

HOW PROSTATE CANCER PATIENTS CAN LIVE LONGER

# LifeExtension<sup>®</sup>

LifeExtension.com

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September 2015

## Taurine Grows New Brain Cells

Boost Your  
Endothelial  
Nitric Oxide

Reversing  
Acute Stroke

Immune  
Enhancing  
Impact Of  
Fucoidan

**PLUS—**

**Metformin Reduces Glaucoma Risk**  
**Major Advance In Glioblastoma Treatment**  
**Novel Alternative Breast Cancer Therapy**



# PQQ Promotes Formation of New Mitochondria

## Critical Importance of Mitochondria

**Mitochondria** provide the power your body requires for a healthy life span. As mitochondria levels decline, cells lose their ability to sustain function and support life processes.<sup>1-7</sup>

**PQQ** is a natural compound that uniquely supports **mitochondrial biogenesis**—the generation of **new mitochondria** in aging cells.<sup>8</sup> **PQQ** stands for *pyrroloquinoline quinone* and is available as a standalone dietary supplement as well as in combination with ubiquinol **CoQ10** and **Mitochondrial Energy Optimizer**.

**PQQ** protects and augments delicate mitochondrial structures to promote *youthful* cellular function.

## Vital Protection for the Aging Heart and Brain

A growing body of research indicates that PQQ's unique nutritional profile supports **heart** health and **cognitive** function—alone and in combination with CoQ10.<sup>9,10</sup> This comes as no surprise, given how much energy these vital organs need.

When taken in combination with **CoQ10**, just **20 mg per day** of **PQQ** has been shown to promote **memory, attention, and cognition** in maturing individuals.<sup>11</sup>

## A Potent Weapon in the Battle Against Aging

The recommended daily dose for **PQQ** is **20 mg**.

Those taking **Mitochondrial Energy Optimizer**, **Mitochondrial Basics**, or **Super Ubiquinol with PQQ** may only require an additional **10 mg** of **PQQ** since these formulas already provide **10 mg** of **PQQ**.

### Non-GMO

**BioPQQ®** is a registered trademark of MGC (Japan).

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### PQQ Caps with BioPQQ®

Item# 01500 • 10 mg vegetarian capsules

	Retail Price	Member Price
1 bottle	\$24	<b>\$18</b>
4 bottles	\$18 each	<b>\$13.50 each</b>



### PQQ Caps with BioPQQ®

Item# 01647 • 20 mg vegetarian capsules

	Retail Price	Member Price
1 bottle	\$40	<b>\$30</b>
4 bottles	\$32 each	<b>\$24 each</b>



To order **PQQ Caps with BioPQQ®** standalone or any other PQQ-containing formulas call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

### CoQ10 and PQQ in One Capsule

There is a version of **Super Ubiquinol CoQ10** that contains **10 mg** of PQQ in each **100 mg** ubiquinol capsule. This formula also contains **shilajit**, which has been shown to double levels of coenzyme Q10 in mitochondria.

The retail price for 30 softgel caps is \$54. If a member buys four, then price is reduced to **\$33** each. When 10 bottles are bought, the price goes down to **\$30** per bottle.

Non-GMO



REPORTS



**38 AN OVERLOOKED FACTOR BEHIND CARDIOVASCULAR DISEASE**

Mainstream medicine overlooks the critical role the **endothelium** plays in maintaining vascular health. With age, nitric oxide production declines, resulting in **endothelial dysfunction**. Nondrug methods have been identified to boost nitric oxide to help restore function to aging arteries.



**50 JAPANESE DIETARY FACTOR BOOSTS IMMUNITY**

The Japanese are among the world's longest-lived people. This may in part be due to their ingestion of compounds found in brown seaweed. New research reveals how these compounds rejuvenate immune function.



**62 ADVANCES IN GLIOBLASTOMA TREATMENT**

Each month, 1,000 Americans die from glioblastoma with survival averaging only 15 months from diagnosis. In 2013, Life Extension<sup>®</sup> reported on the use of the drug valganciclovir, which extended survival to over four years in some studies. Clinical trials are now underway at Duke University on a promising, re-engineered polio virus therapy that may be curative.



**64 TREATMENT ALTERNATIVE FOR BREAST CANCER**

Conventional treatment of breast cancer involves risky side effects inflicted by surgery, radiation, chemo, and hormone therapies. A new outpatient therapy provides a nontoxic alternative with significant advantages.



**72 SCIENTISTS CREATE FIRST TRANSPLANTABLE ORGAN**

The thymus gland helps regulate our immune system. An international team of scientists has created a fully functioning **thymus gland** in the laboratory and transplanted it into a mouse.



**78 INTERNATIONAL STROKE CONFERENCE REPORT**

While stroke death rates have declined since 1990, stroke-related disability has increased 40%. More than one-third of those who have a stroke after age 80 become demented. At the recent stroke conference, scientists reported on new findings related to preventing and treating stroke including brain microbleeds, carotid plaque removal, and migraine-stroke connections.



**88 LISTING OF COMPREHENSIVE STROKE CENTERS**

Life Extension<sup>®</sup> has compiled a listing of comprehensive stroke centers that currently provide rapid-response treatment of acute stroke using intra-arterial thrombectomy/tPA (endovascular clot retrieval therapy).



26 ON THE COVER

**TAURINE REGENERATES  
AGING BRAINS**

Cutting-edge research has shown that brain cells can regenerate. Recent studies show that the amino acid **taurine** triggers new brain cells to grow in the area of the brain associated with memory. This can lead to improved cognition and recall for the aging brain.

DEPARTMENTS



**7 AS WE SEE IT: REVERSING ACUTE ISCHEMIC STROKE**

Stroke is a leading cause of long-term disability in the United States and the fifth-leading cause of death. Many strokes can be reversed if competent arterial intervention is timely delivered. Emergency response personnel are dropping the ball when it comes to implementing lifesaving procedures to remove blood clots before permanent brain damage occurs. Read how hundreds of thousands of stroke-induced catastrophes can be prevented each year.

**21 IN THE NEWS: IMPORTANT UPDATE FOR PROSTATE CANCER PATIENTS**

Metformin reduces glaucoma risk; green tea lowers prostate cancer risk; low magnesium reduces stroke risk; vitamin D is protective against lung cancer; vitamin E maintains muscles; coffee lowers mortality; and more.

**97 WELLNESS PROFILE**

A trailblazer in many aspects of her life, Sedell Rand has also been at the forefront of life extension. At age 94, Rand continues to run her own business, work out with a trainer, and enjoy the best years of her life.





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**LIFE EXTENSION (ISSN 1524-198X) Vol. 21, No.9 ©2015** is published monthly except bi-monthly in April by LE Publications, Inc. at 3600 West Commercial Blvd., Fort Lauderdale, FL 33309-3338. **LE Publications, Inc. All rights reserved.** Published 13 times a year. Subscription rate: \$40 per year in the United States. US \$47 in Canada. US \$60 in other countries. Subscription included as part of Life Extension Foundation membership. Mail subscriptions or address changes to: LE Publications, Inc., P.O. Box 407198, Fort Lauderdale, FL 33340-7198, USA. Or phone us toll-free at: 1-800-841-5433. Canada Subscriptions: Publications mail agreement number 40028967. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B4R6. You will be sent your first issue within six weeks after LE Publications, Inc. receives your subscription fee. Periodicals Postage paid at Fort Lauderdale, FL and at additional mailing offices. **POSTMASTER:** Send address changes to Life Extension, P.O. Box 407198, Ft. Lauderdale, Florida 33340-7198, USA. Printed in USA. The articles in this magazine are intended for informational purposes only. They are not intended to replace the attention or advice of a physician or other health-care professional. Anyone who wishes to embark on any dietary, drug, exercise, or other lifestyle change intended to prevent or treat a specific disease or condition should first consult with and seek clearance from a qualified health-care professional. **LEGAL NOTICE:** Health claims contained in articles and advertisements in this publication have not been approved by the FDA with the exception of FDA approved qualified health claims for calcium, antioxidant vitamins, folic acid and EPA and DHA omega-3 fatty acids, and selenium as noted where applicable. Life Extension<sup>®</sup> does not endorse any of the businesses or the products and/or services that may appear in advertisements for non-Life Extension branded products or services contained in Life Extension magazine<sup>®</sup> except to state that they are advertisers who may have paid Life Extension for placement of an advertisement in this publication. Life Extension disclaims any and all responsibilities or warranties as to the accuracy of information contained in advertisements for non-Life Extension branded products or services. For Canadian customers send change of address information and blocks of undeliverable copies to P.O. Box 1051, Fort Erie, ON L2A 6C7.

Support Healthy Metabolic Factors

# Omega-7

## With Highly Purified Provinal® Fish Oil

As a Life Extension® member, you most likely take an **omega-3** supplement. Scientists are increasingly excited about the newly discovered effects of **another** family of beneficial fats—**omega-7 fatty acids**.

Omega-7 palmitoleic acid powerfully complements omega-3 fatty acids with cellular-signaling properties that support healthy metabolic factors associated with:

- Superior cardiovascular health<sup>1,2</sup>
- A healthy inflammatory response<sup>1,3,4</sup>
- Optimum normal metabolism of glucose and insulin<sup>1,5,6</sup>
- Beneficial management of hunger and satiety<sup>7,8</sup>

Scientific studies show that palmitoleic acid promotes healthy levels of **triglycerides, total cholesterol, LDL,** and **HDL** for those already in normal range—after just one month of supplementation at **210 mg**.<sup>9</sup>

Further studies have found within normal range, palmitoleic acid can help balance **C-reactive protein** levels,<sup>10</sup> optimize insulin sensitivity,<sup>1,10,11</sup> and regulate hunger-promoting gastric hormones.<sup>7,8</sup>

**Life Extension®**'s omega-7 supplement contains **Provinal®**—a highly refined anchovy and/or menhaden oil that is **non-GMO**. Conventional processing methods result in products with only **25%** palmitoleic acid. **Life Extension®**'s **Provinal® Purified Omega-7** is concentrated to **50%** palmitoleic acid.



### Provinal® Purified Omega-7

Item #01812 • 30 softgels

	Retail Price	Member Price
1 bottle	\$27	<b>\$20.25</b>
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To order **Provinal® Purified Omega-7**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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# LifeExtension<sup>®</sup>

Magazine

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**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.



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**Xiaoxi Wei, PhD**, is a chemist expert in supramolecular assembly and development of synthetic transmembrane nanopores with distinguished selectivity via biomimetic nanoscience. She has expertise in ion channel function and characterization. She founded X-Therma Inc., a company developing a radical new highway towards non-toxic, hyper-effective antifreeze agents to fight unwanted ice formation in regenerative medicine and reduce mechanical icing.

# Advanced Defense Against Cellular Aging

# NAD+ Cell Regenerator

If you are experiencing fatigue and lack of motivation, it may be due to the age-related decline in **NAD+** levels<sup>1</sup> and subsequent impairment of healthy cellular metabolism.<sup>2</sup>

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

## How To Boost NAD+ Levels Within Your Cells

Newly patented **nicotinamide riboside** increases cellular levels of **NAD+** in the body.<sup>7,8</sup>

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

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

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

## Multiple Benefits Of Increasing NAD+ Cellular Levels

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

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

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

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

**NIAGEN® Nicotinamide Riboside 100 mg**

## NAD+ Cell Regenerator™

Item #01904 • 30 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$34	<b>\$25.50</b>
4 bottles	\$26 each	<b>\$19.50 each</b>

Non-GMO



To order **NAD+ Cell Regenerator**™,  
call **1-800-544-4440**  
or visit **www.LifeExtension.com**

# Reversing Acute Ischemic Stroke



BY WILLIAM FALOON

More than **2,000** Americans suffer a **stroke** on an average day.<sup>1</sup> Some will recover with minor outward effects, while others who survive endure paralysis and lifelong nursing home confinement.

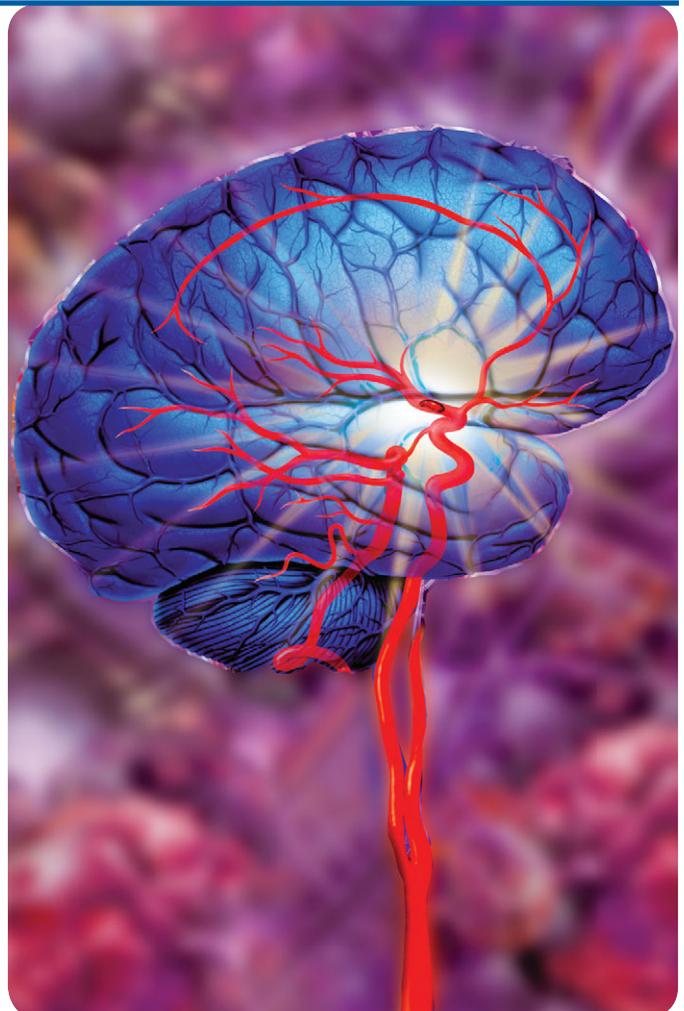
Most strokes happen when a blood clot blocks an artery that feeds a portion of the brain.<sup>2</sup> As neurons die from oxygen starvation, the result too often is paralysis, blindness, and cognitive dysfunction.<sup>3</sup>

Stroke is a leading cause of long-term disability in the United States. It's also the fifth-leading cause of death.<sup>4,5</sup>

The tragedy is that many **strokes** can be reversed if competent arterial intervention is timely delivered.<sup>6</sup>

Emergency response personnel are dropping the ball when it comes to implementing common-sense procedures to remove blood clots before permanent brain damage occurs.

This article reveals how hundreds of thousands of stroke-induced catastrophes can be **prevented** each year and what you should do if a stroke symptom ever manifests.



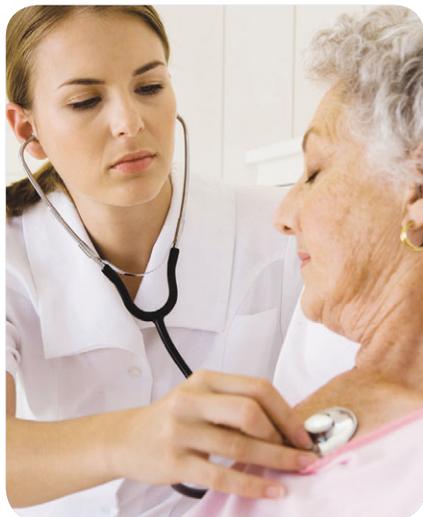
Horrific consequences occur when scientific advances are delayed from entering everyday medical practice.

The term “**ischemia**” means insufficient blood flow to a body part. This article addresses **acute ischemia** to the brain, which is commonly referred to as a **stroke**.<sup>7</sup>

In the treatment of acute **ischemic stroke**, significant advances are being made in the re-opening of blocked cerebral arteries. These lifesaving procedures enable blood flow to be restored before permanent **brain damage** is inflicted.<sup>8,9</sup>

The problem is that not enough emergency response personnel are trained to properly utilize these brain-saving techniques. The result is nursing homes that are filled with permanently paralyzed stroke victims whose conditions were reversible *after* they entered the hospital emergency room—if only appropriate procedures were administered.

The economic cost of not prioritizing implementation of even basic cerebral recanalization (re-opening) techniques is staggering. The human toll of needless paralysis, dementia, and death is beyond civil description in the English nomenclature.



Despite a preponderance of favorable data, there is still debate amongst clinicians as to when to employ advanced techniques in attempting to reverse acute ischemic stroke.

## How Larry King Saved Millions Of Lives

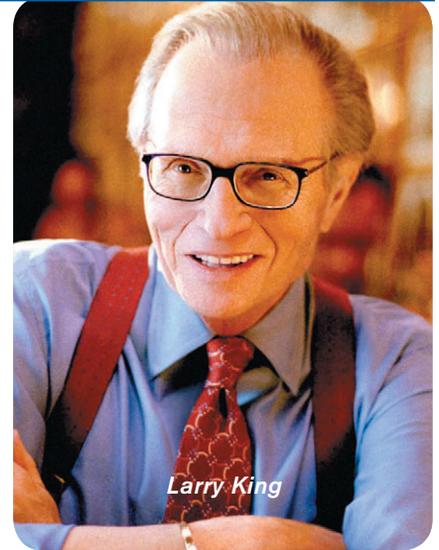
Talk show host **Larry King** is a nonstop workaholic. For most of his life, he smoked three packs of cigarettes a day, ate anything and everything fried, and piled on the desserts. All of this was combined with no exercise and a high level of job-related stress.

In **February 1987**, as pain ripped through his shoulder and stomach, Larry King headed to the hospital emergency room. It was clear to the staff at **George Washington University Hospital** that Larry was in the midst of a severe **heart attack**.<sup>10</sup>

In order to save his life, the doctors decided to try the then-experimental clot-busting drug called **tPA** (tissue plasminogen activator).

In early 1987, **tPA** had not yet been approved by the FDA.<sup>11</sup> Before administering **tPA** to open Larry’s blocked coronary arteries, the doctors placed a clipboard with a release form in front of Larry so he could sign away any liability. Fortunately, he was at one of the few hospitals at the time who were “allowed” to provide this clot-dissolving drug to consenting patients.

**Larry King** was so impressed by how quickly his crushing pain was alleviated by **tPA** that he spearheaded a campaign attacking the **FDA** for not approving widespread use of this drug. The FDA was delaying approval of **tPA** because the agency wanted proof that **tPA** benefited heart attack victims in addition to acutely saving lives.<sup>12</sup>



Back in the mid-1980s, **The Wall Street Journal** and **Life Extension Foundation** were challenging the FDA’s delay of **tPA**. The agency’s reason for not approving **tPA** is that they did not know if it would prolong the life span of acute **heart attack** patients who otherwise had only minutes to live.

Larry King tilted the public against the FDA and the merciful result was that **tPA** gained official approval to treat acute heart attack in **November 1987**—nine months after it saved Larry King’s life.<sup>13</sup>

Two years later, the FDA conceded that **tPA** indeed improved survival in heart attack victims, which had been the agency’s basis for *delaying* initial approval of the drug.<sup>14</sup> It was not until **1996** that **tPA** was approved to treat acute ischemic **stroke**.<sup>11</sup>

Here we are in year **2015**, and controversy continues regarding the best protocols to treat acute stroke with clot-dissolving drugs like **tPA** and/or mechanical recanalization techniques like cerebral artery stenting.

What I find remarkable, however, was the impact that one celebrity activist such as **Larry King** had in breaking down bureaucratic barriers that had cost so many human lives.

## Why Stroke Treatment Is Challenging

Acute myocardial infarction (heart attack) is relatively easy to diagnose. The heart muscle can also withstand oxygen deprivation far longer than the brain, where neurons die within minutes of blood flow cessation.<sup>7</sup> These and other factors make using clot-dissolving drugs like **tPA** in **heart attack** patients easier than in those stricken by **stroke**.

A **stroke** can be either **ischemic** (blockage) or **hemorrhagic** (bleeding). A CT scan or MRI of

the brain must be done quickly at a hospital's emergency department to diagnose what kind of stroke is occurring (about **85%** of strokes are ischemic).<sup>15,16</sup>

Based on brain imaging results, a quick decision must be made whether to implement a clot-dissolving drug and/or utilize intracerebral arterial stenting to reverse the blockage causing an ischemic stroke.

The FDA and most medical authorities claim that clot-dissolving therapy must be initiated within **3.0 to 4.5 hours** from initial onset of symptoms for the benefits to

outweigh the side-effect risks (such as cerebral bleeding).<sup>17</sup> New studies indicate that advanced clot-removing therapies are efficacious for a longer period after initial stroke symptoms present.<sup>18</sup>

For example, technologies have now progressed to a level where a catheter can be inserted into a major artery and threaded directly into the brain's vasculature. This enables the mechanical removal of a blood clot blocking an artery. The procedure is called a **thrombectomy**.<sup>19</sup>

**Thrombectomy** techniques have advanced to the point where a

## Stroke Treatment Breakthroughs

As I was writing this article, new findings were released documenting how many stroke victims could be saved if **intra-arterial recanalization** procedures were more widely used. Here are the highlights from these clinical trials:

- In patients receiving intra-arterial **thrombectomy/tPA** within **4.5 hours** of stroke symptom manifestation, a median of **100%** showed brain reperfusion at 24 hours compared to **37%** receiving standard intravenous tPA. The clinical result measured in **functional independence** was **71%** in the **thrombectomy/tPA** group versus **40%** in the standard tPA group.<sup>25</sup>
- Another clinical study showed that as late as **12 hours** after stroke symptoms appeared, a significant improvement in functional outcome was observed in the **thrombectomy/tPA** group compared to the standard-of-care group (usually tPA alone). This trial also showed that mortality (death) in the **thrombectomy/tPA** group after 90 days was cut almost in half (**10.4%** versus **19.0%**,  $p=0.04$ ).<sup>24</sup>
- In a third study released in early **2015**, **60.2%** of stroke victims showed a good functional outcome in the **thrombectomy/tPA** group compared to **35.5%** receiving intravenous tPA alone. (Note that poor "functional outcomes" often mean lifelong disability and loss of independence.)<sup>26</sup>

These remarkable findings, which help corroborate a large **2014** clinical study, provide a clear validation to treat ischemic stroke patients as late as **12 hours** after symptoms manifest with **intra-arterial tPA/clot-retriever** procedures.<sup>21</sup>

I encourage every member to call their local hospitals now to identify which are "**comprehensive stroke centers**" with trained medical staff on the use of **intra-arterial tPA/advanced stent/clot-retriever** procedures. Every minute of delay reduces one's odds of reversing an acute ischemic **stroke**. The article on page 88 of this issue provides a listing of **comprehensive stroke centers** that **Life Extension** has identified in the United States.



trained physician utilizing a retrievable stent can re-open a blocked cerebral artery mechanically when a clot-dissolving therapy using a tPA drug is not working.<sup>20</sup>

The challenge in treating **ischemic stroke** is that there are many factors that dictate the risk-to-reward ratio of tPA administration and/or thrombectomy for individual stroke patients. This has caused clot-removing therapies to be underutilized by emergency physicians, with the tragic result being needless paralysis and death.

### *Narrow Window Of Therapeutic Opportunity*

Brain cells quickly become impaired and die when oxygen-rich blood flow is interrupted. Even a **15-minute delay** in initiating **clot-removing** therapy reduces the chances that a patient will avoid a stroke-induced disability.<sup>21</sup>

A consensus today is that in most cases, clot-removing therapy in ischemic stroke patients should commence within **one hour** of arrival in a hospital's emergency room.<sup>22</sup>

With properly trained staff, initiation of tPA within **one hour** is feasible, yet a **2009** study found that "door-to-needle" for tPA treatment within **one hour** was occurring in only **29%** of cases. This was an improvement compared to **19%** in year **2003**.<sup>23</sup>

As you might expect, hospitals treating patients in greater volume are better at meeting the **one-hour** treatment initiation objective with **tPA** compared to hospitals treating fewer stroke patients. Patients also have a higher probability of receiving timely tPA treatment if they are younger, male, of white race, had no prior stroke, or if they arrive by ambulance.<sup>23</sup>



When stroke symptoms initially develop, the patient or a family member is sometimes able to drive to a hospital emergency room. The downside to this is less priority given by the ER staff and the risk that tPA therapy will be delayed.

To clarify this critical point, the therapeutic window of opportunity with tPA drug therapy and/or surgical stenting is time sensitive. The initial protocol was that tPA had to be initiated within **three hours** of the onset of the first stroke symptom. This was later expanded to **4.5 hours** after onset of first indication of ischemic stroke. More recent studies suggest that more advanced clot-removing therapies may be used up to **12 hours** after first onset of stroke symptoms.<sup>24</sup>

The reason it is so critical for emergency physicians to initiate **clot-removing** therapy within **one hour** is that there is often a significant delay between the patient realizing they are having a stroke and making it into the hospital.

### **Taking Initiatives To Reduce Stroke Risk**

Circulatory deficits are a leading cause of disability and mortality in aging humans.<sup>38,39</sup>

Conventional medicine views disorders related to blood flow impairment (stroke, heart attack, kidney failure) as inevitable consequences of aging.<sup>40</sup>

Yet a search on the **National Library of Medicine** data base entering the term "**endothelial dysfunction**" reveals over **64,000** published articles. Many of these peer-reviewed scientific findings describe how to **prevent** or **reverse** vascular disorders by making healthy lifestyle choices that most **Life Extension**<sup>®</sup> members have followed for many decades.<sup>41</sup>

The sidebar on page 12 lists the most common symptoms of stroke. If any of these symptoms develop in you, don't hesitate to call an **ambulance** to be transported to a hospital for immediate evaluation. It could mean the difference in you quickly returning to a normal life or permanent confinement to a nursing home or cemetery.

I suspect most **Life Extension**<sup>®</sup> members detest going to a hospital, but when it comes to symptoms of a stroke (or heart attack), any delay can mean permanent institutional confinement.

### *Why Clot-Removing Therapies Are Underutilized*

Despite stroke being the fifth-leading cause of death and a leading cause of disability in the United States, less than **7%** of stroke

survivors (as of year 2010) receive tissue plasminogen activator (tPA) as initial treatment.<sup>28</sup>

A review of two studies, one that examined 45 published articles and one that examined 54 published articles, revealed common barriers to greater tPA use in both pre-hospital and in-hospital settings.<sup>29,30</sup>

Pre-hospital delays were related to trying to contact primary care physicians instead of immediately rushing to the emergency room, the mode of arrival to the hospital, and patient's lack of knowledge regarding stroke symptoms.<sup>29,30</sup>

The causes of in-hospital delays included non-stroke center status, lack of training of emergency

department, delays in CT (computed tomography) scans, and poor understanding regarding priority of stroke treatment.<sup>29,30</sup>

The major issues behind the underutilization of tPA for acute stroke is lack of hospital readiness/preparation, inadequate staff training, and failure to rapidly administer tPA. Patients' lack of awareness of stroke symptoms is another critical factor that precludes more stroke victims from benefiting from clot-removal therapies.

As a result of these and other factors, some clinicians question the efficacy of tPA and other brain clot-removing procedures. Interpreting sometimes flawed and contradictory clinical studies contributes to confusion and delay in administering tPA in the emergency room setting.

A 2011 study found only 1 to 3% of ischemic stroke patients in community settings receive clot-dissolving therapy.<sup>31</sup> While some of these stroke victims were ineligible, others were tPA candidates that were denied for reasons that should not be permitted to continue.

### The Grim Statistics

Stroke is the fifth-leading cause of death in the US, and also is a major cause of disability and loss of independence and quality of life.<sup>4,5</sup>

Up to **40%** of strokes can be fatal. Prompt treatment can significantly reduce the risk of disability and death.<sup>42</sup>

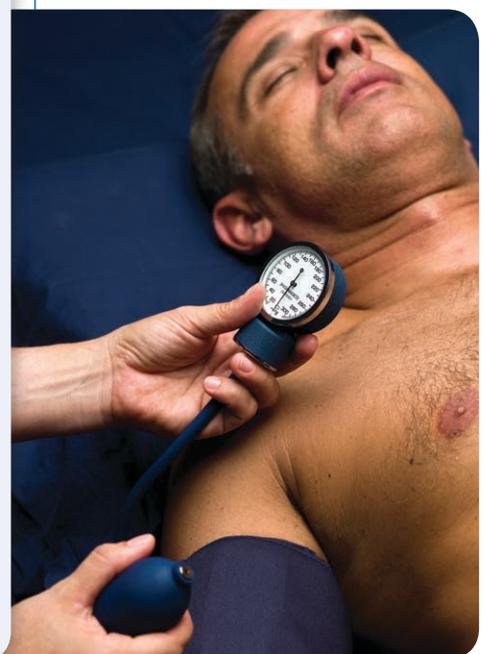
Here are some statistics:<sup>33</sup>

- Approximately 795,000 people suffer a stroke each year. Most, about 600,000 of these, are first attacks, while 185,000 are recurrent attacks.
- Stroke risk more than doubles each decade after age 55. Almost three-fourths of all stroke victims are over age 65.
- However, strokes can and do occur at any age. Almost a quarter of all strokes occur in those under the age of 65.
- African-Americans have a higher stroke death rate than whites, even at a younger age.
- Every 40 seconds on average, someone in the United States suffers a stroke.
- In 2005, stroke mortality was 137,000.
- Current smokers have almost double the risk of nonsmokers of ischemic stroke after adjustment for other risk factors.
- Atrial fibrillation (AF) is an independent risk factor for stroke, increasing risk about **5-fold**.
- The top risk factor for stroke is high blood pressure.

Paralysis or the inability of a muscle to move is one of the most common disabilities resulting from stroke. Among people who survive a stroke, as many as nine out of 10 have some degree of paralysis immediately afterwards.<sup>44</sup>

While mainstream medicine has identified many of the risk factors for stroke, they too often omit other documented risk factors of stroke such as elevated blood levels of **homocysteine**,<sup>35,36,44,45</sup> **C-reactive protein**,<sup>46-49</sup> **fibrinogen**,<sup>49-53</sup> **LDL**,<sup>54-57</sup> and **hormone** imbalances.<sup>58-60</sup>

Annual blood testing, along with regular monitoring of blood pressure, are critical elements of a **stroke prevention program**.



## A Growing Consensus In Favor Of tPA

A study published in **2012** on the use of tPA in the treatment of acute stroke found that:<sup>32</sup>

*“tPA is an effective treatment for stroke when given in prepared stroke centers; emergency physicians and hospitals treating stroke patients with tPA need to have the necessary resources in place and a specific plan for timely care of patients with acute stroke.”*

This study found a significant reduction in stroke-induced disability was achieved despite inclusion of patients treated with tPA after 4.5 hours. It also found that the improper use of tPA (such as administering it to patients with hemorrhagic stroke) skewed results

in a way that could be interpreted as finding no overall benefit to tPA.<sup>31</sup>

The study concluded that tPA has demonstrated benefit in *“academic centers and organized stroke centers, but the benefit is not established at other types of hospitals.”*<sup>32</sup>

This study clears up a lot of misconceptions and criticisms about the use of tPA in the treatment of acute ischemic stroke. As simple as this may sound, more community hospitals need to upgrade their skill levels to those found in organized stroke centers.

Each year, **795,000** strokes occur in the United States.<sup>33</sup> Stroke is not a rare event, yet hospital emergency departments that have skill in treating **heart attacks** are failing miserably when it comes to reversing acute ischemic **stroke**, despite there being similarities in the treatment protocols.

## A New Year's Gift

I was pleased to read the **January 1, 2015**, edition of *The New England Journal of Medicine*, where the results from a large study on acute stroke were published.<sup>34</sup>

This study sought to evaluate whether standard intravenous tPA therapy in addition to **aggressive** use of targeted intra-arterial delivery of tPA and/or advanced intra-arterial surgical procedures was superior to standard intravenous tPA therapy alone in treating a particularly dangerous type of ischemic stroke within **six hours** of symptom onset.

### Stroke Signs And Symptoms

By knowing the signs and symptoms of stroke, you can be prepared to take quick action and perhaps save a life—maybe even your own.<sup>60,61</sup>

- Sudden **numbness** or weakness in the face, arm, or leg, especially on one side of the body.
- Sudden **confusion**, trouble speaking, or difficulty understanding speech.
- Sudden **trouble seeing** in one or both eyes.
- Sudden **trouble walking**, dizziness, loss of balance, or lack of coordination.
- Sudden **severe headache** with no known cause.

**Call 911 immediately if you or someone else has any of these symptoms.**

(This list is repeated on page 15 so it can be cut out and pasted in your home or office.)



The effectiveness of intra-venous tPA is limited by several factors compared to what can be achieved by threading a catheter into the blocked cerebral artery and directly administering tPA to the blood clot causing the ischemic stroke. This intra-arterial catheter can further be used to surgically remove the occluding blood clot or install a retrievable stent to prop open the occluded cerebral artery.<sup>34</sup>

In this study published on New Year's Day of this year, patients fortunate enough to be treated with **aggressive** clot-removing techniques were twice as likely to recover **independent living** capability without major functional restriction compared to the group receiving standard medical therapies.<sup>34</sup>

What made this study stand out was that it demonstrated convincing efficacy compared to previous studies that produced only neutral results. Some of the differences were that this latest study included an improved intra-arterial "retrievable stenting" device, proper imaging to identify precise location of the occluded artery, and shorter time interval to treatment (under six hours) compared to previous studies.<sup>34,37</sup>

Not all findings from this study published on New Year's Day of this year were positive. Patients requiring mechanical removal of their occluded cerebral artery suffered greater numbers of secondary ischemic events within 90 days, probably due to the physical/mechanical nature of the intervention. Yet in the aggressively treated group there was no significant increase in mortality and no significant increase in serious side effects compared to the control group during the follow-up period.<sup>34</sup> The **aggressively treated** groups showed a consistent trend of benefit that led to a far greater rate of **functional recovery**.

## Acting F.A.S.T. Is Key For Stroke

Acting F.A.S.T. can help stroke patients get the treatment they desperately need. The most effective stroke treatments are only available if the stroke is recognized and diagnosed within three hours of the first symptoms. Stroke patients may not be eligible for the most effective treatments if they don't arrive at the hospital in time.

If you think someone may be having a stroke, act F.A.S.T. and do the following simple test:

- **F-Face:** Ask the person to smile. Does one side of the face droop?
- **A-Arms:** Ask the person to raise both arms. Does one arm drift downward?
- **S-Speech:** Ask the person to repeat a simple phrase. Is their speech slurred or strange?
- **T-Time:** If you observe any of these signs, call 911 immediately.

**Note the time when any symptoms first appear.** Some treatments for stroke only work if given in the first three to six hours after symptoms appear. Do not drive to the hospital or let someone else drive you. Call an ambulance so that medical personnel can begin lifesaving treatment on the way to the emergency room.

## Treating A Transient Ischemic Attack (TIA)

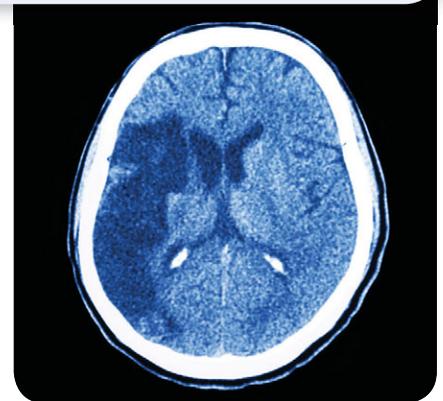
If your symptoms go away after a few minutes,<sup>62</sup> you may have had a transient ischemic attack (TIA).<sup>63</sup> Although brief, a TIA is indicative of a serious condition that will not go away without medical intervention.<sup>61,64,65</sup> Tell your health care team about your symptoms right away.

Unfortunately, because TIAs clear up, many people ignore them.<sup>66</sup> Don't be one of those people. Paying attention to a TIA can save your life by enabling implementation of therapies to restore cerebral circulation before a major stroke develops.<sup>65</sup>

Said differently, **aggressive** treatment of this dangerous type of ischemic stroke (proximal arterial occlusion) resulted in significantly more patients avoiding nursing home confinement.

An editorial in this same issue of *The New England Journal of Medicine* (Jan 1, 2015) posed the question:<sup>37</sup>

*"Is there any doubt left, or should thrombectomy now become the new standard treatment for severe stroke with proximal large-vessel occlusion up to six hours after stroke onset?"*



The editor answered his own question by stating he eagerly awaits the results of ongoing trials, but that this latest clinical trial titled MR CLEAN "*is the first step in the right direction.*"

## Turning The Tide

A large volume of published clinical data persuasively demonstrates that far more stroke victims could be leaving the hospital and returning to their homes to resume normal independent activities.

Technologies exist today to reverse huge numbers of ischemic strokes. Yet not enough hospital emergency rooms qualify as competent “stroke centers,” with trained

personnel and state-of-the-art protocols.

It probably is not necessary for every hospital emergency room to have advanced “stroke center” capabilities, as there are often several hospitals within reasonable reach for ambulances from places where most people live.

Despite the staggering costs of caring for paralyzed stroke victims, priorities aimed at creating competent “stroke centers” within ambulance range of major

population centers is sorely lacking. Life Extension is helping to address this problem by compiling a nationwide listing of **comprehensive stroke centers**. This listing can be reviewed starting on page 88 of this month’s issue.

Those concerned whether their hospital emergency department is utilizing state-of-the-art stroke treatments should consider making an appointment with the hospital administrator in their neighborhood to encourage them to upgrade

## Increasing Recognition Of Endovascular Therapy For Stroke

The **June 11, 2015**, issue of *The New England Journal of Medicine* published two more studies on the benefits of endovascular treatment for acute stroke:

1. During a two-year period, 206 people were randomized to either a **standard medical** therapy arm (which may include alteplase, a type of recombinant tPA) or medical therapy plus **endovascular therapy** using the Solitaire stent retriever (thrombectomy). The endovascular group had a **70% reduction** in the severity of disability for a predefined disability scale. After 90 days, **43.7%** of the endovascular group was able to achieve a predefined level of **functional independence** as opposed to only **28.2%** in the standard medical therapy group. This study intended to enroll more patients (sample size, 690), but favorable results in other clinical studies of endovascular therapy prompted the researchers to end the trial early on the basis of medical ethics (i.e., the evidence of superior efficacy of endovascular therapy from other trials).
2. In a study at 39 participating sites, 196 patients were randomized (98 patients in each of two groups) to either tPA alone or tPA plus endovascular therapy within six hours of stroke symptoms manifesting. The rate of substantial reperfusion to the brain in the group receiving tPA plus endovascular therapy was **88%**. The rate of functional independence was **60%** in the tPA plus endovascular therapy group compared to **35%** in the group that only received tPA. The results were so obvious the study was stopped early.<sup>1-3</sup>

Progressive vascular surgeons have utilized endovascular therapy to treat ischemic stroke since **1999**. The title of an editorial in the June 11, 2015, issue of *The New England Journal of Medicine* was:

### “Endovascular Therapy for Stroke—It’s About Time.”

I have two comments about this.

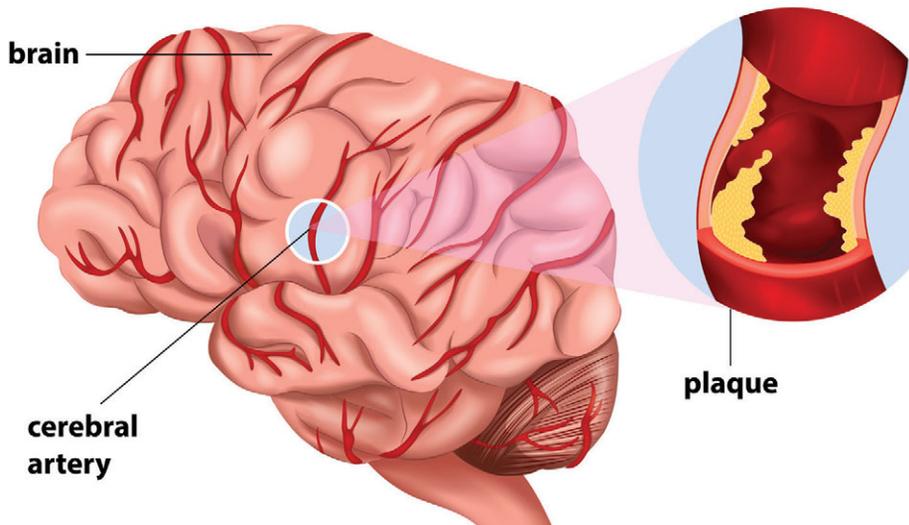
First, it should not have taken **15 years** to transform endovascular therapy into “standard” practice when attempting to reverse acute stroke. Over the past 15 years, more than **ten million** Americans have been stricken with stroke. Millions have died or lie paralyzed in nursing home facilities. Earlier implementation of **endovascular therapy** could have enabled many stroke victims to regain **functional independence**.

Second is that even with the best **endovascular therapies**, too many stroke victims are left with some form of paralysis (or death). Yet the vast majority of strokes are **preventable**. Articles in this month’s issue of *Life Extension* magazine provides practical guidance on how to slash your risk of ever developing an acute ischemic **stroke**. Since these methods have the side benefit of slashing all kinds of disorders such as heart attack, there is no reason to leave yourself vulnerable to the vascular risks posed by **endothelial dysfunction** and **hypertension**.

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## Cerebrovascular Stroke



to “comprehensive stroke center” status, which includes quick turn-around CT or MRI imaging and timely initiation of intra-arterial tPA and intra-arterial (endovascular) clot removing retrievable stent devices.

If your local hospital refuses, shop around and you may find that a qualified “stroke center” exists not that far away. This will enable you to know where to go in case **stroke symptoms** ever manifest.

On page 88 of this month’s issue is a listing of **comprehensive stroke centers** in the United States that **Life Extension’s** staff has been able to identify so far.

For longer life,

William Faloon

To view a video presentation of how intra-arterial clot removal catheter technology can reverse ischemic stroke, log on to:

[LifeExtension.com/strokevideo](http://LifeExtension.com/strokevideo)

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### Stroke Signs And Symptoms

By knowing the signs and symptoms of stroke, you can be prepared to take quick action and perhaps save a life—maybe even your own.<sup>60,61</sup>

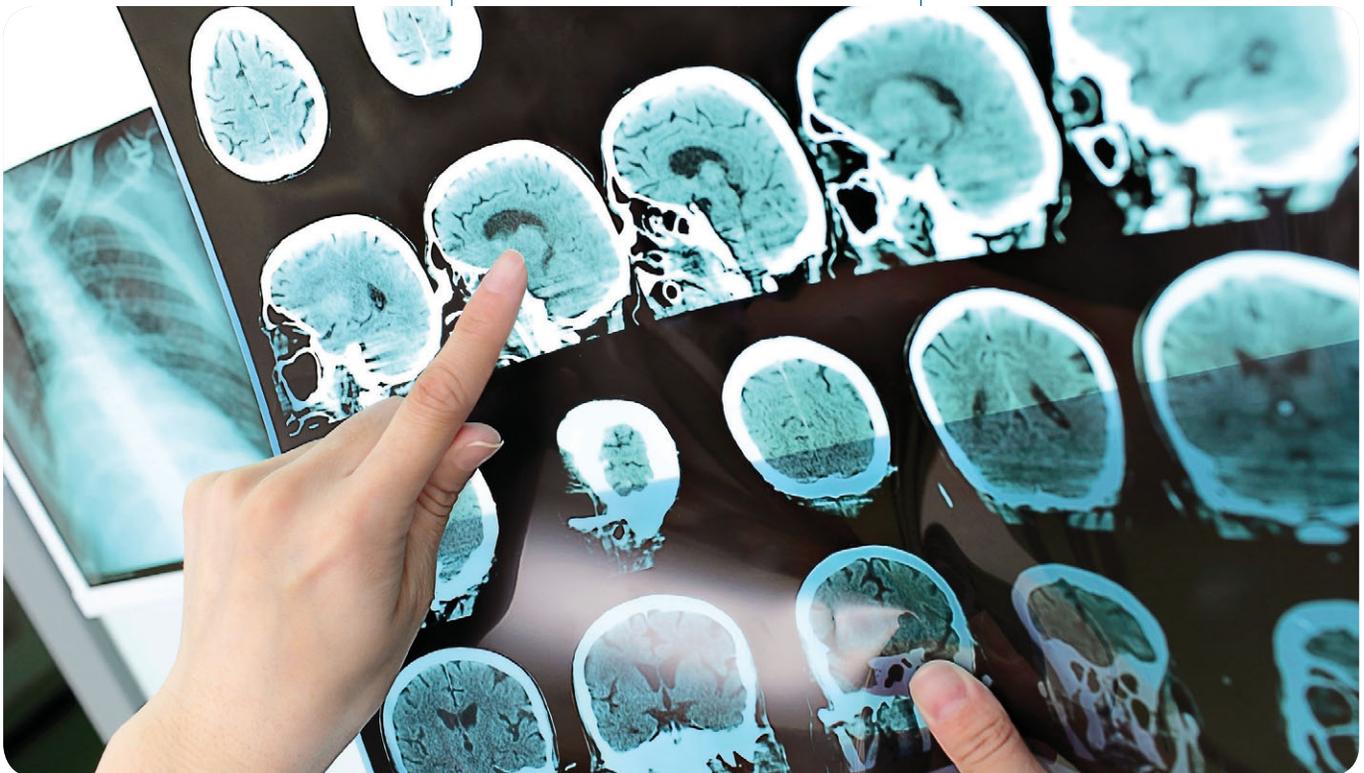
- Sudden **numbness** or weakness in the face, arm, or leg, especially on one side of the body.
- Sudden **confusion**, trouble speaking, or difficulty understanding speech.
- Sudden **trouble seeing** in one or both eyes.
- Sudden **trouble walking**, dizziness, loss of balance, or lack of coordination.
- Sudden **severe headache** with no known cause.

**Call 911 immediately if you or someone else has any of these symptoms.**



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# Dual-Action Support For Aging Joints!

As you grow older, age-related stiffness and discomfort in the joints becomes a fact of life. Activities once routine become a challenge as limited mobility hampers your every move.

You now have a more potent option to provide broad-spectrum support for aging joints.

**ArthroMax® Advanced with UC-II® and AprèsFlex®** is a multi-nutrient formula based on scientific data on natural support for joint health. The ArthroMax® formula provides more joint support than ever before, enhanced with two innovative, clinically validated ingredients: AprèsFlex® and UC-II®.

## Better Absorption For Optimum Benefit

**AprèsFlex®** represents a quantum leap forward in the delivery to aging joints of **boswellia**, long prized for its ability to help with inflammatory issues. It is a superior inhibitor of the enzyme **5-lipoxygenase** or **5-LOX**.

Excess activity of 5-LOX results in the accumulation of **leukotriene B4**, a pro-inflammatory compound that affects aging joints. **Boswellia** has been shown to bind directly to the 5-LOX enzyme in our bodies, blocking it from facilitating production of pro-inflammatory leukotrienes.<sup>1,2</sup>

**AprèsFlex®** boswellia *absorbs* into the blood **52%** better than previously available forms of boswellia, for superior effectiveness.

## ArthroMax® Advanced With UC-II® And AprèsFlex®

In addition to AprèsFlex®, ArthroMax® contains a novel form of standardized cartilage: **UC-II®**. Data show it helps with immune issues that can impact joint discomfort and ease of motion in aging individuals.

### ArthroMax® Advanced with UC-II® & AprèsFlex®

Item #01618 • 60 capsules

	Retail Price	Member Price
1 bottle	\$36	<b>\$27</b>
4 bottles	\$32 each	<b>\$24 each</b>

#### Non-GMO

AprèsFlex® is a registered trademark of Laila Nutraceuticals exclusively licensed to PL Thomas—Laila Nutra LLC. U.S. Patent No. 8,551,496 and other patents pending. FruiteX B® and OsteoBoron® are registered trademarks of VDF FutureCeuticals, Inc. U.S. Patent No. 5,962,049. UC-II® is a registered trademark of InterHealth N.I. U.S. patents 7,846,487; 7,083,820 and EPO patent EP 1435906B1; Canadian patent CA 2459981C; and Japanese patent JP 4800574B2.

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To order ArthroMax® Advanced with UC-II® and AprèsFlex® 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.

**H**undreds of published studies validate the neurological properties of the individual ingredients contained in **Cognitex**<sup>®</sup>.

Scientists wondered what would happen if these cognitive-enhancing nutrients were combined into one formula. An open label study was performed to assess the effects of **Cognitex**<sup>®</sup> on the brain health of elderly human subjects.

Here is a summary from a study that was published in the *Journal of Dietary Supplements* in June 2011:

**Study design:** 26 elderly participants with memory complaints completed the study. Participants were given three capsules daily of **Cognitex**<sup>®</sup> for 12 weeks with assessments at two weeks and 12 weeks.

**Memory** at two weeks:

- Recall: +11.15 points vs. baseline—a **15%** improvement
- Recognition: +8.68 points vs. baseline—a **11%** improvement
- Spatial short-term memory: +19.85 points vs. baseline—a **42%** improvement

**Attention** (sustained and focused) at two weeks:

- Sustained attention: +9.46 points vs. baseline—a **12%** improvement
- Focused attention: +3.77 points vs. baseline—a **4%** improvement

**Visuospatial learning** at two weeks:

- +17.31 points vs. baseline—a **33%** improvement

**Activities of daily living** (executive functions and mental flexibility) scores at two weeks:

- Executive functions: +9.45 points vs. baseline—a **14%** improvement
- Mental flexibility: +9.92 points vs. baseline—a **15%** improvement

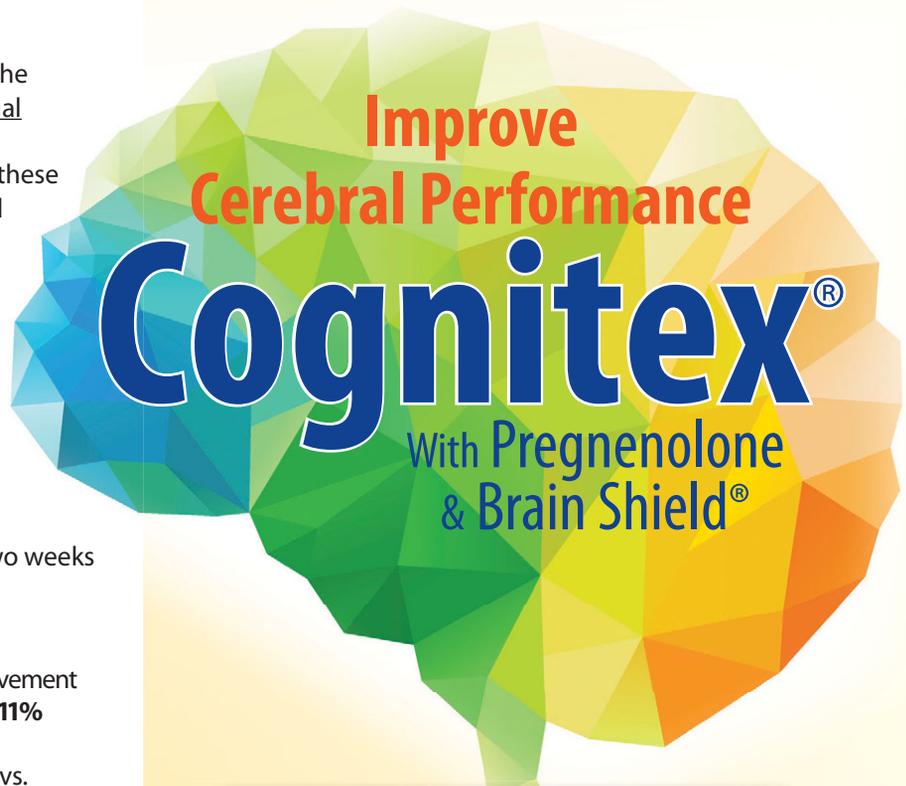
After **10 additional weeks** of **Cognitex**<sup>®</sup> supplementation, further statistically significant improvements in **activities of daily living** (executive functions and mental flexibility) were observed:

- Executive function: +9.15 points vs. two-week scores—a **12%** improvement
- Mental flexibility: +9.73 points vs. two-week scores—a **13%** improvement

**Cognitex**<sup>®</sup> is designed to improve cerebral performance and protect against neurological problems over the long term. This study evaluated the effects of **Cognitex**<sup>®</sup> on boosting brain function over a short-term period.

Sharp-PS<sup>®</sup> is a registered trademark of Enzymotec Ltd. Leucoselect<sup>®</sup> is a registered trademark of Indena S.p.A. Perluxan<sup>®</sup> is used with permission.

Sensoril<sup>®</sup> is protected under US Patents Nos. 6,153,198 and 6,713,092 and is a registered trademark of Natreon, Inc.



The suggested daily dose of three **Cognitex**<sup>®</sup> with **Pregnenolone & Brain Shield**<sup>®</sup> softgel caps provides:

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

Non-GMO

### **Cognitex**<sup>®</sup> with Pregnenolone & Brain Shield<sup>®</sup> (Gastrodin)

Item #01897 • 90 softgels

	Retail Price	Member Price
1 bottle	\$62	<b>\$46.50</b>
4 bottles	\$53 each	<b>\$39.75 each</b>
8 bottles	\$50 each	<b>\$37.50 each</b>

To order **Cognitex**<sup>®</sup> with **Pregnenolone & Brain Shield**<sup>®</sup>, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)



# ULTIMATE eye HYDRATION

Maintaining eye support is essential for optimal eye health.

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

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

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

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

## Brite Eyes III

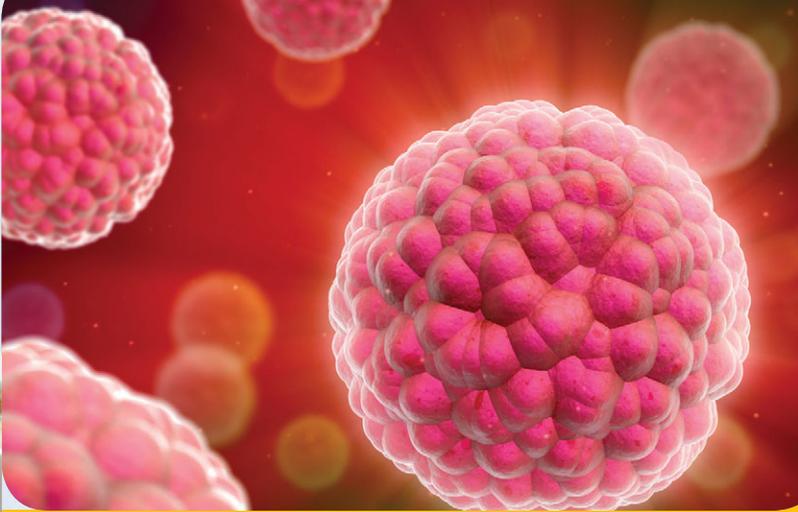
Item #00893 • 2 vials (5 mL each)

	Retail Price	Member Price
1 box	\$34	<b>\$25.50</b>
4 boxes	\$32 each	<b>\$24 each</b>



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

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



## IN THE NEWS

### Western Diet Is Deadly For Prostate Cancer Patients

According to a new study published in *Cancer Prevention Research*, prostate cancer survivors who consume a typical Western diet consisting of red meat, refined grains, processed foods, and high-fat dairy products may be at an increased risk of death from returning prostate cancer, as well as other causes.\*

Researchers at Harvard T.H. Chan School of Public Health studied 926 men aged 40 to 84 who were diagnosed with prostate cancer that had not spread. Subjects answered questions about their diets five years after receiving a prostate cancer diagnosis and were monitored for approximately 10 years.

The men diagnosed with nonmetastatic prostate cancer who ate a diet that was more Westernized, were **2.5 times** more likely to die of prostate cancer than those who ate the healthiest diet, and **1.5 times** more likely to die of any cause.

“Our results suggest that the same dietary recommendations that are made to the general population primarily for the prevention of cardiovascular disease may also decrease the risk of dying from prostate cancer among men initially diagnosed with nonmetastatic disease (cancer that has not spread),” said study leader Dr. Jorge Chavarro.

\* *Cancer Prev Res.* 2015 Jun 8.

**Editor’s Note:** The researchers say men who have been diagnosed with prostate cancer should choose a Mediterranean-style diet rich in fruits, vegetables, and fiber with fewer dairy products and less red meat in order to improve their chances of survival.

### More Severe Stroke Linked To Low Vitamin D Levels

A study presented at the International Stroke Conference found that low vitamin D levels are linked to an increased risk of suffering a more severe stroke, as well as poor health in stroke survivors.\*

The study included almost 100 stroke patients who were treated at a US hospital between 2013 and 2014. All had experienced an ischemic stroke, which is a stroke caused by blocked blood flow to the brain.

People with low blood levels of vitamin D (less than **30 ng/mL**), had about **two times** larger areas of stroke-related dead brain tissue than those with normal vitamin D levels.

According to author Dr. Nils Henninger, of the University of Massachusetts Medical School in Worcester:

“[This research] provide the impetus for yet other studies to come where you could think of scenarios where you have cases who have a very high risk for developing stroke that you might then select for supplementation.”

**Editor’s Note:** The researchers also found that those with low vitamin D levels had poorer health in the months following their stroke, regardless of age or initial stroke severity. In fact, for each **10 ng/mL** reduction in vitamin D levels, the chance of a healthy recovery in the three months following a stroke fell by almost half.

\* Presented at the International Stroke Conference, Feb 11-13, 2015.



### Green Tea May Protect Men At High Risk Of Prostate Cancer

The results of a trial presented at the 2015 American Society of Clinical Oncology Meeting suggest that the intake of active compounds found in green tea could help protect against the development of prostate cancer among men with premalignant lesions.\*

Ninety-seven men with high-grade prostatic intraepithelial neoplasia and/or atypical small acinar proliferation were given capsules containing green tea catechins or a placebo for one year. Among the 49 men who received tea catechins, five developed prostate cancer in comparison with nine among the 48 in the placebo group—a reduction that was considered nonsignificant. When men who had only high-grade prostatic intraepithelial neoplasia upon enrollment were analyzed, a different picture emerged. Of the 26 men in this group who received green tea catechins, the combined rate of the development of prostate cancer or atypical small acinar proliferation was three, compared to 10 of the 25 men who received a placebo.

**Editor's Note:** Tea catechin recipients also experienced a reduction in serum prostate specific antigen (PSA, a prostate cancer marker) in comparison with the placebo group.

\* *Cancer Prev Res.* 2015 Apr 14.



### Metformin May Reduce Glaucoma Risk

According to research published in *JAMA Ophthalmology*, taking metformin was associated with reduced risk of developing the sight-threatening disease open-angle glaucoma in people with diabetes.\*

Researcher Julia E. Richards, PhD, director of the glaucoma research center at the University of Michigan in Ann Arbor, and co-authors examined metformin use and the risk of open-angle glaucoma (OAG) using data from a large US managed care network from 2001 through 2010.

Over the course of the study, about 6,000 people (4%) developed glaucoma. Patients over age 65 were **three times** more likely to be diagnosed with glaucoma than the youngest participants, aged 40 to 45.

After adjusting for age and other variables, the researchers found that people who took the equivalent of more than **1.5 grams** of metformin a day for two years were **25%** less likely to develop glaucoma.

Every **1 gram** increase in metformin was associated with a **0.16%** reduction in glaucoma risk, which means that taking a standard dose of **2 grams** of metformin per day for two years would result in a **20.8%** reduction in risk of glaucoma.

**Editor's Note:** "Our hope is that if we can confirm the findings in diabetics, who clearly benefit from metformin for their diabetes, additional studies can be performed among persons without diabetes," said Dr. Richards.

\* *JAMA Ophthalmology.* 2015 May 28.



### Review Finds Low Vitamin D Associated With Worse Surgical Outcomes

A review in *Patient Safety in Surgery* found evidence of a link between insufficient vitamin D levels and adverse outcomes after surgical procedures.\*

Researchers Paul Iglar and Kirk Hogan selected 31 studies relating to vitamin D and surgery that included a total of 16,195 subjects for their review. Of these, 26 reported at least one correlation between low perioperative vitamin D and an adverse postoperative outcome.

One study found an **8%** higher risk of cancer following kidney transplantation in association with each **1 ng/mL** reduction in serum vitamin D. Another investigation uncovered a risk of delayed kidney graft failure that was **eight times** higher in those with vitamin D deficiency in comparison with nondeficient subjects. And in lung transplant recipients, those who were deficient in the near-transplant period and remained deficient after one year had a rate of dying that was nearly **five times** higher than recipients who were not deficient in vitamin D.

**Editor's Note:** "We contend that learning whether it is safe to deviate far from ancestral levels of vitamin D in patients facing the trauma of surgery, and the demands of healing, is an overarching question, and that until this answer is in hand, measurement and supplementation as indicated is preferred to the no-action approach of the status quo," the authors write.

\* *Patient Saf Surg.* 2015 Apr 30;9:14.



### Link Strengthened Between Greater Magnesium, Potassium Intake And Lower Stroke Risk

The results of a cohort study and updated meta-analyses add evidence to a protective effect for magnesium and potassium against the risk of stroke in women.\*

For the prospective cohort study, researchers evaluated data from 86,149 women enrolled in the Nurses' Health Study I (NHS I) and 94,715 participants in the NHS II. Dietary questionnaires completed by NHS I participants in 1980, 1984, 1986, and every four years thereafter, and in 1991 and every four years thereafter in the NHS II were analyzed for the intake of calcium, magnesium, and potassium from food and supplements. Over 30 years of NHS I follow-up and 22 years of NHS II follow-up, 3,780 strokes occurred.

Among women whose intake of magnesium from food and supplements was among the highest 20% of all participants, the risk of stroke was 13% lower than subjects in the lowest 20%. For potassium, the risk was 11% lower among the top 20%.

**Editor's Note:** In updated meta-analyses of the associations of dietary calcium, magnesium, and potassium with stroke risk, the risk of total stroke was determined to decrease by 2% for a 300 mg per day increase in calcium intake, by 13% for a 100 mg per day increase in magnesium, and by 9% for a 1,000 mg per day increase in potassium.

\* *Am J Clin Nutr.* 2015 May 6.

### Metformin Rarely Used In Diabetes Prevention

A new study published in the *Annals of Internal Medicine* evaluated the use of metformin in 17,352 patients aged 19 to 58 years with prediabetes, a health state indicated by abnormally high blood sugar levels. The analysis revealed only 3.7% of these patients were prescribed metformin between 2010 and 2012.\*

"Diabetes is prevalent, but prediabetes is even more prevalent and we have evidence-based therapies like metformin that are very safe and that work," said study lead author Dr. Tannaz Moin. "Metformin is rarely being used for diabetes prevention among people at risk for developing it. This is something that patients and doctors need to be talking about and thinking about."

Since 2008, the American Diabetes Association has recommended metformin as a measure to prevent diabetes, specifically for those at high risk of the disease. Researchers used a sample size of more than 17,000 participating adults age 19 to 58 with prediabetes. They found that metformin was prescribed for just 7.8% of severely obese patients; with prediabetes, the prevalence of prescriptions for obese individuals was 6.6% versus 3.5% for non-obese people; among people who had prediabetes and two other chronic diseases, 4.2% received prescriptions for metformin, versus 2.8% of people with prediabetes and no other chronic diseases.

**Editor's Note:** Metformin prescriptions for women were nearly twice as high (4.8%) compared to men (2.8%).

\* *Ann Intern Med.* 2015 Apr 21;162(8):542-8.

### Meta-Analysis Concludes Protective Association For High Vitamin D Against Lung Cancer

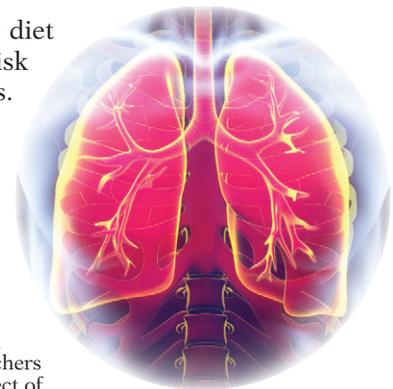
The results of a review and meta-analysis suggest a protective effect for vitamin D against the risk of developing lung cancer.\*

Researchers in Beijing selected nine prospective cohort studies and three nested case-control studies that included a total of 288,778 men and women for their review. Three of the studies examined the association of vitamin D intake with lung cancer and the remainder utilized serum vitamin levels.

Higher vitamin D status, as determined by diet or serum, was associated with a 16% lower risk of lung cancer in comparison with low status. When studies that evaluated serum vitamin D levels were analyzed separately, the risk of lung cancer experienced by subjects whose levels were among the top 20% was 17% lower than those whose levels were among the lowest 20%. For vitamin D intake, the risk was 11% lower among the top one-fifth of subjects.

**Editor's Note:** "Current data suggest an inverse association between serum vitamin D and lung cancer risk," the researchers conclude. "Further studies are needed to investigate the effect of vitamin D intake on lung cancer risk and to evaluate whether vitamin D supplementation can prevent lung cancer."

\* *Cell Physiol Biochem.* 2015 May 4.



## Vitamin E Keeps Muscles Healthy

A study in *Free Radical Biology & Medicine* provides an explanation of how vitamin E helps maintain muscle.\*

Previous research conducted by Paul McNeil and colleagues demonstrated that vitamin E promoted membrane repair in cultured cells and that oxidants inhibited it. For the current study, rats were given normal rodent chow, chow lacking vitamin E, or deficient chow plus supplemental vitamin E, then were tested in their ability to run downhill on a treadmill. Deficient animals demonstrated reduced running ability compared to normal rats and showed increased muscle cell plasma membrane permeability. Examination of their quadriceps muscle fibers revealed diminished size and greater inflammation.

“Every cell in your body has a plasma membrane, and every membrane can be torn,” Dr. McNeil explained. “Part of how we build muscle is a more natural tearing and repair process—that is the no pain, no gain portion—but if that repair doesn’t occur, what you get is muscle cell death.”

**Editor’s Note:** Dr. McNeil predicts that vitamin E supplementation will be used not only to improve muscle cell membrane repair in diseases such as muscular dystrophy, but as a protective measure for individuals at risk of injury.

\* *Free Radic Biol Med.* 2015 Jul;84:246-53.



## Coffee Drinking Associated With Lower Risk Of Dying

The results of a study of men and women revealed a lower risk of mortality among coffee drinkers over an average of 18.7 years of follow-up in comparison with those who did not consume the beverage.\*

The study included 90,914 participants in the Japan Public Health Center-based prospective study who had no history of heart attack, stroke or cancer upon enrollment. Surveys completed at the beginning of the study provided information on coffee intake and other data. The subjects were followed for an average of 18.7 years, during which 12,874 deaths occurred.

In comparison with those who reported almost never drinking coffee, occasional drinkers who consumed less than a cup a day had a **9%** lower risk of dying from any cause over follow-up, while those who consumed one to two cups and three to four cups experienced reductions of **15** and **24%**, respectively.

**Editor’s Note:** As possible mechanisms for coffee against cardiovascular disease, authors Eiko Saito of Japan’s National Cancer Center and colleagues observe that the beverage is rich in chlorogenic acid, which slows the rate of glucose absorption and lowers blood pressure. Additionally, caffeine boosts endothelial function by activating nitric oxide synthases and promoting endothelial repair. Coffee also contains pyridinium, which helps prevent excessive blood clotting. In regard to respiratory disease, caffeine is known to act as a bronchodilator, which improves pulmonary function. Furthermore, chlorogenic acid has been associated with a reduction in the risk of mortality due to inflammation.

\**Am J Clin Nutr.* 2015 May;101(5):1029-37.



## Study Associates Higher Magnesium Intake With Better Diabetes-Related Outcomes

A study reported on October 15, 2014, in the *Journal of Human Nutrition & Food Science* concludes an association between higher magnesium intake and improved diabetes outcomes and metabolic syndrome risk.\*

Yanni Papanikolaou and colleagues analyzed data from 14,338 men and women aged 20 and older who participated in NHANES from 2001-2010. Estimated average requirement (EAR) values were used to categorize the subjects’ magnesium intake as adequate or inadequate. Participants were assessed for the presence of diabetes or other associated factors.

As magnesium intake increased, insulin, body mass index, waist circumference, and systolic blood pressure fell. Among those having adequate magnesium intake from food combined with supplements, the risk of elevated glycohemoglobin, metabolic syndrome, overweight or obesity, increased waist circumference, elevated systolic blood pressure, reduced high density lipoprotein (HDL) cholesterol, and elevated C-reactive protein were lower in comparison with the inadequate group.

**Editor’s Note:** “As magnesium has been identified as a shortfall nutrient by the 2010 DGAC report, and Americans continue to struggle with meeting nutrient and food group recommendations, dietary magnesium supplementation coupled with appropriate food choices offer an evidence-based option to meet authoritative recommendations and potentially reduce the risk of diabetes and diabetes-related outcomes,” the authors conclude.

\**J Hum Nutr Food Sci.* 2014 Oct 15;2(3):1038.

# Promote Tear Production From The Inside Out

A common problem affecting people as they age is the onset of eye discomfort.

Environmental factors, computer use, and contact lenses also increase the chances of dry, irritated, itchy eyes.<sup>1-4</sup>

Life Extension® introduces **Tear Support with MaquiBright®**, a unique *oral* supplement that supports eye health from the inside out for systemic, continuous comfort.

Instead of repeatedly adding artificial tears in the form of drops throughout the day, you can now take one vegetarian capsule in the morning to help support eye health for an entire day!<sup>5</sup> **Tear Support with MaquiBright®** supports your body's natural mechanisms to promote production of your own *natural* tears.

The secret lies in this standardized **maqui berry extract's** supply of compounds called *delphinidins*, which support natural defenses against chemical and light stimulation and ultraviolet (UV) light.<sup>5</sup> In one study, healthy volunteers taking **60 mg** of this extract daily experienced a **45%** increase in tear production.<sup>6</sup>

**Tear Support with MaquiBright®** allows you to get your eyes back to feeling and looking their best.

#### Non-GMO

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**MaquiBright®** is a registered trademark of Maqui New Life S.A, Chile and Oryza Oil & Fat Chemical Co., Ltd., Japan.



To order **Tear Support with MaquiBright®**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

#### Tear Support with MaquiBright®

Item #01918 • 30 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$18	<b>\$13.50</b>
4 bottles	\$16 each	<b>\$12 each</b>

GROW NEW BRAIN CELLS



**GROW NEW  
BRAIN  
CELLS**



For years, scientists believed **brain shrinkage** was inevitable and irreversible.

Cutting-edge research has shown that brain cells can regenerate.

An amino acid called **taurine** plays an important role in **creating new brain cells**.

Researchers found that taurine increased the growth of brain cells by activating “sleeping” **stem cells**. Taurine also increased the survival of new neurons, resulting in an increase in adult brain cell creation.<sup>1-3</sup>

Recent studies reveal that **taurine** has unique biochemical properties that **promote new brain cell formation**.<sup>4,5</sup> Animal studies show that taurine triggers new brain cells to grow in the **hippocampus**, the area of the brain most concerned with memory.<sup>1,6</sup> This can lead to dramatic improvements in cognition and recall.<sup>7,8</sup> Low levels of taurine have been observed in patients with Parkinson’s disease.<sup>9,10</sup>

In addition to these impressive brain benefits, taurine also boosts cardiac function and reduces arterial stiffness as well as reducing the negative impacts of metabolic syndrome.<sup>11-16</sup> In fact, **taurine** supplementation added to the drug **metformin** has been shown to offer tremendous reductions in tissue damage.<sup>17</sup>

**Taurine** levels fall significantly with age, leaving the brain, heart, kidneys, and other tissues deprived of this vital healing compound—one capable of rescuing dying cells and restoring cellular communication.<sup>1,6,18</sup>

Experts are beginning to recognize that with age, many can experience a **taurine deficiency** that is a real and fundamental threat to health.

The great news is that **taurine** is a super **low-cost** supplement, meaning everyone can benefit from its potential to slow and reverse degenerative processes.

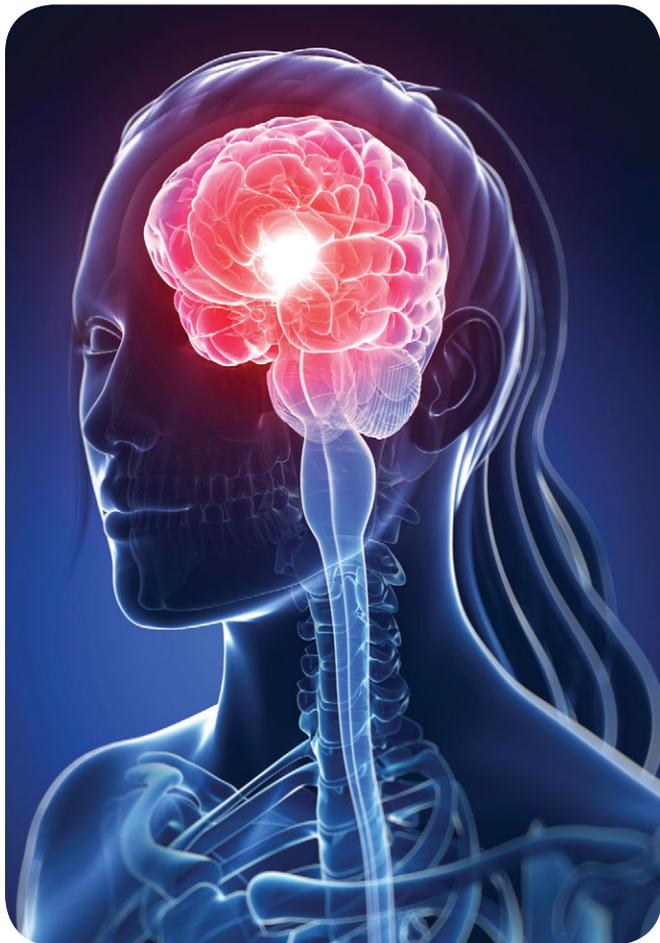
## Taurine Grows New Brain Cells

For years, scientists believed that brain shrinkage (atrophy) was an unstoppable degenerative process. New research reveals this loss of brain matter is partially caused by *reversible* processes.<sup>19,20</sup> This knowledge opens the door to a new paradigm—one that aims to restore brain structure and function—as opposed to simply treating the symptoms.

One of the chief requirements for growing fresh brain cells is a little known amino acid: **taurine**. Taurine has a surprising number of critical actions concerning how cells protect and renew themselves.

Because taurine levels decline with age, older adults are unable to maintain the level of new brain cell formation required to preserve their youthful responses to toxic and metabolic insults.<sup>1,21</sup> This taurine deficiency may lie at the heart of some of our most dreaded brain disorders.<sup>22</sup>

Studies now show that restoring taurine content in brain cells can *reverse* these trends, and *rejuvenate* brain structure and function. Animal studies show that taurine triggers new brain cells to grow in the **hippocampus**, a brain region centrally involved in memory.<sup>1,23</sup>



A study published in the journal *Stem Cell Research* found that taurine supplementation in middle-aged mice increased the growth of new cells in regions of the brain associated with learning and memory. It accomplished this by *activating* “hibernating” **stem cells** that were then capable of maturing into several different kinds of cells.<sup>1</sup>

In fact, one study showed that when human **neural precursor cells** (the early-stage neurons and supporting cells in the brain), were cultured with **taurine**, it produced significantly more brain cells, demonstrating how taurine stimulates stem-like cells to differentiate into functioning brain cells.<sup>2</sup>

In animals, taurine *deficiency* impairs brain growth by delaying normal neuronal development.<sup>2</sup> Lab studies show that taurine can reverse this problem. When taurine-deficient brain cells are grown in culture and then taurine is added, it results in a sharp increase in the development of new cells. This is attributed to multiple mechanisms of action, including improved mitochondrial function; activation of genes required for normal proliferation, survival, and energy functioning;<sup>2</sup> and blocking chemical signals that inhibit neuronal cell regeneration.<sup>3</sup>

In addition to promoting the growth of new brain cells, taurine enhances **neurites**, which are tiny projections that help brain cells to communicate with each other. Neurites maximize connections between those cells, along which electrical impulses flow to support memory, cognition, feeling, and thinking. Over time, chemical stresses and toxins can damage these neurites, contributing to slower cognition in older people.<sup>24</sup> A lab study revealed that taurine restores normal neurite growth in nerves exposed to toxic chemicals, largely through its protective effects against chemical stresses.<sup>25</sup>

The findings that taurine can genuinely rejuvenate damaged brains are truly revolutionary, and are beginning to change the way scientists and neurologists are thinking about age- and trauma-related brain changes.<sup>26,27</sup>

## Taurine’s Benefits For Brain Conditions

Two specific conditions taurine has been shown to help benefit are **Parkinson’s disease** and **depression**.<sup>22,28</sup>

Human studies show that taurine plasma levels are reduced in patients with Parkinson’s disease, suggesting both a potential contribution to the disease—and a possible treatment.<sup>28</sup> This problem is compounded by the fact that standard treatment of Parkinson’s symptoms involves the drug **levodopa**, which may further deplete taurine.<sup>28</sup> This makes it



particularly important for Parkinson's patients to supplement with this versatile amino acid.

Supplementing with taurine is also important for those suffering from depression.<sup>22</sup> Depression is particularly prevalent in diabetics; indeed, there's a strong school of thought that chronic blood sugar elevations are involved in depression and neurodegenerative disorders such as Alzheimer's disease.<sup>29-31</sup> Intriguingly, taurine supplementation in diabetic rats has been shown to improve depressive-like behaviors; in addition, supplementation improved the diabetes-damaged neurotransmitter function, which helped lead to improved short-term memory.<sup>32</sup>

### Solving Your Heart's Energy Crisis

Heart disease remains the leading cause of death in US adults.<sup>33</sup>

A recent study in mice has, for the first time, suggested that taurine might prolong life span by improving heart muscle function.<sup>34</sup> The study used mice genetically engineered to be profoundly taurine deficient, a state that causes premature aging and severe heart problems, eventually resulting in early death.<sup>34</sup> Painstaking work in other animal models revealed why taurine deficiency leads to these severe effects. Taurine deficiency disrupts the "electron transport chain," which reduces the amount of energy-rich adenosine triphosphate (ATP) available for heart cells to support their contractions, leading to decreased pumping ability of the heart.

### Taurine Promotes Brain Cell Regeneration

- Taurine is a free amino acid that is vital in slowing key age-accelerating processes, particularly in the central nervous and cardiovascular systems.
- Laboratory studies show that taurine can achieve what was once thought to be impossible—stimulate new growth and connections of brain cells, which raises the real possibility for restoration of youthful brain function in older adults.
- Taurine levels decrease with age and with metabolic and neurological disease.
- Supplementation with taurine, in both animal and human studies, demonstrates the age-decelerating effects of this amino acid.
- Laboratory studies reveal dramatic improvements in cognition and memory in taurine-supplemented animals, and suggest that human supplementation might slow or reverse changes seen in Parkinson's disease.
- Taurine supplementation boosts cardiac function and reduces arterial stiffness, both contributors to early death from heart disease and stroke.
- Those with metabolic syndrome also stand to gain from taurine supplements, which substantially reduce that syndrome's negative impacts on cardiovascular risk.

## How Taurine Enhances Brain Function

Taurine has the unique ability to help promote new brain cell formation—but its benefits don't end there. Taurine has several other important properties that preserve and enhance brain function:

- Taurine restores to aging brain cells the ability to prevent and clean up after chemical stresses from reactive molecules, to fight brain inflammation, and to generate brain cell relaxing and stimulating signals at appropriate times.<sup>1,6,73-76</sup>
- Taurine increases the electrical activity (signaling ability) in nerve cells through effects on calcium, a key element required for proper electrical function of neurons.<sup>77</sup>
- Taurine can favorably mimic the actions of certain neurotransmitters, the chemical signals that brain cells use to communicate. From a chemical structural standpoint, taurine closely resembles the neurotransmitter gamma-amino-butyric acid (GABA).<sup>78,79</sup> GABA is involved in learning, and studies in lower animals demonstrate improvements on simple learning tasks following GABA supplementation.<sup>79</sup>
- Taurine supplementation supports learning in higher animals as well. Supplementation in a mouse model of inheritable intellectual disability (fragile X syndrome), which is associated with reduced GABA signaling, stabilized and recovered some cognitive functions to an extent that brought some measures of the animals' performance close to that of normal mice.<sup>78</sup>



That fundamental finding—that low taurine levels contribute to or exacerbate poor heart muscle function—is now being corroborated by lab and animal studies demonstrating improvements in heart or blood vessel performance.

Poor or unregulated control of arterial smooth muscle is a major contributor to high blood pressure and resulting cardiovascular disease.<sup>35</sup> Fortunately, taurine is known to have blood pressure-reducing and heart muscle-protecting effects.<sup>11</sup> In a lab study, human artery segments were immersed in a chemical bath that induced contractions similar to those that occur during an angina episode or heart attack. The addition of taurine to the bath resulted in relaxation of the artery.

Animal and lab studies also show that taurine supplementation can mitigate **ischemia-reperfusion injury**,<sup>36,37</sup> a major cause of long-term heart failure and further dysfunction. This type of injury occurs when there is a loss of blood flow to the heart muscle (*ischemia*) followed by the restoration of blood flow (*reperfusion*).<sup>38,39</sup> Both processes can lead to an energy crisis and high amounts of reactive chemicals.

Ischemia-reperfusion injury is severely exacerbated by high sugar intake and diabetes because of negative effects on nervous system signals.<sup>40,41</sup> Taurine supplementation can abolish those aberrant signals and improve arterial blood pressure following such an injury.<sup>42</sup>

## Human Studies Of Taurine's Cardiovascular Effects

Human studies are demonstrating the impact of taurine's cardiovascular effects. Large epidemiological studies show that deficiencies in taurine are associated with an increase in cardiovascular risk factors. For example, when compared to people with the highest taurine levels, those with the lowest levels had a **184%** increase in the risk of obesity, a **22%** increase in the risk of hypertension, and a **120%** increase in the risk of elevated cholesterol.<sup>12</sup>

While the risk of taurine deficiency is great, encouraging studies show that supplementation with taurine can reduce risk factors for heart disease. And in fact, intervention studies are now showing that supplementation can rectify heart muscle energy deficiency to the point of improving clinical outcomes.<sup>43</sup>

One of the best examples of this is a Russian study on patients undergoing heart valve replacement and coronary bypass surgery—both of which are huge thieves of cardiac muscle energy. This study showed that supplementation with taurine resulted in improved heart pumping action, reduced the size



of the enlarged pumping chambers, lowered triglyceride levels, and significantly improved quality of life.<sup>44</sup> These benefits may help to reduce the rates of sudden death after cardiac surgery, which remain unacceptably high.<sup>45-48</sup> As is typical with many mainstream doctors, if something costs virtually nothing, as taurine does, they overlook its critical lifesaving properties.

### Congestive Heart Failure

Taurine has been shown to have protective effects against **congestive heart failure**, a common, energy-related complication in heart attack survivors, cardiac surgery patients, and people with hypertension or severe lung disease; it results from an inability of the heart to pump sufficient blood to meet the demands of the body.<sup>49</sup>

In a study published in the journal *Clinical Cardiology*, patients with congestive heart failure took either a placebo or **2,000 mg** of taurine three times a day.<sup>50</sup> Compared to placebo recipients, supplemented patients experienced significant improvements in the severity of their heart failure, and significant increases in measurements of the heart's ability to pump blood. In addition, none of the taurine-supplemented patients worsened during treatment, while **29%** of placebo subjects did.

In a similarly designed study, heart failure patients who took **500 mg** of taurine three times a day experienced increases in exercise time and distance, and increased ability to utilize cardiac energy, compared with placebo. This is a graphic example of how taurine

can affect heart muscle energy production, making it more efficient and helping to energize tired heart muscle.<sup>51</sup>

Another study of heart failure patients showed that taurine supplementation (**3 grams** per day for six weeks) resulted in significant changes in **echocardiogram** results, which showed improvements in the pumping action of the left ventricle, the chamber that pumps blood out to the entire body.<sup>52</sup>

Clearly, ample blood taurine levels are required for proper heart functioning and this data was published by *Life Extension*<sup>®</sup> decades ago based on what cardiologists in Japan had discovered when treating congestive heart failure patients with **3 grams** of taurine per day.<sup>53</sup> Let's now look at some ways that taurine can reduce the risks for developing cardiovascular disease in the first place.

### Taurine Reduces Metabolic Syndrome

**Metabolic syndrome** is the combination of central obesity, high blood pressure, insulin resistance/borderline high blood sugar, elevated triglyceride levels, and low HDL cholesterol levels.<sup>54</sup> It is strongly associated with short- and long-term risks of cardiovascular and kidney disease, diabetes, cancer, and death.<sup>55-58</sup>

Taurine supplements have been found to be extremely effective in reducing harmful effects of metabolic syndrome—while at the same time inducing changes that reduce the syndrome's long-term impact on cardiovascular risk.

Studies of diabetic and/or obese mice and rats demonstrate that taurine leads to consistent improvements in multiple components of metabolic syndrome, including insulin secretion and sensitivity and glucose tolerance.<sup>13-15</sup>

One study also showed that taurine-deficient mice develop kidney changes identical to those in human diabetic nephropathy, the leading cause of end-stage kidney disease.<sup>59</sup> This suggests that taurine supplementation in metabolic syndrome patients might lower renal disease risk.<sup>16,60</sup>

And, in a remarkable pair of studies, taurine was shown to amplify the beneficial effects of **metformin**, a naturally derived antidiabetic drug with multiple health-promoting effects in metabolic syndrome. In the first study, when rats were treated with both taurine and metformin, they were better protected against chemical and metabolic stresses than when either was used alone.<sup>61</sup> For the second study, the combination of taurine supplementation and metformin was found to provide the same pattern of protection as insulin against diabetes-induced metabolic changes, including preservation of renal function.<sup>17</sup>

## Human Studies Of Taurine And Metabolic Syndrome

Human studies demonstrated just how important taurine supplementation is for people with metabolic syndrome, which exacerbates the age-related decline in taurine levels. Compared with healthy people, obese people have as much as a **41% reduction** in taurine levels compared with healthy controls,<sup>62</sup> while diabetics have a **30% reduction** in taurine levels.<sup>63</sup>

The good news is that supplementing with taurine significantly reduces many of the risk factors faced by those with metabolic syndrome. For example, at doses of **3 grams** per day for eight weeks, a group of obese adults had significant **29%** reductions in plasma markers of inflammation (hs-CRP) and **20%** reduction in lipid peroxidation (thiobarbituric acid reducing substances).<sup>62</sup>

And when diabetics supplemented with **1.5 grams** per day, not only were their taurine levels restored to normal, but their platelet aggregation was reduced to levels seen in healthy controls.<sup>63</sup> (Platelet aggregation is elevated in diabetics,<sup>64</sup> increasing the risk for stroke or heart attack-inducing blood clots.)<sup>65</sup> This study also involved a laboratory test of platelet aggregation, which showed that while taurine reduced aggregation in blood from diabetic patients, it had no effect at all on blood from healthy controls. (This is a safety concern about virtually all prescription antiplatelet drugs).

In addition to the heart disease and stroke risk induced by aggressive platelet aggregation, diabetics



(and even nondiabetic people with chronically “high normal” blood sugar levels) are at increased cardiovascular risk from physical stiffening of their arteries.<sup>66-68</sup>

Again, taurine supplementation is able to reverse this dangerous state of affairs. In a study published in *Diabetes & Vascular Disease Research*, young adults with type I diabetes and impaired endothelial function supplemented with **500 mg** of taurine three times a day. After just two weeks, their abnormal arterial stiffening and reactivity returned to levels found in controls!<sup>69</sup>

Since type I diabetes (formerly known as “juvenile-onset,” or “insulin-dependent” diabetes) exposes its victims to much greater elevation and fluctuation in glucose levels even than those seen in type II (“adult-onset”) diabetes, seeing this dramatic effect in the more severe form of the disease is especially encouraging for the much larger population of type II diabetics.<sup>49,70,71</sup>

## Summary

Taurine, a little-known amino acid,<sup>72</sup> can do the seemingly impossible: **stimulate new brain cells to grow in adult brains**. This capability creates an entirely new paradigm for the ways we think about age-related cognitive decline, and even major neurodegenerative diseases like Parkinson’s and Alzheimer’s.

Taurine levels fall as we age, leaving our brains relatively unprotected. Taurine levels are low in people with age-related brain disorders. Animal studies reveal that supplementation can not only restore youthful taurine levels, but also improves deficits in memory and cognition.

Taurine also has a fundamental connection with longevity, particularly related to cardiovascular disorders. Animal studies demonstrate protection against heart disease with taurine supplementation, and human studies show that supplementation produces dramatic improvements in heart and blood vessel function.

People with metabolic syndrome have lower taurine levels than their healthy peers; again, taurine supplementation drives down the detrimental effects of metabolic syndrome while inducing changes that reduce the syndrome’s long-term impact on cardiovascular risk.

A balanced supplement program should aim at restoring youthful levels of nutrients known to counteract the chemical stresses, inflammatory changes, and toxic exposures we experience through life. The evidence for the amino acid **taurine** suggests that it be included in such a regimen. ●

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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# MAGNESIUM BOOSTS BRAIN HEALTH

Profound shrinkage of **synaptic connections** between nerve cells is one of the major hallmarks associated with brain aging. **Magnesium** is a critical factor in controlling **synaptic density** in the brain.<sup>1</sup>

An innovative form of magnesium called **Neuro-Mag®** has been shown to specifically target multiple areas of the aging brain. In fact, preclinical models show that the **magnesium-L-threonate** contained in **Neuro-Mag®** boosted levels of magnesium in spinal fluid by **15%** versus no increase from conventional magnesium.<sup>2</sup> This means that this **form** of **magnesium** is passing through the blood-brain barrier for assimilation into the **brain**.

## Comprehensive Cognitive Benefits

Scientists continue to uncover **magnesium's** comprehensive benefits for cognitive function.<sup>1,3</sup> Studies using **magnesium-L-threonate** show this unique form of magnesium maintains the quantity of **synaptic** connections between brain cells and inhibits the dysregulation of signaling pathways.<sup>1</sup>

## Neuro-Mag...Capsules Or Powder

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

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

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Non-GMO

Non-GMO

**Neuro-Mag® Magnesium-L-Threonate**  
Item #01603 • 90 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$40	<b>\$30</b>
4 bottles	\$36 each	<b>\$27 each</b>



**Neuro-Mag® Magnesium-L-Threonate with Calcium and Vitamin D3 Powder**  
Item #01602 • 225 grams of powder

	Retail Price	Member Price
1 jar	\$40	<b>\$30</b>
4 jars	\$36 each	<b>\$27 each</b>



To order **Neuro-Mag® Magnesium L-Threonate Capsules or Powder** 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.

# Dual-Action Formula Supports Healthy Cholesterol Levels

As you age, it becomes critically important to maintain an optimum balance between “good” and “bad” cholesterol, otherwise known as **HDL** and **LDL**, in order to maintain a healthy cholesterol profile.

For those who seek a safe and natural way to support healthy cholesterol levels, researchers have discovered *two compounds* that help promote healthy levels of both LDL and HDL already within normal range.<sup>1-4</sup>

**CHOL-Support™** is formulated with a triple standardized **artichoke leaf extract** and **pantethine**, the biologically active form of pantothenic acid<sup>3</sup> to maintain healthy HDL, LDL, and total cholesterol levels already within the normal range.<sup>1-4</sup>

## Artichoke Leaf Extract

Clinical studies now demonstrate that artichoke leaf extract’s polyphenolic compounds<sup>2</sup> support optimal HDL/LDL ratios already within normal range.<sup>12</sup>

## Pantethine

Clinical trials show pantethine safely maintains LDL and total cholesterol already within the normal range, without reducing protective CoQ10 levels.<sup>3</sup>

Two daily liquid vegetarian capsules of **CHOL-Support™** offer comprehensive cardiovascular protection by providing unparalleled support for an optimal cholesterol profile.

### Non-GMO

Pantethin™ is a registered trademark of Daiichi Fine Chemical Co., Ltd.  
Pycrinil™ is a registered trademark of Indena S.p.A., Italy.

### References

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4. *Nutr Res*. 2011 Aug;31(8):608-15.



## CHOL-Support™

Item #01910 • 60 liquid vegetarian capsules

	Retail Price	Member Price
1 bottle	\$52	<b>\$39</b>
4 bottles	\$46 each	<b>\$34.50 each</b>

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

# TAURINE

BOOSTS BRAIN CELL REGENERATION  
& SUPPORTS WHOLE-BODY HEALTH

**Taurine**, a free amino acid, has been described by scientists as **“one of the most essential substances in the body.”**<sup>1</sup> But as we age, taurine levels decline.

## Cognitive Function and Brain Cell Regeneration

The benefits of taurine on brain cell growth are especially evident in those with a taurine deficiency, which includes *aging individuals*.

Promising research has found that taurine can promote **new brain cell formation** in the area of the brain associated with **learning** and **memory**. It does so by activating hibernating **stem cells** that are capable of growing into several different kinds of cells.<sup>2</sup>

Taurine also enhances **neurites**, the tiny projections that help brain cells communicate with each other.

## Whole-Body Health

Past research has also shown the ability of taurine to maintain and support:<sup>3-9</sup>

- Cardiovascular health,
- Insulin sensitivity,
- Modulation of the immune system,
- Regulation of the central nervous system,
- Liver function,
- Eye health, and
- Hearing function.

One capsule taken one to three times daily on an empty stomach, or as recommended by a health care practitioner, supports optimal cardiovascular levels.

### References

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## Taurine

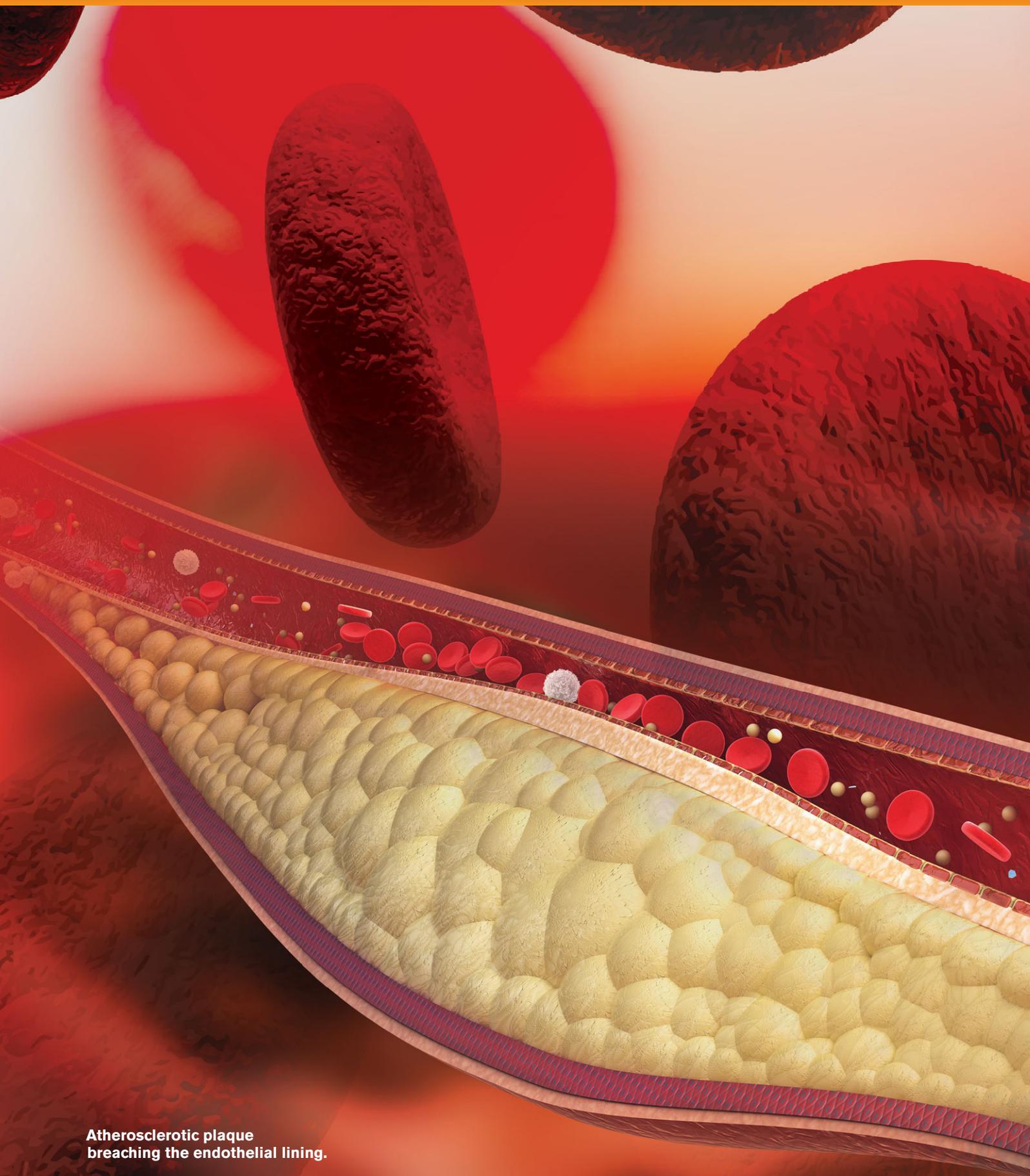
Item #01827 • 90 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$13	<b>\$9.75</b>
4 bottles	\$12 each	<b>\$9 each</b>

Non-GMO

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

ENHANCE YOUR ENDOTHELIAL FUNCTION



**Atherosclerotic plaque  
breaching the endothelial lining.**

# ENHANCE Your Endothelial Function

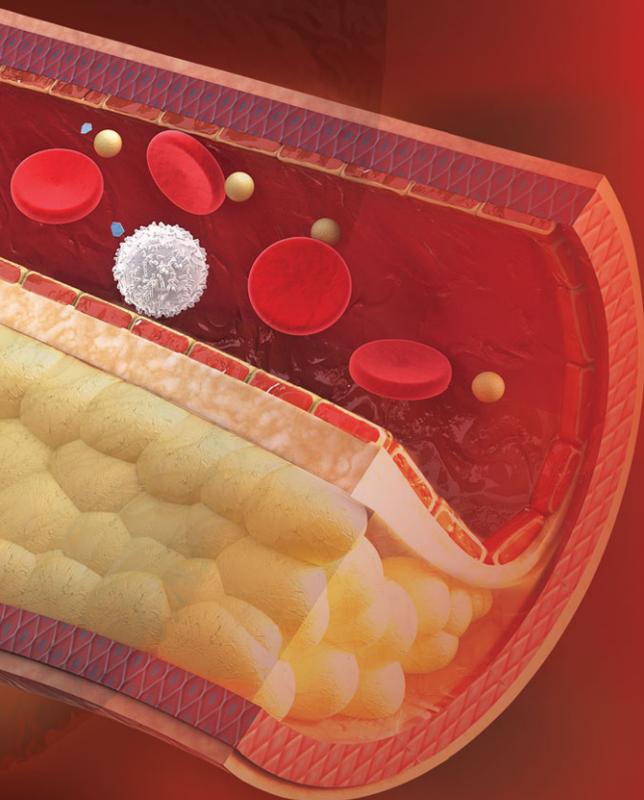
As humans age, their risk of a cardiovascular event escalates, even if traditional vascular risk values are in “normal” ranges.

An underappreciated factor in the development of cardiovascular disease is ***endothelial dysfunction***.

Our **inner arterial lining** is called the **endothelium**. It loses youthful function in response to normal aging.

The consequences of ***endothelial dysfunction*** are diminished circulation, high blood pressure, thrombosis, and atherosclerosis—the major causes of **stroke** and **heart attack**.<sup>1-4</sup>

Fortunately, astute scientists and formulators have discovered potent natural methods to tackle the underlying causes of ***endothelial dysfunction***.



Despite your physician's reliance on standard lipid/glucose testing to determine if you are at risk of heart disease, there is an equally, if not more important, factor involved in the development of arterial blockage: **endothelial dysfunction**.

The **endothelium** is an ultra-thin, one-cell-thick layer of cells that lines your arteries. As you age, your endothelium faces increased vulnerability due to **reduced nitric oxide**, exposing you to increased cardiovascular disease risk.

**Nitric oxide** plays a key role in the healthy functioning of the endothelium. Increasing nitric oxide production can revitalize endothelial function and prevent a host of cardiovascular disease risks.

Fortunately, researchers have discovered an extract from the rind of sweet oranges that has been shown to **increase** nitric oxide production. One way it does this is to **reduce** destruction of the enzyme that is needed to produce **nitric oxide**. This enzyme is called **endothelial nitric oxide synthase** (eNOS). The name of the natural orange peel extract that boosts *nitric oxide* is **CORDIART™**.

### Why Cordiart™ Is Superior

You might find other preparations of hesperidin on the market, so it's important to understand why Cordiart™ is different. It has to do with bioavailability, the measure of how much a substance you take truly gets into your bloodstream and is delivered to its sites of action in your body.

A human study shows that the hesperidin in Cordiart™ is far superior to other forms of citrus extract containing hesperidin.<sup>37</sup> When volunteers took a single **500 mg** dose of either Cordiart™ or commercially sourced hesperidin, blood sampling proved that Cordiart™ produced **108% greater absorption** (bioavailability) compared with the commercial product.

This increased bioavailability comes as a result of Cordiart™'s unique formulation. Cordiart™ has been specially formulated to contain a very high ratio of the active form of the molecule (the "S" form) compared with the less active form (the "R" form). This mimics natural oranges, which contain **100% "S"**—and is distinctly different from conventional hesperidin supplements, which contain nearly equal amounts of "S" and "R" forms.<sup>35</sup>

### Nitric Oxide: The Key To Endothelial Health

Endothelial cells *regulate* the amount of blood flow through the arterial system.<sup>5</sup> With age, the endothelium gradually loses its responsiveness, which leads to a reduction of the amount of blood that flows through the body.<sup>6</sup>

Declining endothelial function is the process that underlies a major cause of cardiovascular disease—atherosclerosis.<sup>3</sup>

The key to youthful endothelial responsiveness is **nitric oxide**. Aging people synthesize much **less** nitric oxide, which can **accelerate** *endothelial dysfunction* as well as additional cardiovascular factors including increased blood pressure and reduced blood flow.<sup>7,8</sup>

When **nitric oxide** concentrations are **increased**, smooth muscle cells of the arterial wall relax and allow increased blood flow and lower blood pressure.<sup>3</sup>

In order to produce **nitric oxide**, endothelial cells *require* a specific enzyme called **endothelial nitric oxide synthase** (eNOS).

### Cordiart™: A Multi-Targeted Endothelial Defender

Medical options to enhance and protect the endothelium are limited, yet researchers have identified a unique extract, **Cordiart™**, derived from sweet orange peels as a novel endothelial protection agent.

Cordiart™ is rich in **hesperidin-2S** (hesperetin-7-O-rutinoside 2S), a rutinoside molecule.<sup>9-11</sup> Studies show that **hesperidin-2S** can change the way endothelial cells communicate with smooth muscle cells to permit natural dilation and control of blood flow and pressure. In isolated endothelial cells in culture, hesperidin stimulates expression and production of **eNOS**, the **nitric oxide-producing** enzyme that triggers arterial dilation to increase healthy blood flow.<sup>12,13</sup>



## How Nitric Oxide Is Created

### Arginine → Nitric Oxide Synthase → Nitric Oxide

The typical American ingests **4-5 grams** of **arginine** a day from dietary sources.\*

Arginine is broken down in the body by multiple enzymes, one of them being **nitric oxide synthase**. The acronym "**eNOS**" is used to describe **endothelial nitric oxide synthase**, which is the enzyme that converts arginine into **nitric oxide** in the arteries.

Aging and other factors create a deficiency of **eNOS**, and a corresponding **deficit** of **nitric oxide** that is required for healthy **endothelial function**.

Boosting levels of **eNOS** and **nitric oxide** are crucial components of a program aimed at preventing vascular disorders.

\* King DE, Mainous AG, Geesey ME. Variation in L-arginine intake according to demographic characteristics and cardiovascular risk. *Nutr Res.* 2007 Jan;28(1):21-4.

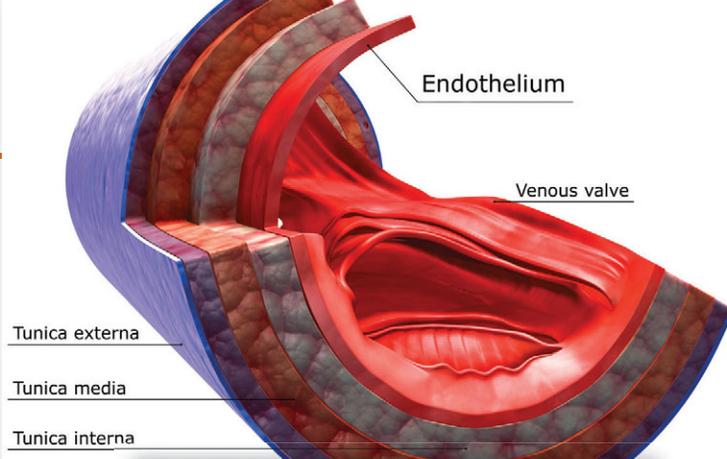
Hesperidin also reduces elevated **CRP** and **serum amyloid A**. Both of these inflammation-promoting factors impair eNOS function and contribute to decreased endothelial function.<sup>1,9-11,14,15</sup> Cordiart™ also lowers levels of **E-selectin**, an adhesion molecule that can initiate inflammatory infiltration of endothelial tissue.

Animal studies demonstrate that supplementation with hesperidin improved nitric oxide-mediated arterial relaxation, which significantly lowered the animals' blood pressure.<sup>16</sup> In other animal research, hesperidin *reduced* inflow of calcium ions into arterial smooth muscle cells that can lead to **arterial calcification**, a major factor in the development of angina (chest pain) and acute coronary syndrome, precursors to an all-out heart attack.<sup>17</sup>

## Measuring Increased Nitric Oxide

The most impressive findings about Cordiart™ come from studies documenting the moment-to-moment changes in endothelial function in living human subjects. Scientists can measure the effects of *increased* nitric oxide production in humans by measuring **flow-mediated dilation** (FMD).

Here's how it works: Flow-mediated dilation is a real-time measure of how well your blood vessels respond to endothelial signaling. It is also one of the best predictors of the progressive arterial stiffening that can later lead to heart attacks and strokes.<sup>18</sup> More *nitric oxide* means better endothelial function, which is indicated by increased flow mediated dilation. This indicates the ability of blood vessels to dilate (widen) as a result of an increase in the amount of blood needing to flow through a vessel.



## What You Need To Know

### Enhancing Endothelial Function

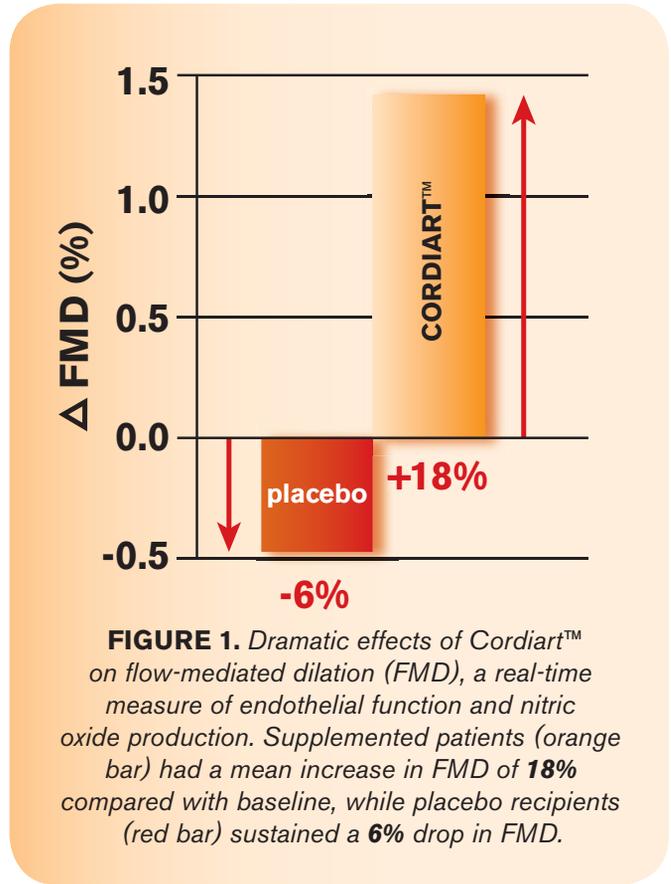
- A limited focus on cholesterol/glucose blood levels can be a dangerous mistake in your approach to preventing cardiovascular disease.
- Just as important is the health of your endothelium, the rapidly responding single layer of cells lining your arteries.
- Endothelial cells detect and respond to blood flow, directing blood where it is most needed.
- But endothelial function declines with age, through the ravages of chemical, metabolic, and inflammatory stresses.
- Those stresses destroy the vital eNOS enzyme that produces nitric oxide, a signaling molecule that endothelial cells use to direct blood flow properly.
- As a result, the aging endothelium needs defense.
- Cordiart™ increases the protective eNOS enzyme, which boosts nitric oxide signaling to dilate blood vessels in real time, allowing them to properly deliver blood flow to heart, brain, kidney, and other essential tissues.
- GliSODin®, a novel oral form of the enzyme superoxide dismutase, further protects eNOS from oxidant stress, and opposes the destructive effects of inflammatory molecules on endothelial tissue.
- And pomegranate extracts enhance protective HDL particles and promote reverse cholesterol transport out of endothelial cells where it can contribute to atherosclerotic plaques.

In a group of adults with *metabolic syndrome* (the combination of hypertension, central obesity, insulin resistance, and lipid disturbances), researchers found that the flow-mediated dilation in hesperidin-supplemented patients increased by a significant **32%** over three weeks when compared to patients on a placebo.<sup>15</sup> This demonstrates *the immediate risk-reducing effects* of hesperidin—improving flow-mediated dilation now prevents dangerous arterial thickening later.<sup>18</sup>

In another report of real-time endothelial function, 24 adults (averaging 52 years old) with metabolic syndrome took **500 mg** of Cordiart™ per day or a placebo for three weeks.<sup>19</sup> Prior to the study, the subjects' flow-mediated dilation and endothelial function were at levels that indicated increased cardiovascular risk. The placebo patients showed a worsening of vascular risk over the time of the study. They had an average *decrease* in flow-mediated dilation of **6%** compared with their baseline values, which means that their risk of heart attack elevated. The Cordiart™ recipients, on the other hand, had an **18% improvement** in flow-mediated dilation, which lowered their risk into the normal range.

As an added benefit, subjects in the Cordiart™ group had a significant **13% reduction** in levels of **E-selectin**, which are the potent adhesion molecules that trigger platelets and white blood cells to stick to arterial walls, where they can start to form clots and inflammation.<sup>20</sup>

In other words, subjects who took Cordiart™ showed a significant improvement in markers of *nitric oxide* production by their endothelial cells. At the same time, Cordiart™ made the endothelial surface *slippery*, which reduced the attachment by platelets and white blood cells, thereby reducing the risk of atherosclerosis and thrombosis (arterial clotting). Add to that the evidence



**FIGURE 1.** Dramatic effects of Cordiart™ on flow-mediated dilation (FMD), a real-time measure of endothelial function and nitric oxide production. Supplemented patients (orange bar) had a mean increase in FMD of **18%** compared with baseline, while placebo recipients (red bar) sustained a **6%** drop in FMD.

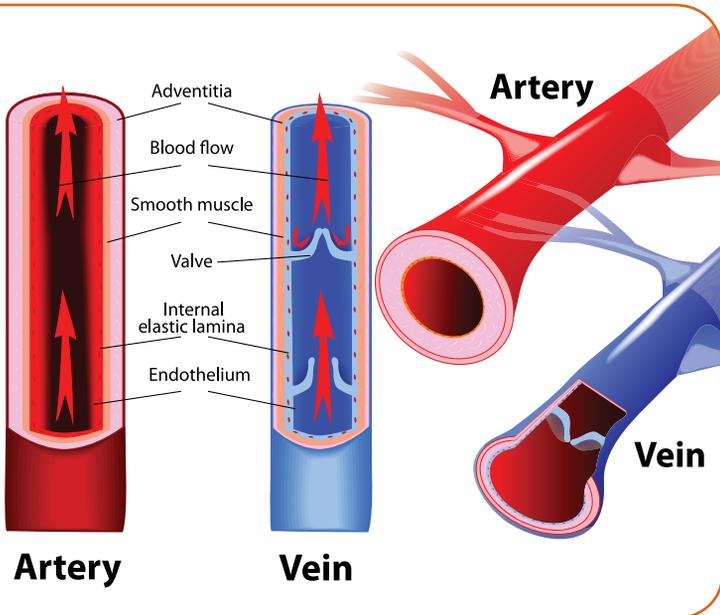
### Magnitude Of Vascular Disease Epidemic

Cardiovascular disease remains the leading cause of death and a major cause of disability worldwide. In the United States, vascular diseases account for over 30% of all deaths and are a major cause of rising health care costs.

Increased adherence to protective lifestyle changes is crucial for effective prevention.

**Life Extension®** members take extraordinary measures to guard against heart attack, stroke, and other vascular disorders. Most members supplement with *standardized pomegranate* extract or drink **pomegranate juice** daily. Pomegranate has demonstrated impressive improvements in markers of endothelial function.

What has to be realized, however, is that **aging** causes a progressive loss of endothelial function that too often results in accelerated **atherosclerosis**. While a cure for *endothelial dysfunction* is not yet available, there exist a number of validated strategies to partially **reverse** it.



Those currently using **pomegranate** may consider adding **Cordiart™** to their daily regimen to further combat endothelial dysfunction by enhancing **nitric oxide** synthesis and reducing adhesion and inflammatory factors that are known to contribute to arterial occlusion.

Those with significant vascular risks may also consider incorporating a specialized form of enteric-coated **superoxide dismutase (SOD)** that protects the **endothelial nitric oxide synthase (eNOS)** from oxidative damage.

We conclude this article with a brief review of the vascular restorative effects of enteric-coated **SOD** and **pomegranate**.

### Protecting eNOS From Oxidation

The endothelium is constantly exposed to oxygen-rich arterial blood, making it is an easy target for oxidative reactions that destroy **endothelial nitric oxide synthase (eNOS)**, which is required to make vital **nitric oxide**.

Oxidation is one of the chief chemical stresses faced by the endothelial enzyme **eNOS**.

**Superoxide dismutase (SOD)** is one the body's strongest endogenous protectors against damage to eNOS. SOD acts by scavenging free oxygen radicals that otherwise destroy eNOS and resulting production of nitric oxide.<sup>4</sup>

SOD used to only be available in an injectable form because it would otherwise be broken down by stomach acid before it could be absorbed. Several years ago, scientists created an innovative way to ingest SOD orally and protect it from the stomach's powerful acid. Called **GliSODin®**, this oral form of SOD can be delivered intact to the intestines where it can be safely absorbed without the need of injections.<sup>21,22</sup>

When **GliSODin®** was given to animals in a lab, they showed significant elevations in SOD activities and increased cellular resistance to oxidative damage.<sup>22</sup> Lab studies show that **GliSODin®** prevents oxidative destruction of mitochondria, the intracellular powerhouses that "burn" food molecules to release energy.<sup>22</sup>

SOD has been shown to reduce activity of **serum amyloid A**, the inflammatory molecule that impairs eNOS function and simultaneously boosts HDL-cholesterol levels, two factors that promote a healthy, youthful endothelium.<sup>11</sup>

Clinical studies reveal that **GliSODin®** is effective in reducing **carotid intima-media thickness (CIMT)**, a proven measure of cardiovascular risk.<sup>23</sup> CIMT is a direct measurement by ultrasound of the thickness of carotid artery walls—the thicker those walls, the greater the risk for a stroke or heart attack.



### Determining Your Cardiovascular Risk

Researchers use two different, but complementary, methods to discern a person's risk for cardiovascular disease. **Carotid intima-media thickness (CIMT)** is a static, long-term measure of arterial thickening (a pathological process) in response to poor endothelial function. Carotid intima-media thickness is a structural measure of how much vascular damage has already arisen from endothelial dysfunction; it is a powerful predictor of future cardiovascular events.<sup>36</sup>

Another measure of arterial responsiveness is **flow-mediated dilation**, or FMD. FMD is of growing importance in understanding endothelial function; it measures real-time, dynamic responses of blood vessels to endothelial signal, and has recently been shown to be the best predictor of progressive arterial stiffening, as measured by carotid intima-media thickness (CIMT).<sup>18</sup>

Think of FMD as the natural complement of carotid intima-media thickness; the former measures minute-by-minute changes in endothelial function, while the latter measures the cumulative effects of years of endothelial dysfunction. Good endothelial defense mechanisms must provide both improvement in FMD (short-term function) to reduce future increases in carotid intima-media thickness (long-term damage). Doing so helps maintain the best possible arterial responses to threats, and optimally lowers cardiovascular risk.

In a revealing study, subjects at risk of future cardiovascular disease took GliSODin® in the dose of **500 IU a day**, while control subjects continued their regular heart-healthy diet.<sup>23</sup> The study lasted for two years.

Subjects' carotid intima-media thickness was measured at baseline, at 365 days, at 545 days (1.5 years) and at 730 days (2 years). During this time, the control group's carotid intima-media thickness *increased* steadily, which indicates an increasing risk for stroke or heart attack. Subjects who supplemented with GliSODin® had a steady *decline* in carotid intima-media thickness.

### Heart-Protective Benefits Of Pomegranate Extracts

**Pomegranate extracts** (from fruit, flower, and seed oil) have long been known to enhance cardiovascular health through a variety of complementary mechanisms. Both lab and human studies demonstrate multiple heart-protective benefits of pomegranate extracts, including reducing blood pressure, lowering triglyceride levels, and boosting beneficial HDL cholesterol.

One of the most intriguing, and most recent, findings about pomegranate juice is its ability to protect the nitric oxide-producing eNOS enzyme from the chemical stresses that damage it, resulting in sustained higher levels of nitric oxide in endothelial cells. These effects have been demonstrated in live animal studies

as well as cultured human coronary (main heart) arteries.<sup>24-27</sup> Pomegranate juice also slows the oxidative degradation of nitric oxide, helping to sustain normal signaling from endothelial cells to the smooth muscle cells that must dilate in order to widen the artery and improve blood flow.<sup>28</sup>

But pomegranate juice has many other endothelial-protecting mechanisms.

When lab mice with atherosclerosis were given pomegranate juice, it increased the flow of cholesterol



### Serum Amyloid A Causes Endothelial Dysfunction

Recent discoveries show that a molecule called **serum amyloid A (SAA)** is connected to poor cardiovascular health and strokes. The **serum amyloid A** enzyme exerts a destructive influence on eNOS, thereby reducing nitric oxide production.<sup>10,11</sup> In fact, serum amyloid A is now recognized as an independent and significant threat, not only to the nitric oxide system, but to other crucial cardiovascular protective factors.

Serum amyloid A (SAA) is a little known but important marker of cardiovascular risk. For those with acute coronary artery disease, the presence of serum amyloid A is often the sign of a poor prognosis.<sup>37-39</sup> Serum amyloid A can wreak havoc on the cardiac vascular system by affecting reverse cholesterol transport, increasing endothelial dysfunction, promoting clotting, and activating inflammatory cells.<sup>37,39</sup> Reducing the levels of serum amyloid A in the body is now thought to be likely to benefit patients with acute coronary artery disease.<sup>39</sup>

Serum amyloid A causes endothelial dysfunction partly by reducing the protective activities of superoxide dismutase (SOD).<sup>10,11</sup>

Fortunately, SOD has been shown to reverse the serum amyloid A-induced contraction of vessels in lab studies, while raising HDL levels that may inhibit some of serum amyloid A's destructive effects.<sup>11</sup>

Another problem with serum amyloid A is that it binds to the protective high density lipoprotein (HDL) particles, reducing its ability to carry cholesterol away from the arteries.<sup>9,40</sup> Reverse cholesterol transport is a feature of HDL cholesterol particles, and it is critical in reducing the amount of cholesterol that builds up in the endothelium and inflammatory cells that produce atherosclerotic plaque.<sup>41,42</sup>

Leading researchers from around the world are now calling for development of new strategies to lower serum amyloid A levels and reduce cardiovascular risk from poor endothelial function.<sup>37</sup>

**out of** inflammatory white blood cells by **39%**, while lowering those cells' oxidized LDL cholesterol uptake by **31%**.<sup>29</sup> The reduction brought cellular cholesterol levels in these mice down to below that of young, untreated control mice. Remarkably, supplemented mice also experienced a **17%** reduction in the size of their atherosclerotic plaques when compared to placebo.

When lab mice are fed a high-cholesterol diet, they develop coronary heart disease (atherosclerosis affecting the main heart arteries). However, researchers found that when these mice were supplemented with **pomegranate extract**, they experienced numerous heart-protective benefits, including a reduction in the size of the atherosclerotic plaques in their major blood vessels, reduced oxidation, lower levels of inflammatory signaling molecules, and reduced numbers of inflammatory cells in the plaques.<sup>30</sup> In addition, while unsupplemented mice developed ECG abnormalities, the pomegranate-supplemented mice were protected from developing these abnormalities.

Human studies on pomegranate extracts are equally promising. In one study, hypertensive patients who drank **5 oz.** of fresh pomegranate juice per day for two weeks had reductions in both systolic (top) and diastolic (bottom) blood pressures.<sup>31</sup> Blood tests on

supplemented subjects also revealed significant reductions in **VCAM-1**, an adhesion molecule that triggers white blood cells to stick to arterial walls, causing blood clots and inflammation.

A separate study published in the *British Journal of Nutrition* found that people who were supplemented with **400 mg** of pomegranate seed oil twice daily experienced reduced lipid abnormalities. Specifically, their mean triglyceride levels fell from **306 mg/dL** to **244 mg/dL**, while their protective HDL cholesterol levels rose by **5 mg/dL** (they fell by **1 mg/dL** in placebo subjects).<sup>32</sup> This resulted in a reduction in the ratio of triglyceride-to-HDL cholesterol, a known cardiovascular risk factor, from **7.5** to **5.7**.

Pomegranate extracts can also enhance the benefits of lipid-lowering drugs (statins). For example, when the drug *simvastatin* was used alone in one study, it reduced reactive oxygen species (ROS) by **18%** compared with baseline. However, when subjects took a pomegranate extract in addition to simvastatin, that reduction reached **30%**. In addition, triglyceride levels fell by a significant **48%** in the pomegranate group, while the drug-only group experienced no change at all.<sup>33</sup>

The beneficial effects of pomegranate extracts have also been demonstrated in studies that specifically evaluated major artery wall structures through **carotid intima-media thickness** (CIMT). This is a long-term measure of arterial thickening as a result of endothelial dysfunction. An increase in CIMT indicates narrowing of the carotid arteries.

When people with increased CIMT took a pomegranate juice supplement, they experienced an average **30% reduction** in CIMT (hence a widening of the area for blood flow). This was in stark contrast to the

### Nitric Oxide Enhancement Restores Erectile Function

Nitric oxide is a vital arterial dilator beyond those involved in heart attacks and strokes. Normal function of the eNOS enzyme and adequate amounts of nitric oxide are required to achieve a normal erection in males; to develop an erection, arteries in the penis must dilate to allow rapid infusion of blood.<sup>43,44</sup> In fact, animal studies show that, in individuals with erectile dysfunction, levels of eNOS and nitric oxide are well below normal, while blood within the cavities of the penis contain an abundance of reactive oxygen species that further damage eNOS.<sup>43</sup> Among the properties of erectile dysfunction drugs like sildenafil is the ability to restore normal eNOS function;<sup>44,45</sup> such drugs were originally developed for use in patients with angina, who needed the ability to dilate their coronary arteries. Studies in animals now demonstrate that long-term pomegranate juice supplementation can reverse the diminished penile blood flow, inhibit oxidative processes within the penis, and restore proper erectile function.<sup>43</sup>





control patients, who had an average increase in CIMT of **9%**, demonstrating further narrowing the arteries.<sup>34</sup> Supplemented patients also experienced a **12%** reduction in systolic (top number) blood pressure and a beneficial **83%** increase in concentration of a native enzyme called **PON1**, which forms an important functional role of the protective HDL cholesterol complex.

### Summary and Recommendations

Healthy arteries have good **endothelial function** that enables them to expand and contract with youthful elasticity.

Good endothelial function requires ample supplies of **nitric oxide**, which is formed in the arteries by **nitric oxide synthase** (eNOS).

Normal aging, along with chemical and metabolic stresses damage **eNOS**. The resulting **endothelial dysfunction** creates a host of vascular disorders including diminished circulation, hypertension, and occlusive arterial disease.

While mainstream medicine has little to offer in terms of **endothelial dysfunction**, researchers have identified three nutrients that provide multi-targeted protection. These nutrients increase clinical markers of endothelial **nitric oxide** and provide other vascular protective effects.

The best studied of these nutrients is **pomegranate**, which protects endothelial **nitric oxide** and fosters **reverse cholesterol transport** by **HDL**, which can result in shrinking of atherosclerotic plaques.

**Cordiart™**, an extract from sweet oranges, has been shown to increase **endothelial nitric oxide synthase**, which stimulates **nitric oxide** production in the body. Cordiart™ also suppresses **inflammatory** reactions associated with circulatory disorders and has shown significant improvement in blood flow in human subjects.

**GliSODin®**, a specialized form of superoxide dismutase, further protects **endothelial nitric oxide synthase** (eNOS) from oxidative destruction.

Each of these nutrients has shown improvements in clinically validated markers of vascular health in human studies.

The dilemma for the health and pocketbooks of aging humans is how many of these endothelial-protecting nutrients are required to achieve **optimal** protection against vascular disorders.

Those already taking **pomegranate** may consider adding low-cost **Cordiart™** to further boost endothelial **nitric oxide** levels that is crucial to arterial health.

Individuals with particular vascular concerns may consider utilizing all three of these nutrients, **pomegranate**, **Cordiart™** and **GliSODin®**, which can now be obtained in one formula.

The objective of supplementing with these nutrients is to restore as much youthful endothelial responsiveness as possible by boosting **nitric oxide**, suppressing proinflammatory factors, and enhancing HDL functionality. ●

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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Optimal heart health depends on many factors, including proper *endothelial function*.<sup>1</sup>

Even with cholesterol/glucose levels in the healthy range, aging individuals need to maintain youthful integrity of their **endothelium**—the thin layer of cells lining the interior of the entire circulatory system.

Based on published studies showing improvements in *endothelial function*, health-conscious people have been drinking **pomegranate juice** or taking a *standardized pomegranate* supplement.

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The addition of **CORDIART™** (extract from sweet orange peels) to pomegranate provides another vascular benefit by activating endothelial production of **nitric oxide**, which signals the smooth muscles to relax, inducing vasodilation to support healthy circulation.

In clinical research, **500 mg** of CORDIART™ alone produced an **18% improvement** in **flow mediated dilation**, a direct marker of endothelial function. CORDIART™ also inhibited the pro-inflammatory factors **C-reactive protein** and **serum amyloid A** that interrupt healthy *nitric oxide* production.<sup>2</sup>

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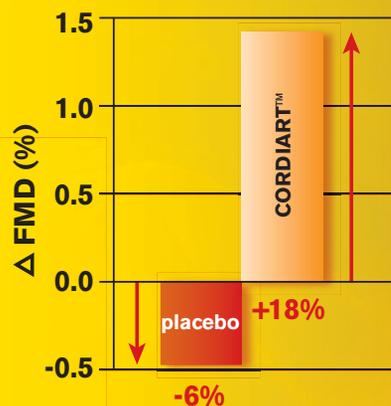
For those seeking the convenience of three nutrients clinically shown to help with blood flow and age-related changes in **endothelial function**,<sup>2-6</sup> the newly formulated **Endothelial Defense™** provides **GliSODin™**, **Full-Spectrum Pomegranate™**, and **CORDIART™**.



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The orally active form of **superoxide dismutase (SOD)**—called GliSODin®—has been clinically demonstrated to support healthy arterial function and structure, while boosting levels of the body's protective enzymes—**SOD** and **catalase**.<sup>4-6</sup> The new Endothelial Defense contains a potent dose of **GliSODin®** along with **500 mg** of **CORDIART™**.

The new Endothelial Defense™ also provides standardized **pomegranate juice** extract and a proprietary **pomegranate flower** and **seed oil blend**. These extracts from different parts of the pomegranate plant provide potent **polyphenols** clinically shown to support healthy blood flow, youthful lipid and glucose metabolism, and healthy inflammatory factors.<sup>2,3,7-9</sup>

**Endothelial Defense™ with Full-Spectrum Pomegranate™ and CORDIART™** addresses many factors that promote youthful endothelial function in a dose of two softgel capsules daily.

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For those who only need the benefits of **CORDIART™**, it also comes in a low-cost **500 mg** capsule called **NitroVasc with CORDIART™** that requires only one-per-day dosing. The retail price for a month's supply of CORDIART is \$18. If a member buys four bottles, the price is reduced to **\$12**—a **34%** discount.

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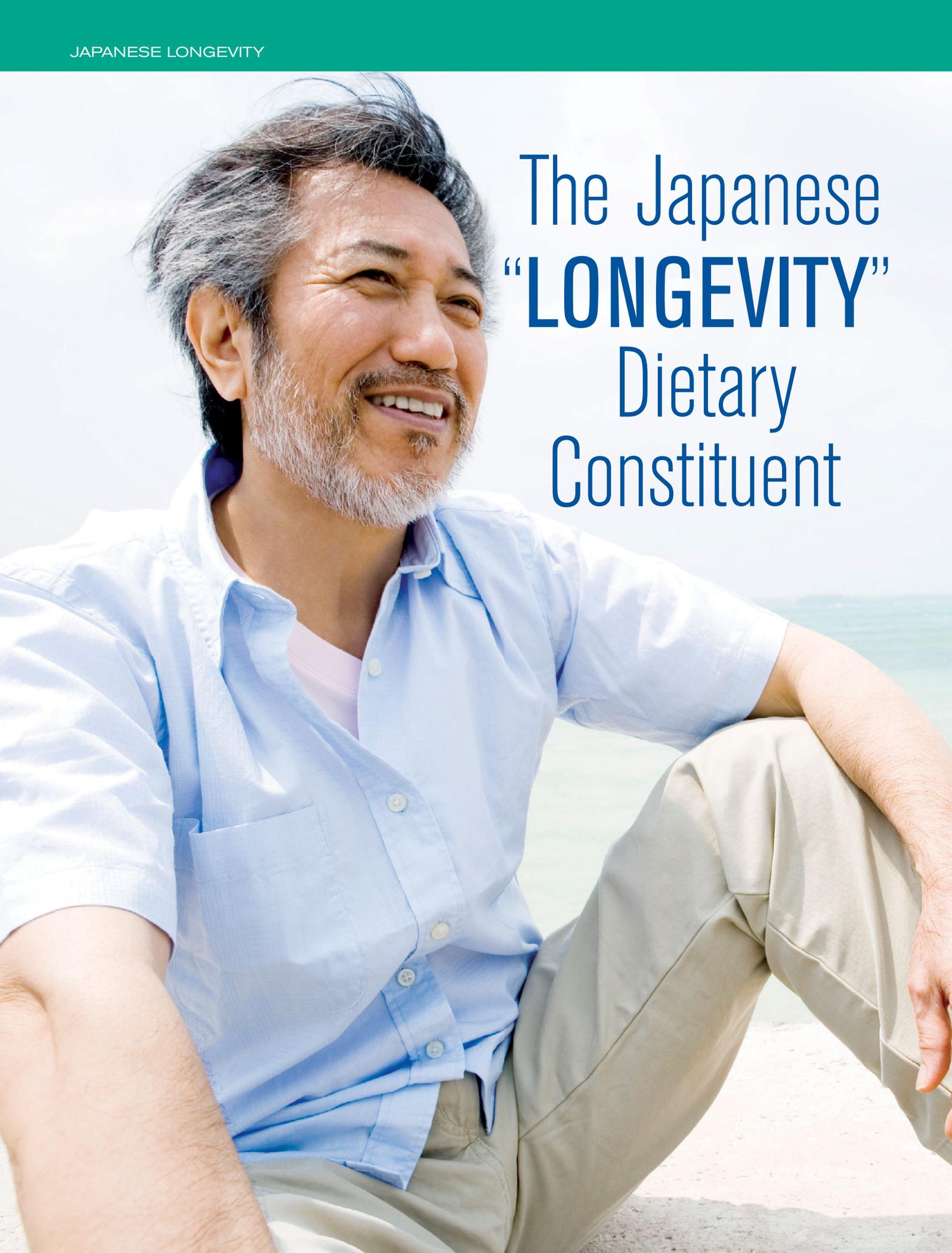
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The Japanese  
“**LONGEVITY**”  
Dietary  
Constituent

A hand is shown holding a piece of seaweed against a background of a beach and ocean. The seaweed is dark green and has a textured, leafy appearance. The background shows a sandy beach in the foreground, a calm ocean in the middle ground, and a bright sky with some clouds in the background. The overall scene is bright and natural.

The average life expectancy of the Japanese people is among the highest in the world.<sup>1,2</sup> Japan also has lower incidences of most chronic diseases compared to Western populations.<sup>2-4</sup>

Multiple factors contribute to their successful aging and healthy life span, including a lower-calorie diet rich in fruits, vegetables, and fish.<sup>2</sup> However, one dietary factor stands out that is virtually unique to the Japanese diet: regular consumption of **seaweed**.

For centuries, the Japanese have been consuming a type of brown seaweed rich in a compound called **fucoïdan**.<sup>5-7</sup>

Over **1,000 studies** have been conducted on this seaweed compound. In one study after another, the multiple benefits of **fucoïdan** have been demonstrated. These include important biological functions such as suppressing chronic inflammation, restoring immune competence,<sup>8</sup> and impeding cancer progression.<sup>9,10</sup>

## How Fucoïdan Works

Fucoïdan is a general term for a group of molecules extracted from several species of seaweed, with *Undaria pinnatifida* being a well-known source.<sup>11-14</sup>

Fucoïdan modulates the activity of the immune system in favorable ways.<sup>15-18</sup> Studies have shown that fucoïdan can stimulate acute immunity, engendering robust defense against infections, but also dampen lingering immune overactivation that can drive chronic inflammation and autoimmune disease.<sup>11-13,17,19</sup>

Fucoïdan helps activate specialized immune cells called *dendritic cells*, whose function is to present information to other immune cells and prepare them to mount an attack against a foreign pathogen. Fucoïdan also activates T cells, as well as enhancing the antiviral and anticancer response of the immune system.<sup>15</sup>

Compelling experimental evidence shows that fucoïdan can also hinder the migration of cancer cells by inhibiting molecules called *selectins*.<sup>19,20</sup> There are several types of selectins in the body, and they facilitate physical interaction and locomotion of various cell types. One problem with selectins, however, is that cancer cells can use these molecules to spread to other parts of the body via a process known as metastasis,<sup>20</sup> which often has deadly consequences for cancer patients.



The importance of fucoïdan’s interaction with **selectins** goes well beyond cancer defense. By inhibiting selectins, fucoïdan helps ensure that inflammation does not become acutely excessive. This is because immune system cells also rely on selectins to help them travel to sites in the body where they are needed. If too many white blood cells quickly converge and initiate intense short-term inflammation, tissues can be damaged.<sup>19-21</sup> Similar mechanisms may contribute to fucoïdan’s ability to ease conditions driven by chronic inflammatory processes, such as autoimmune diseases and atherosclerosis.<sup>22-24</sup>

Fucoïdan sets itself apart from other immunomodulators by effectively readying the immune system to powerfully attack pathogens, while simultaneously helping mitigate potentially damaging overactivation of the immune system and keeping chronic inflammation in check.

## Fucoïdan Combats Inflammatory Disease

As the immune system loses its ability to shut down beneficial inflammatory processes after they’ve completed their task, the result is harmful, chronic inflammation that produces a host of age-related conditions. Fucoïdan has shown tremendous promise in addressing conditions caused by chronic inflammation.

### Osteoarthritis

Osteoarthritis, the most common and disabling joint problem among aging people, has a major inflammatory component.<sup>25</sup> Recent animal studies demonstrate that oral fucoïdan supplements decrease osteoarthritis pain.<sup>25,26</sup> And an impressive human study showed that a **1,000 mg** per day dose of fucoïdan reduced pain, stiffness, difficulty with physical activity, and overall symptom severity by **52%** in just 12 weeks.<sup>25,26</sup>

### Rheumatoid Arthritis

While less common than osteoarthritis, rheumatoid arthritis is potentially much more crippling.<sup>27</sup> It is an autoimmune disorder—the tissue lining the joint is the target of an overreactive immune response in which the body attacks itself. Selectins contribute to this condition by helping to move inflammatory cells into the joint space, making the condition worse.<sup>11,28,29</sup> Studies show that fucoïdan blocks the infiltration of those harmful inflammatory cells, while also reducing inflammatory symptoms.<sup>11,28</sup> In addition, one study found that fucoïdan suppressed pain responses related to those inflammatory cells.<sup>29</sup> And another study showed that fucoïdan decreases production of “protein-melting” enzymes that contribute to joint destruction in rheumatoid arthritis.<sup>11</sup>

### Multiple Sclerosis

Multiple sclerosis is the leading immune-mediated disorder in the central nervous system.<sup>30,31</sup> It is a chronic disorder in which the immune system attacks proteins found on brain cells,<sup>32</sup> resulting in neurologic symptoms and weakness or partial paralysis. As in other autoimmune conditions, multiple sclerosis involves infiltration of white blood cells into the affected areas by selectins<sup>33,34</sup>—a process known to be blocked by fucoidan. Animal studies demonstrate that fucoidan can completely inhibit the development of experimentally induced multiple sclerosis, even when the animals received the fucoidan three days *after* induction of the condition. Importantly, the animals experienced a decrease in the infiltration of inflammatory cells into the spinal cord.<sup>35,36</sup>

### Autoimmune Myocarditis

Autoimmune myocarditis is a condition that occurs when the immune system attacks proteins in the heart muscle; it can arise as a complication of lupus<sup>37,38</sup> or following various viral infections.<sup>39,40</sup> A key feature of this condition is infiltration of heart muscle tissue by inflammatory cells, an action that is promoted by selectin interactions.<sup>10</sup> There's now strong experimental evidence that fucoidan has numerous benefits for those with autoimmune myocarditis,<sup>41</sup> including improving heart pumping function and reducing heart enlargement, as well as reducing the area of heart muscle involved and markers of muscle damage—all of which are related to inhibiting selectin function.<sup>10</sup>

### Inflammatory Bowel Disease

Inflammatory bowel diseases, chiefly Crohn's disease and ulcerative colitis,<sup>42</sup> are common autoimmune conditions in which sections of the intestine become highly inflamed,<sup>43</sup> resulting in chronic pain, diarrhea, and an increased risk of colorectal cancer.<sup>44</sup> As with other autoimmune conditions, inflammatory bowel diseases arise when inflammatory cells infiltrate intestinal tissue and produce inflammatory cytokines. One study showed that fucoidan can reduce disease activity and markers of inflammation in an animal model of inflammatory bowel disease.<sup>45,46</sup>

### Fucoidan Boosts Vaccine Responses

One consequence of immunosenescence is that aging people respond relatively poorly to vaccines, which leaves them vulnerable to mass killers such as pneumonia and influenza.<sup>47,48</sup> In an effort to improve the effectiveness of vaccines, scientists add substances called *adjuvants* that help increase the immune response.<sup>49,50</sup>



What You Need To Know

### Seaweed Promotes Longevity

- Waning immune function reduces your resistance to infections and cancers, while increasing your risk of chronic inflammation and autoimmune disease.
- Fucoidan, a derivative of open ocean-dwelling seaweed, fights immunosenescence in a way that complements known supplements such as Reishi mushrooms and Cistanche.
- Fucoidan acts primarily by blocking *selectins*, which are molecules that cause cells to stick to blood vessel walls, where they leave the circulation to enter tissues.
- White blood cells use selectins to infiltrate and produce inflammation, while cancer cells use the same mechanism to produce deadly metastases.
- By blocking these functions, fucoidan prevents inflammation, autoimmune reactions, and cancer metastases.
- Fucoidan has additional properties that enhance your response to vaccines and discourage cancer cells from replicating and growing.

### The “Okinawa Diet,” Longevity, And Radiation

Seaweed has been an essential component of many Asian diets for centuries, especially in the island nation of Japan.<sup>5,6</sup> In particular, those living on Okinawa are among the oldest and healthiest people in the world. It’s clear that Okinawan attitudes towards food as a medicine, coupled with the ubiquity of soy, green tea, and seaweed, are powerful contributing factors.<sup>65</sup>

Unfortunately, following the 2011 Fukushima nuclear reactor disaster, supplies of seaweed from the Japanese coast to as far away as British Columbia became contaminated with radioactive fallout.<sup>66,67</sup>

For this reason, consumers are strongly advised to seek their sources of edible seaweed products, including **fucoïdan**, from noncontaminated waters. The waters of the southeastern coast of Argentina, off the shore of Patagonia, are rich in fucoïdan-producing seaweed species, and there have been no reports of radioactive contamination from those still-pristine waters, making this an ideal source for fucoïdan.

As an extra bonus, by consuming fucoïdan from *Undaria pinnatifida*, you’ll be doing your part to help combat one of the most notorious invasive species. According to the Global Invasive Species Database, *Undaria* is an opportunistic weed, spreading mainly by sticking to ships’ hulls.<sup>68</sup> Because it forms dense submarine forests, it blocks sunlight and can choke off other plant and animal species.<sup>68</sup>



Fucoïdan has been found to be an extremely powerful vaccine adjuvant—not only for vaccines against infections, but for anticancer vaccines as well.

In a recent study, one group of mice received an anticancer vaccine along with fucoïdan supplementation, and one group received an anticancer vaccine without fucoïdan supplementation.<sup>51</sup> Compared to unsupplemented animals, the mice receiving fucoïdan had significantly greater proliferation of cells that help destroy cancer cells. The supplemented mice also had greatly improved function of immune cells in the spleen. Most importantly, the animals were protected against developing experimental cancers.

Fucoïdan can also help one’s body respond to vaccines against infections. Animal and laboratory studies show that supplementation with fucoïdan boosts immune cell function in the spleen and circulating blood, and boosts the ability of various kinds of killer cells to destroy the organisms represented in the vaccine.<sup>52-56</sup> In one such study, fucoïdan reduced mortality from a viral infection by **51% to 68%**, depending on dose.<sup>57</sup>

Influenza A causes the most serious flu outbreaks. In one compelling study of mice exposed to influenza A, oral fucoïdan supplementation reduced the virus’s ability to replicate and spread the infection.<sup>12</sup> These effects resulted in a decrease in disease-induced weight loss and death, and it also prolonged the survival. Fucoïdan also increased production of antibodies in blood and mucosal secretions that neutralize viruses.

Fucoïdan has been found to help boost the effects of the flu vaccine in humans as well—specifically in older adults. For this study, adults over 60 years old received either a placebo or **300 mg** per day of fucoïdan prior to receiving the flu vaccine.<sup>48</sup> Researchers found that the levels of influenza-specific antibodies rose in the supplemented group, while they failed to do so in placebo recipients.

This is an extremely important finding, since so many older adults can’t raise their flu antibody levels high enough to provide real protection during flu season.

### Fucoïdan Fights Cancer, Prevents Metastasis

While a primary tumor can be dangerous, the spread of cancer from the primary tumor to distant body locations (metastasis) is usually the direct cause of disease recurrence and a major cause of death in cancer patients.<sup>14,58,59</sup> But because cancer cells can float around in the bloodstream and seed a tumor even before cancer is evident, prevention of metastases should not wait until a cancer diagnosis—we all need prevention, every day.<sup>60</sup>



Fucoidan has been proven time and again to prevent the spread of cancer. One of the most unique ways it does this is by blocking **selectins** and preventing those free-floating cancer cells from adhering to blood vessel walls.<sup>14,59,61,62</sup> Laboratory studies show that adding fucoidan to cultures of cancer cells inhibits tumor cell-platelet interactions mediated by selectins.<sup>62,63</sup> Those interactions are known to be essential in the establishment of many primary tumors, as well as in the spread of cancer.

Fucoidan has other mechanisms of action as well, including:

- Inhibiting protein-melting enzymes used by cancer cells to force their way into tissues after leaving the bloodstream,<sup>61</sup>
- Preventing new blood vessel growth (angiogenesis),<sup>11,61</sup>
- Reducing the viability of cancer cells,<sup>11,61</sup>
- Slowing cancer cell proliferation,<sup>11,60-62,64</sup>
- Inducing apoptosis (programmed cell death) in cancer cells, and<sup>58,60</sup>

Numerous animal studies demonstrate the cumulative effects of fucoidan's cancer-preventive actions.

In a mouse model of human lung cancer, for example, fucoidan supplementation prevented spread of the cancer throughout the lungs—and as an added benefit, it prevented the weight loss common in cancer

patients.<sup>61</sup> And in a similar model of a highly invasive and metastatic form of liver cancer, fucoidan supplementation prevented the tumor from spreading. This beneficial effect occurred through its effect on selectins, preventing the adhesion of cancer cells to vessel walls.<sup>14</sup>

And in a rat study in which animals were injected with human colon cancer cells, fucoidan supplementation inhibited the adhesion of malignant cells to lung capillaries (a common site of metastasis) by more than **50%**.<sup>59</sup>

## Summary

Fucoidan blocks actions of **selectin** molecules that promote adhesion between cells and blood vessel walls. This prevents excessive infiltration of inflammatory cells into tissues, helping to prevent and mitigate arthritis and other autoimmune and **inflammatory** diseases. **Selectin-blockade** is one of the anticancer properties of fucoidan. Blocking **selectin** helps prevent **metastatic** spread of many types of cancer.

Fucoidan promotes better responses to vaccines, improves immune competence, and suppresses chronic inflammatory reactions. ●

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

*(Turn page for references.)*

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## Fucoidan Inhibits Cancer

One of the most exciting recent findings about fucoidan is that it not only fights cancer by interacting with *selectins*, but also has powerful effects on how cancer cells escape aging to replicate endlessly. This is also teaching us exciting—and promising—lessons about how normal cells age, and what how we might slow that process to promote extension of our own life spans.

Aging at the cellular level is a highly complicated process, governed by a number of molecular mechanisms. Cellular aging is a double-edged sword. On the one hand, it contributes to aging of the entire organism, and is therefore something we'd like to oppose; on the other, cells entirely freed of aging mechanisms become capable of endless replication, which is a hallmark of cancer.

A recent fascinating study showed that, in a line of liver cancer cells, fucoidan treatment essentially enhanced the aging and eventual tumor cell death. This was accomplished by the selective upregulation of a gene (p53) that permits cell aging and death by apoptosis.<sup>69</sup> In healthy liver cells, however, the same dose of fucoidan had the opposite result, reducing levels of a sensitive marker of cellular aging ( $\alpha$ 2M). As the researchers point out in their published report, this means that fucoidan has an *anti-aging effect* in *normal* cells, while in fact promoting aging and *death* in *cancer cells*—two desirable effects from a single compound.

There's more, however.

Fucoidan fights cancers early in their development through activation of the immune system.<sup>70</sup> This is essential not only in cancer prevention, where it leads to early identification and destruction of malignant

cells, but also to the overall process of immune system aging, or immunosenescence.

To elicit details of how fucoidan influences the immune system in the face of cancer, researchers treated mice with fucoidan supplements for four days, and then inoculated them with tumor cells.<sup>71</sup> Compared with nonsupplemented mice, the fucoidan-treated group survived longer in the face of the cancer. Further study showed that fucoidan treatment enhanced the cancer cell-killing ability of **natural killer cells**, crucial immune system cells that deliver a fatal blow to cells infected with microbes or showing markers of cancer cells. This effect was attributed to a doubling of the amount of interferon-gamma, a powerful signaling molecule, produced by the immune system's T cells.

Very similar effects were shown when mice were inoculated with leukemia cells while on fucoidan supplementation, resulting in a **65%** reduction in tumor development.<sup>70</sup> It has also recently been demonstrated that fucoidan enhances production of antibodies that coat invading organisms like bacteria, leading to their eventual destruction by immune system cells.<sup>72</sup>

All of these findings are good news in the never-ending fight against cancer. They also shine a bright light on **immunosenescence**, the gradual waning of the immune system with age. Fucoidan is showing promising signs of being a bulwark in our battle to restore youthful immune function, an effect that will help us respond more fully to vaccines, to reduce our risks of autoimmune disease, to fight off infections, and, of course, to attack and destroy cancer cells before they can establish themselves as a malignant tumor.

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# Standardized TART CHERRY Extract

# STRONG SUPPORT FOR SORE MUSCLES

## After Exercise and Everyday Exertion

**Tart cherries** are chockfull of compounds found to block **COX-1** and **COX-2** inflammatory enzymes.<sup>1</sup> Benefits of the fruit include:<sup>2-5</sup>

- **Rapid muscle recovery after exercise, and**
- **Fast relief from the minor aches, discomfort, and stiffness following everyday activities.**

### Clinically Validated

Numerous studies have confirmed the muscle-supporting benefits of tart cherries. One clinical trial found that consuming tart cherry juice twice daily produced a substantial decrease in muscle symptoms related to exercise. In the same study, loss of strength due to exercise over four days was reduced from **22%** to only **4%**.<sup>4</sup>

### Anthocyanins

**Anthocyanins**—the powerful flavonoids found in dark-pigmented fruit—have been studied for their many advantages, including **heart, cellular, and cognitive health**.<sup>6-8</sup> Tart cherries have a higher content of anthocyanins than many other fruits.<sup>1</sup>

Life Extension® offers **100% natural Tart Cherry Extract with Standardized CherryPURE®**, which opens the door to the positive benefits of continuous exercise—**at any age!** This formulation provides all the muscle-supporting benefits of tart cherries and matches that anthocyanin dose used in successful clinical trials by providing a standardized **40 mg** dose of anthocyanins in each vegetarian capsule.<sup>2,4</sup>

### Non-GMO

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

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### Tart Cherry Extract with Standardized CherryPURE®

Item #01723 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$22	<b>\$16.50</b>
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# Preserve Youthful CELLULAR ENERGY with Next-Generation LIPOIC ACID

Published studies have shown the critical importance of **lipoic acid** in supporting healthy mitochondrial function.

Unlike other forms of lipoic acid, **Super R-Lipoic Acid** is more bioavailable, stable, and potent, achieving **10-30 times** higher peak blood levels than pure R-lipoic acid.<sup>1</sup> This unique **sodium-R-lipoate** can help you reach peak plasma concentrations within just 10-20 minutes<sup>2</sup> of supplementation.

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

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Item# 01208 • 60 vegetarian capsules

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1 bottle	\$49	<b>\$36.75</b>
4 bottles	\$45 each	<b>\$33.75 each</b>

Suggested dose is one to two capsules daily.

Non-GMO

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

• Bio-Enhanced® is a registered trademark of Geronova Research, Inc.

# OPTIMIZED FUCOIDAN

## The Japanese Secret of Longevity

For thousands of years, the Japanese, who have one of the longest life spans in the world,<sup>1</sup> have been consuming a type of brown seaweed that is rich in a molecule called **fucoidan**.

Found primarily in edible seaweed, **fucoidan** is an integral part of the Japanese diet consumed by the world's highest concentration of centenarians. Over a thousand published studies have found that **fucoidan**:<sup>2-6</sup>

- Promotes DNA protection
- Supports a healthy immune system
- Promotes tissue regeneration
- Sustains cell-to-cell communication

**Maritech® 926 fucoidan** is sourced from hand-harvested, wild seaweed found exclusively in pristine ocean water. A cutting-edge water-extraction process ensures **fucoidan's** delicate molecular structure is delivered intact to provide the critical nutritional benefit of *Undaria pinnatifida*, which is the species of seaweed used in the majority of scientific studies on **fucoidan**.

One capsule of **Optimized Fucoidan with Maritech® 926** provides **88.5 mg** of standardized *Undaria pinnatifida* extract, equaling the amount of fucoidan typically found in a traditional Japanese diet.<sup>7-9</sup> Most people require only one capsule daily, though aging individuals seeking to enhance the benefit may choose to take two per day.

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Item #01513 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$36	<b>\$27</b>
4 bottles	\$33 each	<b>\$24.75 each</b>

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# MAJOR ADVANCES IN GLIOBLASTOMA TREATMENT

By William Faloon

In 2013, Life Extension® announced a discovery that added precious years to people stricken with a lethal brain cancer called glioblastoma. The drug shown to be effective was called valganciclovir, which is typically prescribed to treat cytomegalovirus.

In 2015, the CBS News program “60 Minutes” featured a story about research emanating from Duke University Medical Center showing complete responses in terminal glioblastoma patients who were administered a re-engineered polio virus directly into their brain tumor. The re-engineered virus prompted a powerful immune response against the viral-infected cancer cells, which in some patients appeared to eradicate their glioblastoma.

## **The Magnitude Of Human Carnage**

Each month, 1,000 Americans die from glioblastoma. Up until now there was no cure. Survival from time of glioblastoma diagnosis averages only 15 months.

Valganciclovir extended survival to over four years in some studies. Doctors are cautiously optimistic that this re-engineered polio virus may be curative.

## **How To Enroll In Duke University Study**

If you or someone you know suffers from glioblastoma, here is the patient criteria needed to participate in this Phase I clinical study:

- 1. You must have a recurrent glioblastoma (meaning you have already failed at least one conventional treatment).**
- 2. You can only have one area of tumor.**
- 3. You must be fully functional, which means totally coherent and able to walk and function on your own.**

If you said yes to all three, call and speak to Brittany at 919-684-5301 and press option 1. Brittany will set you up to speak with the nurse who will continue with the medical screening process to see if you qualify for the trial.



### Questions Life Extension® Asked Duke University

**Question:** How many glioblastoma patients is Duke accepting?

**Answer:** There are no limits at this point. People have to qualify after they provide us with their medical histories and complete all the paperwork. If accepted, they then meet the nurses and doctors for their appointments.

**Question:** How long is the wait to begin treatment?

**Answer:** Treatment starts after the patient meets all the appointments and completes the screening. Patients start treatment as soon as everything is in order.

**Question:** Are younger people given preferential treatment?

**Answer:** No.

**Question:** Has anyone been turned away following the favorable “60 Minutes” report?

**Answer:** No one is rejected. We have had a lot of calls, but have been able to handle them. The prescreening questions help to eliminate wasting time so we can continue the screening process and see if people qualify for the study after all the preliminary work is done. That is based on them meeting their appointment times, sending in the paperwork and meeting all the other necessary criteria, etc.

### We Applaud Duke University... But More Lives May Have Been Saved

It appears this re-engineered polio virus therapy could have been introduced sooner had it not been for bureaucratic hurdles regarding human clinical research that Congress has to fix. Glioblastoma is considered virtually **100%** terminal and no human should be denied access to an experimental therapy that has a credible chance of working.

View the “60 Minutes” segment at [www.LifeExtension.com/glio](http://www.LifeExtension.com/glio) for more information regarding this new treatment for glioblastoma.

To inquire about qualifying for this Duke University study, call Brittany at 919-684-5301 and press option 1. If you meet eligibility criteria, Brittany will set you up to speak with the nurse who will continue with the medical screening process to see if you qualify to enter the trial.

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



# *An Alternative To* Conventional Breast Cancer Treatment

If you or someone you know has been recently diagnosed with **breast cancer**, this report may be of importance.

Most **breast cancer** patients do not die directly from their malignancy. Side effects from treatment, however, can be significant even if therapy is limited to lumpectomy.

An alternative approach is now available that has been shown to work as well as surgery, radiation, and chemotherapy, but without the side effects.

In fact, the 15-patient initial clinical trial showed this treatment alternative produced superior results to conventional therapies, but the study was small in size and more data will be needed before a definitive comparison can be made.

Contact information about this novel therapy is provided at the end of this article.

## Treating Breast Cancer: Where We Stand In Year 2015

This year in the United States, a staggering **231,000** women will be diagnosed with **breast cancer**.<sup>1</sup> It is the most common malignancy in women.

Fortunately, because of earlier detection and improved treatments, most women diagnosed with breast cancer will not die directly from the malignancy.

Nonetheless, breast cancer remains the second-leading cause of death among American women, resulting in **40,000 deaths** each year.<sup>1</sup>

Looking at overall numbers, however, is quite misleading. **Early-stage** breast cancers are nearly **100%** curable, whereas only **25%** of advanced (stage IV) patients are alive at **five** years.<sup>2</sup>

From a common sense standpoint, one might think that conventional therapy for **early-stage** breast cancer makes sense due to the high cure rate.

Overlooked are the side effects of **mastectomy** such as pain, scar tissue formation, numbness, tenderness, sensitivity, fluid or blood collection, infection, and tightness. **Radiation, chemotherapy, and hormone-blocking** drugs inflict more insidious side effects.

### Efficacy Of Conventional Therapies

To ensure that all tumor cells have been eradicated in patients with **early-stage** disease, high-intensity **radiation** is often administered into the chest, sometimes with follow-up (or pre-surgical) **chemotherapy**. While these procedures reduce risk of local recurrence



and metastasis, there can be lifelong health risks associated with these treatments, such as chemo-related **leukemia** and **radiation**-induced heart disease.

**Hormone-blocking** treatments used against certain types of breast cancer can induce premature menopause in younger women and create hormonal imbalances in older women that lead to a myriad of side effects, including osteoporosis.

A widely publicized study published in the *Journal of the American Medical Association*<sup>3</sup> showed that **breast-conserving surgery** (lumpectomy) plus **radiation** to the chest provided superior survival results compared to unilateral mastectomy.

In this huge study, **breast-conserving surgery** plus **radiation** also showed equivalent survival to removal of both breasts (bilateral mastectomy).

While we applaud the ability of conventional medicine to “cure” most early-stage breast cancers, we are concerned that the side effects of **breast-conserving surgery** plus **radiation** are being **trivialized**.

There is a litany of side effects caused by chest **radiation** for the treatment of breast cancer, some of which have long-term consequences such as lymphedema, rib bone weakening and fractures, heart problems, radiation pneumonitis, and peripheral neuropathy to the shoulder and arms.

Women diagnosed with more **advanced-stage** breast cancers are at a significant disadvantage with low five-year survival rates. These women are exposed to huge doses of **chemotherapy** that have been shown to improve survival, but at the cost of numerous well-defined side effects.

Women with these more advanced breast cancers need to look **beyond** conventional therapy as the aggressive methods to control **metastatic disease** are largely failing over the longer term.

### A Nontoxic Alternative

Outside of the United States, there is a well-researched cancer treatment referred to as **Photodynamic Immunotherapy**. The acronym that will be used throughout this report for this therapy is **PDIT**.

The basic mechanism by which **PDIT** works is through the use of a photosensitizing agent delivered to the breast tumor that, when exposed to a unique wavelength of light, causes one of the oxygen molecules to spin in the opposite direction in an ever increasing arc before it returns home. This oxygen molecule—otherwise known as **Singlet Oxygen**—produces an energy force that can neutralize nearby cancer cells while at the same time signaling the **immune system** to mount a response against infiltrative or metastatic tumor cells.

PDIT is designed to harness the energy of singlet oxygen to defeat cancer cells without serious side effects while amplifying the **immune system**.

When PDIT is applied to primary breast tumor(s), it neutralizes cancer cells and shrinks and destroys tumors by damaging the cell walls and blood vessels in the tumors, thus making it impossible for the tumor to receive nutrients.<sup>4,6</sup>

PDIT also activates the immune system by breaking down the cancer cells' RNA and exposing tumor cells' immune signal, i.e., antigens. This is called an **Adaptive Immune Response (AIR)**. AIR allows one's body to create its own unique reaction specific to antigens found in their tumor; up-regulating the immune system, and helping to protect against residual or metastatic malignant cells.<sup>4,6</sup>

An Adaptive Immune Response does not occur with conventional chemotherapy or radiation so by choosing **PDIT**, many patients are able to avoid **surgery, radiation, and chemotherapy**.

**Chemotherapy and radiation** have long been shown to severely suppress **immune** function. A little known fact about cancer **surgery** is that it *also* markedly suppresses immune responses.

**PDIT** is an outpatient procedure that can be performed once or more as required depending on individual response to the treatment.

### Results From Long-Term Clinical Study

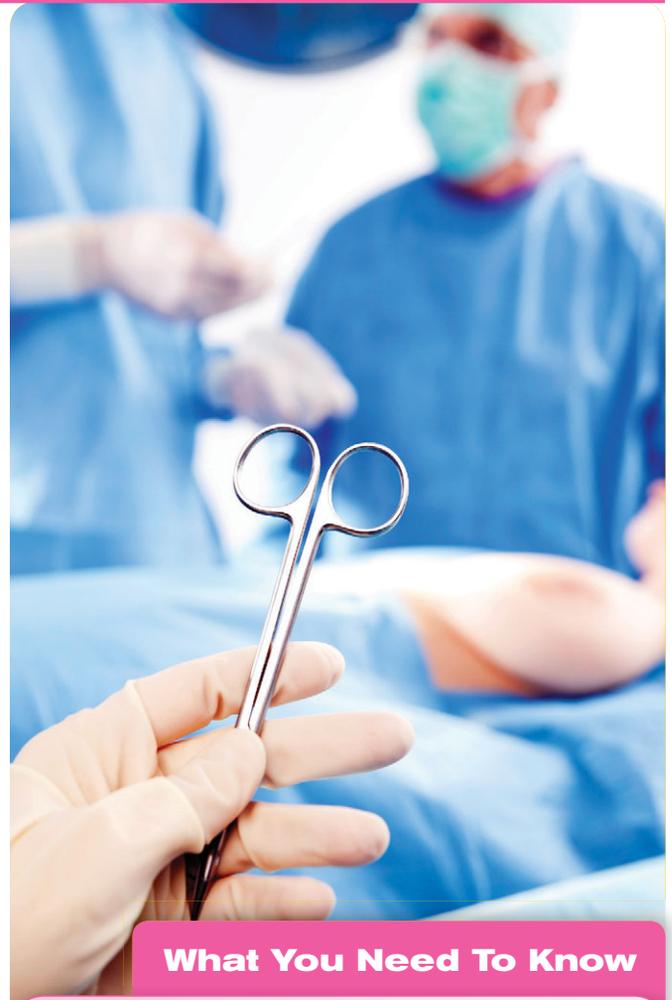
A group called the **International Strategic Cancer Alliance (ISCA)** decided to evaluate the effects of **Photodynamic Immunotherapy (PDIT)** on women with breast cancer and chose a highly regarded private clinic in the Caribbean as the venue for their study.<sup>7</sup>

Because of the PDIT technique's unique ability to destroy both an advanced primary tumor and life-threatening metastases, the researchers decided to treat women with breast cancers that had already spread to the lymph nodes or to other parts of the body.

The results show that in **Stage IV** breast cancer patients treated with **PDIT**, the survival rate to date has been **73.3%**. This is comparable to the most favorable responses using conventional therapies. The advantage is that PDIT produces no serious side effects.

### Details On The First 15 Study Subjects Treated With PDIT

Of the first 15 subjects who were treated, four are deceased, and 11 remain alive. Of those subjects, four are disease-free and two are in remission, which equates to a **73.3%** total subject survival rate. However, of the 15 study subjects, only six subjects completed the



### What You Need To Know

#### Important Facts About Breast Cancer

According to the National Cancer Institute:

- The median age at diagnosis for breast cancer is 61 years old.<sup>10</sup>
- The median age of dying from breast cancer is 68 years old.<sup>10</sup>
- Overall five-year survival for women with breast cancer is **89.2%**. For those with cancer that has metastasized (stage IV), however, just **25%** (or fewer) remain alive five years after their diagnosis.<sup>10</sup>

There is no question that advances in conventional breast cancer treatment have prolonged survival and have resulted in cures for many breast cancer patients. Overlooked are the lifelong side effects inflicted by surgery, radiation, chemo, and hormone therapies.



trial. Of those six subjects, one subject is deceased and five remain alive—of those five subjects, four remain disease free, which equates to an **83.3%** survival rate for subjects who completed the study.

The results from the initial study are encouraging, particularly in light of the poor survival rates when conventional therapies are used. Among the 15 initial study subjects, 11 (or **73.3%** of the group) remain alive today.

This compares favorably with the typical survival rate in the United States for women with advanced breast cancer treated with conventional therapies, which is only **25%** at five years.<sup>2</sup> From this small initial study, almost **three-times more** women (**73.3%**) have survived compared to those subjected to harsh conventional treatments.

Currently, six subjects have surpassed the five-year milestone. Of the surviving **73.3%**, the average survivorship is 59.8 months or **4.9 years** and counting!

Further, of those nine study subjects who did not complete the study but were treated at least once, three subjects are deceased, but six subjects remain alive, and of those, two are in remission, which equates to a **66.6%** survival rate for subjects who did not complete the study.

Results of conventional chemotherapeutic or anti-hormone breast cancer treatment aren't nearly as encouraging. One study reported an average survival of just 15.4 months,<sup>8</sup> another small study reported survival up to 23.1 months, but had no survivors by three years.<sup>9</sup> The authors acknowledge that this pilot study of PDIT was small and more data will be needed before definitive comparisons can be made.

Malignancies that have been treated under this **PDIT** program for the last **seven years** include early and advanced-stage breast cancer, melanoma, and other cancers. The science and clinical results on breast cancer patients treated with one form of PDIT were reported in the November 2012 issue of *Life Extension*<sup>®</sup>.

Ideally, breast cancer patients considering PDIT therapy should consider it before surgery, radiation, and chemotherapy inflict immune impairment and permanent structural damage. In too many cases, patients contact ISCA after conventional therapy fails, which reduces the likelihood that PDIT will induce a complete response.

In response to the article published almost three years ago, an overwhelming number of calls were received from breast cancer patients who wanted the treatment. These patients regrettably had to be turned away because the technology was not available outside the clinical testing arena. An organization called the **International Strategic Cancer Alliance (ISCA)** is pleased to announce that it can now assist women with breast cancer in obtaining access to a PDIT program.

### Advantages And Drawbacks To PDIT

A prime advantage of **Photodynamic Immunotherapy (PDIT)** is that it does not create the myriad of painful and lethal side effects associated with conventional treatments. A pilot study on 15 patients indicates it may be superior in efficacy to conventional treatment, but this was only a small study. It was, however, meticulously carried out.

Travel to the offshore outpatient facility is required and insurance is unlikely to reimburse, which is regrettable since PDIT costs only a fraction of what conventional oncology charges for breast cancer surgery, radiation, chemo, and other ancillary expenses. ISCA is seeking to persuade insurance companies to cover this cost, as it will potentially save them enormous expenditures compared to what they will normally pay.

### Concierge Assistance In Cancer Management

ISCA offers a concierge consulting service whereby it introduces cancer patients to treatments and diagnostics that are ahead of what most of conventional oncology offers.

One of the advantages of becoming an ISCA client is gaining access to advanced **Imaging Service** that can quickly assess whether or not the therapy has eradicated the cancer.

This includes new PET/CT imaging technology that provides the expertise needed to properly read and interpret the scans and that can detect metastatic “hot spots” very early in the treatment, and an advanced MRI technology that can find metastases in lymph nodes well below the size limitations of standard scans, again allowing early detection and thus a more precise diagnosis and targeted intervention.

These kinds of precise imaging technologies enable ISCA to ascertain how well PDIT and other therapies are working on each individual patient.

An advantage of PDIT therapy is that it may be considered as a primary therapy and if the advanced imaging techniques detect any residual tumor cells that fail to respond to ISCA-recommended therapies,



conventional treatment can then be initiated. It is not always possible to avail oneself of PDIT after certain conventional therapies have been performed. The novel MRI technique is also finding application with leading cardiologists and neurologists who can now monitor destructive inflammatory damage in real time if necessary, which can be important in identifying early infiltrating inflammatory damage to healthy tissue caused by conventional radiation therapy.

These invaluable early detection information systems allows ISCA and the client to create and optimize a **Personalized Treatment Protocol**, which can maximize the effectiveness of the treatment and allow the client the opportunity to consider treatment options including Photodynamic Immunotherapy (PDIT), or to opt for other treatments.

In addition to offering **Photodynamic Immunotherapy** for breast cancer, PDIT protocols are being developed for prostate and lung cancer, melanoma, and other difficult-to-treat cancers. ●

If you have any questions on the scientific content of this article, please call ISCA at 610-628-3419 or send an email to: [info@isca.us](mailto:info@isca.us)

For more information regarding the availability of the laser-assisted immunotherapy for breast cancer, please call ISCA at 610-628-3419.

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# Unique Face Oil Breathes New Life Into Aging Skin

Cumulative exposure to sunlight damages structural proteins and other molecules needed to keep skin firm and supple. This photo-aging of skin eventually results in wrinkles, pigment spots, and a sagging, aged appearance.<sup>1-5</sup>

**Cosmesis Anti-Aging Face Oil** seals in vital moisture while nourishing skin with supportive lipids. Formulated with ingredients clinically proven to penetrate and nourish the different layers of skin at the cellular level, **Cosmesis Anti-Aging Face Oil** restores a smoother, more youthful-looking complexion:

- **Olus and Camelina sativa Seed Oils:** This unique botanical blend, with its natural tocopherols, supports skin barrier function and hydration better than other essential fatty acids that are more susceptible to oxidation<sup>6</sup>—*protecting against dry and scaly skin.*
- **Palmitoyl Oligopeptide:** This oil-soluble peptide promotes production of the key molecules collagen and hyaluronic acid<sup>7</sup>—*shown to result in a near 20% reduction in mean wrinkle depth.*<sup>7</sup>
- **Marula Oil:** This fruit extract of the marula tree (*Sclerocarya birrea*) is rich in oxidation-resistant compounds that support collagen production<sup>8</sup>—*proven to revitalize skin and reduce the appearance of wrinkles.*<sup>9-11</sup>
- **Retinyl Palmitate:** This retinol form of vitamin A inhibits collagen breakdown, stimulates collagen formation, and promotes keratinocyte production and epidermal thickness—*resulting in reduced wrinkles and improved evenness of skin tone.*<sup>12,13</sup>

Applying one to two drops of **Cosmesis Anti-Aging Face Oil** morning and night to clean, dry areas of the face results in rejuvenation of the appearance of photo-aged skin for a vibrant, more youthful appearance!

## Cosmesis Anti-Aging Face Oil

Item #80158 • 1-ounce bottle

	Retail Price	Member Price
1 bottle	\$59	<b>\$44.25</b>
2 bottles	\$52 each	<b>\$39 each</b>



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Life Extension® **Two-Per-Day** formulas are the highest-potency multivitamins on the market. In fact, they have the highest potencies of *any* science-based multivitamin formula that can fit inside two easy-to-take tablets or capsules — so you get the full-spectrum of vitamins, minerals, and essential nutrients ... at a very affordable price!

Compared to **Centrum®** (the the leading multivitamin), **Two-Per-Day** provides:

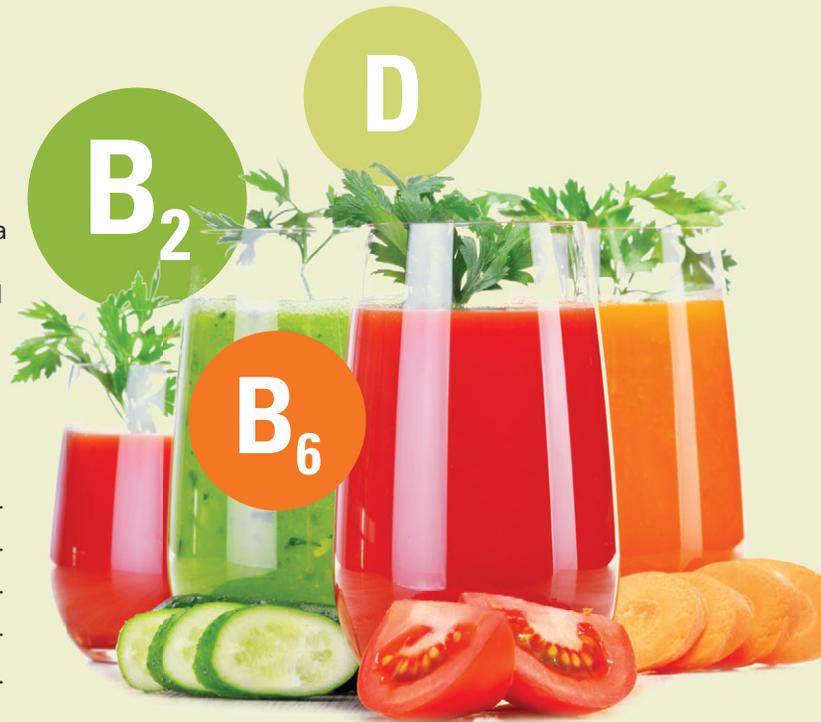
**Centrum®  
Can't  
Compete**

- ..... 50 times more vitamin **B1**
- ..... 12 times more vitamin **B12**
- ..... 25 times more vitamin **B6**
- ..... 10 times more **biotin**
- ..... 10 times more **selenium**
- ..... 8 times more **vitamin C**
- ..... 2 times more **vitamin D**
- ..... **Twice** as much **vitamin E**
- ..... **Twice** as much **niacin**  
(vitamin B3)
- ..... **Twice** as much **zinc**

## And That's Just The Beginning.

Life Extension's **Two-Per-Day** formula also contains bioactive forms of vitamin B2 and B6, plus zinc citrate (for its superior absorption), boron, lycopene, alpha-lipoic acid), and natural mixed tocopherols — nutrients that help protect against lipid oxidation. And Two-Per-Day now contains NIAGEN®, the first commercially available form of *nicotinamide riboside*, to help combat the aging process.

**Let's face it.** When choosing a multivitamin, you should pick the one whose innovative formula is based on 35 years of clinical research and made with premium-quality ingredients. In other words, the very best. Best supplements *always* come from Life Extension.



### Two-Per-Day Capsules

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Non-GMO



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

For the complete list of ingredients, trademarks, cautions, references, dosage and use, please visit [www.LifeExtension.com](http://www.LifeExtension.com).

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# Scientists Create World's First *Fully Functioning* ORGAN

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In an advance that reads like science fiction, researchers have created cells, which once transplanted into a living being, transform into an entire organ that is able to function as well as a natural organ!<sup>1</sup>

In this remarkable achievement, scientists were able to create a functioning **thymus gland** that helps oversee the regulation of our immune system. With aging, the thymus gland shrivels, virtually disappearing in normal adults as we approach age 40. This plays a role in the ***immune senescence*** encountered by maturing humans.<sup>2</sup>

The ability to develop a functioning thymus gland is therefore a major advance in **anti-aging medicine**.

## Understanding Regenerative Medicine

The field of *regenerative medicine*<sup>3,4</sup> is founded on the idea that aging tissues and organs can be repaired or replaced—not by transplantation from another human, but by regeneration from one's own cells. A central goal of this specialty is the generation of intact, transplantable organs from one basic cell line derived from the same individual who will receive the transplanted organ.<sup>1</sup>

This approach removes any risks associated with current transplant medicine—which is the rejection of the new organ by the host's immune system. In this case, the new organ is grown from the host's own cells and therefore won't be rejected.<sup>5</sup> Readily available transplantable organs would also overcome the lengthy waiting lists that patients must currently endure because of the existing shortage of organs.<sup>6,7</sup>

In theory, a regenerative medicine specialist ought to be able to harvest a small number of cells from the intended host (by swabbing the inside of the cheek), expose those cells to various *signals* that would cause them to regress to a more primitive kind of cell (a stem cell), and then induce those stem-like cells to redevelop into the desired tissue types. The specialist would then simply transplant the “new” organ into the host.<sup>7-9</sup>

There has been surprising progress on the so-called “plug-and-play” organ production in laboratories around the world. Surprisingly, the difficulty

isn't getting functional cells for organs like kidneys, lungs, hearts, and livers—all of which have proved to be readily produced in culture.<sup>5,10,11</sup> Rather, the major challenge has been getting the cells to organize themselves properly in order to achieve the correct structure that has been shown to be a vital driver of organ function.<sup>12,13</sup>

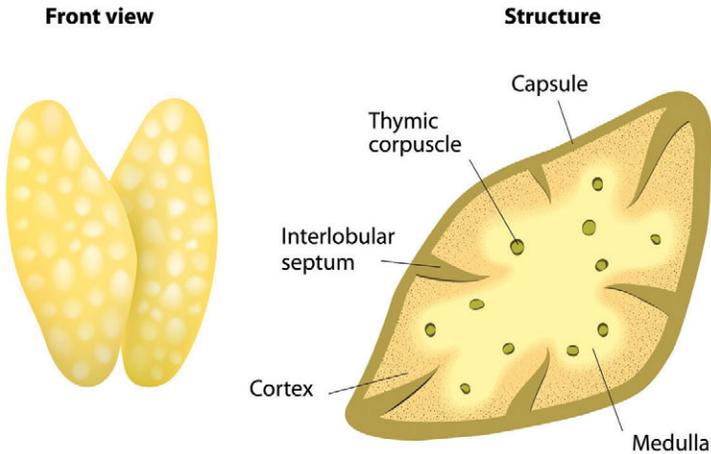
So far, functioning cells have been induced to grow on natural scaffolds derived from animal (mostly pig) organs, which have had the original cells removed to reduce rejection risk, and then repopulated with the recipient's own functioning cells. In some cases, such organs have even been transplanted into rodent models with modest success, but to date the transplanted organs have failed to perform a full range of functions.<sup>6,10</sup>

That all changed in September of **2014**, when an international research group reported their development of a fully intact and fully functional **thymus gland** from cells that were successfully transplanted into an animal host.<sup>1</sup> *This report is the first-ever publication about successful cellular reprogramming techniques that could generate an entire organ.*

A transplantable thymus would be a tremendous breakthrough in human medicine—not only because of its implications for the field of regenerative medicine, but also because of the important role the thymus gland plays in maintaining a healthy immune system.



## THE THYMUS GLAND



### Details From The Groundbreaking Study

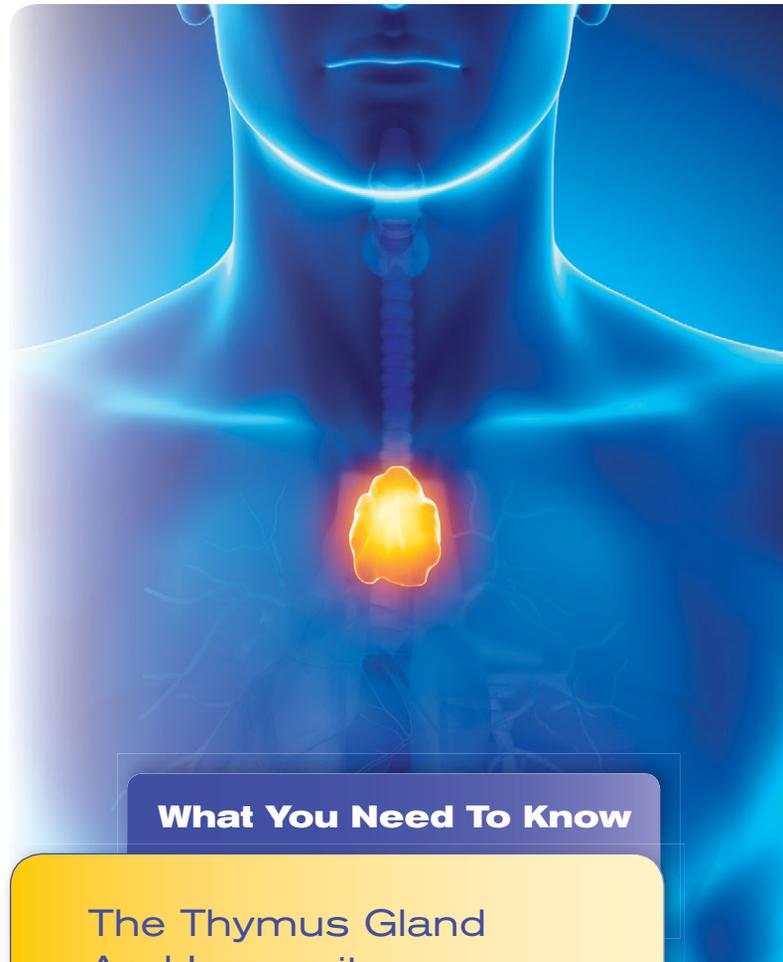
In September 2014, the journal *Nature Cell Biology* published a study by an international research group reporting their development of an intact, fully functioning thymus gland that was successfully transplanted into an animal host.<sup>1</sup>

For this study, researchers treated fibroblasts, which are cells that synthesize collagen and other extracellular substances, as the source material since they can be removed from healthy mice.<sup>1</sup> The researchers used recently developed techniques to “force” expression of a gene that is required to trigger the specialization of cells into functioning **thymus** tissue.<sup>1</sup>

That gene technique involves a “transcription factor” with the unusual name of “forkhead box N1,” or *Foxn1*. Declining natural levels of *Foxn1* have been implicated as a major cause of loss of thymus tissue with aging.<sup>14</sup> Cells that have been “turned on” by the *Foxn1* gene are capable of triggering the production of new naïve T cells, as well as “educating” and selecting them to perform their many functions.<sup>15-17</sup>

Once the basic, undifferentiated fibroblasts were genetically modified to express *Foxn1* and allowed to grow, they were reprogrammed into functioning thymic epithelial cells, or TECs. These induced cells, dubbed “iTECs,” fully supported efficient development of the major T cell types while growing in culture.<sup>1</sup>

Remarkably, when these reprogrammed cells were transplanted from the culture dish into living mice, the iTECs proceeded to establish an intact, functional **thymus** with a natural architecture that contained all of the cell populations necessary to support formation of new T cells.<sup>1</sup> Indeed, the recipients’ immune systems were rapidly populated by functioning T cells!



### What You Need To Know

#### The Thymus Gland And Immunity

- The thymus gland begins to decline in late adolescence, and has almost disappeared by the age of 40.
- The ability to restore normal thymic function would help reverse or arrest immune dysfunction.
- A groundbreaking study has now demonstrated the complete generation of a functioning, transplantable thymus gland in laboratory mice.
- The transplanted thymus produced normal numbers of functioning immune cells (T cells).
- When this technique is successfully applied to human beings, we can confidently anticipate the addition of years, even decades, to the current human life span.

If replicated in humans, it is entirely conceivable that we might see widespread use of thymus transplantation to boost immune function in both young children with congenitally absent thymus tissue, and in the much larger population of aging adults whose thymus glands have deteriorated. Success in this area would help end many of the problems associated with immune senescence, and could add years to the overall human health span.

## Summary

Breakthrough research has now resulted in the production of a *fully functioning, intact, and transplantable thymus* in a mammal model. The techniques used to accomplish this feat take place entirely in a laboratory culture dish, and pose no discernible threat to the intended host, who is also the donor.

Self-donated tissue growing into functional, transplantable organs may turn out to be the wave of the future. In the case of the thymus gland...that future is closer than ever. ●

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

## Why We Need More Transplantable Organs

It is hard to overstate the crucial need for organs available for transplant, as the technology for implanting organs is rapidly outpacing their availability. In 2012, the latest year for which data are available, 16,487 kidney transplants were performed in the United States—but 95,022 transplant candidates remained on waiting lists by year's end.<sup>12</sup> A total of 2,600 additional kidneys were available for transplantation, but had to be discarded for technical reasons, even as more than 4,700 patients died awaiting a kidney.<sup>12</sup>

The promise of regenerative medicine is to make such waiting lists obsolete by allowing production of each needed organ exactly when it is needed, and made from precisely the same tissue type as the recipient because the original cells were derived from the recipient him- or herself. This would ensure a virtually inexhaustible source of organs for transplantation.<sup>12</sup>

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- Promoting insulin sensitivity<sup>9</sup>

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EXCLUSIVE REPORT FROM

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# The 2015 International Stroke Conference

A **stroke** is characterized by a blocked or broken blood vessel in the brain or carotid artery and is a major cause of physical disability, dementia, and death.<sup>1</sup>

With improvements in the quality of medical care, stroke death rates have declined since 1990, but stroke-related disabilities have increased 40%.<sup>2</sup>

More than one-third of those who have a stroke after age 80 become demented as a consequence.<sup>1</sup> Roughly half of surviving stroke victims have difficulty swallowing or suffer fecal incontinence,<sup>3</sup> and more than one-tenth experience seizures within five years.<sup>4</sup> Urinary tract infections<sup>3</sup> and pneumonia<sup>5</sup> commonly occur in stroke survivors as well.

Most stroke survivors have difficulty grasping and manipulating objects,<sup>6,7</sup> and many require assistance with basic daily activities due to having trouble walking or impaired vision, which can lead to falls (nearly a quarter of stroke survivors suffer falls).<sup>8,9</sup> Intriguingly, a pooled analysis of data from several studies suggested that **vitamin D** supplementation might reduce falls in some stroke survivors, possibly by increasing muscle strength.<sup>10</sup>



Stroke is classified as either an *ischemic* or *hemorrhagic* stroke.

**Ischemic stroke** accounts for about **85%** of strokes<sup>11,12</sup> and is caused by blockage of a blood vessel, preventing or severely reducing blood flow in the brain. Blood vessel blockage is typically caused by narrowing and hardening of arteries due to atherosclerosis, or blockage of a blood vessel by a blood clot or dislodged piece of atherosclerotic plaque.<sup>13</sup>

Up to **15%** of strokes are **hemorrhagic**,<sup>12</sup> in which a blood vessel in the brain has burst or broken. Hemorrhagic strokes are fatal much more often than ischemic strokes.<sup>14</sup>

The most effective treatment for ischemic stroke is the clot-dissolving medication **tissue-type plasminogen activator (tPA)** and clot-removing **intra-arterial surgical** procedures, which should be initiated promptly. The therapeutic benefit of tPA is greatest when administered within three- to four-and-a-half hours after ischemic stroke onset.<sup>15</sup> However, tPA is often not given because prompt CT or MRI diagnostics are not provided to rule out hemorrhagic stroke.<sup>16</sup> Intra-arterial clot removing devices have shown efficacy as long as 12 hours after onset of stroke symptoms.

**High blood pressure** is the greatest risk factor for stroke,<sup>17</sup> and stroke risk increases sharply as blood pressure exceeds **115/75 mm Hg**.<sup>18,19</sup> It is especially important for aging individuals to avoid high blood pressure and take steps to maintain good vascular health, as more than two-thirds of strokes occur in those over age 65.<sup>20</sup>

Life Extension® has outlined a variety of important strategies for reducing stroke risk in our *Disease Prevention and Treatment* protocols: Stroke, Atherosclerosis and Cardiovascular Disease, and Blood Pressure Management.

This article will summarize some of the most interesting discussions and presentations from the **International Stroke Conference** held in Nashville, Tennessee, February 11-13, 2015.

## White Matter Hyperintensities

Carole Dufouil, PhD, (Epidemiologist, National Institute of Health and Medical Research, Paris, France) spoke about the prevalence of various brain afflictions related to stroke.



Visualization of blood vessels in the brain with modern medical imaging equipment has revealed blockage of blood vessels even when there are no overt symptoms of stroke. Between the ages of 50 and 75, the incidence of these “**silent infarcts**” increases from about **5 to 20%**.<sup>21</sup>

The brain consists of both *gray matter* (neurons, axons, dendrites, synapses) and *white matter* (myelin coverings of axons that facilitate communication between neurons).<sup>22</sup> Areas of the brain that have a concentration of lines of communication between neurons are dominated by white matter.<sup>23</sup>

Imaging of the brain has revealed bright areas in the white matter described as **white matter hyperintensities**, which are thought to be due to various abnormalities.<sup>24</sup> Over a four-year period, persons with severe white matter hyperintensities are over **eight times more** likely to suffer severe cognitive deterioration than those with no white matter hyperintensities.<sup>25</sup> White matter hyperintensities are predictive of both Alzheimer’s disease and stroke.<sup>26-29</sup> Because white matter hyperintensities can be so reliably quantified, they can serve as a means of assessing the effectiveness of treatments for stroke or dementia.<sup>28</sup> Lowering blood pressure has been shown to slow the progression of white matter hyperintensities.<sup>30</sup>

The March 2014 issue of this publication described in detail the effects of white matter hyperintensities and ways to minimize them that include getting more physical activity and lowering **homocysteine**. The title of this article is “Leukoaraiosis: A Hidden Cause of Brain Aging.” Leukoaraiosis is the medical term used to describe white matter hyperintensities in the brain.

## Stroke And Infection Risk

Roland Veltkamp, MD, (Professor, Imperial College London, England) discussed infection resulting from stroke.



Immediately after a stroke, high levels of inflammatory proteins and cells are present, but within four days there is a profound suppression of the immune system.<sup>31</sup> The size of the stroke corresponds to the amount by which the immune system is suppressed.<sup>32</sup>

Suppression of the immune system is due to massive release of corticosterone and related hormones.<sup>33,34</sup> One result is that stroke victims often suffer from urinary tract infections, and pneumonia contributes to the death of many stroke survivors.<sup>34,35</sup> A very large study of stroke victims showed an infection rate of **30%**, but for stroke victims in the intensive care unit, the infection rate was **45%**.<sup>35</sup>

### Microinfarcts And Microbleeds

Mark van Buchem, MD, PhD, (Professor, Leiden University Medical Center, Leiden, The Netherlands) is an expert in imaging of the brain.



Brain imaging techniques have revealed that tiny blood vessel blockages (**microinfarcts**) and tiny blood vessel hemorrhages (**microbleeds**) are common in many apparently healthy people who have no obvious symptoms. Microbleeds are very common in the elderly, and have been suggested to be predictive of hemorrhagic stroke.<sup>36</sup>

A recent study found evidence of microbleeds in **99%** of subjects aged **65** or older, and that increasing the imaging strength increased the number of detectable microbleeds.<sup>37</sup> The amyloid-beta protein, which is implicated in Alzheimer's disease, can accumulate in blood vessel walls as well as on neurons.<sup>38,39</sup> But Alzheimer's disease patients show a higher-than-normal incidence of microinfarcts, independent of the amyloid-beta deposition in their blood vessels.<sup>40</sup>

Anand Viswanathan, MD, PhD, (Associate Director, Telestroke Program, Massachusetts General Hospital) has shown that **ischemic stroke** victims are twice as likely to have disruptive control of their cognitive processes (**executive dysfunction**) if they exhibited high levels of microbleeds in the cerebral cortex of the brain.<sup>41</sup> Cerebral microbleeds are also associated with high blood pressure and statin use.<sup>42</sup>



### Carotid Endarterectomy

Martin Brown, MD, (Professor of Stroke Medicine, University College London, England) spoke on the subject of carotid endarterectomy for prevention of ischemic stroke.



**Endarterectomy** refers to making incisions in blood vessels to remove atherosclerotic plaque.<sup>43</sup> Endarterectomy is a surgical procedure that has a small risk of immediate death, but in the great majority of cases, the benefits exceed the risks.<sup>44</sup>

A 10-year study of more than 1,500 patients with substantial carotid artery narrowing showed that endarterectomy of the carotid artery greatly reduced the risk of stroke.<sup>45</sup> The benefits are greatest for those under age 75.<sup>45,46</sup> Stroke risk reduction is substantially higher (about **70%**) for those in whom the carotid artery narrowing is greatest.<sup>47</sup>

### Plaque Composition In Stroke

Thomas Hatsukami, MD, (Professor of Surgery, University of Washington, Seattle) has used imaging of blood vessels in the brain to distinguish the types of atherosclerotic plaques that are likely to rupture.



Often, the amount of blood vessel narrowing produced by atherosclerotic plaque is less indicative that a plaque is going to rupture than the composition of the plaque. Plaques composed of fat rather than collagen fiber are more vulnerable to rupture.<sup>48</sup>

Plaques showing signs of inflammation are also more likely to rupture.<sup>49</sup> A blood test called the **PLAC<sup>®</sup>** test can help assess the stability of arterial plaque by measuring levels of an inflammatory enzyme called **Lp-PLA2**.

Modern imaging of blood vessels to detect the composition of atherosclerotic plaque can be used to determine when carotid endarterectomy is advisable.<sup>50</sup> Placing a **stent** (tube) in the carotid artery can be less invasive than endarterectomy, but stents have some risk of themselves causing ischemic stroke.<sup>51</sup>



## Migraine Headache And Stroke

Pamela Rist, ScD, (Instructor, Harvard School of Public Health, Boston) studies the prevalence of migraine headache, with or without aura.



**Migraine aura** refers to symptoms (usually in vision) that occur before or during the headache, such as seeing zigzag lines or flash spots.<sup>52</sup> In the United States, **18%** of females and **6%** of males have migraine headaches, with prevalence highest between the ages of 25 and 55.<sup>53</sup> People with migraine, especially with aura, are more likely to smoke or

have diabetes,<sup>54</sup> as well as have high blood pressure and high blood cholesterol.<sup>55</sup> Only those who have migraine with aura are at increased risk of ischemic stroke, which is approximately doubled.<sup>56</sup> But among all those with migraine, there is nearly a **50%** greater chance of hemorrhagic stroke.<sup>57</sup>

Increasing frequency of migraines corresponds with increasing area of white matter intensities in women, but not in men.<sup>58</sup> A significant correlation has been seen between the duration of aura and the increase in white matter hyperintensities seen over a period of nearly three years.<sup>59</sup>

Turgay Dalkara, MD, PhD, (Professor, Hacettepe University, Ankara, Turkey) wants to know the biological basis of migraine so that he can find therapies.



Migraine is a disorder affecting both the central nervous system and the blood vessels of the brain. Dr. Dalkara suggested that reduced blood flow can trigger a wave of electrical discharge (**cortical spreading depolarization**) in the brain,<sup>60,61</sup> which causes headache and aura.<sup>62</sup> A defect in brain blood vessels (an incomplete Circle of Willis) is especially common



in people who have migraine with aura.<sup>63</sup> On the other hand, brain tissue hyperexcitability, such as seen in epilepsy, may result in migraine and increased risk of stroke.<sup>64</sup> Anti-epileptic drugs and drugs that block adrenalin-like substances (like beta-blocker drugs such as propranolol) have been used to prevent migraine.<sup>65-67</sup>

About one-in-four people have a hole in their heart (**patent foramen ovale**) that failed to close after birth.<sup>68</sup> The prevalence of this condition is up to twice as common in people with migraine, and up to **three times** as common in people having migraine aura.<sup>69</sup> Dr. Dalkara has demonstrated that an air microembolism from a patent foramen ovale can cause brain electrical disturbance and headache.<sup>70</sup> Surgical closure of the patent foramen ovale has been shown to significantly reduce the severity and frequency of migraine headaches.<sup>71</sup>

## Preventing A Second Ischemic Stroke

Rustam Salman, PhD, (Professor, University of Edinburgh, Scotland) discussed therapy for preventing a subsequent ischemic stroke.



Acute stroke is treated as soon as possible with agents that dissolve blood clots. Aspirin is useful at any time following an ischemic stroke, as late as up to 48 hours after the stroke, but the sooner aspirin is given, the more effective the aspirin will be in preventing subsequent stroke.<sup>72</sup> One-quarter of ischemic strokes are **lacunar**, meaning they occur in blood vessels that penetrate deep into the brain.<sup>73</sup> The use of the anticlotting drug clopidogrel with aspirin soon after lacunar stroke was shown to be no more effective at preventing a subsequent stroke than aspirin alone, but significantly increased the risk of bleeding and death.<sup>74</sup>

## Brain Recovery After Stroke

Thomas Carmichael, MD, PhD, (Professor, Brain Research Institute, UCLA, California) described the effect of stroke on brain cells.

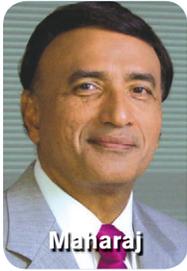


Carmichael

The immediate effect of stroke is cell death, but within a few days growth factors promote recovery.<sup>75</sup> Experiments in rodents and monkeys indicate considerable sprouting of new neuron connections following an ischemic stroke, although there is less sprouting in older people.<sup>76-79</sup>

There are currently no approved drug treatments that facilitate this process of brain recovery, but it is hoped that studying the natural growth factors causing brain recovery can lead to drug treatment.<sup>75</sup>

Dipnarine Maharaj, MD, a member of Life Extension®'s Scientific Advisory Board, suggests that prompt administration of a drug called Neupogen® (granulocyte-colony stimulating factor) might lead to faster neuronal recovery. Dr. Maharaj has seen improvements in long-term stroke victims when properly administering this drug (Neupogen®) that mobilizes stem cells from the bone marrow that then migrate to the brain.



Maharaj

## Quality Of Life After Stroke

Mandip Dhamoon, MD, (Assistant Professor Neurology, Mount Sinai Hospital, New York) studies quality of life for stroke survivors.



Dhamoon

In one five-year study, he found a slight annual improvement in quality of life in the younger lacunar stroke victims.<sup>80</sup> In another study, however, he found a marked decline in quality of life in the years following the stroke, but this decline was restricted to persons lacking medical insurance or only having access to Medicaid.<sup>81,82</sup>

## Driving A Car After Stroke



George

Stacey George, PhD, (Associate Professor, Flinders University, Australia) is interested in the prospect of rehabilitating stroke victims so they can drive an automobile.

Driving is an important aspect of daily living for many people. For about a third of stroke survivors there is no possibility of driving, but about

a third can drive without retraining, and a third would be able to drive after retraining and rehabilitation.<sup>83</sup> In a review of the literature, Dr. George found that there is not sufficient evidence to prove that driving simulators or other existing methods of retraining adequately address the needs of stroke victims.<sup>84</sup>

Hannes Devos, PhD, (Assistant Professor, Georgia Regents University, Augusta, Georgia) is also interested in methods of assessment and retraining of stroke survivors wishing to resume driving.



Devos

Dr. Devos favors virtual reality driving simulators that could simulate very risky conditions.<sup>85</sup> He also wants to see intelligent cars with brain-computer interface systems for shared control over driving<sup>86</sup> before we get self-driving cars. Dr. Devos and

colleagues have developed a set of three tests that can be administered in a physician's office that predict how likely a person is to fail a road test.<sup>87</sup>

## Conclusions

New medical imaging technologies are providing much more information about stroke risk. At present, however, these techniques are not being used extensively to guide stroke treatment.

Hopefully, future technological advances will better be able to distinguish between ischemic and hemorrhagic stroke in a timely manner. Stroke can be horrifyingly debilitating, which makes it an important affliction to avoid. A healthy lifestyle emphasizing practices that reduce atherosclerosis and blood pressure is the best way to avoid stroke. ●

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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Heart Health Support with...

# FULL-SPECTRUM POMEGRANATE FORMULA



Few nutritional sources have gained as much scientific validation as **pomegranate**.<sup>1</sup>

## The Next-Generation Pomegranate Formula

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

These little-known nutrients include: **punicanolic acid** that provides cellular support to help with inflammation,<sup>5</sup> and **pomegranate**, to combat age-related metabolic changes.<sup>6</sup>

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

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

<b>POMELLA® Pomegranate</b>	<b>400 mg</b>
Extract (fruit) [providing 120 mg punicalagins]	
<b>Proprietary Pomegranate</b>	<b>137.5 mg</b>
Blend [flower extract and seed oil (providing 30 mg punicic acid)]	

Non-GMO

Contains soybeans.

POMELLA® extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Science, Inc.

## Full-Spectrum Pomegranate™

Item #01423 • 30 softgels

	Retail Price	Member Price
1 bottle	\$24	<b>\$18</b>
4 bottles	\$21 each	<b>\$15.75 each</b>



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To order Full-Spectrum Pomegranate™,  
call 1-800-544-4440 or  
visit [www.LifeExtension.com](http://www.LifeExtension.com)

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**NEW**

# Protect Your Cells Against Glycation and Premature Aging



Foods cooked at high temperatures including grilled meats and fried vegetables can create harmful **advanced glycation end products (AGEs)**. Glycation can lead to cellular damage and premature aging.<sup>1,2</sup>

Researchers have identified three nutrients that have been shown to effectively protect the body's proteins against the glycation process.

The **new Glycation Protection Formula** contains:

- **Carnosine** is a unique dipeptide found in brain, muscle, and other tissues, but its levels diminish with age.<sup>3</sup> It has been shown to interfere with the glycation process and scientists believe that carnosine helps support longevity in our most vital organs.<sup>4,5</sup>
- **Benfotiamine** is vitamin B1 in a highly absorbable, fat-soluble form that can easily penetrate cell membranes.<sup>6</sup> It further protects against glycation and supports healthy blood glucose levels in those already within normal range.<sup>7,8</sup>
- **Pyridoxal 5'-phosphate**, or **P5P**, is vitamin B6 in a metabolically active form shown to protect lipids<sup>9</sup> and proteins against glycation reactions and accumulation of advanced glycation end products.<sup>10,11</sup> **P5P** also "traps" already-formed AGEs and shuttles them out of body cells.<sup>12</sup>

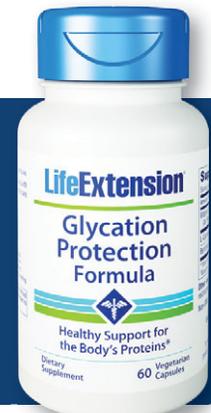
**Glycation Protection Formula** offers a **cost-effective** way to benefit from the complementary glycation-reducing effects of all three compounds.

The suggested dose of two capsules daily provides:

<b>Carnosine</b>	<b>1,000 mg</b>
<b>Benfotiamine</b>	<b>200 mg</b>
<b>Pyridoxal-5-phosphate</b>	<b>100 mg</b>

**Note:** Those already taking **Mitochondrial Energy Optimizer** or **Super Carnosine** do not need this new **Glycation Protection Formula**.

**Non-GMO**



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## Glycation Protection Formula

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# A LISTING OF Comprehensive Stroke Centers In The United States

A Herculean effort has been made by the **Life Extension®** staff to identify hospitals in major metropolitan areas that fit the definition of a **comprehensive stroke center**.

At the time we made contact with the hospitals we have listed on the following pages, they were capable of rapid-response treatment of acute stroke using **intra-arterial thrombectomy/tPA** (endovascular clot retrieval therapy).

Obtaining this information about acute stroke treatment capabilities has been highly challenging. If you don't see a hospital near you on the list we have compiled, check our special website: **www.LifeExtension.com/stroke**. We will be adding more stroke centers to our list as we identify them.

If you do not find a comprehensive stroke center close by, we encourage you to reach out to your local hospitals to find which ones offer the latest endovascular stroke treatment expertise and clot retrieval devices.

## How To Interact With Hospitals

Identifying and amalgamating this list of comprehensive stroke centers has been a daunting task. Getting through to medical staff at hospitals to verify their stroke treatment capability sometimes took weeks.

We don't want to discourage **Life Extension®** members from aggressively reaching out to their local hospitals to determine which are most competent in reversing acute ischemia stroke. We just want to provide some guidance on the obstacles we ran into.

We applaud those hospitals where the operators have the ability to patch through to a **stroke coordinator**, where you can ask them questions and get specific answers. But, more often than not, if you do not have a name for the operator to look up, they cannot send you anywhere.

Sometimes the operator sends you to a neurology unit, but most of the time they haven't a clue as to what devices are used for cerebral clot retrieval. They will give you another number, which you hope yields results, but often it doesn't. After being sent through several floors, including radiology, neurology, and a variety of subdivisions, you may feel like giving up. You may have been on hold for 10 to 20 minutes while you are being patched around the hospital.

At some point, when you start all over and talk to the operator, you may ask for the emergency room,

because that's where one would go first. Of course, we never want to call there first because nurses are extremely busy and are juggling all kinds of urgencies, but if you can get the charge nurse or nurse educator, they more often than not, know the name of the **stroke coordinator**. Some hospitals have so many menus to plough through that even getting to the ER takes several minutes.

In some instances, when we explained what we were seeking, we were told they could not answer our questions without approval from their "public relations" department. Most of the time, when we finally reached the destination of the stroke coordinator of the hospital, all we got was voice mail.

Currently we have left **106** voice messages at hospitals that have not been returned. We have deleted **190** hospitals that don't offer intra-arterial clot removal procedures on a rapid response basis.

Every hospital is different in that most stroke coordinators wear many hats and have to keep certification in all of them. Rarely is it the only position that he or she holds. Because of that, many stroke coordinator positions are often being refilled, so whoever they list may have already left the position and it seems hard for hospital staff to know who that officially is. Normally it is a nurse that has loads of experience and they are well-versed in the position and very helpful.

## Our Listing Of Comprehensive Stroke Centers

Improvements in acute stroke treatment have come a long way since the days when a major ischemic blockage meant inevitable paralysis, long-term institutional confinement, and/or death.

With new developments in endovascular clot removal stroke treatment, it's exciting to know that a brain can be saved, a life can be lived more fully, and people can have the opportunity to change their lifestyle to live healthy, longer lives should they need endovascular clot retrieval therapy to save their brain.

The following listing of comprehensive stroke centers was obtained starting April 25 and concluded June 29, 2015. Additional names of hospitals offering these acute stroke reversal therapies may be found at **www.LifeExtension.com/stroke**.

This listing is alphabetical by state.

## Alabama

### University of Alabama Medical Center (UAB)

1802 6<sup>th</sup> Avenue South  
Birmingham, AL 35233  
(205) 934-3411

### Mobile Infirmary Medical Center

5 Mobile Infirmary Circle  
Mobile, AL 36607  
(251) 435-2400

### University of South Alabama Medical Center

2451 Fillingham  
Mobile, AL 36617  
(251) 471-7000

### Huntsville Hospital

101 Sivley Rd  
Huntsville, AL 35801  
(256) 265-9123

## Alaska

### Alaska Regional Hospital

2801 DeBarr Rd  
Anchorage, AK 99508  
(907) 276-1131

## Arizona

### Banner Desert Medical Center

1400 S. Dobson Rd  
Mesa, AZ 85202  
(480) 412-3000

### St. Joseph's Hospital and Medical Center/Barrow Neurological Institute

350 W Thomas Rd  
Phoenix, AZ 85013  
(602) 406-3000

### St. Mary Hospital (Carondelet)

1601 West Saint Marys Rd  
Tucson, AZ 85745  
(520) 872-3000

### Banner-Good Sam University Medical Center Phoenix Campus

1111 E. McDowell Rd  
Phoenix, AZ 85006  
(602) 839-2000

### Phoenix Baptist Hospital

2000 West Bethany Home Rd  
Phoenix, AZ 85015  
(602) 249-0212

## Arkansas

### Sparks Regional Medical Center

1001 Towson Ave  
Fort Smith, AR 72351  
(479) 441-4000

### Baptist Health Medical Center-Little Rock

9601 Interstate 630 Exit 7  
Little Rock, AR 72205  
(501) 202-2000

### UAMS Medical Center Little Rock

4301 W. Markham St  
Little Rock, AR 72205  
(501) 686-7000

## California

### Cedars-Sinai Hospital

8700 Beverly Hills Blvd  
Los Angeles, CA 90048  
(310) 423-2295

### Ronald Reagan UCLA Medical Center

757 Westwood Plaza  
Los Angeles, CA 90095  
(310) 825-9111

### San Antonio Community Hospital

999 San Bernardino Rd  
Upland, CA 91786  
(909) 985-2811

### John Muir Medical Center-Walnut Creek Campus

1601 Ygnacio Valley Rd  
Walnut Creek, CA 94598  
(925) 939-3000

### Kaiser Foundation Hospital Emergency Department

1100 Veterans Blvd  
Redwood City, CA 94063  
(650) 299-2000

### Presbyterian Intercommunity Hospital

12401 Washington Blvd  
Whittier, CA 90602  
(562) 698-0811

## Colorado

### University of Colorado Hospital Authority

12605 E 16<sup>th</sup> Ave  
Aurora, CO 80045  
(720) 848-0000

### St. Anthony's Hospital

11600 W. 2<sup>nd</sup> Pl  
Lakewood, CO 80228  
(720) 321-0000

### Swedish Medical Center

501 E. Hampden Ave  
Englewood, CO 80113  
(303) 788-6248

## Connecticut

### Hartford Hospital

80 Seymour St  
Hartford, CT 06102  
(860) 545-5000

### Saint Francis Hospital and Medical Center

114 Woodland St  
Hartford, CT 06105  
(860) 714-4000

### The Hospital of Central Connecticut

100 Grand St  
New Britain, CT 06052  
(860) 224-5011

### Yale New Haven Hospital

20 York St  
New Haven, CT 06510  
(203) 688-4242

## Delaware

### Christiana Care Christiana Hospital

4755 Oglethorpe-Stanton Rd  
Newark, DE 19718  
(302) 733-1000

## Florida

### Gulf Coast Medical Center

13681 Doctors Way  
Fort Myers, FL 33912  
(239) 343-1000

### Delray Medical Center

5352 Linton Blvd  
Delray Beach, FL 33484  
(561) 498-4440

### JFK Medical Center

5301 S. Congress Ave  
Atlantis, FL 33462  
(561) 965-7300

**Boca Regional Hospital**

800 Meadows Rd  
Boca Raton, FL 33486  
(561) 955-7100

**UF Health Shands Hospital**

1600 SW Archer Rd  
Gainesville, FL 32608  
(352-265-0111

**Mayo Clinic of Jacksonville**

4500 San Pablo Rd  
Jacksonville, FL 32224  
(904) 953-2000

**Baptist Hospital Miami**

8900 N. Kendall Dr  
Miami, FL 33176  
(786) 596-1960

**Sacred Heart Hospital**

5151 North Ninth Avenue  
Pensacola, FL 32504  
(850) 416-7000

**Baptist of Pensacola**

1000 West Moreno St  
Pensacola, FL 32501  
(850) 434-4011

**St. Mary's Medical Center**

901 45<sup>th</sup> St  
West Palm Beach, FL 33407  
(561) 844-6300

**St. Joseph's Hospital**

3001 W. Dr. Martin Luther  
King Jr. Blvd  
Tampa, FL 33607  
(813) 870-4000

**Mease Countryside Hospital**

3231 N. McMullen Booth Rd  
Safety Harbor, FL 34695  
(727) 725-6111

**Morton Plant Hospital**

300 Pinellas St  
Clearwater, FL 33756  
(727) 462-7000

**Largo Medical Center**

201 14<sup>th</sup> St SW  
Largo, FL 33770  
(727) 588-5200

**Leesburg Regional  
Medical Center, Inc.**

600 E. Dixie Ave  
Leesburg, FL 34748  
(352) 323-5762

**Memorial Hospital West**

703 N. Flamingo Rd  
Pembroke Pines, FL 33028  
(954) 436-5000

**Broward Health North**

201 Sample Rd  
Deerfield Beach, FL 33064  
(954) 941-8300

**Broward Health Medical Center**

1600 S. Andrews Ave  
Fort Lauderdale, FL 33316  
(954) 355-4400

**Tampa General Hospital**

1 Tampa General Cir  
Tampa, FL 33606  
(813) 844-7000

**Florida Hospital Tampa**

3100 East Fletcher Ave  
Tampa, FL 33613  
(813) 971-6000

**Cleveland Clinic**

3100 Weston Rd  
Weston, FL 33331  
(954) 689-5000

**Doctors Hospital of Sarasota**

5731 Bee Ridge Rd  
Sarasota, FL 34233  
(941) 342-1100

**Sarasota Memorial  
Health Care System**

1700 S. Tamiami Trail  
Sarasota, FL 34239  
(941) 917-9000

**Kendall Regional Medical Center**

11750 SW 40<sup>th</sup> Street  
Miami, FL 33175  
(305) 223-3000

**University of Miami Hospital**

1400 NW. 12<sup>th</sup> Avenue  
Miami, FL 33136  
(305) 689-5511

**Palmetto General**

2001 W. 68<sup>th</sup> St  
Hialeah, FL 33016  
(305) 823-5000

**Florida Medical Center-  
A Campus of North Shore**

5000 W. Oakland Park Blvd  
Fort Lauderdale, FL 33313  
(954) 735-6000

**Mount Sinai Medical Center  
of Florida Inc.**

4300 Alton Rd  
Miami Beach, FL 33140  
(305) 674-2121

**North Naples Hospital**

11190 Health Park Blvd  
Naples, FL 34110  
(239) 552-7000

**Tallahassee Memorial  
HealthCare Inc.**

1300 Miccosukee Rd  
Tallahassee, FL 32308  
(850) 431-1155

**Georgia**

**Atlanta Medical Center**

303 Parkway Dr NE  
Atlanta, GA 30312  
(404) 265-4000

**Emory University Hospital  
Midtown**

550 Peachtree St NE  
Atlanta, GA 30308  
(404) 686-8830

**Grady Memorial Hospital**

80 Jesse Hill Jr. Dr SE  
Atlanta, GA 30303  
(404) 616-1000

**Gradys Health**

80 Jesse Hill Jr. Dr SE  
Atlanta, GA 30303  
(404) 616-1000

**Georgia Health Sciences  
Medical Center**

1120 15<sup>th</sup> St  
Augusta, GA 30912  
(706) 721-0211

**JCC Memorial Medical Center**

4700 Waters Ave  
Savannah, GA 31404  
(912) 350-8000

**Georgia Regents Medical Center**

1120 15<sup>th</sup> St  
Augusta, GA 30912  
(706) 721-8623

**Midtown Medical Center**

710 Center St  
Columbus, GA 31904  
(706) 571-1000

**Well Star Kennestone Hospital**  
677 Church St  
Marietta, GA 30060  
(770) 793-5000

**Medical Center Navicent Health**  
777 Hemlock St  
Macon, GA 31201  
(478) 633-1000

## Idaho

**St. Luke's Boise Medical Center**  
190 E. Bannock St  
Boise, ID 83712  
(208) 381-2222

**Saint Alphonsus  
Regional Medical Center**  
1055 N. Curtis Rd  
Boise, ID 83706  
(208) 367-2121

**Eastern Idaho Regional  
Medical Center**  
3100 Channing Way  
Idaho Falls, ID 83404  
(208) 529-6111

**St. Joseph Regional  
Medical Center**  
415 6th St  
Lewiston, ID 83501  
(208) 743-2511

## Illinois

**University of Chicago Medicine**  
5841 S. Maryland Ave  
Chicago, IL 60637  
(773) 702-1000

## Iowa

**The University of Iowa**  
200 Hawkins Dr  
Iowa City, IA 52242  
(800) 777-8442

**Allen Memorial Hospital**  
1825 Logan Ave  
Waterloo, IA 50703  
(319) 235-3629

## Kansas

**The University of Kansas Hospital**  
3901 Rainbow Blvd  
Kansas City, KS 66160  
(913) 588-1227

**St. Francis Health Center, Inc.**  
1700 SW. 7<sup>th</sup> St  
Topeka, KS 66606  
(785) 295-8000

## Kentucky

**King's Daughters Medical Center**  
2201 Lexington Ave  
Ashland, KY 41101  
(606) 408-4000

## Louisiana

**Ochsner Hospital**  
514 Jackson Ave  
New Orleans, LA  
(504) 842-3000

**Tulane Medical Center**  
1415 Tulane Ave  
New Orleans, LA 70112  
(504) 988-5263

## Maine

**Maine Medical Center**  
22 Bramhall St  
Portland, ME 04102  
(207) 662-0111

## Nebraska

**The Nebraska Medical Center**  
42<sup>nd</sup> Street and Dewey Ave  
Omaha, NE 68198  
(402) 552-2000

**Bryan Medical Center**  
2300 S. 16<sup>th</sup> St  
Lincoln, NE 68502  
(402) 475-1011

## Nevada

**University Medical Center  
of Southern Nevada**  
1800 W. Charleston Blvd  
Las Vegas, NV 89102  
(702) 383-2000

**Renown Regional Medical Center**  
1155 Mill St  
Reno, NV 89502  
(775) 982-4100

**Spring Valley Hospital  
Medical Center**  
5400 S. Rainbow Blvd  
Las Vegas, NV 89118  
(702) 853-3000

**Valley Hospital Medical Center**  
620 Shadow Ln  
Las Vegas, NV 89106  
(702) 388-4000

## New Jersey

**Robert Wood Johnson  
University Hospital**  
1 Robert Wood Johnson Pl  
New Brunswick, NJ 08901  
(732) 828-3000

## New Mexico

**University of New Mexico  
Hospital**  
2211 Lomas Blvd NE  
Albuquerque, NM 87106  
(505) 272-3160

## New York

**North Shore University Hospital**  
300 Community Dr  
Manhasset, NY 11030  
(516) 562-0100

## Ohio

**University of Cincinnati  
Medical Center**  
234 Goodman Dr  
Cincinnati, OH 45219  
(513) 584-1000

## Oklahoma

**Mercy Hospital Oklahoma City**  
4300 W Memorial Rd  
Oklahoma City, OK 73120  
(405) 755-1515

**OU Medical System**  
700 NE. 13<sup>th</sup> St  
Oklahoma City, OK 73104  
(405) 271-4700

**St. John Medical Center**  
1923 S. Utica Ave  
Tulsa, OK 74104  
(918) 744-2345

## Oregon

### Sacred Heart Medical Center at RiverBend

3333 RiverBend Dr  
Springfield, OR 97477  
(541) 222-7300

### Oregon Health & Science University

3181 SW Sam Jackson Park Rd  
Portland, OR 97239  
(503) 494-8311

## Pennsylvania

### Allegheny General Hospital

320 E North Ave.  
Pittsburgh, PA 15212  
(412) 359-3131

### UPMC Mercy

1400 Locust St  
Pittsburgh, PA 15219  
(412) 232-8111

### UPMC Presbyterian

200 Lothrop Street  
Pittsburgh, PA 15213  
(412) 647-2345

## Texas

### Baylor University Medical Center

3500 Gaston  
Dallas, TX 75246  
(214) 820-0111

### Memorial Hermann-Texas Medical Center

6411 Fannin St  
Houston, TX 77030  
(713) 704-4000

### Valley Baptist Medical Center

2101 Pease St  
Harlingen, TX 78550  
(956) 389-1100

### Las Palmas Medical Center

1801 N Oregon St  
El Paso, TX 79902  
(915) 521-1200

### Univeristy Medical Center of El Paso

4815 Alameda  
El Paso, TX 79905  
(915) 544-1200

### Kingwood Medical Center

22999 US-59  
Kingwood, TX 77339  
(281) 348-8000

## Utah

### Intermountain Medical Center

5121 S. Cottonwood St  
Murray, UT 84157  
(801) 507-7000

### McKay-Dee Hospital Center

4401 Harrison Blvd  
Ogden, UT 84403  
(801) 387-2800

### Ogden Regional Medical Center

5475 S. 500 East Washington  
Terrace, UT 84405  
(801) 479-2111

### Utah Valley Regional Medical Center

1034 N. 500 W  
Provo, UT 84604  
(801) 357-7850

### St. Mark's Hospital

1200 E. 3900 S  
Salt Lake City, UT 84124  
(801) 268-7111

## Vermont

### The University of Vermont Medical Center

111 Colchester Ave  
Burlington, VT 05401  
(802) 847-2345

## Virginia

### Inova Alexandria Hospital

4320 Seminary Rd  
Alexandria, VA 22304  
(703) 504-3000

### Inova Fairfax Hospital

3300 Gallows Rd  
Falls Church, VA 22042  
(703) 776-4001

### Virginia Hospital Center

1701 N George Mason Dr  
Arlington, VA 22205  
(703) 558-5000

### UVA Hospital (Medical Center)

1215 Lee St  
Charlottesville, VA 22908  
(434) 924-0211

### Johnston Willis

1401 Johnston-Willis Dr  
Richmond, VA 23860  
(804) 330-2000

### Centra Lynchburg General Hospital

1901 Tate Springs Rd  
Lynchburg, VA 24501  
(434) 200-3000

### Bon Secours St. Mary's Hospital

5801 Bremono Rd  
Richmond, VA 23226  
(804) 285-2011

### Riverside Regional Medical Center

500 J Clyde Morris Blvd  
Newport News, VA 23601  
(757) 594-2000

### Virginia Commonwealth University Health System

1250 E Marshall St  
Richmond, VA 23298  
(804) 828-9000

### Carilion Roanoke Memorial Hospital

1906 Belleview Ave  
Roanoke, VA 24014  
(540) 981-7000

### Winchester Medical Center, Inc.

Winchester Medical Center  
1840 Amherst St  
Winchester, VA  
(540) 536-8000

### Reston Hospital Center

1850 Town Center Pkwy  
Reston, VA 20190  
(703) 689-9000

## Washington

### Overlake Hospital Medical Center

1035 116<sup>th</sup> Ave NE  
Bellevue, WA 98004  
(425) 688-5000

### Providence St. Peter's Hospital

413 Lilly Rd NE  
Olympia, WA 98506  
(888) 492-9480

**Harborview Medical Center**

325 Ninth Ave  
Seattle, WA 98104  
(206) 744-3000

**Northwest Hospital and Medical Center**

1550 North 115<sup>th</sup> St  
Seattle, WA 98133  
(206) 364-0500

**Swedish Cherry Hill**

500 17<sup>th</sup> Ave  
Seattle, WA 98122  
(206) 320-2000

**Providence St. Peter's Hospital**

413 Lilly Road NE  
Olympia, WA 98506  
(888) 492-9480

**Providence Sacred Heart Medical Center and Children's Hospital**

101 W. 8<sup>th</sup> Ave  
Spokane, WA 99204  
(509) 474-3131

**Tacoma General**

315 Martin Luther King Jr. Way  
Tacoma, WA 98405  
(253) 403-1000

**Harborview Medical Center**

325 Ninth Ave  
Seattle, WA 98104  
(206) 744-3000

**St. Joseph Medical Center**

1717 S. J St  
Tacoma, WA 98405

**Southwest Medical Center (Peace-Health)**

400 NE Mother Joseph Place  
Vancouver, WA 98668  
(360) 256-2000

**Virginia Mason Medical Center**

925 Seneca St  
Seattle, WA 98101  
(206) 223-6600

**Overlake Hospital Medical Center**

1035 116<sup>th</sup> Ave NE  
Bellevue, WA 98004  
(425) 688-5000

**West Virginia**

**St. Mary's Medical Center**

2900 First Ave  
Huntington, WV 25702  
(304) 526-1234

**Cabell Huntington Hospital**

1340 Hal Greer Blvd  
Huntington, WV 25701  
(304) 526-2000

**West Virginia University Hospitals, Inc. Ruby Memorial**

1 Medical Center Dr  
Morgantown, WV 26506  
(304) 598-4000

**Wisconsin**

**Sacred Heart Hospital**

900 West Clairemont Ave  
Eau Claire, WI 54701  
(715) 717-4121

**Gundersen Lutheran Medical Center, Inc.**

1900 South Ave  
La Crosse, WI 54601  
(608) 782-7300

**St. Mary's Hospital**

700 S Park St  
Madison, WI 53715  
(608) 251-6100

**University of Wisconsin Hospitals and Clinics Authority**

600 Highland Ave  
Madison, WI 53792  
(800) 323-8942

**Saint Joseph's Hospital Ministry Saint Joseph's Hospital**

611 Saint Joseph Ave  
Marshfield, WI 54449  
(715) 387-1713

**Columbia St. Mary's Hospital Milwaukee**

2301 N. Lake Dr  
Milwaukee, WI 53211  
(414) 291-1000

**Aurora St. Luke's Medical Center**

2900 W Oklahoma Ave  
Milwaukee, WI 53215  
(414) 649-6000

**Wheaton Franciscan Healthcare - St. Francis, Inc.**

3237 S. 16<sup>th</sup> St  
Milwaukee, WI 53215  
(414) 647-5000

**Froedtert Memorial Lutheran Hospital**

9200 W. Wisconsin Ave  
Milwaukee, WI 53226  
(414) 805-3666

**Theda Clark Medical Center**

130 Second St  
Neenah, WI 54957  
(800) 236-3122

**Waukesha Memorial Hospital**

725 American Ave  
Waukesha, WI 53188  
(262) 928-1000

**Wyoming**

**Wyoming Medical Center**

1233 E. Second St  
Casper, WY 82601  
(307) 577-7201

This listing of Comprehensive Stroke Centers in the United States is not endorsed by or affiliated with Life Extension®. Life Extension® has not verified the competence, professional credentials, business practices, or validity of these stroke centers. Life Extension® makes no recommendation of any stroke center on this listing. Life Extension® is not liable for any loss or injury suffered as a result of using any stroke center on this listing.

Super Cost Effective!

## Fat-Soluble Nutrients NOT Found In Most Multi-Vitamin Formulas

Life Extension®'s **Once-Daily Health Booster** is a **cost-effective** nutrient formula that combines a **variety** of valuable nutrients in just one softgel.

**Once-Daily Health Booster** provides the following nutrients:

- **Vitamins K1 and K2**, including the rapidly absorbed **MK-4**<sup>1,2</sup> and the 24-hour bioavailable **MK-7**,<sup>1</sup> to keep calcium in the bones and out of the arteries.
- **MacuGuard™ Carotenoid Phospholipid Blend**, which contains **trans-zeaxanthin**, **meso-zeaxanthin**, and **lutein** to support eye health and healthy vision.
- **Gamma tocopherol**, a highly effective form of vitamin E, which quenches a dangerous free radical (peroxynitrite) that plays a major role in age-related decline.<sup>3,4</sup>
- **Vitamin E as D-alpha tocopherol** to suppress lipid peroxidation.<sup>5,6</sup>
- **Blueberry extract** to boost DNA repair and sustain healthy blood sugar levels already within normal range.<sup>7,8</sup>
- **Sesame lignans** to boost tissue levels of **gamma tocopherol**.<sup>9</sup>
- **Lycopene** to support prostate health and guard against LDL oxidation.<sup>10,11</sup>
- **Chlorophyllin**, which offers protection against environmentally induced DNA damage.<sup>12</sup>
- **Black currant extract** anthocyanins to promote eye health.<sup>13</sup>
- **Vitamin B12** to help maintain a healthy nervous system and metabolism.<sup>14</sup>

Just one softgel of the new **Health Booster** taken with a heavy meal provides optimized potencies of **fat-soluble** vitamins, carotenoids, and other nutrients needed by maturing individuals. Taken separately, the individual ingredients in **Once-Daily Health Booster** would cost **two to three times** more!



### Once-Daily Health Booster

Item #01981 • 60 softgels (two-month supply)

	Retail Price	Member Price
1 bottle	\$52	<b>\$39</b>
4 bottles	\$48 each	<b>\$36 each</b>



To order **Once-Daily Health Booster**, call **1-800-544-4440** or visit **www.LifeExtension.com**

1. *Nutr J*. 2012 Nov 12;11:93.
2. *Food Nutr Res*. 2012;56.
3. *Nutr Rev*. 1997 Oct;55(10):376-8.
4. *Med Hypotheses*. 2007;69(6):1367-70.
5. *Cardiovasc Res*. 2003 Feb;57(2):563-71.
6. *Brain Res Bull*. 1994;33(3):313-8.
7. *Int J Mol Sci*. 2013;14(11):21447-62.
8. *J Med Food*. 2011 Dec;14(12):1511-8.
9. *J Nutr*. 2013 Jul;143(7):1067-73.
10. *Nutr Cancer*. 2009;61(6):775-83.
11. *Lipids*. 1998 Oct;33(10):981-4.
12. *Toxicology*. 2004 Mar 1;196(1-2):117-25.
13. *J Biomed Biotechnol*. 2004;2004(5):306-313.
14. Available at: <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMHT0022013/>. Accessed April 24, 2015.

**Contains soybeans.**

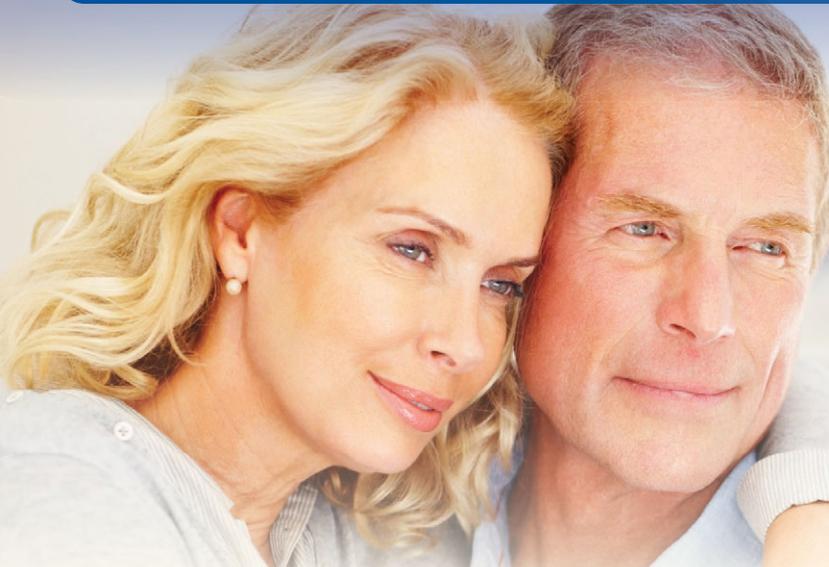
**Caution:** if taking anticoagulant or antiplatelet medication, consult your health care provider before taking this product. Those with inborn errors of copper metabolism (e.g. Wilson's disease) should avoid daily, chronic use of this product.

**Tomat-O-Red®** is a registered trademark of LycoRed, LTD. **LuteinPlus®** and **Mz®** are registered trademarks of NutriProducts Ltd., UK, licensed under U.S. Patent 8,623,428.

**Non-GMO**

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

# MAINTAIN YOUTHFUL MITOCHONDRIA FUNCTION



## The Most Effective Form Of CoQ10

### CoQ10 Energizes Aging Cells by Enhancing Mitochondria Activity

Published studies on CoQ10 absorption clearly show that **ubiquinol** CoQ10 is superior to the conventional ubiquinone form. In middle-age mice, **ubiquinol** proved **40%** more effective in slowing measurements of aging compared to ubiquinone.<sup>1</sup>

A 2014 study further validates that **ubiquinol** activates mitochondrial functions to slow aging in mouse models.<sup>2</sup>

**Life Extension**® goes one step further and adds **shilajit** to its ubiquinol formula in a product called **Super Ubiquinol CoQ10**. Shilajit has been shown to promote mitochondrial metabolism, helping mitochondria convert fats and sugars into ATP—the main source of cellular energy.<sup>3-8</sup> When combined with **ubiquinol** CoQ10, it has been shown to **double** levels of CoQ10 in the mitochondria.<sup>9</sup>

The latest studies reveal that when **shilajit** is combined with CoQ10, cellular energy substantially increases. Combining the two ingredients produced a **56%** increase in energy production in the brain—**40%** more than CoQ10 alone! In the muscles, there was a **144%** increase!<sup>10</sup>

#### References

1. *Exp. Gerontol.* 2006 Feb;41(2):130-40.
2. *Antioxid Resox Signal.* 2014 Jun 1;20(16):2606-20.
3. *Ghosal S. Shilajit in Perspective.* Alpha Science International Limited; 2006.
4. *Kaneka Corp.* Unpublished study. 2007.
5. *Sci Total Environ.* 1987 Apr;62:347-54.
6. *Environ Sci Technol.* 2002 Jul 15;36(14):3170-5.
7. *Environ Sci Technol.* 2002 May 1;36(9):1939-46.
8. *Environ Sci Technol.* 2009 Feb 1;43(3):878-83.
9. *Systemic CoQ level in animals: Part II.* Unpublished study. Natreon, Inc.; 2007.
10. *Pharmacologyonline.* 2009;1:817-25.

Life Extension® combines these two energy-activating ingredients in an exclusive **ubiquinol-shilajit** formulation available in three different potencies:

#### Super Ubiquinol CoQ10

Item #01425 • 100 50 mg softgels

	Retail Price	Member Price
1 bottle	\$58	<b>\$43.50</b>
4 bottles	\$46 each	<b>\$34.50 each</b>
10 bottles	\$42 each	<b>\$31.50 each</b>



Item #01426 • 60 100 mg softgels

#### Non-GMO

	Retail Price	Member Price
1 bottle	\$62	<b>\$46.50</b>
4 bottles	\$52 each	<b>\$39 each</b>
10 bottles	\$48 each	<b>\$36 each</b>



Item #01431 • 30 200 mg softgels

#### Non-GMO

	Retail Price	Member Price
1 bottle	\$62	<b>\$46.50</b>
4 bottles	\$52 each	<b>\$39 each</b>
10 bottles	\$48 each	<b>\$36 each</b>



To order **Super Ubiquinol CoQ10**, call **1-800-544-4440** or visit **www.LifeExtension.com**



# European Milk Thistle Provides The *Ultimate* Protection For Your **LIVER**

Milk thistle extract—rich in **silymarin**—is one of nature's most powerful weapons to support liver health. Numerous scientific studies have demonstrated silymarin's ability to provide potent protection for your liver.<sup>1,2</sup>

Life Extension®'s **European Milk Thistle Advanced Phospholipid Delivery** contains standardized, top-grade potencies of **silymarin, silybin, isosilybin A, and isosilybin B**, providing a full spectrum of liver-supportive compounds.

This unique formula includes **phosphatidylcholine**, a nutrient that promotes better absorption of all the health-providing benefits of milk thistle extract.<sup>3</sup>

**European Milk Thistle Advanced Phospholipid Delivery**, with **480 mg** of silymarin, is a unique complex that is absorbed **5 times** better than silymarin alone, and its concentration in the liver is **10 times** better.

**References:**

1. *Mol Nutr Food Res.* 2009 Apr;53(4):460-6.
2. *Environ Toxicol.* 2007 Oct;22(5):472-9.
3. *Altern Med Rev.* 2009;14(3):226-46.

**Non-GMO**

**Contains soybeans.**

SILIPHOS® is a registered trademark of Indena S.p.A., Italy.

**European Milk Thistle  
Advanced Phospholipid Delivery**

Item #01822 • 60 Softgels

	<b>Retail Price</b>	<b>Member Price</b>
1 bottle	\$28	<b>\$21</b>
4 bottles	\$25 each	<b>\$18.75 each</b>

To order **European Milk Thistle Advanced Phospholipid Delivery** call **1-800-544-4440** or visit **www.LifeExtension.com**

# WELLNESS PROFILE

BY DONNA CARUSO



## Sedell Rand: KNOW YOURSELF

Sedell Rand has lived the life of a pioneer. During the 1940s, she was part of a rare breed of visionary women who pursued higher education and obtained a master's degree from Columbia University. More than 40 years ago, she started her own business when few women had the guts to become independent entrepreneurs in a man's world. In the 1950s, she became interested in health and longevity and began taking vitamins—long before it

became part of the public conversation on health. Today, at age 94, she continues to run her own business, works out with a physical trainer several days a week, utilizes public transportation, and does her own shopping and healthy meal preparation. Sedell Rand is a powerhouse of health and longevity, an inspiration for those who refuse to view aging as a condition of declining health and possibilities, and a longtime member of Life Extension®.

### An Early Path To Healthy, Independent Living

Born in New Jersey, Rand laughingly states she escaped to New York City at the early age of three. Her father's early death at the height of the Great Depression left her mother a widow with five children to raise. "I was blessed with a mother who was strong and capable and a darn good cook," says Rand.

"My mother loved healthy food, she never fried anything and steamed vegetables," Rand recalls. "Her cooking stemmed from her European background where the food on the table came straight from the farm, not the supermarket. We were raised with fresh vegetables, fruit, chicken, and fish. She also knew how to use spices to make the meals interesting and appealing."

Rand notes that today, because she has to stay away from salt to maintain normal blood pressure, she has the advantage of knowing how to mix blends of spices to enhance her food. She is fortunate that a rich variety of fresh vegetables are available from the farmer's market that is accessible a few yards from her door during late spring, summer, and fall. "It makes me chuckle that of all places, New York City should make such 'straight-from-the-farm' vegetables so accessible for its population." The vegetables she buys were usually picked just a few hours earlier.

At a time when most women did not seek higher education, Rand went to college, studying accounting and personnel and labor relations at CCNY before receiving a master's degree from Columbia University. After working for a number of corporations, she decided to strike out on her

own and start her own business. She entered the field of life and health insurance, where she has remained for the past 50 years.

"When I came into the field, there weren't many women and the men often treated businesswomen with caustic disregard," says Rand. "It wasn't easy thriving in such an environment, but I did. I obtained another degree specializing in insurance."

Rand's strong self-esteem and autonomy have fostered success. "I'm a very independent woman," she adds. "I have a theory: Respect has to be earned. A lot of people have a title, but they don't necessarily qualify for respect."

### Nutritious Eating

Having been raised on a wholesome, balanced diet, Rand has continued to favor healthy foods. Her favorites include salads with a variety of greens, tomatoes, peppers, onion, avocado, and other fresh vegetables. Rand describes salad as "the thing I dream about," and adds that she makes her own no-salt dressing, which can include

turmeric, dry mustard, pepper, cumin, lemon, oil, and vinegar. She also eats a lot of fish prepared innumerable ways and when dining out, avoids salt and orders only nutritious foods. She favors high-protein shakes, mixed up in a blender using Life Extension® chocolate-flavored whey protein powder, almond milk, blueberries, walnuts or hickory nuts, and ice.

### Staying Sharp

Rand takes pleasure in running her insurance business, socializing with friends, keeping up with the news, and pursuing her personal interests. She actively participates in lectures, attends museum events, and enjoys the opera. Her work and social calendar are full.

#### Sedell Rand's Supplement List

Evening Primrose

Super Omega-3 EPA/DHA  
with Sesame Lignans &  
Olive Fruit Extract

Super Ubiquinol CoQ10 with  
Enhanced Mitochondrial Support™

Super K with  
Advanced K2 Complex

Biotin

FlorAssist®

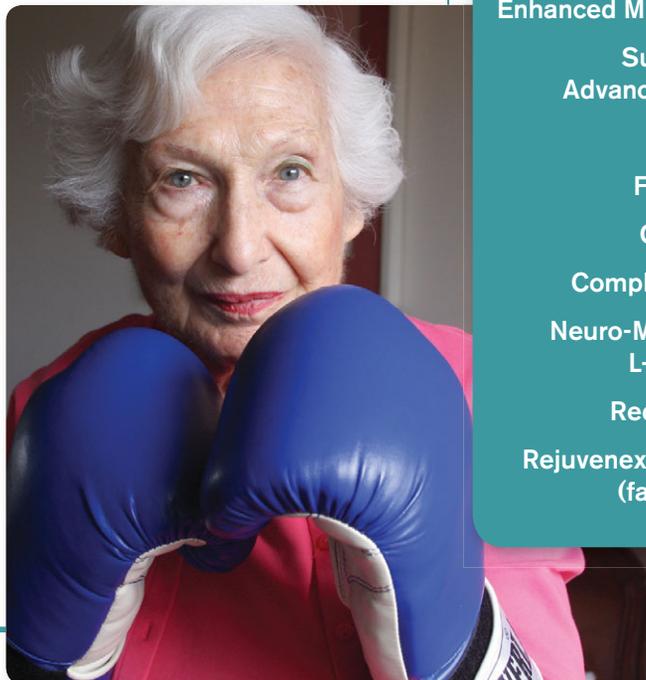
Cognitex®

Complete B Complex

Neuro-Mag™ Magnesium  
L-Threonate

Red Yeast Rice

Rejuvenex® for Day and Night  
(facial cream)



In a long conversation, she demonstrated a great memory for details and an unusual talent for telling amusing or significant stories about her life, especially those with a moral edge.

"I laugh at life," she explains, citing the mindlessness she often observes in some humans. "Stupidity is the reigning force all over the world, and you have to laugh at it."

Rand also mentions "independent thinking," saying that "there are many sides to one story and you're entitled to form your own opinion. Too many people are sheep; never challenging the source of imparted information that has been given gratuitously." Rand also notes that she avoids gossip. "I think it's painful," she explains, "and I don't like hurting people. I can't afford to get angry, either, so I'd rather laugh at things because I know they're not permanent and whatever is going to happen, will happen."

Another positive is not worrying about anything. "If I have a problem, I take care of it," Rand states. "You don't push it off until it becomes a major situation. And when I have a problem with another person, I confront it."

It all adds up to a life that is being consciously savored. "It's important to enjoy your life," she says, "to appreciate little things, like springtime when the blossoms start coming out and the leaves break through. I used to sing to myself when spring came. People thought I was crazy!"

Rand is an avid reader of books and periodicals. Daily, she consumes both *The New York Times* and *The Wall Street Journal* along with periodicals such as *The New Yorker*. The Jane Austen Society is another important part of Rand's life and she regularly flies to dis-

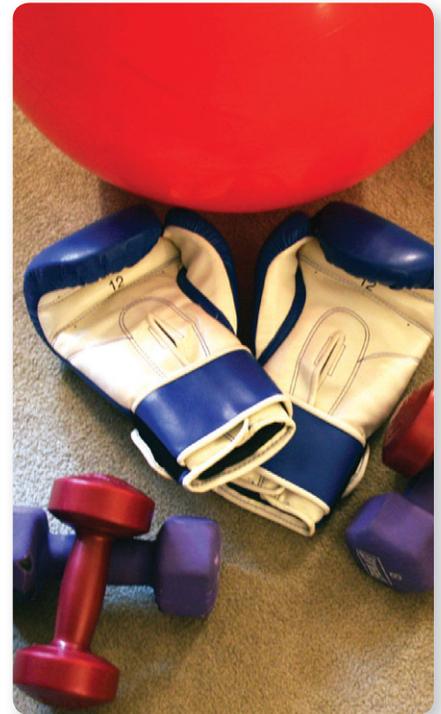
tant cities for annual conferences. Last October, she attended a Jane Austen meeting in Montreal and plans to attend the next one in Louisville, Kentucky. She describes Austen, who has been rediscovered in recent years, as "an absolute genius," and says "she had great insight into human psychology and understood people better than most of us understand people today. Her characters are recognizable and engaging because they are portrayed as functioning individuals with traits that exist currently in our society. The human issues are just as relevant today as they were three hundred years ago."

### Exercise Program

For the past 10 years, Rand has been working with a personal trainer who, she says, has made an enormous difference in her life. "I have an argument with him," she comments. "I say, 'You're my luxury,' and he says, 'I'm your necessity.'"

Prior to engaging her trainer, Rand swam on a regular basis for fitness. However, she soon thought she needed more rigorous physical activity and started working out at a gym. A woman trainer told her machines weren't important to achieving full-body health. "She said 'You have to develop the core of your body, that's the most important thing. Use your body, don't let the machines use you.'"

With basic equipment in her apartment, including a mat, a large rubber ball, boxing gloves, and weights, Rand often works out with the trainer inside, including climbing up and down stairs. In good weather, they move outdoors to do different types of exercises. Her regimen includes push-ups, sit-ups, planks on a rubber ball, and body movements such as touching toes



and swinging arms. Rand practices these moves on her own daily. She has seen a decided change in her physical strength, agility, and feeling of well-being in the years she has been working out.

"When I take the subway, the stairways are usually pretty steep and sometimes go down several levels. Thanks to my physical training, I always manage even though I see others, younger than me huffing and puffing on their way out of the subway." She says if slow moving people are in front of her, she may have to ask them to move over to let her pass.

### Finding Life Extension®

"Life Extension® was introduced to me by a family member," Rand says. "I liked the products and found they were of very high quality. The magazine, filled with information you can't find anywhere else, is extremely well produced and researched. But long

before I found Life Extension<sup>®</sup>,” she continues, “I was already familiar with supplements. I knew that food gets processed and loses nutrients and there are many times when you need extra.” She mentions Linus Pauling and his early studies of vitamin C as an example.

“With Pauling, I went through my ‘C’ stage,” Rand explains. “Then I went through my ‘E’ stage, and so on. As I began to learn more about the benefits of various supplements, I did additional reading to discover what else I might be lacking, like potassium,” she adds, and to this day, she continues to stay up-to-date on the latest findings.

Despite overall good health for most of her life, Rand did have a heart problem a few years ago. Her doctor had been monitoring her heart and when she was in her late 80s, he called to say, “I think it’s time.” She replied, “Time for what?” And he told her it was time for surgery.

“So I went to see the surgeon he recommended and asked him some questions and didn’t like the answers,” Rand recalls. “They were presenting me with open heart surgery as my only option. My nephew took me to see Dr. Mehmet Oz, who looked at my medical records and told me I wasn’t ready for heart surgery just yet. He treated me like a family member, with enormous respect, and he wasn’t eager to jump right into surgery.”

Sometime afterwards, Dr. Michael Ozner, member of the Life Extension<sup>®</sup> Scientific Advisory Board, learned of Rand’s condition and suggested that she investigate the PARTNER trial that was researching a new technique called “percutaneous transcatheter aortic replacement.” This technique had been developed in Europe in 2002, but it was not being practiced in

the US even though it was a safer and more efficient alternative to the many complications of open heart surgery. The clinical study was headed Dr. Mathew Williams at Columbia Presbyterian in New York. The study involved a new minimally invasive procedure to thread a replacement aortic valve through the leg’s femoral artery and insert it into the malfunctioning aortic valve.

Fortunately, Rand was accepted for the study and was randomized to those patients receiving this experimental aortic valve rather than open heart surgery. The procedure was an overwhelming success and Rand avoided the potential complications of an operation and the considerable recovery time that accompanies such serious surgery. She recalls, “I came in for surgery on a Thursday and left the hospital the following Tuesday. My healing and recovery were extremely rapid. Later that month, I flew to Chicago for the Jane Austen Society meeting. Physically and mentally, I went back to all my activities. I had no problems. Dr. Williams did an excellent job and I avoided the surgery that the other doctors had recommended. I am a success story for this innovative, lifesaving procedure.”

Rand adds that the procedure is now available to patients needing heart valve replacements.

### Longevity

At 94, in fine physical health, Rand already qualifies as a paragon of longevity. She credits not only a disciplined, healthy lifestyle but also her family history of long-lived people, including her mother who lived to 96, and two cousins who are in their upper 90s.

But longevity is more than genetics and Rand’s enthusiasm for living, her healthy lifestyle, and her continuing desire to learn more about herself and the world certainly help to keep her going strong.

“I believe in ‘know yourself,’” Rand says. “If you know who you are and how you feel and have good standards, you can stand up to anything.”

And while Rand seems modest about her accomplishments as a feminist and trailblazer in the business world, she did mention a recent surprise at a business dinner, when a woman speaker suddenly said, “There’s a woman here named Sedell Rand and I owe her a vote of thanks. She is a pioneer and she taught me many things about how to deal with different problems.” Rand says she was flabbergasted, but admitted that over many years, she has always tried to help others, especially young women entering the business world. “And some of them have grown beautifully,” she concludes.

Unlike most people who fear growing older, Sedell Rand celebrates her longevity and pursues her interests with zest. She is quick to mention her age and enjoys the astonished reactions of people who believe she is decades younger. Her infinite curiosity about the world in which she lives gives her much pleasure and provides us all with a superb example of active aging with grace and intelligence. ●

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

# Nervia Supports *Healthy Inflammation Response* in Sensitive Nerves in Your *Hands and Feet*

*A Powerful Answer for People Seeking Healthy Immune, Joint and Nerve Support*

Every day, healthy inflammation response is a dynamic process vital to our well-being. Not just in response to invading microbes, toxins or physical injuries, but also in response to the food we ingest and the pollution in the water we drink, or in the air we breathe. While acute inflammation is beneficial, it's supposed to subside when its job is done. As a recurring problem, inflammation can become a risk factor that affects well-being and quality of life. **Nervia® is a next generation, more targeted and scientifically valid approach to achieve functional support with dietary supplementation. It helps support a healthy response to inflammation. Nervia's unique, patented formula works across multiple biological pathways to deliver powerful whole body benefits with as few as 3 vegetarian soft-gels per day.**

**Nervia has been awarded two patents**, with other patents pending. Nervia contains a **full spectrum of Omega 3-6-9 essential fatty acids**. It features **expeller-pressed Evening Primrose Oil (EPO)**, potentiated with Evening Primrose Leaf and other beneficial botanicals, an enhanced combination that supports healthy nerve and inflammation response. And, the natural Nervia softgel also contains other protective factors from ingredients like Taurine, N-Acetyl Cysteine (NAC), R-Alpha Lipoic Acid, plus soothing Bilberry Extract and Leaf, White Willow Bark, Rosehips and Hibiscus flower extracts in a multi-action, single composition. Working together, these ingredients counter the action of free-radicals and oxidative stress, and help maintain already normal feeling in sensitive hands and feet.

<i>How Nervia Can Make a Difference</i>	<b>NERVIA</b>	<b>OTHERS</b>
Neutralizes Oxidative Stress and Whole-Body Inflammation	<b>YES</b>	<b>NO</b>
Super Potent and Strong Enough for Nerve Support in Hands and Feet	<b>YES</b>	<b>NO</b>
Patented, Natural Formula Comes in a Convenient Softgel*	<b>YES</b>	<b>NO</b>
Evening Primrose Oil and Other Key Botanicals and Nutrients	<b>YES</b>	<b>NO</b>
Increases Genes that make <u>Glutathione</u>	<b>YES</b>	<b>NO</b>
Works Fast and on Many Biological Pathways Simultaneously	<b>YES</b>	<b>NO</b>
Helps Protect Cells Against Toxins	<b>YES</b>	<b>NO</b>
Blocks Pro-Inflammatory Cellular Signals	<b>YES</b>	<b>NO</b>



Nervia is supported by five research studies using state of the art technology and testing methods utilized by major pharmaceutical companies. These indicated that **Nervia modulates key inflammatory cytokines**.<sup>1</sup> **Nervia also significantly increases several genes involved in making GLUTATHIONE**.<sup>2</sup> Many scientists think **GLUTATHIONE IS THE BODY'S "MASTER ANTI-OXIDANT" central to SUPPORTING A HEALTHY INFLAMMATION RESPONSE as well as supporting ANTI-AGING**. As an additional benefit, Nervia also significantly induces the production of **QUINONE REDUCTASE**, one of your body's own powerful, cellular detoxifying enzymes and a protective tool against toxins.

#### References

1. Studied at New York Eye and Ear Infirmary, Mount Sinai Hospital, where research under Hu Dan-ning, M.D. showed Nervia significantly modulated two main pro-inflammatory, cell signaling cytokines: Interleukin-1 $\beta$  and Interleukin-6. Nervia was also shown to beneficially block both reactive oxygen and reactive nitrogen species that can destroy sensitive cell structures.

2. Scientific gene research on Nervia conducted by John Pezzuto, Ph.D. Dean of the University of Hawaii, School of Pharmacy, Hilo. All research results are available upon request from Kage Apothecare, LLC.

\* U.S. Patents No. 8,501,248 and No. 9,040,099. Other patents pending. © 2015 Kage Apothecare, LLC. Nervia is a registered trademark of Kage Apothecare, LLC. All rights reserved. Do not take Nervia if you are allergic to any of its ingredients or taking prescription blood thinners.



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

Item # 01121  
Retail Price \$49.95  
Member Price \$37.46

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.

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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**
- WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028) \$275**  
**CBC/Chemistry profile** (see description at right), **DHEA-S**, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin A1c, Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), and Ferritin.
- MALE ELITE PANEL\* (LC100016) \$575**  
**Chem/CBC profile**, Free and Total Testosterone, Total Estrogens, Estradiol, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, Free and Total PSA, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, Ferritin, Homocysteine
- FEMALE ELITE PANEL\* (LC100017) \$575**  
**Chem/CBC profile**, Free and Total Testosterone, Total Estrogens, Estradiol, Estrone, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, Ferritin, Homocysteine
- 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 right), **DHEA-S**, **Estradiol**, **Total Estrogens**, **Progesterone**, **Pregnenolone**, **Total and Free Testosterone**, **SHBG**, **TSH**, **Free T3**, **Free T4**, **Cortisol**.
- MALE COMPREHENSIVE HORMONE PANEL\* (LC100010) \$299**  
**CBC/Chemistry Profile** (see description above right), **DHEA-S**, **Estradiol**, **DHT**, **PSA**, **Pregnenolone**, **Total and Free Testosterone**, **SHBG**, **TSH**, **Free T3**, **Free T4**, **Cortisol**.
- 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.
- STRESS MANAGEMENT PROFILE (LC100043) \$125**  
**Cortisol AM/PM**, **DHEA-S**, **Glucose**, **Insulin**, **Progesterone**, **Free T3**, **Lipid Panel**
- HEALTHY AGING PANEL-COMPREHENSIVE\* (LC100026) \$249**  
**CBC/Chemistry profile** (see description above), **C-Reactive Protein (high sensitivity)**, **Vitamin B12**, **Folate**, **Homocysteine**, **Vitamin D 25-hydroxy**, **Hemoglobin A1c**, **TSH**, **Free T3**, **Free T4**, **Ferritin**, **Urinalysis**, **Fibrinogen**, and **Insulin**.
- HEALTHY AGING PANEL-BASIC\* (LC100025) \$149**  
**CBC/Chemistry profile** (see description above), **C-Reactive Protein (high sensitivity)**, **Vitamin B12**, **Folate**, **Vitamin D 25-hydroxy**, **Hemoglobin A1c**, **TSH**, **Ferritin**, and **Insulin**.
- 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.
- VAP™ PLUS\* (LC100009) \$330**  
**VAP**, **C-Reactive Protein (high sensitivity)**, **Homocysteine**, **Fibrinogen**, **PLAC® Test (Lp-PLA2)**, **Vitamin D 25-hydroxy**.



## Other Popular Tests and Panels Life Extension Member Pricing

- |   |   |
|---|---|
| <input type="radio"/> <b>NUTRIENT PANEL* (LC100024)</b> <b>\$349</b>  | <input type="radio"/> <b>HORMONES</b>   |
| Vitamin B12, Folate, Vitamin D 25-hydroxy, Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC Magnesium.  | <input type="radio"/> <b>DHEA-SULFATE (LC004020)</b> <b>\$61</b>  |
| <input type="radio"/> <b>CHRONIC FATIGUE PROFILE (LC100005)</b> <b>\$375</b>  | This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.   |
| CBC/Chemistry Profile (see description previous page), 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. | <input type="radio"/> <b>MALE BASIC HORMONE PANEL (LC100012)</b> <b>\$75</b>  |
| <input type="radio"/> <b>ANEMIA PANEL* (LC100006)</b> <b>\$79</b>   | DHEA-S, Estradiol, Free and Total Testosterone, PSA   |
| CBC/Chemistry Profile (see description previous page), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.   | <input type="radio"/> <b>FEMALE BASIC HORMONE PANEL (LC100013)</b> <b>\$75</b>  |
| <input type="radio"/> <b>AUTOIMMUNE DISEASE SCREEN* (L100041)</b> <b>\$199</b>  | DHEA-S, Estradiol, Free and Total Testosterone, Progesterone  |
| ANA screen, hs-CRP, TNF, Immunoglobulins, IgA, IgG, IgM   | <input type="radio"/> <b>DIHYDROTESTOSTERONE (DHT)* (LC500142)</b> <b>\$99</b>  |
| <input type="radio"/> <b>DIABETES MANAGEMENT PROFILE – COMPREHENSIVE (LC100040)</b> <b>\$129</b>  | Measures serum concentrations of DHT.   |
| Hemoglobin A1C, Glucose, Insulin, Lipid Panel, Glycomark  | <input type="radio"/> <b>ESTRADIOL (LC004515)</b> <b>\$33</b>   |
| <input type="radio"/> <b>DIABETES MANAGEMENT PROFILE – BASIC (LC100039)</b> <b>\$39</b>   | For men and women. Determines the proper amount in the body.  |
| Hemoglobin A1C, Glucose, Insulin  | <input type="radio"/> <b>INSULIN FASTING (LC004333)</b> <b>\$29.90</b>  |
| <input type="radio"/> <b>ADVANCED CARDIAC BIOMARKERS</b>  | Can predict those at risk of diabetes, obesity, heart and other diseases.   |
| <input type="radio"/> <b>ADVANCED OXIDIZED LDL PANEL* (LC100035)</b> <b>\$285</b>   | <input type="radio"/> <b>PREGNENOLONE* (LC140707)</b> <b>\$116</b>  |
| This panel looks at vascular inflammatory biomarkers, beginning with lifestyle choices to the development of metabolic as well as cardiovascular disease and the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanes, Myeloperoxidase, and Oxidized LDL.  | Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.  |
| <input type="radio"/> <b>OXIDIZED LDL PANEL* (LC100034)</b> <b>\$175</b>  | <input type="radio"/> <b>PROGESTERONE (LC004317)</b> <b>\$55</b>  |
| This panel looks at vascular inflammatory biomarkers, beginning with the development of metabolic as well as cardiovascular disease and the formation of vulnerable plaque. The panel contains the following tests: Myeloperoxidase and Oxidized LDL.   | Primarily for women. Determines the proper amount in the body.  |
| <input type="radio"/> <b>OXIDIZED LDL* (LC817472)</b> <b>\$75</b>   | <input type="radio"/> <b>SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)</b> <b>\$33</b>   |
| OxLDL is a powerful initiator of inflammatory changes in the artery wall, which eventually lead to the formation of plaque.   | This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.                               |
|   | <b>GENERAL HEALTH</b>   |
|   | <input type="radio"/> <b>VITAMIN D (25OH) (LC081950)</b> <b>\$47</b>  |
|   | This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.   |
|   | <input type="radio"/> <b>FERRITIN (LC004598)</b> <b>\$28</b>  |
|   | Ferritin levels reflect your body's iron stores and is also a biomarker for insulin resistance.   |
|   | <input type="radio"/> <b>VITAMIN B12/FOLATE* (LC000810)</b> <b>\$39.68</b>  |
|   | Measurements of B12 and Folate help evaluate your general health and nutritional status since the B vitamins are important for cardiac health as well as energy production. |
|   | <input type="radio"/> <b>PSA (PROSTATE SPECIFIC ANTIGEN) (LC010322)</b> <b>\$31</b>   |
|   | Screening test for prostate disorders and possible cancer.  |

This is NOT a complete listing of LE blood test services. Call 1-800-208-3444 for additional information.

**For non-member prices  
call 1-800-208-3444**

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

\*\* This test is packaged as a kit, requiring a finger stick performed at home.

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Signature of Life Extension Member

X

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Male  Female

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(required) / /

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City

State

Zip

Phone

Credit Card No.

Expiration Date /

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Fort Lauderdale, FL 33309

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 Cognitex® with Pregnenolone & Brain Shield®  
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 Lecithin Granules  
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 Optimized Ashwagandha Extract  
 Prevagen  
 PS (Phosphatidylserine) Caps  
 Super Ginkgo Extract 28/7  
 Vinpocetine

**Cholesterol Management**

Advanced Lipid Control  
 Cho-Less™  
 CHOL-Support™  
 Endothelial Defense™ with Full-Spectrum  
 Pomegranate™ and Cordiart™  
 Endothelial Defense™ with GliSODin®  
 Full-Spectrum Pomegranate™  
 Policosanol  
 Pomegranate Extract Capsules  
 Red Yeast Rice  
 Theaflavins Standardized Extract  
 Vitamin B3 Niacin Capsules

**Digestion Support**

Artichoke Leaf Extract  
 Carnosoothe with PicroProtect™  
 Digest RC®  
 Effervescent Vitamin C - Magnesium Crystals  
 Enhanced Super Digestive Enzymes  
 Esophageal Guardian

Extraordinary Enzymes  
 Fem Dophilus  
 Ginger Force  
 Gutsy Chewy Digestive Tablets  
 Organic Golden Flax Seed  
 Pancreatin  
 Regimint  
 Specially-Coated Bromelain  
 Tranquil Tract™  
 TruFiber™  
 WellBetX PGX plus Mulberry

**Energy Management**

Adrenal Energy Formula  
 Asian Energy Boost  
 D-Ribose Powder  
 D-Ribose Tablets  
 Forskolin  
 Mitochondrial Basics with BioPQQ®  
 Mitochondrial Energy Optimizer with BioPQQ®  
 NAD+ Cell Regenerator™  
 Peak ATP® with GlycoCarn®  
 PQQ Caps with BioPQQ®  
 Rhodiola Extract  
 RiboGen™ French Oak Wood Extract

**Eye Health**

Astaxanthin with Phospholipids  
 Brite Eyes III  
 Certified European Bilberry Extract  
 Eye Pressure Support with Mirtogenol®  
 MacuGuard® Ocular Support  
 MacuGuard® Ocular Support with Astaxanthin  
 Tear Support with MaquiBright®

**Food**

Rich Rewards® Breakfast Blend  
 Rich Rewards® Breakfast Blend  
 Natural Mocha Flavor  
 Rich Rewards® Breakfast Blend  
 Natural Vanilla Flavor  
 Rich Rewards® Breakfast Blend  
 Whole Bean Coffee  
 Rich Rewards® Cruciferous Vegetable Soup  
 Rich Rewards® Decaf Roast  
 Stevia Extract

**Glucose Management**

CinSulin® with InSea2® and Crominex® 3+  
 CoffeeGenic® Green Coffee Extract  
 Glycation Protection Formula  
 Mega Benfotiamine  
 Super Alpha-Lipoic Acid w/ Biotin  
 Super R-Lipoic Acid  
 Tri Sugar Shield®

**Heart Health**

Aspirin (Enteric Coated)  
 Cardio Peak™ with Standardized Hawthorn  
 and Arjunaz  
 Fibrinogen Resist™ with Nattokinase  
 FlorAssist® Heart Health Probiotic  
 Super Ubiquinol CoQ10  
 Super Ubiquinol CoQ10 with BioPQQ®  
 Super Ubiquinol CoQ10 with Enhanced  
 Mitochondrial Support™  
 Super-Absorbable CoQ10 Ubiquinone with  
*d*-Limonene  
 TMG Powder  
 TMG Liquid Capsules  
 Vegetarian Sourced DHA

**Hormone Balance**

DHEA (Dehydroepiandrosterone)  
 DHEA Complete  
 Inner Power  
 Pregnenolone  
 Triple Action Cruciferous Vegetable Extract  
 with Resveratrol  
 Triple Action Cruciferous Vegetable Extract

**Immune Support**

AHCC  
 Echinacea Extract  
 Enhanced Zinc Lozenges  
 i26 Hyperimmune Egg  
 Immune Modulator with Tinofend®  
 Immune Protect with PARACTIN®  
 Immune Senescence Protection Formula™  
 Kyolic® Garlic Formula 102  
 Kyolic® Garlic Formula 105  
 Kyolic® Reserve  
 Lactoferrin (apolactoferrin) Caps  
 NK Cell Activator™  
 Optimized Garlic  
 Optimized Quercetin  
 Peony Immune  
 ProBoost Thymic Protein A  
 Reishi Extract Mushroom Complex  
 Standardized Cistanche  
 Ten Mushroom Formula  
 Zinc Lozenges

**Inflammation Management**

5-LOX Inhibitor with AprèsFlex®  
 Advanced Bio-Curcumin® with Ginger &  
 Turmerones  
 Black Cumin Seed Oil with Bio-Curcumin®  
 Black Cumin Seed Oil  
 Boswellia  
 Cytokine Suppress™ with EGCG  
 Nervia®  
 Serrafazyme  
 Super Bio-Curcumin®  
 Zyflamend® Whole Body

**Joint Support**

Arthro-Immune Joint Support  
 Arthromax® Advanced with UC-II® & AprèsFlex®  
 ArthroMax® with Theaflavins & AprèsFlex®  
 Bio-Collagen with Patented UC-II®  
 Fast-Acting Joint Formula  
 Glucosamine/Chondroitin Capsules  
 Krill Healthy Joint Formula  
 MSM (Methylsulfonylmethane)

**Kidney & Bladder Support**

Cran-max® Cranberry Whole Fruit Concentrate  
 Optimized Cran-Max with Ellirose™  
 Water-Soluble Pumpkin Seed Extract

**Liver Health & Detoxification**

Anti-Alcohol Antioxidants with HepatoProtection  
 Complex  
 Calcium D-Glucarate  
 Chlorella  
 Chlorophyllin  
 European Milk Thistle  
 Glutathione, Cysteine & C  
 HepatoPro  
 Liver Efficiency Formula  
 Mega L-Glutathione Capsules  
 N-Acetyl-L-Cysteine  
 PectaSol-C®  
 Silymarin  
 SODzyme® with GliSODin® & Wolfberry

**Longevity & Wellness**

AMPK Activator  
 AppleWise Polyphenol Extract  
 Berry Complete  
 Blueberry Extract  
 Blueberry Extract with Pomegranate  
 CR Mimetic Longevity Formula  
 DNA Protection Formula  
 Enhanced Berry Complete with Acai  
 Essential Daily Nutrients  
 Grapeseed Extract with  
 Resveratrol & Pterostilbene  
 Mega Green Tea Extract (decaffeinated)  
 Mega Green Tea Extract (lightly caffeinated)

Once-Daily Health Booster  
Optimized Fucoidan with Maritech® 926  
Optimized Resveratrol with NAD+  
Cell Regenerator™  
Optimized Resveratrol with Synergistic  
Grape-Berry Actives  
pTeroPure®  
Pycnogenol® French Maritime  
Pink Bark Extract  
Resveratrol with Pterostilbene  
RNA (Ribonucleic Acid)  
Whole Grape Extract

### Men's Health

Mega Lycopene Extract  
PalmettoGuard® Saw Palmetto with  
Beta-Sitosterol  
PalmettoGuard® Saw Palmetto/Nettle Root  
Formula with Beta-Sitosterol  
Pomi-T®  
Prelox® Natural Sex for Men®  
Super MiraForte with Standardized Lignans  
Triple Strength ProstaPollen™  
Ultra Natural Prostate

### Minerals

Boron  
Chromium Ultra  
Copper  
Iron Protein Plus  
Magnesium (Citrate)  
Magnesium Caps  
Only Trace Minerals  
Optimized Chromium with Crominex® 3+  
Sea-Iodine™  
Se-Methyl L-Selenocysteine  
Super Selenium Complex  
Vanadyl Sulfate  
High Potency Zinc

### Miscellaneous

Advanced Iodine Complete  
Potassium Iodide  
Solarshield Sunglasses

### Mood & Stress Management

5 HTP  
L-Theanine  
Natural Stress Relief  
SAME (S-Adenosyl-Methionine)

### Multivitamins

Children's Formula Life Extension Mix™  
Comprehensive Nutrient Packs ADVANCED  
Life Extension Mix™ Capsules without Copper  
Life Extension Mix™ Capsules  
Life Extension Mix™ Powder without Copper  
Life Extension Mix™ Powder  
Life Extension Mix™ Tablets with Extra Niacin  
Life Extension Mix™ Tablets without Copper  
Life Extension Mix™ Tablets  
One-Per-Day Tablets  
Two-Per-Day Capsules  
Two-Per-Day Tablets

### Personal Care

Advanced Oral Hygiene  
Anti-Aging Rejuvenating Scalp Serum  
Biosil  
Dr. Proctor's Advanced Hair Formula  
Dr. Proctor's Shampoo  
European Leg Solution Featuring Certified  
Diosmin 95  
Face Master Platinum  
Hair Suppress Formula  
Life Extension Toothpaste  
Sinus Cleanser  
Venotone  
Xyliwhite Mouthwash

### Pet Care

Cat Mix  
Dog Mix

### Skin Care

Advanced Lightening Cream  
Advanced Peptide Hand Therapy  
Advanced Triple Peptide Serum  
Advanced Under Eye Serum with Stem Cells  
Amber Self MicroDermAbrasion  
Anti-Aging Face Oil  
Anti-Aging Mask  
Anti-Aging Rejuvenating Face Cream  
Anti-Glycation Serum with  
Blueberry & Pomegranate Extracts  
Antioxidant Facial Mist  
Anti-Oxidant Rejuvenating Foot Cream  
Anti-Oxidant Rejuvenating Foot Scrub  
Anti-Oxidant Rejuvenating Hand Cream  
Anti-Redness & Adult Blemish Lotion  
Bioflavonoid Cream  
Broccoli Sprout Cream  
Collagen Boosting Peptide Serum  
Corrective Clearing Mask  
DNA Repair Cream  
Dual-Action MicroDermAbrasion  
Enhanced FernBlock® with  
Red Orange Complex  
Essential Plant Lipids Reparative Serum  
Face Rejuvenating Anti-Oxidant Cream  
Fine Line-Less  
Healing Formula  
Healing Mask  
Healing Vitamin K Cream  
Hyaluronic Facial Moisturizer  
Hyaluronic Oil-Free Facial Moisturizer  
Hydrating Anti-Oxidant Facial Mist  
Hydroderm  
Lifting & Tightening Complex  
Lycopene Cream  
Melatonin Cream  
Mild Facial Cleanser  
Neck Rejuvenating Anti-Oxidant Cream  
Pigment Correcting Cream  
Rejuvenating Serum  
Rejuvenex® Body Lotion  
Rejuvex® Factor Firming Serum  
Renewing Eye Cream  
Resveratrol Anti-Oxidant Serum  
Skin Lightening Serum  
Skin Restoring Phytoceramides with Lipowheat®  
Skin Stem Cell Serum  
Stem Cell Cream with Alpine Rose  
Tightening & Firming Neck Cream  
Ultra Lip Plumper  
Ultra Rejuvenex®  
Ultra RejuveNight®  
Ultra Wrinkle Relaxer  
Under Eye Refining Serum  
Under Eye Rescue Cream  
Vitamin C Serum  
Vitamin D Lotion  
Vitamin E-ssential Cream  
Youth Serum

### Sleep

Bioactive Milk Peptides  
Enhanced Natural Sleep® with Melatonin  
Enhanced Natural Sleep® without Melatonin  
Fast-Acting Liquid Melatonin  
Glycine  
L-Tryptophan  
Melatonin  
Optimized Tryptophan Plus

### Sports Performance

Creatine Capsules  
Creatine Whey Glutamine Powder  
(Vanilla Flavor)  
DMG (N, N-dimethylglycine)

New Zealand Whey Protein Concentrate,  
(Natural Chocolate and Vanilla Flavor)  
Pure Plant Protein  
Tart Cherry Extract  
Whey Protein Isolate  
(Chocolate and Vanilla Flavor)

### Vitamins

Ascorbyl Palmitate  
Benfotiamine with Thiamine  
Beta-Carotene  
Biotin  
Buffered Vitamin C Powder  
Complete B-Complex  
Daily C+  
Fast-C® with Dihydroquercetin  
Folate & Vitamin B12  
Gamma E Tocopherol with Sesame Lignans  
Gamma E Tocopherol/Tocotrienols  
High Potency Optimized Folate  
Inositol Caps  
Liquid Emulsified Vitamin D3  
Liquid Vitamin D3  
Low-Dose Vitamin K2  
Methylcobalamin  
MK-7  
Natural Vitamin E  
No Flush Niacin  
Optimized Folate (L-Methylfolate)  
Pantothenic Acid (Vitamin B-5)  
Pyridoxal 5'-Phosphate Caps  
Super Absorbable Tocotrienols  
Super Ascorbate C Capsules  
Super Ascorbate C Powder  
Super K with Advanced K2 Complex  
Tocotrienols with Sesame Lignans  
Vitamin B12  
Vitamin B6  
Vitamin C with Dihydroquercetin  
Vitamin D3 with Sea-Iodine™  
Vitamin D3  
Vitamins D and K with Sea-Iodine™

### Weight Management

7-Keto® DHEA Metabolite  
Advanced Anti-Adipocyte Formula  
Advanced Natural Appetite Suppress  
CalReduce Selective Fat Binder  
DHEA Complete  
Garcinia HCA  
HCAActive  
Integra-Lean®  
Mediterranean Trim with Sinetrol™ XPur  
Optimized Irvingia with Phase 3™ Calorie  
Control Complex  
Optimized Saffron with Satiereal®  
Super Citrimax®  
Super CLA Blend with Guarana and  
Sesame Lignans  
Super CLA Blend with Sesame Lignans  
Waist-Line Control™  
Weight Management Formula

### Women's Health

Advanced Natural Sex for Women® 50+  
Breast Health Formula  
Calorie Control Weight Management Formula  
Femmenessence MacaPause  
Natural Estrogen without Soy Isoflavones  
Natural Estrogen  
ProgestaCare® for Women  
Super-Absorbable Soy Isoflavones  
Ultra Soy Extract

# 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		
01828	<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 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		
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		
01907	<b>AMPK ACTIVATOR</b> - 90 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
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/MERATRIM® &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	17.99	13.49		
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	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
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		
01805	<b>ASIAN ENERGY BOOST</b> - 90 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
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		
<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		

**SUB-TOTAL OF COLUMN 1**

No.		Retail Each	Member Each	Qty	Total
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		
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> - 40 mg, 60 small 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	31.99	25.59		
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 w/AC ADAPTOR</b> - MED CUFF	79.99	49.99		
70004	<b>BLOOD PRESSURE MONITOR</b> - Digital WRIST (cuff)	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		
01506	<b>BONE FORMULA (DR. STRUM'S INTENSIVE)</b> - 300 caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
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 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		
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		
01802	<b>BRAIN SHIELD® GASTRODIN</b> - 60 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01253	<b>BRANCHED CHAIN AMINO ACIDS</b> - 90 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.00	12.75		
01699	<b>BREAST HEALTH FORMULA</b> - 60 caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	<b>BRITE EYES III</b> - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		
01203	<b>BROMELAIN (SPECIALLY-COATED)</b> - 500 mg, 60 enteric coated tablets	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		

**SUB-TOTAL OF COLUMN 2**

No.		Retail Each	Member Each	Qty	Total
<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		
***01823	<b>CALREDUCE SELECTIVE FAT BINDER</b> - 120 mint chewable tablets Buy 4 bottles, price each	45.00 38.00	33.75 28.50		
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		
01258	<b>CARNOSOOTHIE w/PICROPROTECT™</b> - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01829	<b>CARNOSINE</b> - 500 mg, 60 caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01687	<b>CARNOSINE (SUPER)</b> - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01830	<b>CAT MIX</b> - 100 grams powder Buy 4 jars, price each	14.00 11.00	10.50 8.25		
01891	<b>CHILDREN'S FORMULA LIFE EXTENSION MIX™</b> - 100 chewable tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00550	<b>CHLORELLA</b> - 500 mg, 200 tablets	23.50	17.63		
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	35.00	26.25		
01910	<b>CHOL-SUPPORT™</b> - 60 liquid veg. caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
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		
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		
01906	<b>CISTANCHE (STANDARDIZED)</b> - 30 veg. caps Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01818	<b>CITRIMAX® (SUPER)</b> - 180 veg. caps Buy 4 bottles, price each	40.00 38.00	30.00 28.50		
00818	<b>CLA BLEND w/SESAME LIGNANS (SUPER)</b> - 1,000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	<b>CLA BLEND w/GUARANA &amp; SESAME (SUPER)</b> - 1,000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01896	<b>COGNITEX® w/BRAIN SHIELD®</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	60.00 52.00 48.00	45.00 39.00 36.00		
01897	<b>COGNITEX® w/PREGNENOLONE &amp; BRAIN SHIELD®</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	62.00 53.00 50.00	46.50 39.75 37.50		
01421	<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		
01659	<b>COGNIZIN® CDP CHOLINE CAPS</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		

**SUB-TOTAL OF COLUMN 3**

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

No.		Retail Each	Member Each	Qty	Total
01835	<b>COMPLETE B-COMPLEX</b> - 60 veg. caps Buy 4 bottles, price each	\$10.00 9.00	\$7.50 6.75		
01999	<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	9.91	7.43		
00949	<b>COQ10 w/ α-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/ α-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 48.00 44.00	42.00 36.00 33.00		
01733	<b>COQ10 w/BIOPQQ® (SUPER UBIQUINOL)</b> - 100 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	54.00 44.00 40.00	40.50 33.00 30.00		
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 52.00 48.00	46.50 39.00 36.00		
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 46.00 42.00	43.50 34.50 31.50		
01427	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 50 mg, 30 softgels Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
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 52.00 48.00	46.50 39.00 36.00		
80154	<b>COSMESIS ADVANCED LIGHTENING CREAM</b> - 1 oz jar Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80155	<b>COSMESIS ADVANCED PEPTIDE HAND THERAPY</b> - 4 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80152	<b>COSMESIS ADVANCED TRIPLE PEPTIDE SERUM</b> - 1 oz bottle Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
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		
80158	<b>COSMESIS ANTI-AGING FACE OIL</b> - 2 oz Buy 2 jars, price each	59.00 52.00	44.25 39.00		
80118	<b>COSMESIS ANTI-AGING MASK</b> - 2 oz Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80151	<b>COSMESIS ANTI-AGING REJUVENATING FACE CREAM</b> - 2 oz jar Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80153	<b>COSMESIS ANTI-AGING REJUVENATING SCALP SERUM</b> - 2 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80157	<b>COSMESIS ANTI-GLYCATION PEPTIDE SERUM</b> - 1 oz Buy 2 bottles, price each	53.00 46.00	39.75 34.50		
80134	<b>COSMESIS ANTI-GLYCATION SERUM</b> - 1 oz w/BLUEBERRY & POMEGRANATE EXTRACTS 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		

**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>					
80128	<b>COSMESIS ANTI-OXIDANT REJUVENATING FOOT SCRUB - 2 oz</b> Buy 2 jars, price each	\$59.00 51.92	\$44.25 38.94		
80117	<b>COSMESIS ANTI-OXIDANT REJUVENATING HAND CREAM - 2 oz</b> Buy 2 jars, price each	64.00 57.49	48.00 43.12		
80105	<b>COSMESIS ANTI-REDNESS &amp; ADULT BLEMISH LOTION - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80147	<b>COSMESIS BIOFLAVONOID CREAM - 1 oz jar</b> Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80144	<b>COSMESIS BROCCOLI SPROUT CREAM - 1 oz</b> Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80156	<b>COSMESIS COLLAGEN BOOSTING PEPTIDE SERUM - 1 oz</b> Buy 2 jars, price each	59.00 52.00	44.25 39.00		
80120	<b>COSMESIS CORRECTIVE CLEARING MASK - 2 oz</b> Buy 2 jars, price each	64.50 56.76	48.38 42.57		
80141	<b>COSMESIS DNA REPAIR CREAM - 1 oz jar</b> Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80108	<b>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz</b> Buy 2 bottles, price each	74.95 65.95	56.21 49.46		
80123	<b>COSMESIS FACE REJUVENATING ANTI-OXIDANT CREAM - 2 oz</b> Buy 2 jars, price each	69.50 61.16	52.13 45.87		
80107	<b>COSMESIS FINE LINE-LESS - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80131	<b>COSMESIS HAIR SUPPRESS FORMULA - 4 oz</b> Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80137	<b>COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz</b> Buy 2 jars, price each	53.00 45.43	39.75 34.07		
80115	<b>COSMESIS HEALING MASK - 2 oz</b> Buy 2 bottles, price each	64.50 56.76	48.38 42.57		
80102	<b>COSMESIS HEALING VITAMIN K CREAM - 1 oz</b> Buy 2 bottles, price each	79.50 69.96	59.63 52.47		
80109	<b>COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz</b> Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80110	<b>COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz</b> Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80138	<b>COSMESIS HYDRATING ANTI-OXIDANT FACE MIST - 4 oz</b> Buy 2 bottles, price each	39.95 38.00	29.96 28.50		
80103	<b>COSMESIS LIFTING &amp; TIGHTENING COMPLEX - 1 oz</b> Buy 2 tubes, price each	74.50 65.56	55.88 49.17		
80146	<b>COSMESIS LYCOPENE CREAM - 1 oz jar</b> Buy 2 jars, price each	28.00 25.40	21.00 19.05		
80135	<b>COSMESIS MELATONIN CREAM - 1 oz</b> Buy 2 jars, price each	33.00 27.10	24.75 20.33		
80114	<b>COSMESIS MILD FACIAL CLEANSER - 8 oz</b> Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80122	<b>COSMESIS NECK REJUVENATING ANTI-OXIDANT CREAM - 2 oz</b> Buy 2 jars, price each	64.00 56.32	48.00 42.24		
80111	<b>COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz</b> Buy 2 bottles, price each	74.00 65.12	55.50 48.84		
80106	<b>COSMESIS REJUVENATING SERUM - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80150	<b>COSMESIS RENEWING EYE CREAM - 1/2 oz</b> Buy 2 jars, price each	65.00 57.00	48.75 42.75		

**SUB-TOTAL OF COLUMN 5**

No.		Retail Each	Member Each	Qty	Total
80142	<b>COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz</b> Buy 2 bottles, price each	\$46.00 39.00	\$34.50 29.25		
80112	<b>COSMESIS SKIN LIGHTENING SERUM - 1/2 oz</b> Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80130	<b>COSMESIS SKIN STEM CELL SERUM - 1 oz</b> Buy 2 bottles, price each	74.00 69.00	55.50 51.75		
80143	<b>COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar</b> Buy 2 jars, price each	66.00 58.00	49.50 43.50		
80148	<b>COSMESIS TIGHTENING &amp; FIRMING NECK CREAM - 2 oz jar</b> Buy 2 jars, price each	39.00 35.00	29.25 26.25		
80116	<b>COSMESIS ULTRA LIP PLUMPER - 1/3 oz</b> Buy 2 bottles, price each	64.00 56.32	48.00 42.24		
80101	<b>COSMESIS ULTRA WRINKLE RELAXER - 1 oz</b> Buy 2 bottles, price each	89.95 79.76	67.46 59.82		
80113	<b>COSMESIS UNDER EYE REFINING SERUM - 1/2 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80104	<b>COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80129	<b>COSMESIS VITAMIN C SERUM - 1 oz</b> Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80136	<b>COSMESIS VITAMIN D LOTION - 4 oz</b> Buy 2 bottles, price each	36.00 33.66	27.00 25.25		
80145	<b>COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz</b> Buy 2 jars, price each	28.00 26.00	21.00 19.50		
80149	<b>COSMESIS YOUTH SERUM - 1 oz</b> Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
00862	<b>CRAN-MAX® - 500 mg, 60 veg. caps</b> Buy 4 bottles, price each	17.50 15.00	13.13 11.25		
01424	<b>CRAN-MAX® with ELLIROSE™ (OPTIMIZED) - 60 veg. caps</b> Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01529	<b>CREATINE CAPSULES - 120 veg. caps</b> Buy 4 bottles, price each	10.95 9.25	8.21 6.94		
01746	<b>CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla)</b> Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01429	<b>CR MIMETIC LONGEVITY FORMULA - 60 veg. caps</b> 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) - 400 mg, 60 veg. caps</b> Buy 4 bottles, price each	38.00 35.00	28.50 26.25		
01808	<b>CURCUMIN® w/GINGER &amp; TURMERONES (ADVANCED BIO)-30 softgels</b> Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01804	<b>CYTOKINE SUPPRESS™ w/EGCG - 30 veg. caps</b> Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
<b>D</b>					
01912	<b>DAILY C+ CITRUS FLAVOR - 30 stick packs</b> Buy 4 boxes, price each	\$21.00 19.00	\$15.75 14.25		
00658	<b>7-KETO® DHEA METABOLITE - 25 mg, 100 caps</b> Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01479	<b>7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps</b> Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01640	<b>DHA (VEGETARIAN SOURCED) - 30 veg. softgels</b> Buy 4 bottles, price each	20.00 18.00	15.00 13.50		

**SUB-TOTAL OF COLUMN 6**

No.		Retail Each	Member Each	Qty	Total
00607	<b>DHEA</b> - 25 mg, 100 tablets (dissolve in mouth) Buy 4 bottles, price each	\$14.00 11.75	\$10.50 8.81		
01478	<b>DHEA COMPLETE</b> - 60 veg. caps Buy 4 bottles, price each	48.00 43.20	36.00 32.40		
00335	<b>DHEA</b> - 25 mg, 100 caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00454	<b>DHEA</b> - 15 mg, 100 caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
00882	<b>DHEA</b> - 50 mg, 60 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01689	<b>DHEA</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01358	<b>DIGEST RC</b> - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	<b>DIGESTIVE ENZYMES (ENHANCED SUPER)</b> - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
01671	<b>D,L-PHENYLALANINE CAPSULES</b> - 500 mg, 100 veg. caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
01540	<b>DMAE BITARTRATE</b> - 150 mg, 200 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00059	<b>DMG</b> - 125 mg, 60 tablets Buy 4 boxes, price each	24.80 22.69	18.60 17.02		
01570	<b>DNA PROTECTION FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
01831	<b>DOG MIX</b> - 100 grams powder Buy 4 jars, price each	18.00 15.00	13.50 11.25		
00321	<b>DR. PROCTOR'S ADVANCED HAIR FORMULA</b> - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	<b>DR. PROCTOR'S HAIR FORMULA SHAMPOO</b> - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	<b>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE</b> - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
<b>E</b>					
01528	<b>ECHINACEA EXTRACT</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01997	<b>ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ AND CORDIART™</b> Buy 4 bottles, price each	68.00 62.00	51.00 46.50		
00997	<b>ENDOTHELIAL DEFENSE™ w/GLISODIN®</b> - 60 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00625	<b>EPA/DHA (MEGA)</b> - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01737	<b>ESOPHAGEAL GUARDIAN</b> (Berry flavor) - 60 chewable tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01042	<b>EUROPEAN LEG SOLUTION DIOSMIN 95</b> - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01706	<b>EXTRAORDINARY ENZYMES</b> - 60 caps Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
01514	<b>EYE PRESSURE SUPPORT w/MIRTOGENOL®</b> - 30 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 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 Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01717	<b>FAST-C® w/DIHYDROQUERCETIN</b> - 120 veg. tabs Buy 4 bottles, price each	26.00 24.00	19.50 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>FEMMESSSENCE MACAPAUSE®</b> - 120 veg. caps	34.99	26.24		
01728	<b>FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED)</b> - 30 veg. caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
00718	<b>FIBRINOGEN RESIST™</b> - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
01749	<b>FLAX SEED (ORGANIC GOLDEN GROUND)</b> - 14 oz.	11.67	8.75		
01821	<b>FLORASSIST® HEART HEALTH PROBIOTIC</b> - 60 caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01825	<b>FLORASSIST® PROBIOTIC</b> - 30 liquid caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01913	<b>FOLATE (OPTIMIZED HIGH-POTENCY)</b> 5,000 mcg, 30 veg. tablets Buy 4 bottles, price each	25.00 22.00	18.75 16.50		
01939	<b>FOLATE (OPTIMIZED) (L-METHYLFOLATE)</b> 1,000 mcg, 100 veg. tablets Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01841	<b>FOLATE + B12 CAPS</b> - 200 veg. caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01544	<b>FORSKOLIN</b> - 10 mg, 60 veg.caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
01513	<b>FUCOIDAN w/MARITECH® 926 (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
<b>G</b>					
00559	<b>GAMMA E TOCOPHEROL/TOCOTRIENOLS</b> - 60 softgels Buy 4 bottles, price each	\$42.00 37.00	\$31.50 27.75		
00759	<b>GAMMA E TOCOPHEROL w/SESAME LIGNANS</b> - 60 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01394	<b>(OPTIMIZED) GARLIC</b> - 200 veg. caps Buy 4 bottles, price each	24.95 21.00	18.71 15.75		
**01122	<b>GINGER FORCE®</b> - 60 liquid caps	34.95	26.21		
01658	<b>GINKGO BILOBA CERTIFIED EXTRACT™</b> - 120 mg, 365 veg. caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
01648	<b>GINKGO EXTRACT 28/7 (SUPER)</b> - 120 mg, 100 veg. caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
00756	<b>GLA WITH SESAME LIGNANS (MEGA)</b> - 60 softgels Buy 4 bottles, price each	19.50 18.00	14.63 13.50		
00345	<b>(L) GLUTAMINE CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00141	<b>(L)-GLUTAMINE POWDER</b> - 100 grams Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00522	<b>GLUCOSAMINE/CHONDROITIN CAPSULES</b> - 100 caps Buy 4 bottles, price each	38.00 32.00	28.50 24.00		
01541	<b>GLUTATHIONE, CYSTEINE &amp; C</b> - 100 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00314	<b>L-GLUTATHIONE (MEGA)</b> - 250 mg, 60 caps	39.64	29.73		

**SUB-TOTAL OF COLUMN 8**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>G CONTINUED</b>					
01987	<b>GLYCATION PROTECTION FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	\$44.00 39.00	\$33.00 29.25		
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	22.00 20.00	16.50 15.00		
01620	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 400 mg, 90 veg. caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
00953	<b>GREEN TEA EXTRACT (MEGA)</b> - lightly caffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 24.00	22.50 18.00		
00954	<b>GREEN TEA EXTRACT (MEGA)</b> - decaffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 24.00	22.50 18.00		
01545	<b>GUTSY CHEWY DIGESTIVE (CITRUS FLAVOR)</b> - 8 tablets	11.50	8.63		
01546	<b>GUTSY CHEWY DIGESTIVE (WILD BERRY FLAVOR)</b> - 8 tablets	11.50	8.63		
<b>H</b>					
01074	<b>5 HTP</b> - 100 mg, 60 caps	\$27.95	\$20.96		
01738	<b>HCA (GARCINIA)</b> - 90 veg. caps Buy 4 bottles, price each	17.00 15.00	12.75 11.25		
29754	<b>HCACTIVE</b> - 90 caps (Jarrow)	30.00	22.50		
01393	<b>HEPATOPRO</b> - 900 mg, 60 softgels Buy 4 bottles, price each	50.00 46.00	37.50 34.50		
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/PRACTIN®</b> - 30 veg. caps Buy 4 bottles, price each	29.50 26.55	22.13 19.91		
01905	<b>IMMUNE SENESCENCE PROTECTION FORMULA™</b> - 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01049	<b>INNERPOWER™</b> - 530 grams powder	42.00	31.50		
01674	<b>INOSITOL CAPSULES</b> - 1,000 mg, 360 veg. caps Buy 4 bottles, price each	62.00 58.00	46.50 43.50		
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		
01248	<b>IODINE COMPLETE (ADVANCED)</b> - 180 tablets	46.00	36.50		
01677	<b>IRON PROTEIN PLUS</b> - 300 mg, 100 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		
<b>J, K</b>					
00056	<b>JARRO-DOPHILUS EPS™</b> - 60 veg. caps	\$22.95	\$17.21		
01759	<b>JARRO-DOPHILUS EPS™</b> - 30 caps	39.95	29.96		
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		

**SUB-TOTAL OF COLUMN 9**

No.		Retail Each	Member Each	Qty	Total
01050	<b>KRILL OIL PHOSPHOMEGA™</b> - 60 softgels	\$33.95	\$25.46		
00316	<b>KYOLIC® GARLIC FORMULA 102</b> - 200 veg. caps	26.45	19.84		
00214	<b>KYOLIC® GARLIC FORMULA 105</b> - 200 caps	27.45	20.59		
00789	<b>KYOLIC® RESERVE</b> - 600 mg, 120 caps	27.95	20.96		
01681	<b>LACTOFERRIN (APOLACTOFERRIN) CAPS</b> - 60 caps Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
00020	<b>LECITHIN</b> - 16 oz. granules Buy 4 jars, price each	18.00 16.00	13.50 12.00		
01955	<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		
01957	<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		
01954	<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		
01956	<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		
01965	<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		
01964	<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		
01966	<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		
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		
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>					
01885	<b>MACUGUARD® OCULAR SUPPORT</b> - 60 softgels Buy 4 bottles, price each	\$22.00 19.80	\$16.50 14.85		
01886	<b>MACUGUARD® OCULAR SUPPORT w/ASTAXANTHIN</b> - 60 softgels Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
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		
01908	<b>MEDITERRANEAN TRIM WITH SINETROL™-XPUR</b> - 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
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		

**SUB-TOTAL OF COLUMN 10**

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# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
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		
01734	<b>MELATONIN</b> (Fast Acting Liquid) - 3 mg (Natural Citrus-Van) Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
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 veg. lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
01537	<b>METHYLCOBALAMIN</b> - 5 mg, 60 veg. 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-EEZE™ (BUTTERBUR)</b> - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		
01800	<b>MIGRA-MAG w/BRAIN SHIELD®</b> - 90 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01522	<b>MILK THISTLE (EUROPEAN)</b> - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
01822	<b>MILK THISTLE (EUROPEAN)</b> - 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01817	<b>MILK THISTLE (EUROPEAN)</b> - 120 softgels Buy 4 bottles, price each	44.00 40.00	33.00 30.00		
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 42.00	39.00 31.50		
01768	<b>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ®</b> - 120 caps Buy 4 bottles, price each	94.00 78.00	70.50 58.50		
00065	<b>MK-7</b> - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00451	<b>MSM (METHYLSULFONYLMETHANE)</b> - 1,000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		
<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		
01904	<b>NAD+ CELL REGENERATOR™</b> - 100 mg, 30 veg. caps Buy 4 bottles, price each	34.00 26.00	25.50 19.50		
00066	<b>NATTOKINASE</b> - 60 softgels	25.50	19.13		
01807	<b>NATURAL APPETITE SUPPRESS (ADVANCED)</b> - 60 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00984	<b>NATURAL BP MANAGEMENT</b> - 60 tablets Buy 4 bottles, price each	44.00 40.00	33.00 30.00		
01892	<b>NATURAL ESTROGEN</b> - 60 veg. tabs Buy 4 bottles, price each	38.00 34.00	28.50 25.50		

**SUB-TOTAL OF COLUMN 11**

No.		Retail Each	Member Each	Qty	Total
01893	<b>NATURAL ESTROGEN w/o SOY ISOFLAVONES</b> - 30 veg. caps Buy 4 bottles, price each	\$32.00 28.00	\$24.00 21.00		
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		
01121	<b>NERVIA®</b> - 60 softgels	49.95	37.46		
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		
01990	<b>NITROVASC w/ CORDIART™</b> - 500 mg, 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01903	<b>NK CELL ACTIVATOR™</b> - 30 veg. tablets Buy 4 bottles, price each	45.00 42.00	33.75 31.50		
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>					
01824	<b>OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRAT(ADVANCED)</b> 500 mg, 60 veg. caps • Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
01819	<b>OMEGA WITH KRILL &amp; ASTAXANTHIN (SUPER)</b> - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	45.00 42.00 33.00	33.75 31.50 24.75		
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 12.50	13.50 12.00 9.38		
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 22.73	24.00 21.00 17.05		
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 24.00	25.50 23.25 18.00		
01485	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	20.00 18.00 14.00	15.00 13.50 10.50		
01619	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL)</b> Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 23.00	24.00 21.00 17.25		

**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>					
01981	<b>ONCE-DAILY HEALTH BOOSTER</b> - 60 softgels Buy 4 bottles, price each	\$52.00 48.00	\$39.00 36.00		
01901	<b>ONE-PER-DAY</b> - 60 tablets Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01328	<b>ONLY TRACE MINERALS</b> - 90 veg. caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
<b>P</b>					
01789	<b>PALMETTOGUARD® SAW PALMETTO w/BETA SITOSTEROL</b> - 30 softgels Buy 12 bottles, price each	\$15.00 12.00	\$11.25 9.00		
01790	<b>PALMETTOGUARD® 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		
00073	<b>PANCREATIN</b> - 500 mg, 50 caps	13.22	9.92		
01323	<b>PEAK ATP® WITH GLYCOCARN®</b> - 60 veg. caps Buy 4 bottles, price each	54.00 50.00	40.50 37.50		
00342	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 454 grams powder	109.95	82.46		
01080	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 270 veg. caps	79.95	59.96		
01811	<b>PEONY IMMUNE</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00673	<b>PGX™ PLUS MULBERRY (WELLBETX®)</b> -180 veg. caps	34.95	26.21		
01676	<b>PHOSPHATIDYLSERINE CAPS</b> - 100 mg, 100 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
01436	<b>POLICOSANOL</b> - 10 mg, 60 veg. caps Buy 4 bottles, price each	20.00 15.00	15.00 11.25		
01423	<b>POMEGRANATE™ (FULL-SPECTRUM)</b> - 30 softgels Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
00956	<b>POMEGRANATE EXTRACT</b> - 30 veg. caps Buy 4 bottles, price each	19.50 17.55	14.63 13.16		
01797	<b>POMI-T®</b> - 60 veg. caps Buy 4 bottles, price each	33.33 30.00	25.00 22.50		
00577	<b>POTASSIUM IODIDE</b> - 1 box, 14 tablets Buy 4 boxes, price each	6.95 5.25	5.21 3.94		
01500	<b>PQQ CAPS W/BIO-PQQ®</b> - 10 mg, 30 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	24.00 18.00 16.00	18.00 13.50 12.00		
01647	<b>PQQ CAPS W/BIO-PQQ®</b> - 20 mg, 30 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	40.00 32.00 28.00	30.00 24.00 21.00		
00302	<b>PREGNENOLONE</b> - 50 mg, 100 caps Buy 4 bottles, price each	26.00 22.00	19.50 16.50		
00700	<b>PREGNENOLONE</b> - 100 mg, 100 caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
***01373	<b>PRELOX® NATURAL SEX FOR MEN®</b> - 60 tablets Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
01576	<b>PREVAGEN®</b> - 10 mg, 30 caps	60.00	45.00		
01577	<b>PREVAGEN® ES</b> - 20 mg, 30 caps	70.00	60.00		
00525	<b>PROBOOST THYMIC PROTEIN A™</b> - 4 mcg, 30 packets	59.95	44.96		
01441	<b>PROGESTACARE® FOR WOMEN</b> - 4 oz cream Buy 4 bottles, price each	35.50 32.50	26.63 24.38		
01898	<b>PROSTATE FORMULA (ULTRA NAT)</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		

**SUB-TOTAL OF COLUMN 13**

No.		Retail Each	Member Each	Qty	Total
01909	<b>PROSTAPOLLEN™ (TRIPLE ACTION)</b> - 30 softgels Buy 4 bottles, price each	\$28.00 25.00	\$21.00 18.75		
01742	<b>PROTEIN-ISOLATE (WHEY) VANILLA</b> - 1 lb. powder Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01743	<b>PROTEIN-ISOLATE (WHEY) CHOCOLATE</b> - 1 lb. powder Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01770	<b>PROTEIN CONCENTRATE</b> (New Zealand Whey) <b>Vanilla</b> - 520 gr Buy 4 bottles, price each	30.00 26.60	22.50 19.95		
01771	<b>PROTEIN CONCENTRATE</b> (New Zealand Whey) <b>Chocolate</b> - 660 gr Buy 4 bottles, price each	30.00 26.60	22.50 19.95		
01812	<b>PROVINAL® PURIFIED OMEGA-7</b> - 30 softgels Buy 4 bottles, price each	27.00 24.00	20.25 18.00		
01508	<b>PTEROPURE®</b> - 50 mg Pterostilbene 60 veg. caps Buy 4 bottles, price each	32.00 30.00	24.00 22.50		
01209	<b>PUMPKIN SEED EXTRACT (WATER-SOLUBLE)</b> - 60 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01587	<b>PURE PLANT PROTEIN</b> - Veg. Vanilla 540 grams powder Buy 4 jars, price each	38.00 35.00	28.50 26.25		
01637	<b>PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT</b> -100 mg, 60 veg. caps Buy 4 bottles, price each	64.00 60.00	48.00 45.00		
01217	<b>PYRIDOXAL 5'-PHOSPHATE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 19.80	16.50 14.85		
<b>Q, R</b>					
01309	<b>QUERCETIN (OPTIMIZED)</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01030	<b>RED YEAST RICE</b> (Bluebonnet)- 600 mg, 60 veg. caps	16.95	13.56		
00605	<b>REGIMINT</b> - 60 enteric-coated caps Buy 4 bottles, price each	19.95 18.67	14.96 14.00		
01708	<b>REISHI EXTRACT MUSHROOM COMPLEX</b> - 60 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01448	<b>REJUVENEX® BODY LOTION</b> - 6 oz Buy 4 tubes, price each Buy 8 tubes, price each	24.00 19.80 17.00	18.00 14.85 12.75		
01621	<b>REJUVENEX® FACTOR FIRING SERUM</b> - 1.7 oz Buy 2 bottles, price each Buy 6 bottles, price each	65.00 50.66 38.52	48.75 38.00 28.89		
01220	<b>REJUVENEX® (ULTRA)</b> - 2 oz Buy 2 jars, price each Buy 4 jars, price each Buy 8 jars, price each	52.00 48.00 44.00 39.93	39.00 36.00 33.00 29.95		
00676	<b>REJUVENIGHT® (ULTRA)</b> - 2 oz Buy 4 jars, price each	39.95 36.00	29.96 27.00		
01410	<b>RESVERATROL W/PTEROSTILBENE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01930	<b>RESVERATROL W/NAD+ CELL REGENERATOR™ (OPTIMIZED)</b> -30 veg. caps Buy 4 bottles, price each	42.00 36.00	31.50 27.00		
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	14.00 12.00	10.50 9.00		
01900	<b>RIBOGEN™ FRENCH OAK WOOD EXTRACT</b> - 200 mg, 30 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		

**SUB-TOTAL OF COLUMN 14**

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# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
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		
01730	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag Natural Mocha	15.00	11.25		
01729	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag Natural Vanilla	15.00	11.25		
01612	<b>RICH REWARDS® BREAKFAST BLEND WHOLE BEAN 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		
01530	<b>RICH REWARDS® CRUCIFEROUS VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01208	<b>R-LIPOIC ACID (SUPER)</b> - 240 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/SATIREAL® (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		
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		
01740	<b>SEA-IODINE™</b> - 1,000 mcg, 60 veg. caps Buy 4 bottles, price each	8.00 7.20	6.00 5.40		
00046	<b>SELENIUM</b> - 2 oz dropper bottle	11.95	8.96		
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		
01684	<b>SILYMARIN</b> - 100 mg, 50 veg. caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01249	<b>SINUS CLEANSER</b> - 4 oz. bottle	25.00	18.75		
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		
00961	<b>SODZYME® w/GLISODIN® AND WOLFBERRY</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		
01097	<b>SOY EXTRACT (ULTRA)</b> - 150 veg. caps Buy 4 bottles, price each	87.00 78.00	65.25 58.50		
00432	<b>STEVIA™ EXTRACT (BETTER)</b> - 100 packets, 1 gram each	9.95	7.46		
00438	<b>STEVIA™ ORGANIC LIQUID EXTRACT (BETTER)</b> - 2 oz liquid	11.00	8.25		
01476	<b>STRONTIUM</b> - 750 mg, 90 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01649	<b>SUPER ABSORBABLE SOY ISOFLAVONES</b> - 60 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
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		

**SUB-TOTAL OF COLUMN 15**

No.		Retail Each	Member Each	Qty	Total
<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		
01827	<b>TAURINE</b> - 1,000 mg, 90 veg. caps Buy 4 bottles, price each	13.00 12.00	9.75 9.00		
01918	<b>TEAR SUPPORT w/MAQUIBRIGHT®</b> - 60 mg, 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00133	<b>L-TAURINE POWDER</b> - 300 grams Buy 4 bottles, price each	20.00 16.88	15.00 12.66		
13685	<b>TEN MUSHROOM FORMULA® ECONUGENICS</b> - 120 veg. caps	39.95	29.96		
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		
01859	<b>TMG</b> - 500 mg, 60 veg. liquid caps Buy 4 bottles, price each	13.00 12.00	9.75 9.00		
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>TOOTH PASTE</b> - 4 oz (Mint) Buy 4 tubes, price each	9.50 8.67	7.13 6.50		
01917	<b>TRANQUIL TRACT™</b> - 60 veg. caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
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		
01803	<b>TRI SUGAR SHIELD®</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01386	<b>TRUFIBER®</b> - 180 grams	32.95	24.71		
01389	<b>TRUFLORA PROBIOTICS</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		
01721	<b>TRYPTOPHAN PLUS (OPTIMIZED)</b> - 90 veg. caps Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01916	<b>TWO-PER-DAY</b> - 60 tablets Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01915	<b>TWO-PER-DAY</b> - 120 tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01914	<b>TWO-PER-DAY</b> - 120 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00326	<b>L-TYROSINE</b> - 500 mg, 100 tablets	12.98	9.74		
<b>V</b>					
00213	<b>VANADYL SULFATE</b> - 7.5 mg, 100 veg. tablets Buy 4 bottles, price each	\$15.00 12.50	\$11.25 9.38		
00408	<b>VENOTONE</b> - 60 caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		

**SUB-TOTAL OF COLUMN 16**

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No.		Retail Each	Member Each	Qty	Total
<b>V CONTINUED</b>					
01327	<b>VINPOCETINE</b> - 10 mg, 100 tablets Buy 4 bottles, price each	\$18.00 14.00	\$13.50 10.50		
00372	<b>VITAMIN B3 Niacin</b> - 500 mg, 100 caps Buy 4 bottles, price each	7.65 6.65	5.74 4.99		
00098	<b>VITAMIN B5</b> - 500 mg, 100 caps (Pantothenic Acid) Buy 4 bottles, price each	10.50 9.38	7.88 7.04		
01535	<b>VITAMIN B6</b> - 250 mg, 100 veg. caps Buy 4 bottles, price each	12.50 11.00	9.38 8.25		
00361	<b>VITAMIN B12</b> - 500 mcg, 100 lozenges Buy 4 bottles, price each	8.75 7.25	6.56 5.44		
01634	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 60 veg. tablets Buy 4 bottles, price each	10.00 9.00	7.50 6.75		
00927	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 250 veg. tablets Buy 4 bottles, price each	25.50 23.25	19.13 17.44		
00084	<b>VITAMIN C (BUFFERED) POWDER</b> - 454 grams Buy 4 bottles, price each	23.95 22.00	17.96 16.50		
01736	<b>(EFFERVESCENT) VITAMIN C-MAGNESIUM CRYSTALS</b> - 180 grams Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01732	<b>VITAMIN D3</b> - 2,000 IU, 1 fl oz, Mint flavor Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01753	<b>VITAMIN D3</b> - 1,000 IU, 90 softgels Buy 4 bottles, price each	7.00 6.00	5.25 4.50		
01751	<b>VITAMIN D3</b> - 1,000 IU, 250 softgels Buy 4 bottles, price each	12.50 11.25	9.38 8.44		
01713	<b>VITAMIN D3</b> - 5,000 IU, 60 softgels Buy 4 bottles, price each	11.00 9.90	8.25 7.43		
01718	<b>VITAMIN D3</b> - 7,000 IU, 60 softgels Buy 4 bottles, price each	14.00 12.60	10.50 9.45		
01758	<b>VITAMIN D3 w/SEA-IODINE™</b> - 5,000 IU, 60 caps Buy 4 bottles, price each	14.00 12.50	10.50 9.38		
00864	<b>VITAMIN D3</b> Liquid Emulsion - 2,000 IU, 1 oz. Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01840	<b>VITAMINS D AND K w/SEA-IODINE™</b> - 60 caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01763	<b>VITAMIN E (NATURAL)</b> - 400 IU, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	30.00 28.00 26.00	22.50 21.00 19.50		
01225	<b>VITAMIN K2 (LOW-DOSE)</b> - 45 mcg, 90 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
<b>X</b>					
00409	<b>XYLIWHITE™ MOUTHWASH</b> - 16 oz	\$10.00	\$7.50		
<b>W</b>					
01902	<b>WAIST-LINE CONTROL™</b> - 120 veg. caps Buy 4 bottles, price each	\$42.00 38.00	\$31.50 28.50		
01826	<b>WEIGHT MANAGEMENT FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
<b>Z</b>					
01813	<b>ZINC HIGH POTENCY</b> - 50 mg, 90 veg. caps Buy 4 bottles, price each	\$7.95 7.00	\$5.96 5.25		
01561	<b>ZINC GLUCONATE/OXIDE LOZENGES</b> - 18.75 mg, 60 veg. lozenges Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
01961	<b>ZINC ACETATE LOZENGES (ENHANCED)</b> - 18.75 mg, 30 veg. lozenges Buy 2 bottles, price each	12.00 8.00	9.00 6.00		
**01051	<b>ZYFLAMEND® WHOLE BODY</b> - 120 softgels	64.95	48.71		

**SUB-TOTAL OF COLUMN 17**



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**WITH A GIFT OF**

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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	

### ORDER TOTALS

Sub-Total A (Sub-total of Columns 1 through 17)	
Postage And Handling (Any size order, contiguous 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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NAME  E-MAIL

ADDRESS

CITY/STATE/ZIP-POSTAL CODE  COUNTRY

PHONE  FAX

VISA/MASTERCARD/AMEX/DISCOVER #

EXP. DATE

SIGNATURE

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No.	<b>LIFE EXTENSION MEDIA</b>		Retail	Member Price	Qty	Total
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33878	<b>TESTOSTERONE REPLACEMENT THERAPY</b> • by Dr. John Crisler	2015	\$19.99	\$14.99		
33877	<b>THE TRUTH ABOUT MEN AND SEX</b> • by Abraham Morgentaler, MD FACS	2015	\$16.99	\$12.74		
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33875	<b>DOCTORED THE DISILLUSIONMENT OF AN AMERICAN PHYSICIAN</b> • by Sandeep Jauhar	2015	\$26.00	\$19.50		
33874	<b>MISSING MICROBES</b> • by Martin J. Blaser, MD	2014	\$28.00	\$21.00		
33873	<b>EATING ON THE WILD SIDE</b> • by Jo Robinson	2014	\$16.00	\$12.00		
33872	<b>GET SERIOUS</b> • by Brett Osborn, MD	2014	\$24.95	\$18.71		
33868	<b>TOXIN TOXOUT: GETTING HARMFUL CHEMICAL OUT OF OUR BODIES AND OUR WORLD</b> • by Bruce Lourie and Rick Smith	2014	\$25.99	\$19.49		
33867	<b>THE COMPLETE MEDITERRANEAN DIET</b> • by Michael Ozner, MD	2014	\$19.95	\$14.96		
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DPT05	<b>DISEASE PREVENTION AND TREATMENT, EXPANDED FIFTH EDITION (hardcover)</b> Buy 4 books, price each	2014	\$39.95 \$36.00	\$39.95 \$36.00		
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33862	<b>I'M TOO YOUNG FOR THIS</b> • by Suzanne Somers	2013	\$26.00	\$19.50		
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33958	<b>THE VITAMIN D SOLUTION</b> • by Michael F. Holick, PhD, MD (paperback)	2013	\$16.00	\$12.00		
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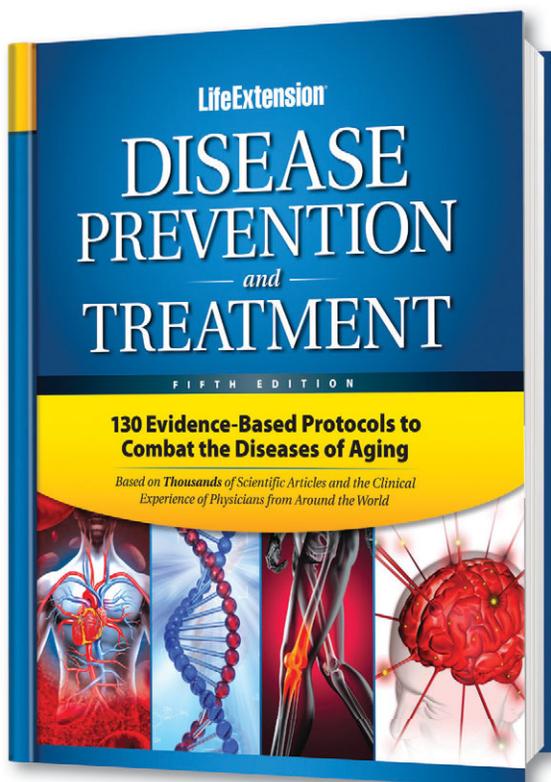
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### HOW TO JOIN THE LIFE EXTENSION FOUNDATION®

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 35-year track record shows that we have been five to 10 years ahead of conventional and alternative medicine in making new life-saving therapies available to our members.

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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.

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# FINALLY AN IMMUNE FORMULA THAT SCORES A PERFECT 10



## Ten Mushroom® Formula

- All Season, Year-Round Immune Support\*
- Safe for Everyday Use\*
- Organically Grown in the Pacific Northwest\*

**Ten Mushroom®** is a **synergistic** blend of ten **organic** mushroom varieties, carefully selected based on their **broad-spectrum benefits** for immune and overall health. Additional beta-glucans give an extra boost to help **optimize immune function**.

	Mushroom Latin Name	Common Name	Benefits
1	<i>Ganoderma lucidum</i>	Reishi	Immune, cellular, cardiovascular, liver, respiratory*
2	<i>Wolfiporia extensa</i>	Poria; Fu Ling	Immune, cellular, liver, digestive, spleen, respiratory*
3	<i>Cordyceps sinensis</i>	Caterpillar Mushroom	Immune, liver, spleen, respiratory*
4	<i>Tremella fuciformis</i>	Tremella	Immune, metabolic/glucose balance, lung, spleen*
5	<i>Polyporus umbellatus</i>	Zhu Ling	Immune, liver, kidney, spleen*
6	<i>Trametes versicolor</i>	Turkey Tails; Coriolus	Immune, cellular, spleen, liver*
7	<i>Grifola frondosa</i>	Maitake	Immune, cellular, digestive, metabolic/glucose balance*
8	<i>Lentinula edodes</i>	Shiitake	Immune, cellular*
9	<i>Auricularia auricula</i>	Wood Ear Fungus	Immune, cardiovascular*
10	<i>Hericium erinaceus</i>	Lion's Mane; Monkey's Head	Immune, digestive*

For thousands of years, traditional cultures have relied on medicinal mushrooms to promote **optimal health** and **longevity**. **Ten Mushroom®** is designed based on this time-honored wisdom, and substantiated with **extensive research** on the **broad-spectrum health benefits** offered by each mushroom in this unique formula.

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**Gentle, nourishing** and **pure**, **Ten Mushroom®** is an ideal formula to **protect** and **promote long-term health**.\*

*Finally, an immune formula that scores a perfect Ten!*



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Item # 13685

**Ten Mushroom Formula®**  
120 Veg. Capsules

Item # **13685**

Retail: \$39.95

Member: \$29.96

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Soluble Fiber with Enzymes

30 capsules  
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Retail: \$42.95  
Member: \$32.21

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Retail: \$32.95  
Member: \$24.71

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Krill Oil is clinically documented to enhance lipid management, brain nutrition, and liver and glucose metabolism.\*



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FORMULAS®

FOR WHOLE-BODY SUPPORT

# Highly Absorbable CURCUMIN

Used medicinally for over 4,000 years, **curcumin** benefits almost every organ in the body.<sup>1,3</sup> The challenge in obtaining these benefits is that most supplements are poorly **absorbed** into the bloodstream and are not well retained in the body.

**Life Extension**®'s curcumin supplements utilize a patented, bio-enhanced curcumin preparation that can reach up to **7 times** higher concentrations in the blood than standard curcumin.<sup>4</sup>

Studies comparing standard curcumin to **Super Bio-Curcumin**® and **Advanced Bio-Curcumin**® with **Ginger & Turmerones** found:<sup>5,6</sup>

- Nearly **2 times** the support for **immune health**,
- Nearly **twice** the support for **inflammatory issues**, and
- Approximately **double** the **free-radical fighting** support.

Life Extension® offers the choice of two super-**absorbing** curcumin formulas that require only one capsule a day dosing:

- **Super Bio-Curcumin**® provides optimal potency of highly absorbable curcumin.
- **Advanced Bio-Curcumin**® with **Ginger & Turmerones** provides the following additional nutrients for those seeking more comprehensive support for prolonged functional inflammatory issues:
  - ∞ **Ginger** to complement health benefits,<sup>7</sup>
  - ∞ **Turmerones** to increase the amount of curcumin inside cells, and
  - ∞ **Phospholipids** to further enhance absorption.<sup>8</sup>



## Super Bio-Curcumin®

Item #00407 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$38	<b>\$28.50</b>
4 bottles	\$35 each	<b>\$26.25 each</b>

Non-GMO



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.

### References

1. *Br J Nutr.* 2010 Jun;103(11):1545-57.
2. *Nat Sci Biol Med.* Jan-Jun;4(1):3-7.
3. *Biofactors.* 2013 Jan-Feb;39(1):2-13.

## Advanced Bio-Curcumin® with Ginger & Turmerones

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7. *J Med Food.* 2012 Mar;15(3):242-52.
8. *Cancer Chemother Pharmacol.* 2007;60:171-7.

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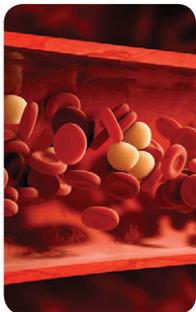
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Magazine



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