

LifeExtension

The ULTIMATE Source For New Health And Medical Findings From Around The World

March 2014

How Government Persecuted Those We Now Honor!

*Control Autoimmune
Attack in Your Body*

*When Medical
Technology
Goes in Reverse*

*The Silent Brain
Disorder Overlooked
By Doctors*



Dr. Martin Luther King, Jr.
in Birmingham, Alabama jail

How Much Curcumin Are You Absorbing?



Curcumin is an active compound derived from the Indian spice **turmeric**. It has been widely acclaimed for its diverse health-promoting effects on nearly every organ system in the body,¹⁻⁶ including its support for the body's natural inflammatory response system.⁷ But most curcumin is neither *absorbed* well nor retained well in the blood—posing a challenge to those who wish to maximize its benefits.⁸

Life Extension® took the lead in resolving this issue several years ago by introducing **Super Bio-Curcumin**® containing **BCM-95**®, a patented, *bioenhanced* preparation of curcumin that has been shown to reach up to **7 times higher concentration** in the blood than standard curcumin.⁸

Now, an exciting **next generation** curcumin formula has become available! The **new Advanced Bio-Curcumin**® with **Ginger & Turmerones** provides additional compounds that **further** boost absorption of curcumin's highly beneficial phytonutrients!^{9,10}

UNRIVALED POTENCY AND ABSORBABILITY

In addition to **BCM-95**®, this **new curcumin** formula contains:

1. Turmerones: After curcumin is extracted from turmeric, what remains is **turmeric oil** rich in compounds called **turmerones**.^{11,12} Combining **BCM-95**® with a high content of **turmerones** provides health consumers with more beneficial **turmeric** compounds that further multiply absorption.⁹ Scientists have shown that these potent **turmerones** not only support curcumin absorption, but significantly increase the amount of curcumin **inside** the cell as well!⁹

2. Ginger: Curcumin and **ginger** are close botanical relatives. Research demonstrates that they have overlapping and complementary health benefits,¹³ and scientists are focusing on the therapeutic effects of *combining* these two plants.^{14,15} **Advanced Bio-Curcumin**® with **Ginger & Turmerones** provides a supercritical extract of ginger standardized to the greatest concentration of ginger compounds—including beneficial gingerols and shogaols.

3. Phospholipids: This new curcumin formula also contains **phospholipids**, a type of emulsifying molecule known to greatly enhance absorption of poorly soluble active compounds.¹⁰

The powerfully enhanced bioavailability and potency of **Advanced Bio-Curcumin**® with **Ginger & Turmerones** is superior to conventional curcumin supplements. This product represents the most powerful and cost-effective way to supplement with—and receive the full benefits of—this very critical nutrient.

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

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

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

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

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



Item# 01808

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REPORTS



22 WHEN TECHNOLOGY GOES IN REVERSE

Medical innovations evolve too slowly to save endangered lives. In this enlightening historical review, **Steven B. Harris, MD**, relates how **cardiopulmonary resuscitation** and other methods of bringing clinically dead people back to life took hundreds of years to become widely accepted.



32 NOVEL MANAGEMENT OF AUTOIMMUNE DISORDERS

Mainstream medicine has no cure for the millions who suffer from crippling autoimmune conditions. Studies show that **glucosides** extracted from the **white peony** root suppress *harmful* immune reactions while boosting *calming* immune components. Evidence suggests this unique dual mechanism helps suppress rheumatoid arthritis, lupus, psoriasis, inflammatory bowel disease, and other autoimmune disorders.



56 GUARD AGAINST IMMUNE SENILITY

Scientists now believe that **immunosenescence** could be caused in part by a deficiency of **zinc**, resulting in higher rates of infections and cancers in older adults. The low-cost mineral **zinc** strengthens the immune system, helps fight colds and flu, and may help avert certain cancers.



68 FLAWED TESTOSTERONE STUDY SPURS MISLEADING MEDIA HEADLINES

A recent study that received massive media attention suggested that testosterone drugs may increase the risk of death and certain cardiovascular events. This flawed study used inadequate amounts of often the wrong form of testosterone, did not evaluate male subjects' estrogen levels, did not properly individualize the testosterone dose, and failed to take into account significantly different baseline testosterone levels. These flaws rendered this study's findings meaningless to aging men who properly optimize their testosterone and estrogen levels.



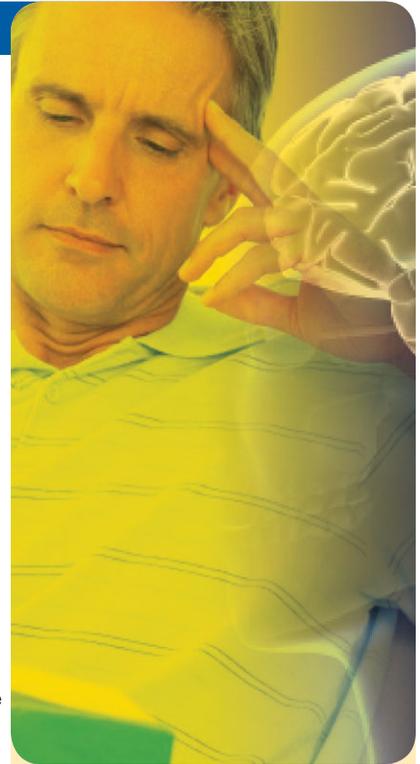
78 REDUCE ENDOTHELIAL DYSFUNCTION AND ARTERIAL STIFFNESS

An overlooked factor in preventing heart disease is avoiding *endothelial dysfunction* and *arterial stiffness*. In laboratory and clinical studies, extracts of the **Amla** fruit were shown to improve lipid profiles, blood glucose, platelet function, blood pressure, and oxidant stress resulting in better endothelial function. When **Amla** is combined with **black tea** extracts, there is even greater potential to reduce deadly arterial stiffening.



90 CONFERENCE REPORT ON MITOCHONDRIAL AGING

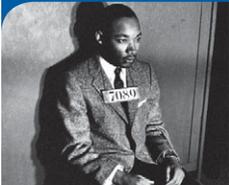
The Mitochondria, Metabolic Regulation, and the Biology of Aging Conference featured discoveries on the links between mitochondria and insulin resistance, between fat cells and aging, and between air pollution and cardiovascular disease. The 2013 conference demonstrated how mitochondria play key roles in the cause and potential cures of aging and associated diseases.



44 A HIDDEN CAUSE OF BRAIN AGING

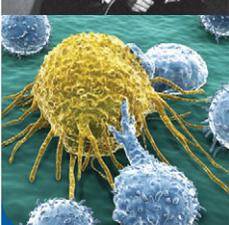
According to a study conducted at the **Mayo Clinic**, a surprising number of aging people suffer from a condition in which tiny areas of their brain become oxygen deprived. This vascular deficit sharply increases risk of stroke, dementia, and cognitive impairment. Healthy lifestyle choices can prevent and may help reverse it.

DEPARTMENTS



7 AS WE SEE IT: THE PERSECUTED VISIONARIES

Martin Luther King, Jr. and other visionaries were ruthlessly persecuted by whatever "authority" ruled in their time. Oppressive bureaucrats today restrain the development and dissemination of life-saving scientific discoveries.



15 IN THE NEWS

Alpha lipoic acid with omega-3 slows decline in Alzheimer's patients; low levels of vitamin D raise risk of infection after gastric surgery; grape seed compound provides anticancer effect to prostate cells; vitamin D deficiency linked to

brain damage; meta-analysis casts doubt on concept of "healthy obesity"; vitamin C lowers stroke risk; high-fat diet in puberty associated with breast cancer risk; drugs that block stomach acid related to B12 deficiency; and more.

95 SUPER FOODS

Flaxseed is the richest dietary source of antioxidant **lignans** and boasts high levels of the essential fatty acid **alpha-linolenic acid** (ALA) and fiber. Studies show that flaxseed offers strong protection against cardiovascular disease, metabolic syndrome, and cancer, and helps manage type II diabetes and its complications.





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ask.lef.org

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RHODIOLA EXTRACT

Supports Cellular Energy Metabolism!

A common complaint among older adults is loss of physical and mental energy. As people age, their cells' ability to produce energy is diminished. Many scientists believe that cellular energy deficit is a critical factor in the onset of many problems.

The Russian herb **rhodiola** (*Rhodiola rosea*) has demonstrated a remarkable ability to *support cellular energy metabolism*.* **Rhodiola** promotes higher levels of ATP (adenosine triphosphate) and CP (creatine phosphate) in the cellular power plants known as the *mitochondria*, thus providing more of the energy molecules need to power many daily activities.¹

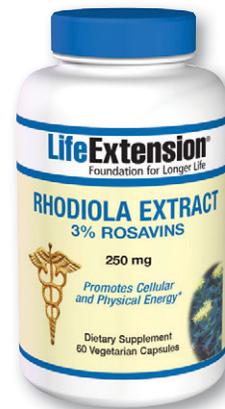
In a human trial, **rhodiola** aided exercise endurance after just a single dose.² In another double-blind, crossover human trial, **rhodiola** increased several measures of mental performance, including associative thinking, short-term memory, calculation, concentration, and speed of audiovisual perception. Statistically significant improvements were reported after just two weeks of supplementation.³

Life Extension® has formulated a **Rhodiola Extract** that provides **250 mg** of *Rhodiola rosea* extract in each capsule.

Unlike other rhodiola supplements on the market today, **Rhodiola Extract** uses only the authentic *Rhodiola rosea* species and is standardized to contain 3% *rosavins* and not less than 1% *salidroside*s—matching the concentrations of active “adaptogens” used in clinical trials.

Rhodiola Extract is an extremely low-cost supplement. The retail price of a bottle of 60 vegetarian capsules (a two-month supply) of **Rhodiola Extract** is just **\$11.75**. If a member orders four bottles, the price is reduced to only **\$7.94** per bottle!

Caution: Individuals with manic or bipolar disorder should not use Rhodiola. Take early in the day if Rhodiola Extract interferes with your sleep.



Item # 00889

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

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

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



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



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



Dipnarine Maharaj MD, MB, ChB, FRCP (Glasgow), FRCP (Edinburgh), FRCPATH., FACP

Dr. Dipnarine Maharaj is the Medical Director of the South Florida Bone Marrow Stem Cell Transplant Institute and is regarded as one of the world's foremost experts on adult stem cells. He received his medical degree in 1978 from the University of Glasgow Medical School, Scotland. He completed his internship and residency in Internal Medicine and Hematology at the University's Royal Infirmary.



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



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



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



Item # 01596

Your Skin's Internal Moisturizer

Ceramides are essential for preserving healthy-looking skin.^{1,2} That's why they're included in so many anti-aging face creams.

Your body's production of **ceramides** declines with age.³ That's bad news, since ceramides make up **35-40%** of the binding matrix that maintains moisture balance and protects the skin's surface.⁴ It's therefore critical that ceramides lost to aging are replaced.

Restore Ceramides Naturally from Within!

The **ceramides** that young skin naturally produces to retain its supple appearance are identical to those present in **wheat!**

Wheat-derived oils have been used *topically* for centuries as a natural moisturizer. But you can't get enough ceramides from topically applied wheat oil to have a long-term impact on your skin's appearance. And they don't appear in sufficient concentration in your diet.

That's why **Life Extension**® brought together these skin-nourishing oils in a concentrated **oral formula** called **Skin Restoring Phytoceramides with Lipowheat**®.

Lipowheat® is a proprietary **ceramide blend** that offers *nutritional* support for aging skin to complement the topical products you may already be using.

The Moisturizing Pill the Japanese Have Enjoyed for a Decade!

Lipowheat® ceramides have been available to Japanese women as a functional food since 2000.⁵ The hydrating action of **Lipowheat**® ceramides have proven effective in clinical trials.

Aging Americans can now offset the visible impact of the gradual decline in their ability to produce enough ceramides by using **Skin Restoring Phytoceramides with Lipowheat**®.

One bottle containing 30 **350 mg** vegetarian liquid capsules of **Skin Restoring Phytoceramides with Lipowheat**® retails for \$25. If a member buys four bottles, the price is reduced to **\$17.25**.

Contains wheat.

Lipowheat® is a registered trademark of LAVIPHARM Group of Companies.

To order **Skin Restoring Phytoceramides with Lipowheat**®
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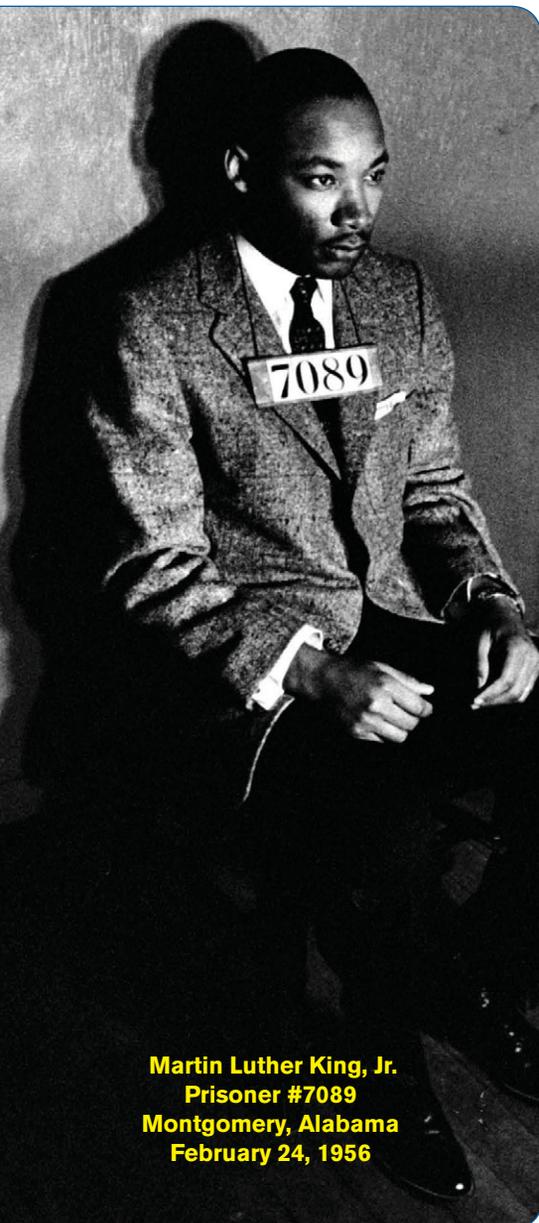
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How Government Treated Those For Whom We Now Celebrate Holidays



BY WILLIAM FALOON



Martin Luther King, Jr.
Prisoner #7089
Montgomery, Alabama
February 24, 1956

Martin Luther King Day is usually a slow time, so I decided to investigate this man for whom I knew relatively little about.

What struck me was how *harshly* our government persecuted **Martin Luther King, Jr.** and the number of times he was *arrested* for doing what he is now celebrated for.

I then began to note other American holidays that are based on individuals who were *persecuted* by whatever "*authority*" existed in their time.

Of course not every oppressed visionary gets a holiday. **Preston Tucker**, inventor of the first safe automobile, was arrested and almost did significant jail time. The big auto companies did not want to compete against Tucker's safer cars, so they instigated a federal prosecution that stripped him of his assets and almost his liberty.¹ (**Most of Tucker's safety features are federally required in today's cars.**)

Linus Pauling won the Nobel Peace Prize for leading the effort to ban above-ground testing of nuclear bombs. Dr. Pauling knew the radiation released into the atmosphere would have lethal consequences. The government rewarded Pauling by stripping him of his passport and threatening prison if he did not reveal who was helping him. This was done under the government's theory that those against above-ground nuclear bomb testing were communist sympathizers. (**The federal government admitted in 2002 that above-ground nuclear bomb testing caused at least 15,000 American cancer deaths.**)²

Galileo was convicted of heresy at an inquisition trial for the crime of teaching that the earth is not the center of the universe. To avoid execution, **Galileo** renounced what he knew to be true and was given a "lenient" sentence of lifetime confinement.³

Galileo was not the first to figure out the solar system. **Giordano Bruno** was convicted of heresy for his teachings that the earth revolved around the sun. Bruno was burned alive at the stake.⁴

People today often forget the *brutality* with which visionaries were persecuted. We at **Life Extension**[®] don't. This article will examine atrocities perpetrated against those who dared to challenge conventional dogma and how this relates to the sluggish pace of medical progress. >

“On June 15, 1591, in the spectacular closing of the infamous North Berwick witch trials, Euphemia MacLean...was burned alive on Castle Hill in Edinburgh by the order of King James VI because, among other things, she had tried to assuage the pains of labor. In the 16th century, pain relief during labor was considered to be witchcraft. It was believed that there was a physiological advantage to pain during labor.”⁵

—*New England Journal of Medicine*
August 6, 2009

Martin Luther King, Jr. graduated from high school at the age of 15 and received his doctorate at age 26.⁶ He first gained public attention when he led a 381-day boycott of the Montgomery, Alabama bus system. This happened after **Rosa Parks** was *arrested* for refusing to give up her seat to a white man.⁷ During the Montgomery bus boycott, Dr. King was *arrested*, his home bombed, and he was placed under FBI surveillance.⁶

When leading a non-violent protest in Atlanta, Georgia, Dr. King was *arrested* and sentenced to four months in jail. Pressure from **John** and **Robert Kennedy** secured his release.⁸

The FBI by this time had assembled a full-time task force to disrupt and destroy Martin Luther King, Jr.⁹

The FBI’s harassment campaign included mailing an anonymous letter that threatened to expose Dr. King’s personal lifestyle choices. Dr. King interpreted this letter as an attempt to make him commit suicide.¹⁰

Despite high profile arrests and the FBI’s disinformation campaign, Dr. King became the youngest man ever to receive the **Nobel Peace Prize**. Dr. King was awarded the Nobel Peace Prize in **1964**.^{11,12} Linus Pauling received his **Nobel Peace Prize** in **1962**.¹¹

Both **Linus Pauling** and **Martin Luther King, Jr.** were targets of harsh government persecution.

How FBI Targeted Martin Luther King, Jr.

For decades, the FBI operated a series of covert projects aimed at surveying, infiltrating, discrediting, and disrupting domestic political organizations.¹³

These covert operations took place between 1956 and 1971.¹³ Tactics have been alleged to include discrediting targets through psychological warfare, harassment, wrongful imprisonment, smearing individuals using forged documents, planting false reports in the media, and illegal violence.¹⁴⁻¹⁶

The FBI’s stated motivation was “*protecting national security, preventing violence, and maintaining the existing social and political order.*”¹⁴

One of the most abusive of all FBI programs was directed against Dr. King.¹³ FBI records show significant resources targeted groups and individuals that the FBI deemed “subversive,” including **Martin Luther King, Jr.** and others associated with the **Southern Christian Leadership Conference**, the Student Nonviolent Coordinating Committee, and other civil rights organizations.¹⁴

FBI Director **J. Edgar Hoover** issued directives ordering FBI agents to “expose, disrupt, misdirect, discredit, or otherwise neutralize” the activities of these organizations and their leaders.¹⁵

© 2003 Getty Images / Express Newspapers



Martin Luther King, Jr.
May 26, 1961



Linus Pauling



Under the direct influence of Hoover, many **civil rights** groups, particularly those focused on racial equality, were reclassified. Hoover's justification for these illegal orders was his belief that civil rights groups were infiltrated by **communists**.¹⁶

The **Southern Christian Leadership Conference** was founded in 1957 and within 10 years, the FBI began monitoring and targeting the group for "intensified attention," focusing particularly on its leaders, including **Martin Luther King, Jr.**^{16,17}

FBI Goes Ballistic When King Says "I Have a Dream."

After the **March on Washington for Jobs and Freedom in 1963**, where his famous "I have a dream..." speech was given, Dr. King was singled out as a major FBI target. Under pressure from Hoover to focus not simply on communist infiltration of the civil rights movement, but on King specifically, FBI counter intelligence director Sullivan wrote:

*"In the light of King's powerful demagogic speech. . . . We must mark him now, if we have not done so before, as the most dangerous Negro of the future in this nation from the standpoint of communism, the Negro, and national security."*¹⁸

Soon after Dr. King's famous "I have a dream..." speech, the FBI was systematically bugging King's home and his hotel rooms.¹⁸

In July–August 1967, the FBI intensified its focus on Dr. King and other civil rights leaders and organizations. FBI offices were instructed to "disrupt, misdirect, discredit, or otherwise neutralize the activities of Black Nationalist 'hate-type' organizations."¹⁶ A particular target was the **Poor People's Campaign**, a national effort organized by Dr. King and the Southern Christian Leadership Conference. The FBI monitored and disrupted the campaign on a national level, while using targeted smear tactics locally to undermine support for the campaign.¹⁶

Why Dr. King Was Deemed To Be A "Hate Type"

In 1976, a Select Senate Investigative Committee led by **Senator Frank Church** reviewed what documents it could obtain from the FBI's multi-decade campaign that targeted a wide range of groups including those that sought out protection for women's rights and those protesting the Vietnam War.

According to this Senate Committee, nonviolent organizations and individuals were targeted because the FBI believed they represented a "potential" for violence. The Black Nationalist counter intelligence program, according to its FBI supervisor, included "a great number of organizations that you might not today characterize as Black Nationalist but which were in fact primarily black."¹⁶

Thus, the nonviolent **Southern Christian Leadership Conference** led by **Martin Luther King** was labeled by the FBI as a Black Nationalist "**hate group**" and subjected to relentless government attack.¹⁶

AS WE SEE IT

Senate Committee Findings Regarding FBI Counter Intelligence Program

The Select Senate Committee uncovered all kinds of wrongdoings committed under the FBI's guise of protecting "national security." In the Final Report of the Select Committee, the FBI Counter Intelligence Program was castigated as follows:

*The Committee finds that the domestic activities of the intelligence community at times violated specific statutory prohibitions and infringed on the constitutional rights of American citizens. The legal questions involved in intelligence programs were often not considered. On other occasions, they were intentionally disregarded in the belief that because the programs served "national security" the law did not apply.*¹³

*While intelligence officers on occasion failed to disclose to their superiors programs which were illegal or of questionable legality, the Committee finds that the most serious breaches of duty were those of senior officials, who were responsible for controlling intelligence activities and generally failed to assure compliance with the law...*¹³

*...the Bureau conducted a sophisticated vigilante operation aimed squarely at preventing the exercise of First Amendment rights of speech and association, on the theory that preventing the growth of dangerous groups and the propagation of dangerous ideas would protect national security and deter violence.*¹⁶

Excerpts From Dr. King's Famous Letter Written While He Was Confined In A Birmingham, Alabama Jail

Martin Luther King, Jr. was arrested for his part in organizing a protest against racial segregation in Birmingham, Alabama. The charges included demonstrating without a permit. While incarcerated, Dr. King wrote a letter on the margins of newspapers, which was the only paper his jailers gave him. These bits and pieces of paper were smuggled through his lawyers and became known as the "*Letter from the Birmingham Jail*." The purpose of this letter was to explain to other clergymen why he led a protest instead of fighting the segregation battle solely in the courts. Below are a few excerpts from Dr. King's famous "*Letter from the Birmingham Jail*":

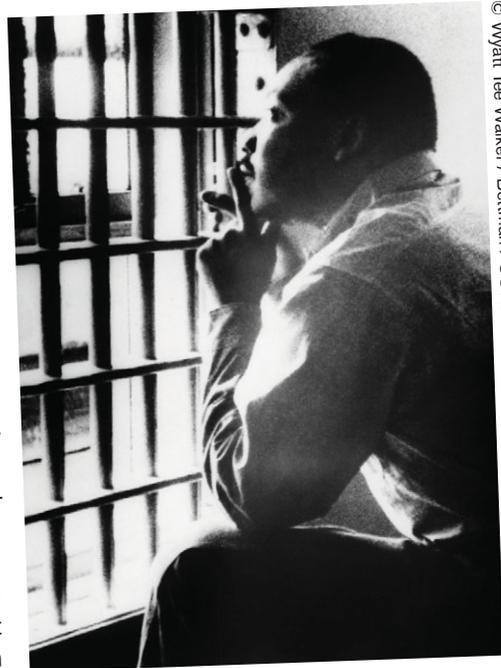
My Dear Fellow Clergymen,

While confined here in the Birmingham City Jail, I came across your recent statement calling our present activities "unwise and untimely."

I cannot sit idly by in Atlanta and not be concerned about what happens in Birmingham. Injustice anywhere is a threat to justice everywhere.

I guess it is easy for those who have never felt the stinging darts of segregation to say wait. But when you have seen vicious mobs lynch your mothers and fathers at will and drown your sisters and brothers at whim; when you have seen hate-filled policemen curse, kick, brutalize, and even kill your black brothers and sisters with impunity; when you see the vast majority of your 20 million Negro brothers smothering in an airtight cage of poverty in the midst of an affluent society; when you suddenly find your tongue twisted and your speech stammering as you seek to explain to your six-year-old daughter why she can't go to the public amusement park that has just been advertised on television, and see the tears welling up in her little eyes when she is told that Funtown is closed to colored children, and see the depressing clouds of inferiority begin to form in her little mental sky, and see her begin to distort her little personality by unconsciously developing a bitterness toward white people; when you have to concoct an answer for a five-year-old son who is asking in agonizing pathos: "Daddy, why do white people treat colored people so mean?" when you take a cross country drive and find it necessary to sleep night after night in the uncomfortable corners of your automobile because no motel will accept you; when you are humiliated day in and day out by nagging signs reading "white" men and "colored" when your first name becomes "nigger" and your middle name becomes "boy" (however old you are) and your last name becomes "John," and when your wife and mother are never given the respected title of "Mrs." when you are harried by day and haunted by night by the fact that you are a Negro, living constantly at tip-toe stance, never quite knowing what to expect next, and plagued with inner fears and outer resentments; when you are forever fighting a degenerating sense of "nobodiness"—then you will understand why we find it difficult to wait.

Yours for the cause of Peace and Brotherhood,
Martin Luther King, Jr.¹⁹



© Wyatt Tee Walker / Bettman / CORBIS

This FBI campaign is all the more ironic when you realize that **Martin Luther King, Jr.** is best known for his steadfast non-violent approach to gaining civil rights.

Signers Of The Declaration Of Independence

The 56 signers of the *Declaration of Independence* were British subjects who fought against their own government.²⁰

Thomas Jefferson, John Adams, and the other founding fathers did not merely ascribe their names to a philosophical document. They signed their own death warrant.²¹

While these men are revered each **July 4th**, the government **authorities** at the time considered them traitors. Punishment for treason included torture and execution along with forfeiture of property.²¹

As Benjamin Franklin adroitly stated on **July 4, 1776**, “*We must, indeed, all hang together, or most assuredly we shall hang separately.*”²²

History books often gloss over significant details about the Revolutionary War. Most of us recall a few sound bytes, but not the cruel realities. A rational review of the historical record reveals that victory against the British was seemingly hopeless, but it nonetheless occurred.²³

Those who led the American Revolution suffered horrific hardships, many losing their lives and property. While fireworks are seen throughout the United States each **July 4th**, overlooked is the fact that signers of the Declaration of Independence, and all others who supported the revolution, were viewed as criminals. Some were captured, tortured, and killed seeking to acquire the liberty we nowadays take for granted.

John Hancock knew this risk quite well when he signed the Declaration of Independence in large letters and stated, “*John Bull can read my name without spectacles. Now let him double the price on my head.*”²⁴

What Does This Have To Do With Anti-Aging Research?

The public looks at government persecution against past visionaries and mistakenly thinks it does not occur in modern society. Even when national holidays are dedicated to persecuted individuals, the message about their heroism is not accurately portrayed.

If you are wondering what this has to do with anti-aging medicine, my response is it is highly relevant. At medical conferences I attend,

the focus too often is how innovative doctors can **stay out of jail**.

At these conferences, attorneys give lectures to **physicians** about how to avoid becoming targets of modern day **witch hunts** initiated by overzealous regulators. The fear instilled by these spurious investigations is causing physicians to think twice before using novel approaches to save humans lives.

Even worse, scientific discoveries that could be translated into curative treatments are shackled by **regulatory barriers** that can take years, decades, or forever to overcome. That means creative ways of keeping us alive today are being **repressed** by government authorities. I have chronicled in past issues of this magazine and my books, shocking incidences of life-saving therapies being denied to Americans by uncaring bureaucrats.²⁶⁻³¹

“Great spirits have always encountered violent opposition from mediocre minds.”

– Einstein²⁵

Martin Luther King On The Duty To Break Unjust Laws

Dr. King was repeatedly arrested for civil disobedience, all in relation to protests for the civil rights movement. In his famous “Letter from the Birmingham Jail,” Dr. King called on all Americans to actively but peacefully oppose laws that were morally wrong. King wrote:

“You express a great deal of anxiety over our willingness to break laws. This is certainly a legitimate concern. Since we so diligently urge people to obey the Supreme Court’s decision of 1954 outlawing segregation in the public schools, at first glance it may seem rather paradoxical for us consciously to break laws. One may well ask: “How can you advocate breaking some laws and obeying others?” The answer lies in the fact that there are two types of laws: just and unjust. I would be the first to advocate obeying just laws. One has not only a legal but a moral responsibility to obey just laws. Conversely, one has a moral responsibility to disobey unjust laws. I would agree with St. Augustine that “an unjust law is no law at all.”

Martin Luther King, Jr.—Letter from Birmingham Jail¹⁹

When I attend scientific conferences, doctors sometimes recognize me and extend their gratitude for protecting them and their patients from the **FDA**. I promise these progressive physicians that our battle to expose governmental abuses that suppress **medical progress** will not abate, despite risks to our personal liberty.

This month we feature an article that discusses the slow pace at which lifesaving therapeutic improvements are recognized. Even the simplest medical advances were opposed by those in positions of **authority** who felt compelled to guard the ignorance of the past.

Your support of **Life Extension** empowers a crusade to liberate scientific discoveries from the deadly impact of bureaucratic **oppression**.

For longer life,



William Faloon

"We know through painful experience that freedom is never voluntarily given by the oppressor; it must be demanded by the oppressed."

Martin Luther King, Jr.-1963

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Danger of Government-Controlled Science

Dr. Randy W. Schekman on the value of curiosity-driven inquiry.
Excerpt from the *Wall Street Journal*, December 27, 2013

"The work in my laboratory probed the molecular basis of protein secretion in baker's yeast. We had no notion of any practical application of this work, and yet after we learned that yeast cells use a pathway fundamentally the same as in human cells, the biotechnology industry applied this knowledge to engineer the production of commercially useful quantities of human proteins. One-third of the world supply of recombinant human insulin is produced in yeast.

Many of you can recount similar stories where an investment in basic science has resulted in a direct application to medicine and technology. And yet we find a growing tendency for government to want to manage discovery with expansive so-called strategic science initiatives at the expense of the individual creative exercise we celebrate today."

(Randy W. Schekman is one of the three 2013 winners of the Nobel Prize in Physiology or Medicine awarded in Stockholm on December 10, 2013.)

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To order vanilla-flavored methylcobalamin lozenges, call 1-800-544-4440 or visit www.LifeExtension.com

Contains corn.

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Scientists have known that when blood sugar combines with fats and proteins the result is known as *glycation* which produces *accelerated aging*.¹ Even those with blood sugar levels within normal range experience the impact of systemic *glycation* on a daily basis.²

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Mega Benfotiamine helps inhibit the formation of *advanced glycation end products* (AGEs), to maintain healthy endothelial, retinal, kidney and nerve cell function.⁸⁻¹²

Each capsule provides 250 milligrams of **benfotiamine** and 10 milligrams of vitamin B1 (as thiamine HCl).

The suggested daily dose is one to four capsules, taken with or without food. A bottle containing 120 vegetarian capsules of 250 milligrams **Mega Benfotiamine** retails for \$30. If a member buys four bottles, the price is reduced to only **\$20.25** per bottle. **Contains rice.**

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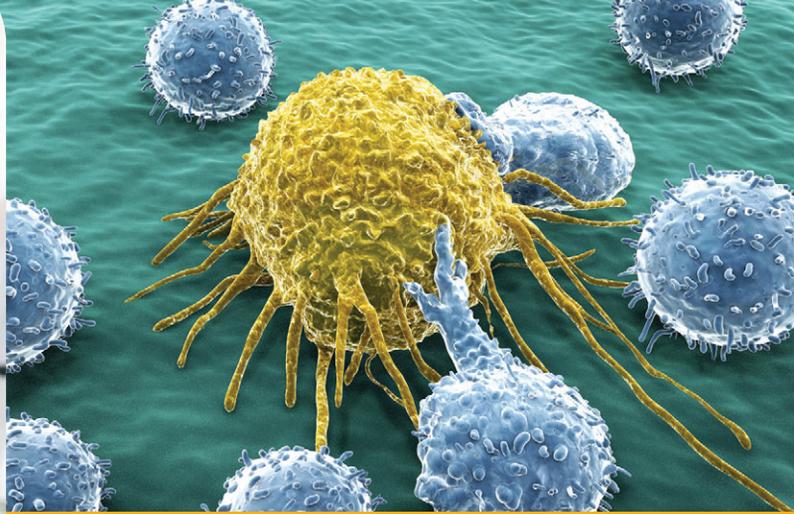
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The Mitochondrial Energy Optimizer formula provides 150 mg of benfotiamine, which when combined with other anti-glycation agents like carnosine and pyridoxal-5-phosphate provides substantial protection at different checkpoint opportunities in the glycation process. The Mitochondrial Energy Optimizer can be viewed on the inside back cover of this month's issue.

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IN THE NEWS

Omega-3 Fatty Acids, Alpha Lipoic Acid Slow Decline In Alzheimer's Disease Patients

The *Journal of Alzheimer's Disease* published the outcome of a recent trial conducted by researchers at Oregon Health & Science University in Portland, which revealed that supplementation with omega-3 fatty acids and alpha lipoic acid slowed functional and cognitive decline in Alzheimer's disease patients.*

Lynne Shinto and colleagues randomized 39 participants with Alzheimer's disease to receive a daily regimen consisting of fish oil concentrate, fish oil plus R-lipoic acid, or a placebo for one year. Blood tests and evaluations of cognitive and functional performance were administered before and after the treatment period.

In comparison with the placebo group, participants who received omega-3 fatty acids plus lipoic acid demonstrated a lesser decline in the Mini-Mental State Examination, which is an evaluation of global cognitive function, and in the Instrumental Activities of Daily Living (IADL) evaluation of functional ability.

Editor's Note: Those who received omega-3 fatty acids alone also showed less functional decline as indicated by IADL performance.

—D. Dye

* *J Alzheimers Dis.* 2014 Jan 1;38(1):111-20.

Decreased Vitamin D Levels Associated With Greater Risk Of Infection In Surgery Patients

An article published online in the American Medical Association journal, *JAMA Surgery*, reveals a greater risk of hospital-acquired infection among gastric bypass surgery patients with diminished levels of vitamin D.*

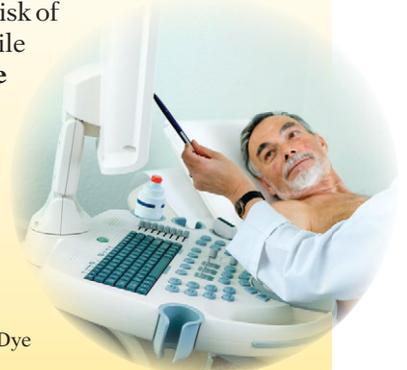
Sadeq A. Quarishi, MD, MHA, of Massachusetts General Hospital and colleagues conducted a retrospective analysis of 770 obese adults who underwent gastric bypass surgery. Serum 25-hydroxyvitamin D [25(OH)D] levels were measured within 30 days prior to the procedure. Hospital-acquired infection, including surgical site infection, catheter-related urinary tract infection, pneumonia or bacteremia, occurred in 41 men and women between two and 30 days after admission.

Among subjects whose 25-hydroxyvitamin D levels were less than **30 nanograms per milliliter (ng/mL)** the risk of acquiring an infection while hospitalized was **three times** as great as the risk experienced by those whose levels were higher.

Editor's Note: For surgical site infections, the risk among those with decreased vitamin D concentrations was **four times** as great in comparison with those who had higher levels.

—D. Dye

* *JAMA Surgery.* 2013 Nov 27.



Vitamin D Deficiency = Damage

Vitamin D's benefits to the bone are well known, but what is perhaps more important is its recently recognized role in the brain. In the journal *Free Radical Biology and Medicine* researchers at the University of Kentucky report a damaging effect in the brains of rats that consumed vitamin D-deficient diets for three to four months.*

Allan Butterfield and his colleagues divided 27 one-year-old rats to receive diets that provided the same amount of calories but contained low, normal, or high amounts of vitamin D. After four to five months on the diets, the animals' brains were examined for markers of oxidative and nitrosative stress.

Rats in the low vitamin D group showed increased nitrosative stress, which damages the cells. They also observed changes in the levels of several brain proteins, three of which are involved in glycolysis (the metabolic breakdown of glucose that releases energy).

Editor's Note: Dr. Butterfield suggests that people get their blood tested to determine their vitamin D levels, and that they consume foods that are high in the vitamin and add vitamin D supplements if needed.

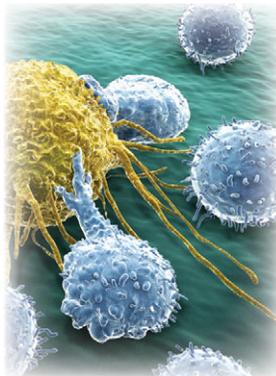
—D. Dye

* *Free Radic Biol Med.* 2013 Dec;65:324-34.



Grape Seed Compound Demonstrates Anticancer Effect In Prostate Cancer Cells

The journal *Nutrition and Cancer* published an article recently in which researchers from the University of Colorado report an anticancer effect in prostate cancer cells for a compound found in grape seed extract known as B2G2.*



The research is the result of years of investigating grape seed's anticancer action. Alpna Tyagi, PhD, and colleagues found that the administration of B2G2 isolated from grape seed extract as well as synthesized B2G2 resulted in cell growth inhibition, cell cycle arrest, and apoptosis (programmed cell death) in several human prostate cancer cell lines.

"We've shown similar anticancer activity in the past with grape seed extract, but now we know B2G2 is its most biologically active ingredient which can be synthesized in quantities that will allow us to study the detailed death

mechanism in cancer cells," Dr. Tyagi remarked.

Editor's Note: B2G2 was discovered to inhibit nuclear factor kappa-beta (NF-kB) transcriptional activity and other factors.

—D. Dye

* *Nutr Cancer.* 2013 Nov 5.

"Healthy Obesity" Questioned

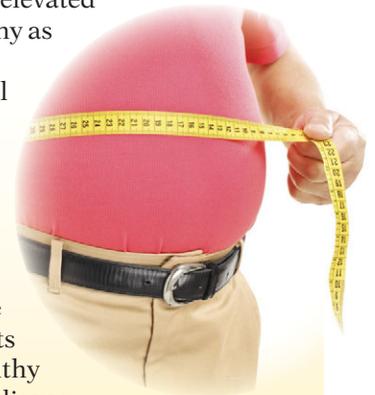
The results of a review and meta-analysis published in the *Annals of Internal Medicine* suggest that so-called "healthy obesity," characterized by an obese body mass index (BMI) in the absence of adverse metabolic features such as disordered lipids, elevated blood glucose, or hypertension, is not as healthy as some once believed.*

Researchers from Mount Sinai Hospital and the University of Toronto selected 12 observational studies that included a total of 67,127 subjects for their review. Studies included those that evaluated all-cause mortality and/or cardiovascular events, BMI, and metabolic status as defined by the presence of metabolic syndrome components. While normal weight, overweight, and obese subjects that were considered metabolically unhealthy had an elevated risk of mortality and/or cardiovascular events in comparison with metabolically healthy subjects over the course of the studies, those who were metabolically healthy but obese had a **24%** greater risk of dying from all causes over 10 years or more of follow-up.

Editor's Note: The authors of an editorial published in the same issue of the journal remark that physicians should focus on treating the obesity in the same manner as any other chronic disease that requires long-term treatment.

—D. Dye

* *Ann Int Med.* 2013 Dec 2.





Higher Vitamin C Levels, Intake Linked With Lower Risk Of Stroke

The results of a meta-analysis described in the *Journal of the American Heart Association* reveal a protective effect for high vitamin C levels and greater intake of the vitamin against the risk of stroke.*

Researchers selected 12 prospective studies involving vitamin C intake and six that examined serum or plasma vitamin C levels for their analysis. Studies of dietary vitamin C included a total of 217,454 men and women, and there were 29,648 participants in the studies involving circulating vitamin C.

For studies that examined vitamin C intake, subjects whose intake was classified as high had a **19%** lower risk of stroke in comparison with those categorized as low. Pooled analysis of participants in studies of plasma or serum vitamin C revealed a **38%** lower risk of stroke for subjects with high versus low levels.

Editor's Note: The authors recommend greater vitamin C consumption for populations with low intake or who are at high risk of stroke and suggest that, since established risk factors appear to be responsible for just half of the cases of stroke that occur, vitamin C levels could serve as an additional predictor of risk.

—D. Dye

* *J Am Heart Assoc.* 2013 Nov 27.

Tea Drinking Linked To Lower Stroke Risk

In a supplement to the *American Journal of Clinical Nutrition* that covered the Fifth International Scientific Symposium on Tea and Human Health, researchers from the University of California, Los Angeles report their conclusion of a protective effect for tea drinking against stroke.*

Lenore Arab and her colleagues reviewed five meta-analyses of human studies of tea or flavonoid consumption and cardiovascular disease or stroke published between 2001 and 2011. A **21%** lower risk of both stroke incidence and mortality from stroke was observed among those with high tea intake in comparison with low, and for those with a high intake of flavonoids, the risk was **20%** lower. A similar reduction was associated with each three cups of tea consumed. A search for new studies published subsequent to the meta-analyses included in the current research revealed additional studies that supported the protective effect of tea-drinking against stroke.

Editor's Note: The disease-preventive properties of tea have been attributed to its flavonoid content.

—D. Dye

* *Am J Clin Nutr.* 2013 Dec;98(6):1651S-9S.



Heartburn Drugs Linked To B12 Deficiency

The *Journal of the American Medical Association* reports an association between the use of drugs that inhibit excess stomach acid and deficient levels of vitamin B12.*

The current study compared 25,956 men and women diagnosed with vitamin B12 deficiency over a four-and-a-half year period with 184,199 subjects who were not deficient. Pharmacy records provided information concerning patients who were dispensed two-year or greater supplies of proton-pump inhibitors (PPIs) or histamine 2 receptor-blocking drugs.

Subjects who received PPIs had a **65%** greater risk of being diagnosed with a vitamin B12 deficiency and those who received histamine 2 receptor blockers had a **25%** greater risk than those who received neither drug. For those who used the highest dose of proton pump inhibitors, the risk of deficiency was nearly double that of those who didn't use the drugs. The strength of the association decreased after the drugs were discontinued.

Editor's Note: By suppressing the production of the stomach's acid, the drugs, which include proton pump inhibitors (PPIs) and histamine 2 receptor blockers used by patients with gastroesophageal reflux disease (GERD), reduce the amount of the vitamin that is absorbed. Those who need to take PPIs like Nexium®, Prolisec® or Prevacid® should consider taking vitamin B12 at a separate time or sublingually if a blood test reveals B12 deficit.

—D. Dye

* *JAMA.* 2013 Dec 11;310(22):2435-42.





High Fat Diet In Puberty May Be Linked To Breast Cancer

A recent study in the journal *Breast Cancer Research* may have found an association between diets that are high in fat in puberty and cases of breast cancer in adult women.* The study was conducted by researchers at Michigan State University and involved two groups of mice. One group was fed a low fat diet and another was fed a high fat diet (HFD), after which both groups were exposed to a carcinogen to induce tumors.

The high fat diet elevated mammary gland expression of inflammatory and growth factor genes as early as weeks 3 and 4 of the diet. At 10 weeks, the mice on the high fat diet, prior to the appearance of palpable tumors, showed increased numbers of abnormal mammary epithelial lesions and several other indications of potential tumor proliferation.

The scientists concluded that, "Our results demonstrate that exposure to HFD in the peri-pubertal period, and the sensitivity of the pubertal gland to HFD, initiate a sequence of inflammatory, angiogenic, and growth-promoting effects starting as early as 3 weeks on diet, which can lead to the promotion of mammary cancer development in adulthood."

—M. Richmond

* Available at: <http://breast-cancer-research.com/content/15/5/R100>. Accessed December 19, 2013.

Five-Fold Increase In Life Span

An article published in *Cell Reports* describes the discovery of a significant extension of life span in worms known as *C. elegans* that were engineered to have two mutations linked to a longer life.¹ The genetically modified worms lived up to five times longer than worms without the mutations.

Pankaj Kapahi, PhD, of the Buck Institute for Research on Aging and colleagues combined a mutation in the nutrient signaling pathway known as Target of Rapamycin (TOR) with a mutation in the insulin signaling pathway Daf-2, which had been demonstrated to increase *C. elegans*' life span by **30** and **100%**, respectively. The combination elicited a far greater extension of life span than what would have resulted from an additive effect. "Instead, what we have here is a synergistic five-fold increase in life span," Dr. Kapahi stated. "The two mutations set off a positive feedback loop in specific tissues that amplified life span. Basically these worms lived to the human equivalent of 400 to 500 years."

Editor's Note: Dr. Kapahi plans to conduct a similar study in mice. "The idea would be to use mice genetically engineered to have suppressed insulin signaling, and then treat them with the drug rapamycin, which is well-known to suppress the TOR pathway," he said. The drug metformin down regulates the the TOR pathway, as does the nutrient curcumin.^{2,3}

—D. Dye

1. *Cell Reports*. 2013 Dec 12.
2. *Anticancer Agents Med Chem*. 2013 Sep;13(7):988-94.
3. *Age (Dordr)*. 2013 Aug 16.



How Vitamin D Works Against MS

A report published in the *Proceedings of the National Academy of Sciences* explains how vitamin D, long suspected to play a role in the prevention of multiple sclerosis (MS), works to protect against the disease.*

Acting on the finding of a preventive benefit for vitamin D in a mouse model of MS, Anne R. Gocke, PhD, and her associates at Johns Hopkins University tested the effects of the form of vitamin D known as 1,25-dihydroxyvitamin D3 and found that administration of the vitamin prevented the animals from showing symptoms. Upon cessation of vitamin D treatment, the animals rapidly developed symptoms, showing that vitamin D temporarily halts the disease.

Editor's Note: Johns Hopkins is currently conducting a trial of vitamin D in MS patients that will help determine whether supplementing with the vitamin is beneficial to humans.

—D. Dye

* *Proc Natl Acad Sci U S A*. 2013 Dec 9.



Rich Rewards®

Breakfast Blend Ground Coffee

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One Smart Cup of Coffee®

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

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

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- Special, naturally occurring compounds that **soothe your stomach!**

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Item #01729



Item #01730

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

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2. *J Natl Cancer Inst.* 2011 Jun 8;103(11):876-84.
3. *J Alzheimers Dis.* 2011;25(2):323-35.

4. *N Engl J Med.* 2012 May 17;366(20):1891-904.
5. *Free Radic Res.* 2013 Mar 22.
6. *Maturitas.* 2013 Mar 2. pii: S0378-5122(13)00047-9.
7. US Patent 6,723,368.

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

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Rather than replace omega-3s, the **omega-7** fatty acid **palmitoleic acid** has been shown to powerfully complement omega-3s with its unique cellular-signaling properties that directly supports healthy metabolic factors associated with:

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BY STEVEN B. HARRIS, MD

When Technology Goes *In Reverse*

Excerpted and reprinted with permission from
The Society for the Recovery of Persons Apparently Dead
by Steven B. Harris, MD^{1,2}

In **1767** a few wealthy and civic-minded citizens in **Amsterdam** gathered to form the **Society for Recovery of Drowned Persons**.³ Amsterdam is a city of canals and hence people fell in and drowned. It thus became the birthplace for the teaching and promotion of the **resuscitation of dead persons**.

Within 4 years of its founding, the society in Amsterdam claimed that **150 persons** were saved by their recommendations.⁴ The Society's techniques involved a range of methods to stimulate the body applying manual pressure to the abdomen and breathing respirations into the mouth of the victim.⁴

The **Society for Recovery of Drowned Persons** introduced scientific principles and techniques, along with ethical changes that started a collective belief that **resuscitation of the dead** was possible.

Following successes of the Amsterdam society, **rescue societies** sprang up in most European capitals in the 18th century, all with the goal of finding a way of successfully resuscitating victims of sudden death. Many of these techniques (or variations of them) are used in modern emergency medical practice.

Today we call this **cardiopulmonary resuscitation** (CPR). It continues to improve using **hypothermia** to extend the period of time a person can be "dead" yet restorable back to healthy life.

What you'll learn in this article is how the **revival of dead persons** came to a virtual halt for surprising reasons, and then once again gained acceptance.

I'll describe a number of medical innovations we take for granted today and the erratic pace they were accepted by the mainstream. >





Overlooking Important Ideas

The history of technological **innovation** is an account of the **tortuous** paths that advances often take before gaining **acceptance**.

It might seem at first that it is the nature of important ideas to spring up nearly everywhere, independently, as soon as the world is ripe for them. But this is only the view at first glance. In actuality, the “synchronicity” of discovery usually turns out to be a late phenomenon. The “new” idea in question often follows a period in which it’s long been around in some form or another, but steadfastly **ignored**.

How long can an important idea be overlooked? The model steam engine was demonstrated by Hero of Alexandria in the first century AD,⁵ sixteen centuries before people started thinking along these lines again. Gregor Mendel published the basic principles of genetics in 1866, and was ignored until 1900.⁶ Oswald Avery published strong evidence that DNA was the principle of heredity in 1944, but no one really believed it until the time of Watson and Crick almost a decade later.⁷ The time between conception, discovery and acceptance varies, depending on circumstance.

“The human mind treats a new idea the way the body treats a strange protein; it rejects it.”

—Biologist P.B. Medawar

Delayed acceptance of discovery happens in all areas of science, but it always happens in the field of medicine with great poignancy, since there the human costs of dropping the technological ball are usually great. We may consider, for instance, the numbers of lives which might have been saved if not for the following delays:

Leeuwenhoek invented the microscope in 1668 and saw animal cells and protozoa with it—but unfortunately for humanity, doctors weren't interested in that kind of thing in 1668, and wouldn't be for another couple of centuries. In the meantime they missed out on the germ theory of infectious disease; thus, as late as 1850, when good Doctor Semmelweis tried to get his Hungarian colleagues to curb the incidence of fatal "childbed fever" by washing their hands between dissecting diseased cadavers and examining patients, his colleagues responded by hounding him out of his job. Meanwhile diseases continued to spread on the hands of well-meaning doctors.

Several explorers like Sir Richard Hawkins independently discovered the anti-scurvy properties of oranges and limes in the 18th century, and James Lind in 1754 even published the results of a controlled experiment in which he showed that citrus was superior to other folk methods for the curing of scurvy. The world, however, was not ready for the discovery, and sailors continued to suffer and die from this quite treatable nutritional disease for more than half a century after Lind's demonstration. Scurvy was also rampant among the troops of both the North and South during the American Civil War, though the means was available to prevent it, and as late as 1912 the famous explorer Robert Falcon Scott died on his way back from the South Pole, probably as the result of scurvy.

An investigator before the First World War discovered the curative powers of *penicillium* mold extracts on infected animals, but could not interest his colleagues, although he published the work. It remained for Alexander Fleming, ignorant of the earlier work, to rediscover the antibacterial effect of *penicillium* in a laboratory accident in 1928.

Alexis Carrel, the French-American scientist who won the Nobel Prize in 1902 for techniques of suturing blood vessels, demonstrated in 1910 that a saphenous vein graft between aorta and main coronary artery in animals could bypass a blockage there, and speculated that the technique might be useful in the treatment of angina. Although Carrel (with aviator Charles Lindbergh) later went on to develop the heart-lung machines that would make such surgery possible, the medical community contented itself for the next half-century with ineffective treatments for severe coronary heart disease, and it was not until 1967 that the saphenous-graft coronary bypass operation was employed on humans.

To the historian, some medical fields seem more plagued with delays in the acceptance of new ideas than others. The medical study of *infectious disease* has been prominent in this dubious regard, as noted, and the above examples are sad enough.

Still, there is possibly one field of medicine which is at least the equal of infectious disease in its record of *ignoring* proven lifesaving strategies for the longest time.

The medical field in question is that of *resuscitation*, the art of restoring clinically *dead people to life*. It took a long time before resuscitation was universally accepted, meaning many people who were revivable instead needlessly remained dead. The problem



persists today as the best resuscitation technologies are not always employed. We've seen these controversies already, and we'll see them again. Perhaps we can profit by exploring them further.

History Of Resuscitation

Historically, the art of resuscitation turns out to be old. The idea of resuscitating a seemingly dead person by more or less physical means occurs in the Hebrew Scriptures. Both I Kings 17 and II Kings 4 contain descriptive elements of resuscitation by chest compression. In II Kings, Elisha also places his mouth on the child's mouth. Clearly there is something more than mystical prayers and incantations going on. Perhaps the oral traditions which were later codified into these tales once contained descriptions of one or more **medical resuscitative** events.

By a few millennia later, things were better defined. Italian writings of the 15th century indicated that midwives had, even then, long been using mouth-to-mouth breathing techniques to resuscitate newborns who did not spontaneously breathe. These techniques were soon to be imitated in the mechanical experiments of the Enlightenment. Paracelsus (1493-1541), an alchemist and perhaps the greatest physician of his age, was said to have attempted the resuscitation of a corpse using bellows, a trick he perhaps picked up from Arabic medical writings. And Andreas Vesalius (1514-1564), the father of modern anatomy, reported successfully using bellows to resuscitate asphyxiated dogs.

Bellows may not always have been available, but physicians eventually learned (possibly again from laymen) that simple mouth-to-mouth resuscitation sometimes worked on recently asphyxiated adults just as it did on newborns. By the 1740s, several cases of successful mouth-to-mouth resuscitation had been reported, the most famous of which was Tossach's 1744 report of the resuscitation of a clinically dead coal miner who had been suddenly overcome after descending into a burned-out mine. By the 1760s, in the wake of such reports, a number of groups advocating the resuscitation of drowned persons had sprung up in Europe. The thinking at this time in many places was strikingly modern. Here, by way of example, is a quote from a 1766 governmental edict from Zurich:

"... Experience has shown that the drowned who are considered dead and that lay for some time under water have often been restored again and kept alive by proper maneuvers. From which one rightly concludes that life has not been completely suspended in the drowned, but that there is hope to save them from death if, as soon as they are withdrawn from the water, prompt and careful help is administered."



The Swiss may have been their usual regulation-happy selves about the subject, but in the rest of the Western world resuscitation was being pushed typically by entirely private societies (voluntary clubs). In 1774, a society was founded in London to promulgate the idea of attempting to resuscitate the dead in some circumstances. Called, after a bit of experimentation, the *Society for the Recovery of Persons Apparently Drowned*, it quickly evolved into the *Humane Society* (and still later, with official patronage and funding, the *Royal Humane Society*).

The First Case Of Defibrillation

The *Humane Society* (London) advocated techniques which were highly advanced. Three months after the society's founding, as an example, a society member had the opportunity to minister to a 3-year-old child named Catherine Sophie Greenhill, who had fallen from an upper story window onto flagstones, and been pronounced dead. The society member, a pharmacist named Squires, was on the scene within twenty minutes, and history records that he proceeded to give the clinically dead child several shocks through the chest with a portable electrostatic generator. This treatment caused her to regain pulse and respiration, and she eventually (after a time in coma) recovered fully.⁵



The resuscitation of little Catherine Greenhill was probably the first successful cardiac defibrillation of a human being, and it followed earlier suggestions by American scientist Benjamin Franklin and others that electricity might possibly be used to “revivify” the human body.

And so it proved able to do in certain circumstances. In 1788, a silver medal was awarded to Humane Society member Charles Kite, who was by this time not only advocating the resuscitation of victims in cardiac arrest with bellows and both oropharyngeal and nasolaryngeal intubation, but had also developed his own electrostatic revivifying machine which used Leyden jar capacitors in a way exactly analogous to the DC capacitative countershock of the modern cardiac defibrillator. (I must confess that to my mind all of these contraptions were fantastic devices in their time, yet they actually existed. A time-traveling physician from the present could not have put together a better resuscitation kit, given the primitive technology of the era.)

Resuscitation Technology Goes Dark

Despite its amazing progress, the enlightened state of the late 18th century regarding resuscitation was not to last. From the very first, dark images from the human psyche began to gather in resistance to the new ideas. Technology never intervenes in a major way into the borderland between life and death without

creating major anxieties and social backlash. Resuscitation had its problems.

To begin with, as the modern reader may guess, the 18th-century discovery that “death” was not a sure and objective state did not exactly sit well in the public mind.

By the end of the first quarter of the 19th century, the public’s view of scientific resuscitation had intruded into the macabre. The fictional potential of the new electromechanical resuscitative technology had its influence on Mary Shelley, who in 1818 had first set out to write a ghost story, but instead ended up producing a cautionary tale of the technological resuscitation of a soulless corpse by a medical experimenter. The book became an instant sensation. Given the spirit of the times, the story touched a public nerve as if one of the new electrical resuscitation machines might create a Frankenstein’s monster.

Shortly after the publication of Shelley’s famous story, the new medicine began to go out of favor, and the science of resuscitation began to suffer on both the technical and mythological fronts. It happened for several reasons.

It is the propensity of all social movements to go too far. The *Humane Society*’s problem was that, when it came to complicated biology, the late 18th century did not possess the experimental expertise necessary to separate the wheat from the chaff. Thus, within a few years after its founding, the *Humane Society* had gone from mouth-to-mouth resuscitation to the more impressive use of bellows. Following a number of instances of lung rupture with the bellows, however, these complicated and difficult-to-use devices were discarded early in the 19th century.

Mouth-to-mouth resuscitation, unfortunately, was not reinstated at that time, partly because of misconceptions about the life-giving oxygen. For the next century and a quarter, therefore, resuscitative techniques centered around chest massage and arm lift techniques. Mouth-to-mouth breathing did not return until the middle of the twentieth century.

Emergency electrical defibrillation fared no better. The new phenomenon of electricity had been transformed early-on into a practice of passing mild shocks through the body in an attempt to cure disease, and its reputation tarnished due to lack of efficacy.

Later, and perhaps even more devastatingly, the charming new electricity was transmuted into a powerful and dangerous force by the giant transformers of Westinghouse (maligned from the first for their deadliness, in a PR campaign by rival industrialist-inventor Thomas Edison) and by the newfangled American electric chair. Technologies as well as people suffer from social stigmas. Mary Shelley had originally

Antique Respirator



Thus, the anesthetic properties of nitrous oxide had been widely and publicly noted by Sir Humphrey Davy as early as 1798, yet it was not until the 1840s that an obscure general practitioner from Georgia and a couple of part-time dentists (remember our observation about outsiders) began to try out inhaled anesthetics for surgical purposes. Even at that, there was an ecclesiastical outcry when Queen Victoria requested chloroform for childbirth, soon after the first anesthetic demonstration in America. One prominent cleric complained that “travail and pain” in childbirth had been ordained by God in the Bible, and that therefore anesthesia was against the will of God. (Others pointed out Genesis 2:21 where Adam is put to sleep as the rib is taken for Eve. Scriptural wars can be quite inventive.)

What then held up full *cardiopulmonary resuscitation* until the late **1950s**, even though the world had discovered all of its essential features before 1900? We can only speculate, but the answer may lie in the fundamental change in the way that people began to relate to and trust technology between 1900 and 1950—a social change that is as profound as any generation of humans has ever had to cope with.

Mythmaking, as ever, played a role. If technology first crept into our nightmares with Frankenstein, it later (redemptively) crept into our heroic myths and won some measure of acceptance. Thus, if the new 20th-century technology of aviation was capable of creating a new kind of hero like Charles Lindbergh, the public was also willing to let Lindbergh have a technological shot at death with his new artificial heart machine. In any case, the mantle of Dr. Frankenstein had by the middle of the 20th century passed to the physicists and their atom bombs, and medicine for the time being was at last back in the heroic mode. ●

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

Editor's Note

The Life Extension Foundation® has been battling an apathetic medical establishment and hostile bureaucrats since 1980. We find ourselves in absurd debates with those in the mainstream who believe our research monies would be better spent on old age homes rather than discovering practical methods to slow and reverse the aging process, thus eliminating the need for most nursing homes.

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Serotonin is a neurotransmitter made in the brain from **tryptophan**. Serotonin has been associated with positive moods and restful sleep.¹⁻⁴

To produce and maintain optimum serotonin levels, your body requires **tryptophan**, an essential amino acid, which means that your body cannot produce it.¹

In the body, tryptophan has been shown to:

- Improve sleep^{3,4}
- Enhance mood^{1,2,4}
- Modulate stress⁵

Life Extension® offers **Optimized Tryptophan Plus** to broadly and powerfully support tryptophan levels already within the normal range.

In addition to delivering an optimum intake of tryptophan *itself*—the **Optimized Tryptophan Plus** formula also provides a unique, balanced supply of *other* nutrients found to help maintain tryptophan activity in the body.⁶⁻⁸

Multi-Pathway Tryptophan Support

The **Optimized Tryptophan Plus** blends lysine, niacinamide, and extracts of hops and rosemary to provide nutritive support for the body's production of serotonin.

Purity and Safety

Life Extension® **Optimized Tryptophan Plus** contains premium L-tryptophan which has undergone significantly more rigorous manufacturing processes than regular tryptophan material to assure the highest purity and safety.

The suggested daily dose of 3 vegetarian capsules of **Optimized Tryptophan Plus** provides:

L-Tryptophan	1,000 mg
L-Lysine (as L-Lysine HCl)	250 mg
Proprietary Tryptophan Plus Blend Perluxan® Hops Standardized Extract (<i>Humulus lupulus</i>)(cones), and Ursole™ Rosemary Standardized Extract (<i>Rosmarinus officinalis</i>)(leaves)	285 mg
Niacin (as Niacinamide)	66 mg

A bottle of 90 vegetarian capsules of **Optimized Tryptophan Plus** retails for \$32. If a member buys four bottles, the price is reduced to **\$21.75** per bottle.

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For those who prefer capsules containing pure Tryptophan alone, **Life Extension**® also offers **L-Tryptophan**.

Each capsule provides **500 milligrams** of **L-Tryptophan**.

A bottle of 90 vegetarian capsules of **L-Tryptophan** retails for \$33. If a member buys four bottles, the price is reduced to **\$22.50** per bottle.



Item #01722

**To order Optimized Tryptophan Plus and L-Tryptophan,
call 1-800-544-4440 or visit www.LifeExtension.com**

Magnesium and Brain Health

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

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

New Cognitive Benefits Revealed!

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

Capsules or Powder...Value Priced

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

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

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

References

1. *J Neurosci.* 2013 May 8;33(19):8423-41.
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To order **Neuro-Mag™ Magnesium L-Threonate Capsules** or Powder call 1-800-544-4440 or visit www.LifeExtension.com

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



Item # 01602



Item # 01603



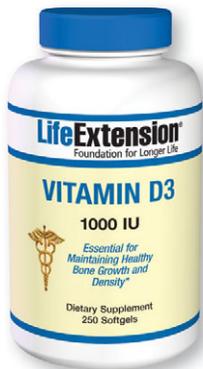
D₃

VITAMIN D₃ SOFTGELS FOR SUPERIOR ABSORPTION

Study after study confirms the vital importance of maintaining optimal levels of **vitamin D**. Research often indicates that a blood level between **50–80 ng/mL** of **25-hydroxyvitamin D** is ideal. Because people have individual requirements, Life Extension® has created a large selection of **vitamin D** supplements to ensure that you achieve your **vitamin D₃** goals.

Keep in mind that you may already be getting **1,000-3,000 IU** of vitamin D in your multi-nutrient formulas.

Vitamin D is now available in superior absorbing softgels. A recent study demonstrated that the use of one **5,000 IU** vitamin D **softgel** daily resulted in a near **30% increase** in vitamin D levels in just **60 days**.

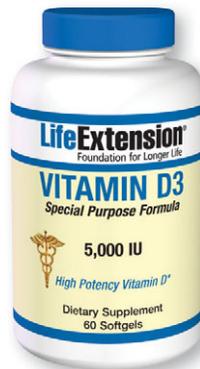


VITAMIN D₃ 1,000 IU 250 softgels

Retail: \$12.50

Four-bottle Member Price: \$8.44 ea.

Commercial companies offered only **400 IU** vitamin D products when Life Extension long ago introduced a **1,000 IU** version. For most people, this **1,000 IU** potency is *insufficient* to attain optimal vitamin D blood levels. For smaller individuals who obtain **2,000-3,000 IU** in their multi-nutrient formulas (and children), this potency of vitamin D may be suitable. **Item # 01751**

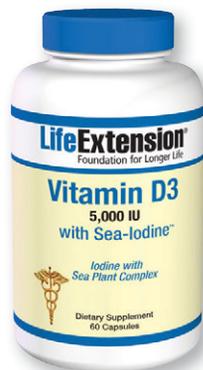


VITAMIN D₃ 5,000 IU 60 softgels

Retail: \$11

Four-bottle Member Price: \$7.43 ea.

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



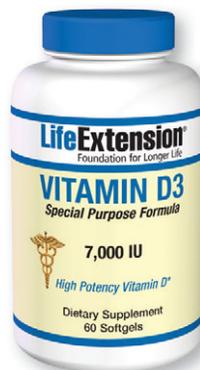
VITAMIN D₃ 5,000 IU WITH SEA-IODINE™* 60 capsules (non-softgel)

Retail: \$14

Four-bottle Member Price: \$9.38 ea.

Most people do not ingest enough vitamin D and iodine, especially those seeking to reduce their salt intake. Combining **5,000 IU** of **vitamin D₃** and **1,000 mcg** of iodine into one capsule makes taking these two nutrients economical and convenient.

Due to the source of kelp, this product may contain fish and shellfish. **Item # 01758**

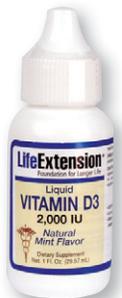


VITAMIN D₃ 7,000 IU 60 softgels

Retail: \$14

Four-bottle Member Price: \$9.45 ea.

Some individuals (such as those weighing more than 180 pounds) may require higher potencies of vitamin D. When combined with **1,000-3,000 IU** obtained from multi-nutrient formulas, this **7,000 IU vitamin D₃** softgel should enable these individuals to attain **25-hydroxyvitamin D** blood levels above the desired range of **50 ng/mL**. **Item # 01718**



VITAMIN D₃ LIQUID 2,000 IU (Natural mint flavor) 1 ounce

Retail: \$28

Four-bottle Member Price: \$18.75 ea.

For those rare individuals who have difficulty absorbing enough vitamin D₃ from softgels, this liquid of vitamin D can be used. **Item # 01732**

Also available without mint. (Item# 00864)

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

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

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

BY KATHY WHITE

WHITE PEONY

Safely Manage **AUTOIMMUNE DISEASES**

Mainstream medicine has no cure for the millions who suffer from crippling autoimmune conditions such as arthritis, lupus, and psoriasis.¹

Victims of autoimmune disease are often injected with costly and potentially dangerous drugs that suppress the immune system, leaving the patient vulnerable to future infections and at an increased risk for cancer.¹⁻³ Victims of autoimmune disease have little choice but to live in those moments between the pain.

However, a sudden explosion of scientific interest has occurred in a **glucoside extract** from the **white peony root** for its ability to treat autoimmune diseases by bringing a dysfunctional, over-excited immune system back into balance.^{4,5}

Peony glucosides are extracted from the root of the peony flower. Peonies are members of the same botanical family as the buttercup and produce fragrant flowers in a variety of colors.⁶ The peony is an extremely long-lived plant, and it is not uncommon for peonies to live for a hundred years. They have been cultivated in both Japan and China for at least several centuries, perhaps even a millennium.⁶

The peony plant has been recorded to have medicinal properties since the times of Hippocrates and is still widely used today in both Indian and Chinese medical systems.⁷ There are many different varieties of Peony plants, Red Peony and White Peony among them. The most common species used in medicine today is **White Peony**—named for the color of its roots, not its flowers (which can include a number of color variations).⁶





Because of its ability to rebalance a malfunctioning immune system due to its unique *dual-acting* mechanisms, **peony glucosides** are now recognized as a drug by the Chinese State Food and Drug Administration for treatment of rheumatoid arthritis, one of the leading autoimmune diseases.⁵

Unlike the dangerous drugs used to treat autoimmune disorders, **peony glucosides** work to simultaneously suppress excessive harmful immune functions while also boosting calming immune components.⁴ A calm and balanced immune system is the most important step in reducing the pain and threat of autoimmune disorders.

Chinese scientists have discovered a broad spectrum of applications for **peony glucosides** for those suffering from autoimmune disorders.

Dual Action Restores Immune Balance

Peony glucosides, unlike most medications, have *multiple mechanisms* of action that include immunomodulatory properties and the reduction of inflammation-promoting molecules that are typically elevated in autoimmune diseases.^{4,8-15}

Peony extract contains specific molecules found in plants known as *glucosides*. The most abundant and active glucoside is *Paeoniflorin* (pay-own-i-floor-in), which is responsible for much of Peony's medicinal benefits.⁴ Paeoniflorin is so important in **peony glucosides** that it is used to standardize the formulation to a specific amount of paeoniflorin.⁴

Paeoniflorin has been shown to normalize out-of-control immune system cells that can be out of balance in autoimmune diseases.^{4,8-15} In a healthy person, these immune cells maintain a steady balance between the inflammatory and anti-inflammatory stimuli. However, in autoimmune diseases, numerous cells produce inflammatory chemicals, which results in non-stop, destructive inflammation.

Through a series of mechanisms, paeoniflorin promotes a *rebalance* between inflammatory cells and calming anti-inflammatory cells.^{13,16,17} This rebalance sharply reduces production of inflammatory cytokines and breaks the cycle of ever-increasing levels of inflammation, especially in the areas of the body most vulnerable to autoimmune attack, such as joints and blood vessels.^{12,13}

Paeoniflorin has also been shown to account for many of the pain-relieving properties of **peony glucosides**. Studies of experimentally-induced arthritis



in rats demonstrate reduced swelling and scar tissue in joints, along with decreases in bone and cartilage destruction; together, all of these factors affect how much pain people feel from their arthritis.¹⁸

In laboratory mice with *excessive inflammation* (for example, those with arthritis or psoriasis), **peony glucosides** inhibited over-active immune reactions, resulting in reduced cytokines and overall inflammation.⁴ But in animals whose immune system is suppressed (similar to people treated with steroids, having chemotherapy, or with immune-impairing diseases such as HIV/AIDS), **peony glucosides** *enhanced* the immune response, bringing antibodies and immune system attack cells back up.⁴ Translated into human terms, this implies that people with overactive immune systems, such as those with lupus and other autoimmune diseases, would benefit from the immune-suppressing effects of **peony glucosides**. At the same time, those with suppressed immune systems would see fewer serious infections and a lower cancer rate.

Peony glucosides achieve this immune balance by a variety of subtle mechanisms that include *slowing* the maturation of cells that promote immune responses while *boosting* maturation of the regulatory cells that return the immune system to its normal, neutral state.^{17,19} This level of immune balancing is beyond what current medications can do (medications typically either boost or suppress immunity, not both at the same time). The result of this balancing act is likely to be a substantial reduction in symptoms and flare-ups of both autoimmune diseases and their counterparts, infections and cancers in people with under-active immunity.

This dual action *immune balancing* extends all the way to target tissues. For example, in rheumatoid arthritis, over-active joint-lining cells create a hyper-inflammatory response in the joint, producing pain and destruction of the joint surfaces. **Peony glucosides** prevent those cells from becoming over-stimulated, sparing the joint from autoimmune damage and reducing joint pain and swelling.^{9,17,18,20}

Unlike mainstream medications that aim only to shut down the inflammatory response, **peony glucosides** are a true *immunomodulator*, which rebalances the disordered immune response and enables the body to restore its own equilibrium.

Autoimmune Arthritis

In China, **peony glucosides** are an approved drug for treatment of rheumatoid arthritis, the most common autoimmune arthritis.^{5,21}

In laboratory experiments, animals with rheumatoid arthritis develop increased numbers of



What You Need to Know

Regulate Immune Balance With Peony Extract

- Autoimmune diseases—when the body attacks itself—are among the most heart-breaking of human conditions.
- Conventional medical therapy aims purely at reducing inflammation, which results in a state of immune suppression and leaves the patient vulnerable to life-threatening infections and cancers.
- Newer drugs also raise the risk of developing additional diseases, and all are tremendously expensive.
- **Peony glucosides** are a time-honored component of traditional Chinese medicine; today it is certified as a drug in China for use in autoimmune disorders.
- **Peony glucosides** act naturally, not to simply quash inflammation, but rather to rebalance the disordered immune system, promoting development of regulatory, inflammation-fighting cells while suppressing pro-inflammatory cells and the deadly cytokines they produce.
- One of the main therapeutic components found in **peony glucosides** is paeoniflorin.
- To date **peony glucosides** have been used in clinical trials involving conditions such as rheumatoid arthritis, lupus, Sjogren's syndrome, psoriasis, and other lesser-known conditions.
- In numerous scientific studies, **peony glucosides** have been demonstrated to significantly and meaningfully restore immune system balance, reduce symptoms, speed onset of remissions, and reduce the amount of dangerous immunosuppressive drugs required.

inflammatory cells. These cells then produce high levels of inflammatory cytokines resulting in destructive inflammation of the delicate tissues lining the joints. The end result is destruction of the joint. Supplementation with **peony glucosides** appears to reduce the population of inflammation-provoking cells while increasing the inflammation-suppressing ones.¹⁶ The result is that inflammatory cytokine levels fall while the over-active immune response in the joints begins to reverse; animal studies show that this biochemical reversal of inflammation is accompanied by reversal in joint damage and pain.^{9,13,17,18, 20,22}

Treatment with **peony glucosides** produces a significant reduction in both arthritis severity and joint damage.^{16,18,23,24} Studies in animals with experimentally-induced arthritis, for example, demonstrate a reduction in clinical manifestations of arthritis after treatment with **peony glucosides**.^{23,24} Arthritis scores, numerical summaries of joint swelling, range of movement, and other parameters are lower in supplemented animals than in controls.^{16,24} Finally, autopsy results of these experimental animals reveal significant reductions in visible joint damage of the kind that produces pain and immobility in human sufferers.¹⁸

As an added benefit in preventing the further destruction caused by arthritis, **peony glucosides** reduce the excessive new blood vessel growth (angiogenesis) that contributes to excessive tissue growth within the joint.²⁵ When excess tissue builds up inside a joint, victims experience decreased range of motion, stiffness, and often pain with movement, as they try to force the joint to overcome the obstruction created by bulky tissue.

Human studies with **peony glucosides** have focused on its use in conjunction with mainstream therapies. One early study found that adding **peony glucosides** to a standard drug, *methotrexate*, originally used for chemotherapy, resulted in a faster onset of action, and lowered serum measures of inflammation significantly more than with the drug alone.²⁶

Additional studies demonstrated that more people (97.5%) experienced at least some relief when treated with both **peony glucosides** and a standard immunomodulatory drug, *leflunomide*, compared with those treated with the drug alone (85%).²⁷

Levels of inflammation fell faster when **peony glucosides** were included in medication regimens, and the onset of protective action was faster.²⁶⁻²⁸ **Peony glucosides** also reduce the liver toxicity of the commonly-used combination of *methotrexate* and *leflunomide* with improvements in clinical disease scores.²⁹



Lupus

Lupus is a chronic inflammatory disease that can impact your entire body including joints, skin, heart, lungs, blood vessels, nervous system, liver, and kidneys as well as increase your risk of cancer and infections.³⁰ Attacking women **9 times** as often as men, the disease occurs in cycles of flares (exacerbations) followed by periods of lower activity (remissions).³¹ Doctors usually treat the symptoms of lupus with a mix of powerful drugs that includes antimalarial drugs, corticosteroids, immune suppressants, and NSAIDs.³⁰ However, despite these medical interventions, the underlying causative factors remain, and the disease can return at any time.

Understanding Autoimmune Diseases

Autoimmune diseases are extremely painful and difficult to treat. In these conditions, which affect more than **23.5 million** Americans (**5 to 8%**), the body turns on itself, launching a relentless attack on its own tissues.^{1,52} The resulting suffering is often crippling. Virtually every organ system in the human body is vulnerable to autoimmune diseases. The US National Institutes of Health estimates that at least 80 human diseases have a major autoimmune component, and new diseases continue to be added to that list.^{1,51}

Rheumatoid arthritis, psoriasis, lupus, and inflammatory bowel diseases lead the list, but type I diabetes, multiple sclerosis, and a host of less well-known disorders such as Sjogren's syndrome and certain types of anemia are also autoimmune conditions.⁵¹⁻⁵³

Regardless of the specific disorder in question, all autoimmune diseases share several common features:

An imbalance in the immune system leading to deregulated inflammatory pathways.⁵⁴ In some autoimmune diseases, pro-inflammatory white blood cells predominate, with abnormally low numbers of inflammation-suppressing, or regulatory cells.⁵⁴

The result is a massive release of "auto-antibodies," which attack the host's own tissues.⁵²

Tissues that are attacked by auto-antibodies are then subject to an excess of inflammatory *cytokines*.⁵⁵ Cytokines are signaling molecules that white blood cells use to communicate with one another about the site and nature of a foreign invasion.⁵⁵

The net result is an aggressive attack on normal body tissue that has been incorrectly identified as alien to the body.⁵¹ For example, the joints are the target tissue in autoimmune arthritis such as rheumatoid

and psoriatic arthritis; the skin and the kidneys are primary targets in lupus; psoriasis targets the skin, and inflammatory bowel diseases target the intestines.

The flood of inflammation destroys tissues in the target organs first, but as the storm rages on, inflammation increases throughout the whole body, leading to damage in other areas far from the original target.⁵⁶

Mainstream medicine's best offerings still include older drugs that simply kill off the rapidly-reproducing inflammatory cells, as well as newer "biological agents," which are specialized antibodies that target inflammatory cytokines to neutralize them.⁵⁷⁻⁵⁹

The main problem with these treatments is that they focus on *immunosuppression*, which may lower the inflammation but can open the door to many other health problems.⁵⁹ By focusing only on reducing inflammation, rather than on rebalancing the entire system, these drugs put the patient at increased risk of new diseases, such as invasion by microbes or cancer.^{1,2}

And the "biological agents" such as the drugs Etanercept®, Adalimumab®, among others are crushingly expensive, must be given by IV injection, and may complicate disease states by producing their own autoimmune reactions.^{59,60}

A better treatment option would be to gently restore the natural balance between inflammation-promoting and inflammation-suppressing cells, in other words, a dual-action approach.

According to the latest scientific data, this dual-action mechanism is precisely how **peony glucosides** work in the face of autoimmune disorders.^{4,5}

Studies show that *peony glucosides*, when used for 5 years or more, can dramatically reduce the rate of people experiencing lupus flares to just **3%**, compared with **19%** in those using the supplement for less than 5 years or only intermittently, and **35%** in those not using it at all.³²

When *peony glucosides* are used in combination with mainstream medicines, the results include reductions in disease activity, less need for prednisone and other immunosuppressive therapies, and a reduced rate of infections.³³ Lab indicators of disease severity dropped along with lower levels of certain inflammatory markers and lower levels of the characteristic lupus autoantibody, indicating a lower level of lupus disease activity in the body.

In patients receiving only mainstream drug therapy, rates of remission were **6.4%**, while rates of partial remission were **29.0%**, and those for whom it was ineffective was **64.5%**. However, in those patients who received *peony glucosides* plus standard medical treatment, the results were **20.7%** for remission, **51.7%** for partial remission, and only **27.6%** ineffective after 3 months of supplementation.³⁴

Other studies of *peony glucosides* combined with Western-style medications reveal similar positive results—faster onset of action, decreased number of side effects, lowered markers of inflammation, and reduced need for immune-suppressive medications.^{26-28,34-36}

Lab studies show that *peony glucosides* produce these significant improvements in lupus patients through a rebalancing of immune system cells, possibly by increasing the number of cells that suppress inflammation.^{37,38} And in mouse studies, animals with lupus and its associated kidney disease (nephritis) had a significant reduction in urinary protein content, indicating improved kidney function, following supplementation.³⁹ Supplemented animals' kidneys also showed less visible lupus-related damage, and serum levels of lupus-related autoantibodies dropped significantly.³⁹

Psoriasis

Psoriasis is an autoimmune skin condition that produces an itchy and unsightly scaling rash. It is responsible for untold misery and social isolation, and is a disease crying out for a safe and effective response.⁴⁰

To date, only one human clinical trial of *peony glucosides* in psoriasis has been conducted, but the results are promising. Thirty-five psoriasis patients who were in remission were monitored during supplementation.⁴¹ At baseline, even though they were

in remission, all the patients had elevated levels of inflammatory cytokines, indicating a smoldering disease process. But after supplementation, there was a significant decrease in these cytokine levels, indicating that the fires of inflammation had been successfully tamed.

Psoriatic arthritis is a form of arthritis that sometimes affects psoriasis sufferers; its features are similar to those of rheumatoid arthritis. In a 2013 study, **19** patients underwent **12-weeks** of supplementation with *peony glucosides* only.⁵ Six (**32%**) had at least a **25%** improvement in their disease activity, and of that group all demonstrated a continuous decrease in the number of pro-inflammatory cells and simultaneous drop in inflammatory cytokines. This is one of the first-ever studies demonstrating such dramatic effects in patients treated solely with *peony glucosides*.

Other Autoimmune Conditions

There are brief reports on *peony glucosides* in the management of more obscure autoimmune disorders. From these we learn that:

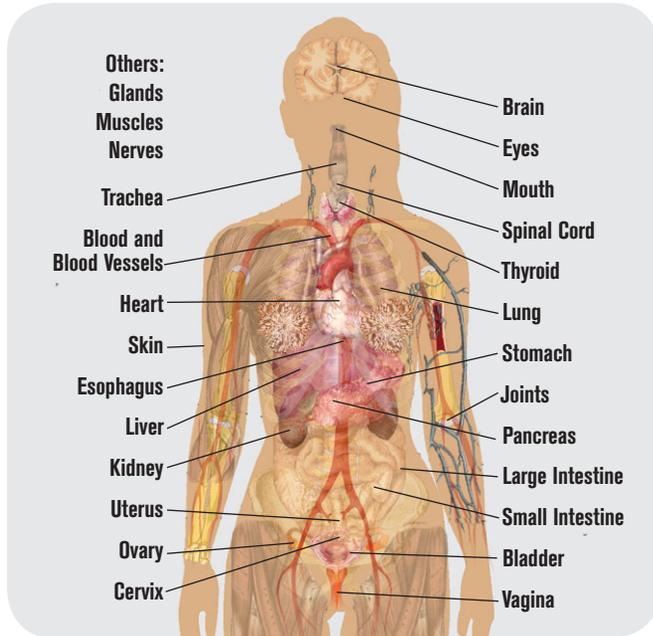
Patients with *uveitis*, an autoimmune inflammation of the middle portion of the eye (iris and its delicate support structures), have a rebalancing of their inflammation-controlling immune cells after supplementation.⁶¹ This provides an excellent example of the unique, dual-acting properties *peony glucosides*.

Peony glucosides increase the efficacy of standard immunosuppressive drug treatment at decreasing the markedly elevated levels of antibodies in the serum of people with *mixed connective tissue disease*, a condition in which multiple body tissues are simultaneously under attack.^{62,63}

Seventy-three percent of patients with chronic *urticaria* responded to treatment with *peony glucosides*, while those on anti-inflammatory medications only had a significantly lower **48%** effective rate.⁶⁴ In chronic *urticaria*, weeping, itchy skin lesions persist often for years, with unsightly scarring as well.

Peony glucosides was effective in up to **68%** of patients with *alopecia areata*, an autoimmune disorder in which the hair follicles are targets of inflammation, resulting in patchy baldness.⁶⁵ This study demonstrated significant reductions in pro-inflammatory regulating cells, and a similar increase in inflammation-suppressing cells, again demonstrating the dual action of the supplement.

FIGURE 1: Body Systems Affected by Autoimmune Diseases⁹



Sjogren's Syndrome

Sjogren's syndrome is the second most-common autoimmune rheumatic disease, afflicting somewhere between **2 and 4 million** Americans—the vast majority of whom are post-menopausal women.⁴²⁻⁴⁴ In this disease, inflammatory cytokines released from immune cells and autoantibodies destroy secretory glands, especially salivary and tear glands.^{43,44}

People with Sjogren's syndrome suffer from dry eyes, mouth, nose, throat, and vagina, and have a massive (**20- to 40-fold**) increase in the risk of malignant lymphoma.⁴² The disease can be diagnosed and its progress tracked by specific autoantibodies, which can be sharply reduced with *peony glucosides* supplementation.⁴⁵⁻⁴⁷

Mouse studies reveal similar effectiveness between *peony glucosides* and the immune-suppressive drug *hydroxychloroquine*, an antimalarial drug used to treat Sjogren's syndrome, with prominent reductions in auto-antibodies, and increases in salivary and tear flow rates—but the peony root extract is vastly safer and works by increasing the numbers of *inflammation-suppressing* regulatory cells, rebalancing the immune response toward normal functioning.⁴⁷

Human research from China supports these observations, demonstrating that *peony glucosides* have similar effectiveness, and was safer than mainstream medications. In a study of patients taking *peony glucosides* or hydroxychloroquine, both treatments effectively improved saliva and tear production and decreased abnormally high levels of serum antibodies,

but adverse effects in the supplement group were 5 cases of diarrhea, while in the drug group, one patient dropped out because of decreased vision, and another for potential liver damage.⁴⁸

Open trials demonstrate that *peony glucosides*, **600 mg** three times daily, was effective at improving saliva and tear flow rates and reducing markers of inflammation in **21.4%** of patients at **12 weeks**, and in **57.1%** by **36 weeks**.^{49,50}

Summary

Autoimmune diseases produce their tragic effects as a result of the body's attacking itself with antibodies that destroy perfectly healthy tissue.⁵¹ These auto-antibodies are the result of an unbalanced immune system, in which normal regulatory cells fail to rein in the actions of inflammatory cells.⁴⁵

Mainstream medicine fights autoimmune disease on only a single front, by aiming to lower inflammation at all costs. Rather than restoring the balance, this approach simply tips it in the opposite direction, leaving victims vulnerable to life-threatening infections and increasing cancer risks.^{1,2}

Peony glucosides, on the other hand, have a gentle and unique dual-acting mechanism. The supplement restores normal immune system regulation both by raising levels of normal inflammation-suppressing cells, and by directly reducing actions of pro-inflammatory cells.^{4,5} As a result, the disordered immune system is brought back into its natural balance, and the excessive inflammation subsides.

Peony glucosides work well in combination with mainstream medicine's arsenal, helping to reduce the amount of dangerous drugs needed to keep the disease at bay and boosting their effectiveness.³⁴

Peony glucosides have now been successfully tested in people with rheumatoid arthritis, with lupus, with Sjogren's syndrome, and psoriasis.^{5, 26-28, 32-34, 48} The supplement has been demonstrated to speed the onset of remissions, reduce the rate of flares, and lower the severity of the disease symptoms.^{5, 26-28, 32-34, 48}

Given the dual and fundamental actions of *peony glucosides*, there is every reason to believe they will be effective in fighting many of the other autoimmune diseases, including inflammatory bowel disease, thyroid disorders, and many others. ●

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

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Fast-acting
and Quickly Absorbed...
for a
Restful Night's Sleep

LIQUID MELATONIN

The consequences of **sleep deprivation** go far beyond fatigue and diminished performance. Sleep deprivation can impact the immune system, the nervous system, memory and cognitive impairment, mood, and more.¹

Ultimately, lack of sleep leads to an overall poor quality of life.

If you're one of the more than **20 million** Americans who suffer from occasional sleep problems,² you don't have to settle for frustrating nights of tossing and turning.

A new, fast-acting **LIQUID melatonin** may enable you to...

TAKE BACK CONTROL OF YOUR SLEEP!

Melatonin is well known for its ability to regulate your body's internal clock. However, as you grow older, the secretion of melatonin declines significantly as the pineal gland becomes calcified.^{3,4}

Fortunately, melatonin has been studied and shown to be effective for managing disturbances in circadian rhythms.^{5,6}

A meta-analysis of 17 studies concluded that melatonin supplementation **decreases the time it takes to fall asleep** while **increasing sleep efficiency** and **total sleep duration**.⁷

In fact, melatonin has been shown to increase the speed of falling asleep—and the quality of sleep—in **about 60% of people who use it**.^{8,9}

MELATONIN LIQUID DROPS!

Not all people benefit from melatonin when it's in the form of a capsule or tablet. However, some report that by applying melatonin *liquid* drops under their tongue at bedtime for immediate absorption, they are able to sleep better. While any kind of liquid melatonin has been reported to work, Life Extension has developed melatonin liquid drops that are completely free of **sugars**.

This soothing **Fast-Acting Liquid Melatonin** has a great tasting natural citrus vanilla flavor and is quickly absorbed for a restful night's sleep.

An increase in age doesn't have to mean an increase in sleep problems. Consider making **Liquid Melatonin** a part of your **healthy sleep program**.

The retail price for 1 bottle of **Fast Acting Liquid Melatonin** is \$12. If a member buys 4 bottles, the price is reduced to **\$8.25** a bottle. Seven drops provide about **1 mg** of melatonin and there are approximately **1,180** drops in each bottle. Most people place one to two full eyedroppers under their tongues at night which provides **3 to 6 mg** of melatonin.



ITEM# 01734

WHY WE NEED SLEEP

Decades of clinical research document that a good night's rest supports nearly all systems of the body, including:

- Skin health and youthful appearance^{10,11}
- Healthy collagen formation¹²
- Insulin levels already within normal range^{13,14}
- Healthy body weight^{15,16}
- Glucose levels already within normal range^{17,18}
- Blood pressure already within normal range^{13,19}
- Healthy cell division²⁰
- Cardiovascular health^{21,22}
- A good mood²³

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TO ORDER FAST ACTING LIQUID MELATONIN, CALL 1-800-544-4440 OR VISIT WWW.LIFEEXTENSION.COM

ARE YOU TAKING THE OPTIMAL FORMS OF VITAMIN E?

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

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

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

SESAME LIGNANS: THE NATURAL VITAMIN E BOOSTER

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

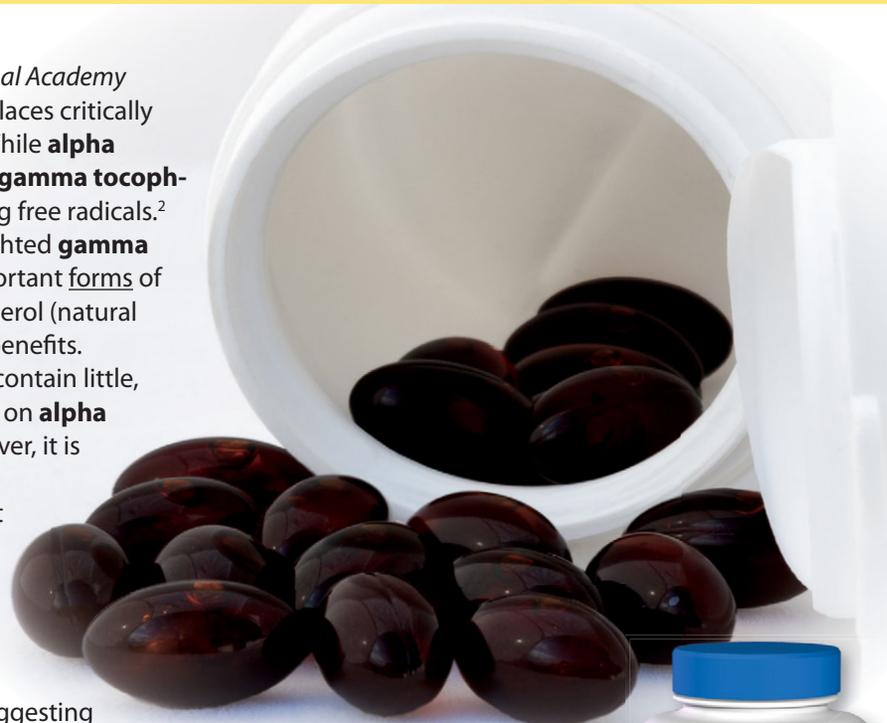
In a human study that combined **gamma tocopherol** with **sesame lignans**, gamma tocopherol/ sesame was **25% more effective** than gamma tocopherol/ tocotrienols in suppressing tissue measurements for free-radical and inflammatory damage.^{4,5} Since tocotrienols are considered nature's most potent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

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

WORLD'S MOST COMPREHENSIVE VITAMIN E FORMULA!

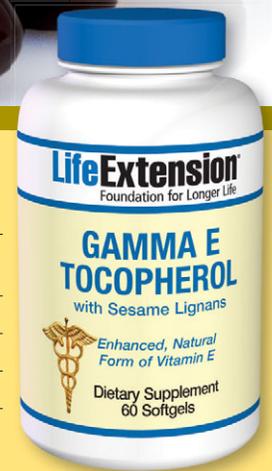
The **Gamma E Tocopherol with Sesame Lignans** formula provides potent doses of critically important gamma tocopherol along with **sesame lignans** to augment its antioxidant effects. Suggested dose is one softgel once or twice daily.

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



Each softgel of Gamma E Tocopherol with Sesame Lignans provides:

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



Item # 00759

Contains soybeans.

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

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

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

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with Sesame Lignans, call 1-800-544-4440
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White Peony Root Extract

FOR IMMUNE SYSTEM BALANCE

Healthy aging requires a dynamic immune system.

A youthful body is dependent on balanced immune-cell activity to maintain effective, responsive, and **modulated** immunity.¹

Extracts from the **white peony root** have been used in China for immune balance for more than 1,200 years.² Modern science now recognizes the immune importance of a bioactive peony extract component called **paeoniflorin**.³⁻⁵

Peony Immune White Peony Root Extract is a standardized extract of active **white peony** compounds that have been shown to help maintain the balanced responsiveness, sensitivity, and strength of a **properly-modulated** immune response.⁶⁻¹⁰

Through a host of subtle mechanisms, **Peony Immune White Peony Root Extract** promotes **immune homeostasis**—optimal immune health—by limiting production of inflammatory molecules and naturally balancing inflammation-suppressing cells and pro-inflammatory cells.³⁻⁵

A host of human clinical trials have demonstrated that the compounds in **Peony Immune White Peony Root Extract** promote a healthy and balanced inflammatory response.⁶⁻¹⁰

The suggested twice-daily dosage of one vegetarian capsule of **Peony Immune White Peony Root Extract** provides:

White peony extract (root)	1,200 mg
[providing 504 mg paeoniflorin]	

A bottle of 60 vegetarian capsules of **Peony Immune White Peony Root Extract** retails for \$36. If a member buys four bottles, the price is reduced to **\$24** per bottle.

To order Peony Immune White Peony Root Extract, call 1-800-544-4440 or visit www.LifeExtension.com



Item #01811

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BY CLYDE EBERLEY

Leukoaraiosis: A HIDDEN CAUSE OF BRAIN AGING

According to a study conducted at the **Mayo Clinic**, a surprising number of aging people suffer a condition in which tiny areas of their brain become oxygen deprived. This cerebral vascular deficit sharply increases risk of stroke, dementia, and cognitive impairment. Healthy lifestyle choices can prevent and may help reverse it.¹

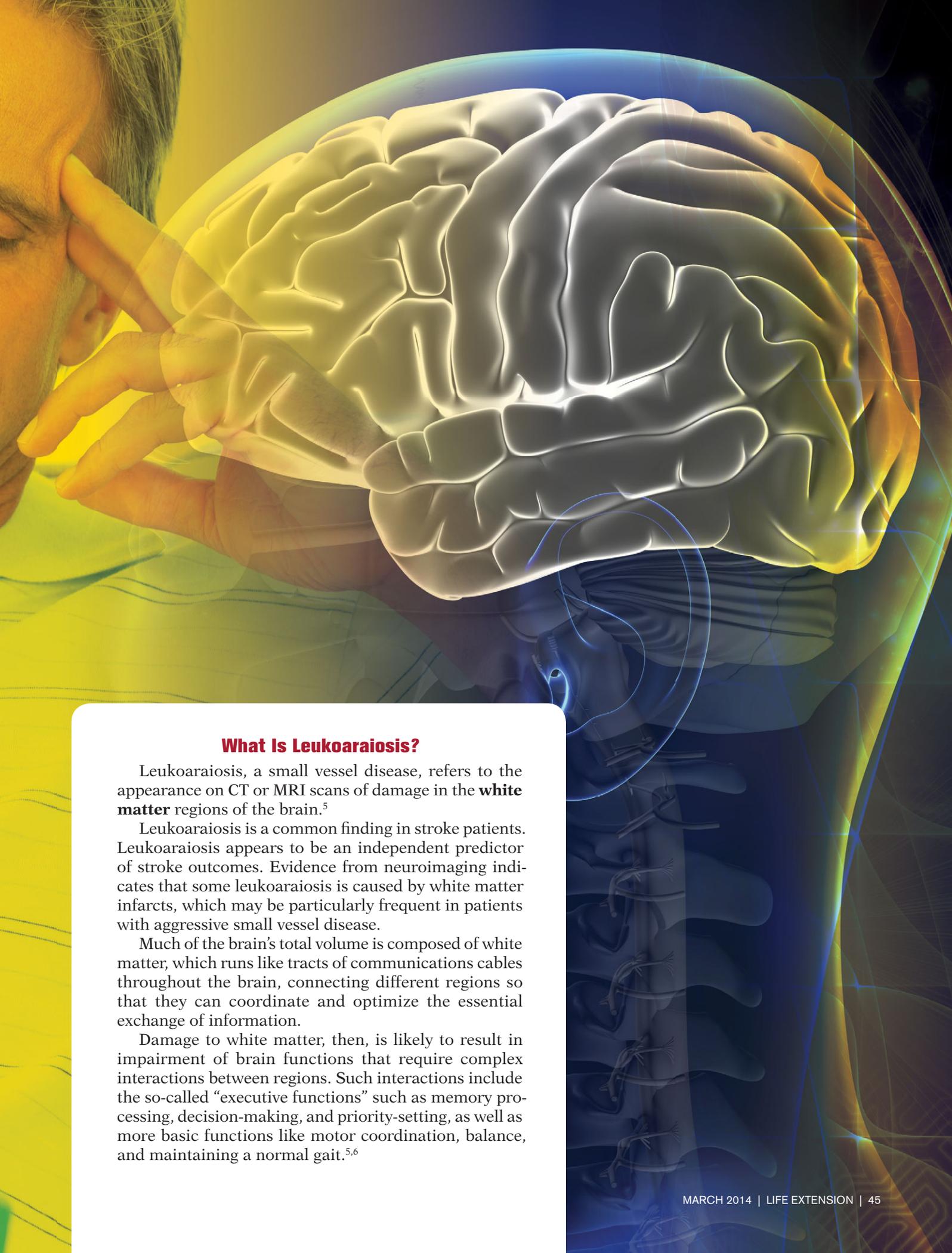
As imaging techniques evolve, we are able to understand more about the workings of our brain. One of the most alarming discoveries has been the existence of ominous changes found in the brains of more than **60%** of people in late middle age and beyond²—changes that were once thought to be simply “age spots” on the brain, but have now taken center stage in the battle against age-related cognitive decline.

Officially known as “leukoaraiosis,” or “white matter hyperintensities,” these tiny spots appear bright white on magnetic resonance imaging (MRI) scans. Scientists are only now coming to grips with the fact that these innocent-looking spots carry grave implications for cognition, memory, personality, and even gait and balance changes as we age.^{3,4}

Fortunately, as we learn more about leukoaraiosis, we’re finding clues to its causes and, therefore, intriguing hints about how we might slow its progress or even prevent it entirely, thereby preserving our cherished brain function well into advanced age. >

LEUKOARAIOSIS





What Is Leukoaraiosis?

Leukoaraiosis, a small vessel disease, refers to the appearance on CT or MRI scans of damage in the **white matter** regions of the brain.⁵

Leukoaraiosis is a common finding in stroke patients. Leukoaraiosis appears to be an independent predictor of stroke outcomes. Evidence from neuroimaging indicates that some leukoaraiosis is caused by white matter infarcts, which may be particularly frequent in patients with aggressive small vessel disease.

Much of the brain's total volume is composed of white matter, which runs like tracts of communications cables throughout the brain, connecting different regions so that they can coordinate and optimize the essential exchange of information.

Damage to white matter, then, is likely to result in impairment of brain functions that require complex interactions between regions. Such interactions include the so-called "executive functions" such as memory processing, decision-making, and priority-setting, as well as more basic functions like motor coordination, balance, and maintaining a normal gait.^{5,6}

The damage that produces leukoaraiosis appears to result from poor blood flow through the smallest arteries and capillaries in the brain (as opposed to “large vessel disease” involving bigger arteries). Small vessel disease caused by *insufficient* blood flow (hypoperfusion) usually produces few specific symptoms.⁵

But that does not mean that leukoaraiosis is benign, as was originally thought. It represents regions of the brain that are not getting enough blood—and hence, not enough oxygen and nutrients.^{5,6}

It was not until powerful imaging techniques such as MRI were developed that we had any way of detecting small vessel disease as it formed and progressed.⁴ Thanks to MRI and other advanced technology, however, we can now watch as leukoaraiosis forms, the hallmark of small vessel disease. On such scans, leukoaraiosis shows up as bright white regions (“unidentified bright objects”) scattered through white matter areas of the brain.^{1,5} Each region of leukoaraiosis represents real brain damage, even though it is often undetected by victims or health care providers.

And even though early and limited leukoaraiosis typically produces no specific symptoms, the more leukoaraiosis you have, the poorer your function on tests of memory, cognition, gait, and balance—reflecting the damage to those white matter communications channels.^{6,7} Over time, leukoaraiosis may produce slowed thinking, forgetfulness, disorientation, perseveration (inability to get off of one subject), depression, and many other problems.⁵

The white matter hyperintensities characteristic of leukoaraiosis have now been found in at least **40** to **50%** of apparently healthy adults over age **50**, and some reports estimate as high as **95%**.^{5,6} Though several different possible explanations for the cause of leukoaraiosis exist, we still don’t know exactly what causes the lesions seen in leukoaraiosis, in part because the symptoms of the condition are so non-specific.^{6,8,9}



What Causes Leukoaraiosis?

Like so many age-related, chronic conditions, leukoaraiosis appears to have multiple causes, but these differ somewhat from the typical risk factors for larger-vessel diseases of the kinds that cause stroke and heart attacks.^{6,8-10}

Hypertension is a leading risk factor for leukoaraiosis, and the small vessel disease it represents.^{6,11,12} People who have hypertension are up to **14 times** as likely to develop leukoaraiosis than those who do not.^{13,14} That differs from large vessel disease of the kind that typically causes overt strokes, in which atherosclerosis is the greatest risk factor.⁹

Research shows that having high blood pressure, particularly ongoing hypertension occurring over time, is a strong predictor of having more severe leukoaraiosis, and of its progression over time; people with the highest cumulative blood pressure across 5 visits had twice the risk of leukoaraiosis progression, compared to those with lower blood pressures.¹⁵

Reduced cerebral blood flow is increasingly being recognized as a cause of leukoaraiosis. People with leukoaraiosis were found to have just **39.7%** of the volume of blood flow in affected regions of their brains compared with those having normal appearing white matter.¹⁶ And the ability of the brain’s smaller blood vessels to react to changes in blood flow is also reduced to about **53%** of normal in leukoaraiosis patients.² Some of this loss of blood flow may be related to the age-related twisting of smaller arteries, which creates increased resistance and hence lower flow.¹⁷ Finally, arterial stiffening of larger arteries, a consequence of long-term **endothelial dysfunction**, creates increased pulse waves in smaller arteries that feed the brain, again resulting in periods of very low blood flow.¹⁸

Homocysteine, a byproduct of protein metabolism, is known to be involved in dysfunction of the endothelium, the ultra-thin lining layer of small blood vessels and capillaries, and endothelial dysfunction in turn is related to poor blood flow in small vessels, leading to leukoaraiosis.¹⁹⁻²³ High homocysteine levels increase the risk of developing leukoaraiosis, with changes detectable as early as middle age.²⁴⁻²⁸

Platelets are the tiny blood components responsible for forming clots; treatments aimed at keeping platelets in check have been successful at preventing large vessel diseases including strokes and heart attacks.²⁹ But platelet characteristics also affect risk factors for developing leukoaraiosis; those with larger, “stickier” platelets have at least a **60%** increase in the risk of developing the brain abnormality.³⁰

Sleep-disordered breathing, which includes the common malady known as obstructive sleep apnea, increases your risk for high blood pressure (the more severe the breathing problem, the higher the risk of hypertension), and hence, the risk of leukoaraiosis.³¹ Fortunately, various non-invasive interventions, such as continuous positive airway pressure (CPAP), have been shown to correct sleep-disordered breathing and lower blood pressure, thereby probably reducing your risk for leukoaraiosis.³¹ Anyone with high blood pressure should, therefore, be evaluated for a sleep-related breathing disorder.

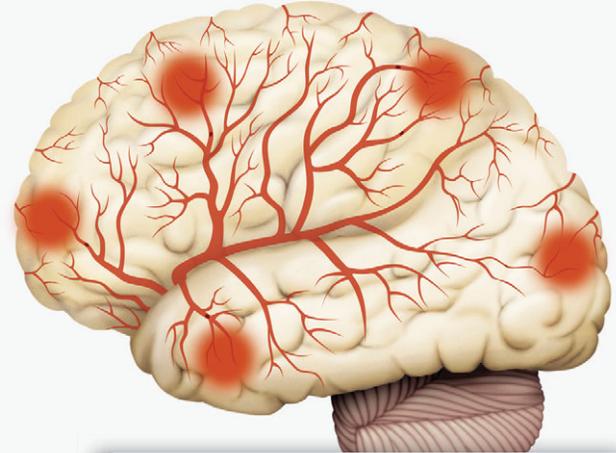
Other risk factors for leukoaraiosis are being discovered; some of the most prominent of these are diabetes (types I or II),^{32,33} high levels of inflammation,³⁴ the metabolic syndrome³⁵⁻³⁸, mitochondrial dysfunction³⁹, and smoking.⁴⁰ Note that all of these factors are known contributors to endothelial dysfunction. **Table 1** shows the main risk factors for the small blood vessel disease that produces leukoaraiosis as cited in a recent review.⁵

Table 1

Main Risk Factors For Small Vessel Disease ⁵
Hypertension
Diabetes
Coronary artery disease
Obesity (body mass index 30 or higher)
Elevated homocysteine
Inactive lifestyle
Age over 45 in men and over 55 in women

What Are The Consequences Of Leukoaraiosis?

The white matter damage that shows up as leukoaraiosis produces no symptoms until it is relatively widespread, and even then symptoms emerge only very slowly over time, and are often confused with “just getting older.”⁶ But studies show that, even in non-disabled older adults, leukoaraiosis on MRI scans is significantly associated with subtle neurological changes that can be detected on a simple physical exam: gait and stance abnormalities, abnormal reflexes, and slowing of small precise movements like finger-tapping.⁴¹



What You Need To Know

Leukoaraiosis And Brain Aging

- Your brain is under attack by “unidentified bright structures,” known to physicians and scientists as leukoaraiosis.
- Undetectable until the advent of modern imaging technology, leukoaraiosis is now closely associated with most symptoms of brain aging, including cognitive decline, gait and balance abnormalities, and dementia.
- The cause of leukoaraiosis is not entirely clear, though it is clear that it represents disease of the brain’s tiniest blood vessels.
- Risk factors for leukoaraiosis include hypertension, platelet dysfunction, excessive homocysteine levels, and most causes of endothelial dysfunction such as diabetes, obesity, and the metabolic syndrome.
- There’s not a known cure for leukoaraiosis, but we have an abundance of nutritional weapons at hand for fighting the risk factors that seem to produce it.
- You can protect yourself against leukoaraiosis and the brain aging it produces by getting regular exercise and choosing nutritional supplements that work against any known risk factors you might have.

And, when symptoms do arise, leukoaraiosis produces a number of concerning findings.^{6,42}

Cognitive decline across many different kinds of function is one of the most widely recognized consequences of leukoaraiosis.^{6,43,44} As one would expect, based on the involvement of white matter communications channels, leukoaraiosis mainly affects executive functioning (planning, prioritizing, risk assessment, etc.), processing speed, and attention, all of which depend on rapid and accurate exchange of information throughout the brain.⁶

A telling study was conducted at the Mayo Clinic and published late in 2012.⁷ Researchers studied a group of apparently cognitively healthy elderly people with and without significant areas of leukoaraiosis, comparing specific regions of brain activation using a functional MRI scanner. Such scans “light up” in brain regions that are activated by specific tasks. The participants with leukoaraiosis had reduced brain activation in all areas associated with certain forms of decision-making.⁷

These changes in cognition and executive function appear to produce some very worrisome outcomes, since they occur in people who typically continue to function and operate independently in society. Leukoaraiosis has been found to be associated, for example, with the risk of being involved in serious traffic crashes. People with large or multiple areas of leukoaraiosis have a two-to-three-fold increase in having crashes, especially deadly crossroad crashes.⁴⁵

Finally, leukoaraiosis has been associated with a greater risk of dementia, and even of death.⁶ In one study, leukoaraiosis was independently associated with a **46%** increase in the risk of dying early; another study found that the risk of dying early was nearly **3-fold** higher in those with severe leukoaraiosis than in those without.^{46,47}

Gait and balance disturbances are another hallmark of leukoaraiosis, again the result of white matter damage that prevents quick and reliable communication between various brain centers.^{6,44} Studies show an association between the amount of leukoaraiosis and deficiencies in gait, balance, and walking speed.^{48,49}

These disturbances more than double the risk of falling, which is itself a leading cause of disability and premature death in older people.⁴⁹ People with larger areas of leukoaraiosis perform more poorly in daily activities than matched, same-aged controls with no damage to their white matter pathways.^{6,50}

Depression is increasingly common as people age; now there is solid evidence to suggest that growing areas of leukoaraiosis may be involved.^{6,44} Studies show that people with more progression of leukoaraiosis over a **3-year** period have higher rates of depression than those with slower or no progression.^{51,52}

Stroke risk is clearly affected by the presence of leukoaraiosis, at least for certain stroke types, particularly those that also affect smaller brain blood vessels in white matter areas of the brain.⁵³⁻⁵⁶ In people who have had a “minor” warning, such as a transient ischemic attack (TIA) or a non-disabling stroke, the presence of leukoaraiosis significantly increases their chances of having a stroke—one study found that **37%** of people with widespread leukoaraiosis had a stroke within **3 years**, compared with just **20%** of those without leukoaraiosis.⁵⁷ Another study found the risk of stroke to increase nearly **five-fold** for people with higher-level leukoaraiosis, compared with those having low-grade leukoaraiosis.⁵⁸

Leukoaraiosis is also associated with an increased risk of a type of “silent stroke” called cerebral microbleeds by more than **five-fold** in patients with a prior stroke history.⁵⁹ And in people who have just had a serious stroke and have been treated with modern “clot busting” drugs, having leukoaraiosis raised the risk of having dangerous bleeding into the brain (intracerebral hemorrhage) by nearly three-fold, and doubled the risk of any bad outcome within **90 days** of the treatment.^{11,60}

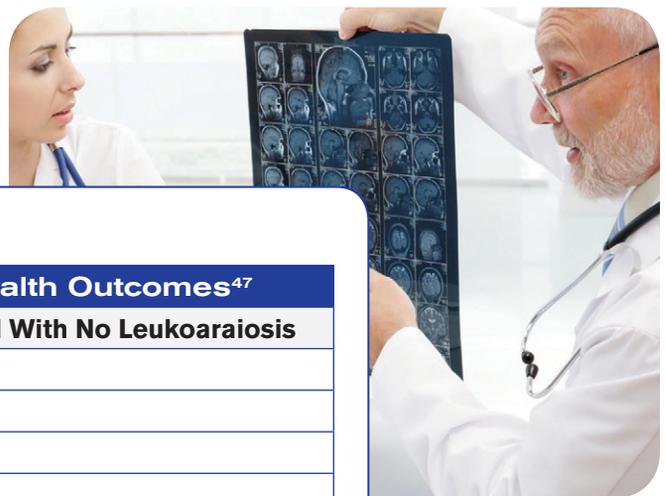


Table 2

Impact Of Severe Leukoaraiosis On Health Outcomes⁴⁷

Outcome	Increased Risk Compared With No Leukoaraiosis
Death	2.9 times
Pneumonia	5.1 times
Death from Pneumonia	8.3 times
Falls	6.8 times

Other consequences of leukoaraiosis are rapidly becoming evident, as shown in Table 2, driving home the point that we all need to do everything we can to prevent this insidious form of brain damage.

How Can I Prevent Leukoaraiosis?

Currently there is no reliable treatment for leukoaraiosis, partly because its fundamental causes remain unknown.^{5,6} But our knowledge of its risk factors can be used to our advantage in preventing leukoaraiosis, and at the very least in slowing its progression.

Not surprisingly, lifestyle and dietary interventions have proven the most effective approaches, especially those that help lower blood pressure, lower blood sugar, reduce obesity, and contribute to improvement in endothelial function.

A few specific interventions have already been shown to directly address leukoaraiosis and its related cognitive deficits:

Physical activity reduces leukoaraiosis-related limitations in mobility.⁴⁸ In one study of people with leukoaraiosis, greater physical activity was associated with a **36%** reduction in the risk of cognitive impairment, a **39%** reduction in risk of dementia, and a **58%** reduction in risk of vascular dementia.⁶¹

Homocysteine-lowering therapy using B vitamins has been shown to improve executive function, which is so strongly affected by leukoaraiosis.⁶²

Correcting platelet function, specifically, the tendency of platelets to be too “sticky,” slows the progression of leukoaraiosis.⁶³

Table 3 provides a partial listing of some nutraceutical supplements that can be helpful in reducing risk factors, thereby potentially slowing the progression of leukoaraiosis. Those with blood pressure readings above **115/75** that do not respond to nutraceuticals may consider pharmaceutical intervention, though those with severe leukoaraiosis sometimes require higher blood pressure to squeeze blood into deformed cerebral arterial and capillary beds.

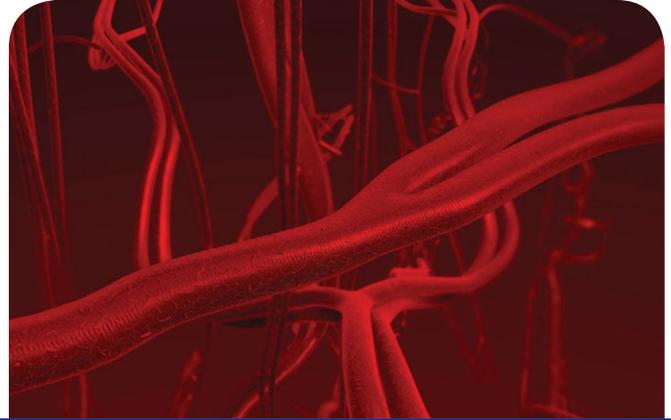


Table 3

Nutraceuticals To Prevent Leukoaraiosis	
Risk Factor	Suggested Nutraceuticals
Hypertension ⁶⁴	Aged garlic extract CoQ10 Ginger Melatonin
Decreased Brain Blood Flow ⁶⁵⁻⁷¹	Ginkgo Gastrodin (Gastrodia orchid extract) Vinpocetine
Homocysteine Elevation ⁷²⁻⁷⁵	B vitamins Folate N-acetylcysteine (NAC)
Endothelial Dysfunction ⁷⁶⁻⁸²	Pomegranate Lipoic acid Amla Resveratrol
Metabolic Syndrome ⁸³⁻⁸⁷	Chromium Curcumin Green tea extract Omega-3 fatty acids Probiotics Resveratrol
Mitochondrial Dysfunction ⁸⁸⁻⁹⁴	Acetyl-L-carnitine Lipoic acid CoQ10 PQQ
Platelet Dysfunction ^{81,95-99}	Anthocyanins Omega-3 fatty acids (fish oil) Astaxanthin Resveratrol Aspirin

Summary

Unidentified bright objects, formally known as leukoaraiosis, or white matter hyperintensities, are early warning signs of ongoing chronic brain damage.⁵ It's almost like having a stroke in ultra-slow motion.

No one even knew of the existence of leukoaraiosis until modern scanning technology detected it. Now we recognize that leukoaraiosis is both widespread and dangerous, signaling the presence of insidious disease in the brain's smallest blood vessels. Small vessel disease deprives local areas of the brain of sufficient blood supply to carry out normal activities, and eventually leads to formation of leukoaraiosis that can be seen on scans.

The causes of leukoaraiosis are not entirely understood, but evidence points to hypertension, endothelial dysfunction, platelet aggregation problems, and homocysteine elevations as major risk factors. And the consequences of leukoaraiosis are increasingly apparent: the larger the volume of brain involved in leukoaraiosis, the worse a person's cognitive function is—even before they become aware of it.



Leukoaraiosis also increases risk for stroke, cognitive decline, and dementia, while interfering with normal gait and balance, eventually leading to greater risks of falling. Indeed, leukoaraiosis seems to correlate with most of the changes we've always associated with brain aging—except that it appears to be preventable and even reversible. Perhaps that's the message those “unidentified bright objects” are trying to send us.

Life Extension members should find comfort that their nutrients and healthy lifestyle choices confer significant protection against leukoaraiosis. ●

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

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COGNITEX

Brain decline affects all aging humans. Scientific studies demonstrate more **youthful** cognition and memory in response to the proper nutrients. **Cognitex**[®] provides the following **brain boosting** ingredients in one advanced formula:

The Ultimate Protection
for your Brain—
now with **Gastrodin/Brain Shield™**

Gastrodin acts as a “brain shield,” calming brain cells and helping to protect against oxidant, inflammatory, and excitatory damage. **Gastrodin’s** multiple modes of action work together with other nutrients to improve circulation and shield the brain from age-related insults.

Alpha-glycerol phosphoryl choline boosts levels of **acetylcholine**, a neurotransmitter that enables brain cells to communicate. **Acetylcholine** is intimately involved in memory and learning. Acetylcholine levels markedly decline as humans age past 30.

Vinpocetine enhances circulation, oxygenation, electrical conductivity of brain cells, and helps support healthy blood flow.

Pregnenolone is a hormone involved in synchronization of brain cells that declines in normal aging brains.

Hops and **rosemary** have all been shown to help suppress inflammatory cytokines.

Wild blueberry extract has been shown to inhibit oxidative and inflammatory changes in brain cells believed to be involved in memory decline.

The ability of **phosphatidylserine** (PS) to improve cognitive skills has been extensively studied. PS exerts significant benefit for cognition, especially those functions that tend to decline with age, including memory, learning, vocabulary skills, and concentration.

Ashwagandha **inhibits** an enzyme (acetylcholinesterase) that breaks down **acetylcholine** in the brain.

Grape seed extract improves blood vessel tone and elasticity, thus boosting cerebral oxygen flow.

Uridine-5'-monophosphate is a compound naturally found in the milk of nursing mothers and is essential to humans when brains are the youngest. UMP also supports superior cognitive function in aging adults.



ITEM # 01897

MOST ADVANCED NEUROLOGICAL FORMULA AT NEW LOWER PRICES

The ingredients in **Cognitex**[®] sell for a small fortune in **Europe** where they are commonly prescribed. You can obtain them all at a fraction of this cost in the comprehensive **Cognitex**[®] nutrient formula for the brain.

A wide range of **gastrodin** doses have shown protective and supportive effects on neurovascular function, in particular in the context of neurovascular inflammation. One pre-clinical study using a well-validated model showed improved memory consolidation and retrieval in chemically impaired rats using a human equivalent dose of **50 mg** daily. This **50 mg** dose, when combined with nutrients that function via some of the same mechanisms as **gastrodin**, may be sufficient to derive results in aging humans.* **Gastrodin** is also available in **300 mg** capsules.

The retail price for 90 softgels of **Cognitex**[®] with **Brain Shield™** is \$62 (Item# 01897). If a member buys four bottles, the price per bottle is **\$39.75**. If eight bottles are purchased, the cost per bottle drops to **\$37.50**. **Cognitex**[®] is also available without pregnenolone at a slightly lower price.

Contains soy.

*J Ethnopharmacol. 1997;56:45-54.

References for most can be found at: http://www.lef.org/magazine/mag2007/feb2007_report_cognitex_03.htm

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Just three softgels of Cognitex[®] provide the following nutrients:

Alpha-Glycerol Phosphoryl Choline (A-GPC)	600 mg
Phosphatidylserine (from Sharp-PS [®])	100 mg
Brain Shield™ (Gastrodin)	50 mg
Vinpocetine	20 mg
Grape Seed Extract	150 mg
Wild Blueberry Extract (Vaccinium angustifolium)	150 mg
Sensoril [®] Ashwagandha Extract (Withania somnifera)	125 mg
Uridine-5'-Monophosphate (disodium)	50 mg
Proprietary NeuroProtection Complex Blend Perluxan [®] Hops Extract (<i>Humulus lupulus</i>) Rosemary (<i>Rosmarinus officinalis</i>) Extract	125 mg
Pregnenolone	50 mg

To order **Cognitex**[®] with **Brain Shield™**,
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.

INTRODUCING

Rich Rewards™

**Mung Bean
Soup with
Turmeric**

**A Delicious Asian-Style Soup Rich in
Vital Plant Nutrients**

If you're looking for a different food to try, you'll be delighted with our **Mung Bean Soup with Turmeric**. The **mung beans** have a chewy texture and unique taste that will make you feel you're eating something new for the first time.

The mung bean, a legume used since ancient times, is considered in Traditional Chinese Medicine to be a "cooling food" and is a favorite among many Asian cultures.*

This new healthy food choice soup contains green mung beans, turmeric, ginger, coriander, olive oil, and lemon juice. It's a refreshing, non-tomato based soup suitable for vegans.

No High-Glycemic Carbs

Processed food companies sell vegetable soups so cheaply because they load them with *high-glycemic* carbohydrates (rice, potatoes, pasta) that cost virtually nothing. They then add inexpensive ingredients such as corn, sugar, and sometimes omega-6 fats (such as cottonseed oil). So for less than \$2, you get a relatively high-carb-calorie soup that provides virtually no health benefits.

Rich Rewards™ soups contain only healthy ingredients without the cheap starches.

Rich Taste—Low Calories

Each serving of **Rich Rewards™ Mung Bean Soup with Turmeric** contains only **130 calories**. It is an excellent source of fiber and provides 6 grams of protein. You can consume the entire contents or use a smaller portion of the soup as part of a meal for you (or several people).

The entire container provides about **3.5 servings** of mung beans, turmeric, and other ingredients—with none of the *glucose-spiking* fillers found in commercial soups.

Rich Rewards™ Mung Bean Soup with Turmeric is packaged in a re-closable bottle free of **BPA**. While the **FDA** says the BPA lining in most cans is safe, we at Life Extension have always used BPA-free containers for our soups.

The retail price for a **3.5 serving bottle** of **Rich Rewards™ Mung Bean Soup with Turmeric** is \$13. The member price is **\$9.75**.

* *PLoS One*. 2011; 6(6): e21071.

To order your fresh supply of **Rich Rewards™ Mung Bean Soup with Turmeric**, call 1-800-544-4440 or visit www.lef.org/soup



Item # 01810

Mung Bean Soup with Turmeric

Nutrition Facts

Serving Size 1 cup (245g)
Servings Per Container about 3.5

Amount Per Serving
Calories 130 Calories from Fat 35

		% Daily Value *
Total Fat	4g	6%
Saturated Fat	0.5g	3%
Trans Fat	0g	
Cholesterol	0mg	0%
Sodium	135mg	6%
Total Carbohydrate	17g	6%
Dietary Fiber	7g	28%
Sugars	2g	
Protein	6g	

Vitamin A 2% • Vitamin C 6%
Calcium 8% • Iron 20%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Ingredients: Water, Green Mung Beans, Lemon Juice, Olive Oil, Ginger, Cumin, Coriander, Turmeric, Citric Acid, Salt, Garlic, Bay Leaf.

Souper tasty. Souper Satisfying.

You know you don't eat enough veggies. So **Life Extension®** cooked up a convenient, tasty way to spoon-feed you these souper foods. Unlike many canned soups, **Rich Rewards™ Mung Bean Soup with Turmeric** is contained in a convenient resealable package that is free of BPA.

This unique Asian inspired soup showcases the ancient and nutritious mung bean and is complemented by delicate spices, lemon juice and olive oil.

One Smart Bowl of Soup

Only 130 calories per serving

Excellent source of fiber

No added starches or sugars

Low in saturated fat and sodium

Cholesterol free

0g trans fat

BY HEATH RAMSEY

Getting Back To Basics...

How Low-Cost Zinc Helps Combat Deadly Immunosenesence

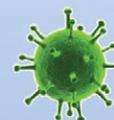
Zinc is required by the body for more than 2,000 transcription factors involved in gene expressions of various proteins.¹ What this means in everyday language is that thousands of essential biological functions are dependent on zinc.

The medical community has known of zinc deficiency for more than 50 years, but the health impact of this crucial mineral has been largely ignored by global health organizations. Extensive scientific inquiry has made it clear that nutritional deficiency of zinc is widely prevalent and its morbidities are severe.¹

Overwhelmingly, the elderly are deficient in zinc¹. Because zinc governs so many biological functions, a simple zinc deficiency can affect multiple facets of health and development.¹ The result is a decline in our body's vigilant immune system, opening the door for an onslaught of numerous diseases. A zinc deficiency contributes to atherosclerosis, cancer, neurological disorders, autoimmune diseases, and other age-related chronic conditions.²

One target that researchers are focusing on is the fact that a zinc deficiency can cause your immune system to decline, a phenomenon known as **immunosenesence**. This decline in immunity places older adults at increased risk for a range of almost every serious disease, from infections and cancer.³

Fortunately, supplementing with the proper amount of zinc can provide life-saving benefits against the diseases of aging. Studies have shown that zinc supplementation in the elderly can restore normal function of the killer cells that attack virally-infected and cancerous cells as well as boost the immune system's anti-aging mechanisms.⁴⁻⁶





Adequate zinc levels have been found to reduce the risk of infection as well as decrease oxidative and inflammatory markers.⁷

Even if zinc levels are adequate, supplementing with zinc may offer additional protection against cancer. In animals with normal zinc levels, the number of experimentally-induced tumors was **28%** lower when the animals were given a modest zinc supplement.⁸

There is no reason that this readily available and inexpensive mineral should not be an essential component of your personal health program against the dangers of immunosenescence.

Immunosenescence: The Waning Of The Immune System

Zinc deficiency is rampant among older adults. As with so many other essentials, zinc levels decrease with age.⁹ But that's only part of the problem.

Another major cause is that people simply don't get enough of this nutrient on a daily basis. The government's minimum recommended daily allowance (RDA) of zinc is just **15 mg**. Yet **35%** to **45%** of people older than 60 don't even get half of that.¹⁰⁻¹³

Scientists now believe that zinc deficiency plays a direct role in the aging of the immune system, known as **immunosenescence**.¹⁴

In immunosenescence, there's a *decrease* in the immune system cells that normally identify and destroy abnormal cells (such as bacteria, virally-infected cells, and cancer cells).¹⁵ That leaves older adults increasingly vulnerable to infections and cancers, while making vaccinations less effective as well.¹⁶

Immunosenescence also increases the frequency and severity of autoimmune disorders (such as rheumatoid arthritis and lupus), in which the immune system attacks and destroys healthy body tissue.¹⁶ In addition, immunosenescence leads to the loss of regulatory control, which adds to the total burden of inflammation in the body, leading to atherosclerosis, osteoporosis, and further heightening the risks of cancer.^{14,17}

Battle Immunosenescence With Zinc

Immunosenescence is a very complex process that is still being understood by researchers. However, what scientists are now realizing is that the immune system in the elderly is the result of a continuous remodelling process.¹⁸ That means it's possible to fight

against this phenomenon of aging—for which zinc is a vital component. There are remarkable similarities between immunosenescence and zinc deficiency, similarities so striking that scientists now believe they can't be coincidental.^{19,20}

A deficiency in zinc reduces the activity of the thymus gland, which prevents the production of essential “killer” T-cells. This shifts the balance to “suppressor” cells that reduce the immune response.²¹

Low zinc levels also increase the occurrence of autoimmunity and excessive inflammation (as is seen in immunosenescence).²⁰ Even borderline low levels of zinc can impair immune functioning and decrease the response to vaccinations.^{19,21} While inadequate zinc is not likely to be the *only* cause of immunosenescence, it appears to be one of the main contributors.

What this means to you is that by restoring zinc levels to those found in younger people, we may be able to slow immunosenescence and protect ourselves against cancer, infection, autoimmunity, and chronic inflammation.²¹

Zinc supplementation in the elderly has been shown to confer the following benefits:

- Restore normal function of the killer cells that go after virally-infected and cancerous cells.^{4,5}
- Boost the stress response of white blood cells from older adults, providing an immune system anti-aging mechanism.⁶
- Boost the immune response to vaccines, which are becoming increasingly vital to protecting older adults from dangerous infections.^{5,22}
- Improve cellular immunity and increase survival rates in older mice.^{19,23}



Zinc supplementation is so widely recognized as essential to healthy immune system support that it now figures broadly in international health programs aimed at reducing the death tolls from diseases such as severe diarrhea, malaria, and tuberculosis.²⁴⁻²⁷

Zinc Battles Infections

Infections, especially those of the respiratory system, are a serious threat to the health of adults over 60 years old. Supplementing with zinc can help lower the risk of these dangerous infections in older adults.

One study showed that a daily **45 mg** dose of zinc reduced the incidence of all infections, including those of the respiratory tract, in elderly adults.⁷ And at a very high dose (**80 mg/day**), zinc was found to reduce overall deaths by **27%** over an median of 6.5 years.²⁸ (Please note: Zinc should not be consumed at doses higher than **90 to 100 mg/day**; at those doses it can have a negative effect on immunity and may produce urinary tract symptoms.^{3,29})

Two specific threats for which zinc has proven effective include pneumonia and influenza.

Pneumonia is one of the leading causes of death in the US for older adults.²⁸ Pneumonia is prevalent in this age group precisely because of *immunosenesence*, the waning protection against infection. But remember, immunosenesence can be a direct result of **zinc deficiency**. That helps explain why people with low zinc status are even more likely to get pneumonia and to have a more severe infection, are more likely to need more antibiotics for longer, and are more likely to die from pneumonia, than are people with healthy zinc levels.²⁹

Fortunately, studies show that simply restoring zinc to normal levels helps combat pneumonia, reducing its incidence by as much as **41%**, cutting new antibiotic prescriptions nearly in half, and shortening the duration of the illness.³⁰ In a two-year study of nursing home residents, daily supplementation with **20 mg** of zinc and **100 micrograms** of selenium decreased the average number of respiratory infections compared with patients taking a placebo.³¹

Another larger study showed that the same doses of zinc and selenium improved antibody production in elderly people after a vaccination against pneumonia-causing germs.³²

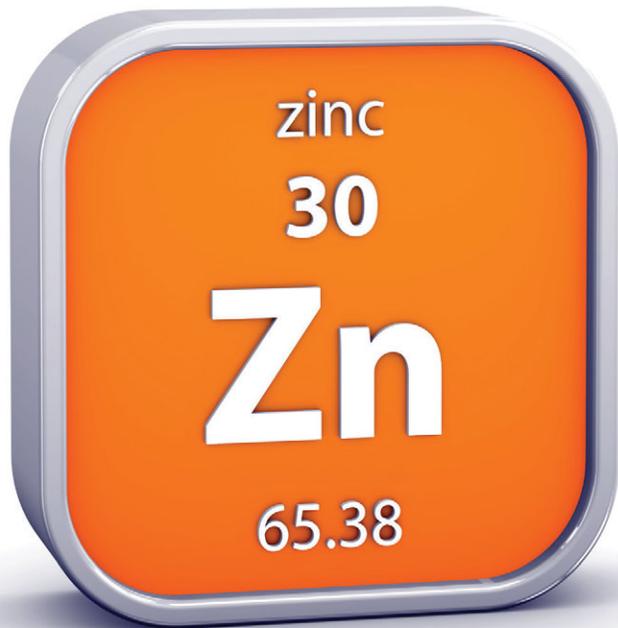
Zinc has also been found to be beneficial against **influenza**, another infection that can be especially dangerous for older adults. Influenza virus infection of lung tissue produces rapid destruction of cells through inflammation and *apoptosis*.³³ Zinc has the ability to directly combat these negative effects of influenza.



What You Need to Know

Guard Immune Health With Zinc

- Immunosenescence, the aging of the immune system, is a major contributor to the higher rates of serious infections and cancers seen in older adults.
- A major contributor to immunosenescence is falling zinc levels, which occur in a large proportion of people as they age.
- Zinc deficiency, therefore, is closely related to the risk of infection and cancer, and is also being seen in obese people and those with diabetes.
- Supplementation with zinc has been shown to enhance the aging immune system's performance, reducing the risks of infections, cancers, and obesity/diabetes.
- Zinc deserves a prominent place in your supplement regimen for all of these reasons.



Additional Benefits Of Zinc

Zinc has an impact on a wide variety of diseases. Today we can say with confidence that zinc plays an important role in **cardiovascular disease** (where it improves lipid profiles),⁶⁰⁻⁶⁶ in **neurological disorders** and cognition (where it may improve mental performance and decrease the risk of depression),^{9,67-77} and in preventing **age-related macular degeneration**, a leading cause of blindness in the elderly.⁷⁸⁻⁸³

Lab studies show that zinc supplementation of cells in culture blocks the inflammatory response, shuts down the self-destructive cycle of apoptosis, and reduces the release of new viruses from the fragmented cells.^{33,34}

Human studies confirm these results. Most importantly from a prevention standpoint, supplementation with zinc markedly enhances the response to influenza vaccines among older adults.^{23,32,35} An increase in anti-influenza antibody occurred in **87%** of supplemented people and just **41%** of controls. In response to the vaccine, supplemented subjects achieved white blood cell proliferation that was **tenfold** that of the control group.³⁵

Support Your Body's Anti-Cancer Surveillance System

Whether you realize it or not, every one of us experiences dozens of pre-cancerous cell changes daily. The reason we don't all develop malignancies every day is thanks to the aggressive anti-cancer surveillance by the body's immune system, particularly the aggressive "natural killer" cells that seek out and destroy abnormal cells.³⁶

Zinc is absolutely essential for this anti-cancer surveillance system to function properly. That's why, when zinc levels drop, we see a substantially higher rate of cancer, especially in the mouth, esophagus, and stomach.³⁷ The tissues of your digestive tract are particularly vulnerable because they're more exposed to the outside toxins that we ingest.

Restoring your body's levels of zinc prevents loss of natural killer cell function, reduces the inflammation that promotes cancer, and reduces cancer cells' ability to grow new blood vessels.^{36,38-40} As a result, zinc supplementation has been associated with a reduced incidence and/or progression of tongue, esophageal, stomach, and colon cancer in animals with zinc deficiencies.^{8,37,41-45}

Zinc offers additional protection against cancer by starving tumors of the glucose they need to grow and spread. Cancer cells take up glucose at a very high rate compared with non-malignant tissues; that's presumably because the rapidly-growing tumors have exceptionally high energy requirements.⁴⁶ Zinc supplements appear to reduce glucose uptake in malignant cells, thus reducing the availability of energy cancer cells need to replicate and progress.⁴⁶

Zinc is important in cancers outside of the digestive tract as well. The risk of non-Hodgkin's lymphoma, a common blood cancer, is **42%** lower in people with higher levels of zinc compared to those with lower levels.⁴⁷ And among patients with head and neck cancers, nearly **65%** were found to be zinc deficient.³⁹

Prostate cancer is also sensitive to zinc. Normally the prostate contains tenfold the amount of zinc found in other soft tissues, but zinc accumulation in prostate tissue decreases shortly after prostate cancer begins.⁴⁸ Supplementation restores normal prostate zinc levels and reduces levels of a promoter of tumor growth (IGF-1).⁴⁸ Supplementation also supports natural antioxidant enzymes in the prostate; those enzymes are impaired as the result of high oxidant stresses imposed by growing malignancies.⁴⁹

Even if your zinc levels are adequate, supplementing with zinc could offer additional protection against cancer. In animals with normal zinc levels, the number of experimentally-induced tumors was **28%** lower when the animals were given a modest zinc supplement.⁸

Diabetes And Obesity

The science demonstrating zinc's importance in preventing diabetes and its consequences is so strong that zinc has become widely accepted as an important supplement for those at risk for—and even those already suffering from—diabetes.

In addition, zinc is involved in the synthesis, storage, and release of insulin. Zinc deficiency is associated with insulin resistance, impaired glucose tolerance, and obesity. In a study of obese individuals supplemented with **30 mg** zinc for one month, researchers found significant reductions in body weight, body mass index (BMI), and triglycerides.⁵⁰

Studies show that supplementation with zinc lowers both fasting and after-meal glucose levels and reduces the long-term measure of blood glucose called *hemoglobin A1c*.⁵¹⁻⁵⁵ Zinc supplementation also improves insulin sensitivity and lowers insulin levels, a major factor in people with “pre-diabetes” (impaired fasting glucose).⁵⁶⁻⁵⁸

Higher blood levels of zinc are associated with the following:

- **10 to 15% decrease** in the risk of **diabetes**.
- **34 to 43% lower** risk of **glucose intolerance**.
- **12 to 13% reduction** in **central obesity**.
- **23 to 43% reduction** in **coronary artery disease**.⁵⁹

In another study, body weight and body mass index decreased following supplementation with **20 mg** of zinc.⁵⁸ That's particularly important because of the relationships between obesity, high insulin levels, and cancer. Zinc supplementation also markedly improves **nerve conduction velocity**, a measure of diabetic nerve damage.⁵²

Summary

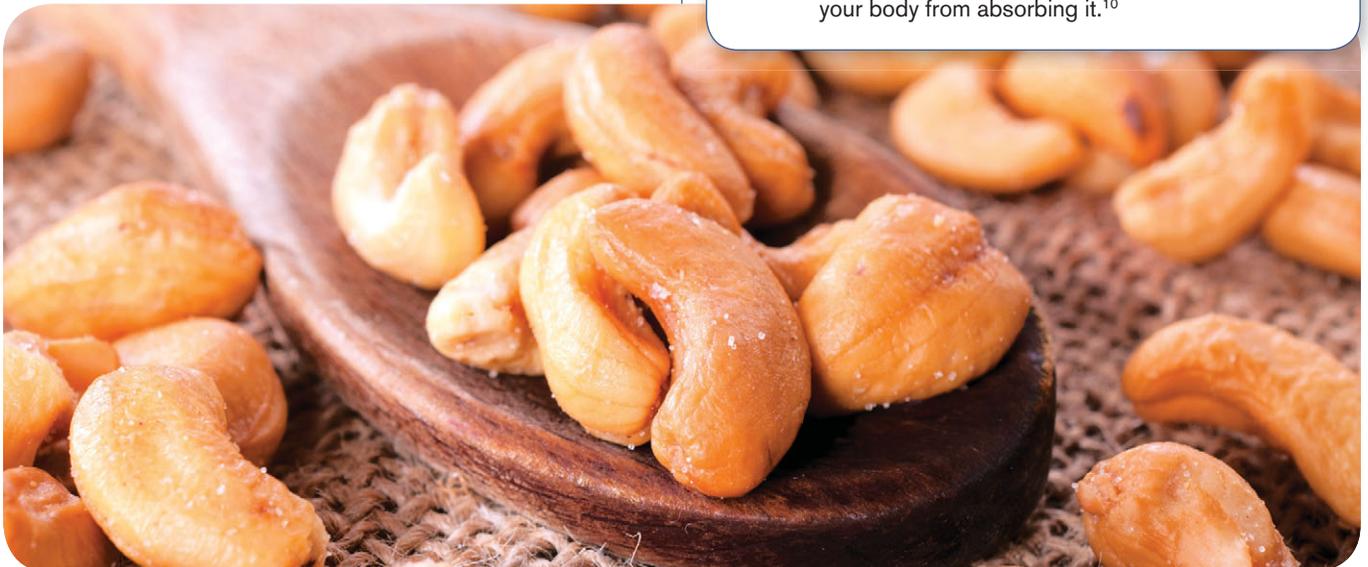
Immunosenescence, the aging of the immune system, is a major contributor to the higher rates of serious infections and cancers seen in older adults. Although immunosenescence was previously thought of as a natural effect of aging, scientists now believe that it could be caused in part by a deficiency in zinc.

That means that something as simple as supplementing with zinc could slow or reverse immunosenescence. Studies show that supplementing with zinc reduces the risk of serious infections such as pneumonia and influenza. Lab studies also demonstrate a remarkable cancer-preventive effect of supplementary zinc. Even the twin scourges of obesity and diabetes

Dietary Sources Of Zinc¹⁰

Food	Mg of zinc per serving
Oysters	74.0
Beef chuck roast	7.0
Lobster	3.4
Pork loin	2.9
Baked beans	2.9
Chicken	2.4
Yogurt	1.7
Cashews	1.6

- Minimum RDA of zinc is **15 mg** according to the government. Optimal supplemental doses for aging humans may be five times higher—up to **80 mg** daily.⁸⁶
- Although it's possible to get zinc from plant sources, your body can't utilize it as well because molecules found in breads, cereals, and legumes can bind the zinc and prevent your body from absorbing it.¹⁰





show signs of yielding to zinc therapy, with improved measures of blood glucose and reduced body mass, as well as fewer diabetic complications such as nerve and kidney damage.

If you are not taking a zinc supplement today, you should consider it to minimize the impact of *immuno-senescence* on your body. ●

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

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Zinc And Copper: A Balancing Act

Research has shown that higher dosing of supplemental zinc has produced significant benefit.⁸⁶ However, long-term supplementation of zinc at doses above around **50 mg** can interfere with copper bioavailability and result in deficiency of copper.⁸⁷ High intake of zinc induces the intestinal synthesis of a copper-binding protein called metallothionein.⁸⁷ Metallothionein traps copper within intestinal cells and prevents its systemic absorption. Copper deficiency can lead to clinical manifestations such as anemia, low levels of neutrophils (the most abundant type of white blood cell), and bone abnormalities, including fractures.⁸⁸ Low levels of copper can also lead to increased concentration of total cholesterol and LDL cholesterol, reduction of HDL cholesterol, diminished glucose tolerance, and altered cardiac rhythm.⁸⁸ Individuals supplementing with more than **50 mg** of zinc on a chronic basis should consider supplementing with **2 mg** of copper daily to address the risk of copper deficiency associated with high zinc ingestion. Short term supplementation of high doses of zinc is unlikely to affect copper distribution in the body.⁸⁷

TABLE: Zinc And Your Health¹⁰

Health Concern	Impact of Insufficient Zinc
Immune Function	Increased susceptibility to pneumonia and other infections ²⁸
Wound Healing	Slow or incomplete wound healing ⁸⁴
Gastrointestinal Health	Worsening of inflammatory bowel diseases and increased production of inflammatory cytokines ⁸⁵
Vision	Increased risk of age-related macular degeneration (AMD) ⁷⁸⁻⁸³
Cardiovascular Health	Increased plasma lipids, markers of atherosclerosis ⁶²
Cancer	Diminished immune surveillance against cancer cells ³⁹
Diabetes	Decreased blood sugar control ⁵⁵
Neurological and Mental Health	Increased risk of depression; decreased cognitive performance ^{9,77}

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Multiple Mechanisms for the Support of Healthy Blood Sugar Levels

Tri Sugar Shield™

Many aging individuals find themselves under assault from rising **blood sugar** levels.

Despite a healthy diet and exercise, blood sugar levels can rise due to a number of factors including excess **gluconeogenesis** whereby the liver produces glucose from protein. Another issue is the rapid conversion of any **starch**, including whole grains, into **glucose**. The result is that even health-conscious, active people can experience higher-than-desired blood sugar levels as they age.^{1,2}

An all-natural, **multi-pronged** approach has been designed to support the natural balance of key **glucose pathways!**

Tri Sugar Shield™ provides three plant-derived nutrients that—through their **rich array of complementary mechanisms**³⁻¹⁸—afford an **unrivaled** level of optimal, broad-spectrum support for healthy glucose metabolism in aging individuals within normal range.

MULTI-PRONGED APPROACH

Life Extension® Tri Sugar Shield™ contains the following three nutrients:

Sorghum Extract

Sorghum has long been cultivated in Asia (and now is grown in Africa, India, China, Australia and the USA) and helps maintain healthy blood sugar levels, among those in the normal range, by modulating **four** different mechanisms:

- Balances the rate of sugar manufacture in the liver (*gluconeogenesis*).⁵
- Promotes insulin sensitivity.⁶
- Regulates *PPAR-gamma*, a metabolic thermostat controlling glucose metabolism.^{6,7}
- Regulates the enzyme *alpha-amylase*, which in turn controls the release of sugar found in starch.^{3,4}

Mulberry Leaf Extract

Mulberry leaf has been used in Chinese traditional medicine for centuries. Like sorghum, mulberry leaf extract targets **three** different mechanisms:

- Targets the *alpha-glucosidase* enzyme to regulate conversion of starch into glucose.⁸⁻¹⁰
- Supports glucose transporter *GLUT4* that moves glucose out of the bloodstream and into muscle and liver cells.^{11,12}
- Promotes insulin sensitivity.¹³

Phloridzin

Phloridzin is a natural polyphenol found in various fruit trees.¹⁴ Phloridzin helps maintain healthy blood sugar levels, among those in the normal range by:

- Targeting carrier protein *SGLT1*, in turn helping to block the absorption of glucose into the bloodstream.^{15,16}
- Targeting carrier protein *SGLT2*, in turn supporting glucose elimination via urine.^{17,18}

By targeting **all** of these diverse glucose pathways, **Life Extension® Tri Sugar Shield™** delivers the **widest possible support** to help naturally stabilize already healthy glucose levels!

The suggested daily dose of one vegetarian capsule taken twice daily before the heaviest carbohydrate or sugar containing meals/drinks of the new **Tri Sugar Shield™** provides:

Sorghum bran (<i>Sorghum bicolor</i>) extract [providing proanthocyanidins (540 mg)]	600 mg
White mulberry extract (leaf) [providing 1-deoxynojirimycin (DNJ) (15 mg)]	300 mg
Phloridzin [from apple extract (root bark)]	100 mg

A bottle of 60 vegetarian capsules of **Life Extension® Tri Sugar Shield™** retails for \$36. If a member buys four bottles, the price is reduced to **\$24** per bottle.



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To order **Life Extension® Tri Sugar Shield™**, call 1-800-544-4440 or visit www.LifeExtension.com

BLACK CUMIN SEED OIL



**For Balanced
Immune Support
and Inflammation
Control**

As we age, a *balanced immune* and *inflammatory* response becomes critical to guarding our health.^{1,5}

Research has shown **Black Cumin Seed Oil** to be particularly effective.^{6,8}

UNIQUE MOLECULAR COMPLEX

Scientists have determined that **black cumin seeds** contain a *broad spectrum* of active compounds.⁶ Combined, these compounds provide powerful and wide-ranging *immune* support and promote healthy *inflammatory* response.^{6,7}

DUAL IMMUNE SUPPORT

A number of biological factors contribute to the body's normal inflammatory activity, including cell-signaling chemicals and hormone-like messengers.⁸ In a series of scientific studies, **Black Cumin Seed Oil** has been shown to support the normal effectiveness of these inflammatory factors.^{6,7}

Also, an aging, healthy immune system needs to orchestrate the activity of macrophages and helper T-cells that work together to identify and destroy dangerous microbes and abnormal cells. **Black Cumin Seed Oil** was also shown to support the optimal function of these vitally important defensive activities.⁹⁻¹¹

A BALANCED INFLAMMATION RESPONSE

By acting on *both* immune factors *and* inflammatory factors, **Black Cumin Seed Oil** supports a healthy immune system—which is increasingly important as we age—and facilitates a **healthy inflammatory response!**

The suggested daily dosage of two softgels of **Black Cumin Seed Oil** provides:

Thymocid™ organic Black Cumin seed oil (<i>Nigella sativa</i>)	1,000 mg
--	----------

A bottle containing 60 softgels of **Black Cumin Seed Oil** retails for \$16. If a member buys four bottles, the price is reduced to **\$10.50** per bottle. (Item# 01709)

Since **curcumin** possesses some of the properties of **black cumin seed oil**, some people might want to take both nutrients in the same capsule.

The suggested daily dose of two softgels of **Black Cumin Seed Oil with Bio-Curcumin®** provides:

BCM-95® Bio-Curcumin® (<i>Curcuma longa</i>) extract	400 mg
--	--------

Thymocid™ organic Black Cumin Seed Oil (<i>Nigella sativa</i>)	1,000 mg
--	----------

A bottle containing 60 softgels of **Black Cumin Seed Oil with Bio-Curcumin®** retails for \$32. If a member buys four bottles, the price is reduced to **\$22.50** per bottle. (Item# 01710)

To order **Black Cumin Seed Oil** or **Black Cumin Seed Oil with Bio-Curcumin®**, call 1-800-544-4440 or visit www.LifeExtension.com



Item# 01709



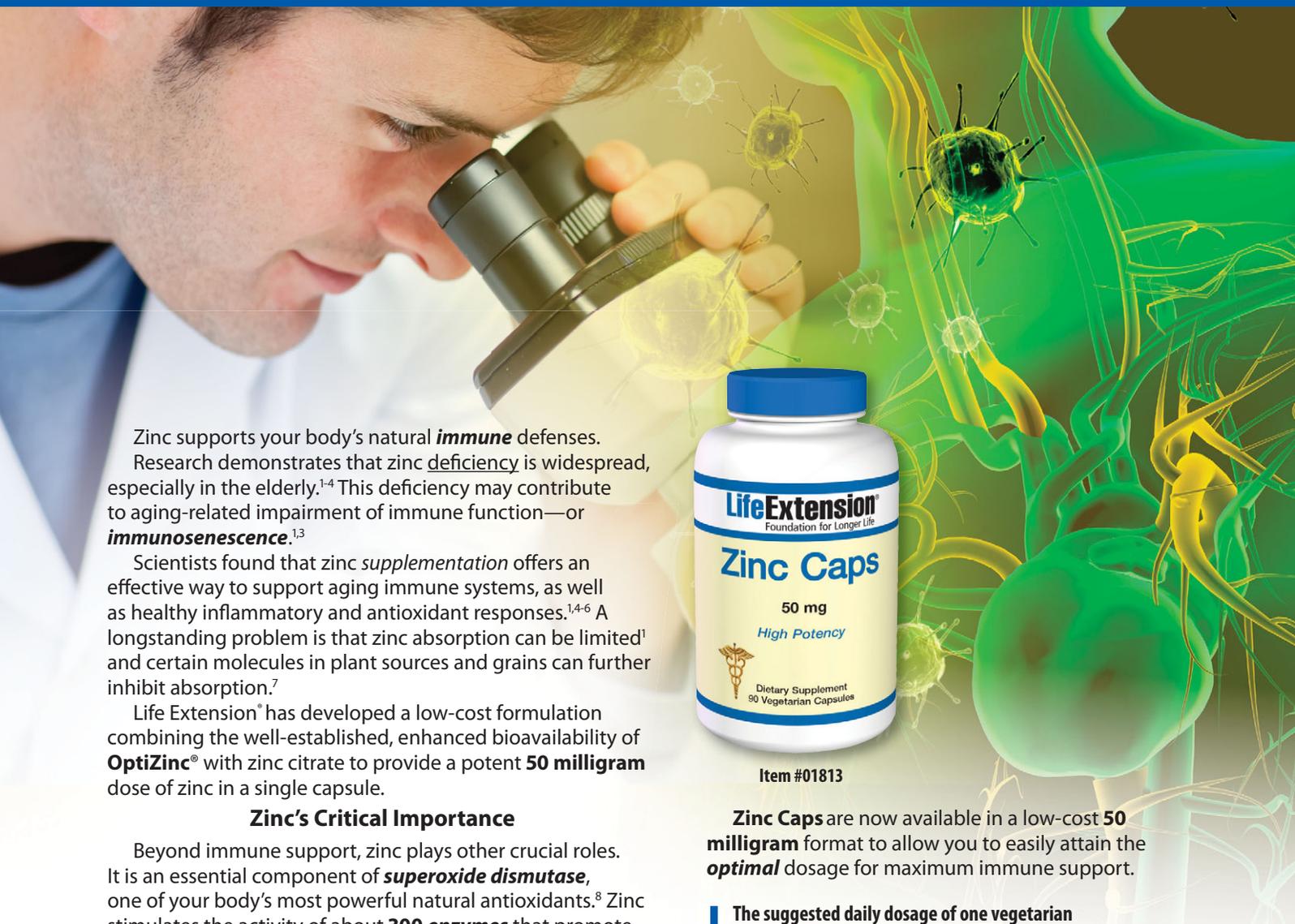
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Higher-Potency **OptiZinc**[®] For Optimal Absorption



Zinc supports your body's natural **immune** defenses. Research demonstrates that zinc **deficiency** is widespread, especially in the elderly.^{1,4} This deficiency may contribute to aging-related impairment of immune function—or **immunosenescence**.^{1,3}

Scientists found that zinc **supplementation** offers an effective way to support aging immune systems, as well as healthy inflammatory and antioxidant responses.^{1,4,6} A longstanding problem is that zinc absorption can be limited¹ and certain molecules in plant sources and grains can further inhibit absorption.⁷

Life Extension[®] has developed a low-cost formulation combining the well-established, enhanced bioavailability of **OptiZinc**[®] with zinc citrate to provide a potent **50 milligram** dose of zinc in a single capsule.

Zinc's Critical Importance

Beyond immune support, zinc plays other crucial roles. It is an essential component of **superoxide dismutase**, one of your body's most powerful natural antioxidants.⁸ Zinc stimulates the activity of about **300 enzymes** that promote biochemical reactions in your body.⁹

This key mineral is also an integral component of vital **hormones** and supports protein and DNA synthesis, insulin production, as well as thyroid and bone metabolism.^{7,8-11} Zinc supports cardiovascular and neurological health, and helps maintain vision in the elderly.^{8,9,12}

Age-related immune decline is partly due to the decreasing size and function of the **thymus** gland. Evidence suggests that zinc may help maintain healthy function of the thymus gland in elderly people.¹

The Proven Superior Absorption Of OptiZinc[®]

OptiZinc[®] is a superior bioavailable form of zinc.¹³ It is assimilated more easily than ordinary zinc because it is comprised of one of the **most absorbable** forms of zinc—**zinc methionate (methionine)**.¹⁴ Published studies show that it results in higher blood levels compared to other forms of zinc.¹⁴



Item #01813

Zinc Caps are now available in a low-cost **50 milligram** format to allow you to easily attain the **optimal** dosage for maximum immune support.

The suggested daily dosage of one vegetarian capsule of Zinc Caps provides:

Zinc (as OptiZinc[®] zinc monomethionine*, Zinc citrate) **50 mg**

A bottle of 90 vegetarian capsules of **Zinc Caps** retails for \$7.95. If a member buys four bottles, the price is reduced to **\$5.25** per bottle.

* OptiZinc[®] is a registered trademark of InterHealth Nutritionals, Inc.

Caution: Supplemental zinc can inhibit the absorption and availability of copper. If more than 50 milligrams of supplemental zinc is taken daily, 2 milligrams of supplemental copper should also be taken to prevent deficiency. Chronic ingestion of more than 100 milligrams of zinc daily may be immunosuppressive.

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

RESPONSE To Media Reports Associating Testosterone Treatment With Greater Heart Attack Risk

Headline news stories on **November 5, 2013**, parroted a study proclaiming that aging men using **testosterone** drugs suffer greater heart attack risk.¹⁻³

Life Extension[®] immediately recognized **errors** in this anti-testosterone study that render its findings meaningless.

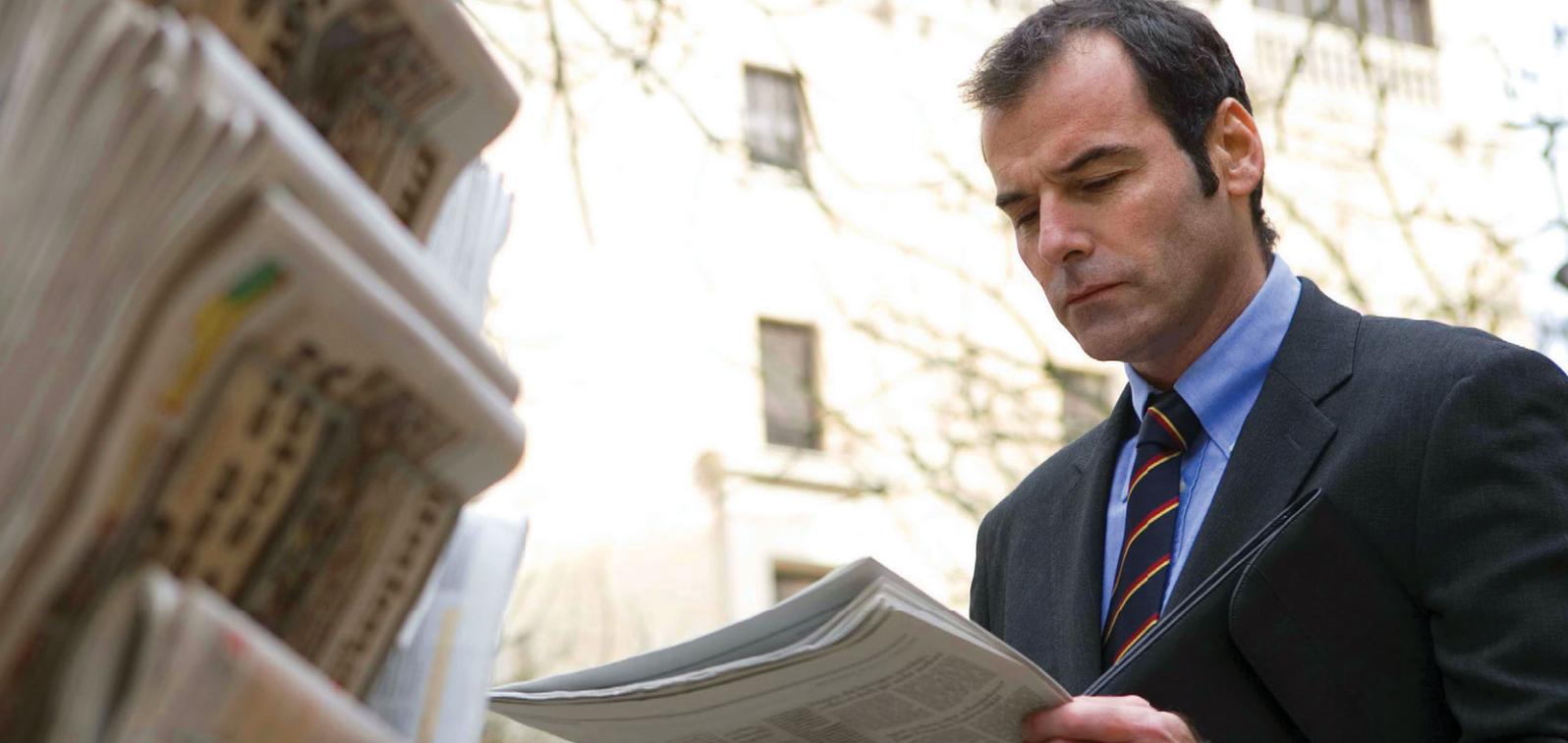
This study was designed by physicians who apparently don't know how to **safely** restore testosterone levels in aging men.

The media's portrayal of this flawed study will discourage aging men from properly restoring their testosterone levels. To help spare the lives of testosterone deficient men, we have prepared an extensive rebuttal to this erroneous report.

Life Extension's official response, starting on page 70 provides a detailed point-by-point rebuttal to the many defects in this study that was used to discredit natural testosterone restoration.

On the next page is a brief **summary** of the more serious flaws that generated the media frenzy. >





In order to confer the most protection against heart disease, **total testosterone** blood levels need to be raised higher than **500–550 ng/dL**.⁴ Life Extension believes that optimal youthful **total testosterone** is in the **700–900 ng/dL** range.

The men enrolled in this flawed study only boosted their mean **total testosterone** levels to **332 ng/dL**.⁵ Previous studies show this low testosterone level (**332 ng/dL**) is associated with an **increased** heart attack risk compared with levels above 500–550 ng/dL.⁴

The men in this study were not properly individually dosed and monitored, which explains why the testosterone treatment they received failed to restore their blood testosterone levels to anywhere near cardio-protective ranges.^{4,5}

Estradiol (an estrogen) blood levels were not reported in this study used to discredit testosterone drugs. A subset of aging men, often with increased visceral body fat (body fat around the internal organs of the abdominal cavity), have a tendency to convert testosterone into excess estrogen.^{6,7} This excess estrogen may alter the balance of anticoagulant and procoagulant (clotting) factors in the blood, and potentially enhance the risk of heart attack and stroke.⁸⁻¹¹ Any man treated with testosterone drugs should also have his **estradiol** blood level tested to ensure that the testosterone is not excessively converting to estrogen. If estradiol increases excessively, then low-dose aromatase-inhibiting drugs

(such as **1 mg/week** of anastrozole [Arimidex®]) can be prescribed to reduce the conversion of testosterone to estrogen.¹²

A subgroup of overweight men with excess visceral body fat treated with testosterone in this study would be expected to excessively convert (aromatize) their testosterone into estrogen, which may help explain why more men in the testosterone group suffered a greater percentage of heart attacks.

Research published in recent years shows profound cardiovascular benefits in response to higher testosterone levels (in men).^{4,13,14} The media conveniently **ignored** these positive reports and narrowly focused on the egregiously flawed study published in the ***Journal of the American Medical Association (JAMA)***.

Based on many published studies, **Life Extension** has recommended for decades that aging men restore testosterone to a youthful range. We've always warned that for some men, restoring one's testosterone to more youthful levels could create excessive levels of estrogen, which is readily detectable by **blood testing** and reversible using aromatase-inhibiting therapies.

What's most frightening is that most mainstream doctors today are blindly prescribing testosterone drugs and omitting any kind of estrogen testing. This creates a very **dangerous** environment for men who convert their testosterone into excess estrogen!

Flawed Testosterone Analysis Spurs Misleading Media Headlines

By Blake Gossard, Kira Schmid, ND, Luke Huber, ND, MBA, Steven V. Joyal, MD

The age-related decline of men's testosterone levels is inevitable.

Unless aging men replace their diminishing testosterone, they could succumb to any of the numerous health problems linked to low testosterone levels: frailty, muscle loss, weight gain, impaired cognition, fatigue, loss of self-confidence, depression, declining bone health, increased risk of type II diabetes, stroke, and cardiovascular disease.^{15,16}

A number of studies show that testosterone replacement therapy improves multiple measures of men's vitality, especially related to cardio-metabolic health.^{4,15-24}

Therefore, on November 5, 2013, we were startled to see media headlines like "*Testosterone Treatments Linked to Heart Risks.*"¹⁻³

This headline and others like it were prompted by a retrospective, observational study in the September 5, 2013, issue of the *Journal of the American Medical Association (JAMA)*. The study suggests testosterone therapy may increase risk of death and certain cardiovascular events.⁵

There are several significant shortcomings in the study's design and methodology, and the results conflict with an existing body of research showing that low testosterone increases a man's risk of heart problems.

Woefully Inadequate Testosterone Replacement

The goal of testosterone restoration in most cases is to restore youthful blood levels of the hormone. Typically, Life Extension suggests men target a blood level of testosterone between **700** and **900 ng/dL** for optimal health.

In studies designed to assess the impact of testosterone replacement therapy, one of the most important considerations is to measure subjects' blood levels of testosterone regularly throughout the study period. This allows the scientists conducting the study to make sure subjects are taking their testosterone as directed and that their blood levels are rising as expected.

Unbelievably, in the flawed analysis published in *JAMA*, only **60%** of study subjects receiving testosterone had a follow-up blood test to assess their testosterone levels. Among them, average testosterone levels rose from a very low level of **175.5 ng/dL** at baseline to a still far-from-optimal level of **332.2 ng/dL** during testosterone therapy.

Raising testosterone levels from a paltry **175.5 ng/dL** to only **332.2 ng/dL** is unlikely to deliver robust health benefits. In fact, research has shown that restoring testosterone levels to **500 ng/dL** or higher is associated with pronounced health benefits, whereas benefits may be less evident at lower levels.^{4,19}



Failure To Account For Impact Of Estrogen

One of the biggest perils facing aging men is the conversion of their testosterone into estrogen by *aromatase*.²⁵

Aromatase is an enzyme that converts testosterone and other androgens into estrogen, primarily estradiol. Although some conversion of testosterone to estradiol is essential for health, too much conversion can have devastating consequences for men.

In one study, men with heart failure and high levels of estradiol had an increased risk of death compared to men whose levels of estradiol were in a balanced, middle range of **21.8–30.1 pg/mL**.²⁶ These findings support Life Extension’s long held suggested optimal estradiol level of **20-30 pg/mL**. Moreover, excess estrogen promotes abnormal clot formation,⁹ and high levels may be associated with an increased risk of stroke.¹⁰

When men take testosterone, there is a significant propensity for it to be converted into estradiol by aromatase; this is especially so for aging men.²⁷ It is therefore important that men undergoing testosterone therapy monitor their estradiol levels regularly and take steps like using an aromatase-inhibiting drug to keep estradiol levels in the optimal range in order to protect against the health detriments of excess estrogen.

In the paper published by *JAMA* (*Journal of the American Medical Association*), there was no report of the subjects’ estradiol levels. If estradiol was not monitored during testosterone administration, this oversight means that the men receiving testosterone could have experienced a concurrent rise in estradiol levels. This may have compromised their cardiovascular health and could partially account for the increased risk observed in the testosterone-treated group.

Significant Difference In Baseline Testosterone Levels Between Groups

Among the men in this *JAMA* study, there was a statistically significant difference in baseline testosterone levels between the “testosterone therapy” (treatment) and “no-testosterone” (control) groups.

Among the control group, testosterone levels were higher at baseline (**206.5 ng/dL**), whereas the average level was significantly lower at baseline (**175.5 ng/dL**) for those who received a prescription for testosterone.

The treatment group may have had significantly lower levels of testosterone than the control group for years prior to entering the study. The damage caused by years of potentially lower testosterone levels was not accounted for in the study and may have skewed the results.



What You Need to Know

Flawed Media Reports Of Anti-Testosterone Study

- The precipitous decline of men’s testosterone levels over the years is inevitable.
- Major news media outlets reported that testosterone replacement therapy is linked to heart risk based on a retrospective, observational study that was published in the September 5, 2013, issue of the *Journal of the American Medical Association (JAMA)*.
- In spite of several significant shortcomings in the study’s design and methodology, and results that are in conflict with an existing body of research, the study suggests adverse effects from testosterone drug therapy.
- Over the years, several studies have shown that testosterone replacement therapy improves multiple measures of men’s vitality, especially related to cardio-metabolic health.
- If aging men do not replace their diminishing testosterone, they could succumb to any of the numerous health problems linked to low testosterone levels: frailty, muscle loss, weight gain, impaired cognition, fatigue, loss of self-confidence, depression, declining bone health, increased risk of type II diabetes, stroke, and cardiovascular disease.

Achieving Higher Testosterone Levels Has Clear Cardiovascular Benefits

Testosterone restoration is an important step aging men can take to retain good health.

In a revealing study, researchers identified 2,416 men (aged 69-81 years) who were not on any kind of testosterone-affecting treatment. These men were subjected to a battery of blood tests that included total testosterone and estradiol.

The first observation was that men with *increasing* levels of testosterone had a *decreased* prevalence of diabetes, hypertension, and body fat mass. Compared to men with the highest testosterone levels, those with low testosterone were twice as likely to have a history of cardiovascular disease. It was also observed that men with the *highest* testosterone levels were the most *physically active*.⁴

This large group of men was followed for an average of 5.1 years. Men in the highest quartile of total testosterone (above **550 ng/dL**) had a **30%** lower risk of cardiovascular events. Any level of total testosterone below 550 ng/dL resulted in significantly increased risk, thus helping establish a minimal baseline as to where total testosterone should be to guard against heart attack or stroke.

Estradiol levels measured in this group appeared to be mostly in safe ranges and did not impact incidence of cardiovascular events.

Data was tabulated based on hospital reports and/or death certificates for:

1. Acute myocardial infarction (heart attack)
2. Unstable angina (chest discomfort caused by a lack of oxygen flow to the heart)
3. Revascularization procedure (bypass surgery or stenting)
4. Transient ischemic attack (mini-stroke)
5. Stroke

The four quartiles of total testosterone in this large group of older men were:

- Quartile 1: Total testosterone below **340 ng/dL**
- Quartile 2: Total testosterone between **341** and **438 ng/dL**
- Quartile 3: Total testosterone between **439** and **549 ng/dL**
- Quartile 4: Total testosterone above **550 ng/dL**

Of interest was the finding that Quartiles 1, 2, and 3 had about the same risk of cardiac adverse events. It was only in Quartile 4 (when total testosterone exceeded **550 ng/dL**) that the **30%** reduction in cardiovascular events occurred.





This finding showed that it did not matter if these men's total testosterone was very low (below **340 ng/dL**) or moderately low (up to **549 ng/dL**)...they all had a similar increased risk for suffering a cardiovascular event. Only when total testosterone exceeded **550 ng/dL** did cardiovascular risk plummet.

This finding remained consistent for cerebrovascular disease incidence, where men with the highest total testosterone (Quartile 4) had a **23%** reduced risk of transient ischemic attack or full blown stroke. The researchers noted this association with reduced cerebrovascular risk remained after adjustment for traditional risk factors.

The conclusions by the researchers who conducted this study were:

“Higher serum testosterone levels are associated with a reduced risk of fatal and non-fatal cardiovascular events in community dwelling elderly men.”⁴

Additional Studies Demonstrate The Benefits Of Maintaining Higher Testosterone Levels

Another study found the threshold level for benefit with testosterone replacement therapy was **>500 ng/dL**. This randomized, double-blind, placebo-controlled trial on 50 male subjects with low testosterone and metabolic syndrome found that testosterone administration reduced fasting glucose and waist circumference, and improved markers of atherosclerosis. The authors concluded: “Clinical efficacy of T [testosterone] replacement therapy in hypogonadal men with MS [metabolic syndrome] is reached when its plasmatic levels approach into the medium-high range of normality (**>5 ng/mL** [or **>500 ng/dL**]).”¹⁹

Asymmetric dimethylarginine (ADMA) is a metabolic compound that contributes to atherosclerosis and cardiovascular disease. In a study of 10 men with low testosterone levels at baseline (**115.27 ng/dL**), testosterone administration for 2 weeks caused testosterone levels to rise to **648.41 ng/dL** and ADMA levels to drop a statistically significant degree. The study authors noted: “*The outcome of this study may be viewed as a favorable effect of normalization of plasma testosterone on plasma ADMA since even small elevations of plasma ADMA significantly increase cardiovascular risk.*”⁷

Study Conflicts with Previous Research

The authors of the *JAMA* study note, “The association between testosterone therapy use and adverse outcomes observed in this study differs from the association observed in a prior retrospective VA study.”

- In the *JAMA* study, investigators noted a **39%** reduction in mortality risk among patients treated with testosterone therapy.²¹ Unfortunately, the testosterone levels achieved in this study were not reported.
- A comprehensive review of data from 4 randomized controlled trials on men with chronic heart failure found that testosterone therapy was associated with improved functional capacity with no adverse events reported after up to 52 weeks of treatment.²²
- French researchers found that lower bioavailable testosterone levels (i.e., the fraction of circulating testosterone that readily enters cells [free testosterone plus weakly bound testosterone]) in men 65 and older were linked to increased carotid artery intima-media thickness, which is a known marker of cardiovascular risk.²³
- A randomized, controlled, 12-month study on 13 men with low testosterone levels and chest pain (i.e., angina) found that testosterone restoration therapy resulted in greater reductions in carotid artery plaques and improvements in time to myocardial ischemia (i.e., decreased blood flow to the heart) during exercise testing; the benefits were maintained throughout the duration of the study.²⁴ The average range of total testosterone achieved during the 12-month period was approximately **461 ng/dL** to **548 ng/dL**.

- In a study of 24 men with low baseline testosterone, intramuscular injections with 200 mg of testosterone every 2 weeks for 3 months were associated with improvements in insulin sensitivity and glycemic control as well as a reduction in total cholesterol and visceral adiposity. The scientists noted, “Improvements in [glycemic] control, insulin resistance, cholesterol and visceral adiposity together represent an overall reduction in cardiovascular risk.”²⁸
- A 2013 study confirmed the increase of metabolic syndrome in men that are testosterone deficient.¹⁷ *Metabolic syndrome* is a cluster of cardiovascular risk factors that include insulin resistance, hypertension, elevated triglycerides/LDL, and low HDL. This study found that men treated with testosterone showed across the board improvements as indicated by:
 - Reduced LDL
 - Reduced triglycerides
 - Reduced glucose
 - Reduced C-reactive protein
 - Reduced liver enzymes
 - Reduced blood pressure
 - Reduced hemoglobin A1c
 - Increased HDL (removes cholesterol buildup from arterial walls)



Retrospective Observational Study - Unmeasured Confounding Or Hidden Bias Might Exist

The study by *JAMA* was retrospective and observational. This study design limits the interpretation of the findings because subjects were treated in a clinical setting and not randomized to treatment. Bias may be introduced if confounding factors (e.g., those associated with both treatment initiation and mortality) are not adequately accounted for. Although the authors attempted to control for confounding factors, unmeasured or hidden factors likely still exist. The extent that these unmeasured variables bias the association reported is unknown.

Based upon an analysis of this study and the existing research, Life Extension continues to recommend male members restore testosterone levels to youthful ranges for optimal health.

Unnatural Forms Of Testosterone Used By 1/3 Of Subjects

Of men receiving testosterone therapy in the study by *JAMA*, only **1.1%** were prescribed testosterone gel, **63.3%** received patches, and **35.7%** received injections. Commonly prescribed testosterone injectables can produce a peak, often supraphysiologic, level of testosterone that then declines slowly to an often subnormal level in 1 to 2 weeks.^{29,30} This “peak and trough” effect is an unnatural rhythm for testosterone. A testosterone cream or gel, on the other hand, gradually releases into the bloodstream, which is more analogous to the natural secretion of testosterone by the testes. More than a third of men in this analysis received testosterone injections, which may cause unusual fluctuations in testosterone levels. In addition, testosterone injectables are comprised of non-bioidentical testosterone compounds. Life Extension advocates that men use a daily bioidentical testosterone gel (e.g., AndroGel® or compounded version) to avoid unnatural fluctuations in testosterone levels.

Summary

Headline news stories on **November 5, 2013**, parroted a study proclaiming that aging men using testosterone drugs suffer greater heart attack risk.¹⁻³ The study suggests testosterone therapy may increase risk of death and certain cardiovascular events.⁵ However, there are several significant shortcomings in the study’s design and methodology, and the results conflict with an existing body of research. The media’s portrayal of this flawed study may discourage aging men from properly restoring their testosterone levels and potentially endanger their health.

Over the years, several studies have shown that testosterone replacement therapy improves multiple measures of men's vitality, especially related to cardio-metabolic health.^{4,15-24} The precipitous decline of men's testosterone levels over the years is inevitable. Unless aging men replace their diminishing testosterone, they could succumb to any of the numerous health problems linked to low testosterone levels: frailty, muscle loss, weight gain, impaired cognition, fatigue, loss of self-confidence, depression, declining bone health, increased risk of type II diabetes, stroke, and cardiovascular disease.^{15,16}

Based on many published studies, *Life Extension* has recommended for decades that aging men restore testosterone to a youthful range. We've always warned that for some men restoring one's testosterone to more youthful levels could create excessive levels of estrogen, which is readily detectable by **blood testing** and reversible using aromatase-inhibiting therapies.

This full report of Life Extension's rebuttal to this flawed testosterone study is also available online at www.lef.org/testosterone-risk. ●

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

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CRUCIFEROUS

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

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

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

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

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



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

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

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

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15 mg	Bioperine®
850 mg	Muira puama
282 mg	Nettle root
15 mg	Chelated elemental zinc
320 mg	Maca
33.4 mg	HMRLignan™
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Item # 01698

The retail price for a bottle of 120 capsules of **Super MiraForte with Standardized Lignans** is **\$62**. If a member buys four bottles, the price is reduced to **\$42** per bottle.

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Super Health. Super Libido.
Super MiraForte.

Caution: If you are taking any medication, use only under physician supervision. Men with existing prostate cancer may not be able to use this product. Elevations in free testosterone can unmask an occult (hidden) prostate cancer. Anyone with this concern should have a baseline PSA prior to using this product and a follow-up PSA test 60 days later. If a significant elevation of PSA is found, discontinue this product and advise physician. Do not take more than 15 mg per day of Bioperine®.

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

BY MICHAELA HARROD

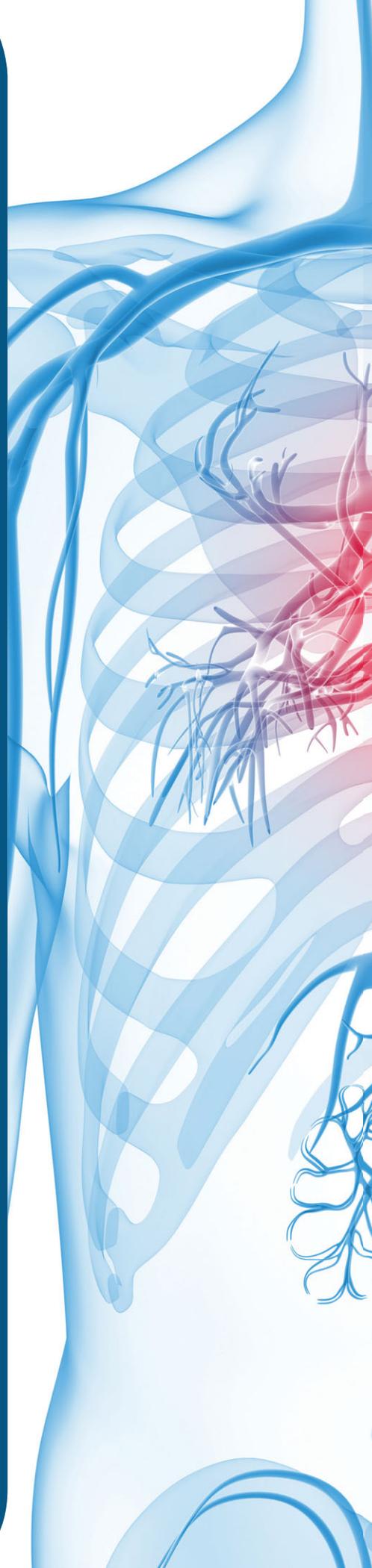
Enhance Endothelial Function And Reduce Arterial Stiffness

Despite years of research and billions of dollars spent on lipid-lowering medications, cardiovascular disease remains the number one killer in the United States.

“Statin” drugs have undergone intense scrutiny, with evidence of over-prescribing, the potential for side effects, and somewhat exaggerated claims about effectiveness.¹⁻³ Statin drugs reduce the risk of heart attack in high-risk patients, such as preventing a second heart attack in those individuals having already experienced a first heart attack. The benefit of reducing the risk of a heart attack in otherwise low-risk patients, however, is not clear.

Furthermore, a recent, controversial guideline change on statin drug prescribing for optimal lipid management has been met with deep skepticism by many experts in cardiology.^{1,2} >

ENDOTHELIAL FUNCTION





Many aging individuals who seek to support healthy blood lipid management look for natural products with evidence of support.

Studies show that extracts from an Ayurvedic herbal plant called **Amla** (*Emblica officinalis*) can provide support for some of the important aspects of vascular and cardiac health.⁴

In addition, **black tea extracts** may offer more benefit for vascular health.⁵ These natural ingredients, used for centuries in Asian medicine, are available without the need for prescription.⁶

If you are concerned about vascular and cardiac health, and seek natural strategies to support cardiovascular health as you age, you'll want to learn more about **Amla** and **black tea** extracts.

Endothelial Dysfunction And Stiff Arteries Are Killing You

By now most of us understand that elevated levels of cholesterol and other fats put us at risk of heart attacks, strokes, and other serious cardiovascular outcomes. We also know that having elevated blood glucose, metabolic syndrome, or outright diabetes adds to that risk.^{7,8} But few people outside of the halls of academia really understand how these factors work together to put your health—and your life—at risk.

In a nutshell, here's how it works:

Your blood vessels are lined with an ultra-thin layer of sensitive cells called *endothelial cells* (or simply, “the endothelium”). The **endothelium** normally regulates blood flow and pressure, assuring that vital tissues always get just the right amount of oxygen- and nutrient-rich blood.

You want to have a healthy endothelium.

But the modern lifestyle works against endothelial health. One culprit is *oxidative stress*, which arises from a number of exposure sources.⁹⁻¹⁸

Oxidative stress damages the endothelium and impairs its ability to regulate blood flow, in part by reducing endothelial production of *nitric oxide*, a signaling molecule that tells the artery when to dilate to improve flow.¹¹ Oxidative stress acts on elevated cholesterol levels to produce dangerous **oxidized LDL**, a key component of artery-clogging plaque.¹⁹



Add to that elevated blood sugar, which produces dangerous **advanced glycation end products** (AGEs) that chemically cross-link proteins in vessels, and physical and emotional stress, which impairs endothelial function still further, and you have the “perfect storm” of factors that damage endothelial function and ultimately lead to stiffening of the arteries.²⁰⁻²³

A result of thickened, stiff arteries is rising blood pressure, an overworked heart, and restricted blood flow. This ultimately leads to the catastrophes we see as heart attacks, heart failure, and strokes.²⁴⁻²⁷

So the bottom line is you want to do everything possible to protect your endothelial function and prevent arterial stiffening, long before you develop warning signs of cardiovascular disease.

To do that, it's wise to attack **all** of the factors that add up to stiffened arteries and poor endothelial function. The ideal cardiovascular protective pill, therefore, would simultaneously reduce oxidative damage, control lipid and blood sugar levels, improve platelet function, and lower blood pressure.

In clinical studies, that pill would markedly improve **endothelial function** and reduce arterial stiffening, in healthy people and those at high risk for cardiovascular disease, such as diabetics, smokers, and those with the metabolic syndrome. And that pill would do all of this, without imposing its own risks to your health.

That's what Amla extract has now been shown to do.²⁸ Black tea extract provides an interesting complement, improving the same risk factors by similar as well as different mechanisms.^{29,30}

How Amla Functions

The fruit of the Amla has long been used in traditional Indian medical systems.³¹ More recently, interest has grown in the fruit's impact on blood glucose, lipid profiles, and, increasingly, other risk factors for cardiovascular disease. Let's see how it stacks up as a supplement for reducing some of the risk factors that produce **endothelial dysfunction** and ultimately arterial stiffening.

Amla is a potent antioxidant.³² Amla reduces overall oxidant stress by three separate pathways: It inhibits production of the oxidizing free radicals that damage endothelial cells, it scavenges and neutralizes those reactive oxygen species that have already been produced, and it enhances production and activity of natural cellular antioxidant enzyme systems.³³⁻³⁷ The result is a significant decrease in oxidant damage, as measured by biochemical markers of oxidation.^{38,39} Amla has very little pro-oxidant activity, ensuring a low rate of undesirable effects.⁴⁰

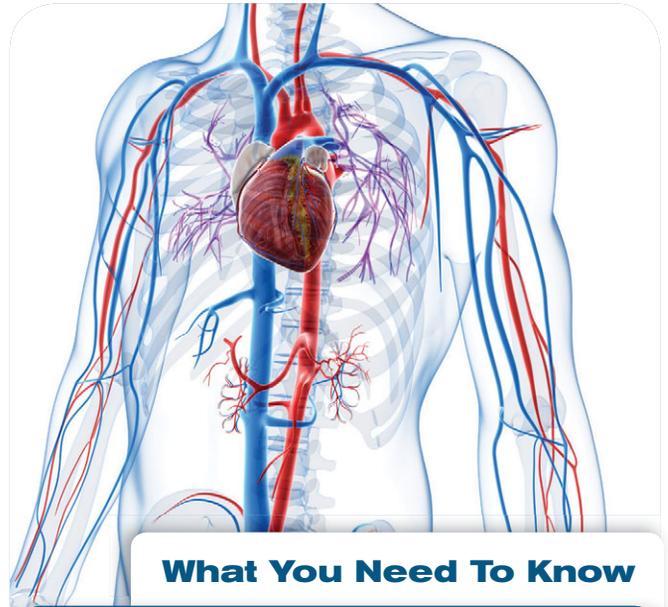
Amla lowers cholesterol. Animal studies show that, while a high-fat or high-fructose diet will produce signs of the metabolic syndrome and unhealthy lipid profiles, treatment with Amla extract has been shown to help reduce total cholesterol and triglycerides.^{38,39,41,42} Importantly, this effect was especially noticeable in a rat model of menopause; at menopause, women's risk for heart disease rapidly rises to become similar to men's.⁴²

It was recently discovered that Amla lowers serum lipids through an important pathway.⁴³ Amla activates the "metabolic sensor" molecule called *PPAR-alpha*; the PPARs lower both blood lipids and glucose by increasing their consumption in cells.³⁹ PPAR-activating drugs are increasingly being recommended for use in combination with statins, especially for diabetics. Amla may provide this benefit with less potential for the side effects seen with the two drugs.^{39,44,45}

Amla fights diabetes. Diabetes is a disaster for endothelial function and arterial stiffness, and substantially raises the odds for a heart attack or stroke. When rats are made diabetic in the laboratory, Amla administration prevents rises in blood sugar and insulin resistance; it also prevents diabetes-associated increases in food intake.^{42,46}

A unique anti-diabetic property of Amla is that it inhibits an enzyme called *aldose reductase*.^{47,48} This enzyme produces a toxic chemical called *sorbitol*, which damages proteins in the eye to cause cataracts, and which more recently has been implicated in production of arterial stiffening and cardiovascular disease.⁴⁷⁻⁵¹

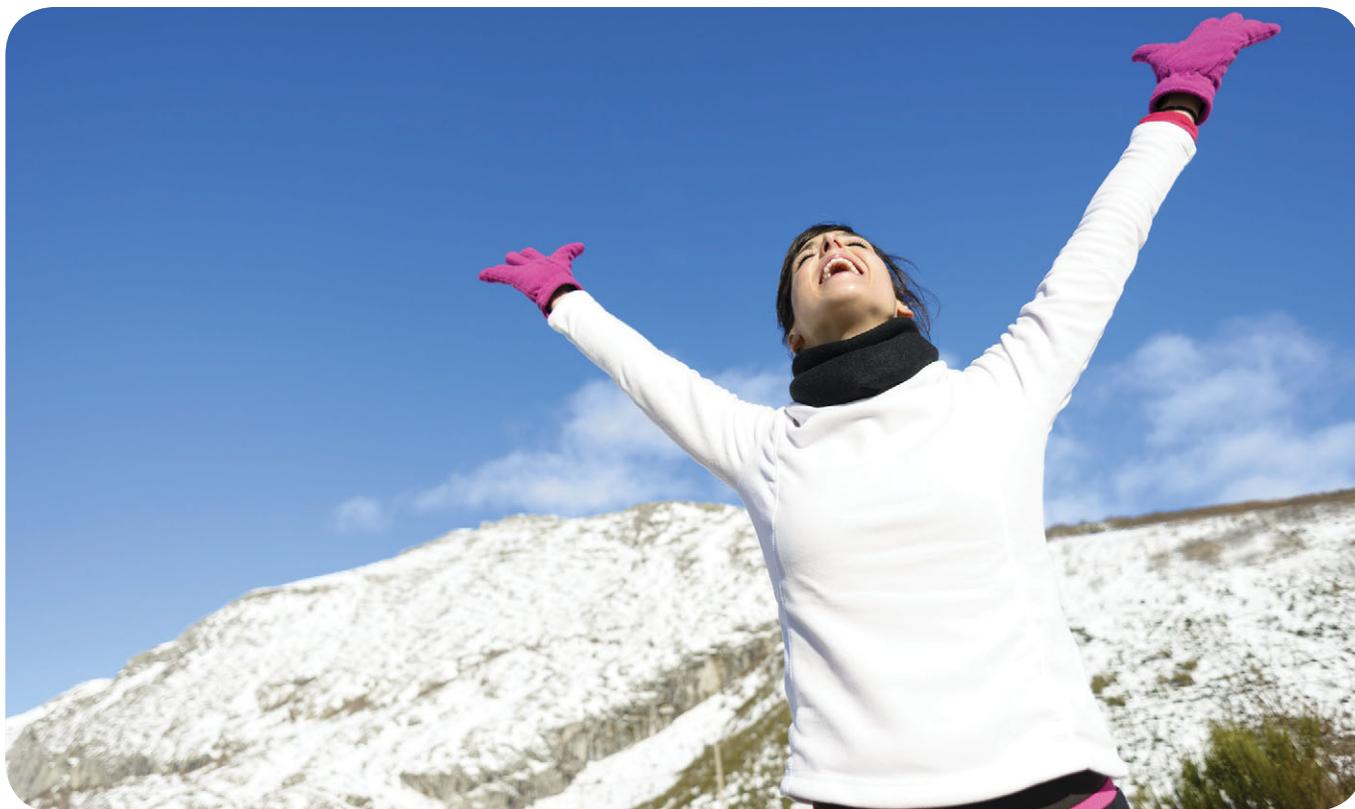
Amla lowers blood pressure. Elevated blood pressure is both a cause and a consequence of arterial stiffening; it can be produced in the laboratory by inducing the metabolic syndrome in rats through high-fructose diets, eventually resulting in damage to the heart and kidneys, exactly as in humans.⁴¹ But if the animals are supplemented with Amla extracts, blood pressure and elevated heart rates return to near-normal levels, heart and kidney swelling are reduced, and elevated sodium and depressed potassium levels are normalized.^{52,53} And in animals with full-blown diabetes, Amla prevents blood pressure-induced heart muscle dysfunction as well.⁴⁶ Anyone using Amla to help with hypertension should have regular blood pressure checks, ideally using an at-home blood pressure monitor to ensure that blood pressure readings stay at the optimal range, which we at *Life Extension* have long argued are around 115/75 mm Hg.



What You Need To Know

Guard Heart Health With Botanical Power Duo

- Your heart health is threatened by arterial stiffening, the result of a host of factors that damage your endothelial function and reduce your body's ability to respond to changes in blood flow and pressure.
- Mainstream medicine uses "statins" to address this problem. "Statins" are increasingly under scrutiny for being over-prescribed and potentially dangerous—and they primarily address lipids, which is only one part of the entire picture.
- Amla has undergone dozens of basic lab and clinical trials related to cardiovascular disease.
- All of these studies point to the idea that Amla fruit extract represents the "perfect heart pill," because it addresses not only lipid levels, but also the oxidant stress, glucose damage, platelet dysfunction, and blood pressure abnormalities that contribute to endothelial dysfunction and arterial stiffening.
- The addition of black tea extract rounds out Amla's benefits, complementing them to assure you of comprehensive heart health promotion.



Amla protects endothelial function. Poor endothelial function, as we've seen, underlies the arterial thickening and stiffening that ultimately leads to cardiovascular disease. Laboratory studies using cultured endothelial cells and experimental models show that treatment with Amla extract enhances production of **nitric oxide**, the signaling molecule that the endothelium uses to "tell" arterial walls to relax and maintain normal blood flow.^{52,54,55}

Amla is cardioprotective. The sum of all of Amla's beneficial effects in the laboratory can be seen in studies that demonstrate how it protects heart muscle from damage. A laboratory model of the overworked, underfed, diseased heart can be produced by treating the animals with the drug *isoproterenol*, a powerful heart stimulant that eventually impairs cardiac muscle function by excessive oxidative stress. Animals treated with isoproterenol develop decreased heart rate, poor contractility ("squeeze"), and increased pressure inside the heart, which leads to heart failure.⁵⁶ But treatment with Amla extract restored normal heart function and pumping pressures, preserves antioxidant levels, reduces enzyme markers of heart muscle damage, and prevents microscopically-visible injury to heart muscle.⁵⁶ And in diabetic rats, Amla also reduced ominous increases in heart size and muscle damage.⁴⁶

Human Clinical Trials Using Amla

Laboratory studies show that Amla may rectify many problems associated with the **endothelial dysfunction** that conspire to cause cardiovascular disease. Now there's exciting new evidence from a series of clinical studies that shows just how powerful these effects are in humans.

The first of these clinical trials examined the effects of Amla fruit extract supplementation on **acute physical stress** in healthy volunteers.⁵⁷ Both acute and chronic stress are known risk factors for coronary artery disease, acting through oxidative mechanisms to damage the endothelium and stiffen arteries.^{57,58} Subjects received either a placebo or **500 mg** Amla fruit extract twice daily for 14 days.⁵⁷ Before and after supplementation, subjects underwent a "cold pressor" test that required placing the hand in ice water for a set period, which is a proven means of acutely impairing endothelial function and raising blood pressure.^{57,59}

All patients showed the same increases in blood pressure (**10-12%**) and arterial stiffness (**12-20%**) **before** treatment was started, but after 14 days, while placebo patients had those same increases, supplemented patients had **decreases** in both blood pressure (**3-5%** less than baseline) and arterial stiffness (**8%**), a marked and significant difference compared with placebo.⁵⁷

In a similarly-designed study, researchers looked at the impact of Amla supplementation on mitigating the effects of **mental stress** on arterial stiffness. Mental stress is known to produce increased risk for acute cardiovascular disease, including even heart attacks.^{60,61} Here, healthy subjects took placebo or **500 mg** Amla fruit extract twice daily for 14 days, and were subjected to a series of stressful mental math exercises before and after the supplementation period.⁶² Subjects taking Amla had a decrease in their aortic blood pressure compared with baseline values, while no such change was seen in placebo patients. No significant change in arterial stiffening occurred in either group.⁶²

Because **smoking** is known to threaten endothelial function,^{13-18,63} another study was done to compare markers of endothelial dysfunction in smokers who received either placebo or **250 mg** Amla extract twice daily for 60 days.⁶⁴ Participants indicated their status on a group of subjective parameters of smoking-related health (e.g., of mouth hygiene, productive cough, painful breathing with exertion, sleep, and palpitations), while objective parameters of endothelial function and risk (including blood counts, lipid profiles, cardiac risk factors, toxicity to genes/chromosomes, platelet aggregation, C-reactive protein, antioxidant status, and lung function) were measured at baseline and the end of the study. With the exception of lung function (which remained constant and showed no signs of further deterioration), the supplemented group had significant improvement on all subjective and all objective measurements, demonstrating the broad-spectrum efficacy of Amla at reducing endothelial risk in one of the most challenging groups, namely smokers.

People with the **metabolic syndrome** are also at increased risk for cardiovascular disease as a result of endothelial dysfunction and increased arterial stiffness.^{27,65} Scientists studied placebo vs. Amla fruit extract (**250** and **500 mg** twice daily for 12 weeks) in metabolic syndrome patients with known endothelial dysfunction.⁶⁶ They used the same proven technique for measuring arterial stiffness as in the previous studies. The placebo group had a small increase (**1.3%**) in stiffness after 12 weeks, while both Amla doses produced significant decreases (**-6.6** and **-7.5%** for the **250** and **500 mg** doses, respectively). Both Amla groups, but not the placebo group, also had significant increases in beneficial **nitric oxide**, which helps arteries dilate to allow increased blood flow. And both Amla doses produced significant increases in endogenous antioxidants such as glutathione, and reduced markers of oxidative damage and inflammation such as C-reactive protein. Finally, both dose levels of Amla

caused drops in triglycerides, total cholesterol and LDL, with no change in the placebo group.

People with **diabetes** (types I or II) are at massively increased risk of endothelial dysfunction and stiffening of their arteries.^{23,65} Researchers have now studied the impact of Amla extract (**500 mg** twice daily for 12 weeks) vs. placebo in a group of diabetics, using the same measures of arterial stiffness as in the other studies.²⁸ Supplemented subjects had a **7.6%** drop in stiffness, compared with a **1.3%** increase in placebo recipients.²⁸ Amla also produced drops in total cholesterol, LDL and triglycerides, with beneficial increases in HDL and native antioxidant enzymes. An additional benefit of Amla was a drop in **hemoglobin A1c**, a measure of chronic glucose exposure and a contributor to cardiovascular risk. Again, virtually every measured outcome was improved in this very high-risk population.²⁸

Together, these studies seem to validate the idea that Amla, particularly at doses of **500 mg** twice daily, provides meaningful cardiovascular protective benefits.

Black Tea: The Ideal Complement To Amla

The world's second most popular beverage after water is tea, which contains more than 4,000 chemical constituents, many of which have proven health benefits, especially the *catechins* and *theaflavins* found in black (and green) tea.^{67,68} Higher catechin consumption is associated with a **51%** reduction in the risk of dying from cardiovascular disease, a **40%** reduction in stroke risk, and a **90%** reduction in lipid disturbances.⁶⁹⁻⁷²





Statins: Potential Benefits, But With Potential Risks, Too

“Statin” drugs have been tremendous money makers for Big Pharma for more than 2 decades; during that time recommendations for who should take them have, with few exceptions, been broadened. A recent review of the subject, in fact, suggested that even people at less than a **10%** risk of cardiovascular disease are candidates for drug treatment. Critics have commented upon the potential for bias given that the review included many studies funded by statin manufacturers.^{2,84}

Some prominent researchers continue to question the need for more widespread use of statins in the general population.

For example, distinguished Harvard professor John D. Abramson and colleagues argue in an editorial published in the prestigious *British Medical Journal* that the evidence of benefit for statins in lower-risk patients comes nowhere near the known risks that these drugs produce.

In a startling calculation, the researchers show that one needs to treat 140 or more low-risk people for five years to prevent a single heart attack or stroke, and even then there's no reduction in the long-term risk of dying.² By comparison, treating as few as 19 patients will produce at least one episode of the severe muscle pain known as “myopathy.”²

And that's not to mention the potential increase in the incidence of diabetes or liver and kidney dysfunction, cataracts, cognitive symptoms, nerve disorders, and sexual dysfunction, and other potentially debilitating effects.²

Abramson has publically made the plea to stop giving statins indiscriminately to more and more patients, and it's time for all physicians to reevaluate their prescribing habits.²

Statins are imperfect drugs, and although they do have a role in cardiovascular disease risk management, a careful risk/benefit analysis must occur for each individual patient, always using the lowest possible drug dose to achieve the desired treatment effect. Life Extension has long argued that half doses of drugs like Lipitor® work as well as full dose in many patients requiring statins.

Clinical trials of black tea or its components have shown substantial benefits on the risk factors for arterial stiffening and cardiovascular disease:

- **Endothelial function** is improved by consumption of black tea for both short- and long-term intervals in healthy volunteers as well as in patients with known coronary artery disease or elevated lipid profiles.^{29,73,74} Black tea consumption also increased the function of the essential coronary arteries by increasing blood flow in a group of healthy volunteers.⁷⁵ These effects are similar to those of green tea, also known for its endothelial function-improving properties.⁷⁶
- **Cholesterol levels** (LDL and total cholesterol) were lowered by black tea consumption in adults with mildly elevated levels, with reductions in total cholesterol of **6.5%** and LDL of **11.1%**.⁷⁷ Black tea extract showed similar effects in other studies.^{30,78}
- **Inflammatory changes and metabolic toxins** that promote endothelial dysfunction can be reduced by black tea consumption, as shown in studies of C-reactive protein (a marker of inflammation) and uric acid, an ammonia-like toxin produced in the liver. Levels of both were significantly reduced by consumption of black tea for 12 weeks.^{79,80}
- **Oxidative stress**, another major contributor to endothelial dysfunction, is also reduced by black tea extract consumption in patients with type II diabetes and in healthy volunteers.^{78,80}
- **Large variations in blood pressure** are an independent risk factor for cardiovascular disease, and recent evidence suggests that these variations are reflections of increased arterial stiffness.^{81,82} Regular black tea consumption can reduce the rate of blood pressure variation and so lower the risk.⁸³

Summary

Your heart and blood vessels are under constant attack from oxidants, inflammation, elevated blood sugar, high cholesterol, and a host of internal and environmental toxins.

These effects add up to diminished **endothelial function** and its major consequence, arterial stiffening, which in turn dramatically raise risk for heart attack, stroke, and other disastrous outcomes.

Mainstream medicine is almost slavishly devoted to statin drugs in attempts to bring down risk, but these drugs are just a small piece of the complex puzzle that represents cardiovascular disease. Statins, which more and more experts feel are over-prescribed, also carry with them a list of serious side effects. They are certainly far short of a perfect heart pill.

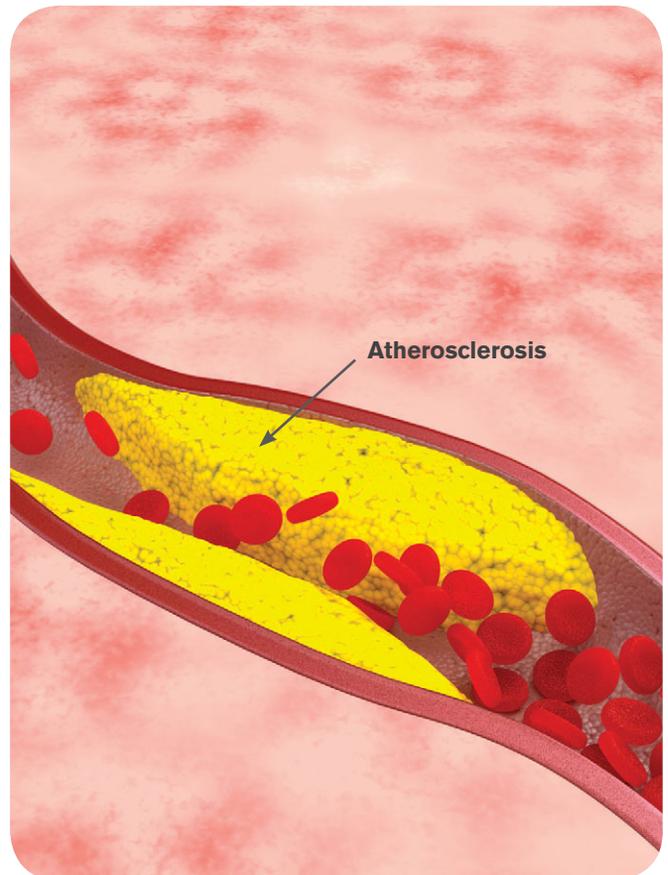
Extracts of **Amla fruit** on the other hand, attack endothelial dysfunction and arterial stiffening on a wide front, improving not only lipid profiles but also blood glucose, platelet function, blood pressure, and the oxidant stress that produces them. Studies in animals and now humans demonstrate the broad-spectrum benefits of Amla, which has now been shown to produce potentially life-saving reductions in the arterial stiffening that raises risk for cardiovascular disease.

The addition of **black tea extracts** would appear to complement the biological benefits of **Amla**. ●

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

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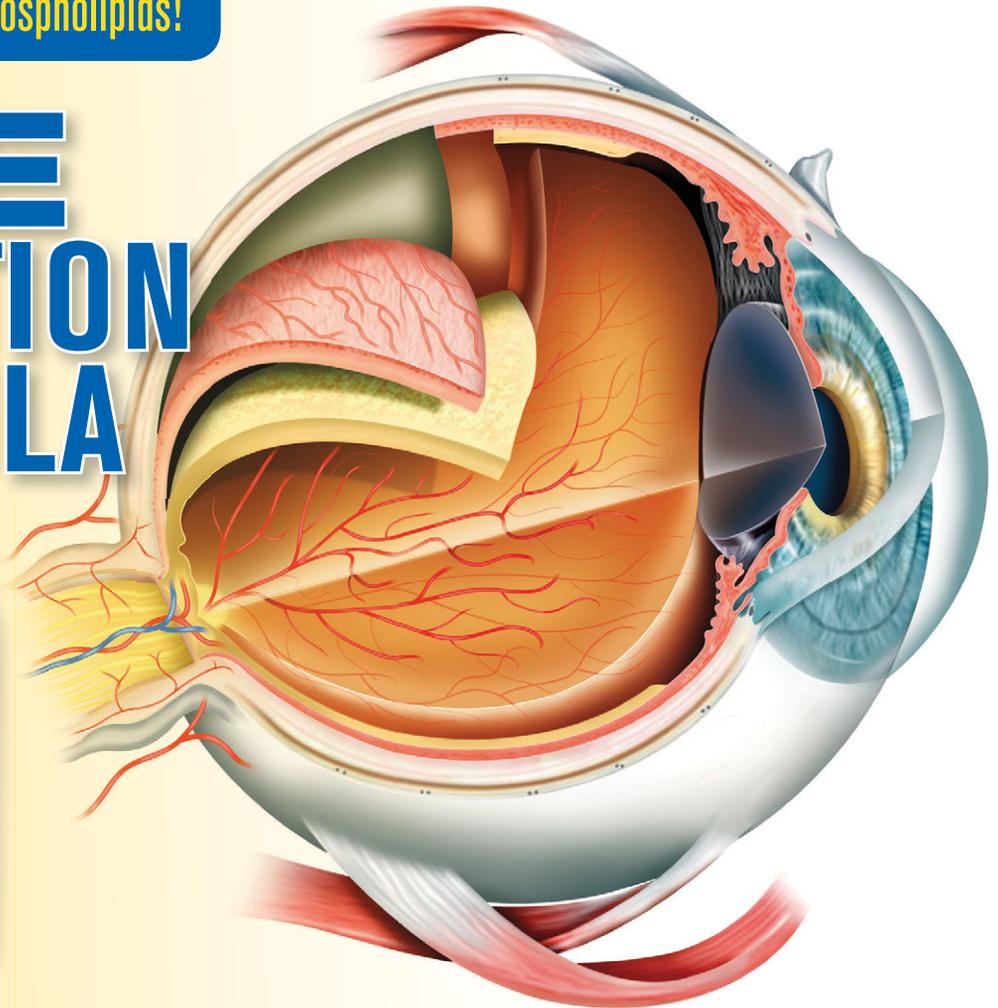
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Enhanced Absorption With Phospholipids!

EYE PROTECTION FORMULA



Ocular Circulation Support

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

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

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

MacuGuard™ Ocular Support offers TRIPLE EYE PROTECTION:

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

Comprehensive Ocular Protection in One Daily Softgel

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

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

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

Contains soybeans.

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

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

Support Endothelial Function and Healthy Blood Lipids

Safely managing the *multiple* elements supporting cardiovascular health can be a challenge as people grow older. Doctors are increasingly recognizing the need to promote the function of the **endothelial** layer of the arterial wall, a critical factor in cardiovascular health.¹

Advanced Lipid Control provides two ingredients that help maintain key aspects of endothelial function—**Amla extract** from the Indian gooseberry and **Black Tea extract**.

Amla Extract

Amla fruit contains a diverse blend of beneficial *phenolic compounds*. This fruit has long been used in herbal preparations by ancient medical systems.²

Standardized Amla extract has been clinically shown to support **endothelial function**.³⁻⁵

Modern research shows that this plant extract safely supports healthy levels of all three key blood lipids⁶ already within healthy range:

1. Low-density lipoprotein (LDL)
2. High-density lipoprotein (HDL)
3. Triglycerides

Evidence demonstrates that **Amla** extract also promotes healthy levels of blood **glucose**, **insulin**, and **blood pressure** within normal range.⁶⁻⁸

Advanced Lipid Control contains a patented standardized extract of **Capros® Amla**.

Black Tea Extract

Black Tea is rich in *polyphenols* such as *theaflavins* that scientists have discovered provide multiple benefits for **arterial health**.^{9,10}

Black tea *polyphenols* have been shown in human studies to help maintain LDL levels already in the normal range.¹¹ Protective compounds found in black tea have been shown to support the body's natural defenses against **LDL oxidation**, thus helping to maintain healthy circulation by favorably affecting **endothelial function**.^{12,13}

In addition, compounds found in **black tea** have been found to be helpful in regulating key inflammatory mediators in the body,¹⁴ thus further helping to preserve endothelial integrity.

Through these multiple mechanisms, **Black Tea** supports **blood pressure** levels within normal range.¹⁵

Advanced Lipid Control also contains theaflavin-standardized black tea extract.

Broad Endothelial and Cardiovascular Support

The ingredients in **Advanced Lipid Control** support **endothelial function**. This special formula also promotes healthy cholesterol levels already within normal range and safeguards vascular and heart health.

The suggested daily dosage of two vegetarian capsules of **Advanced Lipid Control** provides:

Capros® Amla water extract (fruit)	500 mg
[std. to 60% low molecular weight hydrolyzable tannins (300 mg)]	
Black tea extract (leaf)	350 mg
[std. to 25% theaflavins (87.5 mg)]	

A bottle of 60 vegetarian capsules of **Advanced Lipid Control** retails for \$30. If a member buys four bottles, the price is reduced to **\$20.25** per bottle.

Capros® is a registered trademark of Natreon, Inc. This product contains a black tea extract which is licensed from Applied Food Sciences, Inc. and is protected by U.S. patent Nos. 6,811,799 and 6,602,527.



Item #01828

To order
Advanced Lipid Control,
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.

Mitochondria And Aging Conference On The Canary Islands

Mitochondria And Aging

Mitochondria are the source of most energy in living organisms.¹ Muscle, which requires significant amounts of energy, typically has over a hundred mitochondria in every cell.¹ Sugar, fat, and protein are eventually converted to energy-rich ATP molecules by mitochondria, but free radicals are often an unfortunate by-product.²

Over 40 years ago Denham Harman, Professor Emeritus at the University of Nebraska Medical Center, proposed that because mitochondria are the main source of free radicals, mitochondria are the major determinants of aging and life span.³ Harman's theories on the cause of aging have been extremely influential.

Mitochondria were the subject of many of the presentations at the **Mitochondria, Metabolic Regulation, and the Biology of Aging Conference** held on the Canary Island of Lanzarote, February 10-13, 2013. The conference was organized by UK-based Zing Conferences, which specializes in organizing scientific conferences.





Mitochondrial Dynamics And Insulin Resistance



Antonio Zorzano, PhD (Professor of Biochemistry and Molecular Biology at the University of Barcelona, Barcelona, Spain) has been studying the effects of mitochondrial dynamics. Mitochondria are generally depicted as static oval-shaped organelles within cells, but with varying degrees of frequency, mitochondria will fuse with and then separate from other mitochondria within the same cell.^{2,4} Dynamic networks of mitochondria are important for mitochondrial maintenance and quality control. Damaged mitochondria that cannot be rehabilitated by fusion cease to fuse with other mitochondria, and are digested by the cell's incinerators (lysosomes). More than 10 years ago Dr. Zorzano demonstrated that a protein responsible for mitochondrial fusion is often reduced as much as **40%** in the muscle of obese rats.⁵ Two years later he showed that the expression of a gene that encodes this fusion protein in muscle is directly proportional to insulin sensitivity (the degree to which a given amount of insulin causes glucose to enter cells).⁶ Recently, he has determined that reduced mitochondrial fusion protein is not simply *associated* with insulin resistance, but *causes* insulin resistance and he has proposed that this is a potential target for diabetes drug development.⁷ Dr. Zorzano's team has shown that although obese non-diabetics can increase their production of mitochondrial fusion protein (and production of new mitochondria) through aerobic exercise, type II diabetics have lost their capacity to do so.⁸

Fat Stem Cells And Aging



Werner Zwerschke, PhD (Team Leader, Institute of Biomedical Aging Research, Austrian Academy of Sciences, Innsbruck, Austria) cited a study indicating that although total body fat may decrease in old age, lean tissue may decrease even more resulting in the possibility of an increase in percentage of body fat.⁹ With age, fat increasingly tends to accumulate where it does not belong—in muscle, liver, and bone marrow rather than in adipose tissue (fat cells), which contributes to dysfunction of those tissues.⁹ Adipose progenitor cells (fat stem cells) are extremely diligent at retaining the same number of adipocytes (fat cells) throughout adulthood, contributing to the difficulties obese people have in

losing weight.¹⁰ Dr. Zwerschke has been studying the mechanisms controlling fat cell replenishment by fat stem cells in the hope of finding therapies for weight loss.¹¹ He has identified resveratrol as a substance that reduces the activity of fat stem cells.¹²

Autophagy Of Mitochondria



Nektarios Tavernarakis, PhD (Professor of Molecular Systems Biology, Medical School of the University of Crete, Greece) has been focused on the degradation of dysfunctional mitochondria (autophagy). Parkinson's disease patients are thought to have particularly damaged mitochondria in the substantia nigra (the brain region that is most affected in Parkinsonism). Damage to a protein that causes defective mitochondria to be degraded by autophagy results in an inherited form of Parkinson's disease.¹³ Dr. Tavernarakis gave evidence for a similar defect contributing to other brain diseases of aging, namely Alzheimer's disease and Huntington's disease.¹⁴ He believes that removal of defective organelles by autophagy, particularly mitochondria, is an important reason for the life extension benefits seen for rapamycin, resveratrol, and spermidine in model organisms.¹⁵



Frank Madeo, PhD (Professor, Institute of Molecular Biosciences, University of Graz, Graz, Austria) has been working with Dr. Tavernarakis in studying the means by which degradation of damaged or unnecessary cellular components (autophagy) increases life span in model organisms (yeast, nematode worms, and fruit flies). Their team found that resveratrol and spermidine increase autophagy by different mechanisms, and that one tenth of the optimal dose of resveratrol or spermidine can be highly effective when the two substances are given in combination rather than separately.¹⁶ Dr. Madeo has also shown that spermidine increases resistance to free radicals and stress in fruit flies by means that are dependent upon as well as by means that are independent of autophagy.¹⁷ Spermidine has been shown to be enriched in the blood of healthy humans who have lived to be over 90 years of age.¹⁸ Dr. Madeo told me that he eats foods that are high in spermidine. Spermidine content is particularly high in cooked soybeans, green peas, pears, lentil soup, and mushrooms (listed in descending order).¹⁹

Telomerase Protection Of Mitochondrial DNA



Judith Haendeler, PhD (Team Leader, Molecular Cell & Aging Research, University of Duesseldorf, Duesseldorf, Germany) has been studying telomerase, the enzyme that repairs the ends of chromosomes. Telomeres protect the ends of chromosomes just as caps on shoelaces protect shoelaces from becoming frayed. The telomerase enzyme

elongates chromosomes, helping to protect nuclear DNA.²⁰ Like the cell nucleus, mitochondria contain DNA, but the DNA in mitochondria is circular, and thus has no ends, has no telomeres, and has no need for telomerase. Nonetheless, Dr. Haendeler has shown that the active portion of the telomerase enzyme can bind to and thereby protect mitochondrial DNA.²¹ She has also shown that the mechanisms for activation of the telomerase enzyme are similar in the nucleus and in the mitochondria.²² Most recently, she has shown that these mechanisms can be interfered with by ultra-fine carbon black particles in the air as well as by a combination of high levels of dietary fructose and fat.²³ The consequences of this harm contribute to both lung disease and cardiovascular disease, with ultra-fine particles from air pollution damaging the linings of blood vessels along with the lungs.²³

Summary

Although aging theories have been modified considerably since Denham Harman proposed his mitochondrial free radical theories, the researchers at this conference presented much evidence that mitochondria continue to be of major significance in the cause, and possible cures, of aging and aging-associated diseases. ●

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

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Mitochondrial Basics

with BioPQQ®

Energy to burn. It's more than just a phrase. It's the key to a healthy life span.

Behind every process your body needs to survive and thrive are the cellular energy generators known as **mitochondria**. Their function is so crucial that a growing number of scientists now believe mitochondrial longevity may determine overall longevity in aging humans.¹⁻⁵ That's why **Life Extension®** has remained at the forefront in identifying innovative compounds that specifically support mitochondrial health.

In addition to the more comprehensive **Mitochondrial Energy Optimizer with BioPQQ®** and standalone **PQQ** products, we now offer a one capsule per day formula for individuals seeking a simplified, low-cost option called **Mitochondrial Basics with BioPQQ®**.

The reason? We want all members to have access to targeted nutrients required to support mitochondrial function and the generation of healthy new mitochondria.

Three Premium Compounds in One Low-Cost Formula

Mitochondrial Basics with BioPQQ® brings together cutting-edge mitochondrial energizers, including the most exciting nutrient to emerge in recent years called *pyrroloquinoline quinone* or **PQQ**. The three ingredients in value-priced **Mitochondrial Basics with BioPQQ®** are:

1. PQQ. This breakthrough micronutrient has recently been shown to trigger **mitochondrial biogenesis**—the growth of new mitochondria in aging cells!⁶ PQQ also activates *genes* involved in protecting the delicate structures within the mitochondria.⁷⁻¹⁰

2. R-lipoic acid. The detrimental effects of free radicals comprise one of the chief obstacles to optimal mitochondrial energy production. Published studies confirm R-lipoic acid's power to promote mitochondrial bioenergetics while simultaneously *blunting* free radical activity.¹¹⁻¹⁶ **Mitochondrial Basics with BioPQQ®** contains the superior **Bio-Enhanced® R-lipoic acid** and is in a proprietary *microencapsulated* form for better absorption.

3. Acetyl-L-carnitine arginate. Fats are shuttled into the mitochondria for metabolic combustion by the amino acid **carnitine**. The *acetylated* form of carnitine helps to facilitate more efficient utilization of fats than carnitine alone.

Life Extension® members continue to enjoy access to a full range of targeted supplements clinically shown to optimize energy production in the mitochondria. Just one capsule a day of **Mitochondrial Basics with BioPQQ®** supplies:

BioPQQ® 10 mg
R-lipoic acid 100 mg
Acetyl-L-carnitine 250 mg
arginate dihydrochloride

Item # 01769



A bottle containing 30 capsules of **Mitochondrial Basics with BioPQQ®** retails for \$52. If a member buys four bottles, the price is reduced to just **\$34.50** per bottle.

PQQ can also be obtained as a low-cost standalone or in the **Mitochondrial Energy Optimizer with BioPQQ®** formula.

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Contains soybeans.

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.



SUPER FOODS

BY WILLIAM GAMONSKI

FLAX

A Wealth Of ALA And Lignans

Flaxseed's abundance of the essential fatty acid **alpha-linolenic acid** (ALA) and fiber, combined with being the richest dietary source of antioxidant lignans in the human diet, translates into additional health benefits beyond those of other seeds.¹ This unique nutritional profile offers unparalleled protection against metabolic syndrome, cardiovascular disease, and cancer.

Flaxseed's Journey

The flax plant (*Linum usitatissimum*) belongs to the Linaceae family and has been coveted since the Stone Age for its versatility. In addition to its culinary use, flaxseed was believed to alleviate numerous health ailments such as constipation and respiratory infections.

And flax fibers were processed to produce linen, a textile used to manufacture clothing, table coverings, and body armor for European countries and the United States beginning in the late 16th century. The three different flaxseed forms include whole, ground, and oil. Today, the major world producers of flaxseed are Canada, France, Russia, and Argentina.¹





Ways To Enjoy Flaxseed¹

1. Drizzle flaxseed oil over salads and vegetables.
2. Add ground flaxseeds into recipes for breads, cookies, pancakes, and muffins.
3. Sprinkle ground flaxseed onto oatmeal, yogurt, and cereals.
4. Add ground flaxseed or flaxseed oil to smoothies or shakes.

Guards Against Cardiovascular Disease

It is well understood that chronic inflammation is a significant contributor to the development of atherosclerosis. The plant-based omega-3 fatty acid ALA found in flaxseed has been shown to combat the process by decreasing the production of inflammatory cytokines. This was demonstrated in a 4-week human study where flaxseed oil use during food preparation inhibited the synthesis of tumor necrosis factor alpha (TNF alpha) and interleukin-1 beta by **30%**.²

Multiple studies confirm the ability of flaxseed to lower blood pressure, especially in high-risk patients. Participants with peripheral artery disease ingesting **30 grams** of flaxseed for 6 months significantly reduced their mean systolic blood pressure by **10 mmHg** and diastolic blood pressure by **7 mmHg**, compared to a placebo.³ And flaxseed oil supplementation for 12 weeks dropped both systolic and diastolic blood pressure by an average of **5 mmHg** in dyslipidemic patients.⁴

Lowering total cholesterol and LDL cholesterol is another cardiovascular benefit of flaxseed consumption, according to a meta-analysis reported in the *American Journal of Clinical Nutrition*.⁵

Combats Insulin Resistance And Metabolic Syndrome

Insulin resistance, or the inability of the hormone insulin to increase glucose uptake and utilization in cells, is the driving force behind metabolic syndrome, a collection of health risk factors that include central obesity, high blood sugar, elevated triglycerides, low HDL cholesterol, and hypertension.⁶ It is estimated that around one-third of Americans have the condition, with the prevalence increasing with age and body mass index (BMI).⁷

Flaxseed shows great promise in reducing insulin resistance by modulating oxidative stress. In a human study involving overweight and obese glucose intolerant subjects, a diet supplemented with **40 grams** of ground flaxseed daily for 12 weeks resulted in a **34.7%** decrease in a measure of insulin resistance compared to

baseline, thereby enhancing insulin sensitivity.⁸ This appears to result from favorable effects on oxidative stress as evidenced by a significant reduction in lipid peroxidation levels.⁸

To evaluate the efficacy of flaxseed supplementation in conjunction with a healthy lifestyle on managing metabolic syndrome, Chinese researchers conducted a randomized, controlled trial with 283 participants who met the criterion of three or more risk factors for the condition.⁹ Subjects were assigned to one of the following three groups for 12 weeks:

- Lifestyle counseling consisting of a low-fat diet, increased intake of fruits and vegetables, and limited alcohol;
- Lifestyle counseling plus **30 grams** of flaxseed-enriched bread; or
- Lifestyle counseling plus **30 grams** of walnuts.

Compared to baseline, **26.6%** of subjects in the flaxseed group no longer met the criteria for metabolic syndrome at the end of the study, the highest of all groups. Equally noteworthy, central obesity was reversed in **19.2%** of participants in the flaxseed group, compared to only **6.3** and **16%** in the LC and walnut groups, respectively. This demonstrates the potential anti-obesity effects of flaxseed supplementation.⁹

Cancer Protection

Unlike most foods, flaxseed offers a multi-targeted approach to attacking cancer. Research has shown that flaxseed acts as a cancer-preventing agent through

several modes of action including protecting against DNA damage,¹⁰ inhibiting angiogenesis (new blood vessel growth),¹¹ reducing inflammation,¹² and blocking cell proliferation.¹³

Epidemiological evidence reveals that higher intakes of flaxseed and flax bread cut the risk of breast cancer by **18** and **23%**, respectively.¹⁴ Flaxseed consumption has been shown to increase levels of endostatin, a natural tumor angiogenesis inhibitor, in breast tissue comparable to the chemotherapy drug tamoxifen. This is an intriguing finding, since it suggests that flaxseed might provide some of the same benefits as tamoxifen without the potential side effects.¹⁵

In a study reported in the *American Journal of Clinical Nutrition*, postmenopausal women supplemented with **25 grams** of flaxseed for 16 weeks saw a significant increase in the conversion

of estrogen to *2-hydroxyestrone*, a weak form of estrogen that decreases the risk for breast cancer.¹⁶ In patients with newly diagnosed breast cancer, the same dose of flaxseed enhanced apoptosis (programmed cell death) by **30.7%**, whereas women taking a placebo showed no changes.¹⁷

Emerging evidence indicates that flaxseed might have a protective effect against prostate cancer. Researchers at the University of Texas discovered that **30 grams** of flaxseed alone or as part of a low-fat diet significantly reduced tumor growth, compared to a low-fat diet or control in men with prostate cancer.¹³

Type II Diabetes Management

The primary target of nutritional therapy for type II diabetics is controlling blood sugar levels,

since their chronic elevation is linked with numerous diabetic complications. In the laboratory, researchers discovered that lignans in flaxseed decrease the activity of alpha-amylase, an enzyme that breaks down starch into glucose.¹⁸ Patients incorporating **5 grams** of flaxseed gum into their food daily for three months slashed blood sugar levels by **11.7%**, from a mean average of **154 to 136 mg/dL**.¹⁹

Type II diabetics are at increased risk for heart disease due to the typical presence of low HDL cholesterol and elevated triglycerides. This triglyceride/HDL ratio is an accurate predictor of cardiac events such as a heart attack.²⁰ Diabetic participants treated with **10 grams** of flaxseed powder without any other dietary change experienced a decrease of **17.5%** in triglycerides and an **11.9%** increase in beneficial HDL cholesterol in just one month, thus improving their triglyceride/HDL ratio.²¹

One of the most common long-term complications of type II diabetes is diabetic nephropathy (kidney damage), a condition that precedes chronic kidney disease. Flaxseed supplementation was shown to be an effective strategy for reducing protein in the urine (proteinuria) and preserving renal function in an animal model of diabetic nephropathy.²² While these results are compelling, human studies are needed.

Summary

A wealth of scientific data demonstrates the remarkable impact of flaxseed supplementation against cardiovascular disease, metabolic syndrome, and cancer.





Additionally, flaxseed shows great promise in managing type II diabetes and its complications. Opt for ground flaxseed over its whole counterpart since it is superior for digestion and absorption of nutrients.¹ ●

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

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Ground Flaxseed Nutritional Facts, One Tbsp²³

Nutrients	Amount	DV(%)
Manganese	0.2 mg	9%
Dietary Fiber	1.9 g	8%
Thiamine	0.1 mg	8%
Magnesium	27.4 mg	7%
Phosphorous	44.9 mg	4%
Copper	0.1 mg	4%
Omega-3 Fatty Acids	1597 mg	Not Established

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WE ARE RECRUITING FOR STUDY PARTICIPANTS!

LifeExtension[®]
CLINICAL RESEARCH, INC.

ALZHEIMER'S DISEASE STUDY

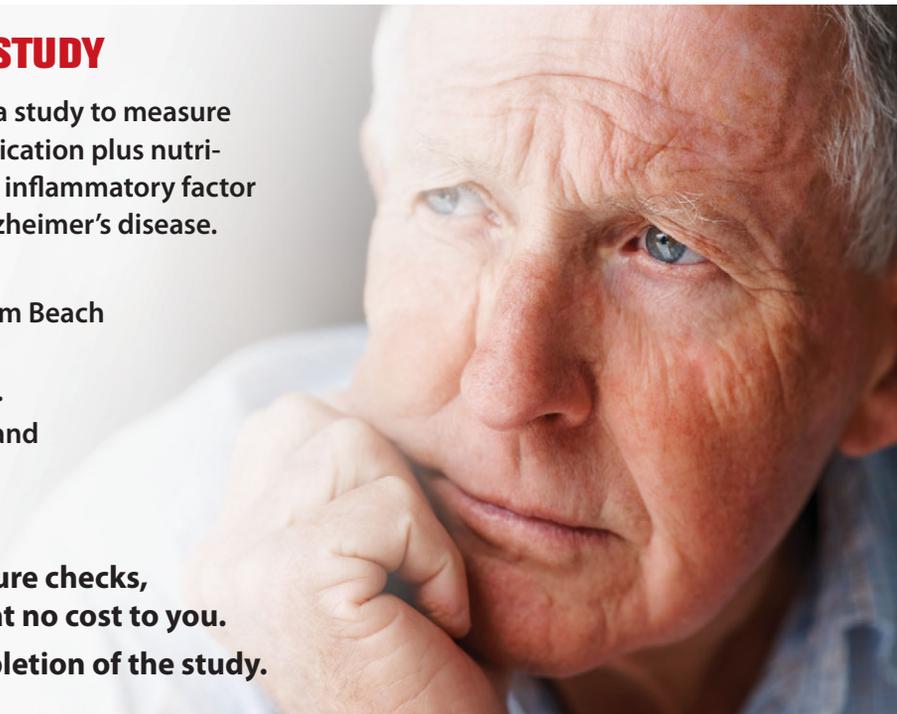
The Life Extension Foundation[®] is sponsoring a study to measure the effects of weekly injections of a study medication plus nutritional supplements that may help suppress an inflammatory factor implicated in the neuronal degeneration of Alzheimer's disease.

If you or someone you know:

- Lives in the Fort Lauderdale, Miami, or Palm Beach area of Florida.
- Has mild to moderate Alzheimer's disease.
- Please contact us for further information and to see if you qualify.

Qualified participants receive:

- Blood tests, evaluations, blood pressure checks, study medication, and supplements at no cost to you.
- Compensation up to \$500 upon completion of the study.



OVERWEIGHT AND MILDLY ELEVATED BLOOD SUGAR STUDY

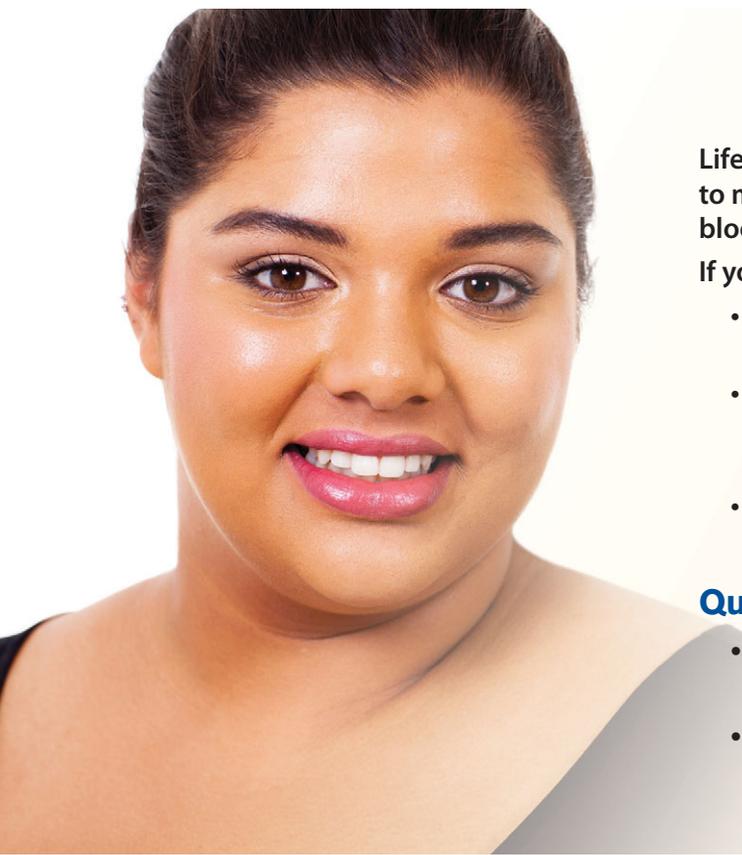
Life Extension Clinical Research, Inc. is conducting a trial to measure the effects of nutritional supplementation on blood sugar and blood vessel health.

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- Lives in the Fort Lauderdale, Miami, or Palm Beach area of Florida.
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Qualified participants receive:

- Blood tests and blood vessel health evaluations at no cost to you during the trial
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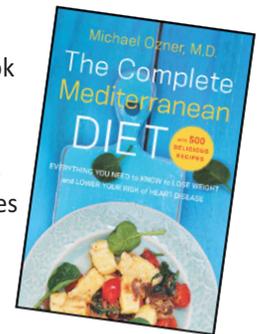


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Sunday, June 8	At Sea		
Monday, June 9	Corfu, Greece	8:00 AM	3:30 PM
Tuesday, June 10	Santorini, Greece	1:30 PM	10:00 PM
Wednesday, June 11	Mykonos, Greece	8:00 AM	6:00 PM
Thursday, June 12	Olympia (Katakolon), Greece	9:00 AM	6:00 PM
Friday, June 13	At Sea		
Saturday, June 14	Venice, Italy	8:00 AM	

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Golden Flax Seeds are one of the few seeds that contain a much higher ratio of the essential **omega-3** (linolenic) fatty acids, relative to omega-6 (linoleic) fats.²

In scientific studies, flax seed supplementation was found to provide effective support for a healthy cardiovascular system,^{3,4} prostate,⁵ metabolic balance,⁶ colon and digestive system,¹ and levels of blood lipids and blood sugar, already in normal range.^{1,4,7}

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Garden Of Life Organic Golden Flax Seed goes through a **unique** cleaning process that produces only the very purest, freshest, certified-organic, non-GMO, ground Golden Flax Seeds.

To unlock the flaxseeds’ potent nutritional punch, **Garden of Life Organic Golden Flax Seed** is milled using a state-of-the-art, **cold-milling** method that unlocks the full goodness of the seeds—without destroying its valuable oils.

JUST ONE SERVING OF THIS PRODUCT CONTAINS:

Omega-3 (alpha-linolenic acid ALA)	3 grams
Omega-6 (linoleic acid LA)	1 gram
Omega-9 (oleic acid OA)	1 gram
Lignans (SDG)	98 mg

The suggested daily dosage of **Garden of Life Organic Golden Flax Seed** is 2 tbsp.

A package of 397 grams of **Garden of Life Organic Golden Flax Seed** retails for \$11.67. Member price is reduced to **\$8.75** per package.

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3. Have your blood drawn.
4. Your blood test results will be sent directly to you by Life Extension.
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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.

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TSH for thyroid function **Free Testosterone**
Estradiol **Total Testosterone**
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DHEA-S **Homocysteine**
TSH for thyroid function **Free Testosterone**
Estradiol **Total Testosterone**
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- MALE WEIGHT LOSS PANEL (LCWLM) \$299**
Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. **CBC** includes immune (white) cell count, red blood cell count and platelet count. Also includes: **C-Reactive Protein**
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SHBG **Free Testosterone**
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Progesterone **Free Testosterone**
Estradiol **Total Testosterone**
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- MALE HORMONE ADD-ON PANEL (LCADDM)* \$155**
Pregnenolone and Dihydrotestosterone (DHT)
 To provide an even more in-depth analysis of a man's hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.
- FEMALE HORMONE ADD-ON PANEL (LCADDF)* \$125**
Pregnenolone and Total Estrogens
 To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.
- LIFE EXTENSION THYROID PANEL (LC304131) \$75**
 TSH, T4, Free T3, Free T4.
- FEMALE COMPREHENSIVE HORMONE PANEL* (LC100011) \$299**
 CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.
- MALE COMPREHENSIVE HORMONE PANEL* (LC100010) \$299**
 CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.
- THE CBC/CHEMISTRY PROFILE (LC381822) \$35**
Note: This CBC/Chemistry Profile is included in many Life Extension panels. Please check panel descriptions.
CARDIOVASCULAR RISK PROFILE
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 HDL Cholesterol Estimated CHD Risk
 LDL Cholesterol Glucose
 Triglycerides Iron
LIVER FUNCTION PANEL
 AST (SGOT) Total Bilirubin
 ALT (SGPT) Alkaline Phosphatase
 LDH
KIDNEY FUNCTION PANEL
 BUN BUN/Creatinine Ratio
 Creatinine Uric Acid
BLOOD PROTEIN LEVELS
 Total Protein Globulin
 Albumin Albumin/Globulin Ratio
BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE
 Red Blood Cell Count Monocytes
 White Blood Cell Count Lymphocytes
 Eosinophils Platelet Count
 Basophils Hemoglobin
 Polys (Absolute) Hematocrit
 Lymphs (Absolute) MCV
 Monocytes (Absolute) MCH
 Eos (Absolute) MCHC
 Baso (Absolute) Polynucleated Cells
 RDW
BLOOD MINERAL PANEL
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 Potassium Chloride
 Phosphorus Iron
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 This test measures delayed (IgG) food allergies for 95 common foods.
- ADRENAL FUNCTION PANEL (LC100021) \$136**
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- OMEGA SCORE™*** (LCOMEGA) \$131.25**
 Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.
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 Carnitine (Free with Total), CoQ10, Glucose
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* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit and will incur an additional \$35 charge. If the customer is having blood drawn at a LabCorp facility, this extra charge does not apply.

** This test is packaged as a kit, requiring a finger stick performed at home.



Other Popular Tests and Panels Life Extension Member Pricing

- | | |
|--|---|
| <input type="radio"/> ENERGY PROFILE (LC100005) \$375 | <input type="radio"/> HORMONES |
| CBC/Chemistry Profile (see description), Epstein –Barr Virus antibodies (IgG and IgM), Cytomegalovirus Antibodies (IgG and IgM), Ferritin, Total and Free Testosterone, DHEA-S, Free T3, Free T4, Cortisol, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Insulin. | <input type="radio"/> DHEA-SULFATE (LC004020) \$61 |
| <input type="radio"/> ANEMIA PANEL* (LC100006) \$86 | This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories. |
| CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count. | <input type="radio"/> DIABESITY PANEL* (LC100019) \$159 |
| <input type="radio"/> INFLAMMATION PANEL (LC100007) \$135 | Glucose, Insulin, HbA1c, VAP™, Cortisol, C-Reactive Protein |
| CBC/Chemistry Profile (see description above), C-Reactive Protein (high sensitivity), Sedimentation Rate, Rheumatoid (RA) Factor, Antinuclear Antibodies (ANA) Screen. | <input type="radio"/> MALE BASIC HORMONE PANEL (LC100012) \$75 |
| <input type="radio"/> THYROID ANTIBODY PROFILE (LC100004) \$99 | DHEA-S, Estradiol, Free and Total Testosterone, PSA |
| Thyroid Antithyroglobulin Antibody (ATA) and Thyroid Peroxidase Antibody (TPO). | <input type="radio"/> FEMALE BASIC HORMONE PANEL (LC100013) \$75 |
| <input type="radio"/> CARDIAC PLUS* (LC100008) \$145 | DHEA-S, Estradiol, Free and Total Testosterone, Progesterone |
| CBC/Chemistry profile (see description), Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Fibrinogen, Homocysteine. | <input type="radio"/> DIHYDROTESTOSTERONE (DHT)* (LC500142) \$99 |
| <input type="radio"/> VAP™ PLUS* (LC100009) \$330 | Measures serum concentrations of DHT. |
| VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy. | <input type="radio"/> ESTRADIOL (LC004515) \$33 |
| CARDIAC RISK | For men and women. Determines the proper amount in the body. |
| <input type="radio"/> COQ10* (COENZYME Q10) (LC120251) \$99 | <input type="radio"/> INSULIN FASTING (LC004333) \$25 |
| This test is used to check the blood level of CoQ10 and will enable more precise dosing for anyone seeking to achieve and maintain high levels of this critical antioxidant. | Can predict those at risk of diabetes, obesity, and heart and other diseases. |
| <input type="radio"/> Lp-PLA2 (PLAC® TEST) (LC123240) \$125 | <input type="radio"/> PREGNENOLONE* (LC140707) \$116 |
| This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries. | Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome. |
| <input type="radio"/> C-REACTIVE PROTEIN (HIGH-SENSITIVITY) (LC120766) \$42 | <input type="radio"/> PROGESTERONE (LC004317) \$55 |
| Measures inflammation factors in arteries. Recent studies indicate that C-reactive protein may be the most accurate risk factor for predicting heart attack and stroke. | Primarily for women. Determines the proper amount in the body. |
| <input type="radio"/> FIBRINOGEN* (LC001610) \$31 | <input type="radio"/> SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016) \$33 |
| High levels of this blood-clotting factor increase the risk of heart attack and stroke. | This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens. |
| <input type="radio"/> HOMOCYSTEINE (LC706994) \$64 | BONE HEALTH |
| Can indicate if you are likely to have a heart attack or stroke. Even if you take folic acid, you still may have dangerously high levels of this artery-clogging metabolic debris that can be lowered with high doses of TMG, vitamin B6, and vitamin B12. | <input type="radio"/> VITAMIN D (25OH) (LC081950) \$47 |
| MALE HEALTH | This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia. |
| <input type="radio"/> PSA (PROSTATE-SPECIFIC ANTIGEN) (LC010322) \$31 | <input type="radio"/> OSTEOCALCIN* (LC010249) \$91 |
| Can provide an early warning sign for prostate disorders and possible cancer. | Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis. |
| <input type="radio"/> FREE-PSA (INCLUDES TOTAL PSA)* (LC480780) \$61 | <input type="radio"/> DPD CROSS LINK URINE TEST (LC511105) \$79 |
| Recommended to determine if an elevated PSA is indicative of prostate cancer. | The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis. |

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TERMS AND CONDITIONS

This blood test service is for informational purposes only and no specific medical advice will be provided. National Diagnostics, Inc., and the Life Extension Foundation contract with a physician who will order your test(s), but will not diagnose or treat you. Both the physician and the testing laboratory are independent contractors and neither National Diagnostics, Inc., nor the Life Extension Foundation® will be liable for their acts or omissions. Always seek the advice of a trained health professional for medical advice, diagnosis, or treatment. When you purchase a blood test from Life Extension/National Diagnostics, Inc., you are doing so with the understanding that you are privately paying for these tests. There will be absolutely no billing to Medicare, Medicaid, or private insurance. I have read the above Terms and Conditions and understand and agree to them.

Signature of Life Extension Member

X

Life Extension Foundation Members only

MEMBER NO.

Male

Female

Name

Date of Birth
(required) / /

Address

City

State

Zip

Phone

Credit Card No.

Expiration Date /

Mail your order form to:

LifeExtension
NATIONAL DIAGNOSTICS, INC.

3600 West Commercial Boulevard
Fort Lauderdale, FL 33309

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

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

Blood tests available only in
the continental United States.
Not available in Maryland.

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

This is NOT a complete listing of
LE blood test services. Call 1-800-208-3444
for additional information.

PRODUCTS

AMINO ACIDS

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
Branched Chain Amino Acids
D, L-Phenylalanine Capsules
Glycine Capsules
L-Arginine Capsules
Arginine/L-Ornithine Capsules
L-Carnitine Capsules
L-Carnitine Powder Natural Lemon Flavor
L-Glutathione, L-Cysteine & C
L-Glutamine Capsules
L-Glutamine Powder
L-Lysine Capsules
L-Tyrosine Tablets
Mega L-Glutathione Capsules
N-Acetyl-L-Cysteine Capsules
Optimized Carnitine with GlycoCarn®
PharmaGABA
Super Carnosine Capsules
Taurine Capsules

BONE & JOINT HEALTH

ArthroMax® with Theaflavins and AprèsFlex®
ArthroMax® Advanced with UC-II® and
AprèsFlex®
Bone-Up™
Bone Restore
Bone Restore w/Vitamin K2
Bone Strength Formula w/KoAct™
Dr. Strum's Intensive Bone Formula
Fast Acting Joint Formula
Glucosamine Chondroitin Capsules

BRAIN HEALTH

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

DIGESTIVE

Bifido GI Balance
Carnosoothe w/PicroProtect
Digest RC™
Esophageal Guardian
Enhanced Super Digestive Enzymes
Extraordinary Enzymes
FlorAssist™
LACTOSOLV™ Long Lasting Digestion
Pancreatin
Regimint
Theralac Probiotics

DURK AND SANDY PRODUCTS

Blast™
Inner Power™

EYE CARE

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

FIBER

AppleWise Polyphenol
Fiber Food
TruFiber®
WellBetX PGX® plus Mulberry

FOOD

Rich Rewards™ Black Bean Vegetable Soup
Rich Rewards™ Spicy Cruciferous Vegetable Soup
Rich Rewards™ Cruciferous Vegetable Soup
Rich Rewards™ Lentil Soup
Rich Rewards™ Mung Bean Soup with Turmeric
Rich Rewards® Coffee
(Available in mocha, vanilla and decaffeinated)
Rich Rewards™ Dark Chocolate

HAIR CARE

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

HEART HEALTH

AppleWise Polyphenol
Advanced Lipid Control
Aspirin (Enteric Coated)
Cardio Peak™ w/Standardized Hawthorn and Arjuna
Cho-Less™
D-Ribose Tablets
D-Ribose Powder
Endothelial Defense™ with
Full-Spectrum Pomegranate™
Fibrinogen Resist
Forskolin
Homocysteine Resist
Natural BP Management
Olive Leaf Vascular Support
Peak ATP® with GlycoCarn®
PhosphOmega®
Policosanol
PROVINAL® Purified Omega-7
Pycnogenol® French Maritime Pine Bark Extract
Red Yeast Rice
Super Absorbable CoQ10™ with d-Limonene
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with BioPQQ®
Super Ubiquinol CoQ10 with Enhanced
Mitochondrial™ Support
Theaflavin Standardized Extract
TMG Powder
TMG Liquid Capsules

HERBAL/PHYTO PRODUCTS

Artichoke Leaf Extract
Asian Energy Boost
Astaxanthin w/Phospholipids
Berry Complete
Blueberry Extract
Blueberry Extract w/Pomegranate
Butterbur Extract w/Standardized
Rosmarinic Acid
Calcium D-Glucarate
Enhanced Berry Complete with Acai
Full-Spectrum Pomegranate™
Grapeseed Extract with Resveratrol &
Pterostilbene
Huperzine A
Kyolic® Garlic Formula 102 + 105
Kyolic® Reserve
Mega Green Tea Extract
Mega Green Tea Extract (Decaffeinated)
(also w/CoffeeGenic® Green Coffee Extract)
Mega Lycopene Extract
Optimized Ashwagandha Extract
Optimized Garlic
Pomegranate Extract
Pomegranate Juice Concentrate
Pycnogenol
Optimized Quercetin

Resveratrol with Synergistic Grape-Berry Actives
Rhodiola Extract
Silymarin
SODzyme™ with GliSODin®
Stevia Extract
Advanced Bio-Curcumin®
with Ginger & Turmerones
Super Bio-Curcumin®
Super Ginkgo Extract
Triple Action Cruciferous Vegetable Extract
Venotone
Whole Grape Extract

HORMONES

Advanced Natural Sex for Women® 50+
7-KETO® DHEA
DHEA
DHEA Complete
GH Pituitary Support Day Formula
GH Pituitary Support Night Formula
Liquid Melatonin
Melatonin
Melatonin Timed Release
Natural Estrogen with Pomegranate Extract
Pregnenolone
ProgestaCare for Women
Super Miraforte with Standardized Lignans

IMMUNE ENHANCEMENT

AHCC® (Active Hexose Correlated Compound)
Black Cumin Seed Oil
Black Cumin Seed Oil w/Bio-Curcumin®
Buffered Vitamin C Powder
Echinacea Extract
FlorAssist™ Probiotic
i26 Hyperimmune Egg
Immune Modulator w/Tinofend®
Immune Protect with PARACTIN®
Lactoferrin
Norwegian Shark Liver Oil
Optimized Fucoidan w/Maritech® 926
Peony Immune
ProBoost™ Thymic Protein A
Reishi Extract Mushroom Complex
Vitamin C with Dihydroquercetin
Winter Wellness™
Zinc Lozenges

INFLAMMATORY REACTIONS

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

LIVER HEALTH

Branch Chain Amino Acids
Certified European Milk Thistle
N-Acetyl Cysteine
Liver Efficiency Formula
European Milk Thistle
Advanced Phospholipid Delivery
Hepatopro
SAME
Silymarin

MINERALS

Biosil
 Bone Restore
 Bone Strength Formula w/KoAct®
 Bone-Up™
 Boron Capsules
 Calcium Citrate with D3
 Chromium Ultra
 Copper
 Iodoral
 Iron Protein Plus
 Magnesium
 Magnesium Citrate
 Only Trace Minerals
 Optimized Chromium w/Crominex® 3+
 OptiZinc
 Sea-Iodine™
 Selenium
 Se-Methyl L-Selenocysteine
 Strontium
 Vanadyl Sulfate
 Zinc Lozenges

MISCELLANEOUS

Blood Pressure Monitor Arm Cuff
 CR Way Edition Advanced Dietary Software

MITOCHONDRIAL SUPPORT

Acetyl-L-Carnitine
 Acetyl-L-Carnitine-Arginate
 Mitochondrial Basics w/BioPQQ®
 Mitochondrial Energy Optimizer w/BioPQQ®
 Optimized Carnitine with GlycoCarn®
 Super Absorbable CoQ10™ with d-Limonene
 Super Alpha Lipoic Acid with Biotin
 Super R-Lipoic Acid
 Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

MOOD RELIEF

Adrenal Energy Formula
 Bioactive Milk Peptides
 L-Theanine
 5 HTP
 Enhanced Natural Sleep® w/ Melatonin
 Enhanced Natural Sleep® w/o Melatonin
 Natural Stress Relief
 SAME
 St. John's Wort Extract
 L-Tryptophan
 Optimized Tryptophan Plus

MOUTH CARE

Advanced Oral Hygiene
 Mouthwash w/Pomegranate
 Toothpaste
 Xyliwhite™ Mouthwash

MULTIVITAMIN

Booster
 Children's Formula Life Extension Mix™
 Comprehensive Nutrient Packs Basic
 Comprehensive Nutrient Packs Advanced
 Life Extension Mix™ Capsules
 Life Extension Mix™ Powder
 Life Extension Mix™ Tablets
 Life Extension Mix™ w/o Copper Capsules
 Life Extension Mix™ w/o Copper Tablets
 Life Extension Mix™ w/Extra Niacin
 Life Extension Mix™ w/Extra Niacin w/o Copper
 Life Extension Mix™ w/Stevia Powder
 Life Extension Mix™ w/Stevia w/o Copper Powder
 Life Extension One-Per-Day
 Life Extension Two-Per-Day
 Super Booster Softgels w/Advanced K2 Complex

PET CARE

Cat Mix
 Dog Mix

PROSTATE & URINARY HEALTH

Optimized Cran-Max® with UTIRose™
 5-LOXIN®
 PalmettoGuard™ Saw Palmetto w/Beta Sitosterol

Pomi-T®
 (Water-Soluble) Pumpkin Seed Extract
 Super Saw Palmetto/Nettle Root Formula w/Beta-Sitosterol
 Ultra Natural Prostate Formula

SKIN CARE

Advanced Under Eye Serum with Stem Cells
 Amber Self MicroDermAbrasion
 Anti-Aging Mask
 Anti-Glycation Serum
 Anti-Aging Rejuvenating Face Cream with Coffee Extracts
 Antioxidant Rejuvenating Foot Cream
 Antioxidant Rejuvenating Foot Scrub
 Antioxidant Rejuvenating Hand Cream
 Antioxidant Rejuvenating Hand Scrub
 Anti-Redness & Blemish Lotion
 Bio-Collagen w/Patented UC-II®
 Bioflavonoid Cream
 Broccoli Sprout
 Corrective Clearing Mask
 DNA Repair Cream
 Dual-Action MicroDermAbrasion
 Essential Plant Lipids Reparative Serum
 Face Master® Platinum
 Face Rejuvenating Antioxidant Cream
 Enhanced FernBlock® with Red Orange Complex
 Fine Line-Less
 Hair Suppress Formula
 Healing Formula All-in-One Cream
 Healing Mask
 Hyaluronic Facial Moisturizer
 Hydrating Anti-oxidant Face Mist
 Hydroderm®
 Lifting & Tightening Complex
 Lycopene Cream
 Melatonin Cream
 Mild Facial Cleanser
 Neck Rejuvenating Antioxidant Cream
 Pigment Correcting Cream (Ultra) Rejuvenex®
 Rejuvenex® Body Lotion
 Rejuvenex® Factor Firming Serum
 Rejuvenating Serum
 Renewing Eye Cream
 Resveratrol Anti-Oxidant Serum
 Skin Lightening Serum
 Skin Restoring Phytoceramides w/Lipowheat®
 Skin Stem Cell Serum
 Stem Cell Cream w/Alpine Rose
 Ultra Rejuvenex®
 Ultra RejuveNight® w/o Progesterone
 Ultra Lip Plumper
 Ultra Wrinkle Relaxer
 Under Eye Refining Serum
 Under Eye Rescue Cream
 Vitamin C Serum
 Vitamin D Lotion
 Vitamin E-ssential Cream
 Vitamin K Healing Cream
 Youth Serum

SOY

Natural Estrogen w/Pomegranate
 Super Absorbable Soy Isoflavones
 Ultra Soy Extract

SPECIAL PURPOSE FORMULA

Anti-Alcohol Antioxidants w/HepatoProtection Complex
 Benfotiamine w/Thiamine
 Breast Health Formula
 Butterbur Extract w/Standardized Rosmarinic Acid
 Chlorella
 Chlorophyllin
 Green Coffee Extract CoffeeGenic® (also w/Glucose control)
 Coriolus Super Strength
 CR Mimetic Longevity Formula

Cinsulin® w/InSea2® and Crominex® 3+
 European Leg Solution Diosmin 95
 Fem Dophilus
 Femmenessence MacaPause®
 GlycemicPro™ Transglucosidase
 Migra-eeze™
 Natural Female Support
 Pecta-So!®
 Potassium Iodide
 PQQ Caps with BioPQQ®
 PteroPure™
 Prelox® Natural Sex for Men®
 Pyridoxal 5' - Phosphate
 Tri Sugar Shield™

SPORTS PERFORMANCE

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

VITAMINS

Ascorbyl Palmitate Capsules
 B12
 Beta-Carotene
 Biotin Capsules
 Buffered Vitamin C Powder
 Complete B Complex
 Effervescent Vitamin C
 Fast-C®
 Folic Acid + B12
 Gamma E Tocopherol w/Sesame Lignans
 Gamma E Tocopherol/Tocotrienols
 Inositol Capsules
 Mega Lycopene Extract
 Methylcobalamin
 MK-7
 No-Flush Niacin
 Optimized Folate
 Super Ascorbate C Capsules
 Super Ascorbate C Powder
 Super K w/Advanced K2 Complex
 Tocotrienols w/Sesame Lignans
 Vitamin B3 (Niacin) Capsules
 Vitamin B6
 Vitamin B12 Lozenges
 Vitamin C
 Vitamin D3
 Vitamin D3 w/Sea-Iodine™
 Vitamins D and K w/Sea-Iodine™
 Vitamin E
 Vitamin K2

WEIGHT MANAGEMENT

Advanced Anti-Adipocyte Formula w/AdipoStat & Integra Lean®
 Advanced Natural Appetite Suppress
 Alli® Refill Pack
 Calorie Control Weight Management™ Formula w/CoffeeGenic® Green Coffee Extract
 CoffeeGenic® Weight Management™ with Green Coffee Extract
 7-KETO DHEA
 DHEA® Complete
 Fucoxanthin Slim™
 Garcinia HCA
 Integra-Lean® African Mango Irvingia
 LuraLean® Caps Special Propolmannan Particle Size
 Optimized Irvingia w/Phase 3™ Calorie Control Complex
 Optimized Saffron with Satiereal®
 Natural Appetite Control
 Natural Glucose Absorption Control
 Super CLA Blend w/Guarana and Sesame Lignans
 Super CLA Blend w/Sesame Lignans
 WellBetX PGX® plus Mulberry

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
A					
01524	ACETYL-L-CARNITINE - 500 mg, 100 veg. caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
01525	ACETYL-L-CARNITINE ARGINATE - 100 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01628	ADRENAL ENERGY FORMULA - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01630	ADRENAL ENERGY FORMULA - 120 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	42.00	31.50		
01828	ADVANCED LIPID CONTROL - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	ADVANCED ORAL HYGIENE - 60 veg. mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	AHCC - 500 mg, 30 caps	59.98	44.99		
*46925	ALLI® REFILL PACK - 120 caps	69.95	58.00		
00457	ALPHA-LIPOIC ACID w/BIOTIN (SUPER) - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01440	ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01509	ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT & INTEGRA LEAN® (ADVANCED) - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01625	APPLEWISE POLYPHENOL EXTRACT - 600 mg, 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	ARGININE/ORNITHINE - 500/250, 100 caps	17.99	13.49		
00038	ARGININE/ORNITHINE POWDER - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	(L)-ARGININE CAPS - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01617	ARTHROMAX® w/THEAFLAVINS & APRESFLEX® - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01618	ARTHROMAX® ADVANCED w/UC-II® & APRESFLEX® - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01404	ARTHRO-IMMUNE JOINT SUPPORT - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00919	ARTICHOKE LEAF EXTRACT - 500 mg, 180 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.38	19.04		
01533	ASCORBYL PALMITATE - 500 mg, 100 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
00888	ASHWAGANDHA EXTRACT (OPTIMIZED) - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
01805	ASIAN ENERGY BOOST - 90 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01066	ASPIRIN - 81 mg, 300 enteric coated tablets	6.00	4.50		
	Buy 4 bottles, price each	5.33	4.00		
01720	ASTAXANTHIN WITH PHOSPHOLIPIDS - 4 mg, 30 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
B					
00920	BENFOTIAMINE w/ THIAMINE - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	BENFOTIAMINE (MEGA) - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01206	BERRY COMPLETE - 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	18.67	14.00		

SUB-TOTAL OF COLUMN 1

No.		Retail Each	Member Each	Qty	Total
01496	BERRY COMPLETE w/ACAI (ENHANCED) - 60 veg. caps	\$29.00	\$21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	BETA-CAROTENE - 25,000 IU, 100 softgels	11.25	8.44		
01622	BIFIDO GI BALANCE - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	BILBERRY EXTRACT - 100 mg, 100 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01512	BIOACTIVE MILK PEPTIDES - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	BIO-COLLAGEN w/PATENTED UC-II® - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	BIOSIL™ - 5 mg, 30 veg. caps	18.95	15.16		
*01007	BIOSIL™ - 1 fl oz	31.99	25.59		
00102	BIOTIN - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
01709	BLACK CUMIN SEED OIL - 60 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01710	BLACK CUMIN SEED OIL w/BIO-CURCUMIN® - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01008	BLAST™ - 600 grams of powder	26.95	20.21		
70000	BLOOD PRESSURE MONITOR - ARM CUFF (medium)	99.95	64.97		
70004	BLOOD PRESSURE MONITOR - WRIST (travel size)	69.95	52.46		
01214	BLUEBERRY EXTRACT - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	BLUEBERRY EXTRACT w/POMEGRANATE - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) - 300 caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01726	BONE RESTORE - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01727	BONE RESTORE w/VITAMIN K2 - 120 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01725	BONE STRENGTH FORMULA w/KOACT® - 120 veg. caps	45.00	33.75		
	Buy 4 bottles, price each	40.00	30.00		
00313	BONE-UP® - 240 caps	28.95	21.71		
	Buy 4 bottles, price each	27.21	20.41		
01379	BOOSTER - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01680	BOOSTER w/ADVANCED K2 COMPLEX (SUPER) - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01661	BORON - 3 mg, 100 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		
00202	BOSWELLA - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	30.00	22.50		
01802	BRAIN SHIELD™ - 60 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01253	BRANCHED CHAIN AMINO ACIDS - 90 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.00	12.75		
01699	BREAST HEALTH FORMULA - 60 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	BRITE EYES III - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		

SUB-TOTAL OF COLUMN 2

No.		Retail Each	Member Each	Qty	Total
01203	BROMELAIN (SPECIALLY-COATED) - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	\$21.00 19.00	\$15.75 14.25		
00884	BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
C					
01653	CALCIUM CITRATE w/VITAMIN D - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
01651	CALCIUM D-GLUCARATE - 200 mg, 60 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
01693	CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC® GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 414 grams powder Buy 4 jars, price each Buy 8 jars, price each	60.00 54.00 50.00	45.00 40.50 37.50		
01700	CARDIO PEAK™ w/STANDARDIZED HAWTHORN & ARJUNA - 120 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00916	CARNITINE w/GLYCOCARN® (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01532	L-CARNITINE - 500 mg, 30 veg. caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01719	L-CARNITINE POWDER NATURAL LEMON FLAVOR - 114 grams Buy 4 jars, price each	28.00 24.00	21.00 18.00		
01258	CARNOSOOTHE w/PICROPROTECT™ - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01687	CARNOSINE (SUPER) - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	CAT MIX - 100 grams powder Buy 4 jars, price each	15.00 12.00	11.25 9.00		
01659	CDP CHOLINE CAPS - 250 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01391	CHILDREN'S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00550	CHLORELLA - 500 mg, 200 tablets	23.50	17.63		
01571	CHLOROPHYLLIN - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	CHO-LESS™ - 90 capsules	33.50	25.13		
01477	CHROMIUM ULTRA - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	CHROMIUM W/CROMINEX® 3+ (OPTIMIZED) - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
01503	CINSULIN® W/INSEA® AND CROMINEX® 3+ - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00818	CLA BLEND w/SESAME LIGNANS (SUPER) - 1,000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	CLA BLEND w/GUARANA & SESAME (SUPER) - 1,000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01707	COFFEEGENIC® WEIGHT MANAGEMENT™ w/GREEN COFFEE EXTRACT - 90 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01896	COGNITEX® w/BRAIN SHIELD™ - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	60.00 52.00 48.00	45.00 39.00 36.00		

SUB-TOTAL OF COLUMN 3

No.		Retail Each	Member Each	Qty	Total
01897	COGNITEX® w/PREGNENOLONE & BRAIN SHIELD™ - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	\$62.00 53.00 50.00	\$46.50 39.75 37.50		
01421	COGNITEX® BASICS - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
01735	COMPLETE B-COMPLEX - 60 veg. caps Buy 4 bottles, price each	10.00 9.00	7.50 6.75		
01795	COMPREHENSIVE NUTRIENT PACKS BASIC - 30 packs Buy 4 boxes, price each	48.00 44.00	36.00 33.00		
01798	COMPREHENSIVE NUTRIENT PACKS ADVANCED - 30 packs Buy 4 boxes, price each	90.00 82.00	67.50 61.50		
00119	COPPER CAPSULES - 2 mg, 100 caps	9.91	7.43		
00949	COQ10™ w/α-LIMONENE (SUPER ABSORBABLE) - 50 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	25.00 22.00 20.00	18.75 16.50 15.00		
00950	COQ10™ w/α-LIMONENE (SUPER ABSORBABLE) - 100 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	66.00 60.00 56.00	49.50 45.00 42.00		
01226	COQ10 (SUPER UBIQUINOL) - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	56.00 52.00 48.00	42.00 39.00 36.00		
01733	COQ10 w/BIOPQQ® (SUPER UBIQUINOL) - 100 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	54.00 50.00 46.00	40.50 37.50 34.50		
01426	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
01425	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) - 50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 53.00 50.00	43.50 39.75 37.50		
01427	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) - 50 mg, 30 softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01431	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) - 200 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
01053	CORIOLUS SUPER STRENGTH - 600 mg, 150 veg. caps	99.95	74.96		
80140	COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - .33 oz Buy 2 bottles, price each	49.00 42.00	36.75 31.50		
80139	COSMESIS AMBER SELF MICRODERMABRASION - 2 oz Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80118	COSMESIS ANTI-AGING MASK - 2 oz Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80151	COSMESIS ANTI-AGING REJUVENATING FACE CREAM - 2 oz jar w/COFFEE EXTRACT Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80134	COSMESIS ANTI-GLYCATION SERUM - 1 oz w/BLUEBERRY & POMEGRANATE EXTRACTS Buy 2 bottles, price each	33.00 31.35	24.75 23.51		

SUB-TOTAL OF COLUMN 4

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
C CONTINUED					
80133	COSMESIS ANTIOXIDANT FACIAL MIST - 2 oz Buy 2 bottles, price each	\$32.00 30.40	\$24.00 22.80		
80127	COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz Buy 2 jars, price each	45.00 42.80	33.75 32.10		
80128	COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz Buy 2 jars, price each	59.00 51.92	44.25 38.94		
80117	COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz Buy 2 jars, price each	64.00 57.49	48.00 43.12		
80121	COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz Buy 2 jars, price each	58.00 51.04	43.50 38.28		
80105	COSMESIS ANTI-REDNESS & ADULT BLEMISH LOTION - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80147	COSMESIS BIOFLAVONOID CREAM - 1 oz jar Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80144	COSMESIS BROCCOLI SPROUT CREAM - 1 oz Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80120	COSMESIS CORRECTIVE CLEARING MASK - 2 oz Buy 2 jars, price each	64.50 56.76	48.38 42.57		
80141	COSMESIS DNA REPAIR CREAM - 1 oz jar Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80108	COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz Buy 2 bottles, price each	74.95 65.95	56.21 49.46		
80123	COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz Buy 2 jars, price each	69.50 61.16	52.13 45.87		
80107	COSMESIS FINE LINE-LESS - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80131	COSMESIS HAIR SUPPRESS FORMULA - 4 oz Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80137	COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz Buy 2 jars, price each	53.00 45.43	39.75 34.07		
80115	COSMESIS HEALING MASK - 2 oz Buy 2 bottles, price each	64.50 56.76	48.38 42.57		
80102	COSMESIS HEALING VITAMIN K CREAM - 1 oz Buy 2 bottles, price each	79.50 69.96	59.63 52.47		
80109	COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80110	COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80138	COSMESIS HYDRATING ANTIOXIDANT FACE MIST - 4 oz Buy 2 bottles, price each	39.95 38.00	29.96 28.50		
80103	COSMESIS LIFTING & TIGHTENING COMPLEX - 1 oz Buy 2 tubes, price each	74.50 65.56	55.88 49.17		
80146	COSMESIS LYCOPENE CREAM - 1 oz jar Buy 2 jars, price each	28.00 25.40	21.00 19.05		
80135	COSMESIS MELATONIN CREAM - 1 oz Buy 2 jars, price each	33.00 27.10	24.75 20.33		
80114	COSMESIS MILD FACIAL CLEANSER - 8 oz Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80122	COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz Buy 2 jars, price each	64.00 56.32	48.00 42.24		
80111	COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz Buy 2 bottles, price each	74.00 65.12	55.50 48.84		

SUB-TOTAL OF COLUMN 5

No.		Retail Each	Member Each	Qty	Total
80106	COSMESIS REJUVENATING SERUM - 1 oz Buy 2 bottles, price each	\$74.50 65.56	\$55.88 49.17		
80150	COSMESIS RENEWING EYE CREAM - 1/2 oz Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80142	COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80112	COSMESIS SKIN LIGHTENING SERUM - 1/2 oz Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80130	COSMESIS SKIN STEM CELL SERUM - 1 oz Buy 2 bottles, price each	74.00 69.00	55.50 51.75		
80143	COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar Buy 2 jars, price each	66.00 58.00	49.50 43.50		
80148	COSMESIS TIGHTENING & FIRING NECK CREAM - 2 oz jar Buy 2 jars, price each	39.00 35.00	29.25 26.25		
80116	COSMESIS ULTRA LIP PLUMPER - 1/3 oz Buy 2 bottles, price each	64.00 56.32	48.00 42.24		
80101	COSMESIS ULTRA WRINKLE RELAXER - 1 oz Buy 2 bottles, price each	89.95 79.76	67.46 59.82		
80113	COSMESIS UNDER EYE REFINING SERUM - 1/2 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80104	COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80129	COSMESIS VITAMIN C SERUM - 1 oz Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80136	COSMESIS VITAMIN D LOTION - 4 oz Buy 2 bottles, price each	36.00 33.66	27.00 25.25		
80145	COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz Buy 2 jars, price each	28.00 26.00	21.00 19.50		
80149	COSMESIS YOUTH SERUM - 1 oz Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
00862	CRAN-MAX® - 500 mg, 60 veg. caps Buy 4 bottles, price each	17.50 15.00	13.13 11.25		
01424	CRAN-MAX® with UTIROSE™ (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01529	CREATINE CAPSULES - 120 veg. caps Buy 4 bottles, price each	10.95 9.25	8.21 6.94		
01746	CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla) Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01429	CR MIMETIC LONGEVITY FORMULA - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
*33840	CRWAY GREAT GLUCOSE CONTROL CD	98.00	82.00		
**CRWAY	CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE	195.00	195.00		
00407	CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps Buy 4 bottles, price each	38.00 35.00	28.50 26.25		
01808	CURCUMIN® w/GINGER & TURMERONES (ADVANCED BIO)-30 softgels Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01804	CYTOKINE SUPPRESS™ w/EGCG - 30 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
D					
00658	7-KETO® DHEA METABOLITE - 25 mg, 100 caps Buy 4 bottles, price each	\$28.00 24.00	\$21.00 18.00		
01479	7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		

SUB-TOTAL OF COLUMN 6

No.		Retail Each	Member Each	Qty	Total
01640	DHA (VEGETARIAN SOURCED) - 200 mg, 30 veg. softgels Buy 4 bottles, price each	\$20.00 18.00	\$15.00 13.50		
00607	DHEA - 25 mg, 100 tablets (dissolve in mouth) Buy 4 bottles, price each	14.00 11.75	10.50 8.81		
01478	DHEA COMPLETE - 60 veg. caps Buy 4 bottles, price each	48.00 43.20	36.00 32.40		
00335	DHEA - 25 mg, 100 caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00454	DHEA - 15 mg, 100 caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
00882	DHEA - 50 mg, 60 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01689	DHEA - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01358	DIGEST RC - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
01671	D,L-PHENYLALANINE CAPSULES - 500 mg, 100 veg. caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
01540	DMAE BITARTRATE - 150 mg, 200 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00059	DMG - 125 mg, 60 tablets Buy 4 boxes, price each	22.80 21.00	17.10 15.75		
01570	DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
00544	DOG MIX - 100 grams powder Buy 4 jars, price each	19.50 16.00	14.63 12.00		
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
E					
01528	ECHINACEA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01498	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels Buy 4 bottles, price each	56.00 52.00	42.00 39.00		
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00625	EPA/DHA (MEGA) - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01737	ESOPHAGEAL GUARDIAN (Berry flavor) - 60 chewable tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01706	EXTRAORDINARY ENZYMES - 60 caps Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
01514	EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		

SUB-TOTAL OF COLUMN 7

No.		Retail Each	Member Each	Qty	Total
F					
01054	FACE MASTER® PLATINUM	\$199.00	\$199.00		
00965	FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01717	FAST-C® w/DIHYDROQUERCETIN - 120 veg. tabs Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
20053	FEM DOPHILUS® - 30 caps	25.95	19.46		
20055	FEM DOPHILUS® - 60 caps	39.95	29.96		
01064	FEMMENESSENCE MACAPAUSE® - 120 veg. caps	34.99	26.24		
01728	FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED) - 30 veg. caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
01670	FIBER FOOD CAPS - 200 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	16.00 14.00 13.00	12.00 10.50 9.75		
00718	FIBRINOGEN RESIST™ - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
01749	FLAX SEED (ORGANIC GOLDEN GROUND) - 14 oz.	11.67	8.75		
01806	FLORASSIST™ PROBIOTIC - 30 liquid veg. caps Buy 4 boxes, price each	33.00 30.00	24.75 22.50		
01439	FOLATE (OPTIMIZED) (L-METHYLFOLATE) 1,000 mcg - 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01641	FOLIC ACID + B12 CAPSULES - 200 veg. caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01544	FORSKOLIN - 10 mg, 60 veg.caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
01513	FUCOIDAN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
00993	FUCOXANTHIN-SLIM™ - 90 softgels Buy 4 bottles, price each	44.00 39.00	33.00 29.25		
G					
00559	GAMMA E TOCOPHEROL/TOCOTRIENOLS - 60 softgels Buy 4 bottles, price each	\$42.00 37.00	\$31.50 27.75		
00759	GAMMA E TOCOPHEROL w/SESAME LIGNANS - 60 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01394	(OPTIMIZED) GARLIC - 200 veg. caps Buy 4 bottles, price each	24.95 21.00	18.71 15.75		
01301	GH PITUITARY SUPPORT DAY FORMULA - 120 tabs Buy 4 bottles, price each	48.00 44.00	36.00 33.00		
01302	GH PITUITARY SUPPORT NIGHT FORMULA - 120 veg. caps Buy 4 bottles, price each	25.00 22.50	18.75 16.88		
**01228	GINGER FORCE - 60 softgels	31.95	23.96		
01658	GINKGO BILOBA CERTIFIED EXTRACT™ - 120 mg, 365 veg. caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
01648	GINKGO EXTRACT 28/7 (SUPER) - 120 mg, 100 veg. caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
00756	GLA WITH SESAME LIGNANS (MEGA) - 60 softgels Buy 4 bottles, price each	19.50 18.00	14.63 13.50		
00345	(L) GLUTAMINE CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00141	(L)-GLUTAMINE POWDER - 100 grams Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00522	GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps Buy 4 bottles, price each	38.00 32.00	28.50 24.00		

SUB-TOTAL OF COLUMN 8

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
G CONTINUED					
01541	GLUTATHIONE, CYSTEINE & C - 100 veg. caps Buy 4 bottles, price each	\$20.00 18.00	\$15.00 13.50		
00314	L-GLUTATHIONE (MEGA) - 250 mg, 60 caps	39.64	29.73		
01731	GLYCEMICPRO™ TRANSGLUCOSIDASE - 60 veg. caps Buy 4 bottles, price each	48.00 42.00	36.00 31.50		
01669	GLYCINE - 1,000 mg, 100 veg. caps Buy 4 bottles, price each	12.00 10.80	9.00 8.10		
01091	GRAPE EXTRACT w/RESVERATROL (WHOLE) - 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01411	GRAPE SEED EXTRACT w/RESVERATROL & PTEROSTILBENE - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01604	GREEN COFFEE EXTRACT COFFEENIC® - 200 mg, 90 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01620	GREEN COFFEE EXTRACT COFFEENIC® - 400 mg, 90 veg. caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
00953	GREEN TEA EXTRACT (MEGA) - lightly caffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
00954	GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
H					
01074	5 HTP - 100 mg, 60 caps	\$27.95	\$20.96		
01738	HCA (GARCINIA) - 90 veg. caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
01393	HEPATOPRO - 900 mg, 60 softgels Buy 4 bottles, price each	50.00 46.00	37.50 34.50		
01435	HOMOCYSTEINE RESIST - 100 caps Buy 4 bottles, price each	24.00 21.60	18.00 16.20		
01527	HUPERZINE A - 200 mcg, 60 veg caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00661	HYDRODERM® - 1 oz Buy 2 bottles, price each	79.95 65.33	59.96 49.00		
I					
*01060	i26® HYPERIMMUNE EGG - 140 grams powder	\$54.99	\$46.75		
01704	IMMUNE MODULATOR W/TINOFEND® - 60 veg. caps Buy 4 bottles, price each	17.00 15.00	12.75 11.25		
00955	IMMUNE PROTECT W/PARACTIN® - 30 veg. caps Buy 4 bottles, price each	29.50 26.55	22.13 19.91		
01049	INNERPOWER™ - 555 grams powder	42.00	31.50		
01674	INOSITOL CAPSULES - 1,000 mg, 360 veg. caps Buy 4 bottles, price each	62.00 58.00	46.50 43.50		
01292	INTEGRA-LEAN® AFRICAN MANGO IRVINGIA - 150 mg, 60 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01002	IODORAL® - 180 tabs	50.00	37.50		
01677	IRON PROTEIN PLUS - 300 mg, 100 veg. caps Buy 4 bottles, price each	28.00 26.00	21.00 19.50		
01492	IRVINGIA W/PHASE 3™ - 120 veg. caps CALORIE CONTROL COMPLEX (OPTIMIZED AFRICAN MANGO) Buy 4 bottles, price each	56.00 48.00	42.00 36.00		

SUB-TOTAL OF COLUMN 9

No.		Retail Each	Member Each	Qty	Total
J, K					
00056	JARRO-DOPHILUS EPS™ - 60 veg. caps	\$22.95	\$17.21		
01759	JARRO-DOPHILUS EPS™ - 25 Billion - 30 caps	39.95	29.96		
01724	K w/ADVANCED K2 COMPLEX (SUPER) - 90 softgels Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01600	KRILL HEALTHY JOINT FORMULA - 30 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01050	KRILL OIL PHOSPHOMEGA™ - 60 softgels	33.95	25.46		
00316	KYOLIC® GARLIC FORMULA 102 - 200 caps	26.45	19.84		
00214	KYOLIC® GARLIC FORMULA 105 - 200 caps	27.45	20.59		
00789	KYOLIC® RESERVE - 600 mg, 120 caps	27.95	20.96		
L					
01681	LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps Buy 4 bottles, price each	\$48.00 44.00	\$36.00 33.00		
01702	LACTOSOLV™ LONG LASTING LACTASE - 30 caps Buy 4 boxes, price each	30.00 27.00	22.50 20.25		
00020	LECITHIN - 16 oz. granules Buy 4 jars, price each	15.00 12.50	11.25 9.38		
01855	LIFE EXTENSION MIX™ - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01857	LIFE EXTENSION MIX™ W/EXTRA NIACIN - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01854	LIFE EXTENSION MIX™ - 490 caps Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01856	LIFE EXTENSION MIX™ POWDER - 14.81 oz Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
01865	LIFE EXTENSION MIX™ - 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01867	LIFE EXTENSION MIX™ W/EXTRA NIACIN 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01864	LIFE EXTENSION MIX™ - 490 caps w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01866	LIFE EXTENSION MIX™ POWDER - 14.81 oz w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
01608	LIVER EFFICIENCY FORMULA - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01639	5-LOX INHIBITOR W/APRESFLEX® - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01678	L-LYSINE - 620 mg, 100 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
01470	LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE - 120 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00455	LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels Buy 4 bottles, price each	35.00 30.00	26.25 22.50		

SUB-TOTAL OF COLUMN 10

No.		Retail Each	Member Each	Qty	Total
M					
01885	MACUGUARD™ OCULAR SUPPORT - 60 softgels	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
01886	MACUGUARD™ OCULAR SUPPORT w/ASTAXANTHIN - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01459	MAGNESIUM CAPS - 500 mg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	10.00	7.50		
01682	MAGNESIUM CITRATE - 160 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	7.50	5.63		
01668	MELATONIN - 300 mcg, 100 veg. caps	5.75	4.31		
	Buy 4 bottles, price each	5.00	3.75		
01083	MELATONIN - 500 mcg, 200 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00329	MELATONIN - 1 mg, 60 caps	5.00	3.75		
	Buy 4 bottles, price each	4.63	3.47		
00330	MELATONIN - 3 mg, 60 caps	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01786	MELATONIN TIME RELEASE - 3 mg, 60 veg. tabs	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
00331	MELATONIN - 10 mg, 60 caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
00332	MELATONIN - 3 mg, 60 veg. lozenges	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01734	MELATONIN (Fast Acting Liquid) - 3 mg (Natural Citrus-Van)	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
01787	MELATONIN TIME RELEASE - 300 mcg, 100 veg. tabs	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
01788	MELATONIN TIME RELEASE - 750 mcg, 60 veg. tablets	8.00	6.00		
	Buy 4 bottles, price each	7.00	5.25		
01536	METHYLCOBALAMIN - 1 mg, 60 lozenges (vanilla)	9.95	7.46		
	Buy 4 bottles, price each	8.00	6.00		
01537	METHYLCOBALAMIN - 5 mg, 60 lozenges (vanilla)	32.00	24.00		
	Buy 4 bottles, price each	25.00	18.75		
	Buy 10 bottles, price each	23.00	17.25		
00709	MIGRA-EEZE™ (BUTTERBUR) - 60 softgels	29.50	22.13		
	Buy 4 bottles, price each	26.33	19.75		
01800	MIGRA-MAG w/BRAIN SHIELD™ - 90 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01522	MILK THISTLE (CERTIFIED EUROPEAN) - 750 mg, 60 veg caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
01822	MILK THISTLE (EUROPEAN) - 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01817	MILK THISTLE (EUROPEAN) - 120 softgels	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01698	MIRAFORTE w/STANDARDIZED LIGNANS (SUPER) - 120 caps	62.00	46.50		
	Buy 4 bottles, price each	56.00	42.00		
01769	MITOCHONDRIAL BASICS w/BIOPQQ® - 30 caps	52.00	39.00		
	Buy 4 bottles, price each	46.00	34.50		
01768	MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ® - 120 caps	94.00	70.50		
	Buy 4 bottles, price each	84.00	63.00		
00065	MK-7 - 90 mcg, 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		

SUB-TOTAL OF COLUMN 11

No.		Retail Each	Member Each	Qty	Total
01279	MOUTHWASH W/POMEGRANATE - 16 oz	\$18.50	\$13.88		
	Buy 4 bottles, price each	17.00	12.75		
00451	MSM (METHYLSULFONYLMETHANE) - 1,000 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	11.95	8.96		
N					
01534	N-ACETYL-L-CYSTEINE - 600 mg, 60 veg. caps	\$14.00	\$10.50		
	Buy 4 bottles, price each	13.50	10.13		
00066	NATTOKINASE - 60 softgels	25.50	19.13		
00891	NATURAL APPETITE CONTROL - 90 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.20	18.90		
01807	NATURAL APPETITE SUPPRESS (ADVANCED) - 60 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
00984	NATURAL BP MANAGEMENT - 60 tablets	42.00	31.50		
	Buy 4 bottles, price each	37.80	28.35		
01692	NATURAL ESTROGEN w/POMEGRANATE EXTRACT - 60 caplets	38.00	28.50		
	Buy 4 bottles, price each	33.00	24.75		
01221	NATURAL FEMALE SUPPORT - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01471	NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01626	NATURAL SEX FOR WOMEN® 50+ (ADVANCED) - 90 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	45.33	34.00		
01444	NATURAL SLEEP® - 60 veg. caps	13.00	9.75		
	Buy 4 bottles, price each	10.00	7.50		
01551	NATURAL SLEEP® w/ MELATONIN (ENHANCED) - 30 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01511	NATURAL SLEEP® w/o MELATONIN (ENHANCED) - 30 caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01445	NATURAL SLEEP® MELATONIN - 5 mg, 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00987	NATURAL STRESS RELIEF - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01603	NEURO-MAG™ MAGNESIUM L-THREONATE - 90 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01602	NEURO-MAG™ L-THREONATE w/CALCIUM & VITAMIN D 225 grams - Lemon flavor	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00373	NO-FLUSH NIACIN - 800 mg, 100 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
O					
01623	OLIVE LEAF VASCULAR SUPPORT - 500 mg, 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01483	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
	Buy 10 bottles, price each	14.00	10.50		
01482	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		
01484	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 enteric coated softgels	34.00	25.50		
	Buy 4 bottles, price each	31.00	23.25		
	Buy 10 bottles, price each	28.00	21.00		

SUB-TOTAL OF COLUMN 12

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
CONTINUED					
01485	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 enteric coated softgels	\$20.00	\$15.00		
	Buy 4 bottles, price each	18.00	13.50		
	Buy 10 bottles, price each	16.00	12.00		
01619	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL) - 240 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		
01632	OMEGA-3 LEMON WHIRL - 16 oz bottle	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01633	OMEGA-3 TROPICAL WHIRL - 16 oz bottle	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01801	ONE-PER-DAY - 60 tablets	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01328	ONLY TRACE MINERALS - 90 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
P					
01789	PALMETTOGUARD™ SAW PALMETTO w/BETA SITOSTEROL -30 softgels	\$15.00	\$11.25		
	Buy 12 bottles, price each	12.00	9.00		
00073	PANCREATIN - 500 mg, 50 caps	13.22	9.92		
01323	PEAK ATP® WITH GLYCO-CARN® - 60 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	50.00	37.50		
00342	PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder	109.95	82.46		
01080	PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps	79.95	59.96		
01811	PEONY IMMUNE - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
00673	PGX™ PLUS MULBERRY (WELLBETX®) -180 caps	34.95	26.21		
00865	PHARMAGABA® - 60 chewable tablets	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01676	PHOSPHATIDYLSERINE CAPS - 100 mg, 100 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
01390	PHOSPHOMEGA® - 60 softgels	39.95	26.96		
01436	POLICOSANOL - 10 mg, 60 veg. caps	20.00	15.00		
	Buy 6 bottles, price each	15.00	11.25		
01423	POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels	24.00	18.00		
	Buy 4 bottles, price each	21.00	15.75		
00956	POMEGRANATE EXTRACT - 30 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.55	13.16		
00957	POMEGRANATE JUICE CONCENTRATE - 16 oz. liquid	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01797	POMI-T® - 60 veg. caps	33.33	25.00		
	Buy 4 bottles, price each	30.00	22.50		
00577	POTASSIUM IODIDE - 1 box, 14 tablets	6.95	5.21		
	Buy 4 boxes, price each	5.25	3.94		
01500	PQQ CAPS W/BIO-PQQ® - 10 mg, 30 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01647	PQQ CAPS W/BIO-PQQ® - 20 mg, 30 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00302	PREGNENOLONE - 50 mg, 100 caps	26.00	19.50		
	Buy 4 bottles, price each	22.00	16.50		
00700	PREGNENOLONE - 100 mg, 100 caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
***01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		

SUB-TOTAL OF COLUMN 13

No.		Retail Each	Member Each	Qty	Total
00525	PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets	\$59.95	\$44.96		
01441	PROGESTACARE FOR WOMEN - 4 oz cream	35.00	26.25		
	Buy 4 bottles, price each	32.00	24.00		
01895	PROSTATE FORMULA (ULTRA NAT) 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
	Buy 12 bottles, price each	32.00	24.00		
01742	PROTEIN-ISOLATE (WHEY) VANILLA - 1 lb. powder	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01743	PROTEIN-ISOLATE (WHEY) CHOCOLATE - 1 lb. powder	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01770	PROTEIN CONCENTRATE (New Zealand Whey) Vanilla - 520 gr	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		
01771	PROTEIN CONCENTRATE (New Zealand Whey) Chocolate - 660 gr	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		
01812	PROVINAL® PURIFIED OMEGA-7 - 30 softgels	27.00	20.25		
	Buy 4 bottles, price each	24.00	18.00		
01508	PTEROPURE™ - 50 mg Pterostilbene 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01587	PURE PLANT PROTEIN - Veg. Vanilla 540 grams powder	38.00	28.50		
	Buy 4 jars, price each	35.00	26.25		
01209	PUMPKIN SEED EXTRACT (WATER-SOLUBLE) - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01210	PUMPKIN SEED EXT w/ SOY ISOFLAVONES (WATER-SOLUBLE) - 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01637	PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT -100 mg, 60 veg. caps	64.00	48.00		
	Buy 4 bottles, price each	60.00	45.00		
01217	PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
Q, R					
01309	QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01030	RED YEAST RICE (Bluebonnet)- 600 mg, 60 veg. caps	16.95	13.56		
00605	REGIMINT - 60 enteric-coated caps	19.95	14.96		
	Buy 4 bottles, price each	18.67	14.00		
01708	REISHI EXTRACT MUSHROOM COMPLEX - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01448	REJUVENEX® BODY LOTION - 6 oz	24.00	18.00		
	Buy 4 tubes, price each	19.80	14.85		
	Buy 8 tubes, price each	17.00	12.75		
01621	REJUVENEX® FACTOR FIRMING SERUM - 1.7 oz	65.00	48.75		
	Buy 2 bottles, price each	50.66	38.00		
	Buy 6 bottles, price each	38.52	28.89		
01220	REJUVENEX® (ULTRA) - 2 oz	52.00	39.00		
	Buy 2 jars, price each	48.00	36.00		
	Buy 4 jars, price each	44.00	33.00		
	Buy 8 jars, price each	39.93	29.95		
00676	REJUVENIGHT® (ULTRA) - 2 oz	39.95	29.96		
	Buy 4 jars, price each	36.00	27.00		
01413	RESVERATROL W/PTEROSTILBENE - 20 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	41.33	31.00		

SUB-TOTAL OF COLUMN 14

No.		Retail Each	Member Each	Qty	Total
00889	RHODIOLA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$11.75 10.58	\$8.81 7.94		
00972	(D) RIBOSE POWDER - 150 grams Buy 4 jars, price each	27.50 24.75	20.63 18.56		
01473	(D) RIBOSE TABLETS - 100 veg. tabs Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01609	RICH REWARDS® BREAKFAST GROUND COFFEE - 12 oz. bag	13.00	9.75		
01729	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag Natural Vanilla	15.00	11.25		
01730	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag Natural Mocha	15.00	11.25		
01610	RICH REWARDS™ DECAFFEINATED ROAST GROUND COFFEE - 12 oz. bag	14.00	10.50		
01809	RICH REWARDS™ DARK CHOCOLATE - 15 piece bag Buy 4 bags, price each	15.00 12.96	11.25 9.72		
01712	RICH REWARDS™ BLACK BEAN VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01530	RICH REWARDS™ CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01531	RICH REWARDS™ (SPICY) CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01705	RICH REWARDS™ LENTIL VEGETABLE SOUP - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01810	RICH REWARDS™ MUNG BEAN SOUP W/TURMERIC - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01208	R-LIPOIC ACID (SUPER) - 300 mg, 60 veg. caps Buy 4 bottles, price each	49.00 45.00	36.75 33.75		
00070	RNA CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	17.95 16.16	13.46 12.12		
S					
01432	SAFFRON w/SATIAREAL (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
00358	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets Buy 8 boxes, price each	16.00 14.00	12.00 10.50		
00453	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00557	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets Buy 6 boxes, price each	28.00 24.00	21.00 18.00		
01055	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01740	SEA-IODINE™ - 1,000 mcg, 60 veg. caps Buy 4 bottles, price each	8.00 7.20	6.00 5.40		
00046	SELENIUM - 2 oz dropper bottle	11.95	8.96		
01679	SE-METHYL L-SELENOCYSTEINE - 200 mcg, 100 veg. caps Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00318	SERRAFLAZYME - 100 tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00284	SHARK LIVER OIL (NORWEGIAN) - 1,000 mg, 30 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01684	SILYMARIN - 100 mg, 50 veg. caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01596	SKIN RESTORING PHYTCERAMIDES w/LIPOWHEAT® - 30 veg. liquid caps Buy 4 bottles, price each	25.00 23.00	18.75 17.25		
00961	SODZYME® w/GLISODIN® AND WOLFBERRY - 90 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		

SUB-TOTAL OF COLUMN 15

No.		Retail Each	Member Each	Qty	Total
00657	SOLARSHIELD SUNGLASSES - 1 pair smoke color Buy 2 pairs, price each	\$12.99 11.50	\$9.74 8.63		
01097	SOY EXTRACT (ULTRA) - 150 veg. caps Buy 4 bottles, price each	87.00 78.00	65.25 58.50		
00432	STEVIA™ EXTRACT (BETTER) - 100 packets, 1 gram each	9.95	7.46		
00438	STEVIA™ ORGANIC LIQUID EXTRACT (BETTER) - 2 oz liquid	11.00	8.25		
01396	ST. JOHN'S WORT EXTRACT - 300 mg, 60 veg. caps Buy 4 bottles, price each	10.98 10.00	8.24 7.50		
01476	STRONTIUM - 750 mg, 90 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01649	SUPER ABSORBABLE SOY ISOFLAVONES - 60 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01790	SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	28.00 26.00 24.00	21.00 19.50 18.00		
01778	SUPER SELENIUM COMPLEX - 200 mcg, 100 veg. caps Buy 4 bottles, price each Buy 12 bottles, price each	14.00 12.00 11.00	10.50 9.00 8.25		
T					
01723	TART CHERRY EXTRACT w/STANDARDIZED CHERRYPURE® - 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
00199	TAURINE - 1,000 mg, 50 caps Buy 4 bottles, price each	8.95 8.00	6.71 6.00		
00133	TAURINE POWDER - 300 grams Buy 4 bottles, price each	20.00 16.88	15.00 12.66		
01304	THEAFLAVIN STANDARDIZED EXTRACT - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01683	(L) THEANINE - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 20.50	18.00 15.38		
††01038	THERALAC PROBIOTICS - 30 caps	47.95	35.96		
00668	THYROID FORMULA™ (METABOLIC ADVANTAGE) - 100 caps	21.95	16.46		
00349	TMG POWDER - 50 grams Buy 4 bottles, price each	14.00 11.00	10.50 8.25		
01859	TMG - 1,000 mg, 60 veg. liquid caps Buy 4 bottles, price each	13.00 12.00	9.75 9.00		
00781	TOCOTRIENOLS WITH SESAME LIGNANS - 60 softgels Buy 4 bottles, price each	38.00 36.00	28.50 27.00		
01400	TOCOTRIENOLS (SUPER-ABSORBABLE) - 60 softgels Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
01278	TOOTHPASTE - 4 oz (Mint) Buy 4 tubes, price each	9.50 8.67	7.13 6.50		
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT - 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL - 60 veg. caps Buy 4 bottles, price each	32.00 29.60	24.00 22.20		
01803	TRI SUGAR SHIELD™ - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01386	TRUFIBER® - 180 grams	32.95	24.71		
01389	TRUFLOA PROBIOTICS - 32 veg. caps	42.95	32.21		
01722	L-TRYPTOPHAN - 500 mg, 90 veg. caps Buy 4 bottles, price each	33.00 30.00	24.75 22.50		
01721	TRYPTOPHAN PLUS (OPTIMIZED) - 90 veg. caps Buy 4 bottles, price each	32.00 29.00	24.00 21.75		

SUB-TOTAL OF COLUMN 16

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
T CONTINUED					
01816	TWO-PER-DAY - 60 tablets	\$10.50	\$7.88		
	Buy 4 bottles, price each	9.50	7.13		
01815	TWO-PER-DAY - 120 tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01814	TWO-PER-DAY - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00326	L-TYROSINE - 500 mg, 100 tablets	12.98	9.74		
V					
00213	VANADYL SULFATE - 7.5 mg, 100 tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00408	VENOTONE - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	VINPOCETINE - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
01526	VITAMIN B3 NIACIN - 1,000 mg, 100 veg. caps	12.75	9.56		
	Buy 4 bottles, price each	12.00	9.00		
00372	VITAMIN B3 NIACIN - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	VITAMIN B5 - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
01535	VITAMIN B6 - 250 mg, 100 veg. caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	VITAMIN B12 - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	VITAMIN C w/ DIHYDROQUERCETIN - 1,000 mg, 60 tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	VITAMIN C w/ DIHYDROQUERCETIN - 1,000 mg, 250 tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	VITAMIN C (BUFFERED) POWDER - 454.6 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
01736	(EFFERVESCENT) VITAMIN C-MAGNESIUM CRYSTALS - 180 grams	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01732	VITAMIN D3 - 2,000 IU, 1 fl oz, Mint flavor	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	VITAMIN D3 - 1,000 IU, 90 softgels	7.00	5.25		
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01751	VITAMIN D3 - 1,000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	VITAMIN D3 - 5,000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	VITAMIN D3 - 7,000 IU, 60 softgels	14.00	10.50		
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01758	VITAMIN D3 w/SEA-IODINE™ - 5,000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
00864	VITAMIN D3 Liquid Emulsion - 2,000 IU, 1 oz.	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01741	VITAMINS D AND K w/SEA-IODINE™ - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01763	VITAMIN E (NATURAL) - 400 IU, 100 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	26.00	19.50		
01225	VITAMIN K2 (LOW-DOSE) - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		

SUB-TOTAL OF COLUMN 17

No.		Retail Each	Member Each	Qty	Total
X					
00409	XYLIWHITE™ MOUTHWASH - 16 oz	\$10.00	\$7.50		
W					
01739	WINTER WELLNESS™ - 60 caps	\$15.00	\$11.25		
	Buy 4 bottles, price each	13.00	9.75		
Z					
01813	ZINC HIGH POTENCY - 50 mg, 90 veg. caps	\$7.95	\$5.96		
	Buy 4 bottles, price each	7.00	5.25		
01561	ZINC LOZENGES - 75 lozenges	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
**01051	ZYFLAMEND® WHOLE BODY - 120 softgels	64.95	48.71		

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SUB-TOTAL COLUMN	6	
SUB-TOTAL COLUMN	7	
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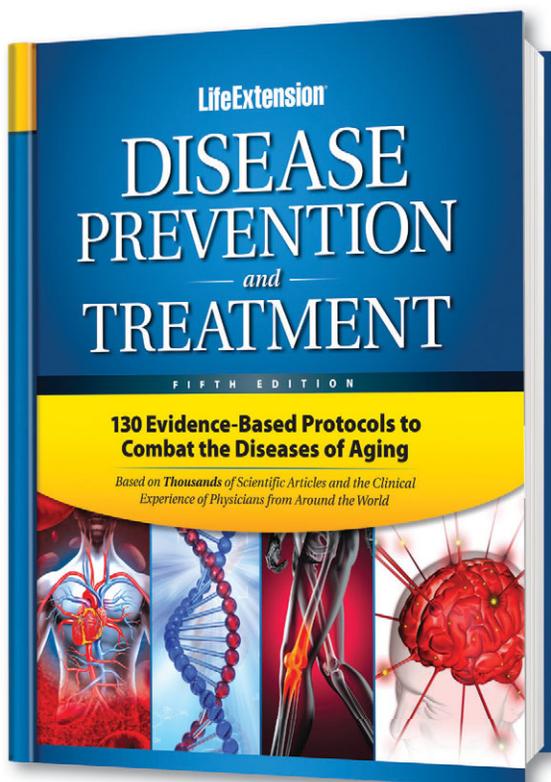
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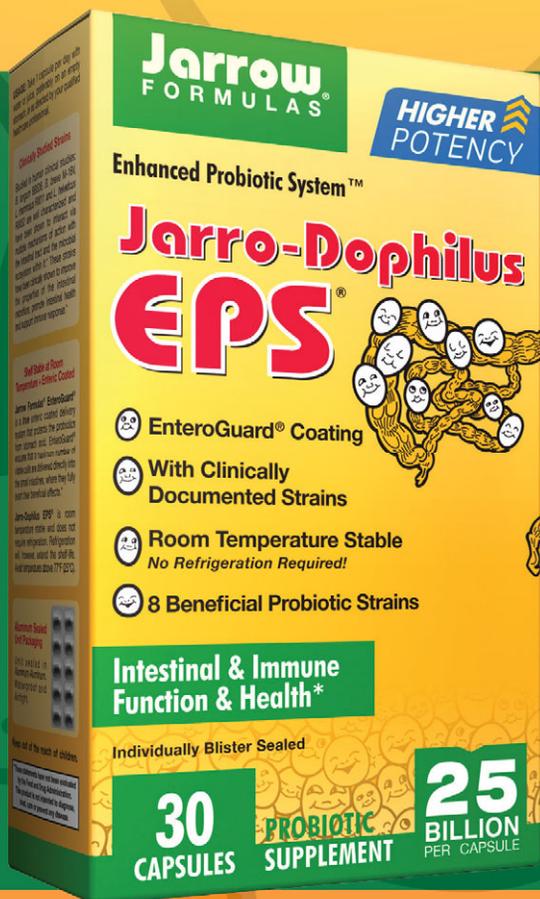
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Item #00882

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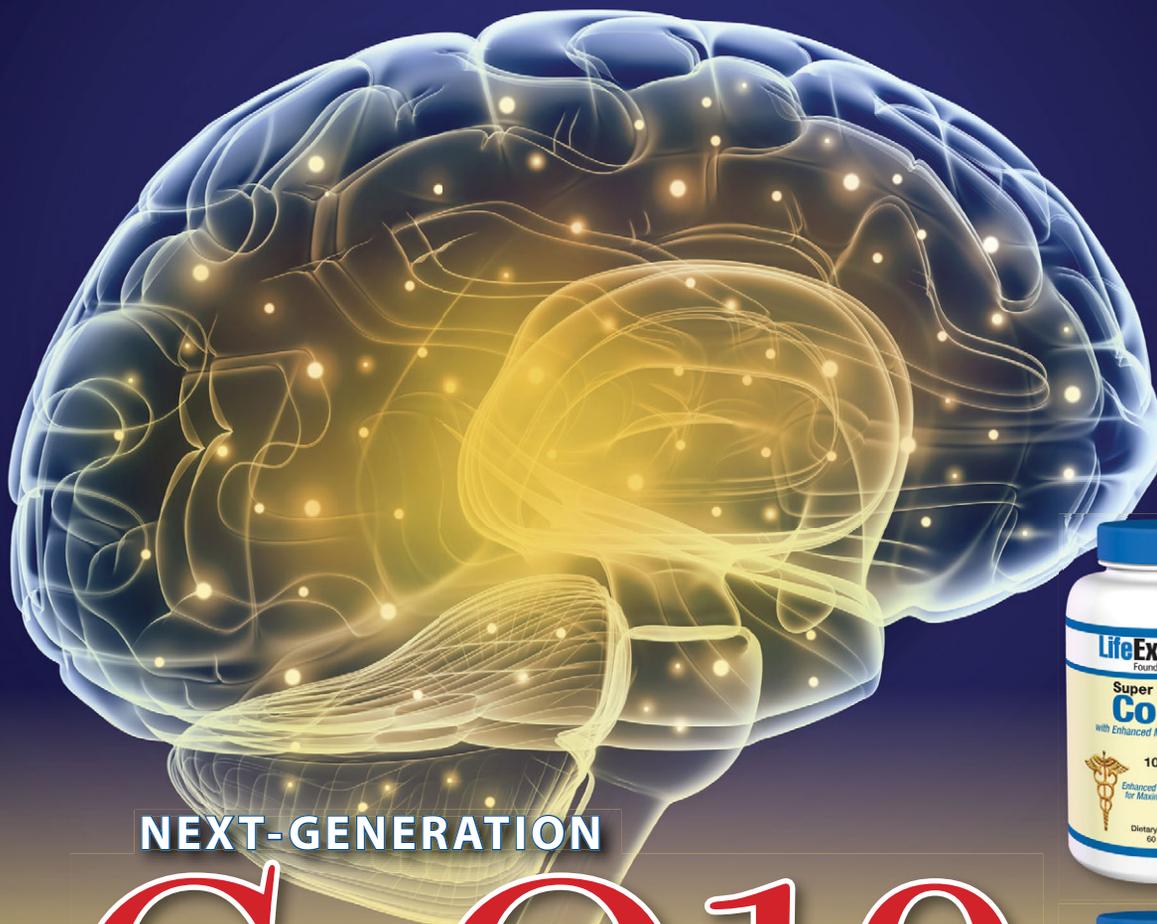
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