

RESTORE YOUTHFUL CEREBRAL CIRCULATION

LifeExtension[®]

LifeExtension.com

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

February 2015

How To HALT Brain Atrophy

Take A Few Inches
Off Your Waistline

Purge Your Cells Of
Accumulated Debris

Age-Reversal Impact
Of AMPK Activation

Natural Hormones Treat
Traumatic Brain Injury



PLUS—

Dangers Of Inhaled Insulin Drugs

Tart Cherries Improve Joint Health

Low Vitamin Intake Promotes Obesity

Why choose Life Extension?

We have one mission and one mission only:
to help you live a healthier, longer life.

At Life Extension® we're absolutely committed to informing you about medical breakthroughs, vital health news, and science-based protocols so you can make wiser health choices ... and become your own health advocate.

There's a multitude of nutritional supplement brands on the market. But only one is backed by the only organization in the world solely dedicated to helping you live a longer, healthier life: **Life Extension®**.

Turn the page and find out **what sets our formulations apart** from all others on the market.



OUR FOCUS

is on quality, purity,
and potency.



Quality

If you're going to make smart health choices, demanding excellence is a top priority when selecting nutritional supplements. Our premium-quality products are based on **35 years** of clinical research. The latest scientific studies determine our dosages and raw materials. Our quality control standards exceed FDA mandates, and every product is manufactured to cGMP (current Good Manufacturing Practice) guidelines. All of which makes Life Extension supplements the gold standard of the industry.

LifeExtension
Foundation for Longer Life®



Purity

We source only the **best raw materials** from the world's most reputable suppliers. But we go one step further by using **advanced analytical methods** such as high-performance liquid chromatography and gas chromatography/mass spectrometry to verify **purity as well as potency**.

Potency

While commercial brands often emphasize lower cost by using sub-optimal doses and less-than-premium quality ingredients, we never choose our ingredients based on cost — so you know you're getting the **most nutritional potency for your dollar**. What's more, **99%** of all our products are manufactured right here in the United States.

Let's face it. When you take something to improve your health, shouldn't you insist on the very best? Always choose premium-quality Life Extension supplements.

SUPER \$ SALE
Live healthy for less.

Just once a year, we discount the price of every product we offer to encourage you to try the highest quality formulations money can buy. That includes our bestsellers and exciting new products like those you see here. So stock up now at huge **Super Sale** savings!

REPORTS



26 DEADLY EFFECTS OF EXCESS ABDOMINAL FAT

Mainstream physicians are finally recognizing that excess abdominal fat sharply increases the risk of age-related diseases. Clinical studies demonstrate that a novel **peptide** complex suppresses appetite, decreases food intake, and reduces abdominal fat deposition.



50 RESTORE MORE YOUTHFUL CEREBRAL CIRCULATION

An extract of the periwinkle plant, **vinpocetine** encourages cerebral blood flow and healthy neuronal function. This is of particular importance in protecting against mechanisms behind Alzheimer's, Parkinson's, vascular dementia, memory impairment, and stroke damage.



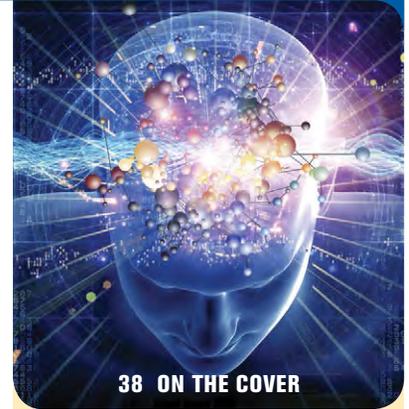
62 HEALTH RISKS OF INHALED INSULIN

The FDA recently approved a new *inhaled insulin* drug. However, reports indicate that inhaled insulin can induce unwanted cell division, respiratory distress, and other adverse effects. A similar drug was withdrawn from the market following links to increased risk of lung cancer.



72 REVERSING TRAUMATIC BRAIN INJURY

Standard medicine has failed many of the 1.7 million Americans afflicted with **traumatic brain injury** (TBI). These victims too often suffer long-term cognitive, emotional, and physical effects. A group of physicians has developed a novel way of reversing these symptoms of brain trauma by replenishing natural hormones on an individualized basis.



38 ON THE COVER

**COMBAT AGE-RELATED
BRAIN SHRINKAGE**

Brain atrophy (shrinkage) increases with age and is a major factor in cognitive, depressive, and movement disorders. Shrinkage of our brain also markedly increases risk of premature death. The good news is that loss of brain mass can be prevented by following a program already practiced by many **Life Extension**[®] members.

DEPARTMENTS



**7 AS WE SEE IT:
MAJOR ADVANCE SLOWS AGING**

A huge number of published studies demonstrate that higher **AMPK** activity can reverse degenerative aging processes by stimulating cellular energy metabolism, inhibiting fat storage, reducing triglyceride production, and boosting glucose uptake into muscles.



19 IN THE NEWS

Vitamin E may lower blood pressure; curcumin blocks tumor growth and inhibits mesothelioma; fiber reduces mortality risk; tart cherry juice treats joint pain; thyroidectomy patients are vitamin D deficient; vitamin D derivative combats pancreatic cancer; B-vitamin deficiencies are linked to obesity; vitamin D improves atopic dermatitis.

85 SUPER FOODS

The bioactive compounds in sage reduce glucose, cholesterol, triglycerides, and inflammation, and improve mood and cognition. Sage also safely boosts memory in those with and without Alzheimer's.



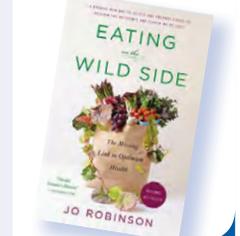
91 ASK THE PHARMACIST

Studies show that up to **68%** of Americans are magnesium-deficient. Magnesium supplementation can support every functional cell in the body and prevent a broad range of diseases and disorders.



97 AUTHOR INTERVIEW

Author Jo Robinson's book *Eating on the Wild Side: The Missing Link to Optimum Health* details how humans gradually replaced once-wild produce with easy-to-harvest varieties that are low in nutrients and high in starch and sugar.





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How Does Your Fish Oil Compare?

There are hundreds of **fish oil** brands on the commercial marketplace.

Only one brand incorporates lifesaving findings to provide optimal **omega-3** and **olive oil** benefits in one formula.

Studies published in **2014** confirm what *Life Extension*[®] espoused a decade ago when it introduced purified **fish oil** fortified with **olive polyphenols**.

Research clearly shows that a combination of **fish** and **olive oil** provides better effects than fish oil alone.¹⁻⁸ Yet most people today take **only** low-potency fish oil.

Sesame Improves Fish Oil's Benefits

When **sesame lignans** are supplemented with **fish oil**, the omega-3 benefits are augmented.^{9,10}

Sesame lignans help guard against **lipid peroxidation**, thereby extending the stability of **DHA** in the body. Sesame also directs fatty acids toward pathways that can help with **inflammatory** reactions.

Super Omega-3 contains purified **fish oil** and **olive fruit polyphenols** plus standardized **sesame lignans**.

5-Star Rated Purity, Potency, And Stability

To ensure the purest, most stable, and easy-to-tolerate fish oil, **Super Omega-3** is **molecularly distilled**. It enjoys the highest **5-star rating** for **purity, quality, and concentration** from the renowned **International Fish Oil Standards** (IFOS) program.¹¹

During **Super Sale**, members can obtain this unique **fish oil-sesame-olive** formula for only **51 cents** a day! On a **cost-per-milligram** basis, **Super Omega-3** provides **more diverse potency** for **less money** than commercial products.

Obtain Super Omega-3 At Below Wholesale Prices

A bottle containing **120** capsules of **Super Omega-3** retails for **\$32**. The regular member price for a single bottle is **\$24**.

If a member buys four bottles of **Super Omega-3** during the **Super Sale**, the cost per bottle drops to **\$18.90**.

When a member buys 10 bottles during **Super Sale**, the cost per bottle is reduced to **\$15.34**—a **52%** discount.

Members gain access to all of our most advanced formulas at the **lowest prices** during the annual **Super Sale**.

Note: While the health benefits of **omega-3s** from fish oil are universally recognized, the critical importance of **olive oil** in maintaining healthy **vascular** function remains largely overlooked.

Super Omega-3 provide the equivalent polyphenol content of **4 to 6 tablespoons** of **extra virgin olive oil**.



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

EPA (eicosapentaenoic acid)	1,400 mg
DHA (docosahexaenoic acid)	1,000 mg
Typical DPA (docosapentaenoic acid)	156 mg
Olive Extract (fruit and leaf) providing [39 mg polyphenols, 10.4 mg hydroxytyrosol/tyrosol, 8.8 mg verbascoside/oleuropein]	600 mg
Sesame Seed Lignan Extract	20 mg



Item # 01482

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To order **Super Omega-3** at **Super Sale** prices lower than last year, call **1-800-544-4440** or visit **www.LifeExtension.com**

LifeExtension[®]

Magazine

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Superior-Absorbing CURCUMIN



Curcumin has turned into a nutrition **superstar** because of the enormous health-promoting effects it provides for almost every organ system.^{1,2}

The challenge in deriving these benefits is that most curcumin extracts are neither well **absorbed** nor well retained in the body.

To resolve this issue, **Life Extension**®'s curcumin supplements utilize a patented preparation of curcumin that can reach up to **7 times higher** concentration in the blood than standard curcumin.³

As the graphs on this page illustrate, the **400 mg** of curcumin in either of our formulas supply the body with the equivalent of **2,500 mg** of most commercial curcumin products.

In recent studies comparing the effects of standard curcumin against Life Extension's turmeric extracts, researchers observed:^{4,5}

- Nearly **twice** the support for immune health and approximately **2 times** the support for inflammatory issues.
- Almost **double** the antioxidant support. A separate study indicated that an antioxidant-rich curcumin extract provided powerful support for heart health.

TWO CURCUMIN FORMULAS TO CHOOSE FROM

Those who want a curcumin stand-alone can order a bottle of 60 vegetarian capsules of **Super Bio-Curcumin**® (Item # 00407) for \$38. If a member buys four bottles during **Super Sale**, the price is reduced to **\$23.63** per bottle. Each bottle lasts a typical user **two** months.

Those seeking additional support against cell changes that promote prolonged functional inflammatory issues may choose **Advanced Bio-Curcumin**® With Ginger & Turmerones.

While **both** of these formulas provide the superior **absorbing** curcumin, **Advanced Bio-Curcumin**® With Ginger & Turmerones also contains:

- **Turmerones** to increase the amount of curcumin inside cells.⁶
- **Ginger**, which provides complementary health benefits.
- **Phospholipids** that further enhance absorption.⁷

A bottle of 30 softgels of **Advanced Bio-Curcumin**® With Ginger & Turmerones (Item # 01808) retails for \$30. If a member buys four bottles during **Super Sale**, the price is reduced to **\$18.23** per bottle. The suggested dose for either of these highly **absorbable** curcumin supplements is **one** capsule daily.

To order either of these products, call 1-800-544-4440 or visit www.LifeExtension.com

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

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

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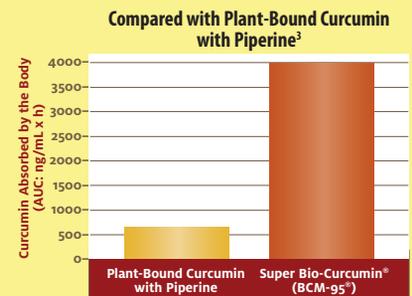


Chart 1. Super Bio-Curcumin® showed 6.3 times greater bioavailability (absorption and sustainability over eight hours) in humans compared with plantbound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin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

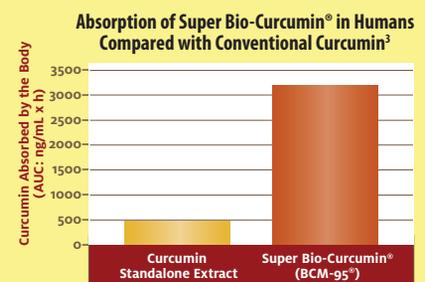


Chart 2. Super Bio-Curcumin® showed 6.9 times greater bioavailability (absorption and sustainability over eight hours) in humans compared with conventional curcumin (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed by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

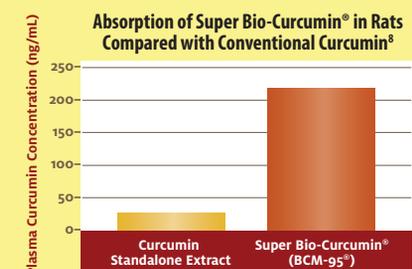


Chart 3. Bioavailability in rats fed with 7.8 times higher than conventional curcumin.

Major Advance In Slowing Aging



BY WILLIAM FALOON

When we first described **antioxidants** in **1980**, the concept was virtually unknown outside the scientific community.

Since then, the term “**antioxidant**” has become ubiquitous, as commercial companies widely use it to advertise products.

In this issue, we describe a method to counteract a deadly aging factor that is today as obscure as **antioxidants** were **35 years** ago.

This novel approach is not new to most **Life Extension**[®] members. We have long recommended the drug **metformin** to protect against aging.¹ The challenge in obtaining a doctor’s prescription has precluded many of our members from using **metformin**.

In a major advance, a pair of **botanical extracts** has been shown to work perhaps better than **metformin** to increase a critical enzyme (called **AMPK**) that enables cells to function with **youthful** vitality.

This article discusses the **anti-aging** effects that occur in response to **higher** AMPK activity. What should fascinate the public is a recent finding showing that ingestion of just one of these **botanical extracts** resulted in significant reductions of **abdominal fat**.²

Longevity enthusiasts will be thrilled to learn about the many degenerative processes that can be reversed when **AMPK** activity is enhanced.

The biological effects of increasing **AMPK** activity include inhibition of **fat storage**, reduced **cholesterol-triglyceride** synthesis, and increased **glucose uptake** into muscle.³⁻¹¹ The diverse properties of **AMPK** may soon make this the most sought-after method to slow and reverse degenerative **aging** processes.



To understand the significance of **AMPK**, it is important to review some causes of aging that are not adequately addressed by the nutrients and hormones we currently take.

As we mature, our cells lose the ability to purge themselves of accumulated debris, often referred to as “cellular junk.”¹²⁻¹⁴ As junk-laden cells accumulate, they emit signals that generate low levels of **inflammation**.¹⁵ These senile cells lose their ability to degrade cellular junk through a process called **autophagy**. The accumulation of these defective “zombie” cells creates a catalyst for virtually all degenerative diseases.

The problems described in the previous paragraph can be traced to an **AMPK deficit**.¹⁵ Low **AMPK** activity cripples aging cells to the point where they no longer maintain their internal stability. This disturbance caused by insufficient AMPK signaling provokes disease and jeopardizes healthy aging.¹⁵

The term “**energy**” is a highly misused commercial term. Lay people associate it with caffeinated drinks that induce a temporary surge of adrenalin.

When we talk about enhancing **energy** metabolism through **activation** of **AMPK**, we are referring to turning back “on” youthful control of cellular functions that are critical to healthy longevity.

AMPK stimulates energy metabolism by signaling cells to burn glucose and fatty acids.^{8,10,16-18} This is just one way that **AMPK** lowers blood **glucose** and reduces storage of **body fat**.

AMPK Declines With Aging

AMPK stands for **adenosine monophosphate-activated protein kinase**. It is an enzyme that plays a critical role in cellular homeostasis.^{19,20} **AMPK** acts as a master switch to regulate cell functions such as uptake of

glucose, burning of fats, and formation of new mitochondria.^{15,21-25}

When observing what happens to aging humans, such as steadily rising blood **glucose** levels and excess **body fat** accumulation, the impact of **AMPK deficit** can clearly be seen.

Nutritional overload impairs **AMPK** activity.^{26,27} It thus should not be surprising that one method of maintaining higher **AMPK** activity is **calorie restriction**.^{28,29} To better understand how this works, in a low-calorie environment, cells turn “on” survival signals (such as **AMPK**) to optimize their energy balance.^{30,31} Chronic overeating deactivates **AMPK** and shortens life spans.

Primate studies validate age-delaying effects when **calorie restriction** is properly executed.³²⁻³⁷ Humans find it challenging to consistently undereat. Fortunately, there are methods to mimic the **AMPK-enhancing** effects of low-calorie diets.

Cellular Housekeeping

Just imagine that you had a sawmill factory where **debris** was routinely removed as part of the manufacturing protocol. At some point, however, your workers decided to stop taking out the debris and wood chips start accumulating. This might not be an immediate problem, but as wood chip rubble piled up, your factory’s efficiency would decline, and at some point become dysfunctional.

Cells continuously produce metabolic **waste products** that are efficiently removed by **AMPK signaling**.¹⁵ As **AMPK** activity declines, waste products (cellular junk) accumulate and eventually render our cells dysfunctional.¹⁵





The dysfunction is so severe that senile cells cannot even commit suicide (apoptosis) because they lack sufficient energy instructions to perform even simple housekeeping tasks. Yet these senile cells emit chronic external signals that create a systemic state of low-level **inflammation** throughout the aging body.³⁸⁻⁴⁰

AMPK augments cellular housekeeping. Reduced AMPK signaling, on the other hand, can exacerbate common problems related to cellular dysfunction like **heart failure**.⁴¹ When you hear that an elderly person's heart "wore out," what often is being stated is that their cardiac muscle became dysfunctional due to **reduced AMPK** signaling.

Likewise, when **type II diabetes** manifests, it is often caused by a loss of cellular **insulin sensitivity**.⁴² **AMPK** improves **insulin sensitivity**,^{9,15} which is one mechanism by which the drug **metformin** lowers **blood sugar** levels.

AMPK Promotes Removal Of Senile Cells

Aging results in the accumulation of cells that can barely function yet create a host of problems such as **chronic inflammation**.

As **AMPK** activity declines with aging, defective cells linger and create metabolic havoc throughout

the body.^{15,39,43,45} To purge the body of these senile cells, strong **AMPK signaling**⁴⁴ is needed to facilitate the beneficial self-removal process.

Combatting Cellular Stress

Cellular **stress** occurs in response to extremes in temperature,^{46,47} exposure to toxins,⁴⁸ mechanical damage,⁴⁹ inflammation,⁵⁰ and free radicals.⁵¹ A healthy **stress response** enables cells to survive these damaging/destructive events.

AMPK triggers signaling pathways that *improve* cell stress response.⁵²

The ability of AMPK to react to cellular stress declines with age and this impairs the maintenance of cellular energy balance. In particular, a deficiency in AMPK **signaling** can make aging humans more vulnerable to the lethal impact of **immune senescence** and **chronic inflammation**.¹⁵

Boosting Sirtuin 1

The **sirtuins** are a family of genes involved in the regulation of cellular energy metabolism.

SIRT1 is one of the most studied of these genes because of its multifaceted role in cell

survival, inflammation, and beneficial apoptosis (programmed cell death).^{15,53,54} SIR stands for "silent information regulator."⁵⁵

AMPK promotes the functional activity of **SIRT1**, which favorably influences beneficial longevity factors.^{56,57} Several studies indicate that SIRT1 signaling is associated with the extension of life span.⁵⁸⁻⁶⁰ SIRT1 increases during **calorie restriction** and can enhance cellular **stress resistance**, which is a well-known defense against the aging process.⁶¹⁻⁶⁵

Resveratrol supplements have become popular because of their ability to enhance SIRT1.⁶⁶⁻⁶⁸ Resveratrol may do this by boosting AMPK.⁶⁹ It is unlikely that resveratrol alone will optimally restore **cellular AMPK** activity to youthful ranges.

Controlling The Cell-Signaling Network

Researchers have identified several "signaling" pathways involved in the regulation of aging processes. These "signaling pathways" promote longevity in lower organisms.

One of these "signals," named **p53**, controls cell proliferation.⁷⁰ **P53** is known as a tumor-suppressor gene and loss of **p53** predisposes cells to **malignancy**.⁷¹⁻⁷³ **P53** is also involved in regulating cell metabolism and self-destruction (apoptosis) of senescent cells.⁷⁴⁻⁷⁶

Nuclear factor-kappa beta (NF- κ B) is an internal cell signal that induces **chronic inflammation**.^{77,78} We take nutrients like **curcumin** to suppress **NF- κ B** activation.^{79,80}

By maintaining higher **AMPK** activity, our functional **p53** is protected, while pro-inflammatory **NF- κ B** is suppressed.

Summary Of AMPK

AMPK is a critical regulator of **energy metabolism**. The initial benefits of **AMPK activation** are lower glucose and triglyceride blood levels, along with reductions in **abdominal fat mass**.^{3-9,15,80-86}

AMPK enables the desirable elimination of dysfunctional cell components (autophagy), which helps reduce chronic low-grade **inflammation**.⁸⁷

Cellular **stress resistance** improves in response to greater **AMPK activation**.¹⁵

Increased AMPK activity can extend life span in lower organisms.^{15,88,89} The efficient **clearance** of “zombie” cells and improved cellular **stress response** are characteristics by which **AMPK** can enhance one’s ability to enjoy healthy longevity.

To state this simply, **AMPK** controls an integrated **signaling** network that has a major role in the regulation of the aging process.

How To Boost AMPK

Exercise activates AMPK, though this effect diminishes as one matures into their elder years.^{90,91} The ability of **metformin** to boost AMPK activity has caused some people to call metformin “**exercise in a bottle**.”⁹²⁻⁹⁵

In response to reduced calorie intake, cells activate AMPK⁹⁶ as a survival mechanism.^{28,29} This beneficial AMPK activation vanishes when normal food consumption resumes.^{26,27}

Nutrients like **resveratrol** and **quercetin** have some effect on activating AMPK, but are probably not as impactful as **metformin**.^{18,97} Those taking **metformin** are probably achieving optimal AMPK activation.



For those not aggressively exercising or taking at least **1,000 mg** a day of metformin, a combination of two **botanical extracts** has emerged as perhaps the most effective way to activate cellular **AMPK**.⁹⁸

The Animal Data

A **2011** published study on **diabetic** mice compared the effect of one of these **botanical extracts** to **metformin**. After 15 days, there was up to a **23% reduction** in glucose in the metformin-administered mice. The group receiving the **botanical extract** saw an up to **30% reduction** in **glucose**.⁹⁹

A **2012** published mouse study showed the following results when one of these **botanical extracts** were administered orally:¹⁰⁰

- **10.3% reduction** in subcutaneous **belly fat** (compared to control group), and
- **15.5% reduction** in deep **visceral fat** (compared to control group).

The fat that builds up around the internal abdominal organs (called visceral fat) is the most **dangerous** form of body fat. Visceral fat generates chronic pro-inflammatory signals¹⁰¹ and distorts hormone balance.¹⁰²⁻¹⁰⁴ Most humans need to reduce their abdominal fat mass to avoid age-related disease.

The Human Data

In **2014**, a randomized, double-blind, placebo-controlled study was published that evaluated the effects of one of these AMPK-enhancing agents on body composition. Eighty human subjects were evaluated. One group received one of the new **AMPK-augmenting botanical extracts** and the second group received **placebo**.

The average **body mass index** (BMI) of the study subjects was **27.53**, meaning they were clinically **overweight** but not obese. After **12 weeks**, the group receiving the **botanical extract** showed

reduction of **3.24** square inches in **abdominal fat area** (not waist circumference), whereas the placebo arm lost only **0.44** square inches.² The botanical extract group lost more than an inch in **abdominal circumference** and nearly one-half inch in hip circumference, both of which are risk factors for the fat-driven inflammation that produces cardiovascular and metabolic diseases.

Reductions in belly fat have been reported in some people who take **metformin**, so it is not surprising that this novel **botanical extract** that activates cellular **AMPK** would reduce **abdominal fat**.

Fat accumulation in the abdomen^{105,106} and liver¹⁰⁷⁻¹⁰⁹ is often accompanied by the reduction in AMPK activity similar to what occurs during aging.^{15,110} For those who have been unable to shed

meaningful weight in their bellies, these **botanical extracts** could provide the energy needed for abdominal cells to burn their surplus stored lipids (fat).

Decades Of Research

The first mention of **AMPK** on the *National Library of Medicine's* database occurred in **1971**.¹¹¹

It was not until **2001** that published research linked decline in **AMPK** activity with pathological aging and shortened life spans.¹¹²

Life Extension® and others have spent enormous amounts of time and money investigating compounds that restore youthful **AMPK** activity. We long ago urged widespread use of **metformin**, but our members were challenged to find doctors to write prescriptions

for this drug that the FDA approves only to treat **type II diabetes**.

With the discovery that two **botanical extracts** that have been safely used for centuries also promote **AMPK** activity, aging humans have a potent new weapon in their arsenal of age-delaying and potentially age-reversing compounds.

Annual Super Sale

In **1989**, **Life Extension®** introduced a program that enables members to obtain advanced nutritional formulas at the year's lowest prices.

By purchasing in quantities of four to 10 bottles, members stock up at steep **discount prices** on nutrients they need to stave off degenerative processes—such as decline in cellular **AMPK activity**.

In **2014**, **Life Extension®** funded over **\$8.4 million** in **biomedical research** aimed at finding cures for today's common ailments and eradicating premature death. This research would not be possible if it were not for the loyalty members show every time they choose a **Life Extension®** supplement.

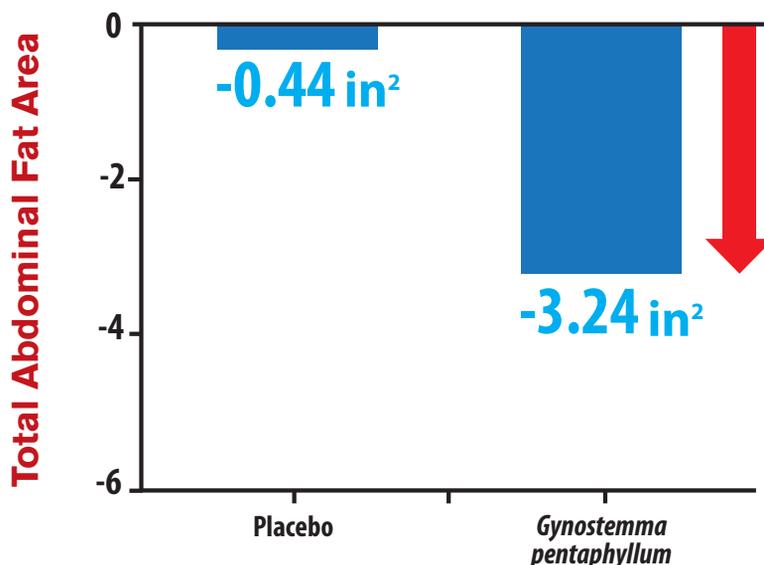
This year's **Super Sale** ends **February 2, 2015**. This provides plenty of time to create a list of the nutrient formulas you need for the upcoming year.

For longer life,



William Faloon

Marked Reduction In Abdominal Fat



Total abdominal fat reduction in human subjects supplemented with *Gynostemma pentaphyllum* vs. placebo.²⁴

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ULTIMATE PROSTATE PROTECTION

Ultra Natural Prostate formula provides the latest scientifically-validated botanical extracts shown to promote healthy prostate function.

No other prostate protection formula provides such a broad array of nutrients to support the multiple factors involved in the health of the aging prostate gland. Here are the ingredients in the **Ultra Natural Prostate** formula:

- **Standardized lignans** convert to *enterolactone* in the intestine, which is then absorbed into the bloodstream to provide support for prostate cells against excess estrogen levels.¹⁻³
- **AprèsFlex®** supports normal inhibition of *5-lipoxygenase* or *5-LOX*, an enzyme that is associated with undesirable cell division changes.^{4,5}
- **Stinging and Dwarf nettle root extracts** help support prostate cells against excess estrogen levels.^{6,7}
- **Saw Palmetto CO2 extract** helps inhibit *dihydrotestosterone* (DHT) activity in the prostate, helps support normal urinary flow, and helps regulate inflammatory reactions in the prostate.⁸⁻¹¹
- **Pygeum** (*Pygeum africanum*) extract helps suppress prostaglandin production in the prostate and supports healthy urination patterns.^{12,13}
- **Pumpkin seed oil**, from select pumpkins, enhances the composition of free fatty acids and augments saw palmetto's benefits.¹⁴⁻¹⁶
- **Beta-sitosterol** enhances the protective effects of other botanical extracts and helps improve quality of life.¹⁷⁻¹⁹
- **Graminex® Flower Pollen Extract™**, has been shown to help relax the smooth muscles of the urethra and help regulate inflammatory reactions.²⁰⁻²²
- **Boron** has been shown to slow elevation of prostate-specific antigen (PSA).²³⁻²⁵
- **Lycopene** supports efficient cellular communication, helps maintain healthy DNA, regulates hormonal metabolism, and promotes healthy prostate size and structure.²⁶⁻³²
- **Phospholipids** enhance absorption of active compounds.

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Contains soybeans.

AprèsFlex® is a registered trademark of Laila Nutraceuticals exclusively licensed to PL Thomas-Laila Nutra LLC. U.S. Patent No. 8,551,496 and other patents pending. HMRlignan™ is a trademark used under sublicense from Linnea S.A. US Patents 6,319,524 and 6,669,968. Alibion™ is a registered trademark of Alibion Laboratories, Inc.

The suggested daily dose of two softgels of **Ultra Natural Prostate** provides:

Saw Palmetto CO2 extract (fruit) [providing 272 mg total fatty acids]	320 mg
Graminex® Flower Pollen Extract™ (from rye)	252 mg
Stinging and Dwarf nettle extracts (root)	240 mg
Beta-Sitosterol (from pine)	180 mg
Phospholipids	160 mg
Pygeum extract (bark)	100 mg
Pumpkin seed oil [providing 170 mg total fatty acids]	200 mg
AprèsFlex® Indian frankincense (<i>Boswellia serrata</i>) extract (gum resin) [providing 14 mg AKBA ¹]	70 mg
Proprietary Enterolactone Precursors Blend [HMRlignan™ Norway spruce (<i>Picea abies</i>) (knot wood) and Flax (seed) lignan extracts]	20.15 mg
Lycopene [from natural tomato extract (fruit)]	10 mg
Boron (as Alibion® bororganic glycine)	3 mg

¹ 3-O-acetyl-11-keto-β-boswellic acid

A bottle of 60 softgels of **Ultra Natural Prostate** retails for **\$38**. If a member buys four bottles during **Super Sale**, the price is reduced to **\$23.63** per bottle. If a member buys 12 bottles during **Super Sale**, the price is **\$21.60**.



Item # 01898

To order Ultra Natural Prostate, call 1-800-544-4440 or visit www.LifeExtension.com

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MOST COST-EFFECTIVE NUTRIENT FORMULA

SUPER BOOSTER

\$100 VALUE FOR LESS THAN \$33

TWO-MONTH SUPPLY!

Most people don't get enough **oil-based** nutrients from their diet. **Super Booster** provides high potencies of the following **fat-soluble** nutrients and other compounds in one daily softgel:

Item # 01980



Vitamin K2: Studies show **vitamin K2** provides superior benefits for bones, arteries, and other tissues. The **MK-4** form of vitamin K2 is the most rapidly absorbed, but only remains active in the blood for a few hours. The **MK-7** form of K2, however, remains bioavailable for a sustained **24 hours**. Super Booster provides a potent dose of **MK-7** and **MK-4** (along with **vitamin K1**) to keep calcium in the bones and out of the arteries.

Sesame lignans: Help boost tissue levels of **gamma tocopherol** via several different mechanisms.

Black currant extract: Cyanidin-3-glucoside is the anthocyanin-rich purple pigment that helps promote eye comfort and health.

Gamma tocopherol: Taking only **alpha** tocopherol displaces the critically important **gamma tocopherol** from cells in the body. **Gamma tocopherol** also quenches a dangerous free radical (peroxynitrite) that plays a major role in age-related decline. It is vital that those taking vitamin E supplements also consume at least **200 mg** a day of gamma tocopherol.

Lycopene: Evidence suggests those who ingest this carotenoid enjoy healthier prostate function. **Lycopene** also helps guard against LDL oxidation.

Chlorophyllin: Scientific studies indicate chlorophyllin may protect against environmentally induced DNA damage.

MacuGuard™ Carotenoid Phospholipid Blend: To support eye health, macular density and healthy vision, MacuGuard™ provides **zeaxanthin**, **meso-zeaxanthin**, and **lutein**. Since these carotenoids are now included in the **Super Booster** formula, most people do not need to take a separate MacuGuard™ supplement.

JUST ONE DAILY SOFTGEL OF SUPER BOOSTER SUPPLIES:

Vitamin K1 (as phytyl adione)	1,000 mcg	C3G (Cyanidin-3-glucoside) [from European black currant extract (fruit)]	2.2 mg
Vitamin K2 (as menaquinone-4)	1,000 mcg	Sesame seed lignan extract	20 mg
Vitamin K2 (as menaquinone-7)	200 mcg	Lycopene proprietary blend [from Micronized Lycopene and Tomat-O-Red® natural tomato extract (fruit)]	10 mg
Gamma E Tocopherol	245 mg	Vitamin B12	300 mcg
Chlorophyllin	100 mg	Vitamin C	95 mg
MacuGuard™ Carotenoid Phospholipid Blend Phospholipids, marigold extract (flower) [providing 10 mg free lutein, 4 mg meso-zeaxanthin & trans-zeaxanthin]	145 mg		

Super Booster saves consumers money and time combining a variety of costly nutrients in one softgel. If you add up the price of the individual ingredients in **Super Booster**, you would spend over **\$100** for what Life Extension members can obtain for under **\$33** during the annual **Super Sale**.

A bottle of 60 **Super Booster** softgels—a two-month supply—retails for **\$52**. If a member buys four bottles during **Super Sale**, the price is reduced to **\$32.40** per bottle.

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

Contains soybeans.

Tomat-O-Red® is a registered trademark of LycoRed, Ltd. LuteinPlus® and Mz® are registered trademarks of NutriProducts Ltd., UK, licensed under U.S. Patent 8,623,428.

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AMPK Activator

A NEW PARADIGM IN CONTROLLING AGING

AMPK is an *enzyme* that serves as the body's "**master regulating switch**." It inhibits multiple degenerative factors by *revitalizing* aging cells.¹

Found in every cell,^{2,3} **AMPK** promotes *longevity factors* that have been shown to extend life span in numerous organisms.^{1,4} Increasing AMPK signaling "turns off" many destructive effects of aging, thus enabling cells to return to their youthful vitality.⁵

Life Extension® scientists have compiled years of research to create **AMPK Activator**, a specialized *dual-extract formulation* that supports **AMPK** activation for health optimization. This natural formula supports AMPK enzymatic activities required to safely support a more youthful cellular environment.

Importance Of AMPK

Greater **AMPK** (*adenosine monophosphate-activated protein kinase*) activation has been shown to help target damaging factors of aging.⁵ Studies show **increased** AMPK activity supports reduced fat storage,⁶ new mitochondria production,⁷ and the promotion of healthy blood glucose and lipids already within normal range.⁴

Gynostemma Pentaphyllum

An extract of the plant *Gynostemma pentaphyllum* was traditionally used in Asian medicine to promote longevity and scientists now know why—*G. pentaphyllum* promotes **AMPK** activation!⁸⁻¹⁰ In one of many studies showing a wide variety of benefits, researchers documented a 1-inch reduction in **abdominal circumference** in overweight individuals who took **450 mg** daily of *G. pentaphyllum* extract for 12 weeks.¹¹

Trans-Tiliroside

Trans-tiliroside, extracted from plants such as **rose hips**, also boosts **AMPK** activation, but triggers different downstream metabolic benefits than *G. pentaphyllum*.¹²⁻¹⁴ Among its many benefits, a low equivalent dose of **56 mg** daily *trans-tiliroside* has been shown by researchers in preclinical studies to promote healthy blood glucose levels and body weight already within normal range.¹⁵

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The suggested daily dosage of **AMPK Activator** is to take two capsules with the first meal of the day and one capsule with the second meal. Three capsules provide:

<i>Gynostemma pentaphyllum</i> extract	450 mg
Rose hip extract	1,119 mg
Standardized to <i>trans-tiliroside</i>	56 mg

Anti-Aging Discovery That Cannot Be Overlooked

Scientists uncovered the cell-energizing effect of **AMPK** in the 1970s. Since then, an exponential volume of data (over 7,500 published studies) documents the critical role that activated AMPK plays in maintaining life-sustaining cellular functions.

Those seeking to meaningfully extend their healthy life span should ensure they optimally activate their cellular **AMPK**. The reason this is so important is that in response to aging, excess calorie consumption, and/or low levels of physical activity, AMPK activity markedly declines.

A targeted way of **reversing** cellular depletion of this critical enzyme is to take the new AMPK Activator formula that comprises a dual-extract, plant-based formulation.

A bottle of 90 vegetarian capsules of the new AMPK Activator retails for \$48. If a member buys four bottles during **Super Sale**, the price is reduced to **\$29.70** per bottle.



Item # 01907

To order **AMPK Activator** at low **Super Sale** prices, 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.

Super Potent Multivitamin & Mineral Supplement

Compare CENTRUM® to TWO-PER-DAY:

Sample Ingredient Comparison	Centrum® Silver® Adults 50+	Life Extension® Two-Per-Day
Vitamin C	60 mg	500 mg
Vitamin D3	500 IU	2,000 IU
Vitamin B1	1.5 mg	75 mg
Vitamin B2	1.7 mg	50 mg
Vitamin B6	3 mg	75 mg
Vitamin B12	25 mcg	300 mcg
Niacin (as niacinamide)	20 mg	50 mg
Pantothenic acid	10 mg	100 mg
Vitamin E	50 IU (synthetic)	100 IU (natural)
Folate	400 mcg (synthetic)	400 mcg (natural)
Zinc	11 mg	30 mg
Selenium	55 mcg	200 mcg
Lutein	250 mcg	5,000 mcg
Lycopene	300 mcg	2,000 mcg
Biotin	30 mcg	300 mcg
Boron	150 mcg	3,000 mcg
Chromium	45 mcg	200 mcg
Molybdenum	45 mcg	100 mcg
Magnesium	50 mg	100 mg
Manganese	2.3 mg	2 mg
Iodine	150 mcg	150 mcg
Potassium	80 mg	25 mg
Vitamin A (as beta-carotene)	1,000 IU	4,500 IU
Vitamin A (preformed)	1,500 IU	500 IU
Choline (as bitartrate)	(none)	20 mg
Inositol	(none)	50 mg
Calcium	220 mg	12 mg
Alpha Lipoic Acid	(none)	25 mg
Natural Mixed Tocopherols (providing gamma, delta, alpha, and beta tocopherols)*	(none)	20 mg
NIAGEN® Nicotinamide Riboside	(none)**	1 mg

Commercial “one-a-day” supplements provide very low potencies.

The chart to the left reveals how much more potent the new Two-Per-Day is compared to the leading commercial multivitamin.

When compared to conventional “one-a-day” products, **Life Extension’s new Two-Per-Day** contains up to **50 times** more potency of specific nutrients.

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

The new **Two-Per-Day** contains a small amount of **nicotinamide riboside**, a nutrient that has been shown to support mitochondrial health and promote longevity by boosting cellular **NAD+** levels. The only common dietary source of **nicotinamide riboside** is cow’s milk. The daily dose of **Two-Per-Day** provides the amount of **nicotinamide riboside** found in almost 7 cups of milk.* Most members are taking higher (**100 mg**) doses in the **NAD+ Cell Regenerator** or the new Optimized Resveratrol with Nicotinamide Riboside.



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

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

A bottle containing 120 capsules of **Two-Per-Day Capsules** retails for \$22. If a member buys four bottles during **Super Sale**, the price is reduced to **\$13.50** per bottle. (Item # 01914)

A bottle containing 120 tablets of **Two-Per-Day Tablets** retails for \$20. If a member buys four bottles during **Super Sale**, the price is reduced to **\$12.15** per bottle. (Item # 01915)

Each bottle of **Two-Per-Day** lasts **60 days**, so members can obtain the benefits of this high-potency formula for as little as **\$6.07 per month**.

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



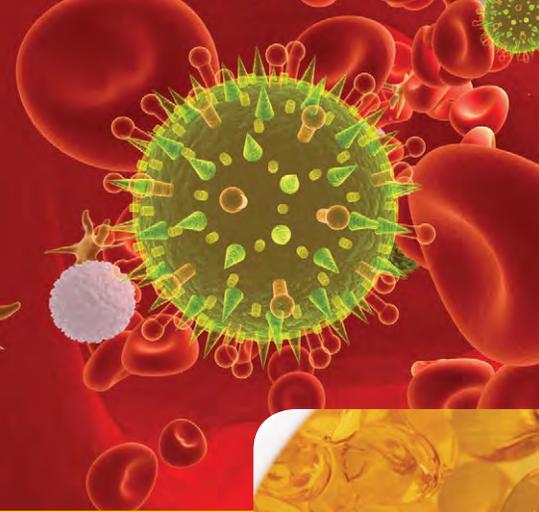
*Ratings based on results of the 2014 ConsumerLab.com Survey of Vitamin & Supplement Users. More information at www.consumerlab.com/survey2014.

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

*Available at: https://chromadex.com/wpresources/Upload/Article/Literature/Ingredient/IngredientSaleSheets_NIAGEN_V0114b_pw.pdf. Accessed July 15, 2014.

**Two-Per-Day provides a small amount of gamma tocopherols as part of natural mixed tocopherols, which include natural vitamin E.

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.



IN THE NEWS

Higher Vitamin E Intake Linked To Lower Blood Pressure

An article published in the *Journal of Nutritional Science and Vitaminology* reveals an association between higher vitamin E intake and a reduced risk of hypertension.*

Akiko Kuwabara and associates evaluated data from 1,405 men and 2,102 women aged 40 and older who participated in Japan's National Health and Nutrition Survey 2007. Dietary records were analyzed for the intake of vitamin E and other nutrients. The presence of hypertension was defined as systolic blood pressure of **140 mmHg** or higher, diastolic blood pressure of **90 mmHg** or higher, or use of an antihypertensive drug.

Among participants whose vitamin E intake was among the top one-third of subjects, there was a **27%** lower risk of hypertension, and for those among the middle third, the risk was **19%** lower. Adjustment for increased intake of other blood-pressure-lowering nutrients failed to significantly affect the results.

Editor's Note: "Oxidative damage and free-radical production in the endothelium are closely involved in the pathogenesis of the atherosclerotic process which leads to cardiovascular disease," Dr. Kuwabara and colleagues explain. "Since vitamin E is a fat-soluble vitamin with potent activity and one of its main physiological roles is considered to be the inhibition of unsaturated fatty acid oxidation, vitamin E is a promising candidate against oxidative stress-induced unfavorable consequences."

* *J Nutr Sci Vitaminol (Tokyo)*. 2014;60(4):239-45.

Greater Fiber Consumption Associated With Lower Mortality Risk

The *American Journal of Clinical Nutrition* published an article that reported a lower risk of dying from any cause over an average period of 5.9 years among men and women with a high intake of fiber.*

The study included 7,216 subjects at increased risk of cardiovascular disease enrolled in the Prevención con Dieta Mediterránea (PREDIMED) trial, which sought to evaluate the effects of the Mediterranean diet on cardiovascular disease prevention. Diet was assessed via a yearly questionnaire. Over an average of 5.9 years, 425 participants died, including 103 deaths from cardiovascular disease and 169 from cancer.

Among those whose intake of fiber at the beginning of the study was among the highest one-fifth of subjects at an average of **33 grams** per day, there was a **37%** lower adjusted risk of dying over follow-up in comparison with those whose intake was among the lowest fifth.

Editor's Note: When fiber was examined by source, fruit emerged as significantly protective. Those whose fruit intake was greater than **210 grams** per day experienced a **41%** lower risk of mortality over follow-up compared with those who consumed less.

* *Am J Clin Nutr*. 2014 Sep 10.

Tart Cherry Juice Could Help Improve Joint Symptoms

The *Journal of Functional Foods* published a report authored by researchers at Northumbria University, in Newcastle upon Tyne, England, that revealed a benefit of tart cherry juice concentrate in reducing factors contributing to painful joints.*

In a single-blind, two-phase, randomized, crossover-designed study, Dr. Glyn Howatson and colleagues gave **30** or **60 mL** Montmorency tart cherry juice to 12 healthy participants twice a day for two days. A washout period of 10 days or more separated each treatment phase. Blood and urine samples were collected before and after treatment.

Reductions in both serum C-reactive protein (CRP), a marker of inflammation, and urate, which is elevated during gout attacks, were observed following consumption of either dose of tart cherry juice concentrate.

Another *Journal of Functional Foods* study, which appeared online on September 2, revealed a positive effect for tart cherry intake to reduce oxidative damage.

Editor's Note: "We have been investigating Montmorency tart cherries for several years because they're a unique fruit with a high concentration of anthocyanins," commented Dr. Howatson, from the Department of Sport, Exercise, and Rehabilitation, Northumbria University. "Our current study was conducted with a healthy population, although more research is needed to determine the specific benefits of Montmorency tart cherry juice for individuals with inflammatory diseases, including gout and other arthritic conditions."

* *J Funct Foods*. 2014 Nov;11:82-90.



Vitamin D Deficiency Common In Men And Women Undergoing Thyroidectomy

The American Academy of Otolaryngology-Head and Neck Surgery annual meeting in Orlando, Florida, September 21-24, 2014, was the site of a presentation of research conducted at Henry Ford Hospital regarding widespread vitamin D deficiency among individuals undergoing surgical removal of all or part of the thyroid gland.* Deficient vitamin D levels increase the risk of potentially dangerous low postoperative calcium levels—a condition that could easily be prevented by vitamin D supplementation.



The study included 110 patients who underwent thyroidectomy for benign or malignant disease in 2013. Vitamin D, calcium, and parathyroid hormone levels were measured before surgery. Forty percent of the participants were classified as vitamin D deficient, which was defined as having a serum 25-hydroxyvitamin D level of **20 ng/mL** or less. Deficient subjects were prescribed a course of vitamin D supplementation that was completed before their surgeries.

Editor's Note: "The issue of vitamin D deficiency in patients who are undergoing thyroid surgery can potentially impact both the care of parathyroid glands during surgery and calcium management after surgery," noted study co-author Hamad Chaudhary, MD, of Henry Ford's Department of Otolaryngology-Head and Neck Surgery. "By routinely checking vitamin D levels in all patients scheduled for thyroid surgery or selectively testing those at great risk, we may be able to improve surgical outcomes and shorten hospital stays."

* American Academy of Otolaryngology-Head and Neck Surgery Annual Meeting, September 21-24, 2014.

Vitamin D Derivative Could Help Treat Pancreatic Cancer

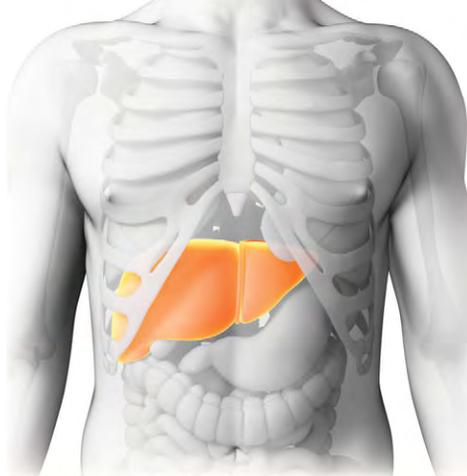
An article in *Cell* reports a potential benefit for a synthetic derivative of vitamin D in the treatment of pancreatic cancer.* The compound works by changing a tumor's microenvironment. The microenvironment, when activated by tumor cells, fuels cancer growth and impedes the entry of immune cells or cancer drugs.

In previous research, the Salk Institute scientists found that a modified form of vitamin D inactivated liver stellate cells, which become activated during injury. Chronic activation of stellate cells that occurs near a tumor fuels its growth as well as surrounding it with a barrier. After uncovering high levels of the vitamin D receptor in activated stellate cells in the pancreatic tumor microenvironment, the researchers found that the vitamin D derivative caused the cells to revert back to their quiescent state. When tested in a mouse model, administration of the compound with chemotherapy resulted in a **57%** increase in survival in comparison with chemotherapy alone.

Editor's Note: "It's really remarkable considering that vitamin D itself is not attacking the cancer cells," commented report co-author Michael Downes, who is a senior staff scientist at the Salk Institute. "It's changing the environment to a more favorable setting needed for the chemotherapy drugs to work."

* *Cell*. 2014 Sep 25.





Granulocyte Colony-Stimulating Factor Improves Liver Function In Alcoholic Hepatitis

A study reported in *The American Journal of Gastroenterology* found a benefit for the administration of granulocyte colony-stimulating factor (GCSF) in patients with severe alcoholic hepatitis, a condition with high short-term mortality.*

Among 46 men who received standard medical therapy for severe alcoholic hepatitis, 23 received subcutaneous GCSF twice daily for five days. CD34+ cells (whose mobilization in peripheral blood is a marker for hematopoietic stem cell mobilization) were measured in peripheral blood samples, and liver function was assessed before and after treatment, and at one, two, and three months.

Treatment with GCSF resulted in higher CD34+ cells on the sixth day of the study in comparison with levels measured prior to treatment. At day 90 of the study, 18 patients who received standard medical treatment alone had died in comparison with 5 among those who also received GCSF.

Editor's Note: Median changes in clinical scores that evaluated liver failure and prognosis were reduced at one, two, and three months in GCSF patients in comparison with those who did not receive it. Granulocyte colony-stimulating factor (GCSF) is an expensive prescription drug administered by intramuscular injection under the care of a physician experienced in using the drug.

* *Am J Gastroenterol.* 2014 Sep;109(9):1417-23.

Curcumin May Help Fight Mesothelioma

Malignant mesothelioma, a cancer of the lining of the lungs that is largely attributable to asbestos exposure, could face a worthy opponent in the form of curcumin, a compound that occurs in the spice turmeric, according to research reported in the journal *Clinical Cancer Research*.*

Ashfin Dowlati and colleagues measured mesothelioma tumor expression of PIAS3 (protein inhibitor of activated STAT3), which is correlated with overall survival. They additionally evaluated the effects of PIAS3 activity on the intracellular protein and transcription factor STAT3 (signal transducer and activator of transcription 3), which can trigger cancer onset and growth. "In those mesothelioma patients where PIAS3 is low, indeed STAT3 is activated," reported Dr. Dowlati.

The team found that STAT3 down regulation, via enhanced expression of PIAS3 or exposure to a peptide derived from PIAS3, inhibited cell growth and increased apoptosis in cancer cells. Administration of curcumin resulted in PIAS3 induction, indicating a potential role for the compound in mesothelioma therapy.

Editor's Note: "Our findings suggest that PIAS3 expression positively affects survival in mesothelioma patients and that PIAS3 activation could become a therapeutic strategy," Dr. Dowlati commented. "Our interest for the future is that we want to find better, more simple ways to increase intracellular levels of PIAS3 for malignant mesothelioma through the use of synthetic PIAS3 peptide or curcumin analogs."

* *Clin Cancer Res.* 2014, Aug14.



Curcumin Quiets Crosstalk In Tumor Cellular Environment

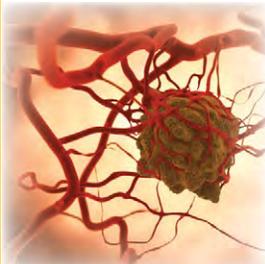
An article published in *PLOS One* reported that BCM-95® curcumin altered the microenvironment of a colorectal cancer cell culture model, thereby reducing tumor-promoting factors and potentially enhancing chemotherapy effectiveness.*

Constanze Buhmann and associates cultured human colon cancer cells with human stromal fibroblast cells for three days. They observed clustering of the cancer cells around the stromal cells, which established close cell-to-cell contact. This cellular interaction was associated with increased expression of adhesion and metastatic molecules, active cell cycle proteins, transforming growth factor-beta 3 (TGF-β3), and vimentin, which is a marker of epithelial to mesenchymal transition (EMT).

The team then employed a high-density tumor microenvironment in which colon cancer cells were co-cultured with stromal cells and treated with varying concentrations of BCM-95® curcumin and/or the chemotherapeutic drug 5-fluorouracil (5-FU). While 5-FU alone was associated with an increase in tumor-promoting factors, TGF-β3 and EMT, pretreatment with curcumin prior to 5-FU administration reduced these factors.

Editor's Note: Treatment with 5-FU and/or curcumin promoted disintegration of high-density tumor spheres, an effect that was greater in curcumin-treated co-cultures.

* *PLoS One.* 2014 Sep 19;9(9):e107514.



Melatonin Improves Mitochondrial Function In Rat Model Of Diabetes

The *Journal of Pineal Research* published an article that reported a protective effect for melatonin on mitochondrial function in obese rats.*

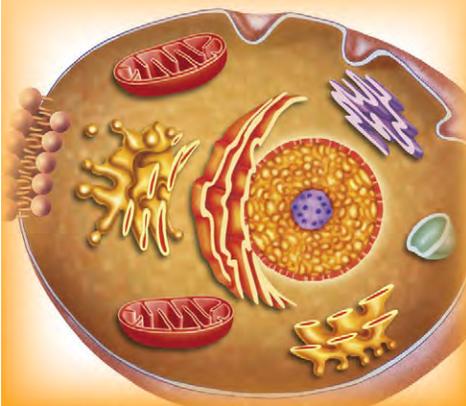
“Because mitochondria are a target for melatonin action, the goal of this study was to investigate the effects of melatonin on mitochondrial function in white and beige inguinal adipose tissue of Zucker diabetic fatty rats,” write authors Ahmad Agil and colleagues.

The team divided eight diabetic rats and eight lean littermates to receive melatonin-enhanced or plain drinking water for six weeks, after which mitochondrial function was evaluated. They observed improvement in mitochondrial respiration and a reduction in oxidative status among both lean and obese animals that received melatonin.

“Melatonin is a natural substance present in plants, animals, and humans; it works as a hormonal signal released during the night to establish circadian rhythms,” said Dr. Agil.

Editor’s Note: In addition to being found in a number of plant foods, melatonin is available as an over-the-counter supplement.

* *J Pineal Res.* 2014 Aug;57(1):103-9.



Reduced B Vitamins Predict Increased Obesity In Children

A study described in the *Journal of Nutrition* found an association between reductions in several B vitamins and an increase in body mass index and other indicators of obesity in children between the ages of 8 and 15.*

Researchers at the University of Queensland evaluated data from 1,131 Mexican-American children who participated in the National Health and Nutrition Examination Survey (NHANES) from 2001-2004. Blood samples were analyzed for serum vitamin B12 and folate levels, and dietary questionnaire responses provided information concerning B vitamin intake.

Body mass index (BMI), trunk fat mass, and total body fat mass were all found to increase with age. Children whose weight was normal had higher average serum vitamin B12 levels compared to those who were overweight or obese. Greater vitamin B12 and folate levels were associated with lower BMI and total body fat mass.

Editor’s Note: When B vitamin dietary intake was examined, consuming more thiamine, riboflavin, and folate was associated with a lower body mass index.

* *J Nutr.* 2014 Oct 8.



Vitamin D Supplementation Helpful For Childhood Atopic Dermatitis

According to a study published in the *Journal of Allergy and Clinical Immunology*, children with winter-related atopic dermatitis may benefit from vitamin D supplementation.*

Acting on the findings of a preliminary investigation, Carlos Camargo Jr, MD, DrPH, and colleagues conducted a randomized, double-blind trial of 107 children with atopic dermatitis: a chronic, inflammatory skin disease that is a form of eczema. Those enrolled in the current study experienced worsening of their symptoms during the autumn to winter transition or in cold weather. The subjects were divided to receive 1,000 IU vitamin D or a placebo daily for one month.

At the end of the treatment period, vitamin D supplementation was associated with an improvement in the Eczema Area and Severity Index and Investigator’s Global Assessment in comparison with the placebo group.

Editor’s Note: “In this large group of patients, who probably had low levels of vitamin D, taking daily vitamin D supplements, which are inexpensive, safe, and widely available, proved to be quite helpful,” Dr. Camargo commented.

* *J Allergy Clin Immunol.* 2014 Oct;134(4):831-835.

Boost “Functional” Natural Killer Cell Activity

Natural killer (NK) cells function as the body’s first responders.¹ As soon as NK cells sense a potential invasion, they are on the scene to initiate immune protection. Natural killer cells promote seasonal support for the body’s natural defense system.

In addition, functional NK cells recognize and eliminate **senescent cells** that accumulate in aged tissues and create metabolic disturbances.

As we age, **natural killer** cell activity markedly declines² with a concurrent weakening of normal immune functions.³

For targeted *seasonal protection*, a formula called **NK Cell Activator™** has been developed, which contains an enzymatically **modified rice bran** shown to be a potent immune modulator.

NK Cell Activator™ supports the activity of **natural killer** (NK) cells—crucial components of the innate immune system.

In one clinical study, scientists documented a **3-fold** increase of **natural killer** cell activity in healthy individuals within three to four weeks of receiving **500 mg** daily of the rice bran compound found in **NK Cell Activator™**.⁴

In another double-blind, randomized, placebo-controlled study, researchers noted that subjects taking the enzymatically **modified rice bran** found in **NK Cell Activator™** experienced a boost in *myeloid dendritic cells*—cells that act as key messengers between the innate and the adaptive immune systems.⁵

A strategy to derive the unique functional effects of **NK Cell Activator™** is to take one capsule daily for four months during the winter season.

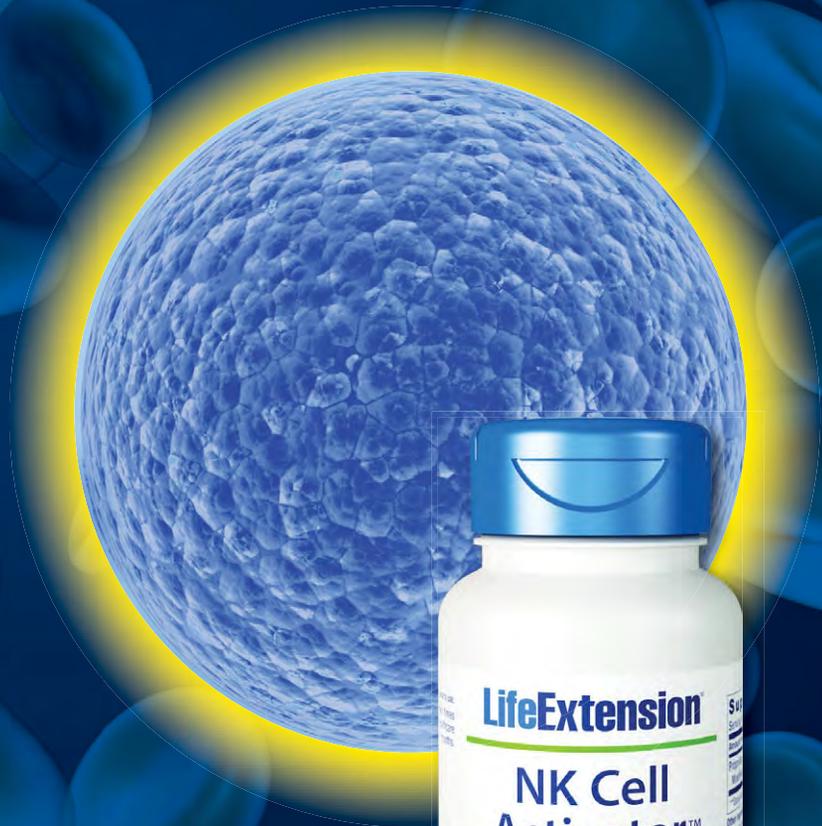
The suggested single serving of one vegetarian tablet of **NK Cell Activator™** provides:

Proprietary Enzymatically Modified Rice Bran	500 mg
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A bottle of 30 tablets of **NK Cell Activator™** retails for \$45. If a member buys four bottles during **Super Sale**, the price is reduced to **\$28.35** per bottle.

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Item # 01903

To order Life Extension® NK Cell Activator™, call 1-800-544-4440 or visit www.LifeExtension.com



FIGHT BACK AGAINST AGING!

Aging is Characterized by Inflammation, Glycation, and Mitochondrial Decay

The loss of cellular vitality is caused by a number of factors, including mitochondrial problems, glycation, and free radical reactions. Life Extension® members have access to a state-of-the-art nutritional formula called MITOCHONDRIAL ENERGY OPTIMIZER WITH BioPQQ® that helps protect delicate cellular structures and enables cells to perform life-sustaining metabolic processes.

Mitochondrial Energy Optimizer with BioPQQ® is designed to counteract age-related structural and functional changes by providing the following unique ingredients:

- **CARNOSINE:** As humans age, proteins in their bodies become **irreversibly damaged** by glycation reactions. Glycation is the cross-linking of proteins and sugar to form **non-functioning** structures called advanced glycation end products in the body, which can lead to alterations of normal cell function. Carnosine is not only a powerful **anti-glycating** agent, but it also protects **neurons** against reactive and cytotoxic protein carbonyl species associated with normal aging.¹⁻⁵
- **PQQ:** This breakthrough micronutrient has 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
- **LUTEOLIN:** Systemic inflammation is involved in most undesirable consequences of aging. Culprits behind **inflammatory** reactions are pro-inflammatory **cytokines**, such as **interleukin-1** and **tumor necrosis factor-alpha**. Luteolin is a flavonoid that has been shown to help suppress these inflammatory cytokines.¹¹⁻¹⁶
- **BENFOTIAMINE:** Effectively modulates multiple destructive biochemical pathways that are induced by higher than desirable blood glucose levels. Human mortality studies indicate that **ideal** fasting glucose levels are between **74–85 mg/dL**. Yet many aging people have fasting glucose above **90 mg/dL**, which is less than optimal.¹⁶⁻¹⁹ Benfotiamine protects endothelial cell integrity from the effects of high glucose levels. In addition, benfotiamine exhibits direct antioxidative capacity and supports DNA function.²⁰
- **PYRIDOXAL 5'-PHOSPHATE:** Aging results in the formation of **advanced glycation end products** throughout the body. **Pyridoxal 5'-phosphate** is the active form of vitamin B6 that has been shown to protect against both lipid and protein **glycation** reactions.²¹⁻²⁴

- **R-LIPOIC ACID:** Destructive free radical activity in the **mitochondria** plays a major role in the loss of cellular vitality. A **microencapsulated Bio-Enhanced® R-lipoic acid** facilitates youthful **mitochondrial energy output** while guarding against **free radicals**. Two forms of lipoic acid are sold on the supplement market, but **R-lipoic acid** is far more potent.²⁵⁻²⁸
- **ACETYL-L-CARNITINE ARGINATE:** The amino acid L-carnitine is required to transport fats into the **mitochondria** to be burned for cellular energy. **Acetyl-L-carnitine arginate** is a patented form of carnitine that also **supports neurites** in the brain.²⁹

Taking all of the individual ingredients in the **Mitochondrial Energy Optimizer with BioPQQ®** separately would be prohibitively expensive, but Life Extension® members obtain this comprehensive formula at substantial savings.

A bottle of **Mitochondrial Energy Optimizer with BioPQQ®** containing **120 capsules** retails for \$94. If a member buys four bottles during **Super Sale**, the price is reduced to **\$52.65** per bottle.

Just four capsules of Mitochondrial Energy Optimizer with BioPQQ® provide:

Carnosine	1000 mg
ArginoCarn® Acetyl-L-carnitine arginate DiHCl	675 mg
R-Lipoic acid (as microencapsulated Bio-Enhanced®)	150 mg
Benfotiamine	150 mg
Vitamin B6 (as pyridoxal 5'-phosphate)	100 mg
BioPQQ® (Pyrroloquinoline quinone disodium salt)	10 mg
Luteolin	8 mg
Calcium	230 mg



Item # 01768

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To order Mitochondrial Energy Optimizer with BioPQQ®, 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.

PQQ Promotes Formation of New Mitochondria

Critical Importance of Mitochondria

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

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

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

Vital Protection for the Aging Heart and Brain

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

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

To order PQQ Caps with BioPQQ® standalone or any other PQQ-containing formulas call **1-800-544-4440** or visit www.LifeExtension.com

A Potent Weapon in the Battle Against Aging

A bottle containing 30 **20 mg** vegetarian capsules of **PQQ Caps** retails for \$40. If a member buys four bottles during **Super Sale**, the price is reduced to **\$21.60** per bottle. (Item #01647)

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

Those taking **Mitochondrial Energy Optimizer, Mitochondrial Basics, or Super Ubiquinol with PQQ** may only require an additional **10 mg** of **PQQ** since these formulas already provide **10 mg** of **PQQ**. The retail price for 30 **10 mg PQQ** caps is \$24. If a member buys four bottles during **Super Sale**, the price is reduced to only **\$12.15** per bottle. (Item #01500)

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Item #01647



Item #01500

CoQ10 and PQQ in One Capsule

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

The retail price for 30 softgel caps is \$54. If a member buys four bottles during **Super Sale**, then price is reduced to **\$29.70** each. When 10 bottles are bought, the price goes down to **\$27** per bottle.



Item #01733

The Deadly
Consequences
Of Excess
ABDOMINAL
FAT



Few people realize that excess abdominal fat, especially excess fatty deposits around the internal organs in the abdominal cavity (called *visceral* body fat), is far more damaging to health and longevity than simply being “overweight.”

When excess abdominal fat accumulates, research indicates a strong correlation with cardiovascular disease, type II diabetes, and even some types of cancer.¹⁻⁴ In addition, excessive abdominal fat is also associated with Alzheimer’s disease and osteoporosis.⁵⁻⁹

Despite these known risks, reduction of stubborn **abdominal fat** through diet and exercise alone is frequently challenging, especially as we age, leaving us vulnerable to age-related disease and premature death.¹⁰ New research has shown that a specialized **peptide complex** isolated through a natural fermentation process can reduce calorie intake and reduce the tendency for abdominal fat accumulation from excess calories.¹¹ In one study, individuals lost, on average, nearly **two full inches** of waist circumference—about **two belt sizes!**¹¹

Exciting human research suggests that a yeast-derived **peptide complex** leads to weight loss, less abdominal fat, and reduced BMI (body mass index).^{12,13}

Consumption of this natural **peptide complex** decreases food intake¹¹ and reduces new abdominal fat deposition.¹⁴ This is especially critical given the association of excess **abdominal fat** with deadly, age-related diseases.

The Dangers Of Excess Abdominal Fat

There are two kinds of fat that accumulate in your belly. One is stored right under the skin and is referred to as **subcutaneous** fat.^{15,16} The other fat that accumulates inside the abdominal region (stomach, liver, and other abdominal organs) is referred to as **visceral** fat.^{3,4,17}

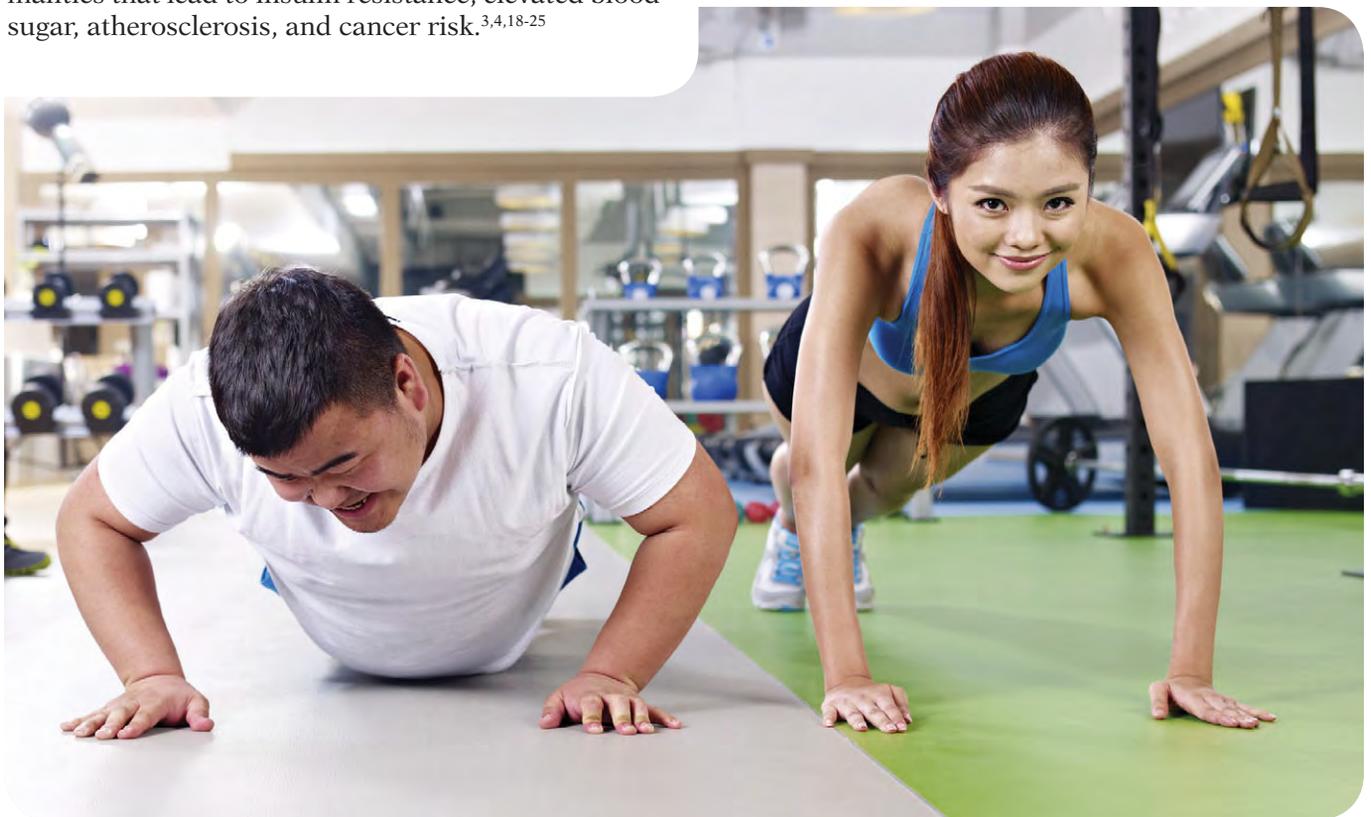
Mainstream physicians are only now coming to grips with the dangers of both subcutaneous and visceral abdominal fat and the ominous implications for their patients' health and longevity. Unlike normal subcutaneous fat stores found elsewhere in the body, both subcutaneous abdominal fat and visceral fat tissue are correlated to metabolic disease risk. Visceral abdominal fat is an especially abundant source of pro-inflammatory signaling molecules known as *cytokines*, which, over time, contribute to biochemical abnormalities that lead to insulin resistance, elevated blood sugar, atherosclerosis, and cancer risk.^{3,4,18-25}

Studies reveal that excess fat stored in the abdomen is associated with a:^{1,4,26}

- **44%** increase in cardiovascular disease risk,
- **43%** increase in cancer risk,
- **233%** increase in risk of death from all causes,
- **700%** increase in cardiovascular death risk,
- **116%** increase (in women) in the risk of a recurrent cardiovascular event of any kind following a known heart attack.

The good news is that just as abdominal fat increases your risk for chronic diseases, strong evidence shows that weight loss—particularly in the abdominal region—can significantly reduce many of the metabolic risks that lead to early death, such as serum triglycerides, systolic blood pressure, and biomarkers of insulin resistance and inflammation.²⁷⁻³⁴

The problem is that substantial reductions in excess abdominal fat are difficult for most aging people, and exercise and dietary changes alone are often inadequate. Even those aging individuals who manage to find the discipline to work out regularly and restrict their diets are often unable to fully rid themselves of stubborn abdominal fat.





What You Need To Know

The Danger Of Excess Abdominal Fat

- All fat deposits are not alike; fat in the abdominal area, especially visceral fat, is correlated with an increased risk of premature disease and death, producing inflammation from *cytokines* that sends the entire body into a state of accelerated aging.
- Scientists are now focused on reducing long-term health risks (cardiovascular, metabolic, and malignancy) through reductions in abdominal fat.
- *Saccharomyces cerevisiae*-derived peptides have been shown to reduce the accumulation of abdominal fat by novel mechanisms.
- Humans supplementing with *Saccharomyces cerevisiae*-derived peptides have been able to reduce daily calorie intake by 25%, resulting in a placebo-subtracted difference for weight loss of approximately 6.9 pounds over 10 weeks.

Dual Action Of *Saccharomyces Cerevisiae* Peptide Hydrolysates

Peptides derived from *Saccharomyces cerevisiae*, a natural component used in beer production and other food applications, contain small-to-moderate-sized protein fragments.³⁵ Scientists have discovered that peptide hydrolysates derived from *Saccharomyces cerevisiae* seem to act by a pair of complementary mechanisms to combat excess abdominal fat. *Saccharomyces cerevisiae*-derived peptides:

- 1. Limit dietary intake.** *Saccharomyces cerevisiae*-derived peptides are thought to beneficially modulate important appetite-regulating hormones in the brain via its effects on *neuropeptide Y* (NPY),^{11,36} as well as other signaling molecules involved in appetite production and control, such as *nitric oxide synthase* (NOS) and *vasoactive intestinal peptide* (VIP).³⁷
- 2. Reduce new fat production.** *Saccharomyces cerevisiae*-derived peptides reduce the activity of enzymes critical to the manufacture of fat from excess energy in foods, particularly *glucose-6-phosphate dehydrogenase* (G6PD) and *malic enzyme* (ME).^{14,38} Reduction of these enzymes' activities inhibits production and storage of fat molecules before hard-to-lose, inflammation-driving fat deposits can grow.

In addition to effects on appetite-regulating hormones and lipogenic enzymes, *Saccharomyces cerevisiae*-derived peptides also support glutathione levels and reduce markers of lipid peroxidation.³⁹ These effects are important contributors to long-term health maintenance at the systemic level.

Animal Studies

Animal studies are revealing strong evidence of the ability of *Saccharomyces cerevisiae*-derived peptides to reduce stores of abdominal fat, as well as the dangers associated with it.

In fact, four separate studies conducted at the Department of Food and Nutrition, Korea University, demonstrated that when mice and rats were supplemented with *Saccharomyces cerevisiae*-derived peptides and fed a normal diet, they gained significantly less body weight than control animals and experienced reductions in fat deposits.^{14,36,37,40}

Belly Fat: Distinctly Different

All fat, it turns out, is not the same. Fat stored in the belly (this includes the abdominal cavity, liver, and abdominal muscles) is much deadlier than fat stored under the skin.¹⁵

Humans, like all animals, store excess food energy (calories) in the form of fat. That process itself is an absolute necessity for providing energy availability, storing excess dietary energy when there is an abundance of food, and breaking fat deposits down for cellular energy when food is scarce.

But in nature, animals rarely face the sheer abundance of calories available to modern Americans. Faced with such extreme excesses of energy, excess dietary food energy is frequently stored in the abdomen.

Such fat accumulations are sometimes referred to as visceral fat and are located in places such as the abdominal cavity (belly), liver, and even the muscles of the abdominal wall.^{4,17,18}

People who gain excessive weight in their abdomen have a demonstrably higher risk of cardiovascular disease and type II diabetes than people of similar weight who store their fat elsewhere.¹⁻³

This means that even if two people have the same body mass index (BMI, which corrects for differences in height), they could have substantially different fat-related risks. This is because patterns of body fat storage offer more meaningful measurements of risk than simple body weight—in fact, excess body fat in the abdominal region substantially increases risk of age-related disease.^{4,42} A person with a larger waist circumference, waist/hip ratio, and measurements of abdominal fat area by CT scan is much more likely to succumb to disease and premature death, according to new findings.^{1,3,4,26}

In one surprising study, subjects in a lower BMI group (<25) and the highest waist circumference were at **180%** greater risk for cardiovascular death, heart attack, or recurrent ischemic heart disease compared to those with a lower BMI (<25) and a lower waist circumference.⁴³ This research supports the observation that having a waist circumference out of proportion to BMI is an important cardiovascular risk factor.⁴³

As two of the studies indicated, that weight loss could have been the result of *Saccharomyces cerevisiae*-derived peptides' ability to modulate appetite-regulating hormones.^{36,37} Sophisticated brain imaging demonstrated that the supplemented rats experienced favorable modulation of signaling molecules involved in appetite regulation.³⁷

Also, the supplemented animals experienced reductions in serum triglycerides and LDL cholesterol levels.¹⁴

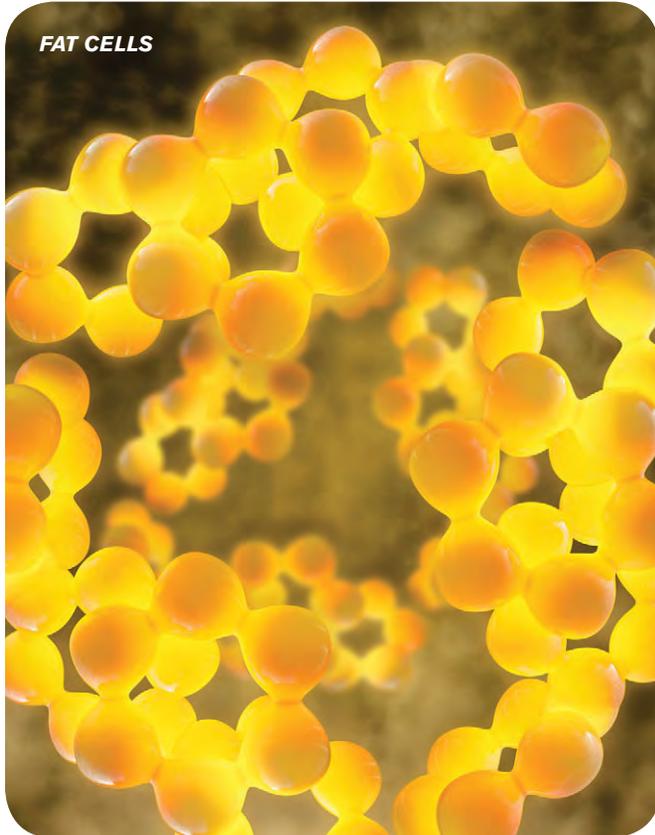
Researchers at the same university conducted another study utilizing rats fed a high-fat diet.⁴⁰ Half of the animals were supplemented with *Saccharomyces cerevisiae*-derived peptides while on a high-fat diet, while others animals received a high-fat diet alone. Once again, supplemented rats gained significantly less weight than the animals that received a high-fat diet alone, fat stores were significantly reduced, and triglyceride levels fell—and in this case, they experienced the added advantage of a beneficial rise in HDL-cholesterol as well.

Human Studies

Human studies are now catching up with—and in some cases surpassing—this early animal research. Two studies demonstrated that this **peptide complex** could lead to significant weight loss.

In one study, 30 obese female college students were randomly assigned to receive equal amounts of either a placebo or *Saccharomyces cerevisiae*-derived peptides twice daily for six weeks.¹² The supplemented group experienced a reduction in weight and BMI. The group receiving the *Saccharomyces cerevisiae*-derived peptides supplement lost **2.5 pounds** and reduced BMI by **0.44**, while the placebo group lost **0.4 pounds** and BMI was reduced by **0.08**.¹²





FAT CELLS

In another study, obese young women with **28%** or higher total body fat were randomly assigned to receive either a placebo or **250 mg** of *Saccharomyces cerevisiae*-derived peptides twice daily for four weeks.¹³ Supplemented subjects lost **3.7 pounds**, while placebo recipients lost just **1.6 pounds** in the same interval.

Weight Loss With *Saccharomyces Cerevisiae*-Derived Peptides

In the most recent human study to date, researchers determined that *Saccharomyces cerevisiae*-derived peptides have the ability to help induce **weight loss**.

For the study, researchers studied young-to-middle-aged women and men in the Asia-Pacific region and directly measured their abdominal fat stores using CT (computed tomography) scans, an extremely accurate means of assessing this potent health risk.¹¹

Patients supplemented with either **500 mg** of *Saccharomyces cerevisiae* derived-peptides or placebo 30 minutes before breakfast and dinner—**but without mandated changes to their personal diet and exercise habits**. Over the 10-week study period, **peptide**-supplemented patients reduced their daily calorie consumption by a striking **25.3%** (nearly 400 calories) from baseline. Placebo recipients' daily calorie intake dropped by only **6.3%**.

An important point with this study is that the baseline calorie intake in both groups hovered around **1,600 calories/day**, which would be low by American standards.¹¹

However, the study data suggests that despite a relatively low calorie intake at baseline, ingestion of the *Saccharomyces cerevisiae*-derived peptides translated directly into reduced **body fat** mass, with a **4.4-pound reduction** from baseline in supplemented subjects—while placebo recipients experienced a **2.5-pound increase**.¹¹ That represents a total difference of approximately **6.9 pounds** of body fat at the end of the study period. Lean body mass, which is composed of healthy muscle, bone, and other nonfat tissues, did not change significantly in either group, suggesting a focused effect on fat.

The advanced CT imaging used in this study quantitatively demonstrated losses of ectopic fat in the abdominal area. For example:

- While placebo subjects gained just about **one-third** of an inch in waist circumference (a major independent risk factor for chronic cardiovascular disease),⁴¹ supplemented individuals on average lost **two full inches** of waist circumference, or about **two belt sizes!**¹¹
- Abdominal fat thickness decreased significantly in supplemented patients by approximately **one-fifth** of an **inch** when compared to the control group.
- The total abdominal fat area, measured in square centimeters, fell **17.34 cm² (2.69 inches²)** in supplemented patients and **7.06 cm² (1.09 inches²)** in placebo subjects.
- Finally, CT measurements of abdominal sagittal diameter (the diameter of the abdominal fat mass when measured along a line facing from back to front) fell by **0.46 cm (.18 inches)** in supplemented patients, and **0.29 cm (.11 inches)** in placebo patients.

Taken together, the combination of laboratory animal and human studies demonstrates the full potential of *Saccharomyces cerevisiae*-derived peptides to:

- Limit calorie intake,
- Reduce new fat production,
- Reduce body weight and fat mass, and, most importantly,
- Significantly reduce the size and weight of dangerous **abdominal fat**.

Summary

Abdominal fat is far more harmful to health than fat stored in most other areas of the body, and increases the risk of serious cardiovascular, metabolic, and malignant diseases. Despite knowing these risks, many aging people find diet and exercise alone inadequate to reduce stubborn abdominal fat.

Saccharomyces cerevisiae-derived peptides are now demonstrating potential in specifically targeting dangerous abdominal fat stores. Animal and human studies have demonstrated that *Saccharomyces cerevisiae*-derived peptides can cut calorie intake, reduce body fat mass, and decrease abdominal fat stores, even with baseline caloric intake low by typical American standards.

Saccharomyces cerevisiae-derived peptides may represent a viable option for aging individuals struggling to lose abdominal fat despite diet and exercise, and should be carefully considered for incorporation into a daily supplementation regimen if stubborn abdominal fat persists despite reduced caloric intake. ●

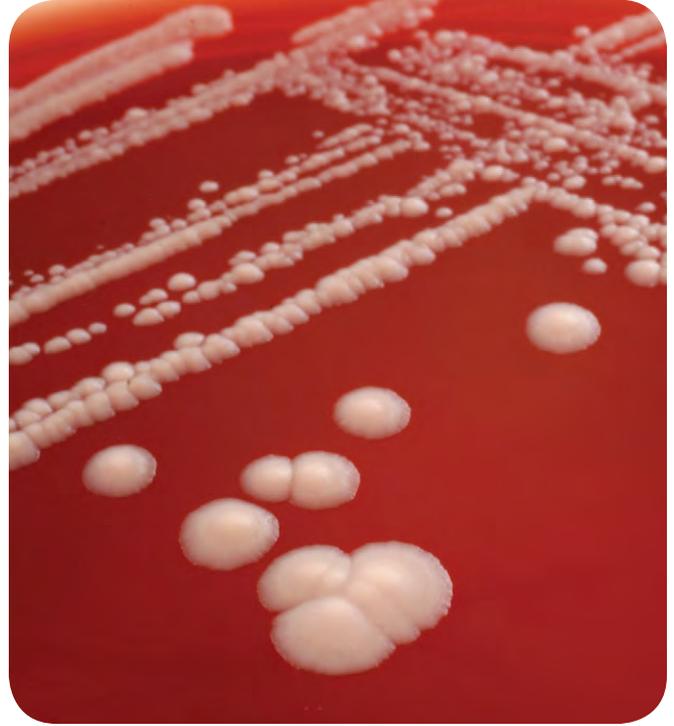
If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.

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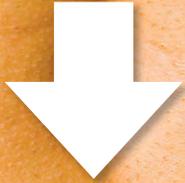
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Eliminating stubborn abdominal fat can lead to a healthier you.

Abdominal fat tissue is a source of pro-inflammatory signaling molecules, which over time contribute to biochemical abnormalities throughout the body.¹

New research has found a specialized **peptide complex** isolated through a natural fermentation process can reduce calorie intake and lessen abdominal fat accumulation.²

Waist-Line Control™ contains peptides derived from *Saccharomyces cerevisiae*, a natural component used in food and beverage applications, which provide dual-action protection from excess abdominal fat.

1. *Saccharomyces cerevisiae*-derived peptides are thought to modulate appetite-regulating hormones in the brain via their effect on *neuropeptide Y* (NPY).²
2. *Saccharomyces cerevisiae*-derived peptides reduce the activity of enzymes responsible for the manufacture of fat from excess energy in foods, particularly *glucose-6-phosphate dehydrogenase* (G6PD) and *malic enzyme* (ME).^{3,4}

The result is a reduction in food intake and added support for the reduction of abdominal fat.

In a recent human trial, young-to-middle-aged male and female participants took **500 mg** of the *Saccharomyces cerevisiae*-derived peptides or placebo before breakfast and dinner. The supplemented subjects reduced their daily calorie intake by **25.3%** and lost nearly **two full inches** of waist circumference, or about two belt sizes.²

Life Extension®'s **Waist-Line Control™** contains the identical **peptide complex** used in this study and at the same dosage administered to these subjects. This product is great for those trying to lose excess abdominal fat. Plus it's stimulant-free and without side effects. Take two capsules twice daily before breakfast and dinner, or as recommended by a health care practitioner.

The suggested dose of two vegetarian capsules of Waist-Line Control™ provides:

Eatless™ peptide complex (<i>S. cerevisiae</i>)	500 mg
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A bottle of 120 vegetarian capsules of **Life Extension® Waist-Line Control™** retails for \$42. If a member buys four bottles during **Super Sale**, the price is reduced to **\$25.65** per bottle.

Effective weight loss requires reduced caloric intake and increased exercise. Individual results may vary. Consult your physician or health care professional if you are nursing, pregnant, or trying to become pregnant.

This supplement should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.

**To order Life Extension®
Waist-Line Control™,
call 1-800-544-4440
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	Our Low Retail Price	SUPER SALE Member-Volume Discount Price Per Bottle
<p>Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract 120 softgels, Item # 01482 Super purified EPA/DHA fish oil plus sesame lignans and potent olive (fruit and leaf) extract to provide critical omega-3 fatty acids and essential components of the Mediterranean diet.</p>	\$32	\$15.34 (ten-bottle purchase)
<p>AMPK Activator • 90 vegetarian capsules, Item # 01907 Activating AMPK “turns off” many of the destructive factors of aging, enabling cells to return to their youthful vitality. Research shows that the two plant extracts contained in this formula (<i>Gynostemma pentaphyllum</i> and <i>trans-tiliroside</i>), promote AMPK activation.</p>	\$48	\$29.70 (four-bottle purchase)
<p>Super Bio-Curcumin® • 400 mg, 60 vegetarian capsules, Item # 00407 Super-absorbable formulation promotes healthy lipids, joint function, and healthy DNA. Absorbs up to <u>seven</u> times greater than conventional curcumin.</p>	\$38	\$23.63 (four-bottle purchase)
<p>Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ 100 mg, 60 softgels, Item # 01426 The superior ubiquinol form of CoQ10 plus a natural compound (shilajit) shown to double mitochondrial CoQ10 levels.</p>	\$62	\$32.40 (ten-bottle purchase)
<p>Super Booster with MacuGuard™ Ocular Support • 60 softgels, Item# 01980 Just <u>one</u> softgel daily provides potent doses of vitamins K1/ K2, gamma tocopherol, sesame lignans, chlorophyllin, and lycopene, along with zeaxanthin, <i>meso</i>-zeaxanthin, lutein, and C3G for eye support.</p>	\$52	\$32.40 (four-bottle purchase)
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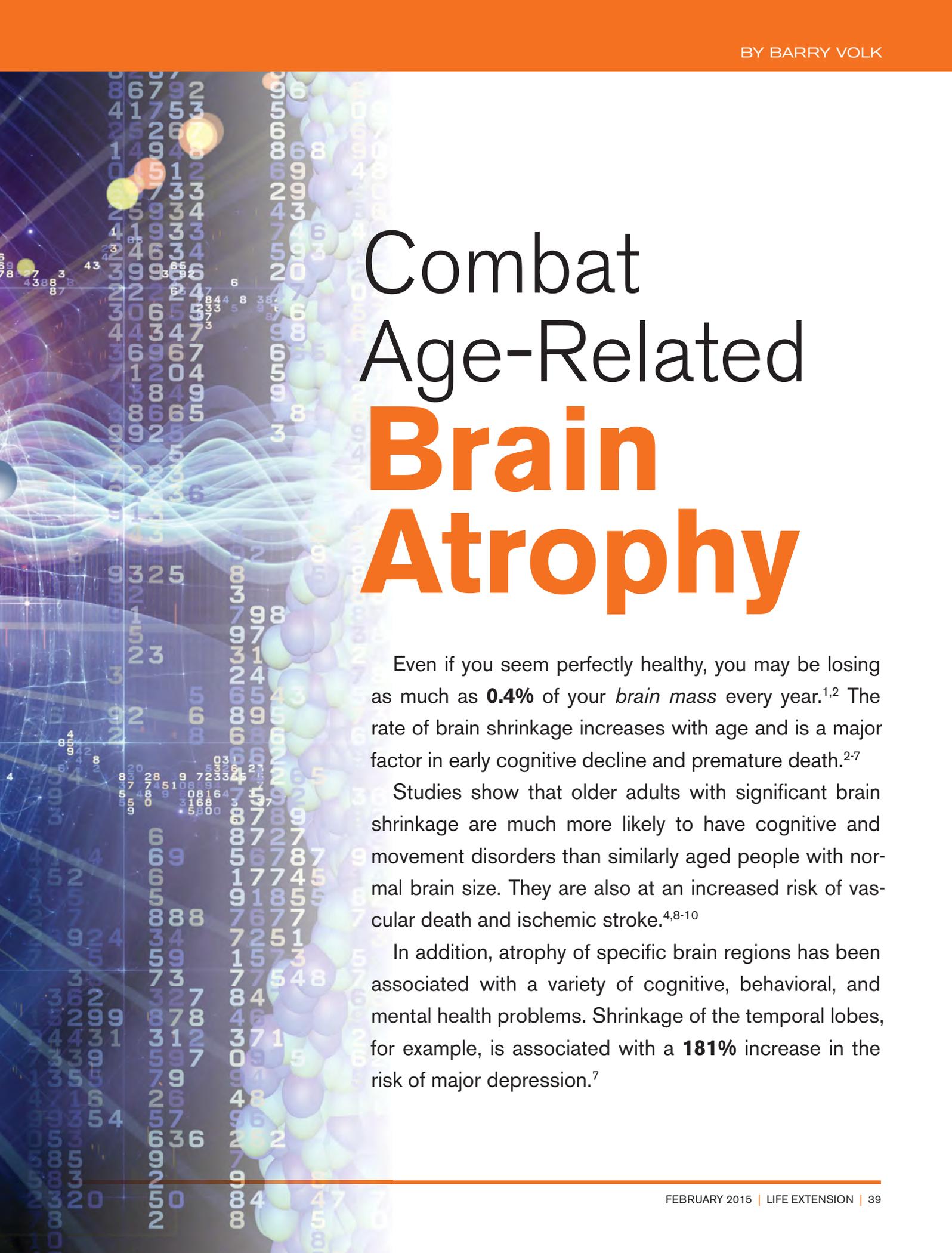
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Combat Age-Related Brain Atrophy

Even if you seem perfectly healthy, you may be losing as much as **0.4%** of your *brain mass* every year.^{1,2} The rate of brain shrinkage increases with age and is a major factor in early cognitive decline and premature death.²⁻⁷

Studies show that older adults with significant brain shrinkage are much more likely to have cognitive and movement disorders than similarly aged people with normal brain size. They are also at an increased risk of vascular death and ischemic stroke.^{4,8-10}

In addition, atrophy of specific brain regions has been associated with a variety of cognitive, behavioral, and mental health problems. Shrinkage of the temporal lobes, for example, is associated with a **181%** increase in the risk of major depression.⁷

Perhaps most alarmingly, brain shrinkage sharply increases risk of early death:

- Younger individuals with **overall brain shrinkage** have as much as a **70%** increase in the chance of dying,⁵
- In a study of people aged 85, **temporal lobe atrophy** is associated with a **60%** increase in the risk of dying,²
- Severe **atrophy of the frontal lobe** (behind the forehead) increases the risk of death by **30%**.²

Brains also shrink from the inside out, resulting in enlargement of the fluid-filled *ventricles*, or hollow spaces on the interior of the brain; such shrinkage has its own modest effect on early death.²

Even though brain shrinkage is progressive, a growing number of neuroscientists believe that brain shrinkage can be *slowed* or even *reversed*.¹¹⁻¹³ In this article, we will share with you how lifestyle changes and proper supplementation can help prevent this devastating cause of cognitive decline and premature death.

Brain Shrinkage Is Not Inevitable

Like so many of the symptoms of aging, brain shrinkage was long thought to be simply an inevitable consequence of growing older. However, we are learning that brain atrophy is by no means inevitable. A host of conditions—from cardiovascular disease and diabetes to sleep and anxiety disorders to lifestyle choices—have been associated with brain shrinkage. Since many of these are reversible or at least preventable, it's important to understand their impact on brain shrinkage, cognition, and life span.

The Connection Between Cardiovascular Disease And Brain Shrinkage

Although we don't often hear about this, there is a strong connection between cardiovascular disease and brain shrinkage.

Perhaps the most obvious connection is the one between blood vessel disease (atherosclerosis) and brain volume. Atherosclerosis occurs when plaque builds up inside your arteries and restricts blood flow throughout the body. Although we typically think of the negative effect atherosclerosis has on the heart, its effect on your brain can be equally devastating.

When blood flow to the brain is restricted, your brain receives less oxygen and fewer nutrients, causing it to shrink. Studies show that people with lower levels of blood flow to the brain have smaller total brain volumes and total thickness of the cortex (the active surface layer of the brain)—resulting in poorer performance on tests of cognitive function.¹⁴

In addition, disease of the coronary arteries (the arteries that feed the heart muscle) is also associated with decreased brain volume. When compared to healthy controls, patients with coronary artery disease had significantly smaller gray matter volume in several regions of their brains.¹⁵ This is especially significant since gray matter is where all thinking, feeling, sensory, and motor function originates.

The relationship between cardiovascular disease and brain volume operates in both directions: People with smaller brain volumes have been found to have a **58%** increase in the risk of death from all causes, a **69%** increase in risk of vascular death, and a **96%** increase in the risk of stroke, compared with those having normal brain volumes.¹⁰



Several other risk factors commonly associated with cardiovascular disease may also predict brain shrinkage. For example, people carrying the **ApoE4 gene variant** have significantly smaller overall brain size—with a specific decrease in brain areas that process memory and emotion.¹⁶

High levels of the amino acid **homocysteine**, another risk factor typically associated with heart disease, have now also been connected to brain shrinkage (independent of its impact on cardiovascular disease).

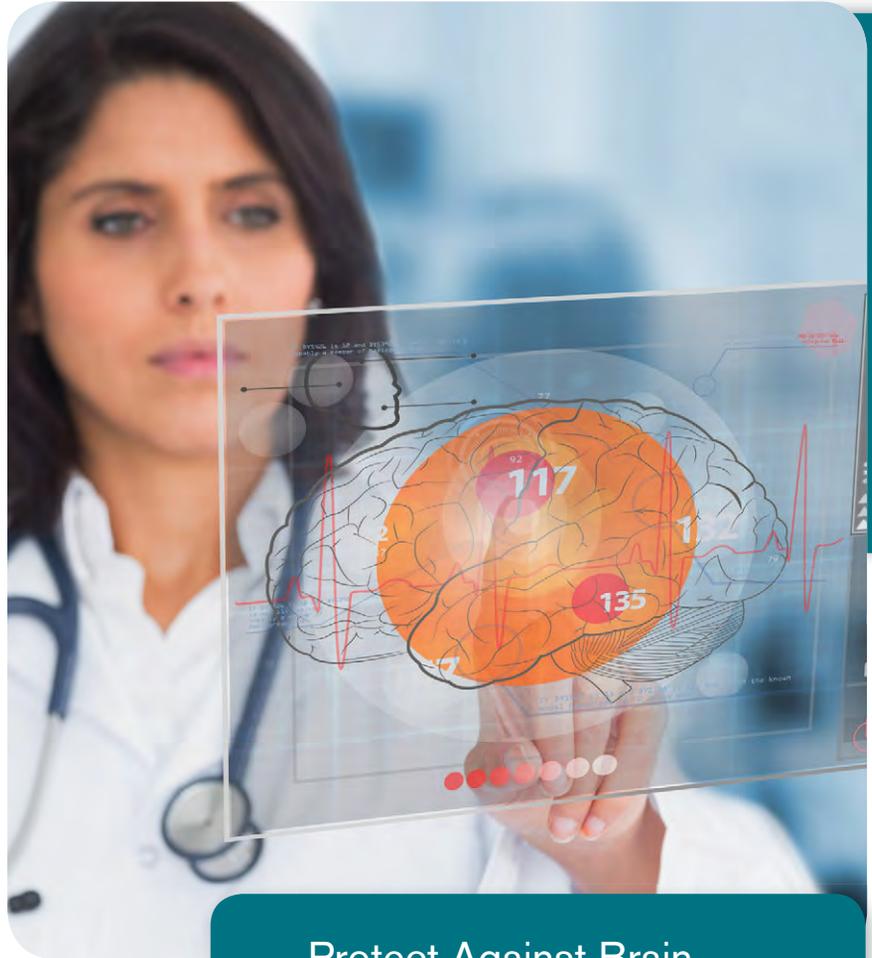
Specifically, studies have shown that people with high levels of homocysteine have smaller volumes of gray matter in the brain—and as a result, have worse scores on many tests of cognitive function.¹⁷

This was especially evident in a study of a group of people who had recently suffered strokes. The researchers found that those with the highest homocysteine levels had a tremendous **8.8-fold increase** in risk of brain shrinkage (compared with those having the lowest).¹⁸ Other studies have demonstrated that the higher the level of plasma homocysteine, the greater the rate of brain atrophy and the risk for Parkinson's and Alzheimer's diseases.¹⁹⁻²²

A deficiency of B vitamins has also been tied to brain shrinkage. This makes sense, since inadequate amounts of vitamins B6, B12, and folic acid can lead to elevated homocysteine levels. This occurs because these vitamins play a role in converting homocysteine into an important protein building block and when there's a shortage of B vitamins, that conversion process isn't as efficient, and homocysteine levels increase.^{13,23}

Close associations have been found between low levels of folate, for example, and severe gray matter atrophy and atrophy of the hippocampus, a main memory-processing center in the brain.^{24,25} Similarly, people with lower vitamin B12 levels have been shown to have progressive brain atrophy, with rates of brain volume loss **517%** greater than those with higher levels.^{13,26}

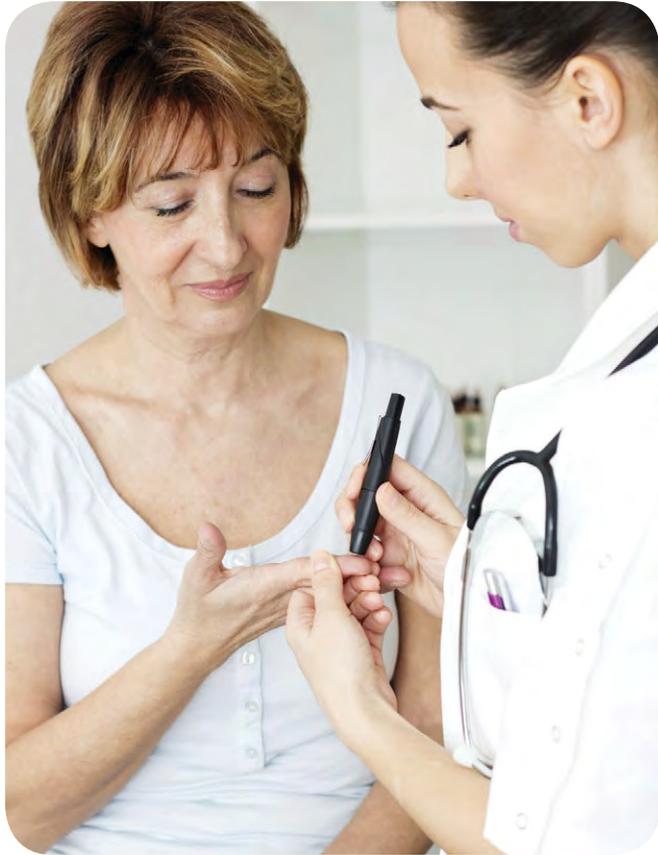
Remarkably, it has been found that brain shrinkage due to high homocysteine levels must reach a critical level before cognitive decline sets in.²¹ This is another example of the “therapeutic window of opportunity” during which brain shrinkage may be prevented by adequate supplementation, as we'll see later.²⁷



What You Need To Know

Protect Against Brain Shrinkage

- Your brain is shrinking as you age, costing you memories and mental sharpness.
- Worse, brain shrinkage has been directly associated with premature death.
- Causes of brain shrinkage are closely related to symptoms of aging, including cardiovascular disease, obesity, diabetes, and even poor sleep habits and distress.
- You may be able to prevent brain shrinkage by adopting healthy lifestyle habits and using supplements that target your own aging body's vulnerabilities.
- Supplements that reduce your cardiovascular risk, lower your blood sugar, or improve your sleep, for example, may do double duty in slowing or stopping brain shrinkage and improving your chances for a long, mentally fit life.



The Connection Between Diabetes And Brain Shrinkage

Diabetes is notorious for causing problems with the **peripheral nervous system**,²⁸ leading to conditions such as painful diabetic neuropathy and blindness-inducing diabetic retinopathy. New findings suggest that high blood sugar levels—and the *advanced glycation end products* (AGEs) that they produce—cause damage to the **central nervous system** as well, specifically neurodegeneration and brain atrophy.²⁹⁻³¹

Studies have shown that, when compared to non-diabetic people of similar age, diabetics have an average of **4%** smaller hippocampal volume, a nearly **3%** reduction in whole brain volume, and **double** the risk of mild cognitive impairment.^{32,33}

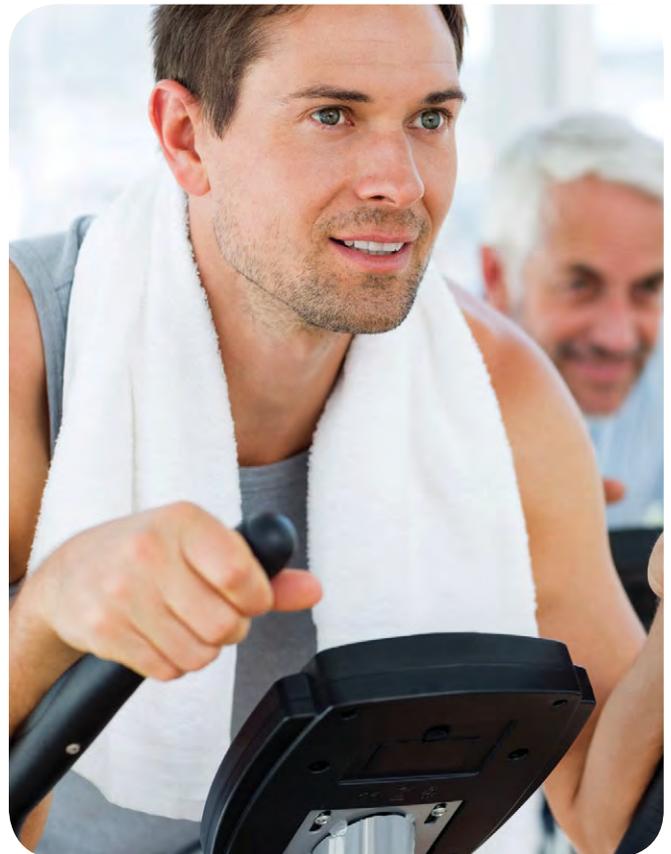
In addition to causing brain shrinkage, studies now suggest that diabetes induces toxic, misfolded proteins quite similar to those found in neurodegenerative diseases such as Alzheimer's, pointing to yet another way that diabetes can damage brain cells.³⁴ Indeed, diabetes and Alzheimer's disease share many properties, including defective insulin release and signaling, impaired glucose uptake from the blood, increased oxidative stress, stimulation of brain cell death by apoptosis,^{35,36} blood vessel abnormalities, and problems with energy production in mitochondria.^{37,38}

Obesity And Your Brain

Like diabetes, obesity is a known cause of brain atrophy.³⁹ Even in people with normal cognition, higher body mass index (BMI, a measure of obesity) is associated with lower brain volume in obese and overweight people.⁴⁰

Obesity and diabetes share many similar mechanisms, including insulin resistance and oxidative stress, both of which are known to contribute to brain atrophy.^{38,41} In addition, fat deposits produce huge amounts of inflammatory signaling molecules (cytokines) that may contribute to brain cell death and brain volume loss.³⁹

Additional links between obesity and brain shrinkage may be even more fundamental. About **46%** of Western Europeans and their descendants carry a gene variant called **FTO**, which is associated with fat mass and obesity. People who carry this gene weigh on average about **2.64 pounds** more and have an extra half-inch of waist circumference compared to those who lack the gene variant.⁴² Recent findings show that carriers of the FTO gene variant have approximately **8%** smaller frontal lobe volumes, and **12%** smaller occipital (back of the brain) volumes than people who don't carry this gene variant. These changes were **not** associated with differences in cholesterol levels or blood pressure, suggesting an independent relationship.⁴²



Sleep Disruptions

Sleep disruptions and anxiety also contribute to loss of brain volume. Relatively healthy older adults with short sleep duration have significantly smaller brains than those with longer sleep duration. In addition, for every hour of reduced sleep duration, they experience a **0.59%** yearly increase in the size of the blood-filled ventricles, and a **0.67%** decrease in cognitive performance.⁴³ Similarly, increases in brain shrinkage are associated with decreased quality of sleep as well.⁴⁴

Poor sleep and anxiety, of course, are related, and one study has shown that middle-aged women who have had longstanding psychological distress (based on a standard questionnaire) are at a **51%** increased risk of moderate-to-severe atrophy of the temporal lobes.⁶

Smoking And Drinking

Smoking has been recognized as a cause of brain shrinkage since at least 1987.^{45,46} More recent studies have confirmed and extended this association, with evidence that any lifetime history of smoking (even if you currently do not smoke) is associated with faster brain shrinkage in multiple brain regions, compared with people who never smoked.⁴⁷

Chronic alcohol consumption has also been associated with brain shrinkage, but in a dose-dependent way. While light-to-moderate drinkers have *larger* total brain volume than nondrinkers,⁴⁸ heavy drinkers are **80%** more likely than nondrinkers to sustain frontal lobe shrinkage, compared with nondrinkers,⁴⁹ and **32%** more likely to have enlargement of the ventricles, indicating shrinkage from within.⁵⁰ (A heavy drinker is defined as someone who consumes more than about **15 ounces** of pure alcohol per week. A standard drink is equal to **14.0 grams**, or **0.6 ounces**, of pure alcohol.)

Natural Supplements That Protect Brain Volume

Even though the array of factors that can cause brain shrinkage can be daunting, there is good news. Since brain shrinkage results from the same basic processes that cause other symptoms of aging, it's likely that brain shrinkage is preventable—*especially when caught early enough*.

That's why we want to provide you with information on key nutrients that have been shown to powerfully protect the brain. Here are four of the most potent brain-protecting nutrients.



B Vitamins

B vitamins are essential for supporting normal metabolic function, especially in the regulation of homocysteine⁵¹ (and elevated homocysteine, as we have seen, leads to significant brain shrinkage and dementia, especially when B-vitamins are deficient).^{18,27,52,53}

Elderly people are now generally advised to maintain optimal B-vitamin status—and for good reason.^{13,54} Studies show that people with higher folate levels have slower rates of brain atrophy and a lower rate of conversion from mild cognitive impairment to actual dementia, and those who take folate or B12 have lower grades of brain white matter abnormalities.^{53,55}

While each of these B vitamins provides its own unique benefits, several recent studies show why it's beneficial to supplement with a combination of folate, vitamin B6, and vitamin B12. This was clearly seen in a double-blind, placebo-controlled clinical trial in adults over age 70 who had mild cognitive impairment.⁵⁶

For the study, one group of subjects took folate (**800 mcg/day**), vitamin B12 (**500 mcg/day**), and vitamin B6 (**20 mg/day**), while the other group took placebo.⁵⁶ After two years, supplemented patients' brains shrank at an annual rate that was **30% slower** than those taking the placebo. Supplemented patients whose homocysteine levels were abnormally high at baseline had a **53% slower** brain shrinkage rate than unsupplemented patients, showing that supplementing with B vitamins is especially important in people who have high homocysteine levels.

A follow-up study showed that brain areas most susceptible to atrophy in the early development of Alzheimer's disease are especially well-protected by the same B-vitamin regimen, with supplemented patients experiencing as much as a **7-fold** reduction in shrinkage of those regions.⁵⁷ Another study, using the same doses of B vitamins, found that supplemented patients had **30%** lower mean plasma homocysteine levels, and slower rates of cognitive decline on multiple standard tests.⁵⁸

Omega-3 Fatty Acids

Omega-3 fatty acids comprise a large and important portion of brain cell membranes, where they participate in a wide variety of cellular functions. Indeed, **30 to 50%** of the fatty acids in brain cell membranes are long-chain polyunsaturated fatty acids that include the vital **omega-3** group. Brain cell

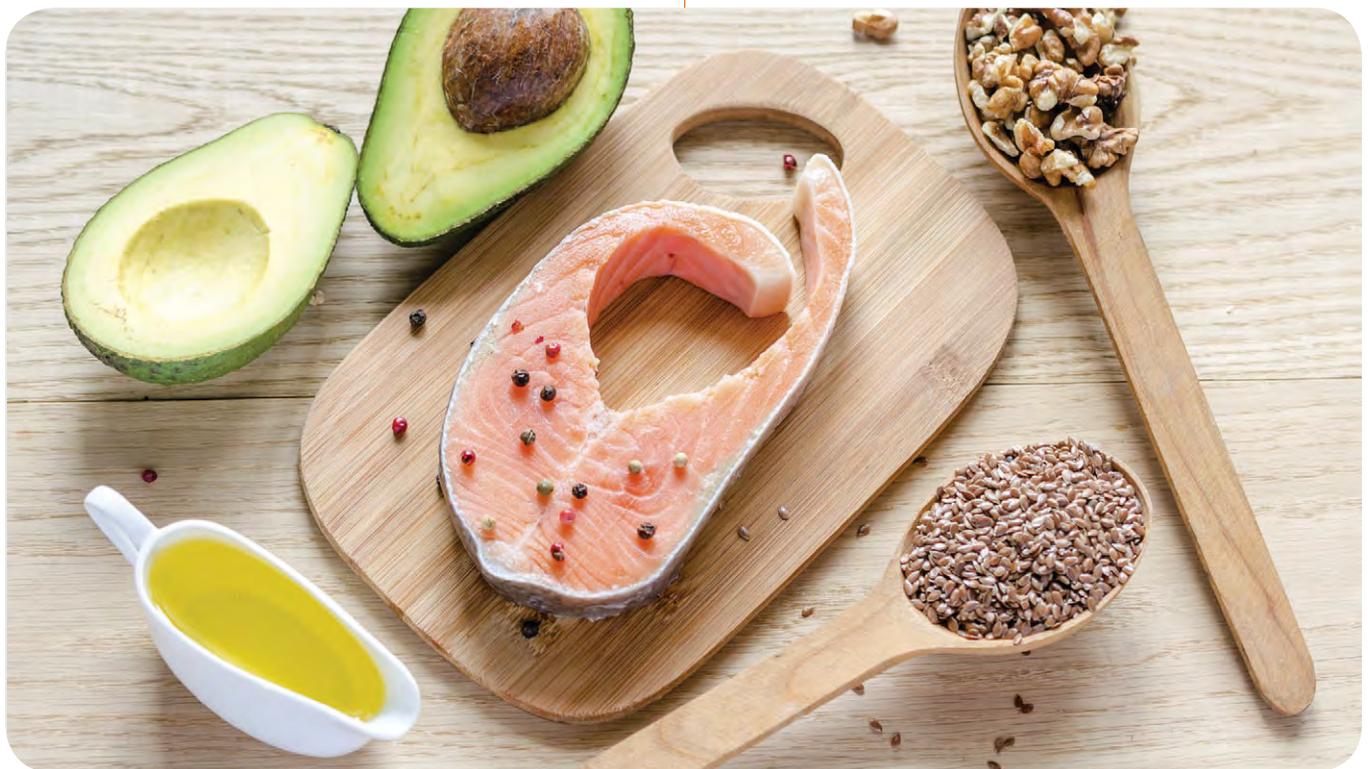
membranes are especially rich in **DHA**, an essential fatty acid derived only from the diet.^{59,60}

Omega-3s have many functions that help protect brain cells. Omega-3 fats are known to enhance the brain's relaxing functions.⁶¹ This protects brain cells from overexcitation, which is a major cause of brain cell damage that occurs with aging.⁶² Omega-3s also help preserve brain cell function by increasing the production of anti-inflammatory signaling molecules in the brain.^{59,63} Similarly, omega-3 fats in brain tissue protect cells from damage induced by stress and elevated stress steroids.⁶³

The importance of this protection is especially seen when there's not enough of this vital nutrient. Indeed, abnormal distributions of fatty acids in brain cells are associated with a variety of mental health disorders, particularly major depression and bipolar disorder.⁶⁴

It is not surprising, then, that age-related changes in brain cell omega-3 fat composition raise the risk of brain abnormalities as people age.⁶⁵ By contrast, studies show that a higher omega-3 index (which is the sum of the omega-3 fats EPA plus DHA), is correlated with larger brain volume.⁶⁶

Unfortunately, aging is associated with a significant decline in DHA levels in the brain, a drop that is sharply worsened in Alzheimer's disease and possibly other neurodegenerative disorders.^{67,68} This highlights the importance of protecting your brain by supplementing with omega-3 fats.



Pomegranate

Pomegranates contain very high levels of polyphenols, which are plant-derived molecules with anti-inflammatory and neuroprotective properties.⁶⁹ Animal studies reveal that supplementing with pomegranate juice slows the development of Alzheimer-like disease, a major cause of brain atrophy.⁶⁹⁻⁷¹ This protection may arise from the ability of the polyphenols in pomegranate to slow or stop brain cell death.⁷²

Human studies demonstrate significant improvements in cognition and memory with consumption of **8 ounces** of pomegranate juice daily, and lab studies with human brain cells in culture show that pomegranate polyphenols protect cells against changes that occur in other neurodegenerative diseases.^{73,74}

Resveratrol

Resveratrol is a major component of red grapes and certain other dark fruits; it has seen widespread use in preventing aging and age-related cardiovascular and neurologic conditions. Studies in a mouse model of chronic fatigue syndrome (which can produce brain shrinkage) show that four weeks of resveratrol therapy increased the animals' daily physical activity by more than **20%**, possibly as a result of reduced brain cell death.⁷⁵ In addition, the volume of the memory-intensive hippocampus was *larger* following supplementation.

Researchers are also exploring resveratrol as a potent neuroprotectant against the brain-shrinking effects of obesity and a high-fat diet. In studies of obese animals (obesity is a cause of brain shrinkage), resveratrol protected brain tissue from oxidative damage, a precursor to brain cell death.⁷⁶ And in mice fed a high-fat diet, resveratrol similarly protected against oxidative damage to the vital blood-brain barrier and decreased injury to the endothelial cells in the brain.⁷⁷

These findings in animals may explain the results of a compelling human study in **2014**, which demonstrated that, in healthy overweight older adults, supplementing with **200 mg/day** of resveratrol improved the functional connections between the hippocampus and the frontal areas of the brain.⁷⁸ Such changes were accompanied by improved memory performance as well as better blood sugar control, again pointing to the complex interactions of metabolism and brain performance.



Summary

Brain shrinkage is a silent threat to our health and longevity. Loss of brain volume means loss of brain cells, which in turn means loss of memory and learning.

There are a myriad of threats to brain volume as we age. Virtually all of the chronic symptoms of aging have been associated with, and to some extent implicated in, brain shrinkage. In addition, lifestyle habits such as a high-fat diet, sedentary behavior, and smoking or excess drinking can further complicate matters.

Fortunately, like other symptoms of aging, brain shrinkage appears to be preventable through a combination of lifestyle changes and sensible supplementation. Start by identifying which aging symptoms most directly affect you, and then focus your supplement regimen on controlling or reversing those factors. With proper care, your brain can maintain its youthful volume and function for years to come. ●

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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Advanced Defense Against Cellular Aging

NAD+ Cell Regenerator

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

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

How To Boost NAD+ Levels Within Your Cells

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

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

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

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

Multiple Benefits Of Increasing NAD+ Cellular Levels

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

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

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

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

NIAGEN® Nicotinamide Riboside 100 mg

Advanced NAD+ Technology At A Low Price

A bottle of 30 vegetarian capsules of **NAD+ Cell Regenerator™** retails for \$34. If a Life Extension member buys four bottles during **Super Sale**, the price is reduced to **\$17.55** per bottle. The suggested dose is just one small capsule daily.

NIAGEN® is a trademark of ChromaDex, Inc. Patents see: www.ChromaDexPatents.com.



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WITH BRAIN SHIELD®

Provides The *ULTIMATE* Protection For Your Brain

All brains decline with age, but numerous studies show that the proper nutrients can promote more youthful cognition and enhanced memory.

Only **Cognitex®** combines **11** essential ingredients in one cost-effective formula.

Sold separately, these components sell for a small fortune in Europe, where they are commonly prescribed for optimal brain health. The following is a sample of what you'll find in each softgel:

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

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

The retail price for 90 softgels of **Cognitex® with Pregnenolone & Brain Shield®** is \$62. If a member buys four bottles during **Super Sale**, the price is reduced to **\$35.78** per bottle. If eight bottles are purchased during **Super Sale**, the price is reduced to **\$33.75**.

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

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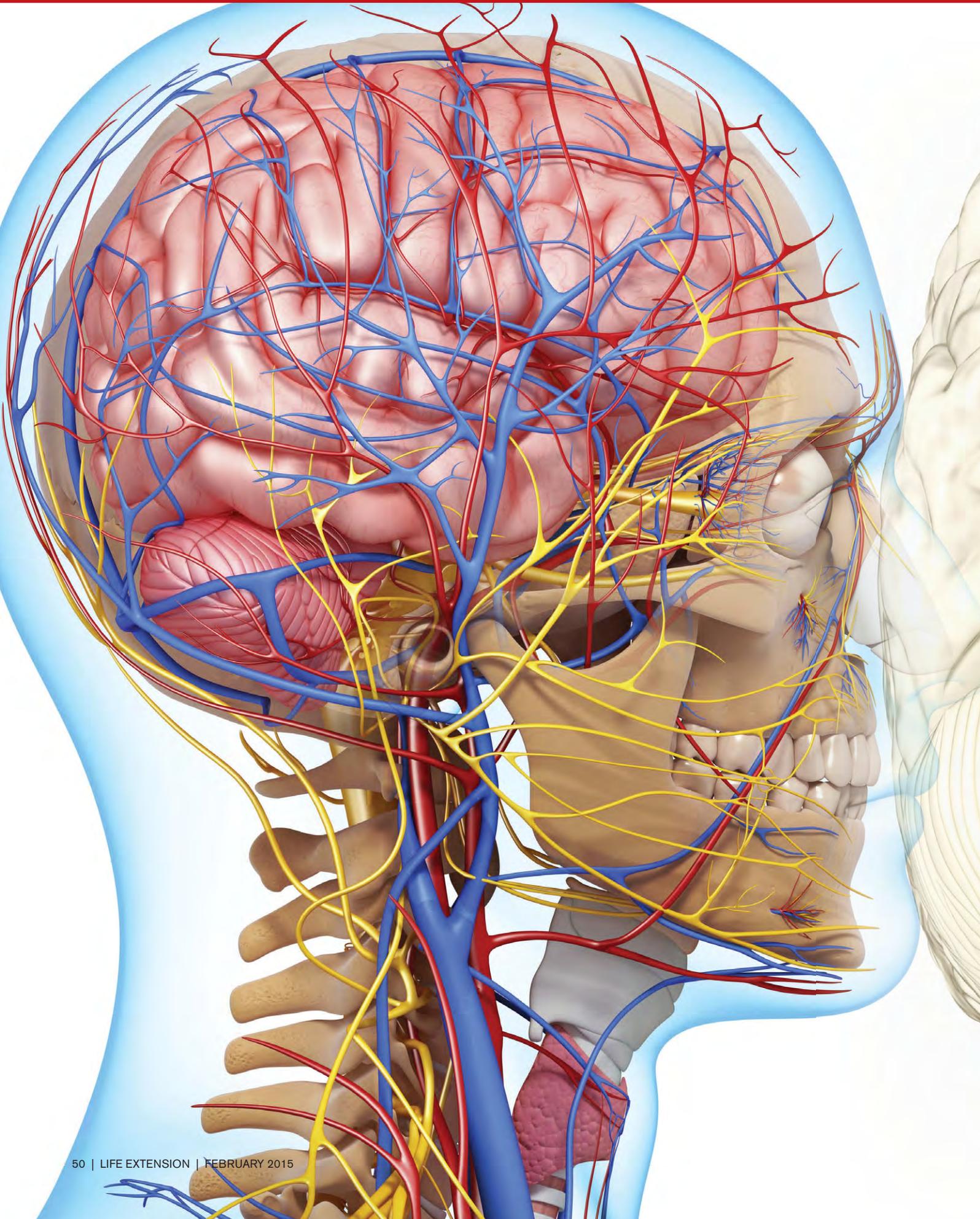


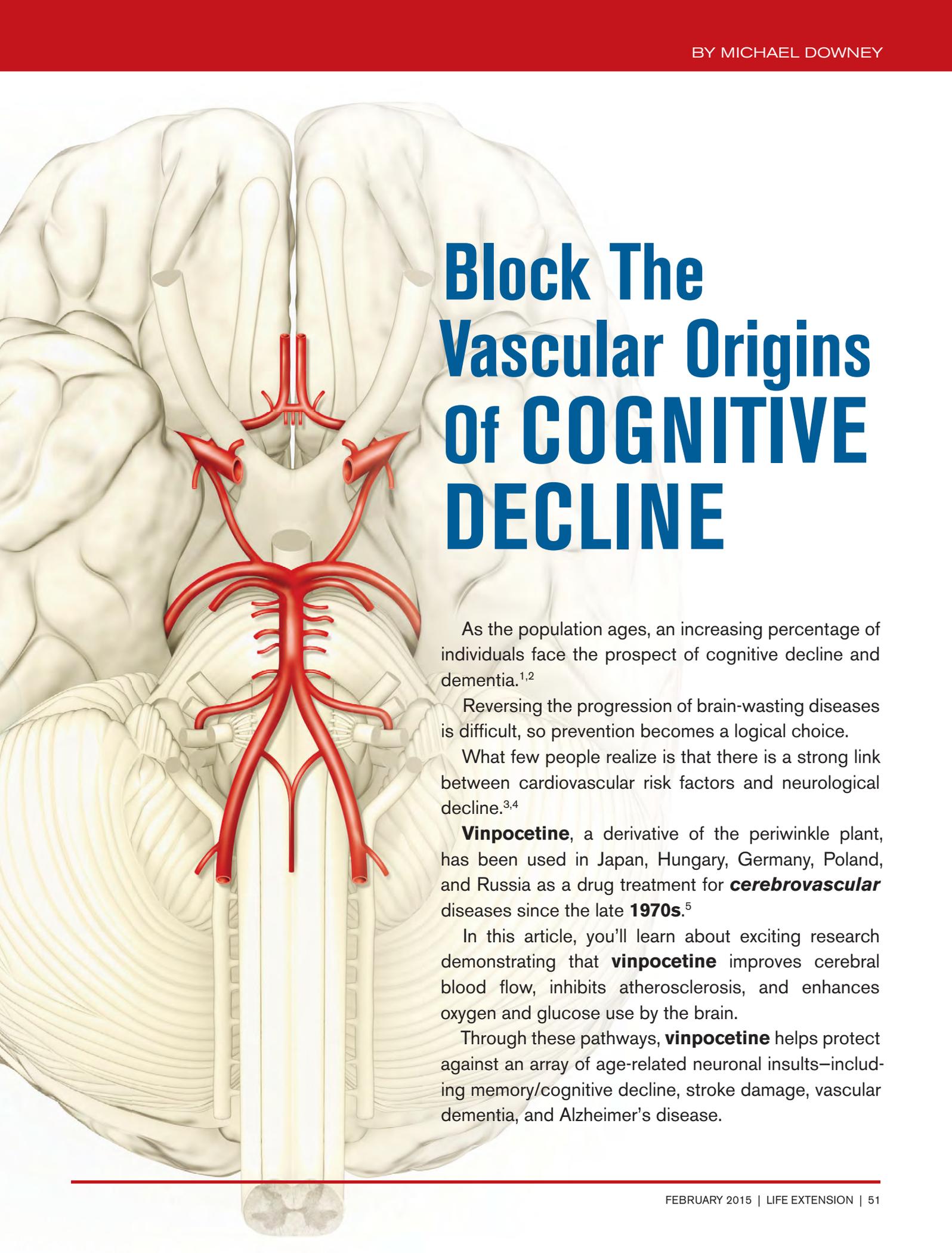
Just three softgels of Cognitex® provide the following nutrients:

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

Contains soybeans.

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Block The Vascular Origins of COGNITIVE DECLINE

As the population ages, an increasing percentage of individuals face the prospect of cognitive decline and dementia.^{1,2}

Reversing the progression of brain-wasting diseases is difficult, so prevention becomes a logical choice.

What few people realize is that there is a strong link between cardiovascular risk factors and neurological decline.^{3,4}

Vinpocetine, a derivative of the periwinkle plant, has been used in Japan, Hungary, Germany, Poland, and Russia as a drug treatment for **cerebrovascular** diseases since the late **1970s**.⁵

In this article, you'll learn about exciting research demonstrating that **vinpocetine** improves cerebral blood flow, inhibits atherosclerosis, and enhances oxygen and glucose use by the brain.

Through these pathways, **vinpocetine** helps protect against an array of age-related neuronal insults—including memory/cognitive decline, stroke damage, vascular dementia, and Alzheimer's disease.

The Heart-Brain Connection

In the late **1970s**, several researchers became aware of a critical link between cardiovascular disease and the start of the cognitive deterioration that often turned to vascular dementia.⁶

This **heart-brain** connection remained largely ignored for many years. Scientists eventually began investigating this intriguing field where **cognitive impairment** could be triggered by **cardiovascular** issues.⁶

By the early **1990s**, researchers were finding links between heart disease and the beginning stages of Alzheimer's.⁶ Since then, continued research on this link has been driven by the Alzheimer's disease epidemic—affecting over **5 million** Americans, a number projected to increase to **16 million** by 2050.⁷

Many large studies, including the Framingham, the Kungsholmen, and the Honolulu-Asia Aging studies, have strongly implicated **hypertension** (high blood pressure) in older persons as an origin of impaired cognition. It has also been well established that hypertension in the elderly is a risk factor for **Alzheimer's**.⁶

Exactly how hypertension may lead to Alzheimer's is not clear. However, it is suspected that the pulsatile pressure changes on the cerebral microvasculature that are generated by hypertension may damage brain **endothelial cells** that control cerebral blood flow.⁶

These vascular changes can induce chronic **hypoperfusion** (decreased blood flow) in the brain, leading to formation of white matter lesions. These lesions are detectable on cerebral magnetic resonance imaging (MRI) scans of Alzheimer's patients and are considered a good marker for this fatal disease.⁶

Brain hypoperfusion may result from vessel stiffness secondary to atherosclerosis, increased vascular resistance, and disturbed hemodynamic (blood circulatory) flow patterns. The consequent diminished blood flow in the brain is strongly implicated in the gradual cognitive decline seen among an increasing number of aging individuals.⁶

Total cerebral blood flow is **20%** lower in Alzheimer's disease patients than in those without dementia.⁷ And studies have shown that constant low blood flow to the brain is often a marker for whether or not someone will develop Alzheimer's.⁶

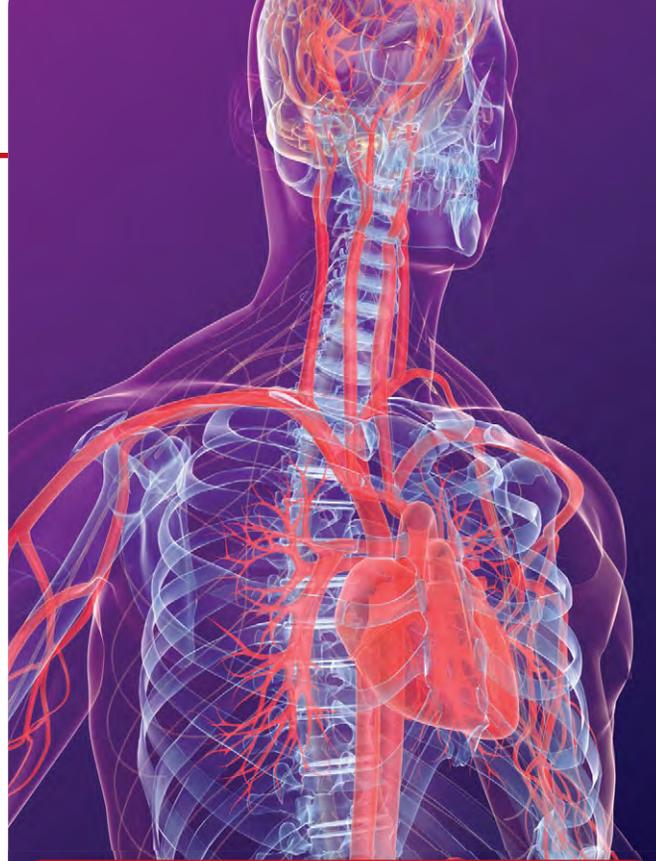
Effects Of Hypoperfusion On The Brain

The cascade of neuronal injuries triggered by **hypoperfusion** can manifest as memory loss,^{8,9} depression,¹⁰⁻¹³ cognitive dysfunction,¹⁴⁻¹⁶ and ultimately, a higher risk of stroke,^{17,18} vascular dementia,^{8,19,20} and Alzheimer's.²¹⁻²³

Why do vascular risk factors have such a powerful impact on brain health? Scientists believe it may be that this pathway adds to the reduced cerebral blood flow that is already present as a result of normal aging.⁶ Various risk factors for Alzheimer's—aging, a former head injury, and the *ApoE4* genotype (a gene variant with higher Alzheimer's risk)—all have the potential to lower blood flow to the brain.⁶

Scientists have described a process in which chronic **low** blood flow to the brain results in destroying even the most resilient neurons. Chances are high that this low blood flow will ultimately manifest as Alzheimer's.⁶





The urgent need for a safe way to block this destructive process is underscored by an alarming fact: The combination of hypertension and hypoperfusion is associated with smaller brain volume.²⁴ This makes accumulating evidence on vinpocetine's ability to inhibit this process even more critical.

Reversing Brain Decline

Once cerebral vasculature has been damaged, brain shrinkage cannot be reversed simply by reducing high blood pressure. Brain volume may continue to shrink despite successful blood pressure control.²⁵ Once deformed and dysfunctional, the cerebral arteries in some people may need elevated blood pressure to “squeeze” blood into their brain and avoid hypoperfusion. This squeezing process causes further damage to blood vessels and increased risk of stroke.²⁶

So while hypertension is a significant cause of arterial damage and hypoperfusion, aging humans have to do more than lower their blood pressure to reverse hypoperfusion and inhibit brain decline.

Fortunately, rodent experiments indicate that while hypoperfusion initially often reduces memory function—by inducing a state of reduced metabolism—the affected brain neurons remain structurally intact. When cerebral perfusion is restored after five weeks, the metabolically compromised neurons can return to a normal state. This finding shows that hypoperfusion can impair memory without killing neurons. More important, it suggests that hypoperfused brain cells might be rescued even after a period of reduced brain blood flow.⁶

This suggestion—that hypoperfused neurons may still be rescued—has been supported by clinical research on the human brain.⁶

Accumulating evidence now shows that **vinpocetine**, a derivative of *vincamine* from the periwinkle plant,⁵ provides a novel opportunity to prevent the effects of vascular risk factors on the brain. Vinpocetine thus has the potential to prevent or reverse the brain deterioration that often precedes vascular dementia and Alzheimer's.

Vinpocetine Manages Cerebrovascular Health

Research demonstrates that vinpocetine exerts anti-atherogenic effects on blood vessels and enhances brain blood flow.²⁷ These brain-protective effects are a result of a host of mechanisms induced by vinpocetine.

Vinpocetine directly relaxes vascular smooth muscle, making it an extremely powerful vasodilator.²⁸ It appears to work by inhibiting the enzyme *phospho-*

Blocking Brain Damage

- Escalating numbers of people are facing cognitive decline and dementia.
- Scientists have shown that cardiovascular risk factors and cognitive decline are intimately related.
- Extensive research demonstrates that vinpocetine, used as a cerebrovascular drug in Europe, inhibits atherosclerosis, improves cerebral blood flow, and enhances the brain's use of glucose and oxygen.
- These activities allow vinpocetine to inhibit an array of age-related neuronal insults including memory and cognitive decline, stroke damage, vascular dementia, and Alzheimer's disease.

diesterase 1 (PDE1), resulting in relaxation of cerebral blood vessel walls.²⁹ As a result, evidence shows enhanced cerebral blood flow in patients with cerebrovascular disorders.²⁸

Vinpocetine exerts viscosity-lowering effects on blood and plasma. It also decreases platelet and red blood cell aggregation, boosts red blood cell membrane flexibility, and exhibits clinically substantiated anti-ischemic activity.²⁸



The biological mechanisms of vinpocetine include inhibition of hypoxic damage to brain tissue, scavenging of hydroxyl radicals, anticonvulsive activity, modulation of several chemical transmitter systems, and inhibition of the reuptake of adenosine (thought to be a major endogenous anticonvulsant and cerebral protectant).²⁸

Vinpocetine's selective enhancement of cerebral blood flow is considered by scientists to be potentially safer than many pharmacologic vasodilators.²⁸

Studies also show that vinpocetine enhances cerebral metabolism.²⁸ It accomplishes this by increasing the brain's oxygen³⁰ and glucose uptake from the blood³¹⁻³⁴ and by increasing neuronal production of ATP (adenosine triphosphate), a molecule that stores and transports chemical energy within cells for metabolism.³⁵

Another useful property of this extract is its capacity to chelate metals. Vinpocetine has successfully reversed *tumoral calcinosis* (tumor-like calcium deposits) in hemodialysis patients with renal failure.²⁸

Scientists have demonstrated that vinpocetine effectively increases microcirculation in the retina, as well as boosting circulation in the inner ear, which suggests potential for treating tinnitus.²⁸

The strong anti-inflammatory activity of vinpocetine makes it a potential treatment for a range of inflammatory diseases, such as atherosclerosis, chronic obstructive pulmonary disease (COPD), arthritis, and otitis media.³⁶

Protection Against Neurological Decline

The many brain-supportive effects of vinpocetine have been demonstrated in scientific studies to offer the potential for novel protection against a broad spectrum of neurological diseases commonly associated with brain aging.

Memory

Vinpocetine's support in the brain for increased blood circulation and metabolism may explain its ability—proven in animal studies—to decrease the loss of neurons resulting from reduced blood flow. Based on these results, scientists conducted three controlled, clinical studies of older adults with memory problems associated with poor brain circulation or dementia-related disease. These human trials documented that vinpocetine confers significantly more improvement than a placebo in performance on comprehensive cognitive tests reflecting memory, attention, and concentration.³⁷

Cognitive Impairment

As early as **1987**, researchers showed that vinpocetine could produce a significant improvement in elderly patients with chronic cerebral dysfunction. In a double-blind clinical trial, investigators gave 42 patients **10 mg** of vinpocetine daily for one month, then **5 mg** for another two months, while control patients received a placebo. Supplemented patients scored better on all effectiveness scales, which included measures of cognition and overall mental status.³⁸

Then, in **1991**, 203 patients with mild-to-moderate dementia took part in a much larger, controlled, randomized trial in which they received **30** or **60 mg** of vinpocetine or a placebo for 16 weeks. There were significant improvements in the supplemented group's performance on cognitive performance scales and decreased severity of illness. Again, vinpocetine was well tolerated.³⁹

A later review study found that vinpocetine enhanced vasodilation (or relaxation) of blood vessels and improved vascular disease-related cognitive dysfunction resulting from reduced blood flow.²⁸

In another review of several controlled studies of older adults with memory impairment related to poor brain circulation or dementia, the study's authors found suggestive evidence that vinpocetine produced significantly more improvement in tests of attention, concentration, and memory than a placebo.³⁷

One study investigated blood flow in patients with ischemic stroke and mild cognitive impairment. The investigators found that vinpocetine both improved the cerebrovascular blood reserve capacity in these patients and favorably influenced their cognitive status and general condition. These results prompted the study authors to recommend vinpocetine for the treatment of patients with mild cognitive impairment.⁴⁰

Based on a review of clinical studies, European scientists wrote that vinpocetine “improves the blood flow and the metabolism of the affected brain areas” and that **“there is increasing evidence that vinpocetine improves the quality of life in chronic cerebrovascular patients.”**⁴¹

Alzheimer’s Disease

Every 68 seconds, an American develops Alzheimer’s disease. By 2050, this rate is projected to escalate to every 33 seconds.⁴²

Scientists treated rats with the chemical streptozocin to create a study model that mimics some Alzheimer-like cognitive problems, including impaired memory and learning. Then, by treating the rats with vinpocetine for 21 days, the research team was able to restore the rodents’ performance in a water maze and the passive avoidance test. Vinpocetine appeared to help protect against neuronal damage.⁴³

In a later report, scientists concluded that vinpocetine’s potential to enhance neuronal plasticity and exert strong anti-inflammatory effects may have beneficial effects against Alzheimer’s and Parkinson’s, conditions in which poor neuronal plasticity and inflammation are present.⁴⁴

Stroke

Vinpocetine may help prevent ischemic stroke, as well as protect against some of the damage related to stroke.

In 2003, a Bulgarian researcher summarized evidence that vinpocetine can protect brain tissue from the effects of asymptomatic cerebrovascular disease, the silent blood vessel damage that precedes a stroke. Their landmark paper cited the supplement’s ability to interfere at various stages in the cascade of events leading to stroke, including its ability to inhibit overstimulation of nerve cells, inhibit oxidation, and prevent free radical release. These scientists showed that vinpocetine passes rapidly across the blood-brain barrier and that it selectively accumulates in parts of the brain most closely related to cognitive function.

Finally, citing the known beneficial effects of vinpocetine on cerebral blood flow, the paper concluded that, **“Vinpocetine may also become a new therapeutic approach to prophylactic neuroprotection in patients at high risk of ischemic stroke.”**³³

This study revealed that vinpocetine was able to inhibit the release of glutamate and suppress damaging free radicals in the brain.³³

Vinpocetine has been shown to inhibit atherosclerosis, the accumulation of deposits in the inner artery lining that is a major cause of stroke. In a study on mice, researchers found that vinpocetine exerts anti-atherogenic effects by inhibiting oxidative stress, inflammatory response, and adhesion of white blood cells known as monocytes.²⁷ Another study on mice and in cultured macrophages⁴⁵ examined vinpocetine’s effect on lectin-type oxidized LDL receptor 1 (LOX-1), a receptor protein that plays a role in the pathogenesis of atherosclerosis.⁴⁶ The investigators discovered a novel role for vinpocetine in blocking the pathogenesis of atherosclerosis, at least partially through suppression of LOX-1 signaling.⁴⁵ **“Given the excellent safety profile of vinpocetine, this study suggests vinpocetine may be a therapeutic candidate for treating atherosclerosis,”**⁴⁵ said the study author.

While prevention of strokes is ideal, vinpocetine may also limit neurological damage following a stroke. A 2005 clinical study in Hungary documented the effects of vinpocetine on patients with multiple strokes. Patients underwent ultrasound scans of brain blood vessels to examine flow, and were then assigned either vinpocetine or a placebo supplement.





After three months, they performed a battery of cognitive tests. The brain blood flow of patients taking vinpocetine improved compared to placebo recipients. On cognitive tests, placebo patients deteriorated significantly while supplement recipients had no change at three months. This study demonstrated the neuroprotective effect of vinpocetine in patients following stroke.⁴⁷

Building on this post-stroke protection, in 2012, Russian scientists conducted a multi-center, clinical-epidemiological program to investigate the effects on ischemic stroke patients when they were given vinpocetine by infusion in the acute stage of a stroke and then, given vinpocetine by tablet for a longer period. Both the supplemented and control groups received standard stroke therapy. By all indicators of efficacy measured, the supplemented group showed greater improvements. The study concluded that these two-phase interventions, using infusion followed by the administration of tablets “*improve the restoration of neurological functions*” in ischemic stroke patients.⁴⁸

Parkinson’s Disease

An experiment was conducted to assess the neuroprotective effects of vinpocetine in an animal model of Parkinson’s disease. Rotenone, an insecticide, was used to induce Parkinsonism in a rat population and some were supplemented with different doses of vinpocetine. All rotenone-treated rats exhibited bradykinesia (slowed movement), motor impairment, depletion of dopamine in the striata (a subcortical part of the forebrain), and increased striatal levels of malondialdehyde (MDA), a marker for oxidative stress. Unlike controls, the vinpocetine-supplemented group showed a significant reversal of locomotor deficits, boosted striatal dopamine, and reduced striatal MDA. The study author concluded that vinpocetine may be considered a possible candidate in the treatment of Parkinson’s.⁴⁹

Brain Damage

Researchers tested vinpocetine on newborn babies who had suffered brain damage due to trauma during birth. The supplement markedly reduced or eradicated seizures in the newborns and decreased the abnormally high pressure within their brains. This study is suggestive of vinpocetine’s broad neurological protection.⁵⁰

Tinnitus and Hearing

Researchers tested vinpocetine in the treatment of acoustic trauma involving subsequent hearing loss and tinnitus. Among those who started vinpocetine supplementation within one week of the incident, **50%** experienced complete disappearance of tinnitus. Vinpocetine supplementation at any time after the trauma resulted in a significant decrease in tinnitus severity in **66%** of individuals and improved hearing in **79%** of individuals.⁵¹

According to a 2003 study, pretreatment with vinpocetine prevented hearing loss associated with aminoglycoside antibiotics (such as gentamicin) in 118 patients under treatment for tuberculosis.⁵²

Vinpocetine has also been found to be effective in treating Ménière’s disease (a disorder of the inner ear, affecting hearing and balance) and in treating visual impairment secondary to arteriosclerosis.^{53,54}



Safety

Human trials and rodent studies have revealed that vinpocetine is safe, effective, and well tolerated.^{34,38,55} However, because vinpocetine decreases platelet aggregation, it should be used with caution in patients on blood-thinning medications.²⁸

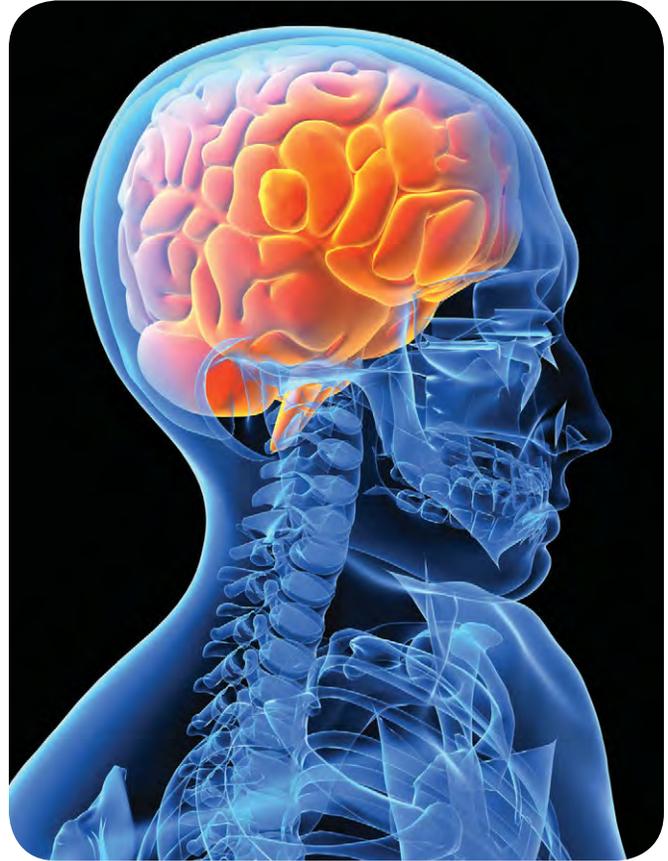
Summary

Increasing numbers of individuals face cognitive decline and dementia. Evidence now strongly links cardiovascular risk factors and cognitive decline. Extensive research demonstrates that vinpocetine, used in Europe since the 1970s as a cerebrovascular drug treatment, inhibits atherosclerosis, improves cerebral blood flow, and enhances oxygen and glucose use by the brain. Through these pathways, vinpocetine inhibits multiple age-related neuronal insults ranging from memory and cognitive decline to stroke damage, vascular dementia, and Alzheimer's disease. ●

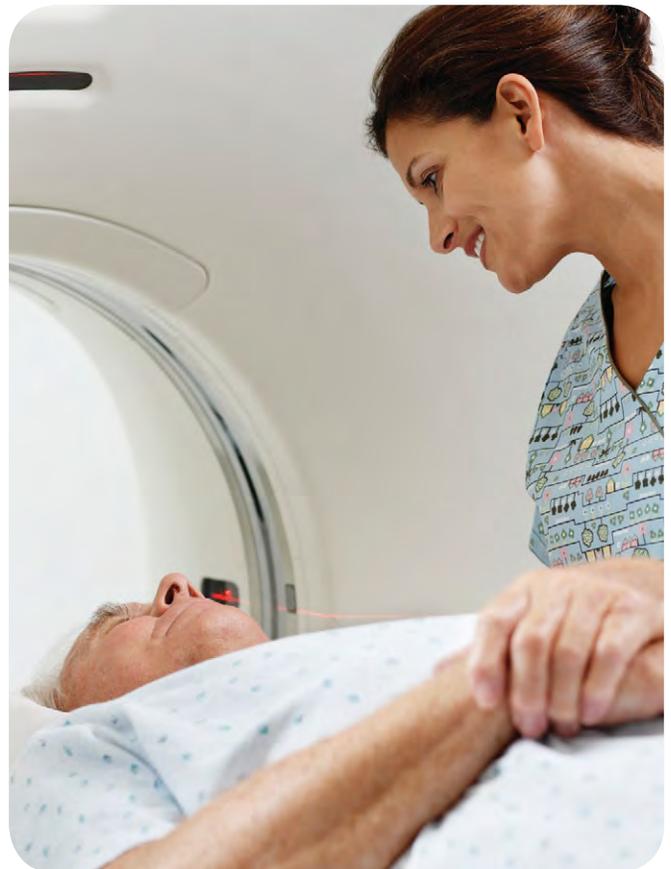
If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.

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TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT

FOR DNA PROTECTION

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

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

Protective compounds found in cruciferous vegetables like **I3C** (*indole-3-carbinol*) and **DIM** (*di-indolyl-methane*) encourage liver detoxification to help neutralize dangerous xenoestrogens (estrogen-like environmental chemicals that damage the body's hormonal system), as well as beneficially modulate estrogen metabolism.¹⁻⁴

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

For those weighing less than 160 pounds, just one capsule a day provides optimal potencies. Those weighing over 160 pounds should consider taking two capsules a day. A bottle containing 60 vegetarian capsules of **Triple Action Cruciferous Vegetable Extract** retails for **\$24**. If a member buys four bottles during **Super Sale**, the price is reduced to **\$14.85 per bottle**.

Those who want the added benefits of **trans-resveratrol** can order **Triple Action Cruciferous Vegetable Extract with Resveratrol**. Each capsule provides **20 mg** of *trans-resveratrol* in addition to the vegetable extracts and retails for **\$32** per 60-capsule bottle. If a member buys four bottles during **Super Sale**, the price is reduced to **\$19.98 per bottle**.

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To order Triple Action Cruciferous Vegetable Extract, call 1-800-544-4440 or visit www.LifeExtension.com



Item # 01468

Item # 01469

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

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

ENHANCE HEART HEALTH

SUPPORT ENDOTHELIAL FUNCTION

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

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

POMEGRANATE POWER—THE NEXT GENERATION

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

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

A bottle containing 60 softgels of **Endothelial Defense™ with Full-Spectrum Pomegranate™** retails for **\$56**. If a member buys four bottles during **Super Sale**, the price is reduced to **\$35.10** per bottle.

Contains soybeans and wheat.

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



Item # 01498

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

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

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

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

Prescribed by Doctors in 50 Countries for
Cognitive Support!

VINPOCETINE

A Natural Weapon in the Battle against Brain Aging

A compound found in the leaf of the **periwinkle plant** called **vinpocetine** has been shown to provide significant support for brain health and cognitive function as you age.

Among its many benefits, **vinpocetine** has been shown to:

- Provide support for age-related cognitive issues.¹
- Promote memory.²
- Support healthy blood flow inside the brain.³
- Promote overall nervous system health.⁴
- Supports normal blood viscosity within the brain.⁵

CLINICALLY VALIDATED FOR BRAIN HEALTH

In a double-blind clinical trial, researchers split 84 people with age-related cognitive issues into two groups. One group received vinpocetine while the other a placebo.⁶ The vinpocetine group performed significantly better on cognitive tests *and* exhibited improved mood.

A separate trial confirmed that vinpocetine supports healthy blood flow in the brain. Vinpocetine ingestion was found to significantly improve **intracerebral blood flow** after just 12 weeks.⁷

Another controlled, randomized trial of 203 patients showed significant improvement in cognitive performance in the vinpocetine group after 16 weeks.⁸

LOW-COST BRAIN SUPPORT

Vinpocetine's power to support cognitive function has gained worldwide recognition. So much so that it's available as a *prescription drug* in nearly **50 countries**, including Germany, Poland, Russia, and Japan.⁹

Unlike prescription drugs, **vinpocetine** is distributed as a low-cost dietary supplement in the United State.

Maturing individuals concerned about brain aging may choose to take up to four **10 mg** tablets per day of **Vinpocetine** initially for optimal brain health support.

Many members already take the **Cognitex**® formula, which contains **20 mg** of vinpocetine in each daily serving. Most people taking Cognitex® do not need additional vinpocetine.

A bottle containing **100** tablets of **Life Extension® Vinpocetine** retails for \$18. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$9.45** per bottle.



Item # 01327

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To order Life Extension® Vinpocetine call
1-800-544-4440 or visit www.LifeExtension.com



Health Risks Of INHALATION INSULIN For Diabetics

Diabetes is a disease in which the body does not produce and/or properly use insulin—in other words, the body is insulin resistant.¹ The treatment of type I and some cases of type II diabetes with subcutaneous **insulin injections** is sometimes associated with lack of compliance due to the pain of multiple daily injections.² Hence, there is a big demand for insulin that can be administered without painful shots. Development of such an insulin delivery system could open the way to a multibillion-dollar market, while making diabetics more treatment-compliant.

The search for a non-injectable form of insulin continues as the diabetic population all over the world continues to explode.³⁻⁵ An apparent advance arrived with the development of a preparation that could simply be **inhaled**.⁶

While the FDA had deemed this novel insulin preparation safe and effective, many questions regarding its long-term health effects remained unresolved.⁷⁻⁹ After an article was published on the potential cancer-causing effects of inhaled insulin using a medication called Exubera®, the Pfizer company withdrew the drug, taking a \$2.5 billion loss.¹⁰⁻¹² Pfizer later reported the development of lung cancer in six patients who had used inhaled insulin. Pfizer's timely withdrawal potentially saved hundreds of diabetics using inhaled insulin from developing cancer.¹³

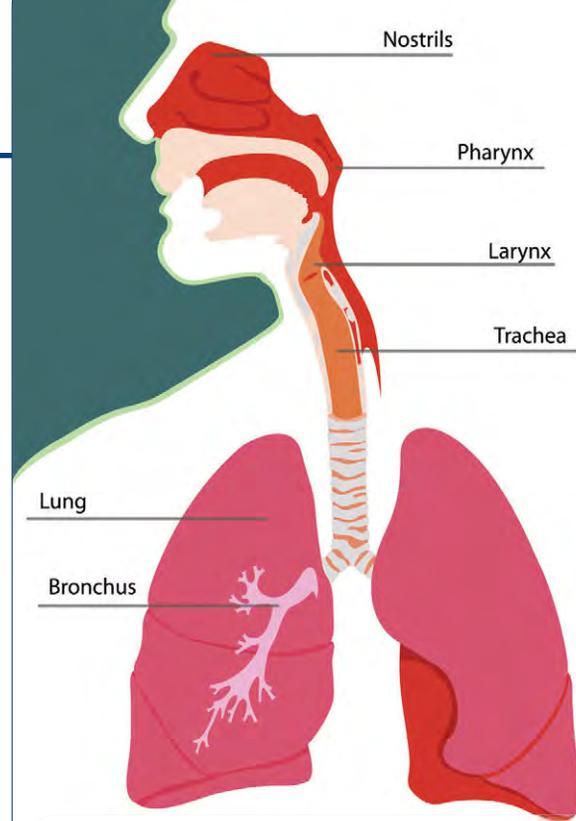
Unfortunately, on June 27, 2014, the FDA approved another inhaled insulin drug.⁷ It is obvious that the FDA did not thoroughly look at the ill effects of inhaled insulin.

What Causes Diabetes?

Insulin is a hormone secreted by endocrine cells (specifically beta cells located in the islets of Langerhans) of the pancreas and is essential for human life. It works by interacting with the insulin receptors on cell membranes to facilitate the entry of glucose and other nutrients into cells for energy production.^{14,15} Insulin facilitates various cellular metabolic functions. In addition to removing excess sugar from the blood, insulin also promotes cell division.^{16,17}

Type I diabetes is characterized by a lack of insulin in the blood due to a deficiency of its production in the pancreas.¹⁸ In type II diabetes, the pancreas does produce insulin, but the body's cells (estimated to be around 37 trillion in adults)¹⁹ are resistant to insulin's action—it is as if the doors that allow glucose to move from the blood into the cells are shut. The result is high levels of unused insulin and glucose in the blood, the hallmarks of early-stage type II diabetes.²⁰ In the later stages of type II diabetes, the pancreas fails to secrete enough insulin,²¹ and the patient becomes reliant on either drugs that artificially stimulate pancreatic insulin secretion, or on exogenously administered insulin with or without oral antidiabetic therapeutic agents.

Presently, type I diabetes is treated with daily insulin injections, whereas type II diabetes is treated with oral antidiabetic therapeutic agents, either alone or in combination with insulin shots.^{22,23} Other modalities to curtail, control, and cure diabetes are under intense research. It is the intent of researchers to develop a simple therapy to treat both of these types of diabetes. The pharmaceutical industry is waiting in the wings for a blockbuster moneymaking drug. It will come, but it will not be inhaled insulin. It will come in a combination that enhances glucose uptake at the cellular level, along with therapeutic agents that act the same as insulin when taken orally.



The Respiratory System

Diagram of the nasal, pharyngeal, oral and respiratory passages. Inhaled insulin passes through similar route as inhaled air. It is obvious that many of the particles of insulin can get deposited on these passages before they reach the final destination of the alveoli.

The Problem With Insulin Therapy Today

The disadvantage of repeated insulin injections is the pain, which makes it more difficult to properly manage type I diabetes.²⁴ To replace injections, repeated attempts have been made to deliver the insulin through alternative routes.

Based on today's diabetes epidemic—often due to obesity associated with a lack of exercise—there is a large and growing demand for insulin medications. However, the inconvenience and disruption of lifestyle associated with multiple daily insulin injections leads many patients to abandon their doctor-recommended treatment plans.² As a result, many patients fail to effectively manage their condition, causing systemic disease associated with complications and early death.

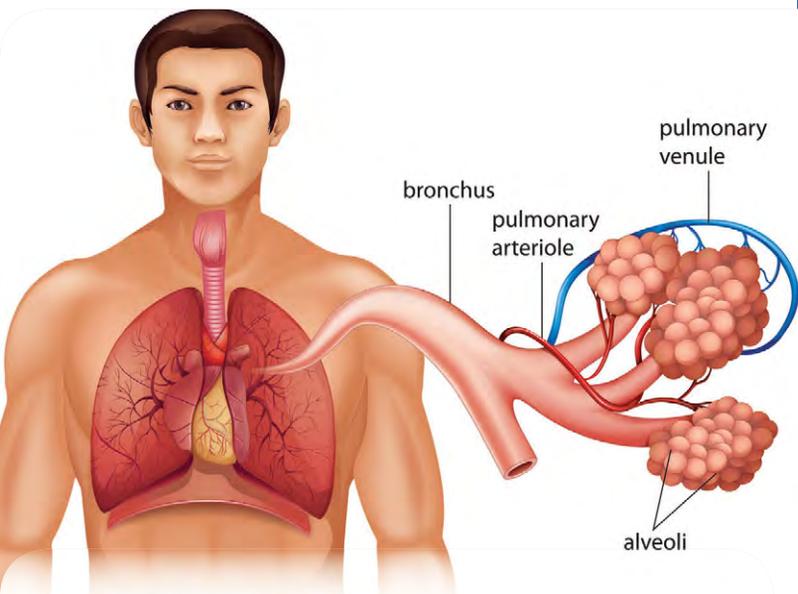
To eliminate pain and improve patient compliance, and thus treatment outcome, research is focusing on alternatives to repeated subcutaneous insulin injections. Some of the areas of investigation include aerosolized insulin for inhalation, oral insulin, insulin-producing stem cell implantation, insulin delivery pumps, and more.²⁵ There is even possible development of microneedles to deliver insulin subcutaneously, along with various transdermal and transmucosal delivery of insulin without needles.

Risk Of Using Inhaled Insulin

The problem with inhaled forms of insulin is that it is effective only when the administered dose is more than **three to 10 times** the amount given by subcutaneous injection. That's because little more than **10%** of the inhaled insulin reaches the alveoli in the lungs where it is absorbed into the bloodstream.^{6,26}

Another area of potential concern regarding **inhaled insulin** is the possible effect on the tissues that it comes in contact with on its way to the alveoli, including the linings of the mouth, throat, tongue, cheeks, gums, tonsils, trachea, bronchial tree, vocal cords, larynx, nasal air sinuses, and olfactory mucosa (which has a direct connection to the brain).²⁷ Even the modified dry form of insulin is of concern. The powdered insulin will stick to the above-mentioned breathing passages on the way to the lungs. It is a known fact that insulin induces cell division wherever it is deposited.²⁸

Furthermore, since insulin is a growth factor, there is also the potential concern that inhaled insulin could support aberrant cell growth, and potentially even change precancerous lesions into cancer. Cancer cells and precancerous cells have numerous insulin receptors that bind to the inhaled insulin. The fundamental problem with the insulin-inhalation delivery method is that the powder particulates stick to the naso-oro-pharyngeal-laryngeal-tracheobronchial tree. By sticking to these structures before it reaches the alveoli, inhaled insulin can facilitate the malignant transformation of cells.²⁹



Bronchial anatomy: Cross section and external view of the alveoli of the lungs where only about **10%** of the inhaled insulin is deposited to enter the blood stream. The rest is deposited in the air passages.

Researchers have noted that those with elevated blood sugar due to type II diabetes and other conditions are more prone to develop certain types of cancers than the healthy population.³⁰ Numerous cancers have more than the normal amount of insulin receptors to facilitate the entry of large amounts of glucose into the tumor cells, thus promoting their growth, multiplication, and spread.^{31,32}

Inhaled insulin may potentially increase the risk of lung cancer. Studies of human epithelial cells suggest that insulin-receptor activation is in itself insufficient for malignant transformation. However, once malignant transformation has been induced by other agents, the insulin receptor pathway to promote malignant progression of these cells can be activated.³² Since inhaled insulin comes in contact with so many tissues, it is crucial that future research examines its impact on normal, precancerous, and cancerous cells of the upper respiratory and digestive systems.

Inhaled Insulin's Health Risks

- As the number of diabetes cases continues to increase, the search for a non-injectable form of insulin increases. In June 2014, the FDA approved an inhaled insulin drug, despite the fact that an earlier inhaled insulin drug was linked to lung cancer and withdrawn from the market.
- A potential problem with inhaled insulin is that it is only effective when the dose is three to 10 times higher than that in an injection because only about 10% is absorbed by the bloodstream.
- Another area of concern is that the possible effect on tissue the inhaled insulin comes in contact with upon delivery. Insulin induces cell division wherever it is deposited. This may lead to aberrant cell growth, triggering cancer.
- Further concerns regarding inhaled insulin include respiratory tract irritation, hypoglycemia, exacerbation of asthma symptoms, and adverse effects in those with pre-existing respiratory diseases.
- It may be years before the benefits versus risks of inhaled insulin are known.

Should You Use Inhaled Insulin?

The FDA's recently approved inhaled insulin is a different formulation than Pfizer's Exubera®, which was removed from the market,^{7,46,47} but that does not make it the method of choice for insulin delivery in type I and some type II diabetics. That's because the powder still has to pass through the same air passages that Exubera® did, and almost **80 to 90%** of it is going to be lost when it sticks to the respiratory passages before it ever reaches the lungs and is then delivered to all cells in the body.

I recommend that inhaled insulin should **not** be used by diabetics who smoke or patients with underlying lung diseases such as asthma or chronic obstructive pulmonary disease (COPD), chronic bronchitis, lung infections (including tuberculosis), and patients suspected of lung carcinomas and sarcomas. Until the drug's full health risks versus benefits are known, I further discourage its use in patients with precancerous lesions (such as polyps, dysplasia, and leukoplakia), those with changes caused by tobacco use, those with chronic exposure to dust and other hydrocarbons, and patients with chronic infections.

Potential Health Risks Of Inhaled Insulin Therapy

The following are documented and possible health risks of insulin inhalation therapy:

- Increased risk of respiratory tract irritation,³³ which causes coughing, shortness of breath, sore throat, and dry mouth.^{34,35}
- Development of hypoglycemia, with adverse outcomes in those who exercise immediately after inhalation and those who smoke. These effects may occur due to the rapid absorption of inhaled insulin from the alveoli.^{36,37}
- Exacerbation of existing conditions in asthmatics that would require more inhaled insulin to control blood sugar.^{7,38} Furthermore, inhaled insulin could lead to smooth muscle contraction of the airway, which could precipitate or exacerbate chronic obstructive pulmonary disease (COPD) or episodes of asthma.³⁹
- Adverse effects in people with pre-existing respiratory diseases such as chronic bronchitis, tuberculosis, tumors, and other chronic lung afflictions.⁸
- Increased insulin antibodies. In one study, inhaled insulin increased the level of insulin antibodies in the body from baseline levels of **6 to 35%**.⁴⁰ This could delay and retard the action of soluble insulin in the blood, since the removal of an insulin immune complex could make less insulin available to lower blood sugar.
- Unwanted tissue growth in normal and precancerous cells, which may lead to genetic defects and ultimately cause cancer. Long-term effects of supraphysiologic doses of insulin in the

human lung or on neoplastic lung tissue have begun to unfold.¹³ Many of the insulin particles are deposited on the oro-pharyngeal-laryngeal-tracheobronchial tree, and nose lining. This might increase the incidence of tumors of the oral cavity, tongue, larynx, pharynx, trachea, bronchial tree, lungs, tonsils, nasal mucosa, nasal air sinuses, nasal polyps, vocal cords, esophagus, and any other structure where the insulin particulates are deposited during inhalation and nasal spray delivery methods.

- A potential increased tumor incidence in the tissues of the respiratory tract, although no evidence of this has been presented to date due to the withdrawal of inhalation insulin by Pfizer. With large-scale use of inhalation insulin, this may become apparent with increased tumors of the nasal sinuses, nasopharyngeal cavity, laryngeal, and respiratory tracheobronchial passages as well as the esophagus. The true health risks could take a long time to reveal themselves, as occurred with other drugs such as Vioxx® (an anti-inflammatory), Avandia® (an oral antidiabetic drug), and the diet drug combination, fenfluramine/phentermine (fen-phen).⁴¹⁻⁴³

If you visit www.pubmed.gov and search for "insulin and cancer," you will find almost 30,000 citations; if you search for "insulin causes cancer," you will find nearly 17,000 citations. This is one indication of the intense research underway on the relationship of insulin to cancer. Many cancer and precancerous cells have **two to four times** more insulin receptors (IR) and more insulin-like growth factor 1 (IGF-1) receptors,^{32,44,45} which thrive on the high blood sugar and high insulin with which they come in direct contact.



It may take years before we know the benefits versus risks of inhaled insulin. The safety of using this type of product in pregnant women, adolescents, and children has not been established. I hope that the FDA and drug companies involved in licensing and developing an inhaled method of insulin delivery will fully investigate these health risks and concerns on a post-approval surveillance basis.

The Future Of Insulin Delivery

The future of insulin delivery with the fewest side effects and a less painful delivery method may come from:

- The development of slow-release injectable insulin that lasts days or weeks with a single shot,
- The implantation of insulin-producing stem cells,
- An insulin pump or painless microneedles that deliver insulin under the skin,
- A method to activate and induce primordial stem cells in the pancreas' insulin-producing islet cells, or
- A transmucosal delivery patch as described in US patent publication 2009/0304776 A1.⁴⁸

The market for new antidiabetic therapeutic agents is a multibillion-dollar market. I am sure the drug companies and research scientists are in a race to develop a method to control the blood sugar to treat diabetes, which has become an endemic disease in the current century.⁴⁹

Summary

As the diabetes epidemic continues to grow, drug manufacturers are eager to develop new methods of insulin delivery. The FDA recently approved an inhaled insulin drug, despite the fact that Pfizer withdrew its inhaled insulin product due to its potential to cause cancer. Inhaled insulin affects all tissue it comes in contact with upon delivery, and since insulin induces cell division, this can lead to aberrant cell growth. Hypoglycemia, exacerbation of asthma symptoms, and adverse effects in those with pre-existing respiratory diseases are also areas of concern regarding inhaled insulin. ●

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

Dr. T.R. Shantha has relentlessly battled and suffered at the hands of the entrenched medical establishment. He is currently pursuing novel approaches to better treat today's diabetes epidemic. His exposés of the risks of the first FDA-approved inhaled insulin drug possibly saved countless lives.

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Multiple Mechanisms for the Support of Healthy Blood Glucose 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. 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 **broad-spectrum support** to help naturally stabilize already healthy glucose levels! The addition of **AMPK activating** agents can help further maintain healthy blood glucose levels.

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

Sorghum bran (<i>Sorghum bicolor</i>) extract [providing 540 mg proanthocyanidins]	600 mg
White mulberry extract (leaf) [providing 15 mg 1-deoxynojirimycin]	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 during **Super Sale**, the price is reduced to **\$21.60** per bottle.

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

BONE RESTORE

WITH VITAMIN K2

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

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

The retail price for 120 capsules of **Bone Restore** is \$24. If a member buys four bottles during **Super Sale**, the price is reduced to **\$14.85** per bottle. (Item# 01727)

The same **Bone Restore** formula without vitamin K2 (MK-7) is available as well. The retail price for 120 capsules is \$22. If a member buys four bottles during **Super Sale**, the price is reduced to **\$12.83** per bottle.

(Item# 01726)

Just four capsules of Bone Restore provide:

Highly Absorbable Calcium (as DimaCal® dicalcium malate, TRAACS® calcium bisglycinate chelate, calcium fructoborate)	700 mg
Vitamin D3	1,000 IU
Vitamin K2 (as menaquinone-7)	200 mcg
Magnesium (as magnesium oxide)	300 mg
Boron (calcium fructoborate as patented FruiteX B® OsteoBoron®)	3 mg
Zinc (as zinc amino acid chelate)	2 mg
Manganese (as amino acid chelate)	1 mg
Silicon [from horsetail extract (herb)]	5 mg



Item #01727

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

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Advanced Defense Against Cellular Aging

The all-new...
OPTIMIZED RESVERATROL
with NAD+ Cell Regenerator

Over 6,000 studies have been published on **resveratrol**, a compound shown to favorably alter genes that help slow the aging process. In fact, resveratrol triggers some of the same beneficial youthful gene expression activated by **calorie restriction**.¹

The all-new **Optimized Resveratrol with NAD+ Cell Regenerator** now contains NIAGEN® **nicotinamide riboside**, a novel nutrient shown to support mitochondrial health and promote longevity pathways. This new formula provides **100 mg of NIAGEN® nicotinamide riboside**—an amount equivalent to almost 667 cups of milk!²

The updated **Optimized Resveratrol with NAD+ Cell Regenerator** also contains specific compounds in berries, such as **pterostilbene** and **fisetin**, which researchers say work in synergy with resveratrol to “turn on” the body’s own longevity genes.

Item# 01930



Just one capsule of Optimized Resveratrol with NAD+ Cell Regenerator supplies:

Trans-Resveratrol	250 mg
NIAGEN® Nicotinamide Riboside	100 mg
Grape-Berry Actives	40 mg
Quercetin	60 mg
Trans-Pterostilbene (from pTeroPure®)	0.5 mg
Fisetin	10 mg

A bottle of 30 **Optimized Resveratrol with NAD+ Cell Regenerator** vegetarian capsules retails for **\$42 (Item # 01930)**. If a member buys four bottles during **Super Sale**, the price is reduced to **\$24.30** per bottle. The suggested dose is **one** capsule daily of this “optimized” resveratrol formula.

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Patents see: www.ChromaDexPatents.com.

To order Optimized Resveratrol with NAD+ Cell Regenerator, call 1-800-544-4440 or visit www.LifeExtension.com

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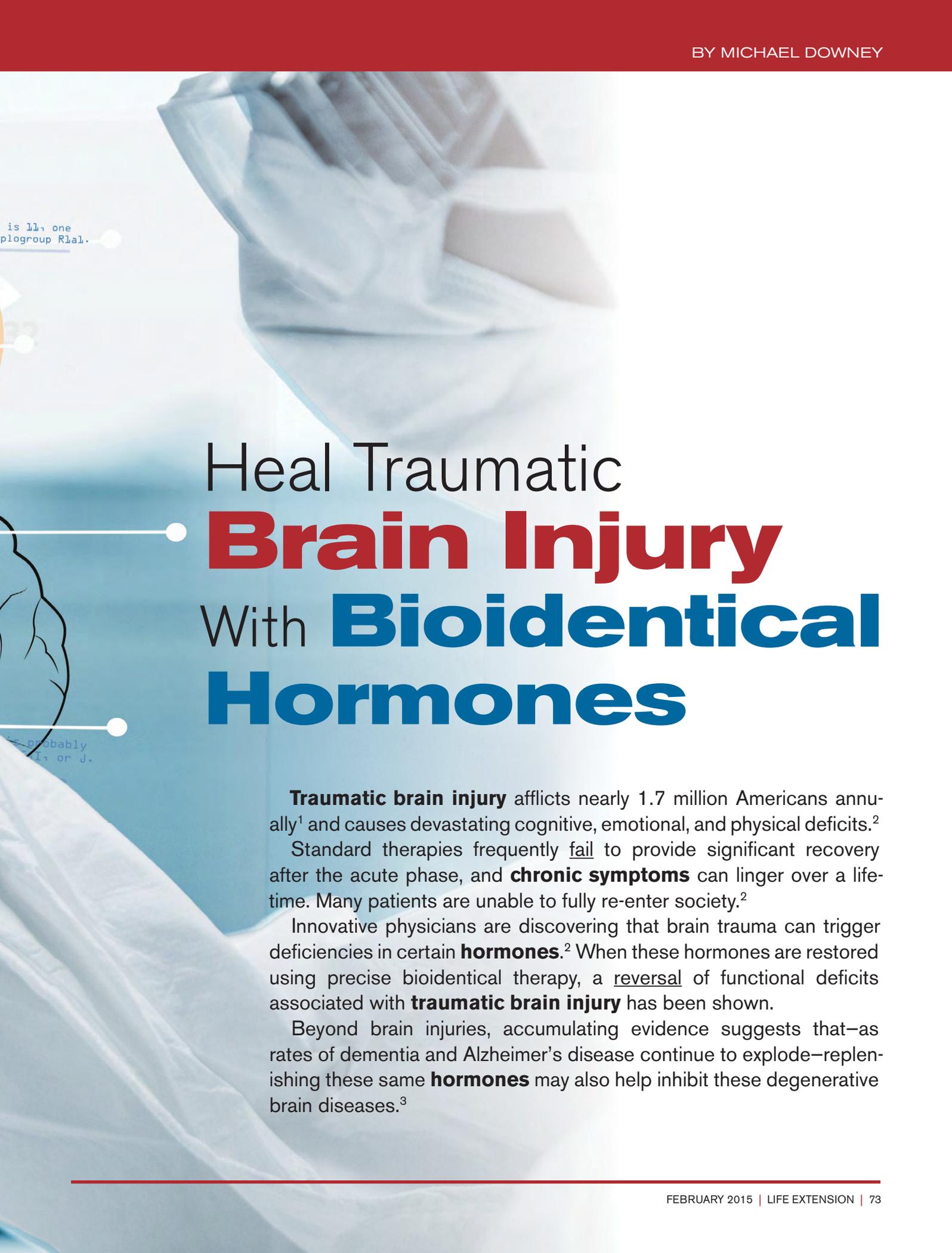
These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

If DYS426 is 12 and DYS392 is not 11, one is probably a member of haplogroup R1b.

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is 12 and DYS392 is probably a member of R1b.

If DYS426 is 11 and DYS388 is modal haplotype for G shown ab



Heal Traumatic **Brain Injury** With **Bioidentical Hormones**

Traumatic brain injury afflicts nearly 1.7 million Americans annually¹ and causes devastating cognitive, emotional, and physical deficits.²

Standard therapies frequently fail to provide significant recovery after the acute phase, and **chronic symptoms** can linger over a lifetime. Many patients are unable to fully re-enter society.²

Innovative physicians are discovering that brain trauma can trigger deficiencies in certain **hormones**.² When these hormones are restored using precise bioidentical therapy, a reversal of functional deficits associated with **traumatic brain injury** has been shown.

Beyond brain injuries, accumulating evidence suggests that—as rates of dementia and Alzheimer’s disease continue to explode—replenishing these same **hormones** may also help inhibit these degenerative brain diseases.³

Traumatic Brain Injury (TBI)

Survivors of traumatic brain injury (TBI) suffer from a broad spectrum of effects that often only show up decades later⁴ and continue to get progressively worse.

Conventional medical treatment frequently fails to achieve substantial recovery, and persistent symptoms can become extremely disabling.²

TBI is caused by both primary and secondary injury.⁵ Primary injury⁶ occurs from the forces at the time of injury and is believed to be irreversible.⁷

It is the complex *secondary* mechanisms that play a critical role in the delayed progression of brain damage—presenting novel opportunities for therapeutic strategies.

One of the secondary injury processes that may promote latent neuronal death is post-traumatic inflammation, which has been shown to increase blood-brain barrier permeability, cerebral edema, and intracranial pressure, resulting in neuronal dysfunction following TBI.⁸

Considered to be one of the “signature wounds” in veterans of both the Iraq and Afghanistan wars, mild traumatic brain injuries are often a result of blast waves from roadside bombs. Most of the 115,000 soldiers afflicted have recovered quickly, but studies suggest as many as **15%** will go on to suffer lingering cognitive problems.⁹

But TBI can affect anyone. Car accident victims. Construction workers. People prone to falls. And quite often, athletes playing contact sports.

Chronic Traumatic Encephalopathy (CTE)

When former heavyweight boxing champion Muhammad Ali was diagnosed with Parkinson’s syndrome in 1984,¹⁰ it was natural to blame his sport. Repeated head blows make professional boxers prone to brain damage, including parkinsonism, tremors, and a severe form of TBI known as chronic traumatic encephalopathy (CTE)—which is the dementia-like disease associated with repeated concussions.¹¹ CTE develops in about **20%** of pro boxers.¹²

The repeated concussions suffered in football have been making headlines for some time now. Decades ago, football players knew they were assuming some risk of long-term damage to knees, back, or even the neck—but the risk of devastating cognitive damage was not well-known.

Offensive lineman Joe DeLamielleure played his final year in the NFL in 1985 at the age of 34.¹³ But years before being named to the Pro Football Hall of Fame in 2003, he began showing TBI symptoms.¹⁴

“You turn 50 and suddenly, things change,” he says. “I thought it was depression, but there were other things besides that. High anxiety. I never slept.”

His symptoms included headaches, bursts of anger, and a **68%** hearing loss in his left ear, which he attributes to years of right-handed defensive linemen slapping him in the head.

“I lived football, I loved football,” DeLamielleure says. “I look at how I am now and I think, ‘Is this a temporary thing or am I going to end up like Mike Webster?’”¹⁵

Hall of Famers from left to right: Paul Krause, Bobby Bell, and Joe DeLamielleure.



Webster, a former offensive lineman and member of the Pro Football Hall of Fame, was just 50 when he died, after spending his final years suffering from dementia and parkinsonian symptoms. In his autopsy, CTE was clearly evident. The extensive brain damage included many diffuse amyloid plaques and neurofibrillary tangles, and the small projections from brain neurons known as neuritic threads were also found to contain tau protein.¹⁶ Amyloid and tau are implicated in neurodegenerative diseases, such as Alzheimer's.¹⁷

CTE effects frequently include memory and decision-making difficulties, mood and behavior problems—including depression and hopelessness—or sudden, violent behavior. Sometimes, there are no symptoms at all.¹⁸ Evidence suggests that a high portion of retired football players develop CTE.^{19,20}

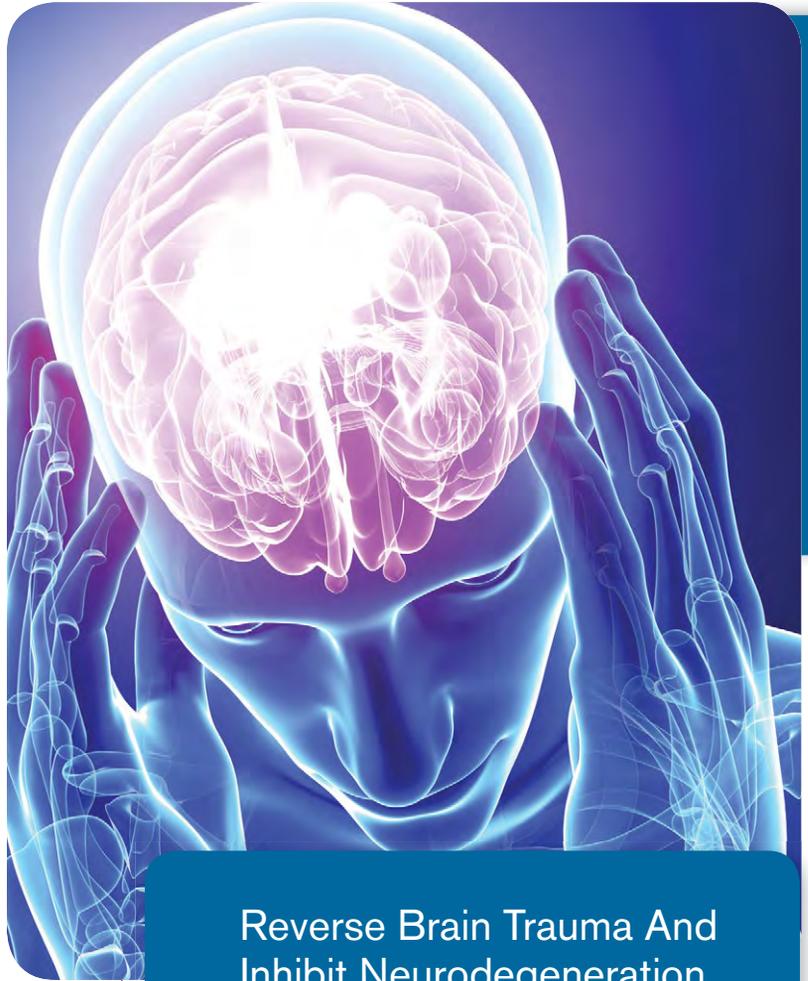
The autopsy conducted on ex-NFL safety André Waters after his 2006 death showed CTE, with substantial deposition of tau and neurofibrillary tangles—and a fatal, self-inflicted gunshot wound to the head.²¹ Prior to his suicide, Waters had suffered from cognitive and neuropsychiatric impairment, including chronic depression, suicide attempts, insomnia, paranoia, and impaired memory.²² The neuropathologist performing the autopsy said that Water's 44-year-old brain had degenerated into that of an 85-year-old man with characteristics similar to early-stage Alzheimer's victims.²¹

Waters' experiences echo the stories of former football players such as Dave Duerson, Ray Easterling, and Junior Seau—all of whom committed suicide and were later diagnosed with CTE.²³

Cognitive symptoms can be explained by neurodegenerative diseases other than CTE, especially in the absence of repeated concussions. "There is no framework to make that [CTE] diagnosis while someone is alive," according to Robert Stern, professor of neurology and neurosurgery at Boston University School of Medicine.²³

"But PET scans can be clearly indicative and diagnostic for CTE," disagrees Gino Tutera MD, the medical director of SottoPelle® Therapy, who has written three books on bioidentical hormone replacement therapy. "And Mr. DeLamielleure has PET scans [consistent with lesions that occur as a part of] CTE."^{24,25}

Ex-NFL player Joe DeLamielleure's devastating outlook was about to change dramatically.



Reverse Brain Trauma And Inhibit Neurodegeneration

- Mainstream therapies have been largely unable to alleviate the progressive symptoms of traumatic brain injury, which often occur years after the original trauma and can include devastating cognitive, emotional, and physical effects.
- Recognizing that brain trauma triggers sex hormone deficiencies that can produce these worsening effects, some physicians are using an innovative sex hormone replacement technique that uses subcutaneous pellets to deliver bioidentical hormone replacement. Patients report rapid reversal of symptoms.
- Also, at a time of exploding rates of dementia and Alzheimer's disease, accumulating evidence suggests that by replenishing diminished sex hormones, aging individuals can help inhibit these devastating brain-wasting diseases.

The Superiority Of Bioidentical Hormones

The synthetic hormone replacement drugs that are most often prescribed by physicians have a structure that differs from human hormones, a feature that allows them to be patented and therefore, be much more profitable.⁶⁰

While synthetic hormones do reduce some symptoms of hormone deficiency, they cannot restore the natural hormone balance that optimally supports good health. The inherent differences in synthetics prevent them from communicating with many of the receptors that control crucial body functions—setting the stage for serious health problems.⁶¹

Bioidentical hormones, however, are plant-based hormone substances that precisely match the molecular structure and functionality of human hormones. Dr. Tutera's pellet-implanted bioidentical hormones are mostly yam based.

The body recognizes **bioidentical hormones**, enabling them to bind appropriately to—and communicate properly with—the same receptors as their human counterparts. The body metabolizes bioidentical hormones in the same way as its own hormones, generating the same physiologic responses to provide vital support to the body's organs, tissues, and cells.

When prescribed—and administered correctly—bioidentical hormones can benefit a variety of conditions from menopause and testosterone deficiency to weight gain and osteoporosis.⁶² And they are virtually free of side effects.

Every individual's body chemistry is unique. So it is particularly relevant to SottoPelle[®] therapy that bioidentical hormones are not mass-produced. This means that they can be individually compounded—personally customized—to meet the exact dosage needs of each patient's specific deficiencies, based on the results of blood testing. Of course, this level of customization is not possible with mass-produced synthetics.



New Hope For Brain Injury Victims

Frustrated with the lack of options within mainstream medicine, DeLamielleure sought help from Dr. Tutera, who has developed a **bioidentical hormone** replacement program called SottoPelle[®], which is Italian for “under the skin.”

DeLamielleure and two other Pro Football Hall of Fame inductees—Paul Krause and Bobby Bell—heard that Tutera and his colleagues were having some success treating the symptoms of Parkinson's disease patients.

“All three were skeptical, due to the fact they did not understand how [sex] hormones could affect brain function,” says Tutera. “But they were desperate for improvement.”

“This therapy helped me achieve balance in my body and mind, which I have been struggling with for a long time,” says DeLamielleure. “In just a few months, I have so much more physical energy...and mental clarity.”

Dr. Tutera has long been one of a small number of physicians delivering bioidentical hormones to replenish low sex hormones by implanting a tiny, slow-release pellet.

Unlike synthetics, bioidentical hormones are plant-based hormone substances that precisely match the molecular structure and functionality of human hormones. SottoPelle[®]'s is a pellet-implant delivery system of bioidentical hormones.²⁶

Physicians generally prescribe hormone delivery orally (tablets) or percutaneously (creams or patches). But each SottoPelle[®] pellet—about the size of a Tic Tac[®]—is implanted subcutaneously (under the skin) in the patient's hip area. A mild local anesthetic is used and the procedure takes a few minutes. Pellets are replaced periodically, according to each patient's specific needs. Unlike other hormone replacement methods, the release of hormones from pellets increases as demanded by the body—during exercise or periods of stress, for example, when blood flow quickens. This mimics normal youthful hormone release and consistent blood levels are easily maintained.²⁶

This novel technique was first developed in Europe in 1935²⁷ and brought to the US four years later by the late Dr. Robert B. Greenblatt.²⁸ However, it never found its way into mainstream medicine here.

“I first started using pellet therapy in 1992. It was taught to me by a physician who was trained by Dr. Greenblatt in the 1960s,” says Tutera. “I felt as if I had found the missing piece to my puzzle of how to help women feel better by better regulation of their hormones.”

Taking dose customization further, Dr. Tutera's pellet therapy involves a patent-pending dosing algorithm that ensures a highly accurate dosing amount for each individual.



“Back in the early 1990s, I realized that individual dosing was the key,” explains Tutera. “The dose—which is customized to bring patients back to high-normal levels of **testosterone**—is dependent on age, size, how deficient they are, and other factors.”

The precise dose of each individual’s pellets is determined after **blood testing** to pinpoint the patient’s specific deficiencies. This level of customization is not possible with mass-produced synthetics.

DeLamielleure’s significant improvement isn’t an isolated case. Former defensive back Paul Krause relates a similar story.

Krause retired after the 1979 NFL season, was inducted into the Pro Football Hall of Fame in 1998, and still holds the all-time record for interceptions. But in his words, “Things started to go bad.”

“I started not to have fun, my memory was going, and I almost didn’t care what happened to me. I can honestly say I needed help, physically and mentally. Like many NFL players, I’ve had some dark and difficult times due to my CTE. I didn’t care if I ‘left’ or not,” he says, suggesting past suicidal thoughts.

“I went to other clinics and doctors, and they said we really can’t tell you what your problem is.”

Krause has started on Tutera’s hormone therapy and is enthusiastic about the early results.

“I’ve started feeling *good* again...I can concentrate, read, and relax,” he says. “It’s changed the outlook of my life: I don’t want to ‘leave’—I want to *live*.”

A number of other retired NFL players have turned to SottoPelle® for relief from a variety of traumatic

brain injury-related complaints—including line-backer-defensive end Bobby Bell.

Retired from the game since 1974 and named to the Hall of Fame in 1983, Bell recently started bio-identical hormone therapy. He found that, “about three or four weeks out,” his worst TBI symptoms were already greatly reduced.

Tutera says he is in the early stages of treating DeLamielleure, Krause, and Bell and expects to be able to document their further recovery over time. Typically, SottoPelle® involves implanting new hormone pellets every three to six months, which varies by individual. For instance, patients DeLamielleure, Krause, and Bell will now receive their pellets every five to six months.

Beneficial effects are often seen in patients with memory fog within four weeks—which clearly demonstrates the crucial link between traumatic brain injury and hormone deficiency.

Critical Role Of Hormones In Traumatic Brain Injury—And Disease

It may seem odd that hormonal balances are connected to traumatic brain injury.

However, many studies demonstrate that hypopituitarism—a condition in which the pituitary fails to produce normal hormone levels—is relatively common following TBI,²⁹ affecting at least **50** to **76%** of victims.³⁰⁻³² Sometimes hypopituitarism diagnoses are not made for more than 20 years after the injury.³³

The Link Between Traumatic Brain Injury And Hormone Deficiency

Most people think of hormones as the products of the endocrine glands located throughout the body. That is an accurate—but incomplete—view of these powerful biological regulatory molecules. Virtually all endocrine glands are under the control of the pituitary gland, which is located inside the skull at the base of the brain. Because of its powerful influence on the other endocrine glands, the pituitary is often referred to as the “master gland.”

But even the pituitary is subject to a higher form of control. An ancient brain structure called the hypothalamus has a direct connection to the pituitary via a unique network of veins. Regulatory molecules from the hypothalamus “tell” the pituitary how much of its hormones and hormone-releasing factors to produce.⁶³ And the hypothalamus, as part of the brain itself, receives constant neurological input from all over the body, creating a host of feedback loops. It is those feedback loops that maintain a steady balance between extreme biochemical states.

That connection between the brain’s hypothalamus and the endocrine system’s pituitary is called neuroendocrine function. And, although it may seem obvious, medical science is only just beginning to recognize

that trauma to the brain, even apparently minor trauma, can damage the hypothalamic-pituitary system and have profound effects on hormonal function.

In fact, most people—including the majority of physicians—assume that the neurological deficits that follow a traumatic brain injury result simply from disruption to brain tissue itself. In this simplistic model, a hit to the head causes the brain to be “rattled,” triggering bleeding, bruising, and other large-scale injuries that can be seen on MRI and CT scans. And it’s true that we can predict some of the deficits a brain-injured person will sustain by evaluating the location and severity of the damage that is visible using those scans.

But victims of traumatic brain injury frequently have sustained neurological deficits that exceed what would be predicted simply by examining brain scans. Unfortunately, people with so-called minor traumatic brain injury, who comprise the largest group of brain-injured patients, have no visible damage at all on brain scans.

It is disrupted hormonal function, not simply physical “brain damage,” that creates the sustained neurological deficits suffered by victims of traumatic brain injury.



Brain-injured patients who have a deficiency in growth hormone exhibit greater deficits in attention, executive functioning, memory, and emotion than patients with normal growth hormone levels.³⁴ Growth hormone binds to receptors found in the brain, especially in regions responsible for learning and memory.^{35,36}

The sex hormones, specifically, are also closely related to cognitive function and dysfunction. Sex hormones can function directly as neurotransmitters in the central nervous system.³⁷

At least **16%** of long-term TBI survivors develop hypogonadism—in which the testes in men or the ovaries in women produce insufficient levels of sex hormones. However, it is estimated that these deficiencies are not identified or treated in most individuals.²⁹

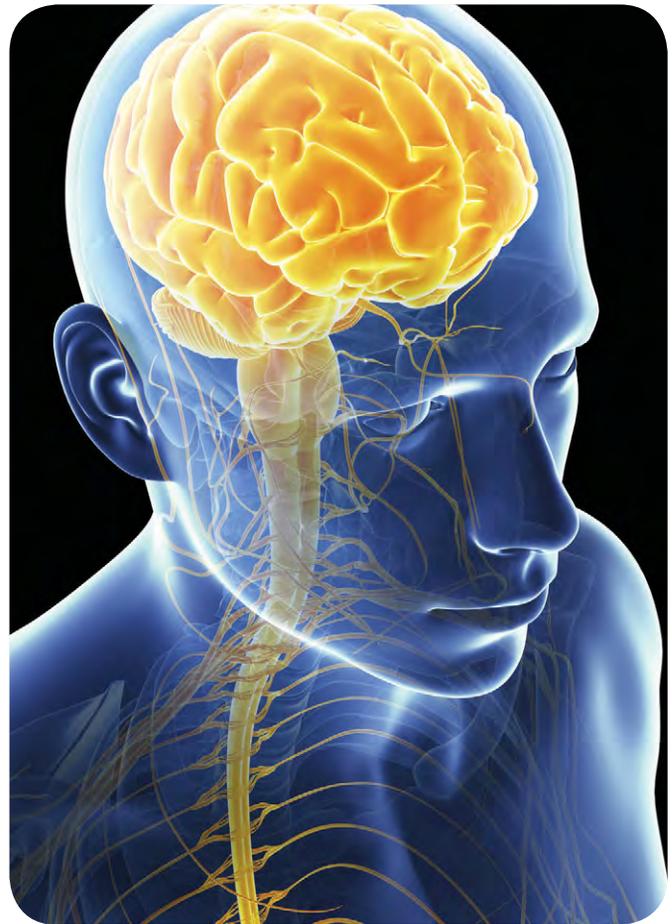
As a hormone that can penetrate the blood brain barrier, estradiol promotes neuronal growth.³⁸ It does so by decreasing inflammation and boosting the growth of *dendrites*, which are branched, tree-like projections at the ends of neurons that receive information from other neurons and transmit electrical stimulation to the body (soma) of the neuron. In the male brain, testosterone is converted to estradiol (in the presence of the enzyme aromatase). These activities minimize the effects of brain trauma and support healing.³⁹

Suboptimal levels of estradiol are associated with lower scores on standardized assessments of cognition in both men and women.⁴⁰ Postmenopausal women with higher levels of endogenous estradiol also have better semantic memory than women with estrogen deficiencies.⁴¹ And postmenopausal women treated with estradiol displayed improvements in executive function compared to placebo.⁴²

Recent findings,⁴³ confirming 27 prior studies,⁴⁴ show that estrogen replacement reduces all-cause mortality and increases general well-being in estrogen-deficient women. Progesterone also protects and heals injured brain tissue.⁴⁵

In a study involving over 500 aging men and women, optimum testosterone levels were linked with better performance on the Mini-Mental Status Examination.⁴⁶ Several other studies concluded that testosterone levels are positively associated with multiple aspects of cognitive function.^{47,48} And scientists have found that recovery of patients with traumatic brain injury is greater in those with higher testosterone levels.⁴⁹

Some dietary supplements are known to protect the brain from traumatic injury. For example, post-injury administration of melatonin has been shown in animal studies to prevent dangerous short-term brain swelling and help brain tissue maintain its function.⁵⁰ Also, nicotinamide—when combined with progester-



one and given within about 24 hours after TBI—has been shown to improve functional recovery.⁵¹

Despite the demonstrated links between sex hormones and neuroprotection, virtually no physicians use sex hormones to treat TBI. However, over 200 SottoPelle®-trained physicians worldwide are now changing the way we think about traumatic brain injuries—and a variety of other diseases—and how to treat them effectively.

Generally, sex hormone replacement therapy is used to treat andropause and menopause. Physicians are currently exploring the use of bioidentical sex hormones to treat TBI, CTE, mood disorders including depression, cognitive deficits, fatigue, menstrual headache, and loss of libido—as well as Parkinson's disease, type II diabetes, and multiple sclerosis (MS).

Bioidentical sex hormones have even been used to treat osteoporosis, metabolic syndrome, muscle loss, and elevated cholesterol.⁵²⁻⁵⁴

Perhaps most compelling, however, for aging individuals concerned about the risk of dementia, returning hormones to physiologic levels can help prevent both mild cognitive impairment (MCI) and Alzheimer's disease!

Sex Hormones May Inhibit Alzheimer's Disease

Whether due to TBI or aging, sex hormone insufficiency is increasingly linked to dementia. For instance, age-related declines in sex hormones significantly contribute to Alzheimer's disease risk in both men and women.³

And just as Dr. Tutera has shown that TBI symptoms can be treated and possibly reversed with sex hormones, the same hormones have been shown to reduce the risk of neurodegenerative diseases such as Alzheimer's disease³—the sixth-leading cause of death in the US.⁵⁶

Both estrogens and androgens provide a broad range of neuroprotective activities. Some of these are relevant to normal brain aging, others may benefit neurodegenerative conditions, and still others appear to be largely specific to Alzheimer's disease.³

Testosterone levels were found to be lower in Alzheimer's patients, and some studies suggest that low free testosterone may precede Alzheimer's onset.



Also, in observational studies, testosterone levels were positively associated with global cognition, memory, executive functions, and spatial performance.⁵⁷

Various studies suggest that there might be an optimal testosterone level beyond which there is no further cognitive benefit. In fact, excessively elevated levels may hinder improvement in cognition and have negative effects.⁵⁷ This demonstrates the necessity for hormonal testing. It also reinforces the superiority of the SottoPelle® process, which customizes pellets to meet the specific dosage needs of each individual patient.

Similarly, evidence suggests that estrogen replacement therapy in postmenopausal women may protect against Alzheimer's. Since testosterone also declines in postmenopausal women, estrogen therapy supplemented with androgens may provide women with additional protection against Alzheimer's.⁵⁸

Estrogen has been shown to inhibit the pathways of Alzheimer's by counteracting the neuropathologic changes, the deficiency in the neurotransmitter acetylcholine, and the brain cell death seen in this disease.⁴ Tutera explains that the mechanisms for this Alzheimer's protection include:

- Increased dendrite spine density,
- Enhanced synapse formation,
- Modulated nerve growth factor activity,
- Production of neurotransmitters (such as acetylcholine),
- Increased apolipoprotein E levels,
- Anti-inflammatory effects,
- Increased breakdown of amyloid precursor protein resulting in less beta-amyloid,
- Enhanced blood flow,
- Augmented glucose uptake and metabolism, and
- Reduced glucocorticoid elevations.

Recently, the Global Experts Consensus Panel in Philadelphia recommended assessment of hypopituitarism for moderate and severe TBI patients—including testing for fasting serum testosterone in men and estradiol in women—at three and 12 months after discharge from intensive care.⁵⁹

Considering accumulating evidence that low levels of these same hormones are a risk factor for Alzheimer's disease, hormone testing may be advisable not just for people with brain trauma, but for *all* aging individuals.

This is one reason why so many Life Extension members order the **Male or Female Blood Test Panel**, which measures a wide range of hormones involved in neurological processes including testosterone, estrogen, progesterone, thyroid, and DHEA. To order the Male or Female Panel, call **1-800-208-3444**.

Summary

Traumatic brain injuries frequently cause devastating cognitive and physical effects that standard therapies cannot fully alleviate, leaving many patients disabled and lost.

Recognizing that brain trauma triggers sex hormone deficiencies, which can produce these worsening effects, some physicians are using a cutting-edge, subcutaneous pellet-delivery technique for bioidentical hormone replacement. Patients are achieving rapid reversal of symptoms.

Additionally, evidence suggests that—as dementia and Alzheimer’s rates explode—replenishing diminished sex hormones may help inhibit these devastating brain 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.

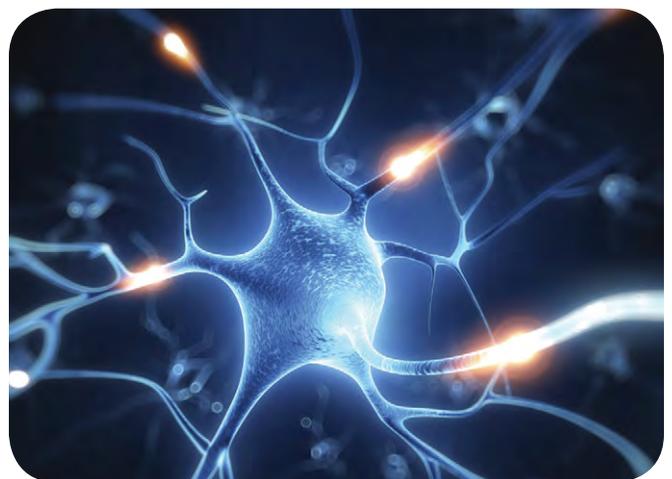
Patients with traumatic brain injury and Parkinson’s disease or their family members can visit SottoPelle®’s website at www.sottopelletherapy.com or call 480-874-1515 to set up an appointment.

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Unlike commercial blood tests that evaluate only a few disease risk factors, Life Extension's **Male** and **Female Blood Test Panels** measure a wide range of blood markers that predispose people to age-related diseases.

Just look at the **huge** number of parameters included in the **Male** and **Female Blood Test Panels**:

MALE PANEL

LIPID PROFILE

Total Cholesterol

LDL (low-density lipoprotein)

HDL (high-density lipoprotein)

Triglycerides

CARDIAC MARKERS

C-Reactive Protein (high sensitivity)

Homocysteine

HORMONES

Free and Total Testosterone

DHEA-S

Estradiol (an estrogen)

TSH (thyroid function)

Vitamin D (25-hydroxyvitamin D)

METABOLIC PROFILE

Glucose

Kidney function tests: creatinine, BUN, uric acid, BUN/creatinine ratio

Liver function tests: AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase

Blood minerals: calcium, potassium, phosphorus, sodium, chloride, iron

Blood proteins: albumin, globulin, total protein, albumin/globulin ratio

Hemoglobin A1c

COMPLETE BLOOD COUNT (CBC)

Red Blood Cell count including: hemoglobin, hematocrit, MCV, MCH, MCHC, RDW

White Blood Cell count including: lymphocytes, monocytes, eosinophils, neutrophils, basophils

Platelet count

CANCER MARKER

PSA (Prostate Specific Antigen)

FEMALE PANEL

LIPID PROFILE

Total Cholesterol

LDL (low-density lipoprotein)

HDL (high-density lipoprotein)

Triglycerides

CARDIAC MARKERS

C-Reactive Protein (high sensitivity)

Homocysteine

HORMONES

Progesterone

Estradiol (an estrogen)

Free and Total Testosterone

DHEA-S

TSH (thyroid function)

Vitamin D (25-hydroxyvitamin D)

METABOLIC PROFILE

Glucose

Kidney function tests: creatinine, BUN, uric acid, BUN/creatinine ratio

Liver function tests: AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase

Blood minerals: calcium, potassium, phosphorus, sodium, chloride, iron

Blood proteins: albumin, globulin, total protein, albumin/globulin ratio

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Red Blood Cell count including: hemoglobin, hematocrit, MCV, MCH, MCHC, RDW

White Blood Cell count including: lymphocytes, monocytes, eosinophils, neutrophils, basophils

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The retail price for a bottle of 120 capsules of **Super MiraForte with Standardized Lignans** is **\$62**. If a member buys four bottles during **Super Sale**, the price is reduced to **\$37.80** per bottle.

Each daily dose of Super MiraForte with Standardized Lignans contains the following testosterone supporting ingredients:

1,500 mg	Chrysin
15 mg	Bioperine®
850 mg	Muira puama
282 mg	Nettle root
15 mg	Chelated elemental zinc
320 mg	Maca
33.4 mg	HMRlignan™
	Norway Spruce lignan extract



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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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SUPER FOODS

BY MICHAEL DOWNEY

Sage

The Medicinal Herb

A wealth of compelling evidence has revealed sage (*Salvia officinalis*) to be an easy way to spice up not only your meals, but your health. Sage provides an array of complex compounds such as chlorogenic acid, tannic acids, resins, estrogenic substances, and potent flavones.¹ Research points to sage's power to help lower glucose, cholesterol, and triglyceride levels in diabetics,² enhance mood and cognitive performance,³ inhibit inflammation,^{4,5} and reduce the hot flashes of menopause.⁶ But perhaps most remarkable, experts now recognize the memory-enhancing capacity of sage in individuals with⁷ and without⁸ Alzheimer's disease.



A Multitude Of Protective Compounds

Sage, with its grayish-green leaves that give off a unique, pleasant aroma, is native to the Mediterranean area. A relative of the mint family, this herb has been valued for thousands of years in that region for its broad range of uses in cooking and medicine.⁹

Sage contains a wide assortment of bioactive compounds. Its essential oil contains cineol, borneol, and thujone. Its leaves contain tannic acid; resins called oleic acid, ursolic acid, and ursolic acid; bitter substances called cornsole and cornsolic acid; estrogenic substances; and fumaric, chlorogenic, caffeic, and nicotinic acids—as well as a powerful class of bioflavonoids known as flavones.¹

Sage flavones include apigenin, diosmetin, and luteolin.¹⁰ Apigenin may stimulate adult neurogenesis—the generation of neuronal cells in the adult brain—by promoting a process called neuronal differentiation.¹¹ Diosmetin may inhibit the proliferation of breast cancer cells,^{12,13} and it has been

suggested that it may be protective against cardiovascular disease.¹³ Luteolin has been shown to exert various pharmacological effects, such as anti-inflammatory, antimicrobial, and anticancer activities—including cancer chemopreventive and chemotherapeutic potential.¹⁴ In fact, evidence suggests that luteolin may help inhibit the development of UVB-induced skin cancer.¹⁵

Natural Improvement Of Alzheimer's Symptoms

Sage may offer a novel natural treatment for Alzheimer's disease by improving memory and information processing.

In research published in the *Journal of Clinical Pharmacy and Therapeutics*, scientists conducted a randomized, placebo-controlled clinical trial to assess the effectiveness and safety of 60 daily drops of either liquid sage extract or placebo on patients with mild to moderate Alzheimer's disease. Subjects were aged 65 to 80 years old.

After four months, sage produced significantly better cogni-

How To Add More Sage To Your Diet

The flavor of sage is very delicate. As a result, it is best to add this herb near the end of any cooking process to retain its maximum essence.

Sage can be added to numerous foods, including bruschetta, tomato sauce, omelets, frittatas, and pizza. It is a healthful addition to soups, stews, and casseroles. Add some dried sage leaves to fish and chicken when baking so that the food will absorb the flavors of this wonderful herb.

To store fresh sage leaves, gently wrap them in a damp paper towel and place them inside a loosely closed plastic bag. Place the bag in the refrigerator and the leaves should keep fresh for several days.

Dried sage should be kept in a tightly sealed glass container. Keep the container in a cool, dark, dry place, and the dried sage should stay fresh for about six months.

tive outcomes as measured by two standardized tests known as the cognitive subscale of Alzheimer's Disease Assessment Scale (ADAS-cog) and the Clinical Dementia Rating (CDR).²

There were no significant differences in side effects, although agitation was less frequent in the treatment group.²

But scientists wondered: Does sage improve memory only in those afflicted with memory-destroying Alzheimer's disease—or can it provide similar memory enhancement for individuals who do not have this disease?

Boosting Memory Performance In Healthy Individuals

Researchers set out to determine sage's effects on memory and cognition in healthy individuals without memory problems.

First, they examined sage's memory effects on older individuals. They set up a clinical trial of a most rigorous type: a randomized, balanced, placebo-controlled, five-period, varying dose, crossover study. Twenty volunteers, all of whom were over 65 years of age, were given a placebo and different doses of sage extract—**167, 333, 666, and 1,332 mg**—on four days. There was a seven-day washout period between each of the testing days. On testing days, cognitive performance was measured, using the Cognitive Drug Research computerized assessment system, at baseline and at one, two-and-a-half, four, and six hours after treatment.

Memory performance after placebo treatment characteristi-

cally declined throughout the day. However, after treatment with sage, participants showed significant memory enhancement at all assessment times throughout the testing days, most especially on the **333 mg** testing day. Results demonstrated that sage improves accuracy of attention and delivers a significant benefit to memory consolidation in older patients without Alzheimer's disease.¹⁶

Next, a group of British researchers investigated whether sage boosts memory in young adults without memory problems.

They set up two crossover studies, which were balanced, placebo-controlled, and double-blind. In the first study, 20 participants were given placebo and sage essential oil extracts in doses of **50, 100, and 150 microliters**. In the second experiment, 24 participants took **25 and 50 microliters** of the sage extract and placebo. The sage used was Spanish sage (*Salvia lavandulaefolia*), and there was a seven-day washout period between the different dosage days. On test days,

the Cognitive Drug Research computerized assessment system was given prior to treatment and again at one, two-and-a-half, four, and six hours after treatment.

In both of these crossover trials, the researchers found that the **50 microliter** dose of sage essential oil significantly boosted immediate word recall. In the journal *Pharmacological Biochemical Behavior*, the study authors wrote, "These results represent the first systematic evidence that *Salvia* (sage) is capable of acute modulation of cognition in healthy young adults."⁸

Enhancing Mood And Alertness

Sage has long been associated with a calming and spirit-lifting effect.

Intrigued by this potential, scientists conducted a double-blind crossover study in which they gave 30 healthy participants, with an average age of 24.4, three different treatments: dried sage leaf in **300 and 600 mg** dosages and placebo. This occurred on three separate days, each seven days apart. On each of these dosage days, mood was assessed pre-dose, plus both one and four hours after treatment.

Measured by the Bond-Lader mood scales, the higher dosage of sage resulted in improvements—at both one and four hours post-dose—in all three of the factors assessed by these scales: alertness, contentedness, and calmness.³

Published in the journal *Neuropsychopharmacology*, the study report concluded that, "The results of the current study confirm that acute administration of *S. officinalis* (sage) can beneficially modulate mood in healthy young participants."³



Inhibiting Inflammatory Diseases

Potent anti-inflammatory sage components such as luteolin and rosmarinic acid may help inhibit inflammation in conditions such as arthritis, asthma, and inflammatory acne.

Luteolin has shown exceptional inhibition of TANK-binding kinase 1 (TBK1), an enzyme believed to play a role in the development of inflammatory diseases. Published in *Biochemical Pharmacology*, a study reported that luteolin had the strongest inhibitory activity against TBK1 among six tested natural anti-inflammatory compounds.¹⁷

The rosmarinic acid in sage supports this anti-inflammatory effect by inhibiting enzymes linked to inflammatory responses.¹⁸

A 2013 study reported in the *Journal of Ethnopharmacology* examined the published research on 71 herbs and found that sage provides an array of critical anti-inflammatory properties.¹⁹

Sage extracts have been shown to inhibit NF-κB, a protein complex that controls many genes involved in inflammation and that is chronically active in many inflammatory diseases ranging from atherosclerosis to inflammatory bowel disease.¹⁹

This review also found that sage extracts can:¹⁹

- Decrease pro-inflammatory interleukin-6 (IL-6),
- Inhibit release of tumor necrosis factor (TNF-α), cell-signaling proteins that were involved in systemic inflammation,

- Inhibit formation of pro-inflammatory leukotrienes,
- Increase the anti-inflammatory cytokine interleukin-10 (IL-10), and
- Reduce COX-2, an enzyme that is elevated during inflammation.

Reducing Glucose Levels And Improving Lipid Profiles In Diabetics

A team of researchers in Iran demonstrated that, in patients with type II diabetes, sage provides antihyperglycemic effects and improves lipid profile.

In a randomized, placebo-controlled study, half of a group of 80 hyperlipidemic type II diabetics were given a **500 mg** capsule of sage leaf extract three times a day, while other participants were given a placebo.

Nutritional Content Of Sage

Adding fiber-rich sage to your diet provides powerful flavones, resins, tannic acids, and estrogenic substances. A serving of **two grams** (one tablespoon) of sage contains:²⁰

Calories	6.3
Calories from fat	2.1
Protein	0.2 grams
Total fat	0.3 grams
Saturated fat	0.1 grams
Omega-3 fatty acids	24.6 mg
Cholesterol	0 grams
Vitamin A	118 IU
Vitamin B6	0.1 mg
Vitamin C	0.6 mg
Vitamin E (alpha tocopherol)	0.1 mg
Vitamin K	34.3 micrograms
Folate	5.5 micrograms
Calcium	33.0 mg
Iron	0.6 mg
Magnesium	8.6 mg
Manganese	0.1 mg
Potassium	21.4 mg
Zinc	0.1 mg



After three months, the sage treatment showed various beneficial effects on blood sugar and blood lipids. Sage lowered fasting glucose by **32.2%**, lowered glycated hemoglobin (HbA1c) by **22.7%**, reduced total cholesterol by **16.9%**, decreased triglycerides by **56.4%**, lowered LDL cholesterol by **35.6%**, and raised HDL cholesterol by **27.6%**.²

No adverse effects were reported.

Decreasing Menopausal Hot Flashes And Sweating

In traditional folk medicine, sage was long used a remedy for excessive sweating and hot flashes. In recent years, scientists have investigated this potential benefit.

Menopausal women with at least five daily hot flashes were given a once-daily tablet of fresh sage leaves for about two months.

With each week that passed, the participants experienced a significant drop in both the number and severity of hot flashes. After the eight-week period, the mean number of mild hot flashes had decreased by **46%**, moderate hot flashes by **62%**, severe hot flashes by **79%**, and very severe hot flashes had decreased by **100%**!

Other menopausal symptoms—including psychological and urogenital problems—were also greatly reduced by the sage therapy. Treatment was well tolerated.⁶

Summary

Sage is a source of powerful acid compounds, resins, and flavones. Published studies now recognize that sage provides memory improvement both in Alzheimer's

patients and in young and old healthy persons. It inhibits inflammatory diseases, diabetic factors, and menopausal hot flashes. Sage not only spices up main dishes—it protects your memory, mood, and health. ●

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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EGCG For Optimal Health

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

Life Extension® has created a standardized **98% polyphenol green tea extract**. These highly concentrated **Mega Green Tea Extract Capsules** contain **725 mg** of either lightly caffeinated or decaffeinated **98%** standardized green tea extracts.

The retail price for **100** vegetarian capsules of **Mega Green Tea Extract** is **\$30**. If a member buys four bottles of **725 mg Mega Green Tea Extract** capsules during **Super Sale**, the price is reduced to **\$16.20 per bottle**. Each bottle will last over **three months** at the typical dose of one capsule daily.

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ASK THE PHARMACIST

BY KIMMI STULTZ, PHARMD, CPH



Magnesium Deficiency May Be Caused By Prescription Pills

Q Recent studies have come out stating magnesium deficiency is running rampant among Americans and that it's a serious problem. I take quite a few medications for different health conditions. Do medications drive magnesium levels even lower?

A Americans are not consuming enough magnesium from their diet. Analysis of Data from the National Health and Nutrition Examination Survey estimates that 48% of Americans all ages have intakes of magnesium below the estimated average requirement.¹

To maintain health, the current Reference Daily Intake (RDI) of magnesium for adults is **310 to 420 mg** a day.^{2,3} Keep in mind, this value is not the optimal amount required to prevent deficiency. Even if we meet the RDI, this level is not satisfactory to nurture one's health by correcting existing deficiencies or preventing the development of disease.^{4,5}

Magnesium is a critical co-factor involved in over 300 diverse enzyme-driven biochemical reactions in the body. It plays a crucial role in maintaining cellular physiological function.⁶ Multiple health benefits of magnesium include energy metabolism and transport, muscle contractility, nerve function, DNA and RNA synthesis, stabilization of

mitochondrial membranes, glucose utilization, insulin metabolism, neurotransmission, bone density development, regulation of detoxification pathways, a healthy nervous and cardiovascular system, and much more.⁷⁻⁹

Magnesium's Key Roles

Magnesium is an essential mineral that the body cannot manufacture, yet every single fundamental cell in the body requires it to perform properly. Because of its many functions, magnesium plays a key role in disease prevention and overall health.¹⁰ Continual low intake and absorption produces changes in biochemical pathways, which can increase the development of a wide array of disease and illness.¹¹

Though frequently overlooked, magnesium deficiency is strongly linked to many diseases and disorders of the human body including diabetes, cardiovascular disease, osteoporosis, neuromuscular mani-

festations, metabolic syndrome, and increased levels of both inflammatory mediators and free radicals.^{7,12-15}

Even though the exact mechanism is not clearly understood, magnesium deficiency is believed to be involved in processes that lead to tumor formation and development.¹⁶⁻¹⁸ Emerging research shows low magnesium levels are associated with cardiovascular and high all-cause mortality.¹⁹ Numerous studies recognize the value of magnesium in the presentation of lifestyle-related diseases such as heart disease, diabetes, and metabolic syndrome.²⁰⁻²² These pathological conditions are characterized as having a chronic inflammatory stress component exacerbating the occurrence of chronic diseases. Research shows that the recommended level of dietary magnesium is not able to prevent the negative consequences on health associated with cellular magnesium deficiency.²³ Research priorities include refining the magnesium requirement and understanding how a magnesium deficiency influences the incidence of inflammatory-related disorders.²⁴

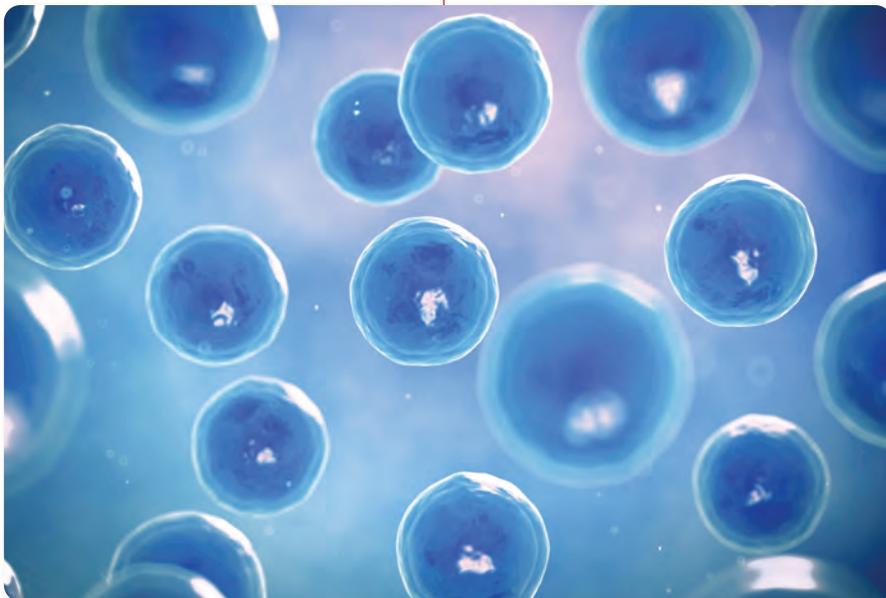
Magnesium, Medication, And Health Care Providers

Since magnesium is critical for the function of multiple enzyme systems, deficiency results vary from minor to extremely debilitating clinical manifestations.^{25,26} Health care providers should adopt practices that recognize early disordered magnesium metabolism and implement therapy quickly to avoid further complications.²⁷

The lack of transparency and awareness in diagnosing potential magnesium deficiency may cause health care practitioners to overlook the possibility of natural magnesium supplementation and implement prescription-drug treatment instead.²⁸⁻³⁰

Medications, including over-the-counter drugs, deplete your body of critical nutrients. This exacerbates the existing problem most Americans suffer from—a nutrient deficiency.³¹ While medications are effective at relieving symptoms, they deplete viable nutrients our bodies need in order to heal. Even worse, they may generate unintended consequences from these nutrient losses, which leads to more prescriptive medications being prescribed, creating a vicious cycle.^{32,33}

There are a number of ways that medications can negatively affect the nutrient status of magnesium in the body. Some pharmaceuticals alter the mechanics of how magnesium gets utilized in your body by inhibiting nutrient absorption, synthesis, transport, metabolism, and excretion.^{34,35} There is no direct relationship regarding how the depletion occurs, especially when you take into account a patient's varied health status and biochemical individuality.³⁶





Testing For Deficiency

Magnesium is found primarily inside the cells. Conventional tests that measure serum magnesium only show what is in the bloodstream and not what is inside the cells. Because magnesium is primarily an intracellular ion, blood contains less than **1%** of the body's magnesium stores.^{37,38} Most routine laboratory evaluations only measure serum magnesium in the blood, which is why these results are often misleading and can lead to a false sense of security.³⁹ To comprehensively evaluate magnesium status, both an RBC (Red Blood Cell) magnesium test and a clinical assessment are necessary, especially if long-term prescription therapy is required.

Examples Of Drugs That Rob The Body Of Magnesium⁴⁰

ACID BLOCKERS

- Cimetidine (Tagamet®)
- Famotidine (Pepcid®)
- Omeprazole (Prilosec®)
- Pantoprazole (Protonix®)
- Ranitidine (Zantac®)

ANTACIDS

- Calcium Carbonate (Tums®)
- Sodium Bicarbonate (Alka-Seltzer®)

ANTIBIOTICS

- Amoxicillin (Amoxil®)
- Azithromycin (Z-Pak®)
- Cephalexin (Keflex®)
- Ciprofloxacin (Cipro®)
- Minocycline (Minocin®)
- Sulfamethoxazole and Trimethoprim (Bactrim®)
- Tetracycline (Sumycin®)

ANTIVIRALS

- Foscarnet (Foscavir®)
- Lamivudine (Epivir®)
- Nevirapine (Viramune®)
- Zidovudine (Retrovir®)

CARDIAC GLYCOSIDE

- Digoxin (Digitek®)

CENTRAL NERVOUS SYSTEM STIMULANTS

- Methylphenidate (Ritalin®)

CORTICOSTEROIDS

- Betamethasone Dipropionate (Diprolene®)
- Dexamethasone (Decadron®)
- Hydrocortisone (Cortef®)
- Prednisone (Sterapred®)
- Fluticasone (Flonase®)

DIURETICS

- Hydrochlorothiazide (Hydrodiuril®)
- Valsartan (Diovan®)
- Bumetanide (Bumex®)
- Furosemide (Lasix®)
- Indapamide (Lozol®)

HORMONE REPLACEMENT THERAPY

- Estradiol (Estrace®, Menostar®, and many more)
- Estrogen-containing drugs (birth control)
- Conjugated Estrogens (Prempro®)
- Levonorgestrel (birth control)

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

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Olive Leaf

WITH CELERY SEED EXTRACT

Advanced Vascular Support Formula

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

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

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

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

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

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

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

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

A bottle of 60 vegetarian capsules of **Advanced Olive Leaf Vascular Support with Celery Seed Extract** retails for \$36. If a member buys four bottles during **Super Sale**, the price is reduced to **\$21.60** per bottle.

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To order **Advanced Olive Leaf Vascular Support with Celery Seed Extract**, call 1-800-544-4440 or visit www.LifeExtension.com

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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 during **Super Sale**, the price is reduced to **\$24.30** per unit.

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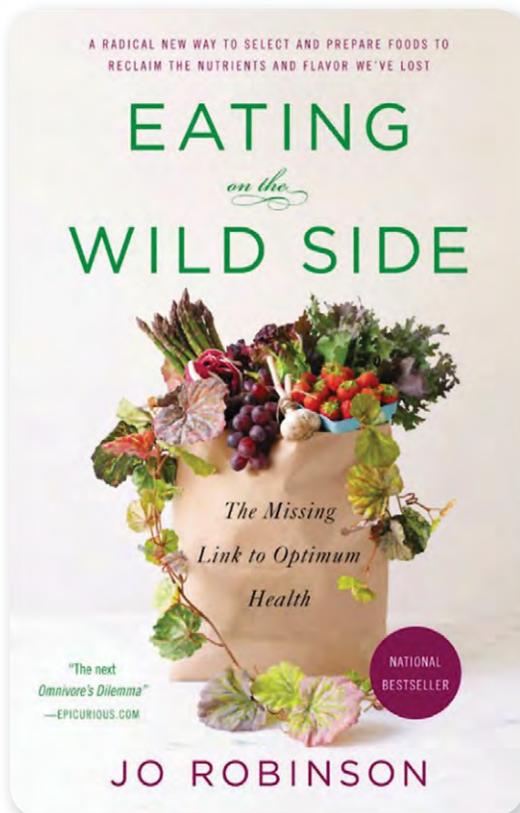
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Eating On The Wild Side

The Missing Link
To Optimum Health

BY ASTRID DERFLER KESSLER

An Interview With Jo Robinson



Over 10,000 years ago, humans turned from a hunting-and-gathering existence to one of domesticated farming. While no longer having to forage for food initially led to many advantages in the short term—including food surpluses, fewer accidental deaths, and an increased population—in the long term, it caused the foods we eat to eventually become less and less nutritious and more likely to lead to chronic disease.

In her latest book, *Eating on the Wild Side: The Missing Link to Optimum Health*, health writer, food activist, and investigative journalist Jo Robinson traces the origins of many of the fruits and vegetables we depend on today. Her cutting-edge research, which includes examining more than **6,000 scientific studies**, describes in detail how, over the course of four hundred generations, we eliminated nutrients and replaced our once-wild fruits and vegetables with better-tasting, easy-to-harvest varieties that are full of starch and sugar, but lack the vitamins, minerals, and polyphenols of the original wild versions.

In an exclusive interview with *Life Extension*[®], Robinson offers novel advice on the most nutritious plant choices available today, plus the best ways to enhance and retain the nutritional value that remains.

LE: Will you discuss some of the changes going on with today's plants versus what our ancestors foraged for and ate?

JR: Generation after generation, we've reshaped native plants and made them our own. Unwittingly, as we went about breeding more palatable fruits and vegetables, we were stripping away some of the very nutrients we now know are essential for optimum health. Compared with wild fruits and vegetables, most of our manmade varieties are markedly lower in vitamins, minerals, and essential fatty acids.

LE: Can you give us an example of a food that has undergone a dramatic change?

JR: The ancestor of our modern corn is a grass called teosinte. Its kernels are about **30%** protein and **2%** sugar. Old-fashioned sweet corn is **4%** protein and **10%** sugar. Some of the newest varieties are as high as **40%** sugar. Eating corn this sweet can have the same impact on blood sugar as eating a Snickers® candy bar or doughnut.

Storing, Preparing, And Cooking Produce

LE: In your book, you discuss various storage and cooking methods. What are some ways we can make the foods we eat even better for us?

JR: Once you've brought your fruits and vegetables home from the store or harvested them from your garden, their nutritional fate is in your hands. Depending on how you store, prepare, and cook them, you can either destroy their beneficial bionutrients or retain and even enhance them.

This is a relatively new discovery. Until this century, little was known about the health benefits of phytonutrients or how to preserve them during storing and cooking. In the past two decades, food researchers have discovered hundreds of ways to retain the bionutrients in our fresh produce and make them more bioavailable. It doesn't matter how many nutrients there are if you can't absorb them.

LE: I was surprised to read that fresh is not always best in terms of nutrients.

JR: Some findings are so different from conventional wisdom you might feel like you're tumbling down a rabbit hole! Most berries, for example, increase their antioxidant activity when you cook them. Believe it or not, **canned** blueberries have **more phytonutrients** than fresh ones, provided you consume the canning liquid. And simmering a tomato sauce for hours **triples** its **lycopene** content.

Supermarket Produce Versus Wild Varieties

LE: This is a good time to get into the specifics of some of the fruits and vegetables you cover. Let's begin with broccoli.

JR: Most broccoli sold in farmers markets is impeccably fresh and highly nutritious. Look for a vendor who has the broccoli on ice or in a cooler. In order to preserve nutrients, broccoli must be chilled as soon as harvested, kept cool, and then eaten within two to three days. [In a study], broccoli was exposed to the warmer, drier conditions of a supermarket. At the end of 10 days, it lost **80%** of glucosinolates, **75%** of flavonoids, and **50%** of vitamin C.

LE: There are many kinds of broccoli. Which are the most nutritious?

JR: Extra-nutritious varieties to look for include Packman, Brigadier, and Cavolo. Purple Sprouting is another excellent choice. Instead of forming a head, the crucifer produces small purple florets on its side branches that can be harvested for weeks. The purple color comes from anthocyanins.

LE: What are the best methods for preparing and cooking broccoli?



JR: Eating broccoli raw gives you **20 times** more of a beneficial compound called *sulforaphane* than cooked. Sulforaphane provides much of the vegetable's anticancer properties. If you cook broccoli in boiling water, half the glucosinolates will leach out. If you deep fry, you lose even more. Nuking can destroy half its nutrients in two minutes. One of the best ways is to steam it for no more than four minutes...to retain the most nutrients. Another recommended way to cook is to sauté in extra virgin olive oil and garlic. The vegetables will absorb the phytonutrients in the oil and garlic, which can make it even more nutritious.

LE: After reading your book, it seems the old saying "An apple a day keeps the doctor away," no longer holds true with today's cultivated varieties.

JR: Wild apples—the way nature made them—may indeed help us live longer and healthier lives. In a 2003 survey, lab tests showed wild apples were vastly more nutritious. One species had **15 times** more phytonutrients than the Golden Delicious. Another had **65 times** more.

LE: You compared six wild varieties of apples with six modern varieties. The results were shocking.

JR: The wild varieties had **475 times** more phytonutrients! The Ginger Gold, a relatively new apple, has so few phytonutrients that it fails to even register on the scale. Throughout our history of cultivating apples, we've squandered a wealth of nutrients.

One consequence is we may be more vulnerable to cancer. In a 1994 study, researchers compared Fuji apples, one of our most popular, with apples from two other species. The apples from the



other species had **five times** more [phytonutrient] activity, including **four times** the vitamin E. They were [also] much more effective at fighting leukemia cells. One species had **80 times** more cancer-fighting compounds than the Fuji. The researchers concluded the Fuji had almost no anticancer activity.

Our supermarkets have large, luscious, and sweet apples, but some of the varieties may offer relatively little protection against cancer and other diseases.

LE: Is anyone cultivating or developing an heirloom-type apple that is more nutritious?

JR: An encouraging sign is that heritage orchards are making a comeback. More good news comes from New Zealand. Mark Christensen discovered one of the most nutritious apple varieties in the world. [In lab tests], compared to 250 other varieties, his apples had exceptionally high levels of phytonutrients and the skin had more flavonoids than any other

variety. Tests show extracts of these apples reduced the growth of different types of cancer cells, and were more effective at destroying colon cancer cells than any other apple tested.

Christensen named the new variety Monty's Surprise. New Zealanders call it the Full Monty because it has it all—flavor, beauty, size, a bounty of phytonutrients, and the promise of being a potent weapon against cancer. Instead of patenting his find, Christensen formed a nonprofit to spread news about the new variety and give away young trees.

LE: Until the Full Monty is readily available, how can we choose the most nutritious apple at the store?

JR: Choose the most colorful fruit of any given variety. [Know the] varieties that are the least nutritious include Empire, Ginger Gold, Golden Delicious, and Pink Lady. And eat the skin; an unpeeled apple can give you **50%** more phytonutrients than a peeled one.

LE: Let's talk about tomatoes.

JR: The old idea that a tomato is a tomato is a tomato no longer holds. Tomatoes were given a major makeover during the 19th and 20th centuries...to make them more productive, uniform, and attractive.

LE: What happened, nutrition-wise, during this transformation?

JR: The nutritional consequence wasn't known until a century later. The reason the new varieties were a solid color is that they had a mutant gene that made them ripen uniformly. It had an unforeseen negative effect: It **lowered** the **lycopene** content, making them less nutritious. Today, virtually all our modern tomatoes carry this mutant gene and are lower in lycopene.

LE: What should we look for in order to pick the most nutrient-dense tomatoes?

JR: If you know how to identify the most nutritious tomatoes in the market, you can **triple** or **quadruple** your intake of **lycopene**. Choose tomatoes by color. The darkest red have the most lycopene. Shopping by **size is just as important**. Small, dark red tomatoes have the **most lycopene per ounce** and they're also sweeter and more flavorful. Small tomatoes also have **more vitamin C**. The smaller-is-better rule applies to varieties within a category.

LE: What's the most nutritious way to serve them?

JR: Tomatoes are better cooked than raw. The longer you cook them, the more health benefits you get. Heat breaks down the cell walls, making nutrients more bioavailable. Second, it twists the lycopene molecule into a new configuration that's easier to absorb.

The most nutritious tomatoes are in the canned goods aisle. Processed tomatoes are the richest source of lycopene. The heat of canning makes lycopene more bioavailable and tomatoes grown for the food industry are picked when red-ripe and processed immediately. No flavor is lost along the way. **Tomato paste** has up to **10 times the lycopene** as raw tomatoes.

LE: I've heard you shouldn't eat canned foods that are acidic, like tomatoes.

JR: Most tomatoes are packed in cans that have a plastic lining that contains a noxious chemical called bisphenol A (BPA). Look for tomato products sold in glass jars or BPA-free cans. Another option—aseptic containers, coated paper containers, which allow food to be stored for months without refrigeration.

LE: From chips to fries to mashed, potatoes are an all-American favorite. How much of our diet is made up of the potato, and how has the potato changed since its wild beginning?

JR: White potatoes account for **32%** of all vegetables consumed by adults. Our intake of dark green and cruciferous vegetables, by contrast, is less than **1%**. We eat **7.5 billion** pounds of french fries a year (30 pounds per person) and 18 million pounds of potato chips—on Super Bowl Sunday alone.

There are as many as five thousand varieties of wild potatoes, from marble to football size. In addition to white, there are black, tan, red, purple, blue, orange, yellow, and green varieties.

Potatoes have been on a downward slide for hundreds of years... and a great many nutrients have disappeared. The loss of color is the major reason for the decline. The

Purple Peruvian is a small, knobby potato cultivated for thousands of years. Its abundance of **anthocyanins** makes it one of the most nutritious. On an ounce-per-ounce basis, it has **28 times** more *bionutrients* than our popular potato, the Russet Burbank, and **166 times** more than the Kennebec white.

Wild potatoes are also **lower in sugar** and rapidly digested **starch**. Most of our modern varieties are high-glycemic [and] give us a sharp rise in blood glucose. People who consume a high-glycemic diet over a long time have a higher risk of metabolic syndrome, which can lead to type II diabetes.

LE: Shouldn't we cut back on consumption if they are such a high-glycemic food?

JR: There is a slick trick you can use to tame the sugar rush of high-glycemic potatoes. If you cook them and then chill them for about 24 hours, they are magically transformed into a low- or moderate-glycemic vegetable. The cool temperature converts the potatoes' rapidly digested starch into a more resistant starch that is broken down more slowly. You can reheat them and they'll maintain their lower glycemic value.*

LE: One of the few foods that hasn't changed is garlic.

JR: No one has mounted a campaign to make garlic bulbs larger, sweeter, or milder. For this reason, they've maintained most of their wild nutrients. Whether or not you get all the health benefits of garlic depends on how you prepare and cook it. In 2001, Israeli food chemists discovered that conventional ways of preparing garlic destroy most health benefits.

LE: Garlic's health-promoting property is a compound called

allicin, which is only created when two substances isolated in a garlic bulb come in contact with each other. Heating immediately after crushing or mincing eliminates the formation of allicin. But you discuss a trick to keeping cooked garlic nutritious.

JR: You can cook garlic and reap all its benefits if you make a simple change to the way you prepare it. Chop, mince, slice, or mash it then keep it away from the heat for 10 minutes. During this time, the maximum amount of allicin is created.

LE: Berries have been in the news a lot lately as a superfood. What can you tell us about how these berries have changed?

JR: Hunter-gatherers valued wild berries above all other fruits because they were abundant, naturally sweet, and easy to dry for later use. Although few of our cultivated berries measure up to native berries, most are nutritional superstars nonetheless. As a rough estimate, berries have **four times more antioxidant** activity than most vegetables, and **40 times** more than some cereals.

LE: Blueberries are touted as the superfood of the century. Has the blueberry changed a lot since centuries past?

JR: Until 150 years ago, people were eating wild blueberries, not domesticated varieties. The flaw of wild fruit was its size...about the size of a pea. Because it takes as long to pick a small berry as one five times its size, growing large berries reduces labor costs. [Developers] next rejected bushes with dark berries...light berries looked fresher and more appealing.

LE: I'm sure this wasn't the most nutritious choice.

JR: It wasn't known until the early 21st century that choosing the largest, palest blueberry [bushes] left the most nutritious ones behind. Most dark berries have more anthocyanins than light-colored berries and anthocyanins are the most beneficial phytonutrients in the fruit.

LE: In your book, you cite numerous studies regarding blueberries and how they show promise in fighting the diseases of aging, such as cancer, high blood pressure, and inflammation.

JR: Blueberries show great promise in fighting our so-called diseases of civilization. In animal studies, the fruit has prevented tumor formation, slowed the growth of existing tumors, lowered blood pressure, reduced arterial plaque buildup, and soothed inflammation. It also prevented obesity and diabetes in rats fed a high-fat, high-calorie, and high-sugar lab chow—in other words, a replica of the typical American diet.

LE: What should we look for in order to get the most nutrition from blueberries?

JR: Choose the freshest. Examine and reject those that contain soft, moldy, leaking, or shriveled fruit. If you don't eat them right away, store in the crisper drawer and don't rinse off the bloom [the natural waxy coating] until you eat.

Frozen berries are almost as nutritious as fresh. The highest-quality are those that are flash frozen. Cooked berries, believe it or not, have **greater antioxidant** levels than fresh. Even canned are better for you than fresh-picked fruit, provided you consume the canning liquid along with the berries. Cooking and canning rearranges the structure

of the the phytonutrients and makes them more bioavailable.

Dried berries are convenient, but **50 to 80%** of **antioxidant** value is **lost** in the process...as polyphenol oxidases are breaking down their phytonutrients.

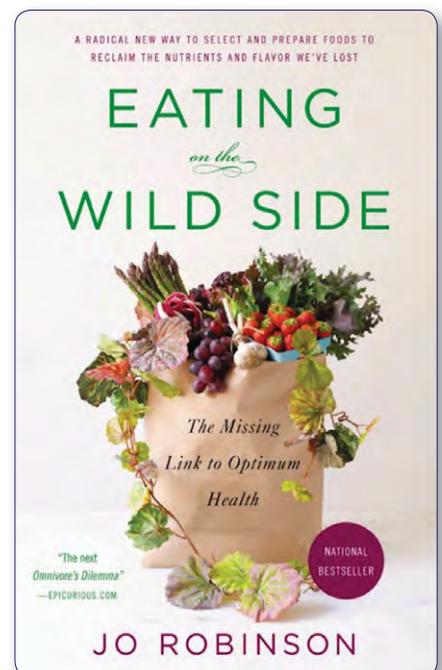
LE: I think we've provided the readers with great advice on how to get the most nutrition from the foods they eat—and which foods to choose and what to avoid. Thank you. ●

* Ek KL, Wang S, Copeland L, Brand-Miller JC. *Br J Nutr.* 2014 Feb;111(4):699-705.

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 TSH for thyroid function Free Testosterone
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 Estradiol Total Testosterone
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 HDL Cholesterol Estimated CHD Risk
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 ALT (SGPT) Alkaline Phosphatase
 LDH</p> <p>KIDNEY FUNCTION PANEL
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 Basophils Hemoglobin
 Polys (Absolute) Hematocrit
 Lymphs (Absolute) MCV
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 Baso (Absolute) Polynucleated Cells
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CBC/Chemistry Profile (see description previous page), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.</p> <p><input type="radio"/> INFLAMMATION PANEL (LC100007) \$135
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w/Celery Seed Extract
Aspirin (Enteric Coated)
Cardio Peak™ w/Standardized Hawthorn and Arjuna
Cho-Less™
D-Ribose Tablets
D-Ribose Powder
Endothelial Defense™ with
Full-Spectrum Pomegranate™
Fibrinogen Resist
Forskolin
Homocysteine Resist
Natural BP Management
Peak ATP® with GlycoCarn®
PhosphoOmega®
Policosanol
PROVINAL® Purified Omega-7
Pycnogenol® French Maritime Pine Bark Extract
Red Yeast Rice
Super Absorbable CoQ10™ with d-Limonene
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Super Omega with Krill & Astaxanthin
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with BioPQQ®
Super Ubiquinol CoQ10 with Enhanced
Mitochondrial™ Support
Theaflavin Standardized Extract
TMG Powder
TMG Liquid Capsules

HERBAL/PHYTO PRODUCTS

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

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

HORMONES

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

IMMUNE ENHANCEMENT

AHCC® (Active Hexose Correlated Compound)
Black Cumin Seed Oil
Black Cumin Seed Oil w/Bio-Curcumin®
Buffered Vitamin C Powder
Echinacea Extract
FlorAssist™ Probiotic
i26 Hyperimmune Egg
Immune Modulator w/Tinofend®
Immune Protect with PARACTIN®
Immune Senescence Formula™
Lactoferrin
NK Cell Activator™
Norwegian Shark Liver Oil
Optimized Fucoidan w/Maritech® 926
Peony Immune
ProBoost™ Thymic Protein A
Reishi Extract Mushroom Complex
RiboGen™ French Oak Wood Extract
Standardized Cistanche
Vitamin C w/Dihydroquercetin
Zinc Lozenges

INFLAMMATORY REACTIONS

Arthro-Immune Joint Support
ArthroMax® with Theaflavins
Boswellia
Bromelain (Specially-coated)
Cytokine Suppress™ with EGCG
DHA (Vegetarian Sourced)
Fast Acting Joint Formula
Ginger Force®
Krill Healthy Joint Formula
5-LOX Inhibitor w/AprèsFlex®
Mega EPA/DHA
Mega GLA with Sesame Lignans
MSM
Organic Golden Flax Seed
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
Hepatopro
SAME
Silymarin

MINERALS

Advanced Iodine Complete
Biosil
Bone Restore
Bone Strength Formula w/KoAct®
Bone-Up™
Boron Capsules
Calcium Citrate with D3
Chromium Ultra
Copper
Iron Protein Plus
Magnesium
Magnesium Citrate
Only Trace Minerals
Optimized Chromium w/Crominex® 3+
OptiZinc
Sea-Iodine™
Selenium
Se-Methyl L-Selenocysteine
Strontium
Vanadyl Sulfate
Zinc Lozenges

MISCELLANEOUS

Blood Pressure Monitor Arm Cuff
CR Way Edition Advanced Dietary Software

MITOCHONDRIAL SUPPORT

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginine
Mitochondrial Basics w/BioPQQ®
Mitochondrial Energy Optimizer w/BioPQQ®
Optimized Carnitine with GlycoCarn®
Super Absorbable CoQ10™ with d-Limonene
Super Alpha Lipoic Acid with Biotin
Super R-Lipoic Acid
Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

MOOD RELIEF

Adrenal Energy Formula
Bioactive Milk Peptides
L-Theanine
5 HTP
Enhanced Natural Sleep® w/ Melatonin
Enhanced Natural Sleep® w/o Melatonin
Natural Stress Relief
SAME
L-Tryptophan
Optimized Tryptophan Plus

MOUTH CARE

Advanced Oral Hygiene
Toothpaste
Xyliwhite™ Mouthwash

MULTIVITAMIN

Booster
Children's Formula Life Extension Mix™
Comprehensive Nutrient Packs Advanced
Life Extension Mix™ Capsules
Life Extension Mix™ Powder
Life Extension Mix™ Tablets
Life Extension Mix™ w/o Copper Capsules
Life Extension Mix™ w/o Copper Tablets
Life Extension Mix™ w/Extra Niacin
Life Extension Mix™ w/Extra Niacin w/o Copper
Life Extension Mix™ w/Stevia Powder
Life Extension Mix™ w/Stevia w/o Copper Powder
Life Extension One-Per-Day
Life Extension Two-Per-Day
Super Booster MacuGuard™ Ocular Support

PET CARE

Cat Mix
Dog Mix

PROSTATE & URINARY HEALTH

Optimized Cran-Max® with UTIRose™
5-LOXIN®
PalmettoGuard™ Saw Palmetto w/Beta Sitosterol
Pomi-T®
PalmettoGuard™ Saw Palmetto/Nettle Root
Formula w/Beta-Sitosterol

Ultra Natural Prostate Formula
Water-Soluble Pumpkin Seed Extract

SKIN CARE

Advanced Lightening Cream
Advanced Peptide Hand Therapy
Advanced Triple Peptide Serum
Advanced Under Eye Serum with Stem Cells
Amber Self MicroDermAbrasion
Anti-Aging Mask
Anti-Glycation Serum
Anti-Aging Rejuvenating Face Cream with Coffee Extracts
Anti-Aging Rejuvenating Scalp Serum
Antioxidant Rejuvenating Foot Cream
Antioxidant Rejuvenating Foot Scrub
Antioxidant Rejuvenating Hand Cream
Antioxidant Rejuvenating Hand Scrub
Anti-Redness & Blemish Lotion
Bio-Collagen w/Patented UC-II®
Bioflavonoid Cream
Broccoli Sprout
Corrective Clearing Mask
DNA Repair Cream
Dual-Action MicroDermAbrasion
Essential Plant Lipids Reparative Serum
Face Master® Platinum
Face Rejuvenating Antioxidant Cream
Enhanced FernBlock® with Red Orange Complex
Fine Line-Less
Hair Suppress Formula
Healing Formula All-in-One Cream
Healing Mask
Hyaluronic Facial Moisturizer
Hydrating Anti-oxidant Face Mist
Hydroderm®
Lifting & Tightening Complex
Lycopene Cream
Melatonin Cream
Mild Facial Cleanser
Neck Rejuvenating Antioxidant Cream
Pigment Correcting Cream
(Ultra) Rejuvenex®
Rejuvenex® Body Lotion
Rejuvenex® Factor Firming Serum
Rejuvenating Serum
Renewing Eye Cream
Resveratrol Anti-Oxidant Serum
Skin Lightening Serum
Skin Restoring Phytoceramides w/Lipowheat®
Skin Stem Cell Serum
Stem Cell Cream w/Alpine Rose
Ultra Rejuvenex®
Ultra RejuveNight® w/o Progesterone
Ultra Lip Plumper
Ultra Wrinkle Relaxer
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Serum
Vitamin D Lotion
Vitamin E-ssential Cream
Vitamin K Healing Cream
Youth Serum

SOY

Natural Estrogen w/Pomegranate
Super Absorbable Soy Isoflavones
Ultra Soy Extract

SPECIAL PURPOSE FORMULA

AMPK Activator
Anti-Alcohol Antioxidants w/HepatoProtection
Complex
Benfotiamine w/Thiamine
Breast Health Formula
Butterbur Extract w/Standardized Rosmarinic Acid
Chlorella
Chlorophyllin
Green Coffee Extract CoffeeGenic®
Coriolus Super Strength
CR Mimetic Longevity Formula

Cinsulin® w/InSea2®
and Crominex® 3+
European Leg Solution Diosmin 95
Fem Dophilus
Femmenessence MacaPause®
GlycemicPro™ Transglucosidase
Migra-eeze™
NAD+ Cell Regenerator™
Nicotinamide Riboside
Natural Female Support
Optimized Resveratrol w/NAD+
Cell Regenerator™
Pecta-Sol®
Potassium Iodide
PQQ Caps with BioPQQ®
PteroPure®
Prelox® Natural Sex for Men®
Pyridoxal 5' - Phosphate
Tri Sugar Shield™

SPORTS PERFORMANCE

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

VITAMINS

Ascorbyl Palmitate Capsules
B12
Beta-Carotene
Biotin Capsules
Buffered Vitamin C Powder
Complete B Complex
Effervescent Vitamin C
Fast-C®
Folic Acid + B12
Gamma E Tocopherol w/Sesame Lignans
Gamma E Tocopherol/Tocotrienols
Inositol Capsules
Mega Lycopene Extract
Methylcobalamin
MK-7
No-Flush Niacin
Optimized Folate
Super Ascorbate C Capsules
Super Ascorbate C Powder
Super K w/Advanced K2 Complex
Tocotrienols w/Sesame Lignans
Vitamin B3 (Niacin) Capsules
Vitamin B6
Vitamin B12 Lozenges
Vitamin C
Vitamin D3
Vitamin D3 w/Sea-Iodine™
Vitamins D and K w/Sea-Iodine™
Vitamin E
Vitamin K2

WEIGHT MANAGEMENT

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

Buyers Club Order Form

SUPER SALE SAVINGS ON ALL PRODUCTS
To order call 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
A					
01524	ACETYL-L-CARNITINE - 500 mg, 100 veg. caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
01525	ACETYL-L-CARNITINE ARGINATE - 100 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01628	ADRENAL ENERGY FORMULA - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01630	ADRENAL ENERGY FORMULA - 120 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	42.00	31.50		
01828	ADVANCED LIPID CONTROL - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	ADVANCED ORAL HYGIENE - 60 mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	AHCC - 500 mg, 30 caps	59.98	44.99		
00457	ALPHA-LIPOIC ACID w/BIOTIN (SUPER) - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01907	AMPK ACTIVATOR - 90 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01440	ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01509	ANTI-ADIPOCYTE FORMULA w/MERATRIM® & INTEGRA LEAN® (ADVANCED) - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01625	APPLEWISE POLYPHENOL EXTRACT - 600 mg, 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	ARGININE/ORNITHINE - 500/250, 100 caps	17.99	13.49		
00038	ARGININE/ORNITHINE POWDER - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	(L)-ARGININE CAPS - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01617	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	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01533	ASCORBYL PALMITATE - 500 mg, 100 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
00888	ASHWAGANDHA EXTRACT (OPTIMIZED) - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
01805	ASIAN ENERGY BOOST - 90 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01066	ASPIRIN - 81 mg, 300 enteric coated tablets	6.00	4.50		
	Buy 4 bottles, price each	5.33	4.00		
01720	ASTAXANTHIN WITH PHOSPHOLIPIDS - 4 mg, 30 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
B					
00920	BENFOTIAMINE w/ THIAMINE - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	BENFOTIAMINE (MEGA) - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		

SUB-TOTAL OF COLUMN 1

No.		Retail Each	Member Each	Qty	Total
01206	BERRY COMPLETE - 30 veg. caps	\$21.00	\$15.75		
	Buy 4 bottles, price each	18.67	14.00		
01496	BERRY COMPLETE w/ACAI (ENHANCED) - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	BETA-CAROTENE - 25,000 IU, 100 softgels	11.25	8.44		
01622	BIFIDO GI BALANCE - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	BILBERRY EXTRACT - 100 mg, 100 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01512	BIOACTIVE MILK PEPTIDES - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	BIO-COLLAGEN w/PATENTED UC-II® - 40 mg, 60 small caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	BIOSIL™ - 5 mg, 30 veg. caps	18.95	15.16		
*01007	BIOSIL™ - 1 fl oz	31.99	25.59		
00102	BIOTIN - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
01709	BLACK CUMIN SEED OIL - 60 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01710	BLACK CUMIN SEED OIL w/BIO-CURCUMIN® - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01008	BLAST™ - 600 grams of powder	26.95	20.21		
70000	BLOOD PRESSURE MONITOR - ARM CUFF (medium)	99.95	49.99		
70004	BLOOD PRESSURE MONITOR - WRIST (cuff)	69.95	52.46		
01214	BLUEBERRY EXTRACT - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	BLUEBERRY EXTRACT w/ POMEGRANATE - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) - 300 caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01726	BONE RESTORE - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01727	BONE RESTORE w/VITAMIN K2 - 120 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01725	BONE STRENGTH FORMULA w/KOACT® - 120 caps	45.00	33.75		
	Buy 4 bottles, price each	40.00	30.00		
00313	BONE-UP® - 240 caps	28.95	21.71		
	Buy 4 bottles, price each	27.21	20.41		
01379	BOOSTER - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01980	BOOSTER w/MACUGUARD™ OCULAR SUPPORT (SUPER) - 60 softgels	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
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® GASTRODIN - 60 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01253	BRANCHED CHAIN AMINO ACIDS - 90 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.00	12.75		
01699	BREAST HEALTH FORMULA - 60 caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	BRITE EYES III - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		

SUB-TOTAL OF COLUMN 2

FEBRUARY 2015

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

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

OFFER ENDS FEBRUARY 2, 2015
 To order online visit www.LifeExtension.com/SuperSale

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01203	BROMELAIN (SPECIALLY-COATED) - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	\$21.00 19.00	\$15.75 14.25		
00884	BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
C					
01653	CALCIUM CITRATE w/VITAMIN D - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
01651	CALCIUM D-GLUCARATE - 200 mg, 60 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
***01823	CALREDUCE SELECTIVE FAT BINDER - 120 mint chewable tablets Buy 4 bottles, price each	45.00 38.00	33.75 28.50		
01700	CARDIO PEAK™ w/STANDARDIZED HAWTHORN & ARJUNA - 120 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00916	CARNITINE w/GLYCOCARN® (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01532	L-CARNITINE - 500 mg, 30 veg. caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01258	CARNOSOOTHE w/PICROPROTECT™ - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01687	CARNOSINE (SUPER) - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	CAT MIX - 100 grams powder Buy 4 jars, price each	15.00 12.00	11.25 9.00		
01891	CHILDREN'S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00550	CHLORELLA - 500 mg, 200 tablets	23.50	17.63		
01571	CHLOROPHYLLIN - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	CHO-LESS™ - 90 capsules	35.00	26.25		
01477	CHROMIUM ULTRA - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	CHROMIUM W/CROMINEX® 3+ (OPTIMIZED) - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
01503	CINSULIN® W/INSEA® AND CROMINEX® 3+ - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
01906	CISTANCHE (STANDARDIZED) - 30 veg. caps Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01818	CITRIMAX® (SUPER) - 180 veg. caps Buy 4 bottles, price each	40.00 38.00	30.00 28.50		
00818	CLA BLEND W/SESAME LIGNANS (SUPER) - 3,000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	CLA BLEND w/GUARANA & SESAME (SUPER) -3,000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01896	COGNITEX® w/BRAIN SHIELD® - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	60.00 52.00 48.00	45.00 39.00 36.00		
01897	COGNITEX® w/PREGNENOLONE & BRAIN SHIELD® - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	62.00 53.00 50.00	46.50 39.75 37.50		
01421	COGNITEX® BASICS - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		

SUB-TOTAL OF COLUMN 3

No.		Retail Each	Member Each	Qty	Total
01659	COGNIZIN® CDP CHOLINE CAPS - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$36.00 34.00	\$27.00 25.50		
01735	COMPLETE B-COMPLEX - 60 veg. caps Buy 4 bottles, price each	10.00 9.00	7.50 6.75		
01998	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 48.00 44.00	42.00 36.00 33.00		
01733	COQ10 w/BIOPOQ® (SUPER UBIQUINOL) - 100 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	54.00 44.00 40.00	40.50 33.00 30.00		
01426	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 52.00 48.00	46.50 39.00 36.00		
01425	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 46.00 42.00	43.50 34.50 31.50		
01427	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 30 softgels Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01431	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -200 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 52.00 48.00	46.50 39.00 36.00		
80154	COSMESIS ADVANCED LIGHTENING CREAM - 1 oz jar Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80155	COSMESIS ADVANCED PEPTIDE HAND THERAPY - 4 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80152	COSMESIS ADVANCED TRIPLE PEPTIDE SERUM - 1 oz bottle Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80140	COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - .33 oz Buy 2 bottles, price each	49.00 42.00	36.75 31.50		
80139	COSMESIS AMBER SELF MICRODERMABRASION - 2 oz Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80118	COSMESIS ANTI-AGING MASK - 2 oz Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80151	COSMESIS ANTI-AGING REJUVENATING FACE CREAM - 2 oz jar Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80153	COSMESIS ANTI-AGING REJUVENATING SCALP SERUM - 2 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80134	COSMESIS ANTI-GLYCATION SERUM - 1 oz w/BLUEBERRY & POMEGRANATE EXTRACTS Buy 2 bottles, price each	33.00 31.35	24.75 23.51		
80133	COSMESIS ANTIOXIDANT FACIAL MIST - 2 oz Buy 2 bottles, price each	32.00 30.40	24.00 22.80		
80127	COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz Buy 2 jars, price each	45.00 42.80	33.75 32.10		
80128	COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz Buy 2 jars, price each	59.00 51.92	44.25 38.94		

SUB-TOTAL OF COLUMN 4

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

FEBRUARY 2015

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

Buyers Club Order Form

SUPER SALE SAVINGS ON ALL PRODUCTS
To order call 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
C CONTINUED					
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		
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		

SUB-TOTAL OF COLUMN 5

No.		Retail Each	Member Each	Qty	Total
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 & FIRMING 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		
01640	DHA (VEGETARIAN SOURCED) - 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		

SUB-TOTAL OF COLUMN 6

FEBRUARY 2015

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

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

OFFER ENDS FEBRUARY 2, 2015
 To order online visit www.LifeExtension.com/SuperSale

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
00335	DHEA - 25 mg, 100 caps Buy 4 bottles, price each	\$18.00 15.00	\$13.50 11.25		
00454	DHEA - 15 mg, 100 caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
00882	DHEA - 50 mg, 60 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01689	DHEA - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01358	DIGEST RC - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
01671	D,L-PHENYLALANINE CAPSULES - 500 mg, 100 veg. caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
01540	DMAE BITARTRATE - 150 mg, 200 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00059	DMG - 125 mg, 60 tablets Buy 4 boxes, price each	24.80 22.69	18.60 17.02		
01570	DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
00544	DOG MIX - 100 grams powder Buy 4 jars, price each	19.50 16.00	14.63 12.00		
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
E					
01528	ECHINACEA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01498	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels Buy 4 bottles, price each	56.00 52.00	42.00 39.00		
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00625	EPA/DHA (MEGA) - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01737	ESOPHAGEAL GUARDIAN (Berry flavor) - 60 chewable tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01706	EXTRAORDINARY ENZYMES - 60 caps Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
01514	EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
F					
01054	FACE MASTER® PLATINUM	\$199.00	\$199.00		
00965	FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01717	FAST-C® w/DIHYDROQUERCETIN - 120 veg. tabs Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
20053	FEM DOPHILUS® - 30 caps	25.95	19.46		
20055	FEM DOPHILUS® - 60 caps	39.95	29.96		

SUB-TOTAL OF COLUMN 7

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

SUB-TOTAL OF COLUMN 8

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

FEBRUARY 2015

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Buyers Club Order Form

SUPER SALE SAVINGS ON ALL PRODUCTS
To order call 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
G CONTINUED					
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 COFFEEGENIC® - 200 mg, 90 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01620	GREEN COFFEE EXTRACT COFFEEGENIC® - 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 24.00	22.50 18.00		
00954	GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 24.00	22.50 18.00		
01545	GUTSY CHEWY DIGESTIVE (CITRUS FLAVOR) - 8 tablets	11.50	8.63		
01546	GUTSY CHEWY DIGESTIVE (WILD BERRY FLAVOR) - 8 tablets	11.50	8.63		
H					
01074	5 HTP - 100 mg, 60 caps	\$27.95	\$20.96		
01738	HCA (GARCINIA) - 90 veg. caps Buy 4 bottles, price each	17.00 15.00	12.75 11.25		
01393	HEPATOPRO - 900 mg, 60 softgels Buy 4 bottles, price each	50.00 46.00	37.50 34.50		
01435	HOMOCYSTEINE RESIST - 100 veg 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		
01905	IMMUNE SENESCENCE PROTECTION FORMULA™ - 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01049	INNERPOWER™ - 530 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		
01248	IODINE COMPLETE (ADVANCED) - 180 tablets	46.00	36.50		
01677	IRON PROTEIN PLUS - 300 mg, 100 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		
J, K					
00056	JARRO-DOPHILUS EPS™ - 60 veg. caps	\$22.95	\$17.21		
01759	JARRO-DOPHILUS EPS™ - 30 caps	39.95	29.96		
01724	K w/ADVANCED K2 COMPLEX (SUPER) - 90 softgels Buy 4 bottles, price each	30.00 27.00	22.50 20.25		

SUB-TOTAL OF COLUMN 9

No.		Retail Each	Member Each	Qty	Total
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 veg. caps	26.45	19.84		
00214	KYOLIC® GARLIC FORMULA 105 - 200 caps	27.45	20.59		
00789	KYOLIC® RESERVE - 600 mg, 120 caps	27.95	20.96		
L					
01681	LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps Buy 4 bottles, price each	\$52.00 48.00	\$39.00 36.00		
00020	LECITHIN - 16 oz. granules Buy 4 jars, price each	15.00 12.50	11.25 9.38		
01955	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		
01957	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		
01954	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		
01956	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		
01965	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		
01967	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		
01964	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		
01966	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		
00455	LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels Buy 4 bottles, price each	35.00 30.00	26.25 22.50		
M					
01885	MACUGUARD™ OCULAR SUPPORT - 60 softgels Buy 4 bottles, price each	\$22.00 19.80	\$16.50 14.85		
01886	MACUGUARD™ OCULAR SUPPORT w/ASTAXANTHIN - 60 softgels Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
01459	MAGNESIUM CAPS - 500 mg, 100 veg. caps Buy 4 bottles, price each	12.00 10.00	9.00 7.50		
01682	MAGNESIUM CITRATE - 160 mg, 100 veg. caps Buy 4 bottles, price each	9.00 7.50	6.75 5.63		
01668	MELATONIN - 300 mcg, 100 veg. caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		

SUB-TOTAL OF COLUMN 10

FEBRUARY 2015

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No.		Retail Each	Member Each	Qty	Total
01083	MELATONIN - 500 mcg, 200 veg. caps Buy 4 bottles, price each	\$18.00 16.00	\$13.50 12.00		
00329	MELATONIN - 1 mg, 60 caps Buy 4 bottles, price each	5.00 4.63	3.75 3.47		
00330	MELATONIN - 3 mg, 60 caps Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01786	MELATONIN TIME RELEASE - 3 mg, 60 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00331	MELATONIN - 10 mg, 60 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00332	MELATONIN - 3 mg, 60 veg. lozenges Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01734	MELATONIN (Fast Acting Liquid) - 3 mg (Natural Citrus-Van) Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01787	MELATONIN TIME RELEASE - 300 mcg, 100 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01788	MELATONIN TIME RELEASE - 750 mcg, 60 veg. tablets Buy 4 bottles, price each	8.00 7.00	6.00 5.25		
01536	METHYLCOBALAMIN - 1 mg, 60 veg. lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
01537	METHYLCOBALAMIN - 5 mg, 60 veg. lozenges (vanilla) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 25.00 23.00	24.00 18.75 17.25		
00709	MIGRA-EZZE™ (BUTTERBUR) - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		
01800	MIGRA-MAG w/BRAIN SHIELD® - 90 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01522	MILK THISTLE (EUROPEAN) - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
01822	MILK THISTLE (EUROPEAN) - 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01817	MILK THISTLE (EUROPEAN) - 120 softgels Buy 4 bottles, price each	44.00 40.00	33.00 30.00		
01698	MIRAFORTE w/STANDARDIZED LIGNANS (SUPER) - 120 caps Buy 4 bottles, price each	62.00 56.00	46.50 42.00		
01769	MITOCHONDRIAL BASICS w/BIOPOQ® - 30 caps Buy 4 bottles, price each	52.00 42.00	39.00 31.50		
01768	MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPOQ® - 120 caps Buy 4 bottles, price each	94.00 78.00	70.50 58.50		
00065	MK-7 - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00451	MSM (METHYLSULFONYLMETHANE) - 1,000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		
N					
01534	N-ACETYL-L-CYSTEINE - 600 mg, 60 veg. caps Buy 4 bottles, price each	\$14.00 13.50	\$10.50 10.13		
01904	NAD+ CELL REGENERATOR™ - 100 mg, 30 veg. caps Buy 4 bottles, price each	34.00 26.00	25.50 19.50		
00066	NATTOKINASE - 60 softgels	25.50	19.13		
01807	NATURAL APPETITE SUPPRESS (ADVANCED) - 60 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00984	NATURAL BP MANAGEMENT - 60 tablets Buy 4 bottles, price each	44.00 40.00	33.00 30.00		

SUB-TOTAL OF COLUMN 11

No.		Retail Each	Member Each	Qty	Total
01892	NATURAL ESTROGEN - 60 veg. tabs Buy 4 bottles, price each	\$38.00 34.00	\$28.50 25.50		
01221	NATURAL FEMALE SUPPORT - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01626	NATURAL SEX FOR WOMEN® 50+ (ADVANCED) - 90 veg. caps Buy 4 bottles, price each	59.00 45.33	44.25 34.00		
01444	NATURAL SLEEP® - 60 veg. caps Buy 4 bottles, price each	13.00 10.00	9.75 7.50		
01551	NATURAL SLEEP® w/ MELATONIN (ENHANCED) - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	NATURAL SLEEP® w/o MELATONIN (ENHANCED) - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01445	NATURAL SLEEP® MELATONIN - 5 mg, 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00987	NATURAL STRESS RELIEF - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01603	NEURO-MAG™ MAGNESIUM L-THREONATE - 90 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01602	NEURO-MAG™ L-THREONATE w/CALCIUM & VITAMIN D 225 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01903	NK CELL ACTIVATOR™ - 30 veg. tablets Buy 4 bottles, price each	45.00 42.00	33.75 31.50		
00373	NO-FLUSH NIACIN - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
O					
01824	OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRAT(ADVANCED) 500 mg, 60 veg. caps • Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
01819	OMEGA WITH KRILL & ASTAXANTHIN (SUPER) - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	45.00 42.00 33.00	33.75 31.50 24.75		
01483	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	18.00 16.00 12.50	13.50 12.00 9.38		
01482	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 22.73	24.00 21.00 17.05		
01484	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	34.00 31.00 24.00	25.50 23.25 18.00		
01485	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	20.00 18.00 14.00	15.00 13.50 10.50		
01619	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL) - 240 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 23.00	24.00 21.00 17.25		

SUB-TOTAL OF COLUMN 12

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

FEBRUARY 2015

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

Buyers Club Order Form

SUPER SALE SAVINGS ON ALL PRODUCTS
To order call 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
CONTINUED					
01901	ONE-PER-DAY - 60 tablets Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01328	ONLY TRACE MINERALS - 90 veg. caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
P					
01789	PALMETTOGUARD™ SAW PALMETTO w/BETA SITOSTEROL - 30 softgels Buy 12 bottles, price each	\$15.00 12.00	\$11.25 9.00		
01790	PALMETTOGUARD™ SUPER SAW PALMETTO/ - 60 softgels NETTLE ROOT W/BETA-SITOSTEROL Buy 4 bottles, price each Buy 12 bottles, price each	28.00 26.00 24.00	21.00 19.50 18.00		
00073	PANCREATIN - 500 mg, 50 caps	13.22	9.92		
01323	PEAK ATP® WITH GLYCOCARN® - 60 veg. caps Buy 4 bottles, price each	54.00 50.00	40.50 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 Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00673	PGX™ PLUS MULBERRY (WELLBETX®) -180 veg. caps	34.95	26.21		
00865	PHARMA GABA® - 60 chewable tablets Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01676	PHOSPHATIDYLSERINE CAPS - 100 mg, 100 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
01390	PHOSPHOMEGA® - 60 softgels	39.95	26.96		
01436	POLICOSANOL - 10 mg, 60 veg. caps Buy 4 bottles, price each	20.00 15.00	15.00 11.25		
01423	POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
00956	POMEGRANATE EXTRACT - 30 veg. caps Buy 4 bottles, price each	19.50 17.55	14.63 13.16		
01797	POMI-T® - 60 veg. caps Buy 4 bottles, price each	33.33 30.00	25.00 22.50		
00577	POTASSIUM IODIDE - 1 box, 14 tablets Buy 4 boxes, price each	6.95 5.25	5.21 3.94		
01500	PQQ CAPS W/BIOPQQ® - 10 mg, 30 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	24.00 18.00 16.00	18.00 13.50 12.00		
01647	PQQ CAPS W/BIOPQQ® - 20 mg, 30 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	40.00 32.00 28.00	30.00 24.00 21.00		
00302	PREGNENOLONE - 50 mg, 100 caps Buy 4 bottles, price each	26.00 22.00	19.50 16.50		
00700	PREGNENOLONE - 100 mg, 100 caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
***01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
01576	PREVAGEN® - 10 mg, 30 caps	60.00	45.00		
01577	PREVAGEN® ES - 20 mg, 30 caps	70.00	60.00		
00525	PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets	59.95	44.96		
01441	PROGESTACARE FOR WOMEN - 4 oz cream Buy 4 bottles, price each	35.00 32.00	26.25 24.00		
01898	PROSTATE FORMULA (ULTRA NAT) 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		

SUB-TOTAL OF COLUMN 13

No.		Retail Each	Member Each	Qty	Total
01742	PROTEIN-ISOLATE (WHEY) VANILLA - 1 lb. powder Buy 4 jars, price each	\$30.00 27.00	\$22.50 20.25		
01743	PROTEIN-ISOLATE (WHEY) CHOCOLATE - 1 lb. powder Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01770	PROTEIN CONCENTRATE (New Zealand Whey) Vanilla - 520 gr Buy 4 bottles, price each	30.00 26.60	22.50 19.95		
01771	PROTEIN CONCENTRATE (New Zealand Whey) Chocolate - 660 gr Buy 4 bottles, price each	30.00 26.60	22.50 19.95		
01812	PROVINAL® PURIFIED OMEGA-7 - 30 softgels Buy 4 bottles, price each	27.00 24.00	20.25 18.00		
01508	PTEROPURE® - 50 mg Pterostilbene 60 veg. caps Buy 4 bottles, price each	32.00 30.00	24.00 22.50		
01209	PUMPKIN SEED EXTRACT (WATER-SOLUBLE) - 60 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01587	PURE PLANT PROTEIN - Veg. Vanilla 540 grams powder Buy 4 jars, price each	38.00 35.00	28.50 26.25		
01637	PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT -100 mg, 60 veg. caps Buy 4 bottles, price each	64.00 60.00	48.00 45.00		
01217	PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 19.80	16.50 14.85		
Q, R					
01309	QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01030	RED YEAST RICE (Bluebonnet) - 600 mg, 60 veg. caps	16.95	13.56		
00605	REGIMINT - 60 enteric-coated caps Buy 4 bottles, price each	19.95 18.67	14.96 14.00		
01708	REISHI EXTRACT MUSHROOM COMPLEX - 60 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01448	REJUVENEX® BODY LOTION - 6 oz Buy 4 tubes, price each Buy 8 tubes, price each	24.00 19.80 17.00	18.00 14.85 12.75		
01621	REJUVENEX® FACTOR FIRMING SERUM - 1.7 oz Buy 2 bottles, price each Buy 6 bottles, price each	65.00 50.66 38.52	48.75 38.00 28.89		
01220	REJUVENEX® (ULTRA) - 2 oz Buy 2 jars, price each Buy 4 jars, price each Buy 8 jars, price each	52.00 48.00 44.00 39.93	39.00 36.00 33.00 29.95		
00676	REJUVENIGHT® (ULTRA) - 2 oz Buy 4 jars, price each	39.95 36.00	29.96 27.00		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01930	RESVERATROL W/NAD+ CELL REGENERATOR™ (OPTIMIZED) - 30 veg. caps Buy 4 bottles, price each	42.00 36.00	31.50 27.00		
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps Buy 4 bottles, price each	46.00 41.33	34.50 31.00		
00889	RHODIOLA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	11.75 10.58	8.81 7.94		
01900	RIBOGEN™ FRENCH OAK WOOD EXTRACT - 200 mg, 30 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
00972	(D) RIBOSE POWDER - 150 grams Buy 4 jars, price each	27.50 24.75	20.63 18.56		

SUB-TOTAL OF COLUMN 14

FEBRUARY 2015

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

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

OFFER ENDS FEBRUARY 2, 2015
 To order online visit www.LifeExtension.com/SuperSale

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
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		
01730	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag Natural Mocha	15.00	11.25		
01729	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag Natural Vanilla	15.00	11.25		
01612	RICH REWARDS® BREAKFAST BLEND WHOLE BEAN COFFEE -12 oz. bag	13.00	9.75		
01610	RICH REWARDS® DECAFFEINATED ROAST GROUND COFFEE -12 oz. bag	14.00	10.50		
01712	RICH REWARDS™ BLACK BEAN VEGETABLE SOUP - 32 oz. bottle 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		
01820	RICH REWARDS™ PROTEIN COFFEE CREAMER - Vanilla - 270 grams Buy 4 jars, price each	26.00 23.00	19.50 17.25		
01208	R-LIPOIC ACID (SUPER) - 240 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/SATIREAL® (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 PHYTOCERAMIDES 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		
00657	SOLARSHIELD SUNGLASSES - 1 pair smoke color Buy 2 pairs, price each	12.99 11.50	9.74 8.63		

SUB-TOTAL OF COLUMN 15

No.		Retail Each	Member Each	Qty	Total
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		
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		
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	TOOTH PASTE - 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		
01916	TWO-PER-DAY - 60 tablets Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01915	TWO-PER-DAY - 120 tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01914	TWO-PER-DAY - 120 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00326	L-TYROSINE - 500 mg, 100 tablets	12.98	9.74		

SUB-TOTAL OF COLUMN 16

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

FEBRUARY 2015

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
V					
00213	VANADYL SULFATE - 7.5 mg, 100 veg. tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00408	VENOTONE - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	VINPOCETINE - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
00372	VITAMIN B3 NIACIN - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	VITAMIN B5 - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
01535	VITAMIN B6 - 250 mg, 100 veg. caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	VITAMIN B12 - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	VITAMIN C w/ DIHYDROQUERCETIN - 1,000 mg, 60 veg. tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	VITAMIN C w/ DIHYDROQUERCETIN - 1,000 mg, 250 veg. tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	VITAMIN C (BUFFERED) POWDER - 454.6 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
01736	(EFFERVESCENT) VITAMIN C-MAGNESIUM CRYSTALS - 180 grams	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01732	VITAMIN D3 - 2,000 IU, 1 fl oz, Mint flavor	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	VITAMIN D3 - 1,000 IU, 90 softgels	7.00	5.25		
	Buy 4 bottles, price each	6.00	4.50		
01751	VITAMIN D3 - 1,000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	VITAMIN D3 - 5,000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	VITAMIN D3 - 7,000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01758	VITAMIN D3 w/SEA-IODINE™ - 5,000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
00864	VITAMIN D3 Liquid Emulsion - 2,000 IU, 1 oz.	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01741	VITAMINS D AND K w/SEA-IODINE™ - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01763	VITAMIN E (NATURAL) - 400 IU, 100 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	26.00	19.50		
01225	VITAMIN K2 (LOW-DOSE) - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
X					
00409	XYLIWHITE™ MOUTHWASH - 16 oz	\$10.00	\$7.50		
W					
01902	WAIST-LINE CONTROL™ - 120 veg. caps	\$42.00	\$31.50		
	Buy 4 bottles, price each	38.00	28.50		
01826	WEIGHT MANAGEMENT FORMULA - 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		

SUB-TOTAL OF COLUMN 17

SUPER SALE SAVINGS ON ALL PRODUCTS
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No.		Retail Each	Member Each	Qty	Total
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01813	ZINC HIGH POTENCY - 50 mg, 90 veg. caps	\$7.95	\$5.96		
	Buy 4 bottles, price each	7.00	5.25		
01561	ZINC GLUCONATE/OXIDE LOZENGES - 18.75 mg, 60 veg. lozenges	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
01961	ZINC ACETATE LOZENGES (ENHANCED) - 18.75 mg, 30 veg. lozenges	12.00	9.00		
	Buy 2 bottles, price each	8.00	6.00		
***01051	ZYFLAMEND® WHOLE BODY - 120 softgels	64.95	48.71		

SUB-TOTAL OF COLUMN 18

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SUB-TOTAL COLUMN 5	
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SUB-TOTAL COLUMN 7	
SUB-TOTAL COLUMN 8	
SUB-TOTAL COLUMN 9	
SUB-TOTAL COLUMN 10	
SUB-TOTAL COLUMN 11	
SUB-TOTAL COLUMN 12	
SUB-TOTAL COLUMN 13	
SUB-TOTAL COLUMN 14	
SUB-TOTAL COLUMN 15	
SUB-TOTAL COLUMN 16	
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SUB-TOTAL COLUMN 18	

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Shipping <small>UPS OVERNIGHT add \$16, UPS 2nd DAY AIR add \$7. For Puerto Rico, US Virgin Islands, Alaska & Hawaii, add \$7. CANADA UPS EXPRESS Flat rate \$17.50, UK Flat rate \$25 USD. ALL OTHER INTERNATIONAL AIR WILL BE ADDED.</small>	
GRAND TOTAL (Must be in U.S. dollars)	



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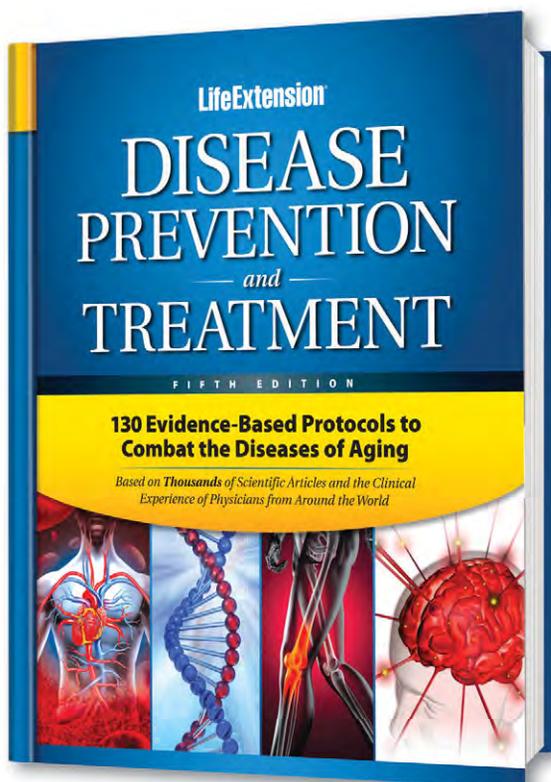
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HOW TO JOIN THE LIFE EXTENSION FOUNDATION®

As a member of the Life Extension Foundation®, you have the opportunity to participate in a great scientific endeavor. We are the world's premier organization dedicated to stopping and reversing aging.

Our 34-year track record shows that we have been five to 10 years ahead of conventional and alternative medicine in making new life-saving therapies available to our members.

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

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

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MEMBERSHIP APPLICATION

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

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Charge my cc:

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SUPPORT FOR THE AGING IMMUNE SYSTEM

DUAL-MECHANISM IMMUNE SENESCENCE FORMULA

As we age, our once-vigorous immune system begins to decline. The result is **immune senescence**, which has been linked to problematic outcomes in aging.¹

A vital immune system is composed of a healthy balance of **naïve T-cells** that attack new invaders and **memory T-cells** that attack previously known invaders. However, after a **naïve T-cell** attacks a new threat, it becomes a **memory T-cell**, which will only go after a threat that it remembers.^{2,3}

The result is that the delicate immune balance tips and we have a surplus of **memory T-cells** and a deficit of **naïve T-cells**. With this imbalance, our body is less able to defend itself against new invasions. This produces a less-vigilant immune system—or **immune senescence**.⁴

Life Extension® researchers have developed an innovative, *dual-mechanism* formula designed to combat **immune senescence**.

Immune Senescence Protection Formula™ is composed of two botanical compounds that support both adaptive (e.g. **naïve T-cells**) and innate (e.g. macrophages and neutrophils) immune response cells. Together, these nutrients work in a complementary fashion to rejuvenate both major arms of the aging immune system through unique mechanisms.

Cistanche Rejuvenates Aging Immune System

Scientists have discovered that the *echinacoside* compound found in **Cistanche** plant extract stimulates the development of **naïve T-cells** and leads to a lower amount of **memory T-cells**, thereby creating a more balanced immune response. **Cistanche** also increases Natural Killer (NK) cell activity—resulting in a **15%** life span increase in animal research!⁵

A 12-week human study of a dietary supplement containing standardized **Cistanche**, resulted in impressive gains in immune factors after supplementation. Subjects had significant improvements, including an **11.7%** increase in natural killer (NK) cell activity and a **20.2%** improvement in the ratio of CD4 to CD8 cells. An increased CD4/CD8 ratio is indicative of healthy, youthful immune function.⁶

Reishi Mushroom Combats Immune Senescence

The numerous bioactive components of the **Reishi** mushroom exert powerful effects that may reverse many of the factors of immune senescence.⁷

Reishi extracts boost the function of innate immune cells, the immune system's first line of defense.⁷⁻⁹

It has long been known that **Reishi's** unique polysaccharides, triterpenes, and other constituents¹⁰ enhance the body's hematopoietic stem cells, macrophages, and other crucial immune factors.¹¹⁻¹³ Animal research shows **Reishi** supports multiple aspects of immune function and longevity.¹⁴

Ultra-Potent, *Dual-Extract* Formulation

Now, both **Cistanche** and **Reishi** are available in one powerful, dual-extract formulation, specifically created for year-round support of the aging immune system!

Immune Senescence Protection Formula™ with standardized Cistanche and Reishi is our maximum *dual-extract* defense against immune senescence.

The suggested serving of two vegetarian capsules daily of **Immune Senescence Protection Formula™** provides:

Cistanche tubulosa extract (stem and leaf) [std. to 22% echinacosides (46.2 mg)]	210 mg
Reishi mushroom (<i>Ganoderma lucidum</i>) extract (Fruit body) [std to 13.5% polysaccharides (132.3 mg) and 6% triterpenes (58.8 mg)]	980 mg
Reishi mushroom (<i>Ganoderma lucidum</i>) spore	150 mg

A bottle of 60 vegetarian capsules of **Life Extension® Immune Senescence Protection Formula™** retails for \$40. If a member buys four bottles during **Super Sale**, the price is reduced to **\$24.30** per bottle.

Standardized *Cistanche*

For those seeking the effects of **Cistanche** only, **Life Extension®** has created a standalone **Standardized Cistanche** that contains the same echinacosides as in the **Immune Senescence Protection Formula™**. For a very low price, a member can obtain the recommended **210 mg** daily **Cistanche** dosage in a single, high-potency capsule providing a potent **46.2 mg** dose of echinacosides.

Standardized Cistanche provides powerful support against immune senescence.

The suggested dosage of one vegetarian capsule of **Standardized Cistanche** provides:

Cistanche tubulosa extract (stem and leaf) [std. to 22% echinacosides (46.2 mg)]	210 mg
Vitamin C (as ascorbyl palmitate)	2 mg

A bottle of 30 vegetarian capsules of **Life Extension® Standardized Cistanche** retails for \$20. If a member buys four bottles during **Super Sale**, the price is reduced to **\$10.80** per bottle.

To order Life Extension® Immune Senescence Protection Formula™, or Standardized Cistanche call 1-800-544-4440 or visit www.LifeExtension.com



Item # 01905



Item # 01906

References

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COMPREHENSIVE VITAMIN K FORMULA



Item # 01724

To Support Arterial Health And Bone Support

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

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

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

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

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

Just one daily softgel of Super K formula provides:

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

The retail price for a bottle containing **90 softgels** is \$30. If a member buys four bottles during **Super Sale**, the price is reduced to **\$18.23 per bottle**. Each bottle lasts for three months.

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

References

1. *Vitam Horm.* 2008;78:393-416.
2. *Nutrition.* 2006 Jul-Aug;22(7-8):845-52.
3. *Calcif Tissue Int.* 1996 Nov;59(5):352-6.
4. *Z Kardiol.* 2001;90 Suppl 3:57-63.
5. *Atherosclerosis.* 2008 Jul 19.
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8. *J Biol Regul Homeost Agents.* 2008 Jan-Mar;22(1):35-44.
9. *Blood.* 2007 Apr 15;109(8):3279-83.

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

Most Effective Form Of CoQ10

The unique benefits of the **ubiquinol** form of **CoQ10** have been further validated by studies published in **2014**.¹⁻¹²

CoQ10 supports **mitochondrial** energy production. A new study published in **2014** confirms previous research showing that **ubiquinol** activates mitochondrial functions to **slow aging** in the laboratory mouse model.¹²

Life Extension® improves this a step further by adding **shilajit** to its **ubiquinol** formulas. The result is a doubling of CoQ10 levels in **mitochondria**.¹³

When **CoQ10** and **shilajit** are combined, there is a **56% increase** in energy production in the **brain** and **144%** energy increase in muscle.¹⁴

Restoring youthful energy levels is why so many maturing people turn to **coenzyme Q10**. The most **absorbable** form of CoQ10 is **ubiquinol**.

The name of this advanced **ubiquinol/shilajit** formula is **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support**™.

Super Sale Prices On All Ubiquinol Formulas

Life Extension combines these two energizing ingredients into an exclusive **ubiquinol-shilajit** formula available in the following potencies...all at discounted **Super Sale** prices:



Item # 01425

The retail price for 100 **50 mg** softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support**™ is \$58. If a member buys four bottles during **Super Sale**, the price is reduced to **\$31.05** per bottle. If a member buys 10 bottles, the price is **\$28.35** per bottle. (Item # 01425)



Item # 01426

The retail price for 60 **100 mg** softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support**™ is \$62. If a member buys four bottles during **Super Sale**, the price is reduced to **\$35.10** per bottle. If a member buys 10 bottles, the price is **\$32.40** per bottle. (Item # 01426)



Item # 01431

The retail price for 30 **200 mg** softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support**™ is \$62. If a member buys four bottles during **Super Sale**, the price is reduced to **\$35.10** per bottle. If a member buys 10 bottles, the price is **\$32.40** per bottle. (Item # 01431)

To order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support, call 1-800-544-4440 or visit www.LifeExtension.com

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1. *J Agric Food Chem.* 2014 Jul 23;62(29):7174-82.
2. *Biochim Biophys Acta.* 2014 Jul;1842(7):893-901.
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These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.



WHAT'S INSIDE

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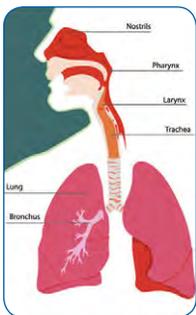
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Magazine



38 COMBAT AGE-RELATED BRAIN SHRINKAGE

Brain shrinkage is a major factor in cognitive, depressive, and movement disorders. This degenerative loss of brain mass can be prevented with a program followed by many **Life Extension®** members.



62 HEALTH RISKS OF INHALED INSULIN

Even though inhaled insulin was approved by the FDA, reports indicate that it can induce unwanted cell division, respiratory distress, and other adverse effects.



7 MAJOR ADVANCE SLOWS AGING

Published studies demonstrate that higher levels of **AMPK** can reverse degenerative aging by stimulating cellular energy metabolism, inhibiting fat storage, reducing triglyceride production, and boosting glucose uptake.



26 DEADLY IMPACT OF EXCESS ABDOMINAL FAT

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50 RESTORE MORE YOUTHFUL CEREBRAL CIRCULATION

Vinpocetine enhances cerebral blood flow and neuronal function to protect against mechanisms that underlie Alzheimer's, Parkinson's, vascular dementia, memory impairment, and ischemic stroke damage.



72 REVERSING TRAUMATIC BRAIN INJURY

A team of physicians developed a novel way of reversing the symptoms of **brain trauma** by replenishing natural hormones on an individualized basis.