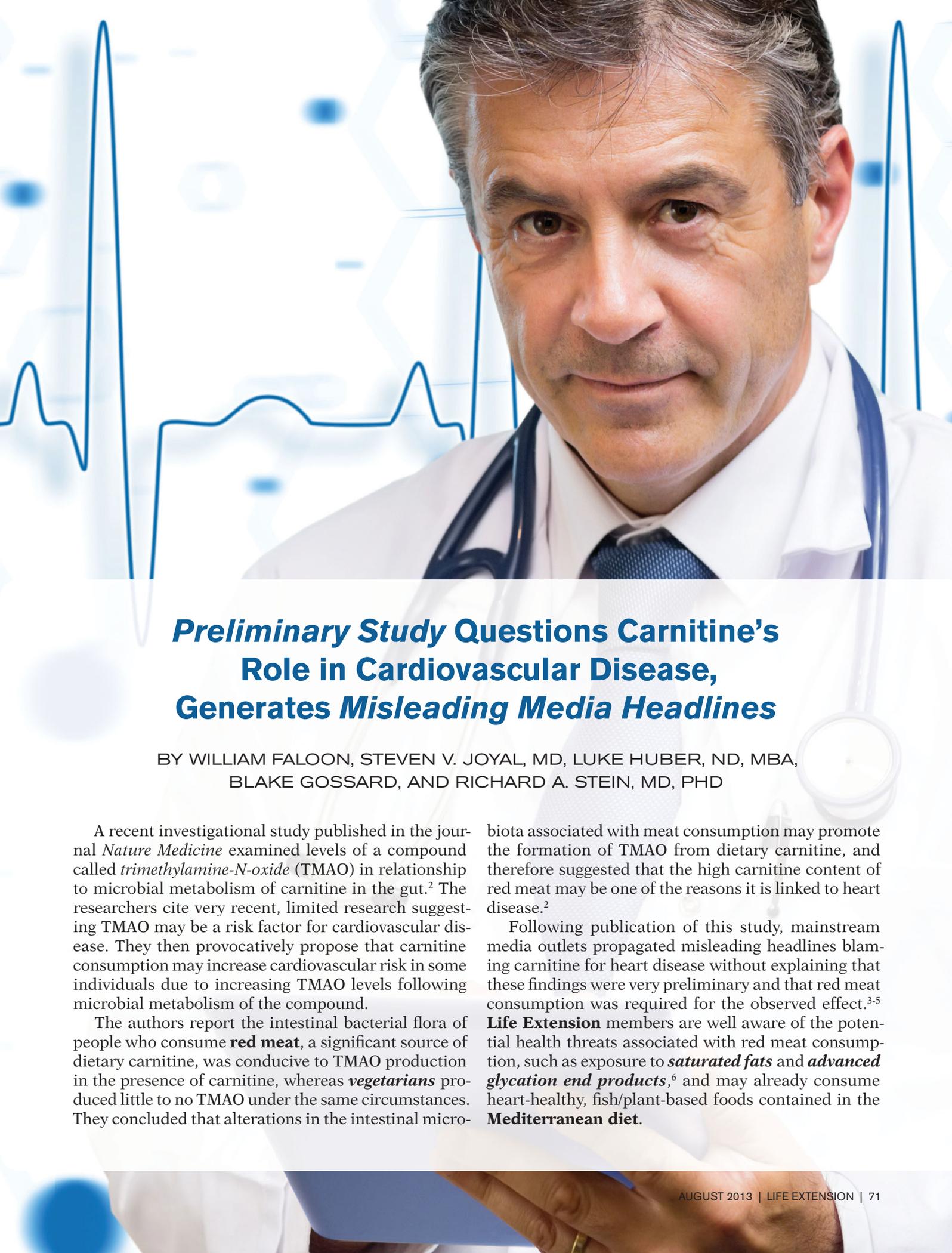
The Mayo Clinic study found carnitine supplementation was associated with a **27% reduction** in all-cause mortality, a **65% reduction** in ventricular arrhythmias, and a **40% reduction** in angina symptoms in patients who had experienced a heart attack.<sup>1</sup> The media largely overlooked this favorable report, however.

Instead, headline news stories were created based on a report released a week earlier that had asserted that carnitine (found in **red meat**) may react with certain gut bacteria in certain individuals to promote a compound (TMAO) that could then cause heart disease.<sup>2</sup>

These carnitine findings were based on a sub-study of **10** people.<sup>2</sup> They were obscure, theoretical, and preliminary. Yet the media ignored hundreds of studies showing significant cardiovascular benefits to carnitine, choosing instead to use this study in isolation to bash anything that contained carnitine.

**Life Extension**<sup>®</sup> has thoroughly analyzed the report used by the media to attack carnitine, reviewed the published literature on carnitine and heart disease, and conducted a survey of our members using carnitine. It may not surprise you to learn that our findings contradict the mainstream's propagandized carnitine attack. This article contains a scientific rebuttal to this recent attack on carnitine.

As a **Life Extension** member, I hope you appreciate discovering the facts behind misleading reports spewing from today's headline-frenzied media.



## ***Preliminary Study Questions Carnitine's Role in Cardiovascular Disease, Generates Misleading Media Headlines***

BY WILLIAM FALOON, STEVEN V. JOYAL, MD, LUKE HUBER, ND, MBA, BLAKE GOSSARD, AND RICHARD A. STEIN, MD, PHD

A recent investigational study published in the journal *Nature Medicine* examined levels of a compound called *trimethylamine-N-oxide* (TMAO) in relationship to microbial metabolism of carnitine in the gut.<sup>2</sup> The researchers cite very recent, limited research suggesting TMAO may be a risk factor for cardiovascular disease. They then provocatively propose that carnitine consumption may increase cardiovascular risk in some individuals due to increasing TMAO levels following microbial metabolism of the compound.

The authors report the intestinal bacterial flora of people who consume **red meat**, a significant source of dietary carnitine, was conducive to TMAO production in the presence of carnitine, whereas **vegetarians** produced little to no TMAO under the same circumstances. They concluded that alterations in the intestinal micro-

biota associated with meat consumption may promote the formation of TMAO from dietary carnitine, and therefore suggested that the high carnitine content of red meat may be one of the reasons it is linked to heart disease.<sup>2</sup>

Following publication of this study, mainstream media outlets propagated misleading headlines blaming carnitine for heart disease without explaining that these findings were very preliminary and that red meat consumption was required for the observed effect.<sup>3-5</sup> **Life Extension** members are well aware of the potential health threats associated with red meat consumption, such as exposure to **saturated fats** and **advanced glycation end products**,<sup>6</sup> and may already consume heart-healthy, fish/plant-based foods contained in the **Mediterranean diet**.



These deceptive media headlines have generated concern that supplemental forms of L-carnitine may be detrimental to heart health. This notion flies in the face of numerous published, peer-reviewed studies showing L-carnitine *promotes* cardiovascular health in a variety of ways. The media's effort to generate outrageous headlines has undermined decades of scientific research on the heart-health benefits of carnitine.

### New Mayo Clinic Meta-Analyses: Carnitine Improves Outcomes in Heart Attack Patients

Ironically, days after publication of the carnitine article in *Nature Medicine*, a **meta-analysis** of the research on **carnitine and heart health** was published by researchers from the **Mayo Clinic**.<sup>1</sup> This large systematic review provides strong evidence for carnitine's benefits in heart health. This article examined 13 controlled trials that enrolled, collectively, 3,629 participants, representing the largest, most powerful scientific review of carnitine's cardiovascular benefits to date.

The authors of the Mayo Clinic study found carnitine supplementation was *associated with a 27% reduction in all-cause mortality, a 65% reduction in ventricular arrhythmias, and a 40% reduction in angina symptoms in patients experiencing a heart attack*.<sup>1</sup> These effects were thought to occur through multiple mechanisms, including improved energy metabolism in the mitochondria, decreased ischemia, and enhanced left ventricle function.

The authors describe carnitine as an inexpensive therapy with an *“excellent safety profile”* which could potentially be used in patients with angina or who are at risk for angina after suffering from a heart attack.<sup>1</sup> Based on the results of this meta-analysis, the authors suggest L-carnitine as a potential future therapy for heart attack and secondary coronary prevention and treatment, including angina. The scientists state: *“Further study with large randomized controlled trials of this inexpensive and safe therapy in the modern era is warranted.”* Unfortunately they also note: *“However, a large trial may never be performed because L-carnitine is an over-the counter supplement available to the public, which decreases the potential revenue compared with a synthesized [pharmaceutical] product.”*<sup>1</sup>

Carnitine's benefits are well established and Life Extension has written about them at length over the years. The next several paragraphs describe some of the key health benefits associated with carnitine.

### Carnitine Reduces Death Rates

The heart muscle uses fat as its primary energy source. Carnitine is a fat-transporting compound that is absolutely essential for normal heart function.<sup>1,7</sup> Over time, the decline of carnitine plays a role in the weakening of the heart's muscles.<sup>8</sup>

People with heart muscle damage due to heart attacks or heart failure have especially low carnitine levels.<sup>9-11</sup> Fortunately, carnitine supplementation has proven to be remarkably effective in fighting and even reversing the heart-weakening effects of that drop.<sup>8</sup>

In one study, 160 male and female heart attack survivors between 39 and 86 years old received either **4 grams/day** of L-carnitine or a placebo for 12 months.<sup>12</sup> The patients taking L-carnitine experienced significantly favorable decreases in heart rate and blood pressure; they also had improved blood lipid profiles. Most importantly, those supplementing with carnitine had a dramatically reduced death rate compared to those not taking carnitine. *Patients taking carnitine had a death rate of just 1.2% in the entire year, while 12.5% of control patients died, with the majority of deaths attributed to repeat heart attacks.*<sup>12</sup>

L-carnitine supplementation also prevents the progression of heart muscle damage in people with congestive heart failure and improves exercise tolerance in people who develop chest pain (angina) with exertion.<sup>9</sup> In one study, *55% of patients experienced improvement in their standard heart failure classification.*<sup>9</sup>

People with angina, an early sign of impaired blood flow (ischemia) to the heart muscle, benefited from carnitine supplements. A natural derivative of L-carnitine, propionyl-L-carnitine, at a dose of **500 mg** 3 times daily, *increased the average time patients could exercise without EKG signs of ischemia by an impressive 450%*.<sup>10</sup> That result indicated improved blood flow to heart muscle cells following ischemia, an effect amply demonstrated in animal studies.<sup>13,14</sup>

Carnitine also increases concentrations of *nitric oxide*, which helps endothelial cells relax and increase blood flow, an effect that can help lower blood pressure.<sup>15-17</sup> Three weeks of supplementation with **2 grams** of L-carnitine improved blood flow by **17%** during the critical after-meal period in a group of people fed a high-fat meal; placebo patients had a **12%** decrease in blood flow.<sup>18</sup> And a daily **6-gram** intravenous dose of propionyl-L-carnitine for one week improved walking distance in people with peripheral arterial disease by **28%**.<sup>19</sup>

### Carnitine Fights Diabetes

As *obesity* rates skyrocket, more and more Americans are developing **type II diabetes** as a result, producing a syndrome called “diabesity.”<sup>20,21</sup>

Since carnitine helps the mitochondria utilize energy, it plays a critical role in reducing the occurrence and impact of diabesity.<sup>22,23</sup> Studies show that in addition to helping the mitochondria burn fat as energy, carnitine is also vital for removing waste



### Media Deception of Carnitine's Established Benefits

- Carnitine is a fat-transporting compound that is absolutely essential for normal heart function.
- L-carnitine supplementation also prevents the progression of heart muscle damage in people with congestive heart failure and improves exercise tolerance in people who develop chest pain (angina) with exertion.
- Carnitine also has multiple favorable effects on blood sugar and insulin resistance, the hallmarks of type II diabetes.
- Studies also indicate that some forms of carnitine are effective at relieving clinical symptoms of cardiovascular conditions such as peripheral arterial disease, angina, coronary artery disease, cardiomyopathy, intermittent claudication, ischemic heart disease, atherosclerosis, and congestive heart failure.
- A recent investigational study examined levels of a compound called trimethylamine-N-oxide (TMAO) in relationship to microbial metabolism of carnitine in the gut.
- The researchers cite very recent, limited research suggesting TMAO may be a risk factor for cardiovascular disease.
- Despite an exceedingly small subject number, they then provocatively propose that carnitine consumption may increase cardiovascular risk in some individuals due to increasing TMAO levels following microbial metabolism of the compound.
- What the media reports didn't say was that these results are very preliminary, based on limited research (versus the extensive body of peer-reviewed research attesting to carnitine's benefits), applicable only in red-meat consumption, and contradictory to the vast majority of research on carnitine.



products from mitochondria.<sup>23,24</sup> This is important, because we now recognize that the buildup of mitochondrial waste products is one of the most important contributors to insulin resistance, which further promotes high blood sugar and obesity.<sup>25</sup>

Obesity and aging contribute to low carnitine levels, which compromises mitochondrial performance and increases insulin resistance, promoting further obesity and carnitine reduction. Restoring carnitine levels to their youthful values is an effective way to break this deadly cycle.<sup>23</sup>

Human volunteers who took L-carnitine **3 grams/day** for 10 days had favorable changes in body composition.<sup>26</sup> **Supplemented patients used their fat for energy, burning it 22% faster than control patients, without any increase in muscle protein breakdown.** Another study, **using 2 grams/day for 6 months, demonstrated a loss of total fat mass of 4 pounds, with a gain in lean muscle mass of 8.4 pounds.**<sup>27</sup>

Animal studies confirm and extend these findings, showing that propionyl-L-carnitine decreases body weight gain, food intake, and fat composition, while improving insulin resistance.<sup>22</sup>

Carnitine also has multiple favorable effects on blood sugar and insulin resistance, the hallmarks of type II diabetes.<sup>24</sup> Animals fed a high fat diet develop the same symptoms and signs that humans do: obesity, insulin resistance, abnormal lipid profiles, and liver damage, which are known as **metabolic syndrome**. Just 4 weeks of treatment with L-carnitine reversed all of those abnormal parameters.<sup>20,28,29</sup>

Similar effects have been found in diabetic humans. **Two grams of L-carnitine** twice daily for 10 days **improved insulin sensitivity and reduced insulin levels.**<sup>30</sup> L-carnitine supplementation of **2 grams/day** caused a significant reduction in plasma free fatty acids, which contribute to insulin resistance.<sup>31</sup> **Three grams/day** were shown to **reduce simulated after-meal blood sugar spikes from 157 mg/dL to 132 mg/dL (oral glucose tolerance test).**<sup>32</sup> A significant number of studies document the deadly impact of elevated **after-meal** glucose levels.

### **Carnitine Protects Against Heart Disease**

Research suggests that a specific form of carnitine, called propionyl-L-carnitine (PLC), plays an important role in protecting the function and health of endothelial cells.<sup>33-35</sup> Studies also indicate that PLC may act as a nutritional corrective agent, relieving clinical symptoms of cardiovascular conditions such as peripheral arterial disease, angina, coronary artery disease, cardiomyopathy, intermittent claudication, ischemic heart disease, atherosclerosis, and congestive heart failure.<sup>36-42</sup>

PLC passes across the mitochondrial membrane to supply L-carnitine directly to the mitochondria, the energy-producing organelles of all cells.<sup>43</sup> This is important because heart muscle cells and endothelial cells burn fatty acids rather than glucose for **60%** of their energy.<sup>44</sup>

Carnitine deficiency has been associated with congestive heart failure.<sup>45</sup> PLC supplementation has been reported to increase exercise capacity, optimize energy production, and reduce ventricular size in patients with congestive heart failure.<sup>38</sup>

The myocardium, the muscular substance of the heart, comprises cells called cardiomyocytes. A study of cardiomyocytes found that PLC helped to correct an imbalance between the production and utilization of adenosine triphosphate (ATP), the energy currency used throughout the body. This suggests that PLC may improve cardiac performance by improving energy metabolism and optimizing ATP levels.<sup>46</sup>

An animal study suggests PLC may help to prevent or decrease the severity of atherosclerosis. In rabbits fed a high-cholesterol diet, which normally induces endothelial dysfunction and subsequent atherosclerosis, supplementation with PLC resulted in reduced plaque thickness, markedly lower triglyceride levels, and reduced proliferation of foam cells, thereby preventing the progression of atherosclerosis.<sup>41</sup>

PLC has been shown to have a protective role against vascular cell inflammation that other carnitines do not. When rodents were exposed to irritating chemicals, PLC protected their vascular cells from this source of damage, but L-carnitine and acetyl-L-carnitine did not, leading the study authors to support “a specific protective role of PLC in the vascular component of the inflammatory process.”<sup>34</sup>

PLC improves endothelial function by increasing nitric oxide production in animals with normal blood



pressure and in animal models of hypertension. The increased nitric oxide production induced by PLC is related to its antioxidant properties; PLC reduces reactive oxygen species and increases nitric oxide production in the endothelium in the presence of superoxide dismutase (SOD) and catalase.<sup>47</sup>

Oxygen-deprived endothelial cells produce large amounts of free radicals. Laboratory findings suggest that PLC protects these cells during periods of oxygen deprivation. When blood flow is restored, PLC also allows the cells to regain their lost energy charge much faster.<sup>35</sup>

An animal study indicates that PLC prevents abnormal heart muscle function associated with diabetes. The researchers found that PLC significantly increased both fatty acid and glucose utilization while restoring cardiac muscle function. These findings suggest PLC prevents diminished cardiac function associated with diabetes, possibly by promoting a favorable shift in glucose and fatty acid metabolism.<sup>46</sup>

### Life Extension Conducts Survey of Members Using Carnitine Supplementation

As part of a thorough evaluation of this issue, Life Extension’s **Health Advisors** spoke to a representative sample of **115** members who supplement with carnitine and inquired as to their experience with the compound. Not surprisingly, **not one member reported having a cardiovascular event** such as a heart attack or stroke after initiation of carnitine supplementation.

### Summary Examination of the Media-Hyped Carnitine Article Exposes Several Problems

Despite the media attention given to the negative carnitine study published in *Nature Medicine*, caution must be used when applying the results to cardiovascular risk. Life Extension has carefully examined this study and identified the following factors with this study that are summarized below.

**1. Limited research on TMAO and associated effects on human health prevents causal interpretation at this time.** A search of the peer-reviewed literature using terms “TMAO” and “atherosclerosis” yields only 4 results, with the first suggestion of a potential association in 2011.<sup>48</sup> Correlation is not causation, and in fact, TMAO is found in relatively large quantities in fish, a food that is linked to a markedly reduced risk of cardiovascular events. In contrast, components of red meat such as saturated fat raise

LDL cholesterol, and a search of the peer-reviewed literature using the terms “LDL,” “cholesterol,” and “atherosclerosis” returns over 10,500 results.

**2. Only 10 human subjects examined in carnitine supplementation substudy.** The researchers used only 10 subjects in their small substudy of carnitine supplementation and TMAO levels.<sup>2</sup> This is a very small data set with which to make such sweeping conclusions. Since so few humans were directly examined in this context, the validity and applicability of the scientists’ findings are questionable at best.

**3. Published, peer-reviewed research demonstrates L-carnitine prevents the progression of atherosclerotic lesions.** The recent negative study published in *Nature Medicine* focused upon the metabolic conversion of L-carnitine to TMAO by gut bacteria and the differences in the gut microbiome between red meat eaters and vegetarians.<sup>2</sup> In fact, many studies show that L-carnitine has a variety of beneficial effects upon cardiovascular function, including prevention of the progression of atherosclerotic lesions. For example, one study reported that in the context of hypercholesterolemia, L-carnitine supplementation “completely prevented the progression of atherosclerotic lesions induced by hypercholesterolemia in both aorta and coronaries.”<sup>49</sup> In another study, supplementation with propionyl-L-carnitine (PLC), a derivative of carnitine used as a drug in Europe for treatment of atherosclerosis, “induced a marked lowering of plasma triglycerides, very low density lipoprotein (VLDL) and intermediate density lipoprotein (IDL) triglycerides...”



while plasma cholesterol was slightly and transiently reduced. In addition, PLC treatment “...exhibited a reduction of plaque thickness and extent...and a reduction of the number of both proliferating macrophage- and smooth muscle cell-derived foam cells.”<sup>41</sup> Foam cells are precursors to atherosclerotic lesions.

**4. Published, peer-reviewed evidence shows L-carnitine effectively treats peripheral artery disease caused by atherosclerosis.** Intermittent claudication (IC) is a painful, atherosclerotic syndrome that is known to be caused by peripheral artery disease.<sup>50</sup> A 2013 systematic review of 40 articles on IC found that L-carnitine demonstrates a benefit in functional performance with carnitine supplementation. The authors suggest routine supplementation with carnitine “may therefore be a useful adjunct therapy for management of intermittent claudication.”<sup>51</sup>

**5. Heavy red meat consumption is a known, well-validated risk factor for atherosclerosis in contrast to plant-based diets.** In the recent study, L-carnitine alone did not raise TMAO levels—the increases in TMAO were observed when L-carnitine was exposed to the bacterial gut microbiome of red meat eaters in comparison with vegetarians’ gut microbiome.<sup>2</sup> Extrapolation of these preliminary test results involving the gut microbiome in heavy red meat eaters is not representative of health conscious individuals who typically limit red meat consumption given the known adverse health effects associated with a diet rich in red meat.

**6. Heart-healthy salmon is associated with high TMAO levels.** Consistency of association is critical in order to draw conclusions from study data across the published literature. The fact that heart-healthy fish consumption is associated with an increase in TMAO levels is challenging to reconcile with the idea that TMAO necessarily causes atherosclerosis. For example, one research team reported that consumption of salmon, a food known for cardiovascular health benefits, led to an increase in TMAO levels in human test subjects.<sup>52</sup> In another study, it was also observed that TMAO levels increased in individuals consuming large amounts of seafood products.<sup>53</sup>

**7. Carnitine decreases LDL and VLDL cholesterol, established risk factors for cardiovascular disease.** Unlike TMAO, LDL, and VLDL cholesterol blood levels are widely recognized risk factors for cardiovascular disease. Carnitine supplementation has been shown to reduce both LDL and VLDL cholesterol levels.<sup>54</sup>



**8. The gut microbiome of red meat eaters is different from vegetarians.** In this study vegans had almost no increase in TMAO levels.<sup>2</sup> It was suggested that this was due to a different gut microbiota that develops in vegetarians compared to omnivores.

**9. Probiotic supplementation may modulate gut microbiota and suppress formation of TMAO.** Not all gut bacteria strongly generate TMAO. On the contrary, certain strains of commensal bacteria have been shown to manipulate the gut microbiome in a manner favorable to human health. Specifically, members of the *Lactobacilli* species were inversely associated with TMAO in the human subjects examined.<sup>2</sup> Also, *Lactobacilli spp.* have been shown to increase the ratio of genus *Bacteroidetes* to genus *Firmicutes* in the human intestine following oral administration; this is important because many species of the *Firmicutes* genus were shown to produce TMAO (though the associations were not consistent across all species of *Firmicutes* tested).<sup>2,55</sup> In addition, the current study showed that antibiotics, by suppressing intestinal bacterial colonization, virtually abolished TMAO formation.<sup>2</sup> While antibiotic prophylaxis is not an ideal method for reducing TMAO formation since it also eliminates beneficial intestinal bacteria, evidence suggests that certain members of the probiotic species *Bifidobacterium* and *Lactobacilli* may generate antibiotic-like metabolic byproducts called short-chain fatty acids that modify the intestinal microbiota in a favorable way.<sup>56</sup>

## Summary

In the wake of a single negative study, deceptive media headlines have generated concern that supplemental forms of L-carnitine may be detrimental to heart health. This notion flies in the face of numerous published, peer-reviewed studies showing L-carnitine promotes cardiovascular health in a variety of ways. The media's effort to generate outrageous headlines has undermined decades of scientific research on the heart-health benefits of carnitine.

Carnitine is a vital nutrient for health. The discovery of carnitine's ability to maximize cellular fuel efficiency and minimize the impact of normal cellular metabolism on delicate cellular machinery has led to a revolution in the way scientists think about some of the most troubling age-related conditions. Supplementing with carnitine can help preserve cell energy levels, enhance heart muscle strength, reduce the impact of obesity and diabetes, and protect heart attack victims from dying. ●

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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# ANTI-AGING EFFECTS OF PYCNOGENOL®

Life Extension® **Pycnogenol**® French Maritime Pine Bark Extract is a natural botanical extract containing procyanidins, bioflavonoids, and other health-giving molecules that synergistically support the body's natural defenses against 5 major processes that characterize premature aging. Its effectiveness is backed by 40 years of study.

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

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

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

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

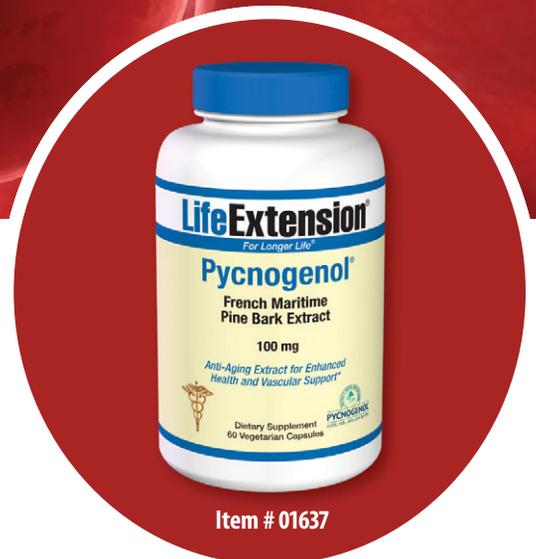
**OXIDATIVE STRESS:** *Pycnogenol*® supports the normal functioning of healthy antioxidant systems to help suppress free radicals and protect DNA.<sup>14-19</sup>

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

Unlike other forms of pine bark extract, *Pycnogenol*® is a superior patented and standardized ingredient that has undergone extensive human clinical research to substantiate its numerous anti-aging properties. A bottle of **Life Extension® Pycnogenol® French Maritime Pine Bark Extract** containing 60 vegetarian capsules retails for \$64. If a member buys four bottles, the price is reduced to **\$45** per bottle. The dose for most people is one capsule daily, so each bottle lasts **two months**.

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

<b>Pycnogenol</b> ® dried French Maritime pine ( <i>Pinus pinaster</i> ) extract (bark)[std. to 65% procyanidins (65 mg)]	<b>100 mg</b>
<b>Vitamin C</b> (as ascorbyl palmitate)	<b>4 mg</b>



Item # 01637

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To order **Pycnogenol**® French Maritime Pine Bark Extract, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

# Natural Support for Cellular Energy Production

## Optimized Carnitine with GlycoCarn<sup>®</sup>

Diminished cellular energy production is an inevitable consequence of aging. As adults mature, the cellular power plants known as the *mitochondria* become dysfunctional. The resulting slowdown in energy production manifests in numerous health problems.

Nutritional researchers have discovered that the amino acid **carnitine** promotes the burning of fat for fuel in the mitochondria, thus promoting youthful levels of cellular energy production.\* Researchers have now identified several optimized, next-generation forms of **carnitine** that not only help boost cellular energy production, but also may confer targeted benefits for the brain, heart, muscles, and central nervous system.

**Optimized Carnitine with GlycoCarn<sup>®</sup>** combines these advanced forms of carnitine—*acetyl L-carnitine*, *glycine propionyl L-carnitine*, and *acetyl L-carnitine arginate*—in a single formula that provides balanced, broad-spectrum support for cellular energy production throughout the body.

**Acetyl L-carnitine** readily crosses the blood-brain barrier to combat oxidative stress and promote energy production in critical brain and central nervous system tissues.<sup>1</sup> Acetyl L-carnitine also supports healthy brain function by stimulating the release of acetylcholine and dopamine, two neurotransmitters that play vital roles in brain health and communication.\*

**Acetyl L-carnitine arginate** has an added molecule of arginine that enables it to augment the effects of acetyl L-carnitine, promoting the growth of neurites that facilitate communication among nerve cells in the brain.<sup>2</sup>

**GlycoCarn<sup>®</sup>** is a patented form of AminoCarnitine<sup>®</sup> that is molecularly bonded to the amino acid glycine and quickly penetrates into heart, endothelial, and muscle cells, with effects that range from protecting heart muscle from lack of blood flow to combating muscle fatigue by increasing muscle energy stores of glycogen.<sup>3</sup>

Two vegetarian capsules of **Optimized Carnitine with GlycoCarn<sup>®</sup>** provide:

Acetyl L-carnitine HCl	800 mg
ArginoCarn <sup>®</sup> Acetyl L-carnitine Arginate Di-HCl	300 mg
GlycoCarn <sup>®</sup> Glycine Propionyl L-Carnitine HCl	300 mg

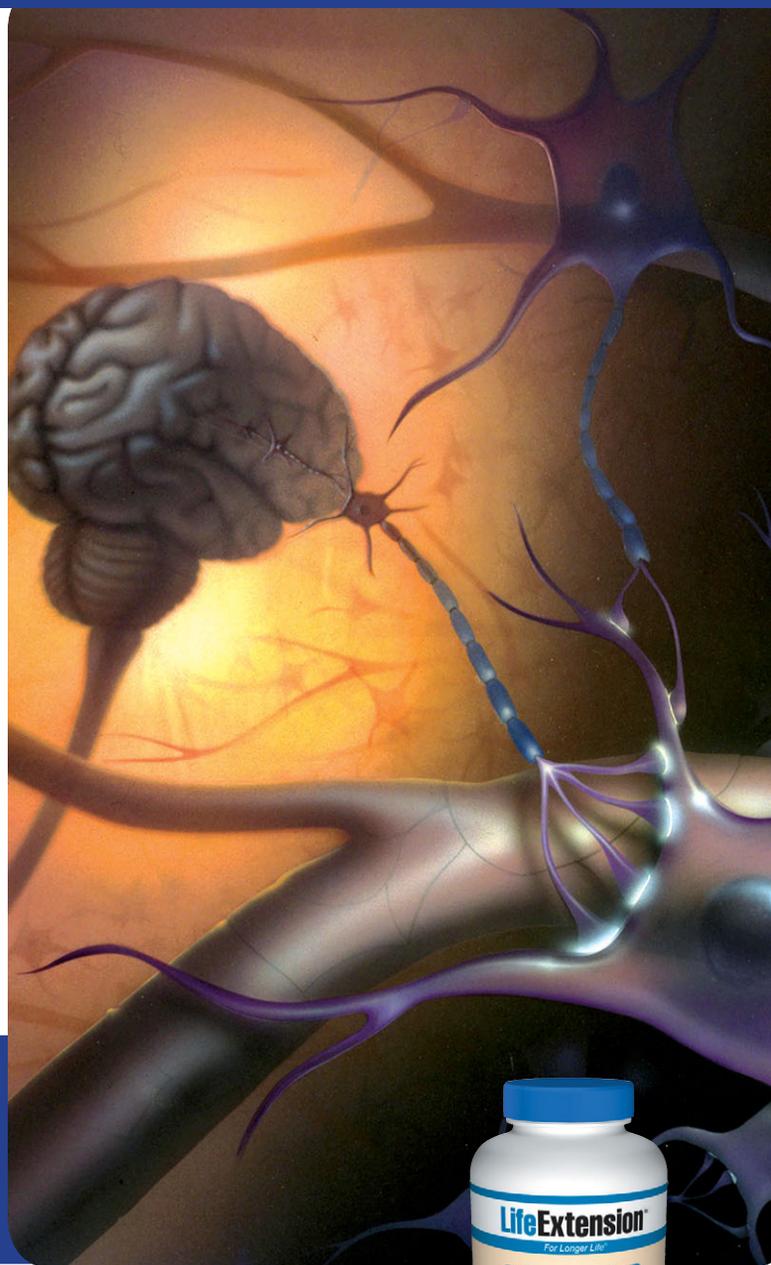
A bottle of 60 vegetarian capsules of **Optimized Carnitine with GlycoCarn<sup>®</sup>** retails for \$36. If a member buys four bottles, the price is reduced to only **\$24 per bottle**.

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GlycoCarn<sup>®</sup>, ArginoCarn<sup>®</sup>, and AminoCarnitine<sup>®</sup> are registered trademarks of Sigma-tau HealthScience, Inc., and are protected by US patent No. 6,703,042 and worldwide patent EP1202956. The combination of multiple forms of Carnitine is protected by Sigma-tau patent # 6,245,378.

\*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.



Item # 00916

To order **Optimized Carnitine with GlycoCarn<sup>®</sup>**,  
call **1-800-544-4440** or visit  
**www.LifeExtension.com**



Enhanced Night Vision!

# EYE PROTECTION FORMULA

## Maintain Macular Density

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

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

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

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

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

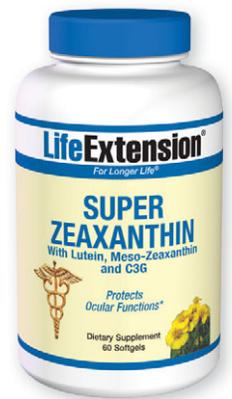
**Super Zeaxanthin** contains a potent dose of **C3G** to nourish cells throughout the body.

## Comprehensive Ocular Protection in One Daily Softgel

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

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

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



Item # 01685

### References

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OptiLut<sup>®</sup> is a registered trademark of NutriScience Innovations, LLC. LuteinPlus<sup>®</sup> and MZ<sup>®</sup> are registered trademarks of Nutriproducts Ltd., 7 Marfleet, CB22 5LA, UK, licensed under US Patents 6,218,436 & 6,329,432.

To order **Super Zeaxanthin with Lutein, Meso-Zeaxanthin and C3G**, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)

NEW

# ASTAXANTHIN Formula with *Increased Bio-availability*

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

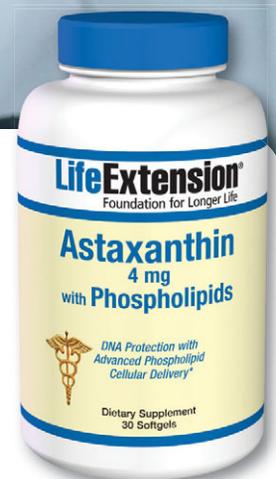
A new **Astaxanthin 4 mg with Phospholipids** combines **4 milligrams** of natural astaxanthin with a *proprietary blend of phospholipids*.

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

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

## ASTAXANTHIN

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



Item #01720

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

### References

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3. *Int J Pharm.* 2011 Jun 30; 412(1-2):99-105.

To order **Astaxanthin 4 mg with Phospholipids**,  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

BY ROBERT GOLDFADEN AND GARY GOLDFADEN, MD

# Protect and Rejuvenate Delicate Skin Around the EYES

The delicate features around the eye are among the attributes focused on to estimate a person's age.<sup>1</sup> This finding has encouraged maturing individuals to seek skin care specifically designed for this prominent area of the face.

This article will detail how topically applied compounds effectively target the natural recycling process of skin cells to promote skin renewal and rejuvenation to the area around the eye.

When tested in a clinical study with 80 female volunteers aged 31 to 50, this unique combination reduced wrinkle depth in the optical facial area by an average of **17%** in just 28 days. This translates into a remarkable skin rejuvenation effect of **6 years in just 4 weeks!**<sup>2</sup> >



## Aging Changes in the Eye Area

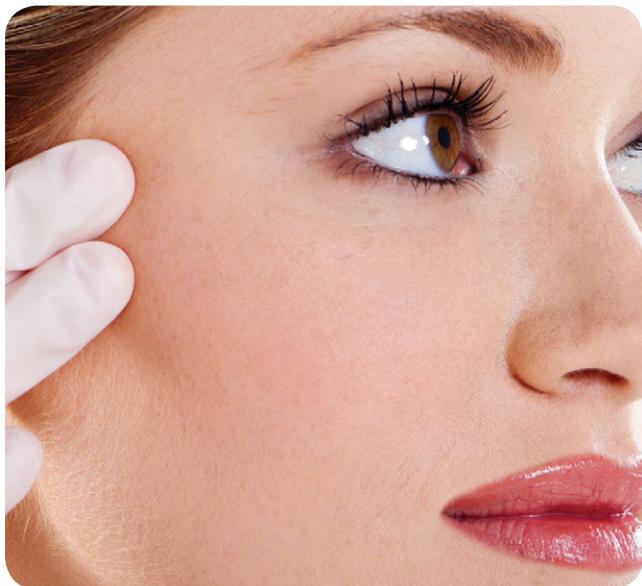
The skin around the eyes is naturally thin and is constantly exposed to oxidative stress from environmental stressors such as sunlight, smoking, and air pollution.<sup>3</sup> This constant assault gradually breaks down the fibrous network composed of proteins, elastin, and collagen, resulting in thinner skin in the eye region as you age. Facial expressions like laughing and frowning further contribute to the destruction of the skin proteins and stimulate the formation of wrinkles (crow's feet), dark circles, and bags under the eyes.<sup>4</sup>

Let's first take a look at one of the primary underlying causes of skin aging: loss of function of the proteasome.

## Proteasomal Dysfunction Contributes to Skin Aging

Skin cells are continuously synthesizing proteins to maintain their structural integrity and proper functioning. Some of these proteins are damaged by free radicals during normal metabolism and as a result are tagged for destruction by the molecule ubiquitin.<sup>5</sup> The marked proteins are subsequently directed to a multi-protein structure known as the proteasome, which contains enzymes that degrade and recycle the unwanted proteins.<sup>5</sup> This tightly regulated balance between the formation of new proteins and the disposal of damaged ones is vital for healthy, youthful-looking skin.

As you age, the function of the proteasome declines, and the removal of damaged proteins slows.<sup>6</sup> This leads to a toxic accumulation of unnecessary proteins within skin cells that eventually clump together



JUJUBE

to form protein aggregates, which disrupt normal cellular functions and further impair the activity of the proteasome.<sup>7</sup> Over time, this process results in the outward signs of aging, such as age spots and wrinkles.

Fortunately, scientific evidence indicates that several nutrients can combat the occurrence of damaged proteins and directly activate the proteasome, along with restoring moisture to inhibit cellular skin aging.

## Jujube Seed Extract Boosts Antioxidant Defense

In traditional Chinese medicine, the jujube fruit (*Ziziphus jujube Mill*) has been recommended as a treatment for a variety of health conditions.<sup>8</sup> These beneficial effects are believed to be due to its impressive array of antioxidant compounds, including flavonoids, phenolics, and vitamin C.<sup>8</sup> The antioxidant potency of jujube seed extract provides an excellent tool for guarding the skin against free radical damage, particularly in the sensitive area around the eyes.

Although free radicals are a normal product of cellular metabolism, excessive production of these molecules can overwhelm the antioxidant system in place to counteract them and leave vital skin proteins in the cell vulnerable to attack.<sup>9</sup> Jujube seed extract strengthens the antioxidant protection system and inhibits the occurrence of damaged proteins by neutralizing free radicals.<sup>2</sup>

Another skin benefit of jujube seed extract can be attributed to its tonic properties, which helps revitalize the skin and ensure a more vibrant, healthier look.<sup>2</sup>

### Olive Leaf Extract Activates the Proteasome

As the mainstay of the Mediterranean diet, the olive fruit contains compounds that are responsible for its well-known antioxidant and anti-inflammatory effects. One of these compounds, *oleuropein*, is found in high concentration in the olive's leaf and appears to have anti-aging potential.<sup>10</sup>

In an in-vitro study, researchers examined the impact of olive leaf extract with oleuropein on proteasome activity in human keratinocytes—the most common type of skin cell in the upper layer of the skin (epidermis). After exposing keratinocytes to olive leaf extract with oleuropein, they found a significant increase in proteasome activity. In fact, the extract doubled the activity compared to the control.<sup>2</sup>

This improved action of the proteasome causes damaged proteins to be degraded more efficiently, thereby preventing the buildup of proteins that promote cellular aging.

### Levan Exerts Powerful Moisturizing Effects

Moisture loss promotes dry, flaking, and sagging skin. It can cause fine lines and wrinkles to be more visible. This is especially apparent in the skin around the eyes, since it naturally has very few sebaceous glands and produces less oil as you age.<sup>11</sup> Levan is a polymer that has been utilized for a number of applications (including cosmetics) and by the pharmaceutical industry.<sup>12</sup> It has shown promise as an effective topical ingredient in cosmetics due to its ability to attract water molecules into the skin, thereby helping restore lost moisture by improving hydration and tightening of the skin.<sup>2,11,12</sup>



OLIVE TREE



#### What You Need to Know

### Topical Nutrients To Rejuvenate the Aging Skin of the Eyes

- Since it's naturally thin, the facial area around the eyes is often the first place to show visible signs of aging, such as age spots, dark circles, and crow's feet.
- The proteasome is a multi-protein structure within skin cells that degrades or removes damaged proteins, which helps maintain healthy, youthful-looking skin.
- As you age, proteasome activity decreases, and this leads to a toxic accumulation of damaged proteins that accelerates skin aging in the form of age spots and wrinkles.
- A novel cream has been formulated with clinically proven anti-aging ingredients to specifically target proteasome activation.
- Jujube seed extract has beneficial antioxidant compounds that strengthen the antioxidant protection system and reduce the occurrence of damaged proteins induced by free radicals.
- Olive leaf extract directly activates the proteasome, improving its activity and ability to efficiently degrade damaged proteins.
- Levan has potent moisturizing effects, which hydrates and tightens the skin.
- In a controlled clinical study, these ingredients reduced wrinkle depth in the eye area by an average of 17% in just 28 days, a remarkable skin rejuvenation effect of 6 years.



### Rejuvenates the Eye Area in Humans

Scientists evaluated the efficacy of these ingredients on wrinkle depth in 80 women between the ages of 31 and 50. In this controlled clinical study, participants applied the nutrient-dense combination twice daily to the eye area for 28 days. Wrinkle depth was measured at day 14 and 28. At the end of the study, the findings revealed that wrinkle depth was reduced by an average of **17%** in just 4 weeks.<sup>2</sup>

The results became even more impressive when scientists calculated the rejuvenation effect of the decrease in wrinkle depth in subjects with the average age of 44. The subjects exhibited the wrinkle depth expected in an individual with the average age of 38, a remarkable anti-aging effect of 6 years.<sup>2</sup>

### Summary

The facial area around the eyes is the first place to show visible signs of premature aging such as age spots and wrinkles. A topical eye cream has been designed specifically for targeting this delicate area of tissue.

The three ingredients, jujube extract, olive leaf extract, and levan, have scientific data supporting their ability to enhance the antioxidant protection system and activate the proteasome, along with properly hydrating the skin, all of which slows down cellular skin aging. In a controlled clinical study, a formulation of these ingredients was shown to reduce wrinkle depth by an average of **17%**, translating to a skin rejuvenation of the eye area by 6 years.<sup>2</sup> ●

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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# High Potency **FAT-SOLUBLE** NUTRIENTS in ONE Softgel

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

Just one **SUPER BOOSTER** provides:

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

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

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



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

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

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

## JUST ONE SOFTGEL OF SUPER BOOSTER SUPPLIES:

Vitamin K2 (as menaquinone-7)	200 mcg	Gamma Tocopherol	197.45-296.25 mg
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Vitamin K1 (as phytonadione)	1000 mcg	Lutein	2 mg
Ginkgo extract	120 mg	Vitamin B12	300 mcg
Sesame lignans	20 mg	Vitamin C	95 mg
Chlorophyllin	100 mg		

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

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

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

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# Enhanced Berry Complete with Açai

## Another Breakthrough in Antioxidant Defense!

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

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

## ORAC: A Measure of Antioxidant Power

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

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

Why should this matter to you? It's more than a matter of antioxidant potency. In 2010, a team of researchers reported for the first time that **açai**, **blueberry**, and **strawberry** polyphenols may provide targeted support for cellular metabolic processes that promote neural and cognitive health in the aging brain.<sup>6</sup> But you need the *complete* polyphenolic profile to get the benefit.

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

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



Item #01496

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

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

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To order Enhanced Berry Complete with Açai,  
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# COSMESIS RENEWING EYE CREAM

## TARGET AND REJUVENATE THE AGING SKIN AROUND YOUR EYES!

The thin, delicate skin area around your eyes is **extremely susceptible** to the visible impacts of aging, such as wrinkles, crow's feet, fine lines, and bags. Oxidative and environmental stress gradually breaks down the elastin and collagen, resulting in more fragile skin around the eye area.

Researchers have combined three natural ingredients into a formula to promote skin renewal and rejuvenation for the tender skin surrounding the **eye**.

## UNIQUE SCIENTIFIC FORMULATION

Specifically designed for the eye's delicate skin, **Renewing Eye Cream** combines several complementary compounds that have been generating interest among dermatologists for their beautifying effects.

**Renewing Eye Cream** contains:

- **Jujube seed extract**—a skin tonic rich in jujubosides, flavonoids, phenolics, and vitamin C.<sup>1,2</sup>
- **Olive leaf extract**—packed with potent compounds, notably **oleuropein**, to help with inflammation.<sup>3</sup>
- **Levan**—a polymer that attracts water molecules into the skin with powerful moisturizing effects.<sup>4</sup>

**Renewing Eye Cream** promotes **firmer** skin and helps maintain natural **hydration**. It also **smooths** and minimizes the appearance of fine lines and wrinkles.

In a controlled clinical study, twice-daily application of the active compounds contained in **Renewing Eye Cream** to the area around the eye was demonstrated to have softened the appearance of wrinkles by an average of **17%**.<sup>2</sup> This result was translated by the scientists to have provided the overall appearance of being **6 years** younger—**in just 28 days!**<sup>2</sup>

One 1/2-ounce jar of **Cosmesis Renewing Eye Cream** retails for \$65. If a member buys two jars, the price is reduced to **\$42.75**.

Item # 80150



To order **Cosmesis Renewing Eye Cream**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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## ASK THE DOCTOR



BY ARIEL SOFFER, MD, FACC

# The Importance of Maintaining Optimal Vein Health

**Q:** What causes most vein symptoms?

**A:** **Venous Reflux Disease**, also known as **Chronic Venous Insufficiency (CVI)**, affects the circulation of your blood. The main role of your veins is to return blood to the heart, but if the valves inside the veins fail, they will give way to the forces of gravity and not return blood to the heart. This backward flow is called *reflux*. This blood can become acidic from accumulation of metabolic waste, causing an intense inflammatory reaction resulting in symptoms such as pain and swelling.<sup>1</sup> Venous reflux disease can lead to spider veins or thick, bulging varicose veins. Typically, varicose veins are an indicator of venous reflux, which can cause serious circulatory problems if not treated properly.

**Q: What are the most common symptoms of Venous Insufficiency (VI)?**

**A:** According to most reports, these are the five most common symptoms:<sup>2-4</sup>

- Leg pain
- Leg heaviness
- Leg throbbing
- Leg, ankle, or foot swelling
- Leg itching

**Q: Can Restless Leg Syndrome be related to veins?**

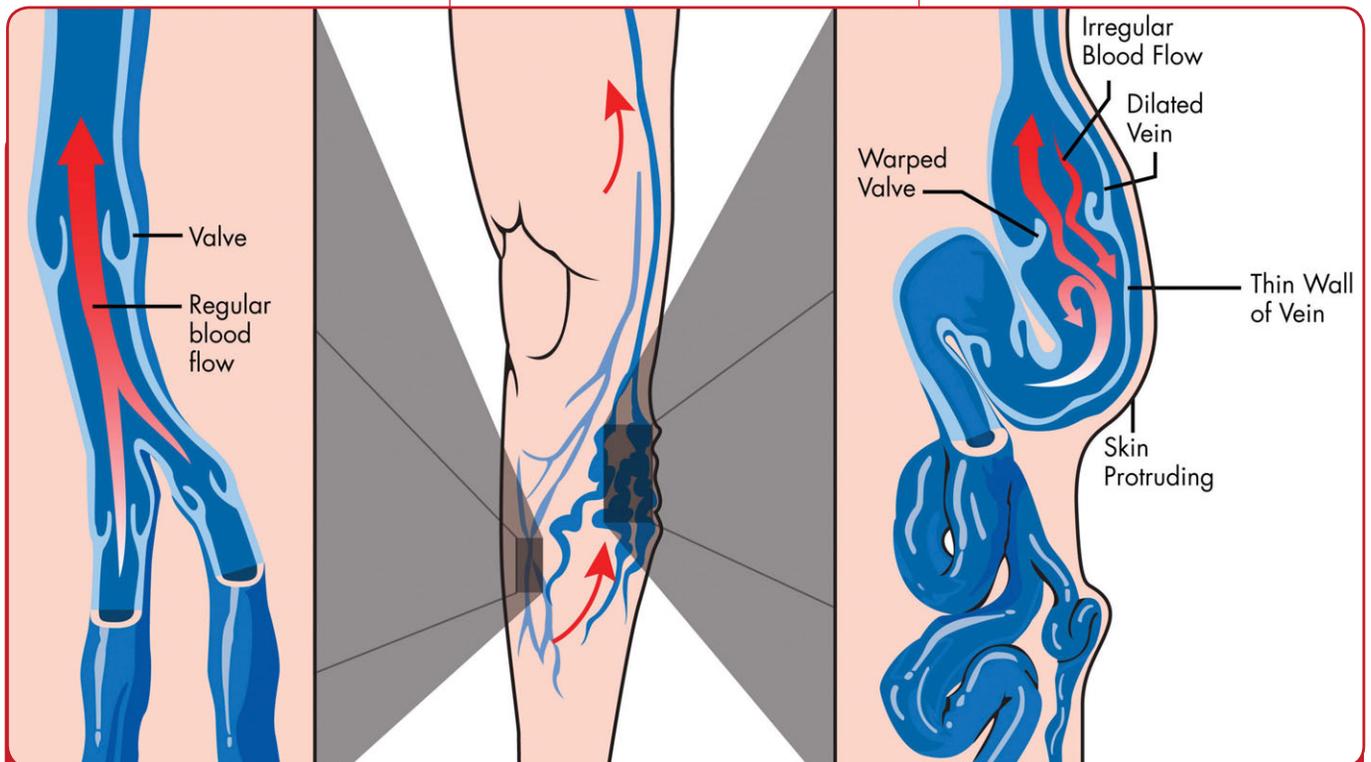
**A:** Restless Leg Syndrome causes a person to always feel the urge to move his or her legs. Restless Leg Syndrome can make it uncomfortable to do normal activities, such as sleeping through the night or

traveling long distances in the car or on a plane. While there are other causes of Restless Leg Syndrome, it is a common complaint by people who have vein disease. Legs often tend to feel achy, cramped, and tired because of broken vein valves. Treatment of venous insufficiency is often very helpful in dealing with Restless Leg Syndrome.<sup>5</sup>

**Q: What are “spider veins” and are they purely a cosmetic problem?**

**A:** Spider veins are tiny, thin veins that can be seen very close to the skin’s surface caused by pooling blood. These are tiny, red, purple and/or blue veins found on the surface of the skin. They often are found in combination with slightly larger “reticular” veins, which tend

to be green or blue in color. Spider veins are thought to be the result of a miniature version of the same process as varicose veins and may or may not be associated with obvious underlying varicose veins. If there is significant venous insufficiency present, which is caused by broken valves that can be identified with a simple ultrasound, any treatment is unlikely to provide lasting results. Therefore, an experienced practitioner should carefully examine a patient’s legs before attempting treatment. Spider veins, without corresponding venous insufficiency, are typically simple cosmetic issues and are relatively easily treated by experienced practitioners with injections of new mild vein irritants such as polidocanol or sotradecol.<sup>6</sup> Laser treatment of spider veins on the



**In a normal vein (far left) the blood flow is only in one direction—back to the heart. When a vein becomes unhealthy blood can flow in both directions causing excess blood to pool and stretch the vein resulting in the ropey, twisted appearance of varicose veins.**



face or legs can also be successful as the newer equipment is more specific to the vein and spares the surrounding tissues.<sup>6</sup>

**Q: What are varicose veins?**

**A:** Varicose veins are enlarged veins that often appear ropey and look blue or red. However, because they often occur deeper under your skin, you are not able to see them in many instances. Varicose veins are caused by unhealthy valves inside the veins.<sup>7</sup> When these valves fail or leak, they can no longer pump blood to the heart. Gravity causes the blood to gather in the veins and makes them look enlarged, twisted or full and bulging. Aside from their unpleasant appearance, other side effects of varicose veins include pain, fatigue, itching, burning, swelling, cramping, restlessness, and throbbing, which will worsen over time if left untreated and can lead to even more serious circulatory problems.<sup>7</sup>

**Q: What types of non-surgical treatments are out there for vein problems?**

**A:** Unlike in the past, surgery is rarely necessary for vein problems anymore.<sup>7</sup> Newer treatments, such as thermal energy (including laser or radiofrequency) or newly approved injectable sclerotherapy agents designed to painlessly destroy the damaged veins while sparing the competent ones, have become the mainstay of most *phlebologists* (doctors specializing in vein care).<sup>8</sup> Additionally, cer-

tain nutraceuticals (some used frequently in Europe by prescription) have been shown in multiple studies to relieve the symptoms of varicose veins and venous insufficiency.<sup>9-16</sup>

**Q: What are some of the nutraceutical treatments available for vein problems?**

**A:** First isolated in 1925, the flavonoid **diosmin** is a phytonutrient that can be isolated from various plants or can be synthetically converted from the citrus flavonoid hesperidin.<sup>17</sup> For around 40 years it has been used as an oral phlebotropic (a compound that supports the veins) compound used in the treatment of venous diseases including chronic venous insufficiency and hemorrhoids.<sup>17</sup>

In some European countries, diosmin is available only by prescription. In the United States however, it is considered a nutritional supplement.

One of the most widely used nutraceutical approaches for varicose veins is **horse chestnut seed extract** (*Aesculus hippocastanum*). Horse chestnut seed extract is widely used in Europe for chronic venous insufficiency.

Horse chestnut seed extract has demonstrated impressive efficacy in relieving the symptoms of chronic venous insufficiency, effectively reducing leg volume, alleviating leg pain, improving edema, and averting itching.<sup>18</sup> Horse chestnut has been reported to increase blood circulation by

inhibiting the breakdown of vein walls and improving venous contractility.<sup>18,19</sup>

The active ingredient in horse chestnut seeds is a chemical called *escin*.<sup>18</sup> Studies suggest that twice-daily horse chestnut extract, containing **50 mg** escin, is as effective as standard therapy with compression stockings in the early stages of chronic venous insufficiency.<sup>20,21</sup> (The corresponding dose of horse chestnut extract is **250 mg** taken twice daily, standardized at **20% [50 mg]** escin.)

**Q: What do the new lasers and injectables do for vein problems?**

**A: Endovenous Laser Treatment.** Endovenous Laser Treatment (EVL) is a technology used to treat varicose veins, which involves heating the inside of the vein, causing it to seal shut and disappear.<sup>22</sup> During Endovenous Laser Treatment, a very thin laser fiber is inserted into the damaged vein. It is largely painless and can be performed on an outpatient basis, allowing patients to go back to work the very same day. In capable, experienced hands, this technology has been extremely successful and has largely eliminated the need for the more invasive vein-stripping surgery.<sup>22</sup> To ensure satisfactory long-term results, most Endovenous Laser Treatment patients will require some sclerotherapy in conjunction with Endovenous Laser Treatment to treat their varicose and smaller veins. The result is often a complete resolution of symptoms and a vast improvement in aesthetic appearance.

**Sclerotherapy.** Sclerotherapy is an injection treatment used to eliminate small to medium size varicose veins and spider veins.<sup>23</sup> Sclerotherapy is affordable, does



not require anesthetic, and there is no downtime associated with this simple procedure. Sclerotherapy utilizes a very fine needle to inject a solution, known as a sclerosant, into the varicose or “spider vein.”<sup>23</sup> Most patients compare the discomfort of the needle to an ant bite. The location of the vein determines if this procedure is done with or without ultrasound guidance. Different solutions are used, depending on the type of the vein, and different strengths of the solutions are used, based on the size of the vessel. Once injected, the cells that line the vein wall (endothelium) will become irritated, inflamed, and damaged.<sup>23</sup> External pressure is applied using cotton balls, tape, and support hose. The compression causes the vein walls to seal together, sealing the vein off from the rest of the vein network in your leg, and the vein can no longer transport blood. Your body will then break down and absorb the damaged vein, and naturally redirect the blood flow to healthy veins. Upon the completion of healing, the vein is no longer visible. It should be noted that the same vein may have to

be treated more than once during your sclerotherapy sessions. The process is very similar to how your body heals a bad bruise. Spider veins do not have any known useful function and eliminating them will not affect your circulation. Reducing or eliminating varicose veins can improve your circulation and symptoms of heaviness, aching, and fatigue.

**Ultrasound-guided Sclerotherapy.** Ultrasound-guided Sclerotherapy is used for larger and deeper varicose veins that cannot be treated with the laser for varying reasons, including their visibility, location, and/or morphology.<sup>24</sup> The ultrasound offers your physician the ability to precisely target the exact location to optimize treatment results.<sup>25</sup> Ultrasound guided sclerotherapy is similar to traditional sclerotherapy. The only difference is that the doctor uses ultrasound technology to see the veins beneath the skin. Using the ultrasound image as a guide, the doctor can place sclerosing foam directly into the abnormal vein, thereby redirecting blood flow to healthy veins.<sup>24,25</sup> The treated vein closes and, over weeks or months,

becomes an imperceptible thread beneath the skin.

### **Conservative Treatment.**

The objective of the conservative approach in treating varicose veins is to help support the venous circulation of the legs in order to slow the development of new veins and to minimize symptoms. These treatment methods will not cure or eliminate existing vein problems; however, they will help slow the progression of the disease and alleviate symptoms such as swelling, aching, and cramping. As a result, conservative treatment is most suitable for people who are sick, elderly, or pregnant. Some of the more popular conservative treatments are:<sup>9-16,26</sup>

- Support compression stockings provide external graduated counter-pressure to aid in venous blood flow to the heart. They reduce pooling and pressure in the veins and may also reduce the risk of forming a deep vein blood clot. Consider wearing them during long plane or car rides.

- Making lifestyle changes, including losing weight and increasing activity and exercise.
- Preventative measures. There is no known scientific method for preventing varicose veins, but there are ways of improving your circulation and muscle tone, thereby reducing the risk of developing varicose veins or getting additional ones. Some of the more popular preventive measures are:
  - Elevating your legs. Elevate your legs when possible by keeping your feet positioned higher than your heart level to reduce pooling and pressure on your legs.
  - Exercising daily. Walking, climbing stairs, cycling, and swimming keep your calf muscles in motion to activate the calf muscle pump. This reduces pooling and pressure in the veins.
  - Maintaining a healthy body weight. Maintaining your ideal body weight will reduce excess pressure on your legs.
  - Actively moving. On long car or plane trips, activate your calf muscle pump by flexing your ankles periodically to pump the blood out of your legs (simulating walking). During periods of prolonged sitting or standing, flex your ankles 10 times and repeat this every 10 minutes. You should also consider stopping for short walks every few hours.

- Avoiding sitting extensively. Try to avoid sitting for extended periods throughout your day.
- Avoiding excessive heat. Try to avoid excess heat on your legs, such as hot tubs and hot baths. Heat tends to increase vein distention and lead to more pooling of blood.
- Nutraceutical treatment: As explained in greater detail above.

While there are a number of different treatment options available for varicose and spider veins, in our experience, we have found that a treatment consisting of a combination of the treatments above has proven to be most effective in the treatment of varicose and spider veins and related symptoms. Our refined use of sclerotherapy, combined with thermal laser treatments, allows us to uniquely address the needs of our patients by treating the smallest spider vein to the largest ropelike varicose vein. The great news is that

none of the treatments requires hospitalization or surgery. All procedures are done in our office and patients can be back on their feet doing their normal routine that very same day.

**Q: How do you measure progression of your treatment?**

**A:** Clinical photography is one of the most important tools a phlebologist may use to easily illustrate the progress of treatment to the patient. Because every patient responds to treatments at different rates, clinical photography also assists practitioners in adjusting their treatment strategy. Additionally, since improvement is gradual over time in certain instances, the use of clinical photography is a wonderful tool for practitioners to better manage their patients' expectations by easily showing the progress of their veins when compared to a baseline. Most experienced practitioners utilize clinical photography in some form, and recent improvements in digital equipment technology make it easily accessible to the patient. ●



Dr. Soffer is a Board Certified Cardiovascular Specialist, Member of the American College of Phlebology and Fellow of the American College of Cardiology. He is also the Medical Expert for ABC News-Miami and where he has the weekly segment "Dr. Soffer's Second Opinion" on 5pm ABC-Miami News. The Soffer Health has Private Offices in Dade and Broward County [www.sofferhealth.com](http://www.sofferhealth.com)

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- Opportunities to interact with speakers after their presentations
- Ask the Experts: question-and-answer sessions with participating faculty and other experts and conference attendees
- Exhibits from participating supporters and other members of the prostate cancer community
- Support group meetings will be held all throughout the conference – courtesy of UsToo and Women Against Prostate Cancer
- Saturday Night Gala Dinner (optional) - Live Entertainment with the The Harry Pinchot and Catalyst Awards
- Los Angeles Excursions (optional) - Hollywood Bowl featuring the Blue Man Group (Sept. 6) and the Grammy Museum (Sept. 8).

## CONFERENCE FACULTY

Duke Bahn, MD, Charles Drake, MD, PhD, Steven Finkelstein, MD, Mark Kawachi, MD, John Kurhanewicz, MD, Mark Moyad, MD, Charles Myers, MD, Mack Roach III, MD, Mark Scholz, MD, Andrea Singer, MD, Jeff Turner, MD, Nicholas Vogelzang, MD, and Timothy Wilt, MD



Proudly Produced By:

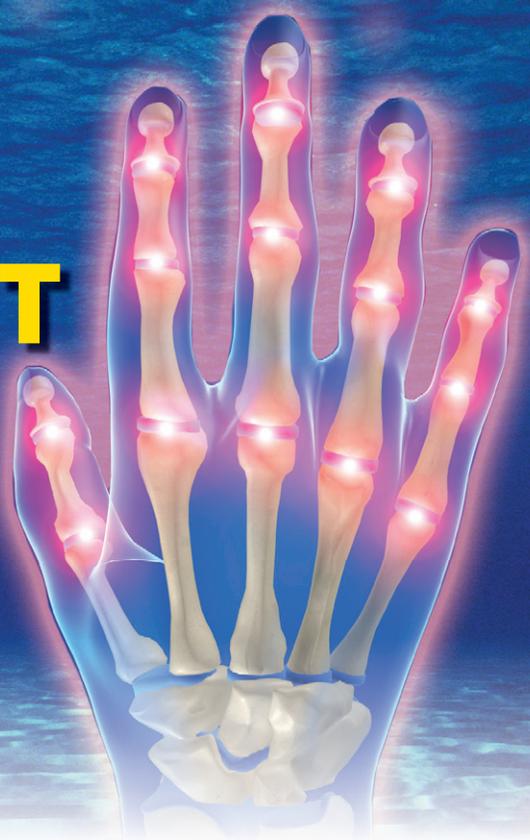


Helping Men Know Their Options

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# KRILL HEALTHY JOINT FORMULA

TARGETED SUPPORT  
FOR OPTIMAL JOINT  
FUNCTION AND MOBILITY



Maintaining healthy, flexible joints is essential to quality of life. Joint stiffness and discomfort can stand in the way of performing even simple everyday tasks.

Most people do not obtain critical nutrients shown to support youthful joint function and mobility.

To meet this urgent need, **Life Extension**<sup>®</sup> introduced **Krill Healthy Joint Formula**, a patent-pending blend of deep-sea **whole krill oil** sourced in Antarctica, combined with **hyaluronic acid** and **astaxanthin**.

In a recent clinical trial involving over 100 maturing individuals, a **55% reduction** in joint discomfort was observed in less than three months, with **63%** of participants maintaining ease of motion.<sup>1</sup>

## THREE SYNERGISTIC COMPOUNDS FOR SUPERIOR BENEFIT

The data reveals that the fatty acids found in krill oil are particularly effective for joint health.<sup>2</sup> These unique fatty acids have been shown to *specifically target joint tissue*.<sup>2,3</sup>

**Hyaluronic acid** occurs naturally in the joints,<sup>4</sup> where it acts to lubricate and cushion against repeated physical impacts.<sup>5</sup> Because it forms a major component of cartilage and soft tissue,<sup>4</sup> it is widely used to promote joint health.<sup>4-8</sup>

The difficulty has been that hyaluronic acid is a large molecule not well absorbed by the body. When combined with krill oil, it has been shown to reach significantly *higher* levels in the bloodstream than in standalone form.<sup>8</sup>

Krill oil is a natural source of the antioxidant carotenoid **astaxanthin**. Astaxanthin works in multiple ways, including suppression of free radical activity and enhanced mitochondrial function.<sup>9</sup> It also maintains krill oil's molecular stability.

Most commercially available krill oils do not contain significant amounts of astaxanthin because it is nearly eliminated during processing. **Krill Healthy Joint Formula** is *fortified* with astaxanthin, for maximum stability and superior benefit.

## JUST ONE SOFTGEL DAILY

The suggested daily serving of one **Krill Healthy Joint Formula** softgel daily supplies **353 mg** of this proprietary blend.

A bottle containing **30** softgels of **Krill Healthy Joint Formula** retails for \$32. If a member buys four bottles, the price is reduced to **\$21.75** per bottle. Just one softgel a day of **Krill Healthy Joint Formula** duplicates a successful human clinical trial.

## References

1. Valensa. (Data on File.) 2011.
2. *Altern Med Rev.* 2010 Apr;15(1):84-6.
3. *J Am Coll Nutr.* 2007 Feb;26(1):39-48.
4. *Curr Med Chem.* 2009;16(14):1718-45.
5. *Curr Rheumatol Rep.* 2003 Feb;5(1):7-14.
6. *Nutr J.* 2008;7:3.
7. *Am J Phys Med Rehabil.* 2005 Apr;84(4):278-83; quiz 84, 93.
8. *World J Gastroenterol.* 2007 Feb 14;13(6):945-9.
9. *J Nutr Biochem.* 2010 May;21(5):381-9.

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

**Contains crustacean shellfish (krill).**

Licensed from Valensa International.

Zanthin<sup>®</sup> is a registered trademark of Valensa International, Inc.



Item # 01600

To order **Krill Healthy Joint Formula**  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

# Relieve Aging Veins *Naturally*

## Natural Relief from Unsightly Varicose Veins

In a healthy vascular system, veins in the lower body must work against gravity to pump blood back to the heart. They are helped by one-directional valves, which prevent back-flow of blood into lower parts of the leg. Good skin elasticity and muscle tone are also needed to allow the veins to contract and ensure smooth blood return.

Venous circulation can often become compromised with aging. Over time, vein walls, which lack the characteristic strong muscle lining of arteries, weaken, leading the valves to fail. The result is collection of sluggish blood in the veins, causing the characteristic red and blue veins to appear on the skin's surface. The increased pressure on the veins also makes them more permeable and they begin to leak fluid into the surrounding tissues, which swell, causing bulges and twists in surface veins.

**Horse chestnut seed extract**, an herbal treatment widely used in Europe, has been shown in clinical studies to counteract these undesirable changes in blood vessel walls. Horse chestnut restores the ability of veins to contract appropriately at any given pressure,<sup>1</sup> allowing blood to flow back to the heart more easily. It also supports a healthy fluid balance by reducing fluid leakage from stressed vessel walls.<sup>2,3</sup> In addition, horse chestnut has shown a general vasoprotective role by blocking the release of a capillary wall-damaging enzyme called *hyaluronidase*, thus strengthening blood vessels that have lost their elasticity.<sup>4</sup>

Furthermore, horse chestnut has been shown to provide the *same relief* from lower leg swelling as compression (support) stockings, considered the primary treatment for circulation problems.<sup>3,5</sup>

**Venotone** is an extract of horse chestnut seed extract, which contains the active ingredient *Escin*. **Venotone** has been standardized to provide 20% Escin, a dose that has been found to be effective for keeping aging veins fit and healthy.

A bottle containing 60 capsules of Venotone retails for \$18.95. If a member buys four bottles, the price is reduced to \$12 per bottle.

### References

1. *Arzneimittelforschung*. 1979;29(4):672-5.
2. *Angiology*. 2000 Mar;51(3):197-205.
3. *Lancet*. 1996 Feb 3;347(8997):292-4.
4. *Arch Pharm (Weinheim)*. 1995 Oct;328(10):720-4.
5. *BMC Cardiovasc Disord*. 2001;1:5.



ITEM # 00408

To order Venotone,  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://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.



**B**lood testing provides the ultimate information regarding correctable risk factors that may predispose you to disorders such as cancer, diabetes, cardiovascular disease, and more. Information about general health and nutritional status can also be gained through standard blood analysis. Standing behind the belief that blood testing is an essential component of any program designed to attain optimal health and longevity, *Life Extension*<sup>®</sup> offers this innovative and convenient service at a very affordable price. Not only is comprehensive blood testing an important step in safeguarding your health, it is a simple process from virtually anywhere in the United States.

#### Five Easy Steps:

1. Call 1-800-208-3444 to discuss and place your order with one of our knowledgeable health advisors. (This order form can also be faxed to 1-866-728-1050 or mailed). Online orders can also be placed at [www.lifeextension.com](http://www.lifeextension.com).
2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit; whichever is applicable (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be sent directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable health advisors by calling 1-800-226-2370; or review the results with your personal physician.

It's that simple! Don't delay—call today!

#### For Our Local Members:

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

# Blood Testing The Ultimate Information

## MOST POPULAR PANELS

### Life Extension Member Pricing

- COMPREHENSIVE PANELS**

**○ MALE LIFE EXTENSION PANEL (LC322582) \$269**  
**Chemistry Profile** includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. **CBC** includes immune (white) cell count, red blood cell count and platelet count. Also includes: **C-Reactive Protein**  
**DHEA-S** **Homocysteine**  
**TSH for thyroid function** **Free Testosterone**  
**Estradiol** **Total Testosterone**  
**Vitamin D 25- hydroxy** **PSA (prostate-specific antigen)**  
**Hemoglobin A1c**
- FEMALE LIFE EXTENSION PANEL (LC322535) \$269**  
**Chemistry Profile** includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. **CBC** includes immune (white) cell count, red blood cell count and platelet count. Also includes: **C-Reactive Protein**  
**DHEA-S** **Homocysteine**  
**TSH for thyroid function** **Free Testosterone**  
**Estradiol** **Total Testosterone**  
**Progesterone** **Vitamin D 25- hydroxy**  
**Hemoglobin A1c**
- MALE WEIGHT LOSS PANEL (LCWLM) \$299**  
**Chemistry Profile** includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. **CBC** includes immune (white) cell count, red blood cell count and platelet count. Also includes: **C-Reactive Protein**  
**DHEA-S** **Insulin**  
**SHBG** **Free Testosterone**  
**Estradiol** **Total Testosterone**  
**Free T3** **Free T4**  
**TSH for thyroid function** **PSA (prostate-specific antigen)**
- FEMALE WEIGHT LOSS PANEL (LCWLF) \$299**  
**Chemistry Profile** includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. **CBC** includes immune (white) cell count, red blood cell count and platelet count. Also includes: **C-Reactive Protein**  
**DHEA-S** **Insulin**  
**Progesterone** **Free Testosterone**  
**Estradiol** **Total Testosterone**  
**Free T3** **Free T4**  
**TSH for thyroid function** **SHBG**
- MALE HORMONE ADD-ON PANEL (LCADDM)\* \$155**  
**Pregnenolone and Dihydrotestosterone (DHT)**  
 To provide an even more in-depth analysis of a man's hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.
- FEMALE HORMONE ADD-ON PANEL (LCADDF)\* \$125**  
**Pregnenolone and Total Estrogens**  
 To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.
- LIFE EXTENSION THYROID PANEL (LC304131) \$75**  
**TSH, T4, Free T3, Free T4.**
- FEMALE COMPREHENSIVE HORMONE PANEL\* (LC100011) \$299**  
**CBC/Chemistry Profile** (see description above), **DHEA-S**, **Estradiol**, **Total Estrogens**, **Progesterone**, **Pregnenolone**, **Total and Free Testosterone**, **SHBG**, **TSH**, **Free T3**.
- MALE COMPREHENSIVE HORMONE PANEL\* (LC100010) \$299**  
**CBC/Chemistry Profile** (see description above), **DHEA-S**, **Estradiol**, **DHT**, **PSA**, **Pregnenolone**, **Total and Free Testosterone**, **SHBG**, **TSH**, **Free T3**.
- THE CBC/CHEMISTRY PROFILE (LC381822) \$35**  
**Note:** This CBC/Chemistry Profile is included in many Life Extension panels. Please check panel descriptions.  
**CARDIOVASCULAR RISK PROFILE**  
**Total Cholesterol** **Cholesterol/HDL Ratio**  
**HDL Cholesterol** **Estimated CHD Risk**  
**LDL Cholesterol** **Glucose**  
**Triglycerides** **Iron**  
**LIVER FUNCTION PANEL**  
**AST (SGOT)** **Total Bilirubin**  
**ALT (SGPT)** **Alkaline Phosphatase**  
**LDH**  
**KIDNEY FUNCTION PANEL**  
**BUN** **BUN/Creatinine Ratio**  
**Creatinine** **Uric Acid**  
**BLOOD PROTEIN LEVELS**  
**Total Protein** **Globulin**  
**Albumin** **Albumin/Globulin Ratio**  
**BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE**  
**Red Blood Cell Count** **Monocytes**  
**White Blood Cell Count** **Lymphocytes**  
**Eosinophils** **Platelet Count**  
**Basophils** **Hemoglobin**  
**Polys (Absolute)** **Hematocrit**  
**Lymphs (Absolute)** **MCV**  
**Monocytes (Absolute)** **MCH**  
**Eos (Absolute)** **MCHC**  
**Baso (Absolute)** **Polynucleated Cells**  
**RDW**  
**BLOOD MINERAL PANEL**  
**Calcium** **Sodium**  
**Potassium** **Chloride**  
**Phosphorus** **Iron**
- COMPREHENSIVE THYROID PANEL (LC100018) \$199**  
**TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA**
- FOOD SAFE ALLERGY TEST\*\* (LCM73001) \$198**  
 This test measures delayed (IgG) food allergies for 95 common foods.
- ADRENAL FUNCTION PANEL (LC100021) \$136**  
**DHEA-S, AM/PM Cortisol, Glucose, Insulin, Lipid Panel, RBC magnesium**
- OMEGA SCORE™\*\*\* (LCOMEGA) \$131.25**  
 Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.
- MITOCHONDRIAL FUNCTION PANEL (LC100020) \$159**  
**Carnitine (Free with Total), CoQ10, Glucose**
- 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.

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

\*\* This test is packaged as a kit, requiring a finger stick performed at home.



## Other Popular Tests and Panels Life Extension Member Pricing

- |  |              |  |              |
|--|--------------|--|--------------|
| <input type="radio"/> <b>ENERGY PROFILE (LC100005)</b><br>CBC/Chemistry Profile (see description), Epstein –Barr Virus antibodies (IgG and IgM), Cytomegalovirus Antibodies (IgG and IgM), Ferritin, Total and Free Testosterone, DHEA-S, Free T3, Free T4, Cortisol, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Insulin. | <b>\$375</b> | <input type="radio"/> <b>HORMONES</b>  |              |
| <input type="radio"/> <b>ANEMIA PANEL (LC100006)</b><br>CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.  | <b>\$86</b>  | <input type="radio"/> <b>DHEA-SULFATE (LC004020)</b><br>This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.  | <b>\$61</b>  |
| <input type="radio"/> <b>INFLAMMATION PANEL (LC100007)</b><br>CBC/Chemistry Profile (see description above), C-Reactive Protein (high sensitivity), Sedimentation Rate, Rheumatoid (RA) Factor, Antinuclear Antibodies (ANA) Screen.   | <b>\$135</b> | <input type="radio"/> <b>DIABESITY PANEL (LC100019)</b><br>Glucose, Insulin, HbA1c, VAP™, Cortisol, C-Reactive Protein   | <b>\$159</b> |
| <input type="radio"/> <b>THYROID ANTIBODY PROFILE (LC100004)</b><br>Thyroid Antithyroglobulin Antibody (ATA) and Thyroid Peroxidase Antibody (TPO).  | <b>\$99</b>  | <input type="radio"/> <b>MALE BASIC HORMONE PANEL (LC100012)</b><br>DHEA-S, Estradiol, Free and Total Testosterone, PSA  | <b>\$75</b>  |
| <input type="radio"/> <b>CARDIAC PLUS+ (LC100008)</b><br>CBC/Chemistry profile (see description), Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Fibrinogen, Homocysteine.   | <b>\$145</b> | <input type="radio"/> <b>FEMALE BASIC HORMONE PANEL (LC100013)</b><br>DHEA-S, Estradiol, Free and Total Testosterone, Progesterone   | <b>\$75</b>  |
| <input type="radio"/> <b>VAP™ PLUS* (LC100009)</b><br>VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy.  | <b>\$330</b> | <input type="radio"/> <b>DIHYDROTESTOSTERONE (DHT)* (LC500142)</b><br>Measures serum concentrations of DHT.  | <b>\$99</b>  |
| <b>CARDIAC RISK</b>  |              | <input type="radio"/> <b>ESTRADIOL (LC004515)</b><br>For men and women. Determines the proper amount in the body.  | <b>\$33</b>  |
| <input type="radio"/> <b>COQ10* (COENZYME Q10) (LC120251)</b><br>This test is used to check the blood level of CoQ10 and will enable more precise dosing for anyone seeking to achieve and maintain high levels of this critical antioxidant.  | <b>\$99</b>  | <input type="radio"/> <b>INSULIN FASTING (LC004333)</b><br>Can predict those at risk of diabetes, obesity, and heart and other diseases.   | <b>\$42</b>  |
| <input type="radio"/> <b>Lp-PLA2 (PLAC® TEST)* (LC123240)</b><br>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.             | <b>\$125</b> | <input type="radio"/> <b>PREGNENOLONE* (LC140707)</b><br>Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.  | <b>\$116</b> |
| <input type="radio"/> <b>C-REACTIVE PROTEIN (HIGH-SENSITIVITY) (LC120766)</b><br>Measures inflammation factors in arteries. Recent studies indicate that C-reactive protein may be the most accurate risk factor for predicting heart attack and stroke.   | <b>\$42</b>  | <input type="radio"/> <b>PROGESTERONE (LC004317)</b><br>Primarily for women. Determines the proper amount in the body.   | <b>\$55</b>  |
| <input type="radio"/> <b>FIBRINOGEN* (LC001610)</b><br>High levels of this blood-clotting factor increase the risk of heart attack and stroke.   | <b>\$31</b>  | <input type="radio"/> <b>SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)</b><br>This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.   | <b>\$33</b>  |
| <input type="radio"/> <b>HOMOCYSTEINE (LC706994)</b><br>Can indicate if you are likely to have a heart attack or stroke. Even if you take folic acid, you still may have dangerously high levels of this artery-clogging metabolic debris that can be lowered with high doses of TMG, vitamin B6, and vitamin B12.                         | <b>\$64</b>  | <b>BONE HEALTH</b>   |              |
| <b>MALE HEALTH</b>   |              | <input type="radio"/> <b>VITAMIN D (25OH) (LC081950)</b><br>This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.  | <b>\$47</b>  |
| <input type="radio"/> <b>PSA (PROSTATE-SPECIFIC ANTIGEN) (LC010322)</b><br>Can provide an early warning sign for prostate disorders and possible cancer.   | <b>\$31</b>  | <input type="radio"/> <b>OSTEOCALCIN* (LC010249)</b><br>Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis.  | <b>\$91</b>  |
| <input type="radio"/> <b>FREE-PSA (INCLUDES TOTAL PSA)* (LC480780)</b><br>Recommended to determine if an elevated PSA is indicative of prostate cancer.  | <b>\$61</b>  | <input type="radio"/> <b>DPD CROSS LINK URINE TEST (LC511105)</b><br>The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis. | <b>\$79</b>  |

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-Carnitine Powder Natural Lemon Flavor  
L-Glutathione, L-Cysteine & C  
L-Glutamine Capsules  
L-Glutamine Powder  
L-Lysine Capsules  
L-Tyrosine Tablets  
Mega L-Glutathione Capsules  
N-Acetyl-L-Cysteine Capsules  
Optimized Carnitine with GlycoCarn®  
PharmaGABA  
Super Carnosine Capsules  
Taurine Capsules

## BONE & JOINT HEALTH

ArthroMax™ with Theaflavins and AprèsFlex®  
ArthroMax™ Advanced with UC-II® and  
AprèsFlex®  
Bone-Up™  
Bone Restore  
Bone Restore w/Vitamin K2  
Bone Strength Formula w/KoAct™  
Fast Acting Joint Formula  
Glucosamine Chondroitin Capsules

## BRAIN HEALTH

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

## DIGESTIVE

Bifido GI Balance  
Carnosoothe w/PicroProtect  
Digest RC™  
Enhanced Super Digestive Enzymes  
Extraordinary Enzymes  
Life Flora™  
Natural EsophaGuard  
Pancreatin  
Probiotic All-Flora®  
Regimint  
Theralac Probiotics

## DURK AND SANDY PRODUCTS

Blast™  
Inner Power™

## EYE CARE

Bilberry Extract  
Brite Eyes III  
Eye Pressure Support with Mirtogenol®  
Overxcast Polarized Sunglasses  
Solarshield Sunglasses  
Super Zeaxanthin with Lutein &  
Meso-Zeaxanthin Plus Astaxanthin and C3G  
Super Zeaxanthin with Lutein &  
Meso-Zeaxanthin and C3G

## FIBER

AppleWise Polyphenol  
Fiber Food  
TruFiber®  
WellBetX PGX® plus Mulberry

## FOOD

Rich Rewards™ Black Bean Vegetable Soup  
Rich Rewards™ Spicy Cruciferous Vegetable Soup  
Rich Rewards™ Cruciferous Vegetable Soup  
Rich Rewards™ Lentil Soup  
Rich Rewards® Coffee

## HAIR CARE

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

## HEART HEALTH

AppleWise Polyphenol  
Advanced Lipid Control  
Aspirin (Enteric Coated)  
Cardio Peak™ w/Standardized Hawthorn and Arjuna  
Cho-Less™  
D-Ribose Tablets  
D-Ribose Powder  
Endothelial Defense™ with  
Full-Spectrum Pomegranate™  
Fibrinogen Resist  
Forskolin  
Homocysteine Resist  
Krill Healthy Joint Formula  
Natural BP Management  
Olive Leaf Vascular Support  
Peak ATP® with GlycoCarn®  
PhosphOmega®  
Policosanol  
Pycnogenol® French Maritime Pine Bark Extract  
Red Yeast Rice  
Super Absorbable CoQ10™ with d-Limonene  
Super Omega-3 EPA/DHA with Sesame  
Lignans & Olive Fruit Extract  
Super Ubiquinol CoQ10  
Super Ubiquinol CoQ10 with BioPQQ®  
Super Ubiquinol CoQ10 with Enhanced  
Mitochondrial™ Support  
Theaflavin Standardized Extract  
TMG Powder  
TMG Tablets

## HERBAL/PHYTO PRODUCTS

Artichoke Leaf Extract  
Astaxanthin w/Phospholipids  
Berry Complete  
Blueberry Extract  
Blueberry Extract w/Pomegranate  
Butterbur Extract w/Standardized  
Rosmarinic Acid  
Calcium D-Glucarate  
Enhanced Berry Complete with Acai  
Full-Spectrum Pomegranate™  
Grapeseed Extract with Resveratrol &  
Pterostilbene  
Huperzine A  
Kyolic® Garlic Formula 102 + 105  
Kyolic® Reserve  
Mega Green Tea Extract  
Mega Green Tea Extract (Decaffeinated)  
(also w/CoffeeGenic® Green Coffee Extract)  
Mega Lycopene Extract  
Optimized Ashwagandha Extract  
Optimized Garlic  
Pomegranate Extract  
Pomegranate Juice Concentrate  
Pycnogenol  
Optimized Quercetin  
Resveratrol with Synergistic Grape-Berry Actives  
Rhodiola Extract  
Silymarin  
SODzyme™ with GliSODin®

Stevia Extract  
Super Bio-Curcumin®  
Super Ginkgo Extract  
Triple Action Cruciferous Vegetable Extract  
Venotone  
Whole Grape Extract

## HORMONES

Advanced Natural Sex for Women® 50+  
7-Keto® DHEA  
DHEA  
DHEA Complete  
GH Pituitary Support Day Formula  
GH Pituitary Support Night Formula  
Melatonin  
Melatonin Timed Release  
Natural Estrogen with Pomegranate Extract  
Pregnenolone  
ProgestaCare for Women  
Super Miraforte with Standardized Lignans

## IMMUNE ENHANCEMENT

AHCC® (Active Hexose Correlated Compound)  
Black Cumin Seed Oil  
Black Cumin Seed Oil w/Bio-Curcumin®  
Buffered Vitamin C Powder  
Echinacea Extract  
i26 Hyperimmune Egg  
Immune Modulator w/Tinofend®  
Immune Protect with PARACTIN®  
Lactoferrin  
Norwegian Shark Liver Oil  
Optimized Fucoidan w/Maritech® 926  
ProBoost™ Thymic Protein A  
Reishi Extract Mushroom Complex  
Vitamin C with Dihydroquercetin  
Zinc Lozenges

## INFLAMMATORY REACTIONS

Arthro-Immune Joint Support  
ArthroMax™ with Theaflavins  
Boswellia  
Bromelain (Specially-coated)  
DHA (Vegetarian Sourced)  
Fast Acting Joint Formula  
Ginger Force  
Krill Oil  
5-LOX Inhibitor w/AprèsFlex®  
Mega EPA/DHA  
Mega GLA with Sesame Lignans  
MSM  
Natural Relief 1222™ Cream  
Omega-3 Whirl  
Serrafazyme  
SODzyme™ with GliSODin® and Wolfberry  
Super Omega-3 EPA/DHA with Sesame  
Lignans & Olive Fruit Extract  
Tart Cherry w/Standardized CherryPURE®  
Zyflamend® Whole Body

## LIVER HEALTH

Branch Chain Amino Acids  
N-Acetyl Cysteine  
Liver Efficiency Formula  
Certified European Milk Thistle  
Hepatopro  
SAME  
Silymarin

## MINERALS

Biosil  
Bone Restore  
Bone Strength Formula w/KoAct®  
Bone-Up™  
Boron Capsules  
Calcium Citrate with D3  
Chromium Ultra  
Copper  
Iodoral  
Iron Protein Plus

Magnesium  
Magnesium Citrate  
Only Trace Minerals  
Optimized Chromium w/Crominex® 3+  
OptiZinc  
Sea-Iodine™  
Selenium  
Se-Methyl L-Selenocysteine  
Strontium  
Vanadyl Sulfate  
Zinc Lozenges

## MISCELLANEOUS

Blood Pressure Monitor Arm Cuff  
CR Way Edition Advanced Dietary Software

## MITOCHONDRIAL SUPPORT

Acetyl-L-Carnitine  
Acetyl-L-Carnitine-Arginate  
Mitochondrial Basics w/BioPQQ®  
Mitochondrial Energy Optimizer w/BioPQQ®  
Optimized Carnitine with GlycoCarn®  
Super Absorbable CoQ10™ with d-Limonene  
Super Alpha Lipoic Acid with Biotin  
Super R-Lipoic Acid  
Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

## MOOD RELIEF

Adrenal Energy Formula  
Bioactive Milk Peptides  
L-Theanine  
5 HTP  
Enhanced Natural Sleep® w/ Melatonin  
Enhanced Natural Sleep® w/o Melatonin  
Natural Stress Relief  
SAME  
St. John's Wort Extract  
L-Tryptophan  
Optimized Tryptophan Plus

## MOUTH CARE

Advanced Oral Hygiene  
Mouthwash w/Pomegranate  
Toothpaste

## MULTIVITAMIN

Booster  
Children's Formula Life Extension Mix™  
Comprehensive Nutrient Packs Basic  
Comprehensive Nutrient Packs Advanced  
Life Extension Mix™ Capsules  
Life Extension Mix™ Powder  
Life Extension Mix™ Tablets  
Life Extension Mix™ w/o Copper Capsules  
Life Extension Mix™ w/o Copper Tablets  
Life Extension Mix™ w/Extra Niacin  
Life Extension Mix™ w/Extra Niacin w/o Copper  
Life Extension Mix™ w/Stevia Powder  
Life Extension Mix™ w/Stevia w/o Copper Powder  
Life Extension One-Per-Day  
Life Extension Two-Per-Day  
Super Booster Softgels w/Advanced K2 Complex

## PET CARE

Cat Mix  
Dog Mix

## PROSTATE & URINARY HEALTH

Optimized Cran-Max® with UTIRose™  
5-LOXIN®  
(Water-Soluble) Pumpkin Seed Extract  
Super Saw Palmetto with Beta-Sitosterol  
Super Saw Palmetto/Nettle Root Formula w/Beta-Sitosterol  
Ultra Natural Prostate Formula

## SKIN CARE

Advanced Under Eye Serum with Stem Cells  
Amber Self MicroDermAbrasion  
Anti-Aging Mask  
Anti-Glycation Serum  
Antioxidant Rejuvenating Foot Cream  
Antioxidant Rejuvenating Foot Scrub  
Antioxidant Rejuvenating Hand Cream  
Antioxidant Rejuvenating Hand Scrub  
Anti-Redness & Blemish Lotion  
Bio-Collagen w/Patented UC-II®  
Bioflavonoid Cream  
Broccoli Sprout  
Corrective Clearing Mask  
DNA Repair Cream  
Dual-Action MicroDermAbrasion  
Essential Plant Lipids Reparative Serum  
Face Master® Platinum  
Face Rejuvenating Antioxidant Cream  
Enhanced FernBlock® with Red Orange Complex  
Fine Line-Less  
Hair Suppress Formula  
Healing Formula All-in-One Cream  
Healing Mask  
Hyaluronic Facial Moisturizer  
Hydrating Anti-oxidant Face Mist  
Hydroderm®  
Lifting & Tightening Complex  
Lycopene Cream  
Melatonin Cream  
Mild Facial Cleanser  
Neck Rejuvenating Antioxidant Cream  
Peel Off Cleansing Mask  
Pigment Correcting Cream  
(Ultra) Rejuvenex®  
Rejuvenex® Body Lotion  
Rejuvenex® Factor Firming Serum  
Rejuvenating Serum  
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  
Supercritical Omega 7™  
Ultra Rejuvenex®  
Ultra RejuveNight® w/o Progesterone  
Ultra Lip Plumper  
Ultra Wrinkle Relaxer  
Under Eye Refining Serum  
Under Eye Rescue Cream  
Vitamin C Serum  
Vitamin D Lotion  
Vitamin E-ssential Cream  
Vitamin K Healing Cream  
Youth Serum

## SOY

Natural Estrogen w/Pomegranate  
Super Absorbable Soy Isoflavones

## SPECIAL PURPOSE FORMULA

Anti-Alcohol Antioxidants w/HepatoProtection Complex  
Benfotiamine w/Thiamine  
Breast Health Formula  
Butterbur Extract w/Standardized Rosmarinic Acid  
Chlorella  
Chlorophyllin  
Green Coffee Extract CoffeeGenic® (also w/Glucose control)  
Coriolus Super Strength  
CR Mimetic Longevity Formula  
Cinsulin® w/InSea2® and Crominex® 3+  
European Leg Solution Diosmin 95  
Fem Dophilus

Femmenessence MacaPause®  
GlycemicPro™ Transglucosidase  
Migra-eeze™  
Natural Female Support  
Organic Total Body Cleanse  
Pecta-Sol®  
Potassium Iodide  
PQQ Caps with BioPQQ®  
PteroPure™  
Prelox® Natural Sex for Men®  
Pyridoxal 5' - Phosphate  
Ultra Natural Prostate w/AprèsFlex® and Standardized Lignans

## SPORTS PERFORMANCE

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

## VITAMINS

Ascorbyl Palmitate Capsules  
B12  
Beta-Carotene  
Biotin Capsules  
Buffered Vitamin C Powder  
Complete B Complex  
Fast-C®  
Folic Acid + B12  
Gamma E Tocopherol w/Sesame Lignans  
Gamma E Tocopherol/Tocotrienols  
Inositol Capsules  
Mega Lycopene Extract  
Methylcobalamin  
MK-7  
No-Flush Niacin  
Optimized Folate  
Super Ascorbate C Capsules  
Super Ascorbate C Powder  
Super K w/Advanced K2 Complex  
Tocotrienols w/Sesame Lignans  
Vitamin B3 (Niacin) Capsules  
Vitamin B6  
Vitamin B12 Tablets  
Vitamin C  
Vitamin D  
Vitamin D3  
Vitamin D3 w/Sea-Iodine™  
Vitamins D and K w/Sea-Iodine™  
Vitamin E  
Vitamin K1

## WEIGHT MANAGEMENT

Alli® Refill Pack  
Advanced Anti-Adipocyte Formula w/AdipoStat & Integra Lean®  
Calorie Control Weight Management™ Formula w/CoffeeGenic® Green Coffee Extract  
CoffeeGenic® Weight Management™ with Green Coffee Extract  
7-Keto DHEA  
DHEA® Complete  
Fucosanthin Slim™  
HCA  
Integra-Lean® Irvingia  
LuraLean® Caps Special Propolmannan Particle Size  
Optimized Irvingia w/Phase 3™ Calorie Control Complex  
Optimized Saffron with Satiereal®  
Natural Appetite Control  
Natural Glucose Absorption Control  
Super CLA Blend w/Guarana and Sesame Lignans  
Super CLA Blend w/Sesame Lignans  
WellBetX PGX® plus Mulberry

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>A</b>					
01524	<b>ACETYL-L-CARNITINE</b> - 500 mg, 100 veg. caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
01525	<b>ACETYL-L-CARNITINE ARGINATE</b> - 100 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01628	<b>ADRENAL ENERGY FORMULA</b> - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01630	<b>ADRENAL ENERGY FORMULA</b> - 120 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	42.00	31.50		
01308	<b>ADVANCED LIPID CONTROL</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	<b>ADVANCED ORAL HYGIENE</b> - 60 veg. mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	<b>AHCC</b> - 500 mg, 30 caps	59.98	44.99		
	Buy 4 bottles, price each	53.33	40.00		
*46925	<b>ALLI® REFILL PACK</b> - 120 caps	69.95	58.00		
00457	<b>ALPHA-LIPOIC ACID w/BIOTIN (SUPER)</b> - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01440	<b>ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO</b> - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01509	<b>ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT &amp; INTEGRA LEAN®(ADVANCED)</b> - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01625	<b>APPLEWISE POLYPHENOL EXTRACT</b> - 600 mg, 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	<b>ARGININE/ORNITHINE</b> - 500/250, 100 caps	16.00	12.00		
	Buy 4 bottles, price each	14.50	10.88		
00038	<b>ARGININE/ORNITHINE POWDER</b> - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	<b>(L)-ARGININE CAPS</b> - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01617	<b>ARTHROMAX™ w/THEAFLAVINS &amp; APRESFLEX®</b> - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01618	<b>ARTHROMAX™ ADVANCED w/UC-II® &amp; APRESFLEX®</b> - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01404	<b>ARTHRO-IMMUNE JOINT SUPPORT</b> - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00919	<b>ARTICHOKE LEAF EXTRACT</b> - 500 mg, 180 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.38	19.04		
01533	<b>ASCORBYL PALMITATE</b> - 500 mg, 100 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
00888	<b>ASHWAGANDHA EXTRACT (OPTIMIZED)</b> - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
01066	<b>ASPIRIN</b> - 81 mg, 300 enteric coated tablets	6.00	4.50		
	Buy 4 bottles, price each	5.33	4.00		
01720	<b>ASTAXANTHIN WITH PHOSPHOLIPIDS</b> - 4 mg, 30 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		

**SUB-TOTAL OF COLUMN 1**

No.		Retail Each	Member Each	Qty	Total
<b>B</b>					
00920	<b>BENFOTIAMINE w/ THIAMINE</b> - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	<b>BENFOTIAMINE (MEGA)</b> - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01206	<b>BERRY COMPLETE</b> - 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	18.67	14.00		
01496	<b>BERRY COMPLETE w/ACAI (ENHANCED)</b> - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	<b>BETA-CAROTENE</b> - 25,000 IU, 100 softgels	11.25	8.44		
	Buy 4 bottles, price each	10.13	7.60		
01622	<b>BIFIDO GI BALANCE</b> - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	<b>BILBERRY EXTRACT</b> - 100 mg, 100 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01512	<b>BIOACTIVE MILK PEPTIDES</b> - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	<b>BIO-COLLAGEN w/PATENTED UC-II®</b> - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	<b>BIOSIL™</b> - 5 mg, 30 veg. caps	18.95	15.16		
*01007	<b>BIOSIL™</b> - 1 fl oz	29.99	23.99		
00102	<b>BIOTIN</b> - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
01709	<b>BLACK CUMIN SEED OIL</b> - 60 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01710	<b>BLACK CUMIN SEED OIL w/BIO-CURCUMIN®</b> - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01008	<b>BLAST™</b> - 600 grams of powder	26.95	20.21		
70000	<b>BLOOD PRESSURE MONITOR</b> - ARM CUFF (medium)	99.95	64.97		
70004	<b>BLOOD PRESSURE MONITOR</b> - WRIST (travel size)	69.95	52.46		
01214	<b>BLUEBERRY EXTRACT</b> - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	<b>BLUEBERRY EXTRACT w/ POMEGRANATE</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01726	<b>BONE RESTORE</b> - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01727	<b>BONE RESTORE w/VITAMIN K2</b> - 120 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01725	<b>BONE STRENGTH FORMULA w/KOACT®</b> - 120 veg. caps	45.00	33.75		
	Buy 4 bottles, price each	40.00	30.00		
00313	<b>BONE-UP®</b> - 240 caps	28.95	21.71		
	Buy 4 bottles, price each	27.21	20.41		
01379	<b>BOOSTER</b> - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01680	<b>BOOSTER w/ADVANCED K2 COMPLEX (SUPER)</b> - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01661	<b>BORON</b> - 3 mg, 100 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		
00202	<b>BOSWELLA</b> - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	30.00	22.50		

**SUB-TOTAL OF COLUMN 2**

No.		Retail Each	Member Each	Qty	Total
01253	<b>BRANCHED CHAIN AMINO ACIDS</b> - 90 veg. caps Buy 4 bottles, price each	\$19.50 17.00	\$14.63 12.75		
01699	<b>BREAST HEALTH FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
00893	<b>BRITE EYES III</b> - 2 vials, 5 ml each Buy 4 boxes, price each	34.00 32.00	25.50 24.00		
01203	<b>BROMELAIN (SPECIALLY-COATED)</b> - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	21.00 19.00	15.75 14.25		
00884	<b>BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID</b> - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
<b>C</b>					
01653	<b>CALCIUM CITRATE w/VITAMIN D</b> - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
01651	<b>CALCIUM D-GLUCARATE</b> - 200 mg, 60 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
01693	<b>CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC® GREEN COFFEE EXTRACT BLUEBERRY FLAVOR</b> - 414 grams powder Buy 4 jars, price each Buy 8 jars, price each	60.00 54.00 50.00	45.00 40.50 37.50		
01694	<b>CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC® GREEN COFFEE EXTRACT BLUEBERRY FLAVOR</b> - 60 individual packs Buy 4 boxes, price each Buy 8 boxes, price each	64.00 60.00 56.00	48.00 45.00 42.00		
01700	<b>CARDIO PEAK™ w/STANDARDIZED HAWTHORN &amp; ARJUNA</b> - 120 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00916	<b>CARNITINE w/GLYCOCARN® (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01532	<b>L-CARNITINE</b> - 500 mg, 30 veg. caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01719	<b>L-CARNITINE POWDER NATURAL LEMON FLAVOR</b> - 114 grams Buy 4 jars, price each	28.00 24.00	21.00 18.00		
01258	<b>CARNOSOOTHIE w/PICROPROTECT™</b> - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01687	<b>CARNOSINE (SUPER)</b> - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	<b>CAT MIX</b> - 100 grams powder Buy 4 jars, price each	15.00 12.00	11.25 9.00		
01659	<b>CDP CHOLINE CAPS</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01370	<b>CHILDREN'S FORMULA LIFE EXTENSION MIX™</b> - 100 chewable tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00550	<b>CHLORELLA</b> - 500 mg, 200 tablets Buy 4 bottles, price each	23.50 21.00	17.63 15.75		
01571	<b>CHLOROPHYLLIN</b> - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	<b>CHO-LESS™</b> - 90 capsules	32.50	24.38		
01477	<b>CHROMIUM ULTRA</b> - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	<b>CHROMIUM W/CROMINEX® 3+ (OPTIMIZED)</b> - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		

**SUB-TOTAL OF COLUMN 3**

No.		Retail Each	Member Each	Qty	Total
01503	<b>CINSULIN® W/INSEA® AND CROMINEX® 3+</b> - 90 veg. caps Buy 4 bottles, price each	\$38.00 34.00	\$28.50 25.50		
00818	<b>CLA BLEND W/SESAME LIGNANS (SUPER)</b> - 1000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	<b>CLA BLEND w/GUARANA &amp; SESAME (SUPER)</b> -1000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01707	<b>COFFEEGENIC® WEIGHT MANAGEMENT™ w/GREEN COFFEE EXTRACT</b> - 90 veg. caps Buy 4 bottles, price each	48.00 42.00	36.00 31.50		
01697	<b>COGNITEX® w/PREGNENOLONE &amp; NEUROPROTECTION COMPLEX</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	74.00 66.60 58.89	55.50 49.95 44.17		
01696	<b>COGNITEX® w/o PREGNENOLONE w/NEUROPROTECTION COMPLEX</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	72.00 64.00 56.96	54.00 48.00 42.72		
01421	<b>COGNITEX® BASICS</b> - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
01735	<b>COMPLETE B-COMPLEX</b> - 60 veg. caps Buy 4 bottles, price each	10.00 9.00	7.50 6.75		
01795	<b>COMPREHENSIVE NUTRIENT PACKS BASIC</b> - 30 packs Buy 4 boxes, price each	48.00 44.00	36.00 33.00		
01796	<b>COMPREHENSIVE NUTRIENT PACKS ADVANCED</b> - 30 packs Buy 4 boxes, price each	90.00 82.00	67.50 61.50		
00119	<b>COPPER CAPSULES</b> - 2 mg, 100 caps Buy 4 bottles, price each	9.91 8.96	7.43 6.72		
00949	<b>COQ10™ w/ #LIMONENE (SUPER ABSORBABLE)</b> - 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	<b>COQ10™ w/ #LIMONENE (SUPER ABSORBABLE)</b> - 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	<b>COQ10 (SUPER UBIQUINOL)</b> - 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	<b>COQ10 w/BIOPQQ® (SUPER UBIQUINOL)</b> - 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	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -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	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -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	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -50 mg, 30 softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01431	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -200 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
01053	<b>CORIOLUS SUPER STRENGTH</b> - 600 mg, 150 veg. caps	99.95	74.96		

**SUB-TOTAL OF COLUMN 4**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>C CONTINUED</b>					
80140	<b>COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS</b> - .33 oz Buy 2 bottles, price each	\$49.00 42.00	\$36.75 31.50		
80139	<b>COSMESIS AMBER SELF MICRODERMABRASION</b> - 2 oz Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80118	<b>COSMESIS ANTI-AGING MASK</b> - 2 oz Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80134	<b>COSMESIS ANTI-GLYCATION SERUM</b> - 1 oz <b>W/BLUEBERRY &amp; POMEGRANATE EXTRACTS</b> Buy 2 bottles, price each	33.00 31.35	24.75 23.51		
80133	<b>COSMESIS ANTIOXIDANT FACIAL MIST</b> - 2 oz Buy 2 bottles, price each	32.00 30.40	24.00 22.80		
80127	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM</b> - 2 oz Buy 2 jars, price each	45.00 42.80	33.75 32.10		
80128	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB</b> - 2 oz Buy 2 jars, price each	59.00 51.92	44.25 38.94		
80117	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM</b> - 2 oz Buy 2 jars, price each	64.00 57.49	48.00 43.12		
80121	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB</b> - 2 oz Buy 2 jars, price each	58.00 51.04	43.50 38.28		
80105	<b>COSMESIS ANTI-REDNESS &amp; ADULT BLEMISH LOTION</b> - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80147	<b>COSMESIS BIOFLAVONOID CREAM</b> - 1 oz jar Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80144	<b>COSMESIS BROCCOLI SPROUT CREAM</b> - 1 oz Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80120	<b>COSMESIS CORRECTIVE CLEARING MASK</b> - 2 oz Buy 2 jars, price each	64.50 56.76	48.38 42.57		
80141	<b>COSMESIS DNA REPAIR CREAM</b> - 1 oz jar Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80108	<b>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM</b> - 1 oz Buy 2 bottles, price each	74.95 65.95	56.21 49.46		
80123	<b>COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM</b> - 2 oz Buy 2 jars, price each	69.50 61.16	52.13 45.87		
80107	<b>COSMESIS FINE LINE-LESS</b> - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80131	<b>COSMESIS HAIR SUPPRESS FORMULA</b> - 4 oz Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80137	<b>COSMESIS HEALING FORMULA ALL-IN-ONE CREAM</b> - 1 oz Buy 2 jars, price each	53.00 45.43	39.75 34.07		
80115	<b>COSMESIS HEALING MASK</b> - 2 oz Buy 2 bottles, price each	64.50 56.76	48.38 42.57		
80102	<b>COSMESIS HEALING VITAMIN K CREAM</b> - 1 oz Buy 2 bottles, price each	79.50 69.96	59.63 52.47		
80109	<b>COSMESIS HYALURONIC FACIAL MOISTURIZER</b> - 1 oz Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80110	<b>COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER</b> - 1 oz Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80138	<b>COSMESIS HYDRATING ANTIOXIDANT FACE MIST</b> - 4 oz Buy 2 bottles, price each	39.95 38.00	29.96 28.50		
80103	<b>COSMESIS LIFTING &amp; TIGHTENING COMPLEX</b> - 1 oz Buy 2 tubes, price each	74.50 65.56	55.88 49.17		
80146	<b>COSMESIS LYCOPENE CREAM</b> - 1 oz jar Buy 2 jars, price each	28.00 25.40	21.00 19.05		

**SUB-TOTAL OF COLUMN 5**

No.		Retail Each	Member Each	Qty	Total
80135	<b>COSMESIS MELATONIN CREAM</b> - 1 oz Buy 2 jars, price each	\$33.00 27.10	\$24.75 20.33		
80114	<b>COSMESIS MILD FACIAL CLEANSER</b> - 8 oz Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80122	<b>COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM</b> - 2 oz Buy 2 jars, price each	64.00 56.32	48.00 42.24		
80111	<b>COSMESIS PIGMENT CORRECTING CREAM</b> - 1/2 oz Buy 2 bottles, price each	74.00 65.12	55.50 48.84		
80106	<b>COSMESIS REJUVENATING SERUM</b> - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80150	<b>COSMESIS RENEWING EYE CREAM</b> - 1/2 oz Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80142	<b>COSMESIS RESVERATROL ANTI-OXIDANT SERUM</b> - 1 oz Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80112	<b>COSMESIS SKIN LIGHTENING SERUM</b> - 1/2 oz Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80130	<b>COSMESIS SKIN STEM CELL SERUM</b> - 1 oz Buy 2 bottles, price each	74.00 69.00	55.50 51.75		
80143	<b>COSMESIS STEM CELL CREAM W/ALPINE ROSE</b> - 1 oz jar Buy 2 jars, price each	66.00 58.00	49.50 43.50		
80148	<b>COSMESIS TIGHTENING &amp; FIRMING NECK CREAM</b> - 2 oz jar Buy 2 jars, price each	39.00 35.00	29.25 26.25		
80116	<b>COSMESIS ULTRA LIP PLUMPER</b> - 1/3 oz Buy 2 bottles, price each	64.00 56.32	48.00 42.24		
80101	<b>COSMESIS ULTRA WRINKLE RELAXER</b> - 1 oz Buy 2 bottles, price each	89.95 79.76	67.46 59.82		
80113	<b>COSMESIS UNDER EYE REFINING SERUM</b> - 1/2 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80104	<b>COSMESIS UNDER EYE RESCUE CREAM</b> - 1/2 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80129	<b>COSMESIS VITAMIN C SERUM</b> - 1 oz Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80136	<b>COSMESIS VITAMIN D LOTION</b> - 4 oz Buy 2 bottles, price each	36.00 33.66	27.00 25.25		
80145	<b>COSMESIS VITAMIN E-ESSENTIAL CREAM</b> - 1 oz Buy 2 jars, price each	28.00 26.00	21.00 19.50		
80149	<b>COSMESIS YOUTH SERUM</b> - 1 oz Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
00862	<b>CRAN-MAX®</b> - 500 mg, 60 veg. caps Buy 4 bottles, price each	17.50 15.00	13.13 11.25		
01424	<b>CRAN-MAX® with UTI ROSE™ (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01529	<b>CREATINE CAPSULES</b> - 120 veg. caps Buy 4 bottles, price each	10.95 9.25	8.21 6.94		
01746	<b>CREATINE WHEY GLUTAMINE POWDER</b> - 454 grams (vanilla) Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01429	<b>CR MIMETIC LONGEVITY FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
*33840	<b>CRWAY GREAT GLUCOSE CONTROL CD</b>	98.00	82.00		
**CRWAY	<b>CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE</b>	195.00	195.00		
00407	<b>CURCUMIN® (SUPER BIO)</b> - 400 mg, 60 veg. caps Buy 4 bottles, price each	38.00 35.00	28.50 26.25		

**SUB-TOTAL OF COLUMN 6**

To order online visit: [www.LifeExtension.com](http://www.LifeExtension.com)

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
<b>D</b>					
00658	<b>7-KETO® DHEA METABOLITE</b> - 25 mg, 100 caps	\$28.00	\$21.00		
	Buy 4 bottles, price each	24.00	18.00		
01479	<b>7-KETO® DHEA METABOLITE</b> - 100 mg, 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01640	<b>DHA (VEGETARIAN SOURCED)</b> - 200 mg, 30 veg. softgels	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00607	<b>DHEA</b> - 25 mg, 100 tablets (dissolve in mouth)	14.00	10.50		
	Buy 4 bottles, price each	11.75	8.81		
01478	<b>DHEA COMPLETE</b> - 60 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	43.20	32.40		
00335	<b>DHEA</b> - 25 mg, 100 caps	18.00	13.50		
	Buy 4 bottles, price each	15.00	11.25		
00454	<b>DHEA</b> - 15 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	12.00	9.00		
00882	<b>DHEA</b> - 50 mg, 60 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
01689	<b>DHEA</b> - 100 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01358	<b>DIGEST RC</b> - 30 tablets	19.95	14.96		
	Buy 4 boxes, price each	17.00	12.75		
01272	<b>DIGESTIVE ENZYMES (ENHANCED SUPER)</b> - 100 veg. caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01671	<b>D,L-PHENYLALANINE CAPSULES</b> - 500 mg, 100 veg. caps	18.75	14.06		
	Buy 4 bottles, price each	16.00	12.00		
01540	<b>DMAE BITARTRATE</b> - 150 mg, 200 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	15.00	11.25		
00059	<b>DMG</b> - 125 mg, 60 tablets	22.80	17.10		
	Buy 4 boxes, price each	21.00	15.75		
01570	<b>DNA PROTECTION FORMULA</b> - 60 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	32.00	24.00		
00544	<b>DOG MIX</b> - 100 grams powder	19.50	14.63		
	Buy 4 jars, price each	16.00	12.00		
00321	<b>DR. PROCTOR'S ADVANCED HAIR FORMULA</b> - 2 oz	39.95	29.96		
	Buy 4 bottles, price each	32.00	24.00		
00320	<b>DR. PROCTOR'S HAIR FORMULA SHAMPOO</b> - 8 oz	24.95	18.71		
	Buy 4 bottles, price each	22.00	16.50		
00899	<b>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE</b> - 2.4 oz	39.95	29.96		
	Buy 4 jars, price each	38.95	29.21		
<b>E</b>					
01528	<b>ECHINACEA EXTRACT</b> - 250 mg, 60 veg. caps	\$14.35	\$10.76		
	Buy 4 bottles, price each	12.50	9.38		
01498	<b>ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™</b> - 60 softgels	56.00	42.00		
	Buy 4 bottles, price each	52.00	39.00		
00997	<b>ENDOTHELIAL DEFENSE™ w/GLISODIN®</b> - 60 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
00625	<b>EPA/DHA (MEGA)</b> - 120 softgels	19.95	14.96		
	Buy 4 bottles, price each	18.00	13.50		
01042	<b>EUROPEAN LEG SOLUTION DIOSMIN 95</b> - 600 mg, 30 veg. tabs	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01706	<b>EXTRAORDINARY ENZYMES</b> - 60 caps	26.00	19.50		
	Buy 4 bottles, price each	24.00	18.00		
01514	<b>EYE PRESSURE SUPPORT w/MIRTOGENOL®</b> - 30 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		

**SUB-TOTAL OF COLUMN 7**

No.		Retail Each	Member Each	Qty	Total
<b>F</b>					
01054	<b>FACE MASTER® PLATINUM</b>	\$199.00	\$199.00		
00965	<b>FAST-ACTING JOINT FORMULA</b> - 30 caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01717	<b>FAST-C® w/DIHYDROQUERCETIN</b> - 120 veg. tabs	26.00	19.50		
	Buy 4 bottles, price each	24.00	18.00		
20053	<b>FEM DOPHILUS®</b> - 30 caps	25.95	19.46		
20055	<b>FEM DOPHILUS®</b> - 60 caps	39.95	29.96		
01064	<b>FEMMENESSENCE MACAPAUSE®</b> - 120 veg. caps	34.99	26.24		
01728	<b>FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED)</b> - 30 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01670	<b>FIBER FOOD CAPS</b> - 200 veg. caps	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
	Buy 10 bottles, price each	13.00	9.75		
00718	<b>FIBRINOGEN RESIST™</b> - 30 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	44.00	33.00		
01439	<b>FOLATE (OPTIMIZED) (L-METHYL-FOLATE)</b> 1000 mcg - 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01641	<b>FOLIC ACID + B12 CAPSULES</b> - 200 veg. caps	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01544	<b>FORSKOLIN</b> - 10 mg, 60 veg. caps	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01513	<b>FUCOIDAN w/MARITECH® 926 (OPTIMIZED)</b> - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	33.00	24.75		
00993	<b>FUCOXANTHIN-SLIM™</b> - 90 softgels	44.00	33.00		
	Buy 4 bottles, price each	39.00	29.25		
<b>G</b>					
00559	<b>GAMMA E TOCOPHEROL/TOCOTRIENOLS</b> - 60 softgels	\$42.00	\$31.50		
	Buy 4 bottles, price each	37.00	27.75		
00759	<b>GAMMA E TOCOPHEROL w/SESAME LIGNANS</b> - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01394	<b>(OPTIMIZED) GARLIC</b> - 200 veg. caps	24.95	18.71		
	Buy 4 bottles, price each	21.00	15.75		
01301	<b>GH PITUITARY SUPPORT DAY FORMULA</b> - 120 vegetarian tabs	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01302	<b>GH PITUITARY SUPPORT NIGHT FORMULA</b> - 120 veg. caps	25.00	18.75		
	Buy 4 bottles, price each	22.50	16.88		
01228	<b>GINGER FORCE</b> - 60 softgels	29.95	22.46		
01658	<b>GINKGO BILOBA CERTIFIED EXTRACT™</b> - 120 mg, 365 veg. caps	46.00	34.50		
	Buy 2 bottles, price each	43.50	32.63		
01648	<b>GINKGO EXTRACT 28/7 (SUPER)</b> - 120 mg, 100 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.50	19.88		
00756	<b>GLA WITH SESAME LIGNANS (MEGA)</b> - 60 softgels	19.50	14.63		
	Buy 4 bottles, price each	18.00	13.50		
00345	<b>(L) GLUTAMINE CAPSULES</b> - 500 mg, 100 caps	14.95	11.21		
	Buy 4 bottles, price each	13.50	10.13		
00141	<b>(L)-GLUTAMINE POWDER</b> - 100 grams	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00522	<b>GLUCOSAMINE/CHONDROITIN CAPSULES</b> - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	32.00	24.00		
01541	<b>GLUTATHIONE, CYSTEINE &amp; C</b> - 100 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		

**SUB-TOTAL OF COLUMN 8**

# Buyers Club Order Form

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No.		Retail Each	Member Each	Qty	Total
<b>G CONTINUED</b>					
00314	<b>L-GLUTATHIONE (MEGA)</b> - 250 mg, 60 caps Buy 4 bottles, price each	\$39.64 35.68	\$29.73 26.76		
01731	<b>GLYCEMICPRO™ TRANSLUCOSIDASE</b> - 60 veg. caps Buy 4 bottles, price each	54.00 50.00	40.50 37.50		
01669	<b>GLYCINE</b> - 1,000 mg, 100 veg. caps Buy 4 bottles, price each	12.00 10.80	9.00 8.10		
01091	<b>GRAPE EXTRACT w/RESVERATROL (WHOLE)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01411	<b>GRAPE SEED EXTRACT w/RESVERATROL &amp; PTEROSTILBENE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01604	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 200 mg, 90 veg. caps Buy 4 bottles, price each	25.00 22.00	18.75 16.50		
01620	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 400 mg, 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00953	<b>GREEN TEA EXTRACT (MEGA)</b> - lightly caffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
00954	<b>GREEN TEA EXTRACT (MEGA)</b> - decaffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
<b>H</b>					
01074	<b>5 HTP</b> - 100 mg, 60 caps	\$27.95	\$20.96		
01675	<b>HCA</b> - 90 veg. caps Buy 4 bottles, price each	18.00 15.50	13.50 11.63		
01393	<b>HEPATOPRO</b> - 900 mg, 60 softgels Buy 4 bottles, price each	50.00 46.00	37.50 34.50		
01435	<b>HOMOCYSTEINE RESIST</b> - 100 caps Buy 4 bottles, price each	24.00 21.60	18.00 16.20		
01527	<b>HUPERZINE A</b> - 200 mcg, 60 veg caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00661	<b>HYDRODERM®</b> - 1 oz Buy 2 bottles, price each	79.95 65.33	59.96 49.00		
<b>I</b>					
*01060	<b>i26® HYPERIMMUNE EGG</b> - 140 grams powder	\$54.99	\$46.75		
01704	<b>IMMUNE MODULATOR w/TINOFEND®</b> - 60 veg. caps Buy 4 bottles, price each	17.00 15.00	12.75 11.25		
00955	<b>IMMUNE PROTECT w/PARACTIN®</b> - 30 veg. caps Buy 4 bottles, price each	29.50 26.55	22.13 19.91		
01049	<b>INNERPOWER™</b> - 555 grams powder	42.00	31.50		
01674	<b>INOSITOL CAPSULES</b> - 1000 mg, 360 veg. caps Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
01292	<b>INTEGRA-LEAN® AFRICAN MANGO IRVINGIA</b> - 150 mg, 60 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01002	<b>IODORAL®</b> - 180 tabs	50.00	37.50		
01677	<b>IRON PROTEIN PLUS</b> - 300 mg, 100 veg. caps Buy 4 bottles, price each	28.00 26.00	21.00 19.50		
01492	<b>IRVINGIA w/PHASE 3™</b> - 120 veg. caps <b>CALORIE CONTROL COMPLEX (OPTIMIZED AFRICAN MANGO)</b> Buy 4 bottles, price each	56.00 48.00	42.00 36.00		

**SUB-TOTAL OF COLUMN 9**

No.		Retail Each	Member Each	Qty	Total
<b>J, K</b>					
00056	<b>JARRO-DOPHILUS EPS™</b> - 60 veg. caps	\$22.95	\$17.21		
01387	<b>JARRO-DOPHILUS ORAL PROBIOTIC GUM</b> - Pom-Berry flavor, 8 pieces	4.95	3.71		
01388	<b>JARRO-DOPHILUS ORAL PROBIOTIC LOZENGE</b> - Pom-Berry flavor, 8 pieces	4.95	3.71		
01724	<b>K w/ADVANCED K2 COMPLEX (SUPER)</b> - 90 softgels Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01600	<b>KRILL HEALTHY JOINT FORMULA</b> - 30 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01050	<b>(NKO) KRILL OIL PHOSPH OMEGA</b> - 60 softgels	33.95	25.46		
00316	<b>KYOLIC® GARLIC FORMULA 102</b> - 200 caps Buy 4 bottles, price each	26.45 23.00	19.84 17.25		
00214	<b>KYOLIC® GARLIC FORMULA 105</b> - 200 caps Buy 4 bottles, price each	27.45 25.00	20.59 18.75		
00789	<b>KYOLIC® RESERVE</b> - 600 mg, 120 caps Buy 4 bottles, price each	27.95 25.00	20.96 18.75		
<b>L</b>					
01681	<b>LACTOFERRIN (APOLACTOFERRIN) CAPS</b> - 60 caps Buy 4 bottles, price each	\$48.00 44.00	\$36.00 33.00		
00020	<b>LECITHIN</b> - 16 oz. granules Buy 4 jars, price each	15.00 12.50	11.25 9.38		
01755	<b>LIFE EXTENSION MIX™</b> - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01757	<b>LIFE EXTENSION MIX™ w/EXTRA NIACIN</b> - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01754	<b>LIFE EXTENSION MIX™</b> - 490 caps Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01756	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
01765	<b>LIFE EXTENSION MIX™</b> - 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01767	<b>LIFE EXTENSION MIX™ w/EXTRA NIACIN</b> 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01764	<b>LIFE EXTENSION MIX™</b> - 490 caps w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01766	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
00263	<b>LIFE FLORA™</b> - 300 mg, 120 caps Buy 4 bottles, price each	20.50 18.75	15.38 14.06		
01608	<b>LIVER EFFICIENCY FORMULA</b> - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01639	<b>5-LOX INHIBITOR w/APRESFLEX®</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01678	<b>L-LYSINE</b> - 620 mg, 100 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		

**SUB-TOTAL OF COLUMN 10**

No.		Retail Each	Member Each	Qty	Total
01470	<b>LURALEAN® CAPS SPECIAL PROPOLMANNAN</b> PARTICLE SIZE - 120 veg. caps Buy 4 bottles, price each	\$28.00 25.00	\$21.00 18.75		
00455	<b>LYCOPENE EXTRACT (MEGA)</b> - 15 mg, 90 softgels Buy 4 bottles, price each	35.00 30.00	26.25 22.50		
<b>M</b>					
01459	<b>MAGNESIUM CAPS</b> - 500 mg, 100 veg. caps Buy 4 bottles, price each	\$12.00 10.00	\$9.00 7.50		
01682	<b>MAGNESIUM CITRATE</b> - 160 mg, 100 veg. caps Buy 4 bottles, price each	9.00 7.50	6.75 5.63		
01668	<b>MELATONIN</b> - 300 mcg, 100 veg. caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		
01083	<b>MELATONIN</b> - 500 mcg, 200 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00329	<b>MELATONIN</b> - 1 mg, 60 caps Buy 4 bottles, price each	5.00 4.63	3.75 3.47		
00330	<b>MELATONIN</b> - 3 mg, 60 caps Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01786	<b>MELATONIN TIME RELEASE</b> - 3 mg, 60 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00331	<b>MELATONIN</b> - 10 mg, 60 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00332	<b>MELATONIN</b> - 3 mg, 60 veg. lozenges Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01787	<b>MELATONIN TIME RELEASE</b> - 300 mcg, 100 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01788	<b>MELATONIN TIME RELEASE</b> - 750 mcg, 60 veg. tablets Buy 4 bottles, price each	8.00 7.00	6.00 5.25		
01536	<b>METHYLCOBALAMIN</b> - 1 mg, 60 lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
01537	<b>METHYLCOBALAMIN</b> - 5 mg, 60 lozenges (vanilla) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 25.00 23.00	24.00 18.75 17.25		
00709	<b>MIGRA-EZE™ (BUTTERBUR)</b> - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		
01522	<b>MILK THISTLE (CERTIFIED EUROPEAN)</b> - 750 mg, 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
01517	<b>MILK THISTLE (CERTIFIED EUROPEAN)</b> - 120 veg. caps Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
01698	<b>MIRAFORTE w/STANDARDIZED LIGNANS (SUPER)</b> - 120 caps Buy 4 bottles, price each	62.00 56.00	46.50 42.00		
01769	<b>MITOCHONDRIAL BASICS w/BIOPQQ®</b> - 30 caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
01768	<b>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ®</b> - 120 caps Buy 4 bottles, price each	94.00 84.00	70.50 63.00		
00065	<b>MK-7</b> - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01279	<b>MOUTHWASH W/POMEGRANATE</b> - 16 oz Buy 4 bottles, price each	18.50 17.00	13.88 12.75		
00451	<b>MSM (METHYLSULFONYLMETHANE)</b> - 1000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		

**SUB-TOTAL OF COLUMN 11**

No.		Retail Each	Member Each	Qty	Total
<b>N</b>					
01534	<b>N-ACETYL-L-CYSTEINE</b> - 600 mg, 60 veg. caps Buy 4 bottles, price each	\$14.00 13.50	\$10.50 10.13		
00066	<b>NATTOKINASE</b> - 60 softgels	25.50	19.13		
00891	<b>NATURAL APPETITE CONTROL</b> - 90 softgels Buy 4 bottles, price each	28.00 25.20	21.00 18.90		
00984	<b>NATURAL BP MANAGEMENT</b> - 60 tablets Buy 4 bottles, price each	42.00 37.80	31.50 28.35		
00913	<b>NATURAL ESOPHAGUARD</b> - 10 softgels Buy 2 boxes, price each	19.95 19.00	14.96 14.25		
01692	<b>NATURAL ESTROGEN w/POMEGRANATE EXTRACT</b> - 60 caplets Buy 4 bottles, price each	38.00 33.00	28.50 24.75		
01221	<b>NATURAL FEMALE SUPPORT</b> - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	<b>NATURAL GLUCOSE ABSORPTION CONTROL</b> - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
00698	<b>NATURAL RELIEF 1222™</b> - 2 oz Buy 4 tubes, price each	28.00 25.00	21.00 18.75		
01626	<b>NATURAL SEX FOR WOMEN® 50+ (ADVANCED)</b> - 90 veg. caps Buy 4 bottles, price each	59.00 45.33	44.25 34.00		
01444	<b>NATURAL SLEEP®</b> - 60 veg. caps Buy 4 bottles, price each	13.00 10.00	9.75 7.50		
01551	<b>NATURAL SLEEP® w/ MELATONIN (ENHANCED)</b> - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	<b>NATURAL SLEEP® w/o MELATONIN (ENHANCED)</b> - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01445	<b>NATURAL SLEEP® MELATONIN</b> - 5 mg, 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00987	<b>NATURAL STRESS RELIEF</b> - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01603	<b>NEURO-MAG™ MAGNESIUM L-THREONATE</b> - 90 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01602	<b>NEURO-MAG™ L-THREONATE w/CALCIUM &amp; VITAMIN D</b> 225 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00373	<b>NO-FLUSH NIACIN</b> - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
<b>O</b>					
01623	<b>OLIVE LEAF VASCULAR SUPPORT</b> - 500 mg, 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01483	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	18.00 16.00 14.00	13.50 12.00 10.50		
01482	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 24.90	24.00 21.00 18.68		
01484	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> Buy 4 bottles, price each Buy 10 bottles, price each	34.00 31.00 28.00	25.50 23.25 21.00		

**SUB-TOTAL OF COLUMN 12**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>CONTINUED</b>					
01485	<b>OMEGA 3 EPA/DHA W/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 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	<b>OMEGA 3 EPA/DHA W/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> (SMALL SOFTGEL) - 240 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		
01632	<b>OMEGA-3 LEMON WHIRL</b> - 16 oz bottle	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01633	<b>OMEGA-3 TROPICAL WHIRL</b> - 16 oz bottle	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01701	<b>ONE-PER-DAY</b> - 60 tablets	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01328	<b>ONLY TRACE MINERALS</b> - 90 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
00915	<b>OPTIZINC®</b> - 30 mg, 90 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.00	3.75		
01070	<b>ORGANIC TOTAL BODY CLEANSE™</b> - 14-day supply	34.99	26.24		
<b>P</b>					
00073	<b>PANCREATIN</b> - 500 mg, 50 caps	\$13.22	\$9.92		
	Buy 4 bottles, price each	12.12	9.09		
01323	<b>PEAK ATP® WITH GLYCOCARN®</b> - 60 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	50.00	37.50		
00342	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 454 grams powder	99.95	74.96		
	Buy 4 jars, price each	95.70	71.78		
01080	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 270 veg. caps	69.95	52.46		
00673	<b>PGX™ PLUS MULBERRY (WELLBETX®)</b> -180 caps	34.95	26.21		
00865	<b>PHARMAGABA®</b> - 60 chewable tablets	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01676	<b>PHOSPHATIDYLSERINE CAPS</b> - 100 mg, 100 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
01390	<b>PHOSPHOMEGA®</b> - 60 softgels	39.95	26.96		
00561	<b>POLICOSANOL</b> - 10 mg, 60 tablets	24.00	18.00		
	Buy 6 bottles, price each	18.00	13.50		
01423	<b>POMEGRANATE™ (FULL-SPECTRUM)</b> - 30 softgels	24.00	18.00		
	Buy 4 bottles, price each	21.00	15.75		
00956	<b>POMEGRANATE EXTRACT</b> - 30 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.55	13.16		
00957	<b>POMEGRANATE JUICE CONCENTRATE</b> - 16 oz. liquid	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
00577	<b>POTASSIUM IODIDE</b> - 1 box, 14 tablets	6.95	5.21		
	Buy 4 boxes, price each	5.25	3.94		
01500	<b>PQQ CAPS W/BIO-PQQ®</b> - 10 mg, 30 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01647	<b>PQQ CAPS W/BIO-PQQ®</b> - 20 mg, 30 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00302	<b>PREGNENOLONE</b> - 50 mg, 100 caps	26.00	19.50		
	Buy 4 bottles, price each	22.00	16.50		
00700	<b>PREGNENOLONE</b> - 100 mg, 100 caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		

**SUB-TOTAL OF COLUMN 13**

AUGUST 2013

No.		Retail Each	Member Each	Qty	Total
***01373	<b>PRELOX® NATURAL SEX FOR MEN®</b> - 60 tablets	\$52.00	\$39.00		
	Buy 4 bottles, price each	48.00	36.00		
01329	<b>PROBIOTIC ALL-FLORA®</b> - 60 veg. caps	25.95	19.46		
00525	<b>PROBOOST THYMIC PROTEIN A™</b> - 4 mcg, 30 packets	59.95	44.96		
01441	<b>PROGESTACARE FOR WOMEN</b> - 4 oz cream	34.95	26.21		
01695	<b>PROSTATE FORMULA W/APRESFLEX® STAND. LIGNANS (ULTRA NAT)</b> 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	<b>PROTEIN-ISOLATE (WHEY) VANILLA</b> - 1 lb. powder	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01743	<b>PROTEIN-ISOLATE (WHEY) CHOCOLATE</b> - 1 lb. powder	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01508	<b>PTEROPURE™</b> - 50 mg Pterostilbene 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01587	<b>PURE PLANT PROTEIN</b> - Veg. Vanilla 454 grams powder	38.00	28.50		
	Buy 4 jars, price each	35.00	26.25		
01209	<b>PUMPKIN SEED EXTRACT (WATER-SOLUBLE)</b> - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01210	<b>PUMPKIN SEED EXT w/SOY ISOFLAVONES (WATER-SOLUBLE)</b> - 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01637	<b>PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT</b> -100 mg, 60 veg. caps	64.00	48.00		
	Buy 4 bottles, price each	60.00	45.00		
01217	<b>PYRIDOXAL 5'-PHOSPHATE</b> - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
<b>Q, R</b>					
01309	<b>QUERCETIN (OPTIMIZED)</b> - 250 mg, 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01030	<b>RED YEAST RICE</b> (Bluebonnet)- 600 mg, 60 veg. caps	16.95	13.56		
00979	<b>RED YEAST RICE</b> (Nature's Plus)- 600 mg, 60 veg. caps	23.95	17.96		
00060	<b>RED YEAST RICE EXTENDED RELEASE</b> - 30 veg. tablets	21.50	16.13		
00605	<b>REGIMINT</b> - 60 enteric-coated caps	19.95	14.96		
	Buy 4 bottles, price each	18.67	14.00		
01708	<b>REISHI EXTRACT MUSHROOM COMPLEX</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01448	<b>REJUVENEX® BODY LOTION</b> - 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	<b>REJUVENEX® FACTOR FIRING SERUM</b> - 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	<b>REJUVENEX® (ULTRA)</b> - 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	<b>REJUVENIGHT® (ULTRA)</b> - 2 oz	39.95	29.96		
	Buy 4 jars, price each	36.00	27.00		
01413	<b>RESVERATROL W/PTEROSTILBENE</b> - 20 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01410	<b>RESVERATROL W/PTEROSTILBENE</b> - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		

**SUB-TOTAL OF COLUMN 14**

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

No.		Retail Each	Member Each	Qty	Total
01430	<b>RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED)</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$46.00 41.33	\$34.50 31.00		
00889	<b>RHODIOLA EXTRACT</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	11.75 10.58	8.81 7.94		
00972	<b>(D) RIBOSE POWDER</b> - 150 grams Buy 4 jars, price each	27.50 24.75	20.63 18.56		
01473	<b>(D) RIBOSE TABLETS</b> - 100 veg. tabs Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01609	<b>RICH REWARDS® BREAKFAST GROUND COFFEE</b> - 12 oz. bag	13.00	9.75		
01729	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag Natural Vanilla	15.00	11.25		
01730	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag Natural Mocha	15.00	11.25		
01609	<b>RICH REWARDS® BREAKFAST GROUND COFFEE</b> - 12 oz. bag	13.00	9.75		
01610	<b>RICH REWARDS® DECAFFEINATED ROAST GROUND COFFEE</b> - 12 oz. bag	14.00	10.50		
01712	<b>RICH REWARDS™ BLACK BEAN VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01530	<b>RICH REWARDS™ CRUCIFEROUS VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01531	<b>RICH REWARDS™ (SPICY) CRUCIFEROUS VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01705	<b>RICH REWARDS™ LENTIL VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01208	<b>R-LIPOIC ACID (SUPER)</b> - 300 mg, 60 veg. caps Buy 4 bottles, price each	49.00 45.00	36.75 33.75		
00070	<b>RNA CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	17.95 16.16	13.46 12.12		
<b>S</b>					
01432	<b>SAFFRON w/SATIAREAL (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
00358	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 200 mg, 20 enteric coated tablets Buy 8 boxes, price each	16.00 14.00	12.00 10.50		
00453	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 200 mg, 50 enteric coated tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00557	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 400 mg, 20 enteric coated tablets Buy 6 boxes, price each	28.00 24.00	21.00 18.00		
01055	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 400 mg, 50 enteric coated tablets Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01543	<b>SEA-IODINE™</b> - 1000 mcg, 60 caps Buy 4 bottles, price each	8.00 7.20	6.00 5.40		
00046	<b>SELENIUM</b> - 2 oz dropper bottle Buy 4 bottles, price each	9.95 9.45	7.46 7.09		
01679	<b>SE-METHYL L-SELENOCYSTEINE</b> - 200 mcg, 100 veg. caps Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00318	<b>SERRAFLAZYME</b> - 100 tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00284	<b>SHARK LIVER OIL (NORWEGIAN)</b> - 1000 mg, 30 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01684	<b>SILYMARIN</b> - 100 mg, 50 veg. caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01596	<b>SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT®</b> - 30 veg. liquid caps Buy 4 bottles, price each	25.00 23.00	18.75 17.25		

**SUB-TOTAL OF COLUMN 15**

No.		Retail Each	Member Each	Qty	Total
00961	<b>SODZYME® w/GLISODIN® AND WOLFBERY</b> - 90 veg. caps Buy 4 bottles, price each	\$28.00 24.00	\$21.00 18.00		
00657	<b>SOLARSHIELD SUNGLASSES</b> - 1 pair smoke color Buy 2 pairs, price each	12.99 11.50	9.74 8.63		
00432	<b>STEVIA EXTRACT</b> - 100 packets, 1 gram each Buy 4 boxes, price each	9.95 9.00	7.46 6.75		
01396	<b>ST. JOHN'S WORT EXTRACT</b> - 300 mg, 60 veg. caps Buy 4 bottles, price each	10.98 10.00	8.24 7.50		
01476	<b>STRONTIUM</b> - 750 mg, 90 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00747	<b>SUNGLASSES (OVERCAST POLARIZED)</b> - gray color, large Buy 2 pairs, price each	27.00 21.00	20.25 15.75		
01649	<b>SUPER ABSORBABLE SOY ISOFLAVONES</b> - 60 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01408	<b>SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL</b> - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	28.00 26.00 24.00	21.00 19.50 18.00		
01407	<b>SUPER SAW PALMETTO W/BETA-SITOSTEROL</b> - 30 softgels Buy 12 bottles, price each	15.00 12.00	11.25 9.00		
01778	<b>SUPER SELENIUM COMPLEX</b> - 200 mcg, 100 veg. caps Buy 4 bottles, price each Buy 12 bottles, price each	14.00 12.00 11.00	10.50 9.00 8.25		
<b>T</b>					
01723	<b>TART CHERRY EXTRACT w/STANDARDIZED CHERRYPURE®</b> - 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
00199	<b>TAURINE</b> - 1000 mg, 50 caps Buy 4 bottles, price each	8.95 8.00	6.71 6.00		
00133	<b>TAURINE POWDER</b> - 300 grams Buy 4 bottles, price each	20.00 16.88	15.00 12.66		
01304	<b>THEAFLAVIN STANDARDIZED EXTRACT</b> - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01683	<b>(L) THEANINE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 20.50	18.00 15.38		
**01038	<b>THERALAC PROBIOTICS</b> - 30 caps	47.95	35.96		
00668	<b>THYROID FORMULA™ (METABOLIC ADVANTAGE)</b> - 100 caps	21.95	16.46		
00349	<b>TMG POWDER</b> - 50 grams Buy 4 bottles, price each	14.00 11.00	10.50 8.25		
01559	<b>TMG</b> - 500 mg, 60 veg. tablets Buy 4 boxes, price each	11.00 10.00	8.25 7.50		
00781	<b>TOCOTRIENOLS WITH SESAME LIGNANS</b> - 60 softgels Buy 4 bottles, price each	38.00 36.00	28.50 27.00		
01400	<b>TOCOTRIENOLS (SUPER-ABSORBABLE)</b> - 60 softgels Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
01278	<b>TOOTHPASTE</b> - 4 oz (Mint) Buy 4 tubes, price each	9.50 8.67	7.13 6.50		
01468	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT</b> - 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01469	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT w/RESVERATROL</b> - 60 veg. caps Buy 4 bottles, price each	32.00 29.60	24.00 22.20		
01386	<b>TRUFIBER®</b> - 180 grams	32.95	24.71		
01389	<b>TRUFLORA PROBIOTICS &amp; ENZYMES</b> - 32 veg. caps	42.95	32.21		
01722	<b>L-TRYPTOPHAN</b> - 500 mg, 90 veg. caps Buy 4 bottles, price each	33.00 30.00	24.75 22.50		

**SUB-TOTAL OF COLUMN 16**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>T CONTINUED</b>					
01721	<b>TRYPTOPHAN PLUS (OPTIMIZED)</b> - 90 veg. caps	\$32.00	\$24.00		
	Buy 4 bottles, price each	29.00	21.75		
01716	<b>TWO-PER-DAY</b> - 60 tablets	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01715	<b>TWO-PER-DAY</b> - 120 tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01714	<b>TWO-PER-DAY</b> - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00326	<b>L-TYROSINE</b> - 500 mg, 100 tablets	12.98	9.74		
	Buy 4 bottles, price each	11.81	8.86		
<b>V</b>					
00213	<b>VANADYL SULFATE</b> - 7.5 mg, 100 tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00408	<b>VENOTONE</b> - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	<b>VINPOCETINE</b> - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
01526	<b>VITAMIN B3 NIACIN</b> - 1,000 mg, 100 veg. caps	12.75	9.56		
	Buy 4 bottles, price each	12.00	9.00		
00372	<b>VITAMIN B3 NIACIN</b> - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	<b>VITAMIN B5</b> - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
01535	<b>VITAMIN B6</b> - 250 mg, 100 veg. caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	<b>VITAMIN B12</b> - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1000 mg, 60 tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1000 mg, 250 tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	<b>VITAMIN C (BUFFERED) POWDER</b> - 454.6 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
01732	<b>VITAMIN D3</b> - 2000 IU, 1 fl oz, Mint flavor	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	<b>VITAMIN D3</b> - 1000 IU, 90 softgels	7.00	5.25		
	Buy 4 bottles, price each	6.00	4.50		
01751	<b>VITAMIN D3</b> - 1000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	<b>VITAMIN D3</b> - 5000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	<b>VITAMIN D3</b> - 7000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01573	<b>VITAMIN D3 w/SEA-IODINE™</b> - 5000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
01572	<b>VITAMINS D AND K w/SEA-IODINE™</b> - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01763	<b>VITAMIN E (NATURAL)</b> - 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	<b>VITAMIN K2 (LOW-DOSE)</b> - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		

**SUB-TOTAL OF COLUMN 17**

No.		Retail Each	Member Each	Qty	Total
<b>Z</b>					
01686	<b>ZEAXANTHIN w/LUTEIN &amp; MESO-ZEAXANTHIN PLUS ASTAXANTHIN AND C3G (SUPER)</b> - 60 softgels	\$42.00	\$31.50		
	Buy 4 bottles, price each	38.00	28.50		
01685	<b>ZEAXANTHIN w/LUTEIN &amp; MESO-ZEAXANTHIN AND C3G (SUPER)</b> - 60 softgels	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
00061	<b>ZINC LOZENGES</b> - 75 lozenges	9.50	7.13		
	Buy 4 bottles, price each	6.75	5.06		
01051	<b>ZYFLAMEND® WHOLE BODY</b> - 120 softgels	60.95	45.71		

\* These products are not 25% off retail price.

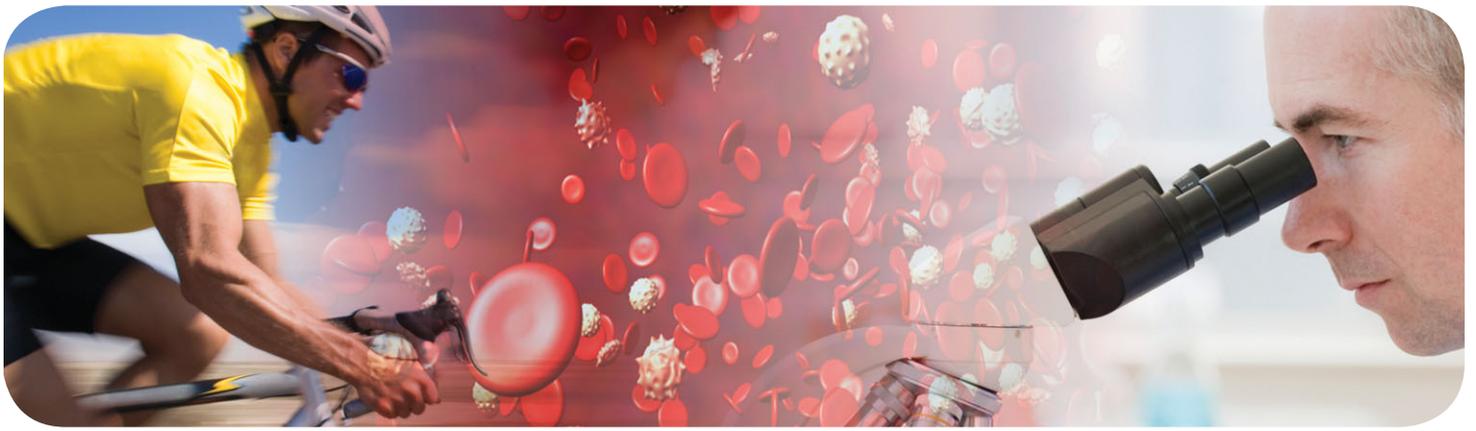
\*\* Not eligible for member discount or member renewal product credit.

\*\*\* Due to license restrictions, this product is not for sale to customers outside of the USA.

† Member pricing not valid on this item.

†† Due to license restrictions, this product is not for sale to Canada.

**SUB-TOTAL OF COLUMN 18**



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



**GIVE THE LIFE-ENHANCING BENEFITS OF LIFE EXTENSION® WITH A GIFT OF \$10, \$25, \$50 OR \$100**

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

## HOW TO JOIN THE LIFE EXTENSION FOUNDATION®

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

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

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

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

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

### Four Easy Ways to Join

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

## MEMBERSHIP APPLICATION

I want to contribute to your research efforts to extend the healthy human life span. Enclosed is my first year's membership donation of \$75 to join the most elite group of longevity enthusiasts in the world. (Canadians add \$7, all others outside the U.S. add \$35) Item code: MEMB1. Call for multiple year membership rates.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ ST \_\_\_\_\_ ZIP \_\_\_\_\_

Email \_\_\_\_\_ Phone \_\_\_\_\_

Check enclosed (payable to Life Extension Foundation®)

Charge my cc: \_\_\_\_\_

Card # \_\_\_\_\_ Exp. \_\_\_\_\_

### ORDER SUBTOTALS

SUB-TOTAL COLUMN 1	
SUB-TOTAL COLUMN 2	
SUB-TOTAL COLUMN 3	
SUB-TOTAL COLUMN 4	
SUB-TOTAL COLUMN 5	
SUB-TOTAL COLUMN 6	
SUB-TOTAL COLUMN 7	
SUB-TOTAL COLUMN 8	
SUB-TOTAL COLUMN 9	
SUB-TOTAL COLUMN 10	
SUB-TOTAL COLUMN 11	
SUB-TOTAL COLUMN 12	
SUB-TOTAL COLUMN 13	
SUB-TOTAL COLUMN 14	
SUB-TOTAL COLUMN 15	
SUB-TOTAL COLUMN 16	
SUB-TOTAL COLUMN 17	
SUB-TOTAL COLUMN 18	

### ORDER TOTALS

Sub-Total A (Sub-total of Columns 1 through 18)	
Postage And Handling (Any size order, continental U.S.)	<b>\$5.50</b>
C.O.D.s (Add \$7 for C.O.D. orders)	
Shipping	
<b>GRAND TOTAL</b> (Must be in U.S. dollars)	



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 P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198  
 Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050  
 Local Number: 954-766-8433

ORDER ONLINE AT: [www.LifeExtension.com](http://www.LifeExtension.com)

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MEMBER NO.

PRINT MEMBERSHIP NO. FOR MEMBER DISCOUNT

#### NOT A MEMBER? JOIN TODAY!

I want to join the Life Extension Foundation®.  
 Enclosed is \$75 for annual membership. (Canadians add \$7.00, all others outside the U.S. add \$35.00). Send me: *Disease Prevention & Treatment Protocol Book*

CHECK HERE FOR C.O.D. ORDERS

CHECK HERE FOR UPS BLUE LABEL (2ND DAY)

CHECK HERE FOR UPS RED LABEL (OVERNIGHT)

### BILL TO ADDRESS

NAME \_\_\_\_\_ E-MAIL \_\_\_\_\_

ADDRESS \_\_\_\_\_

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VISA/MASTERCARD/AMEX/DISCOVER # \_\_\_\_\_

EXP. DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_

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ADDRESS \_\_\_\_\_

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33860	<b>YOUNG FOR LIFE</b> • by Marilyn Diamond and Dr. Donald Schnell	2013	\$26.99	\$20.24		
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	Buy 4 books, price each			\$8.00		
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33854	<b>THE GREAT CHOLESTEROL MYTH</b> • by Jonny Bowden, PhD, CNS and Stephen Sinatra, MD	2012	\$19.99	\$14.99		
33852	<b>THE MAGIC OF CHOLESTEROL NUMBERS</b> • by Dr. Sergey Dzigan	2012	\$29.95	\$22.46		
33848	<b>YOUR BEST INVESTMENT SECRETS TO A HEALTHY BODY AND MIND</b> • by Edwin Lee, MD	2012	\$24.95	\$18.71		
33847	<b>THE FATIGUE SOLUTION</b> • by Dr. Eva Cwynar	2012	\$24.95	\$18.71		
33844	<b>ABUNDANCE: THE FUTURE IS BETTER THAN YOU THINK</b> • by Steven Kotler and Petere Diamandis	2012	\$26.99	\$20.24		
33843	<b>BOMBSHELL</b> • by Suzanne Somers	2012	\$26.00	\$19.50		
33845	<b>DRUG MUGGERS</b> • by R.Ph. Susy Cohen	2012	\$21.99	\$16.49		
33842	<b>HEART ATTACK PROOF</b> • by Michael Ozner, MD	2012	\$19.95	\$14.96		
33839	<b>THE GOLDEN RATIO LIFESTYLE DIET</b> • by Robert Friedman, MD, and Matthew Cross	2012	\$19.95	\$14.96		
33838	<b>YOUR GUIDE TO HEALTHY SKIN THE NATURAL WAY</b> • by Gary Goldfaden, MD	2012	\$26.00	\$15.00		
33837	<b>WHEAT BELLY</b> • by William Davis, MD	2011	\$25.99	\$19.49		
33833	<b>THE LIFE PLAN</b> • by Jeffrey S. Life, MD, PhD	2011	\$26.00	\$19.50		
33832	<b>YOUR BONES</b> • by Lara Pizzorno, MA, LMT	2011	\$12.00	\$9.00		
33829	<b>THE IMMORTALITY EDGE</b> • by Michael Fossel, MD, PhD, Greta Blackburn, David Woyrnarowski, MD	2011	\$25.95	\$18.17		
33824	<b>VITAMIN D SOLUTION</b> • by Michael F. Holick, PhD, MD	2010	\$25.95	\$18.17		
33822	<b>BREAKTHROUGH: EIGHT STEPS TO WELLNESS</b> • by Suzanne Somers (paperback)	2010	\$15.00	\$10.50		
33836	<b>WEIGHT LOSS GUIDE</b> • by Steven V. Joyal, MD and William Faloon (hardcover) (3rd Edition)	2010	\$29.95	\$8.99		
33816	<b>FDA: FAILURE, DECEPTION, ABUSE</b> • by Life Extension Foundation	2010	\$20.00	\$15.00		
33818	<b>STAY YOUNG &amp; SEXY WITH BIO-IDENTICAL HORMONE REPLACEMENT</b> • by Jonathan Wright, MD	2010	\$19.95	\$14.96		
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Sub-Total (U.S. Dollars)

Shipping only \$5.50 U.S. • \$17.50 Canada • \$12.50 Hawaii, Alaska, U.S. Virgin Islands, Puerto Rico • UK Flat rate \$25 USD

(Add \$7 for C.O.D. • Add \$16.00 for UPS overnight • Add \$7.00 for UPS 2nd day air • International air mail costs will be added.)

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**TOTAL**

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P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198

Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050 • Local Number: 954-766-8433

Other International Shipping Restrictions May Apply. Please visit

[www.lef.org/vitamins-supplements/shipping/shipping-information.htm](http://www.lef.org/vitamins-supplements/shipping/shipping-information.htm) for details.

**LIFE EXTENSION FOUNDATION® MEMBERS ONLY**

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PRINT MEMBERSHIP NO. FOR MEMBER DISCOUNT

**NOT A MEMBER? JOIN TODAY!**

I want to join the Life Extension Foundation®.

Enclosed is \$75 for annual membership. (Canadians add \$7.00, all others outside the U.S. add \$35.00). Send me: *Disease Prevention & Treatment Protocol Book*

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COUNTRY

PHONE

FAX

VISA/MASTERCARD/AMEX/DISCOVER #

EXP. DATE

SIGNATURE

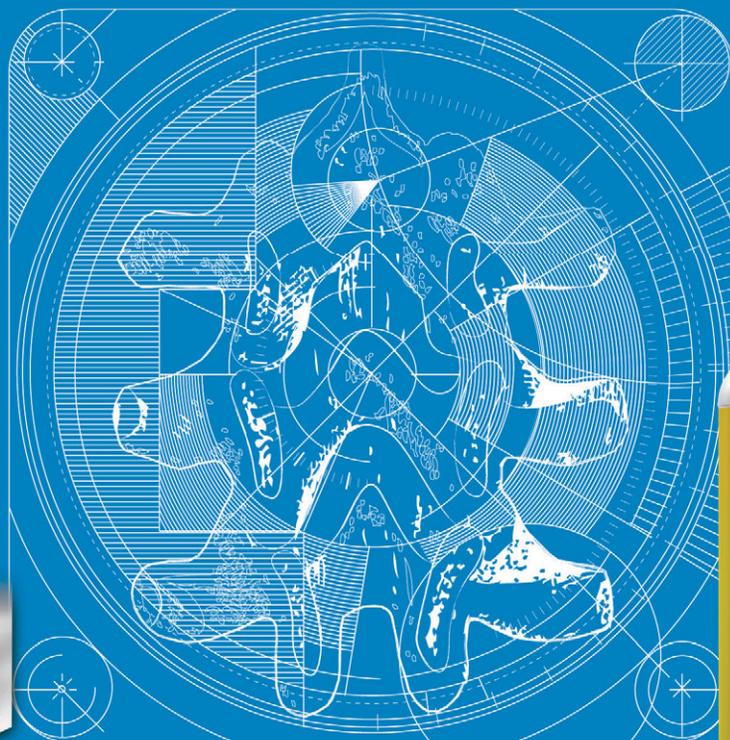
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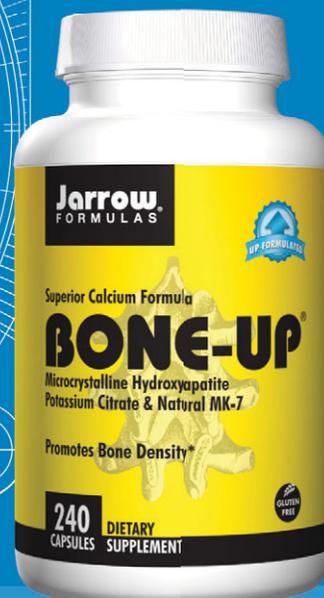
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# Better Bones by Design

2%-4% of your skeleton is "rebuilt" every year as calcium and minerals leave the bone and must be replaced.



— NOW WITH —  
**MORE**  
VITAMIN K<sub>2</sub>



## Jarrow Formulas® Presents . . . **A Complete Multi-Nutrient Bone Health System!**

**Bone-Up®** provides your body with much needed calcium as well as essential nutrients for building strong bones.\* It utilizes the finest source of calcium available: Australian/New Zealand bovine bone hydroxyapatite from chemical-free, range grazed calves less than two years old.

**Bone-Up®** is a clinically-validated formula and an effective addition to any bone health regimen.\* It features added vitamins and minerals that synergistically support healthy bone density and overall bone health\*:

- **Ossein Microcrystalline Hydroxyapatite (MCHA):** Promotes calcium balance.\*
- **Vitamin D<sub>3</sub>:** Converts to calcitriol to enhance calcium absorption.
- **MK-7:** The more bioavailable form of Vitamin K<sub>2</sub>, which is needed for building bone matrix and proper calcium distribution.\*
- **Boron:** A trace mineral important in calcium retention.\*
- **Manganese, Copper and Zinc:** Essential trace minerals involved in the formation of bone.\*

Jarrow Formulas® Bone-Up®, 240 capsules Item # 00313: \$28.95  
If a member buys four bottles, the price will be reduced to \$20.41 per bottle.  
To order, call (800)544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

[www.Jarrow.com](http://www.Jarrow.com)

**Jarrow**  
FORMULAS®

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

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RAISING THE STANDARD.

Theralac® and TruFlora® pack powerful help for digestive health.

# Powerful Pair.

## Theralac®

- + Bio-Replenishing® Action
- + Colonizes the intestinal lining in the large and small intestines
- + Five clinically proven probiotic strains
- + High Bifido bacteria count to help with colon health



## TruFlora®

- + Bio-Cleansing Action
- + Colonizes the contents of the G.I. Tract
- + Three probiotic strains and two enzymes
- + Contains enzymes that help digest problematic yeast cell walls

Both Theralac® and TruFlora® offer powerful probiotic action for total digestive balance. Because they differ, they can be used alternatively for maximum digestive biodiversity. Both are covered by four U.S. Patents that ensure delivery through harsh stomach acid and active prebiotic stimulation of the probiotics with Lactostim®, found only in Master Supplements products.

Call your *Life Extension®* advisor to learn more.

Call Life Extension to place your order today.

**1-800-544-4440**



Bio-Replenishing Probiotic

Bio-Cleansing Probiotic

Soluble Fiber with Enzymes

**Theralac®**  
30 capsules  
Item# 01038  
Retail: \$47.95

**TruFlora®**  
32 capsules  
Item# 01389  
Retail: \$42.95

**TruFiber®**  
6.2 OZ  
Item# 01386  
Retail: \$32.95

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# Discover the *force* of the Whole

## The Tonic Herbal with Abundant Health Benefits

### The *Force* of Whole Ginger

Ginger *Force*® from New Chapter® supports blood platelet health and cardiovascular function *in vitro*.\* Active ingredients support the growth of beneficial intestinal microorganisms, which are vital for intestinal health.\* In addition, the Ginger *Force* formula includes complementary supercritical Rosemary.

Ginger has been used for thousands of years in the most revered traditional herbal systems. In the Chinese herbal tradition, Ginger is known as *jiang*, meaning “defend.” In Ayurveda it is called *vishwabhesaj*, meaning “universal medicine.” Rosemary has traditional significance as well. Since the times of the ancient Egyptians and Greeks, Rosemary has symbolized love, loyalty, friendship, and remembrance.

### Full-Spectrum Extraction: Our Difference

Many companies may isolate elements from an herb, concentrate them, and add the label “whole herb.” New Chapter does not isolate out single ingredients or use synthesized additives. Instead, to provide each herb’s broad profile of naturally occurring beneficial compounds, New Chapter uses full-spectrum extraction methods, including traditional methods and supercritical CO<sub>2</sub> extraction.

### Choice Whole Herbs

New Chapter selects the finest and most pure whole herbs for our concentrated extracts. In using whole herbs, our *Force* products provide the whole spectrum of compounds found naturally in each herb, preserving innate nuances that may otherwise be lost or discarded. Our gentle, holistic extraction methods help capture and deliver the complexity of phytonutrients in an herb.

**Ginger *Force* 60 Softgels Item # 01228**  
**Retail Price: \$29.95 Member Price: \$22.46**  
 To order Ginger *Force*, call 1-800-544-4440  
 or visit [www.LifeExtension.com](http://www.LifeExtension.com)



 **NEWCHAPTER®**

Learn more at  
[newchapter.com](http://newchapter.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.

# Super Potent Multi-Nutrient Formula

## Compare CENTRUM® to TWO-PER-DAY:

Sample Ingredient Comparison	LIFE EXTENSION® TWO-PER-DAY	Centrum® Silver® Adults 50+
Vitamin C	500 mg	60 mg
Vitamin D	2,000 IU	500 IU
Vitamin B1	75 mg	1.5 mg
Vitamin B2	50 mg	1.7 mg
Vitamin B6	75 mg	3 mg
Vitamin B12 (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)
PABA	30 mg	(none)
Calcium	12 mg	220 mg
Alpha Lipoic Acid	125 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.

Compared to "one-a-day" products, **Life Extension® Two-Per-Day** contains up to **50 times more** potency! This **Two-Per-Day** formula is available in tablet or capsule form.

Commercial supplements often contain the cheapest form of nutrients that don't provide optimal benefits. For example, the 50 IU of synthetic vitamin E contained in **Centrum® Silver® Adults 50+** may provide relatively little vitamin E to the bloodstream 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**.



Item # 01714  
Capsules



Item # 01715  
Tablets

## 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 #01715) 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 #01714)

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**.



Ratings based on results of the 2012 ConsumerLab.com Survey of Supplement Users. More information at [www.consumerlab.com](http://www.consumerlab.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.

To order Life Extension Two-Per-Day Tablets or Two-Per-Day Capsules, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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

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.



## WHAT'S INSIDE

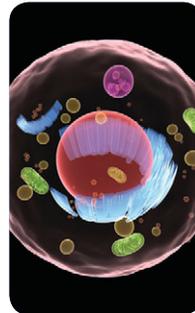
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# LifeExtension® Magazine



### 7 WHY MEDICAL ADVANCES AREN'T HAPPENING FASTER!

Lifesaving therapies are bogged down in a **regulatory quagmire** while aging Americans needlessly suffer and die. A real-world analogy shows how a rapid technological advance occurred when bureaucratic roadblocks were bypassed.



### 24 THREE-STEP STRATEGY TO REVERSE MITOCHONDRIAL AGING

Scientists have identified three compounds that reduce mitochondrial DNA damage and generate new mitochondria with the objective of promoting enhanced longevity.



### 38 CELLULAR REQUIREMENTS FOR VITAMIN D

With nearly every cell in your body containing receptors for vitamin D, it's no wonder that new studies continue to validate the ability of vitamin D to protect against diabetes, cancer, and heart disease.



### 52 SUMMER SANDERS BEATS VENOUS INSUFFICIENCY

Not just a cosmetic problem, varicose veins can be a sign of more serious health issues that can be avoided with early medical attention and prevention. Olympian Summer Sanders reveals her secrets to combatting varicose veins.



### 84 REJUVENATE THE SKIN AROUND YOUR EYES

In a remarkable clinical study, three unique ingredients *reduced* wrinkle depth around the eyes by **17%** in 28 days—equaling a skin rejuvenation effect of **6 years** in just **4 weeks!**



### 70 MEDIA BIAS IN REPORTING CARNITINE'S BENEFITS

A study at the Mayo Clinic found that carnitine supplementation resulted in a **27% reduction** in all-cause mortality, yet recent media headlines claim that L-carnitine is detrimental to vascular health! Read **Life Extension's** scathing rebuttal.