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References

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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.

TAPE OF CONTENTS

VOLUME TWENTY ONE / NUMBER NINE  •  September 2015

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® 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® 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).

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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### References
1. Lipids Health Dis. 2011;10:120.
9. Effect of Two Dosage Level of Provinal® on serum lipid and c-reactive protein profiles in humans: Tersus Pharmaceuticals, LLC.
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Reversing Acute Ischemic Stroke

BY WILLIAM FALOON

More than 2,000 Americans suffer a stroke on an average day. 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. As neurons die from oxygen starvation, the result too often is paralysis, blindness, and cognitive dysfunction.

Stroke is a leading cause of long-term disability in the United States. It’s also the fifth-leading cause of death.

The tragedy is that many strokes can be reversed if competent arterial intervention is timely delivered.

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.
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. 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. 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.

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.

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. It was not until 1996 that tPA was approved to treat acute ischemic stroke. 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. 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).

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). New studies indicate that advanced clot-removing therapies are efficacious for a longer period after initial stroke symptoms present.

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.

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.

- 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).

- 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.)

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/advanced stent/clot-retriever procedures.

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.20

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 under-utilized 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.21

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.22

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 2003.23

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.23

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.24

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.

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® 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.28

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.29,30

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.29,30

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.29,30

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-removing 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.31 While some of these stroke victims were ineligible, others were tPA candidates that were denied for reasons that should not be permitted to continue.

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**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.4,5

Up to **40%** of strokes can be fatal. Prompt treatment can significantly reduce the risk of disability and death.62

Here are some statistics:33

- 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.44

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**, C-reactive protein, fibrinogen, LDL and hormone imbalances.

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:

“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.31

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.”32

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.33 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.34

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.60,61

- 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 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.”

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.34

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.34

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.34,37

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.34 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,62 you may have had a transient ischemic attack (TIA).63 Although brief, a TIA is indicative of a serious condition that will not go away without medical intervention.61,64,65 Tell your health care team about your symptoms right away.

Unfortunately, because TIAs clear up, many people ignore them.66 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.65

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:37

> “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.”
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.

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.1-3

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.

References
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 Falloon

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

References

11. Zivin JA. Acute stroke therapy with tissue plasminogen activator (tPA) since it was approved by the U.S. Food and Drug Administration (FDA). Ann Neurol. 2009 Jul;66(1):6-10.

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.50,61

- 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.


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.1,2

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

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References

Hundreds of published studies validate the neurological properties of the individual ingredients contained in Cognitex®. 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® 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® 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® 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® is designed to improve cerebral performance and protect against neurological problems over the long term. This study evaluated the effects of Cognitex® on boosting brain function over a short-term period.

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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.

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
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.

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.


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.


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.

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%).


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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.”


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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.


**In the News**

**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.


**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.


**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.

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.¹⁻⁴

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!⁵ 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.⁵ In one study, healthy volunteers taking 60 mg of this extract daily experienced a 45% increase in tear production.⁶

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

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References

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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.1-3

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

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.11-16 In fact, taurine supplementation added to the drug metformin has been shown to offer tremendous reductions in tissue damage.17

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.1,6,18

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. This knowledge opens the door to a new paradigm—one that aims to restore brain structure and function—instead of 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. This taurine deficiency may lie at the heart of some of our most dreaded brain disorders.

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.

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.

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.

In animals, taurine deficiency impairs brain growth by delaying normal neuronal development. 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; and blocking chemical signals that inhibit neuronal cell regeneration.

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. A lab study revealed that taurine restores normal neurite growth in nerves exposed to toxic chemicals, largely through its protective effects against chemical stresses.

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.

**Taurine’s Benefits For Brain Conditions**

Two specific conditions taurine has been shown to help benefit are Parkinson’s disease and depression.

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. This problem is compounded by the fact that standard treatment of Parkinson’s symptoms involves the drug levodopa, which may further deplete taurine. This makes it...
What You Need To Know

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

Supplementing with taurine is also important for those suffering from depression. 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. 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.

Solving Your Heart’s Energy Crisis

Heart disease remains the leading cause of death in US adults.

A recent study in mice has, for the first time, suggested that taurine might prolong life span by improving heart muscle function. 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. 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.\(^1\),\(^6\),\(^7\),\(^3\)-\(^7\),\(^6\)

• Taurine increases the electrical activity (signaling ability) in nerve cells through effects on calcium, a key element required for proper electrical function of neurons.\(^7\),\(^7\)

• 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-aminobutyric acid (GABA).\(^7\),\(^9\). GABA is involved in learning, and studies in lower animals demonstrate improvements on simple learning tasks following GABA supplementation.\(^7\)

• 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.\(^7\)

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.\(^3\) Fortunately, taurine is known to have blood pressure-reducing and heart muscle-protecting effects.\(^1\) 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,\(^3\),\(^6\),\(^7\) 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).\(^3\),\(^8\),\(^9\) 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.\(^4\),\(^0\) Taurine supplementation can abolish those aberrant signals and improve arterial blood pressure following such an injury.\(^4\)

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.\(^1\)

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.\(^4\)

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
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.\(^4^9\)

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.\(^5^0\) 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.\(^5^1\)

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.\(^5^2\)

Clearly, ample blood taurine levels are required for proper heart functioning and this data was published by *Life Extension*\(^\circ\) decades ago based on what cardiologists in Japan had discovered when treating congestive heart failure patients with 3 grams of taurine per day.\(^5^3\) 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.\(^5^4\) It is strongly associated with short- and long-term risks of cardiovascular and kidney disease, diabetes, cancer, and death.\(^5^5-5^8\)

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.\(^1^3-1^5\)

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.\(^5^9\) This suggests that taurine supplementation in metabolic syndrome patients might lower renal disease risk.\(^1^6,6^0\)

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.\(^5^3\) 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.\(^1^7\)
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, while diabetics have a 30% reduction in taurine levels.

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).

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. (Platelet aggregation is elevated in diabetics, increasing the risk for stroke- or heart attack-inducing blood clots.) 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 antplatelet 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.

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!

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.

Summary

Taurine, a little-known amino acid, 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.

References


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.¹

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.² 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.³ Studies using magnesium-L-threonate show this unique form of magnesium maintains the quantity of synaptic connections between brain cells and inhibits the dysregulation of signaling pathways.¹

**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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**References**

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.¹⁻⁴

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

**Artichoke Leaf Extract**
Clinical studies now demonstrate that artichoke leaf extract’s polyphenolic compounds support optimal HDL/LDL ratios already within normal range.¹⁻²

**Pantethine**
Clinical trials show pantethine safely maintains LDL and total cholesterol already within the normal range, without reducing protective CoQ10 levels.³

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

**Non-GMO**
Pantesin® is a registered trademark of Daiichi Fine Chemical Co., Ltd.\nPycrinil® is a registered trademark of Indena S.p.A., Italy.

**References**
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.” 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.\(^2\)

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:\(^3\,^9\)

- 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


Taurine

Item #01827 • 90 vegetarian capsules

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Non-GMO

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Atherosclerotic plaque breaching the endothelial lining.
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.1-4

Fortunately, astute scientists and formulators have discovered potent natural methods to tackle the underlying causes of endothelial dysfunction.
Nitric Oxide: The Key To Endothelial Health

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

Declining endothelial function is the process that underlies a major cause of cardiovascular disease—atherosclerosis.

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.

When nitric oxide concentrations are increased, smooth muscle cells of the arterial wall relax and allow increased blood flow and lower blood pressure. In order to produce nitric oxide, endothelial cells require a specific enzyme 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. 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.

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Hesperidin also reduces elevated CRP and serum amyloid A. Both of these inflammation-promoting factors impair eNOS function and contribute to decreased endothelial function.1,9-11,14,15 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.16 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.17

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.18 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.

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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.

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. This demonstrates the immediate risk-reducing effects of hesperidin—improving flow-mediated dilation now prevents dangerous arterial thickening later.

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. 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.

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 that Cordiart™'s active ingredient reduces dangerous inflammation that impairs nitric oxide production and you can understand how this orange peel extract protects and improves endothelial function.

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 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.4

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.21,22

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

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.11

Clinical studies reveal that GliSODin® is effective in reducing carotid intima-media thickness (CIMT), a proven measure of cardiovascular risk.23 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.36

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).18

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. 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. 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.

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. 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. 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. Reducing the levels of serum amyloid A in the body is now thought to be likely to benefit patients with acute coronary artery disease.

Serum amyloid A causes endothelial dysfunction partly by reducing the protective activities of superoxide dismutase (SOD).

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.

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. 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.

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.
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). 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.

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. 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. Among the properties of erectile dysfunction drugs like sildenafil is the ability to restore normal eNOS function, 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.
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.

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.

References


Nearly 6,000 studies have been published on the broad-spectrum health benefits of green tea. Research shows that green tea favorably influences cardiovascular health, lipid clearance, glucose tolerance, healthy body weight, DNA support, prostate and breast health, and healthy cell division.¹⁻⁷ Scientists have identified the polyphenol EGCG as the key compound for green tea’s multimodal health benefits.⁸

Life Extension® has created a standardized 98% polyphenol green tea extract. These highly concentrated Mega Green Tea Extract Capsules contain 725 mg of either lightly caffeinated or decaffeinated 98% standardized green tea extracts. Each bottle will last over three months at the typical dose of one capsule daily.

Non-GMO

References

To order Mega Green Tea Extract, call 1-800-544-4440 or visit www.LifeExtension.com

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

**GOING BEYOND POMEGRANATE**

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.  

**TRIPLE-ACTION PROTECTION**

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

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. 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.

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

**LOW-COST CORDIART™ CAPS**

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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**Endothelial Defense™ with Full-Spectrum Pomegranate™ and Cordiart™**

Item #01997 • 60 softgels • Non-GMO

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**NitroVasc with CORDIART™**

Item #01990 • Non-GMO

30 500 mg vegetarian capsules

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To order Life Extension® Endothelial Defense™ with Full-Spectrum Pomegranate™ and CORDIART™, or NitroVasc with CORDIART™ call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com).

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References


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The Japanese "LONGEVITY" Dietary Constituent
The average life expectancy of the Japanese people is among the highest in the world.\(^1\,^2\) Japan also has lower incidences of most chronic diseases compared to Western populations.\(^2\,^4\)

Multiple factors contribute to their successful aging and healthy life span, including a lower-calorie diet rich in fruits, vegetables, and fish.\(^2\) 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 **fucoidan**.\(^5\,^7\)

Over **1,000 studies** have been conducted on this seaweed compound. In one study after another, the multiple benefits of **fucoidan** have been demonstrated. These include important biological functions such as suppressing chronic inflammation, restoring immune competence,\(^8\) and impeding cancer progression.\(^9\,^10\)
The importance of fucoidan’s interaction with selectins goes well beyond cancer defense. By inhibiting selectins, fucoidan 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.19-21 Similar mechanisms may contribute to fucoidan’s ability to ease conditions driven by chronic inflammatory processes, such as autoimmune diseases and atherosclerosis.22-24

Fucoidan 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.

Fucoidan 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. Fucoidan 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.25 Recent animal studies demonstrate that oral fucoidan supplements decrease osteoarthritis pain.25,26 And an impressive human study showed that a 1,000 mg per day dose of fucoidan reduced pain, stiffness, difficulty with physical activity, and overall symptom severity by 52% in just 12 weeks.25,26

Rheumatoid Arthritis

While less common than osteoarthritis, rheumatoid arthritis is potentially much more crippling.27 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.11,28,29 Studies show that fucoidan blocks the infiltration of those harmful inflammatory cells, while also reducing inflammatory symptoms.11,28 In addition, one study found that fucoidan suppressed pain responses related to those inflammatory cells.29 And another study showed that fucoidan decreases production of “protein-melting” enzymes that contribute to joint destruction in rheumatoid arthritis.11

How Fucoidan Works

Fucoidan is a general term for a group of molecules extracted from several species of seaweed, with Undaria pinnatifida being a well-known source.11-14

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

Fucoidan 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. Fucoidan also activates T cells, as well as enhancing the antiviral and anticancer response of the immune system.15

Compelling experimental evidence shows that fucoidan can also hinder the migration of cancer cells by inhibiting molecules called selectins.19,20 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,20 which often has deadly consequences for cancer patients.
Multiple Sclerosis

Multiple sclerosis is the leading immune-mediated disorder in the central nervous system.\textsuperscript{30,31} It is a chronic disorder in which the immune system attacks proteins found on brain cells,\textsuperscript{32} 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\textsuperscript{33,34}—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.\textsuperscript{35,36}

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\textsuperscript{37,38} or following various viral infections.\textsuperscript{39,40} A key feature of this condition is infiltration of heart muscle tissue by inflammatory cells, an action that is promoted by selectin interactions.\textsuperscript{10} There’s now strong experimental evidence that fucoidan has numerous benefits for those with autoimmune myocarditis,\textsuperscript{41} 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.\textsuperscript{10}

Inflammatory Bowel Disease

Inflammatory bowel diseases, chiefly Crohn’s disease and ulcerative colitis,\textsuperscript{42} are common autoimmune conditions in which sections of the intestine become highly inflamed,\textsuperscript{43} resulting in chronic pain, diarrhea, and an increased risk of colorectal cancer.\textsuperscript{44} 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.\textsuperscript{45,46}

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.\textsuperscript{47,48} In an effort to improve the effectiveness of vaccines, scientists add substances called adjuvants that help increase the immune response.\textsuperscript{49,50}
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. 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.

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

As an extra bonus, by consuming fucoidan 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. Because it forms dense submarine forests, it blocks sunlight and can choke off other plant and animal species.

Fucoidan 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 fucoidan supplementation, and one group received an anticancer vaccine without fucoidan supplementation. Compared to unsupplemented animals, the mice receiving fucoidan 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.

Fucoidan can also help one’s body respond to vaccines against infections. Animal and laboratory studies show that supplementation with fucoidan 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. In one such study, fucoidan reduced mortality from a viral infection by 51% to 68%, depending on dose.

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

Fucoidan 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 fucoidan prior to receiving the flu vaccine. 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.

Fucoidan 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. 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.
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. Laboratory studies show that adding fucoidan to cultures of cancer cells inhibits tumor cell-platelet interactions mediated by selectins. 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.
- Preventing new blood vessel growth (angiogenesis).
- Reducing the viability of cancer cells.
- Slowing cancer cell proliferation.
- Inducing apoptosis (programmed cell death) in cancer cells.

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. 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.

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%.

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 selectins 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.)
**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 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.69 In healthy liver cells, however, the same dose of fucoidan had the opposite result, reducing levels of a sensitive marker of cellular aging (α2M). 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.70 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.71 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.70 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.72

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.


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

- 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%.4

**Anthocyanins**

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

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.2,4

Non-GMO

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

**References**


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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Published studies have shown the critical importance of lipoic acid in supporting healthy mitochondrial function.

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

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

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

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.

References

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.
OPTIMIZED FUCOIDAN

The Japanese Secret of Longevity

For thousands of years, the Japanese, who have one of the longest life spans in the world, 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:

• 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. Most people require only one capsule daily, though aging individuals seeking to enhance the benefit may choose to take two per day.

Maritech® 926 is a registered trademark of Marinova Pty Ltd.

To order Optimized Fucoidan with Maritech® 926, call 1-800-544-4440 or visit www.LifeExtension.com

References

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.
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 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.
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. 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.

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.

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 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.\textsuperscript{4-6}

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.\textsuperscript{4-6}

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.\textsuperscript{7}

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
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®.

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.

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. 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, another small study reported survival up to 23.1 months, but had no survivors by three years. The authors acknowledge that this pilot study of PDIT was small and more data will be needed before definitive comparisons can be made.
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

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

References
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.¹⁻⁴

**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 oxidation⁶—protecting against dry and scaly skin.

- **Palmitoyl Oligopeptide:** This oil-soluble peptide promotes production of the key molecules collagen and hyaluronic acid⁷—shown to result in a near 20% reduction in mean wrinkle depth.⁷

- **Marula Oil:** This fruit extract of the marula tree (*Sclerocarya birrea*) is rich in oxidation-resistant compounds that support collagen production⁹—proven to revitalize skin and reduce the appearance of wrinkles.⁹⁻¹¹

- **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.¹²,¹³

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**

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To order **Cosmesis Anti-Aging Face Oil**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

**References**


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SCIENTISTS CREATE FIRST FULLY FUNCTIONING ORGAN
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!

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.

The ability to develop a functioning thymus gland is therefore a major advance in anti-aging medicine.
isn’t getting functional cells for organs like kidneys, lungs, hearts, and livers—all of which have proved to be readily produced in culture.5,10,11 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.12,13

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.6,10

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.1 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.

Understanding Regenerative Medicine

The field of regenerative medicine3,4 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.1

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.5 Readily available transplantable organs would also overcome the lengthy waiting lists that patients must currently endure because of the existing shortage of organs.6,7

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.7,9

There has been surprising progress on the so-called “plug-and-play” organ production in laboratories around the world. Surprisingly, the difficulty
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.¹

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.¹ 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.¹

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.¹⁴ 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.¹⁵⁻¹⁷

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.¹

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.¹ Indeed, the recipients’ immune systems were rapidly populated by functioning T cells!¹

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. 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.

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.

References

Despite a healthy diet and exercise, aging individuals often find themselves under assault from rising blood sugar levels due to a multitude of factors such as:

- Excess **gluconeogenesis**, (glucose produced in the liver from protein)¹
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- Regulating **PPAR-gamma**, a metabolic thermostat that controls glucose metabolism⁵,⁶
- Regulating **alpha-amylase**, which controls the release of sugar from starch⁷

**Mulberry Leaf Extract**
Mulberry leaf extract targets **two** different mechanisms by:

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Phloridzin helps maintain healthy blood sugar levels among those in the normal range by:

- Regulating carrier protein **SGLT1**, helping to block absorption of glucose into the bloodstream¹⁰
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**References**

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Take one capsule twice daily immediately before the heaviest carbohydrate or sugar containing meals/drinks.

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

**Non-GMO**
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.1

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

More than one-third of those who have a stroke after age 80 become demented as a consequence.1 Roughly half of surviving stroke victims have difficulty swallowing or suffer fecal incontinence,3 and more than one-tenth experience seizures within five years.4 Urinary tract infections3 and pneumonia5 commonly occur in stroke survivors as well.

Most stroke survivors have difficulty grasping and manipulating objects,6,7 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).8,9 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.10
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%.21

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

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.24 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.25

White matter hyperintensities are predictive of both Alzheimer’s disease and stroke.26-29 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.28 Lowering blood pressure has been shown to slow the progression of white matter hyperintensities.30

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.31 The size of the stroke corresponds to the amount by which the immune system is suppressed.32
Suppression of the immune system is due to massive release of corticosterone and related hormones. One result is that stroke victims often suffer from urinary tract infections, and pneumonia contributes to the death of many stroke survivors. 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%.

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.

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. The amyloid-beta protein, which is implicated in Alzheimer's disease, can accumulate in blood vessel walls as well as on neurons. But Alzheimer's disease patients show a higher-than-normal incidence of microinfarcts, independent of the amyloid-beta deposition in their blood vessels.

Anand Viswanathan, MD, PhD, (Associate Director, Telesstroke 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. Cerebral microbleeds are also associated with high blood pressure and statin use.

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. 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. 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. The benefits are greatest for those under age 75. Stroke risk reduction is substantially higher (about 70%) for those in whom the carotid artery narrowing is greatest.

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. Plaques showing signs of inflammation are also more likely to rupture. A blood test called the PLAC® 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. Placing a stent (tube) in the carotid artery can be less invasive than endarterectomy, but stents have some risk of themselves causing ischemic stroke.
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. In the United States, 18% of females and 6% of males have migraine headaches, with prevalence highest between the ages of 25 and 55. People with migraine, especially with aura, are more likely to smoke or have diabetes, as well as have high blood pressure and high blood cholesterol. Only those who have migraine with aura are at increased risk of ischemic stroke, which is approximately doubled. But among all those with migraine, there is nearly a 50% greater chance of hemorrhagic stroke.

Increasing frequency of migraines corresponds with increasing area of white matter intensities in women, but not in men. 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.

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, which causes headache and aura. A defect in brain blood vessels (an incomplete Circle of Willis) is especially common in people who have migraine with aura. On the other hand, brain tissue hyperexcitability, such as seen in epilepsy, may result in migraine and increased risk of stroke. Anti-epileptic drugs and drugs that block adrenalin-like substances (like beta-blocker drugs such as propranolol) have been used to prevent migraine.

About one-in-four people have a hole in their heart (**patent foramen ovale**) that failed to close after birth. 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. Dr. Dalkara has demonstrated that an air microembolism from a patent foramen ovale can cause brain electrical disturbance and headache. Surgical closure of the patent foramen ovale has been shown to significantly reduce the severity and frequency of migraine headaches.

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. One-quarter of ischemic strokes are lacunar, meaning they occur in blood vessels that penetrate deep into the brain. 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.
a third can drive without retraining, and a third would be able to drive after retraining and rehabilitation. 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.

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. Dr. Devos favors virtual reality driving simulators that could simulate very risky conditions. He also wants to see intelligent cars with brain-computer interface systems for shared control over driving 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.

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.
References


76. Brown C, Aminolteyari K, Erb H, Winship IR, Murphy TH. In vivo voltage-sensitive dye imaging in adult mice reveals that somatosensory maps lost to stroke are replaced over weeks by new structural and functional circuits with prolonged modes of activation within both the peri-infarct zone and distant sites. *J Neurosci*. 2009 Feb 11;29(6):1719-34.


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

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,²⁻⁴ Full-Spectrum Pomegranate™ augments these polyphenols with newly discovered biologically active compounds from other parts of the pomegranate plant.

These little-known nutrients include: punicanolic acid that provides cellular support to help with inflammation,³ and pomegranate, to combat age-related metabolic changes.⁶

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

Full-Spectrum Pomegranate™
Item #01423 • 30 softgels

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References
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.1,2

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.3 It has been shown to interfere with the glycation process and scientists believe that carnosine helps support longevity in our most vital organs.4,5

- **Benfotiamine** is vitamin B1 in a highly absorbable, fat-soluble form that can easily penetrate cell membranes.6 It further protects against glycation and supports healthy blood glucose levels in those already within normal range.7,8

- **Pyridoxal 5’-phosphate**, or PSP, is vitamin B6 in a metabolically active form shown to protect lipids9 and proteins against glycation reactions and accumulation of advanced glycation end products.10,11 PSP also “traps” already-formed AGES and shuttles them out of body cells.12

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:
- Carnosine 1,000 mg
- Benfotiamine 200 mg
- Pyridoxal-5-phosphate 100 mg

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

### References

### Glycation Protection Formula
Item #01987 • 60 vegetarian capsules

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To order Life Extension® Glycation Protection Formula, call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
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.
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<td>University of Alabama Medical Center (UAB)</td>
<td>1802 6th Avenue South</td>
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<td>Mobile Infirmary Medical Center</td>
<td>5 Mobile Infirmary Circle</td>
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<td>University of South Alabama Medical Center</td>
<td>2451 Fillingham</td>
<td>Mobile, AL 36617</td>
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<td>Huntsville Hospital</td>
<td>101 Sivley Rd</td>
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<td>Alaska</td>
<td>Alaska Regional Hospital</td>
<td>2801 DeBarr Rd</td>
<td>Anchorage, AK 99508</td>
<td>(907) 276-1131</td>
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<td>Arizona</td>
<td>Banner Desert Medical Center</td>
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<td>Mesa, AZ 85202</td>
<td>(480) 412-3000</td>
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<td>St. Joseph's Hospital and Medical Center Barrow Neurological Institute</td>
<td>350 W Thomas Rd</td>
<td>Phoenix, AZ 85013</td>
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<td>St. Mary Hospital (Carondelet)</td>
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<td>Banner–Good Sam University Medical Center Phoenix Campus</td>
<td>1111 E. McDowell Rd</td>
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<td>(602) 839-2000</td>
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<td>Phoenix, AZ 85015</td>
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<td>Fort Smith, AR 77351</td>
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<td>Ronald Reagan UCLA Medical Center</td>
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<td>Los Angeles, CA 90095</td>
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<td>San Antonio Community Hospital</td>
<td>999 San Bernardino Rd</td>
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<td>John Muir Medical Center-Walnut Creek Campus</td>
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<td>Kaiser Foundation Hospital Emergency Department</td>
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<td>Redwood City, CA 94063</td>
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<td>Presbyterian Intercommunity Hospital</td>
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<td>Whittier, CA 90602</td>
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<td>Colorado</td>
<td>University of Colorado Hospital Authority</td>
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<td>Aurora, CO 80045</td>
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<td>80 Seymour St</td>
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<td>New Britain, CT 06052</td>
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<td>Yale New Haven Hospital</td>
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<td>Delaware</td>
<td>Christiana Care</td>
<td>4755 Ogletown-Stanton Rd</td>
<td>Newark, DE 19718</td>
<td>(302) 733-1000</td>
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<td>Gulf Coast Medical Center</td>
<td>13681 Doctors Way</td>
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<td>JFK Medical Center</td>
<td>5352 Linton Blvd</td>
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<td>JFK Medical Center</td>
<td>5301 S. Congress Ave</td>
<td>Atlantis, FL 33482</td>
<td>(561) 965-7300</td>
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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 45th 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 14th 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) 345-1100

Sarasota Memorial Health Care System
1700 S. Tamiami Trail
Sarasota, FL 34239
(941) 917-9000

Kendall Regional Medical Center
11750 SW 40th Street
Miami, FL 33175
(305) 223-3000

University of Miami Hospital
1400 NW. 12th Avenue
Miami, FL 33136
(305) 689-5511

Palmetto General
2001 W. 68th 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

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 15th 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 15th St
Augusta, GA 30912
(706) 721-8623

Midtown Medical Center
710 Center St
Columbus, GA 31904
(706) 571-1000
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<td>Robert Wood Johnson University Hospital</td>
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**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

**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

**Maine**
Maine Medical Center
22 Bramhall St
Portland, ME 04102
(207) 662-0111

**Nebraska**
The Nebraska Medical Center
42nd Street and Dewey Ave
Omaha, NE 68198
(402) 552-2000

**Nevada**
University Medical Center of Southern Nevada
1800 W. Charleston Blvd
Las Vegas, NV 89102
(702) 383-2000

**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. 13th St
Oklahoma City, OK 73104
(405) 271-4700

**St. John Medical Center**
1923 S. Utica Ave
Tulsa, OK 74104
(918) 744-2345
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<td>Sacred Heart Medical Center at RiverBend</td>
<td>3333 RiverBend Dr</td>
<td>(541) 222-7300</td>
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<td>Springfield, OR 97477</td>
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<td>UPMC Mercy</td>
<td>1400 Locust St</td>
<td>(412) 232-8111</td>
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<td>UPMC Presbyterian</td>
<td>200 Lothrop Street</td>
<td>(412) 647-2345</td>
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<td>(412) 647-2345</td>
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<td>Baylor University Medical Center</td>
<td>3500 Gaston</td>
<td>(214) 820-0111</td>
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<td>Dallas, TX 75246</td>
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<td>Memorial Hermann-Texas Medical Center</td>
<td>6411 Fannin St</td>
<td>(713) 704-4000</td>
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<td>Houston, TX 77030</td>
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<td>2101 Pease St</td>
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<td>Harlingen, TX 78550</td>
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<td>Las Palmas Medical Center</td>
<td>1801 N Oregon St</td>
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<td>El Paso, TX 79902</td>
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<td>111 Colchester Ave</td>
<td>(802) 847-2345</td>
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<td>Burlington, VT 05401</td>
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<td>4320 Seminary Rd</td>
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<td>1701 N George Mason Dr</td>
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<td>1906 Belleview Ave</td>
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<td>Washington Overlake Hospital Medical Center</td>
<td>1035 116th Ave NE</td>
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<td>Bellevue, WA 98004</td>
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<td>Providence St. Peter's Hospital</td>
<td>413 Lilly Rd NE</td>
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<td>Olympia, WA 98506</td>
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Harborview Medical Center
325 Ninth Ave
Seattle, WA 98104
(206) 744-3000

Northwest Hospital and Medical Center
1550 North 115th St
Seattle, WA 98133
(206) 364-0500

Swedish Cherry Hill
500 17th 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. 8th 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) 256-3000

Virginia Mason Medical Center
925 Seneca St
Seattle, WA 98101
(206) 233-6600

Overlake Hospital Medical Center
1035 116th 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. 16th 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.
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 and the 24-hour bioavailable MK-7, 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.
- **Vitamin E** as D-alpha tocopherol to suppress lipid peroxidation.
- **Blueberry extract** to boost DNA repair and sustain healthy blood sugar levels already within normal range.
- **Sesame lignans** to boost tissue levels of gamma tocopherol.
- **Lycopene** to support prostate health and guard against LDL oxidation.
- **Chlorophyllin**, which offers protection against environmentally induced DNA damage.
- **Black currant extract** anthocyanins to promote eye health.
- **Vitamin B₁₂** to help maintain a healthy nervous system and metabolism.

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!
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.¹

A 2014 study further validates that ubiquinol activates mitochondrial functions to slow aging in mouse models.²

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.³⁴⁵ When combined with ubiquinol CoQ10, it has been shown to double levels of CoQ10 in the mitochondria.⁹

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!¹⁰

References
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.¹²

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.³

**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:

Non-GMO
Contains soybeans.
SILIPHOS® is a registered trademark of Indena S.p.A., Italy.

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To order **European Milk Thistle Advanced Phospholipid Delivery**
call 1-800-544-4440 or visit www.LifeExtension.com

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

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An Early Path To Healthy, Independent Living
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 distant 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®,” 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® 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.
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.

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.¹ Nervia also significantly increases several genes involved in making GLUTATHIONE.² 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-1β 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

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

Five Easy Steps:
1. Call 1-800-208-3444 to discuss and place your order with one of our knowledgeable health advisors. (This order form can also be faxed to 1-866-728-1050 or mailed.)
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.

**Most Popular Panels**

<table>
<thead>
<tr>
<th>Panel Description</th>
<th>Price</th>
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<tr>
<td><strong>Female Life Extension Panel (LC322535)</strong></td>
<td>$269</td>
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<tr>
<td>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 Homocysteine TSH for thyroid function Free Testosterone Estradiol Total Testosterone Vitamin D 25-hydroxy PSA (prostate-specific antigen) Hemoglobin A1c</td>
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<tr>
<td><strong>Female Elite Panel (LC100016)</strong></td>
<td>$575</td>
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<tr>
<td>Chem/CBC profile, Free and Total Testosterone, Estradiol, Testosterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin A1c, Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), and Ferritin.</td>
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<tr>
<td><strong>Male Elite Panel (LC100017)</strong></td>
<td>$575</td>
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<tr>
<td>Chem/CBC profile, Free and Total Testosterone, Estradiol, Testosterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Total PSA, IGF-1, SHBG, Vitamin D 25-DH, hs-CRP, Ferritin, Hemocysteine</td>
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<tr>
<td><strong>Male Hormone Add-On Panel (LCADD05)</strong></td>
<td>$125</td>
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<tr>
<td>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.</td>
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<td><strong>Female Hormone Add-On Panel (LCADD04)</strong></td>
<td>$125</td>
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<tr>
<td>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.</td>
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<td><strong>Life Extension Thyroid Panel (LC304131)</strong></td>
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<td>TSH, Free T4, T3, Free T4</td>
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<td><strong>Female Comprehensive Hormone Panel (LC100010)</strong></td>
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<td>CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, Total Estradiol, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3, Free T4, Cortisol.</td>
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<td>CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, Total Estradiol, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3, Free T4, Cortisol.</td>
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<td><strong>The CBC/Chemistry Profile (LC318122)</strong></td>
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<td><strong>Comprehensive Thyroid Panel (LC100018)</strong></td>
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<td>TSH, Free T4, Free T3, Reverse T3, TPO, ATA</td>
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<td><strong>Food Safe Allergy Test (LCM3001)</strong></td>
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<td>This test measures delayed (IgG) food allergies for 95 common foods.</td>
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<td><strong>Stress Management Profile (LC100043)</strong></td>
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<td>Cortisol, AM/PM, DHEA-S, Glucose, Insulin, Progesterone, Free T3, T4, Lipid Panel</td>
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<td><strong>Healthy Aging Panel—Comprehensive (LC100026)</strong></td>
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<td>CBC/Chemistry profile (see description above), C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Homocysteine, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Free T3, Ferritin, Urinalysis, Fibrinogen, and Insulin.</td>
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<td><strong>Healthy Aging Panel—Basic (LC100025)</strong></td>
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<td><strong>VAP Test (LC804500)</strong></td>
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<td>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.</td>
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<td><strong>VAP™ Plus (LC100089)</strong></td>
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<td>VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC Test (LP-PLA2), Vitamin D 25-hydroxy.</td>
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This test is packaged as a kit, requiring a finger stick performed at home. This panel looks at vascular inflammatory biomarkers, Total and Free Testosterone, DHEA-S, Free T3, Free T4, and RBC Magnesium. Metabolic as well as cardiovascular disease and the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanes, Myeloperoxidase, and C-reactive protein (high sensitivity), Vitamin B12, Folate, Insulin.

ADVANCED OXIDIZED LDL PANEL* (LC100035)
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.

OXIDIZED LDL PANEL* (LC100034)
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.

OXIDIZED LDL* (LC817472)
OxLDL is a powerful initiator of inflammatory changes in the artery wall, which eventually lead to the formation of plaque.

For non-member prices call 1-800-208-3444

Includes the following tests:
- Vitamin B12, Folate, Vitamin D 25-hydroxy, Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC Magnesium.
- 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.

This test is used to monitor SHBG levels which are under the positive control of estrogens and also a biomarker for insulin resistance. This test shows if you are taking the proper amount of DHEA. This test normally costs $100 or more at commercial laboratories.

MALE BASIC HORMONE PANEL (LC100012)
DHEA-S, Estradiol, Free and Total Testosterone, PSA

FEMALE BASIC HORMONE PANEL (LC100013)
DHEA-S, Estradiol, Free and Total Testosterone, Progesterone

DIHYDROTESTOSTERONE (DHT)* (LC500142)
Measures serum concentrations of DHT.

ESTRADIOL (LC004515)
For men and women. Determines the proper amount in the body.

INSULIN FASTING (LC004333)
Can predict those at risk of diabetes, obesity, heart and other diseases.

PREGNENOLONE* (LC140707)
Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.

PROGESTERONE (LC004317)
Primarily for women. Determines the proper amount in the body.

SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)
This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.

GENERAL HEALTH

VITAMIN D (25OH) (LC081950)
This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.

FERRITIN (LC004596)
Ferritin levels reflect your body's iron stores and is also a biomarker for insulin resistance.

VITAMIN B12/FOLATE* (LC008810)
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.

PSA (PROSTATE SPECIFIC ANTIGEN) (LC010322)
Screening test for prostate disorders and possible cancer.

Blood tests available in the continental United States only. Restrictions apply in NY, NJ, PA, RI, and MA. Not available in Maryland.
**Triple Strength ProstaPollen™**
- Two-Per-Day Tablets
- Two-Per-Day Capsules
- Grape-Berry Actives
- Cell Regenerator™
- Diosmin 95
- Beta-Sitosterol
- Anti-Aging Rejuvenating Scalp Serum
- Advanced Oral Hygiene
- Advanced Iodine Complete
- Venotone
- Whole Grape Extract

**Men’s Health**
- Mega Lycopene Extract
- PalmettoGuard® Saw Palmetto with Beta-Sitosterol
- Pomi-T™
- Prelox® Natural Sex for Men®
- Super MiraForte with Standardized Lignans
- Triple Strength ProstaPollen™
- Ultra Natural Prostate

**Minerals**
- Boron
- Copper
- Iron Protein Plus
- Magnesium (Citrate)
- Magnesium Caps
- Only Trace Minerals
- Optimized Chromium with Crominex® 3+
- Selenium 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
- 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
- Bioel
- Dr. Proctor’s Advanced Hair Formula
- Dr. Proctor’s Shampoo
- European Leg Solution Featuring Certified Diosmin 95
- Face Master Platinum
- Hair Suppression 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 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 Rejuvening 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
- Rejuvenex® Factor Firming Serum
- Renewing Eye Cream
- Resveratrol Anti-Oxidant Serum
- Skin Lightening Serum
- Skin Replenishing Phytoemamides 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 Relather
- 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)

**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)
- Pantethenic 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**

## SUB-TOTAL OF COLUMN 1

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**September 2015**

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*Life Extension Members receive 25% off the retail price of all products.*

*To order online visit: www.LifeExtension.com*
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<td>Member Each</td>
<td>Qty</td>
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<td>DIGEST NC - 30 tablets</td>
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<td>DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps</td>
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<td>D.L-PHENYLALANINE CAPSULES - 500 mg, 100 veg. caps</td>
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<td>DMG - 125 mg, 60 tablets</td>
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<td>DNA PROTECTION FORMULA - 60 veg. caps</td>
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<td>01831</td>
<td>DOG MIX - 100 grams powder</td>
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<tr>
<td>00321</td>
<td>DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz</td>
<td>39.95</td>
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<td>Buy 4 bottles, price each</td>
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<td>00320</td>
<td>DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz</td>
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<td>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz</td>
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<td>Buy 4 jars, price each</td>
<td>38.95</td>
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**SUB-TOTAL OF COLUMN 7**

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

**SUB-TOTAL OF COLUMN 8**

**SEPTEMBER 2015**

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**No.** | **Retail Each** | **Member Each** | **Qty** | **Total** |
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<td>FAST-C® w/DIHYDROQUERCETIN - 120 veg. tabs</td>
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<td>FERMENTOR w/RED ORANGE COMPLEX (ENHANCED) - 30 veg. caps</td>
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<td>00718</td>
<td>FIBRIN OGEN RESIST™ - 30 veg. caps</td>
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<td>01749</td>
<td>FLAX SEED (ORGANIC GOLDEN GROUND) - 14 oz.</td>
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<td>01821</td>
<td>FLORASSIST® HEART HEALTH PROBIOTIC - 60 caps</td>
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<td>FOLATE (OPTIMIZED HIGH-POTENCY) - 5,000 mcg, 30 veg. tablets</td>
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<td>FOLATE (OPTIMIZED) (L-METHYLFOcate) - 1,000 mcg, 100 veg. tablets</td>
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<td>01841</td>
<td>FOLATE + B12 CAPS - 200 veg. caps</td>
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<td>FORSKOLIN - 10 mg, 60 veg. caps</td>
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<td>FUCOIDAN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps</td>
<td>36.00</td>
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**G**

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<th>Qty</th>
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<td>01394</td>
<td>(OPTIMIZED) GARLIC - 200 veg. caps</td>
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<td>Buy 4 bottles, price each</td>
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<td>***01122</td>
<td>GINGER FORCE® - 60 liquid caps</td>
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<td>01658</td>
<td>GINKGO BILOBA CERTIFIED EXTRACT™ - 120 mg, 365 veg. caps</td>
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<td>Buy 2 bottles, price each</td>
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<td>01648</td>
<td>GINKGO EXTRACT 28/7 (SUPER) - 120 mg, 100 veg. caps</td>
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<td>Buy 4 bottles, price each</td>
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<td>19.88</td>
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<td>00756</td>
<td>GLA WITH SESAME LIGNANS (MEGA) - 60 softgels</td>
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<td>18.00</td>
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<tr>
<td>00345</td>
<td>(L) GLUTAMINE CAPSULES - 500 mg, 100 caps</td>
<td>14.95</td>
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<td>Buy 4 bottles, price each</td>
<td>13.50</td>
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<tr>
<td>00141</td>
<td>(L)-GLUTAMINE POWDER - 100 grams</td>
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<td>GLUCOSAMINE/CHONDRORITIN CAPSULES - 100 caps</td>
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<td>01541</td>
<td>GLUTATHIONE, CYSTEINE &amp; C - 100 veg. caps</td>
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<td>L-GLUTATHIONE (MEGA) - 250 mg, 60 caps</td>
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To order online visit: www.LifeExtension.com
## Buyers Club Order Form

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<td>01669</td>
<td>Glucine - 1,000 mg, 100 veg. caps</td>
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<td>01091</td>
<td>Grape Extract &amp; Resveratrol (Whole) - 60 veg. caps</td>
<td>$36.00</td>
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<td>01411</td>
<td>Grape Seed Extract &amp; Resveratrol &amp; Pterostilbene - 100 mg, 60 veg. caps</td>
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<td>01604</td>
<td>Green Coffee Extract Coffeegenic® - 200 mg, 90 veg. caps</td>
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<td>Green Coffee Extract Coffeegenic® - 400 mg, 90 veg. caps</td>
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<td>Green Tea Extract (Mega) - lightly caffeinated - 100 veg. caps</td>
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<td>Green Tea Extract (Mega) - decaffeinated - 100 veg. caps</td>
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<td>Gutsy Chewy Digestive (Citrus Flavor) - 8 tablets</td>
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<td>Gutsy Chewy Digestive (Wild Berry Flavor) - 8 tablets</td>
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<td>5-HTP - 100 mg, 60 caps</td>
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<td>01738</td>
<td>HCA (Garcinia) - 90 veg. caps</td>
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<td>IC Active - 90 caps (Jarrow)</td>
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<td>Hepatopro - 900 mg, 60 softgels</td>
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<td>Huperzine A - 200 mcg, 60 veg caps</td>
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<td>Hydroderm® - 1 oz</td>
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<td>*12® Hyperimmune Egg - 140 grams powder</td>
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<td>Immune Modulator W/Tinofend® - 60 veg. caps</td>
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<td>Immune Protect W/Paractin® - 30 veg. caps</td>
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<td>Immune Senescence Protection Formula® - 60 veg. caps</td>
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<td>Inositol Capsules - 1,000 mg, 360 veg. caps</td>
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<td>Integra-Lean® African Mango Irvingia - 150 mg, 60 veg. caps</td>
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<td>Iodine Complete (Advanced) - 180 tablets</td>
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<td>Iron Protein Plus - 300 mg, 100 caps</td>
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<td>Irvingia W/Phase 3® - 120 veg. caps</td>
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<td>Jarro-Dophilus EPS® - 30 caps</td>
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<td>K w/Advanced K2 Complex (Super) - 90 softgels</td>
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<tr>
<td>01600</td>
<td>Krill Healthy Joint Formula - 30 softgels</td>
<td>$32.00</td>
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**SUB-TOTAL OF COLUMN 9**

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<tr>
<td>01050</td>
<td>Krill Oil Phosphomega® - 60 softgels</td>
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<tr>
<td>00316</td>
<td>Kyolic® Garlic Formula 102 - 200 veg. caps</td>
<td>$26.45</td>
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<td>00214</td>
<td>Kyolic® Garlic Formula 105 - 200 veg. caps</td>
<td>$27.45</td>
<td>20.59</td>
<td>$559.95</td>
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<tr>
<td>00789</td>
<td>Kyolic® Reserve - 600 mg, 120 caps</td>
<td>$27.95</td>
<td>20.96</td>
<td>$579.00</td>
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<tr>
<td>01681</td>
<td>Lactoferrin (Apolactoferrin) Caps - 60 caps</td>
<td>$52.00</td>
<td>39.00</td>
<td>$2,028.00</td>
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<tr>
<td>00020</td>
<td>Legthin - 16 oz. granules</td>
<td>$18.00</td>
<td>13.50</td>
<td>$243.00</td>
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### SUB-TOTAL OF COLUMN 10

To order call: 1.954.766.8433 or 1.800.544.4440

**SEPTEMBER 2015**

Life Extension members receive 25% off the retail price of all products.
### Buyers Club Order Form

<table>
<thead>
<tr>
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<th>Member Each</th>
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<tbody>
<tr>
<td>00329</td>
<td>MELATONIN - 1 mg, 60 caps</td>
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<tr>
<td>00330</td>
<td>MELATONIN - 3 mg, 60 caps</td>
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<tr>
<td>01786</td>
<td>MELATONIN TIME RELEASE - 3 mg, 60 veg. tabs</td>
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<td>00331</td>
<td>MELATONIN - 10 mg, 60 caps</td>
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<tr>
<td>00332</td>
<td>MELATONIN - 3 mg, 60 veg. lozenges</td>
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<tr>
<td>01787</td>
<td>MELATONIN TIME RELEASE - 300 mcg, 100 veg. tabs</td>
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<tr>
<td>01536</td>
<td>METHYLCOBALAMIN - 1 mg, 60 veg. lozenges (vanilla)</td>
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<tr>
<td>01537</td>
<td>METHYLCOBALAMIN - 5 mg, 60 veg. lozenges (vanilla)</td>
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<tr>
<td>00709</td>
<td>MIGRA-EEZE™ (BUTTERBUR) - 60 softgels</td>
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<tr>
<td>01800</td>
<td>MIGRA-MAG™ w/ BRAIN SHIELD™ - 90 veg. caps</td>
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<td>01522</td>
<td>MILK THISTLE (EUROPEAN) - 60 veg. caps</td>
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<td>01822</td>
<td>MILK THISTLE (EUROPEAN) - 60 softgels</td>
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<td>01817</td>
<td>MILK THISTLE (EUROPEAN) - 120 softgels</td>
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<td>MIRAForte® w/STANDARDIZED LIGNANS (SUPER) - 120 caps</td>
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<td>01769</td>
<td>MITOCHONDRIAL BASICS w/BIOPQQ® - 30 caps</td>
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<td>01768</td>
<td>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ® - 120 caps</td>
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<td>00065</td>
<td>MK-7 - 90 mcg, 60 softgels</td>
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<td>00451</td>
<td>MSM (METHYLGLUTATHIONE) - 1,000 mg, 100 caps</td>
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<td>01534</td>
<td>#ACETYL-L-CYSTEINE - 600 mg, 60 veg. caps</td>
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<tr>
<td>01904</td>
<td>NAD+ CELL REGENERATOR® - 100 mg, 30 veg. caps</td>
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<tr>
<td>00066</td>
<td>NATROKINASE - 60 softgels</td>
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<td>01807</td>
<td>NATURAL APETITE SUPPRESS (ADVANCED) - 60 veg. caps</td>
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<tr>
<td>00984</td>
<td>NATURAL BP MANAGEMENT - 60 tablets</td>
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<td>01892</td>
<td>NATURAL ESTROGEN - 60 veg. tabs</td>
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### Sub-Total of Column 11

Life Extension Members receive 25% off the retail price of all products.

### Sub-Total of Column 12

To order online visit: www.LifeExtension.com

<table>
<thead>
<tr>
<th>No.</th>
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<tr>
<td>01893</td>
<td>NATURAL ESTROGEN w/SOY ISOFLAVONES - 30 veg. caps</td>
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<tr>
<td>01626</td>
<td>NATURAL SEX FOR WOMEN® 50+ (ADVANCED) - 90 veg. caps</td>
<td>$44.25</td>
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<td>01444</td>
<td>NATURAL SLEEP® - 60 veg. caps</td>
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<tr>
<td>01551</td>
<td>NATURAL SLEEP® w/ MELATONIN (ENHANCED) - 30 caps</td>
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<tr>
<td>01511</td>
<td>NATURAL SLEEP® w/ MELATONIN (ENHANCED) - 30 caps</td>
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<tr>
<td>01445</td>
<td>NATURAL SLEEP® MELATONIN - 5 mg, 60 veg. caps</td>
<td>$13.50</td>
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<tr>
<td>00987</td>
<td>NATURAL STRESS RELIEF - 30 veg. caps</td>
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<tr>
<td>01121</td>
<td>NERVAL® - 60 softgels</td>
<td>$37.46</td>
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<td>01603</td>
<td>NEURO-MAG® MAGNESIUM L-THREONATE - 90 veg. caps</td>
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<tr>
<td>01602</td>
<td>NEURO-MAG® L-THREONATE w/CALCIUM &amp; VITAMIN D 225 grams - Lemon flavor</td>
<td>$27.00</td>
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<tr>
<td>01990</td>
<td>NITROVASC w/ CORDIARTM - 500 mg, 30 veg. caps</td>
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<td>01903</td>
<td>NK CELL ACTIVATOR™ - 30 veg. tablets</td>
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<tr>
<td>00373</td>
<td>NO-FUSION INNOC - 800 mg, 100 caps</td>
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<table>
<thead>
<tr>
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<tr>
<td>01824</td>
<td>OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRACT (ADVANCED)</td>
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<tr>
<td>01819</td>
<td>OMEGA WITH KRILL &amp; ASTAXANTHIN (SUPER) - 120 softgels</td>
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<tr>
<td>01483</td>
<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 60 softgels</td>
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<tr>
<td>01482</td>
<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 120 softgels</td>
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<tr>
<td>01484</td>
<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 120 softgels</td>
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<tr>
<td>01485</td>
<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 60 enteric coated softgels</td>
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<tr>
<td>01619</td>
<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL)</td>
<td>$24.00</td>
<td></td>
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</table>

**SEPTEMBER 2015**
## Buyers Club Order Form

**SEPTEMBER 2015**

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

**CONTINUED**

<table>
<thead>
<tr>
<th>No.</th>
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<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>01789</td>
<td>PALMETTOGARD® SAW PALMETTO w/BETA-SITOSTEROL - 30 softgels</td>
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<td>$9.25</td>
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<tr>
<td>01790</td>
<td>PALMETTOGARD® SUPER SAW PALMETTO - 60 softgels NETTLE ROOT w/BETA-SITOSTEROL</td>
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<td>$16.00</td>
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<td>01327</td>
<td>PEAK ATP® WITH GLYCOCARN® - 60 veg. caps</td>
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<td>PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder</td>
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<td>PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps</td>
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<tr>
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<td>PEONY IMMUNE - 60 veg. caps</td>
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<td>PDG™ PLUS MULBERRY (WELLBEX®) - 180 veg. caps</td>
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<tr>
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<td>PHOSPHATIDYLSERINE CAPS - 100 mg, 100 veg. caps</td>
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<td>POLICOSANOL - 10 mg, 60 veg. caps</td>
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<td>POMEGRANATES™ (FULL-SPECTRUM) - 30 softgels</td>
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<td>POMEGRANATE EXTRACT - 30 veg. caps</td>
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<td>POME™-T® - 60 veg. caps</td>
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<td>00577</td>
<td>POTASSIUM IODIDE - 1 box, 14 tablets</td>
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<td>01500</td>
<td>PQO CAPS W/BIOPO® - 10 mg, 30 veg. caps</td>
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<td>PQO CAPS W/BIOPO® - 20 mg, 30 veg. caps</td>
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<td>00302</td>
<td>PREGNENOLID® - 50 mg, 100 caps</td>
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<td>PREGNENOLID® - 100 mg, 100 caps</td>
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<td>$22.50</td>
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<td>01576</td>
<td>PREVAGEN® - 10 mg, 30 caps</td>
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<td>PREVAGEN® ES-20 mg, 30 caps</td>
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<td>00525</td>
<td>PROBOOST THYMIC PROTEIN A® - 4 mg, 30 packets</td>
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<td>01441</td>
<td>PROGESTACARE® FOR WOMEN - 4 oz cream</td>
<td>$35.50</td>
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<td>01898</td>
<td>PROSTATE FORMULA (ULTRA NAT) - 60 softgels</td>
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<tr>
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<td>Buy 4 bottles, price each</td>
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<td>Buy 12 bottles, price each</td>
<td>$32.00</td>
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**SUB-TOTAL OF COLUMN 13**

### Q, R

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<td>QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps</td>
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<td>01304</td>
<td>RED YEAST RICE (Bluetonnet)-600 mg, 60 veg. caps</td>
<td>$16.95</td>
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<td>00605</td>
<td>REGIMINT - 60 enteric-coated caps</td>
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<td>01708</td>
<td>REISH EXTRACT MUSHROOM COMPLEX - 60 veg. caps</td>
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<td>01448</td>
<td>REJUVENEX® BODY LOTION - 6 oz</td>
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<td>01621</td>
<td>REJUVENEX® FACTOR FIRMING SERUM - 1.7 oz</td>
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<td>01220</td>
<td>REJUVENEX® (ULTRA) - 2 oz</td>
<td>$52.00</td>
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<td>REJUVENEX®-H® (ULTRA) - 2 oz</td>
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<td>RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps</td>
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<td>RESVERATROL W/NAD + CELL REGENERATOR® (OPTIMIZED) -30 veg. caps</td>
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<td>RESVERATROL W/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps</td>
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<td>RHODIOLA EXTRACT - 250 mg, 60 veg. caps</td>
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<td>01900</td>
<td>RIBOGEN™ FRENCH OAK WOOD EXTRACT - 200 mg, 30 veg. caps</td>
<td>$36.00</td>
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<td>1</td>
<td>$36.00</td>
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**SUB-TOTAL OF COLUMN 14**

To order call: 1.954.766.8433 or 1.800.544.4440
<table>
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<tr>
<th>No.</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
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<td>(D) NIBOE POWDER - 150 grams</td>
<td>$27.90</td>
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<td>01473</td>
<td>(D) NIBOE TABLETS - 100 veg. tabs</td>
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<td>01609</td>
<td>RICH REWARDS® BREAKFAST GROUND COFFEE - 12 oz. bag</td>
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<tr>
<td>01730</td>
<td>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag</td>
<td>15.00</td>
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<tr>
<td>01729</td>
<td>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag</td>
<td>15.00</td>
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<tr>
<td>01612</td>
<td>RICH REWARDS® BREAKFAST BLEND WHOLE BEAN COFFEE - 12 oz. bag</td>
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<tr>
<td>01610</td>
<td>RICH REWARDS® DECAFIMMUNATED ROAST GROUND COFFEE - 12 oz. bag</td>
<td>14.00</td>
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<tr>
<td>01530</td>
<td>RICH REWARDS® CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle</td>
<td>11.95</td>
<td>8.96</td>
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<tr>
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<td>R-LIPIC ACID (SUPER) - 240 mg, 60 veg. caps</td>
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<td>SODZYM® w/GLISODIN® and WOLFBERY - 90 veg. caps</td>
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**SUB-TOTAL OF COLUMN 15**

**SUB-TOTAL OF COLUMN 16**

Life Extension Members receive 25% off the retail price of all products.
## Buyers Club Order Form

**SEPTEMBER 2015**

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

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*These products are not 25% off retail price.

**Not eligible for member discount or member renewal product credit.

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† Member pricing not valid on this item.

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|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|

**ORDER TOTALS**

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- **Shipping**
- **GRAND TOTAL** (Must be in U.S. dollars)

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**Prices Subject to Change Without Notice. Please Notify the Life Extension Foundation® of Any Address Change**

| TOTAL |

**PLEASE MAIL TO:** Life Extension Foundation Buyers Club, Inc.
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Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050

**LIFE EXTENSION FOUNDATION® MEMBERS ONLY**

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**ADDRESS**

**CITY/STATE/ZIP-POSTAL CODE**

**COUNTRY**

**PHONE**

**FAX**

**VISA/MASTERCARD/AMEX/DISCOVER #**

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- [ ] UPS RED LABEL
- [ ] UPS BLUE LABEL

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- [ ] I want to join the Life Extension Foundation®.
- Enclosed is $75 for annual membership. (Canadians add $7.00; all others outside the U.S. add $35.00). Send me: Disease Prevention & Treatment Protocol Book
FREE Gift to New Members

This 2014 edition of Disease Prevention and Treatment provides 1,400 pages of information about therapies that are documented in the scientific literature, but are not routinely used in clinical medical practice. Gaining access to this knowledge enables one with a medical disorder to take advantage of these advanced modalities immediately, rather than waiting years for conventional medicine to catch on.

To order a copy of Disease Prevention and Treatment, visit www.LifeExtension.com

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.

When you join the Life Extension Foundation®, we update you on the latest published medical research by sending you FREE books. Our most impressive publication is the 1,400-page Disease Prevention and Treatment protocol book that contains novel therapies to treat 130 common diseases of aging. Disease Prevention and Treatment is the only book that combines conventional and alternative therapies in order to implement a treatment regimen for fighting the multiple processes involved in degenerative disease.

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

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

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

MEMBERSHIP APPLICATION

I want to contribute to your research efforts to extend the healthy human life span. Enclosed is my first year’s membership donation of $75 to join the most elite group of longevity enthusiasts in the world. (Canadians add $7, all others outside the U.S. add $35) Item code: MEMB1. Call for multiple year membership rates.

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Address __________________________

City __________________ ST _______ ZIP _______

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☐ Check enclosed (payable to Life Extension Foundation®)

☐ Charge my cc: __________________________

Card #: __________________________ Exp. _______
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.

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.

This synergistic mushroom blend delivers powerful yet gentle support for immune health, with additional organ-specific benefits to help you reach optimal vitality. Organically grown in a controlled indoor environment and packaged under strict GMP guidelines, Ten Mushroom® uses the vegetative mycelium of each mushroom, rather than the spore-containing fruiting body (which often cause allergic reactions).

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!

To order Ten Mushroom®, call 1-800-544-4440 or visit www.LifeExtension.com

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

You care about the quality of your family’s supplements.

We do too.

Master Supplements Inc. is proud that we have been posting online test results for every single lot of our products for over ten years. These tests verify the purity, potency and high quality of our powerful product line. We rely on ingredients that are backed with scientific research, clinical studies and years of efficacy. We have protected our unique technology with 16 U.S. patents, providing formulas that support digestive and immune health. Our probiotics, fiber and enzyme supplements all help restore digestive comfort, regularity, and energy.

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Call Life Extension to place your order today. 1-800-544-4440

* 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.
A FULL SPECTRUM PHOSPHOLIPID—OMEGA-3 COMPLEX

KRILLPOWER

HEALTHY LIPID MANAGEMENT*  BRAIN NUTRITION*  METABOLIC HEALTH*

KRILL OIL: A UNIQUE & POWERFUL ALTERNATIVE TO FISH OIL

Jarrow Formulas® Krill Oil is a traceable, sustainable, and eco-friendly low temperature extract of the abundant Antarctic krill (Euphausia superba). It contains unique phospholipids rich in Omega-3 PUFAs (EPA and DHA) as well as astaxanthin.

Krill Oil is clinically documented to enhance lipid management, brain nutrition, and liver and glucose metabolism.*
Used medicinally for over 4,000 years, curcumin benefits almost every organ in the body. 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.

Studies comparing standard curcumin to **Super Bio-Curcumin** and **Advanced Bio-Curcumin with Ginger & Turmerones** found:

- 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,
  - **Turmerones** to increase the amount of curcumin inside cells, and
  - **Phospholipids** to further enhance absorption.

**Super Bio-Curcumin**
Item #00407 • 60 vegetarian capsules

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<td>4 bottles</td>
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**Advanced Bio-Curcumin with Ginger & Turmerones**
Item #01808 • 30 softgels

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</table>


**References**

To order **Super Bio-Curcumin** or **Advanced Bio-Curcumin with Ginger & Turmerones**, call **1-800-544-4440** or visit **www.LifeExtension.com**

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
38 OVERLOOKED FACTOR BEHIND CARDIOVASCULAR DISEASE
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
Long life span amongst the Japanese may be due to their ingestion of compounds in brown seaweed, which help rejuvenate immune function.

7 REVERSING ACUTE ISCHEMIC STROKE
Comprehensive stroke centers are saving lives by mechanically removing cerebral blood clots before permanent brain damage occurs. Find out what you should do in case stroke symptoms ever manifest.

26 TAURINE REGENERATES AGING BRAINS
Recent studies show that the amino acid taurine triggers new brain cells to grow in the area of the brain associated with memory.

62 ADVANCES IN GLIOBLASTOMA TREATMENT
Duke University is running clinical trials on a promising, re-engineered polio virus therapy that may be curative for this deadly brain cancer.

64 TREATMENT ALTERNATIVE FOR BREAST CANCER
A new outpatient therapy for breast cancer provides a nontoxic alternative with significant advantages over what mainstream medicine currently offers.