

**RESTORE YOUTHFUL CEREBRAL CIRCULATION**

# LifeExtension<sup>®</sup>

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?

A smiling man and woman standing together, representing a healthy, active lifestyle. The man is wearing a light blue V-neck shirt and the woman is wearing a light grey sweater and a beige cardigan. They are both smiling and looking towards the camera.

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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*<sup>®</sup> 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.<sup>1-8</sup> 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.<sup>9,10</sup>

**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.<sup>11</sup>

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:

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



Item # 01482

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# LifeExtension®

Magazine

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Dr. Moss has independently evaluated the claims of various cancer treatments and currently directs The Moss Reports, an updated library of detailed reports on more than 200 varieties of cancer diagnoses.



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# Superior-Absorbing CURCUMIN



Item # 00407

Item # 01808

**Curcumin** has turned into a nutrition **superstar** because of the enormous health-promoting effects it provides for almost every organ system.<sup>1,2</sup>

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.<sup>3</sup>

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:<sup>4,5</sup>

- 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.<sup>6</sup>
- **Ginger**, which provides complementary health benefits.
- **Phospholipids** that further enhance absorption.<sup>7</sup>

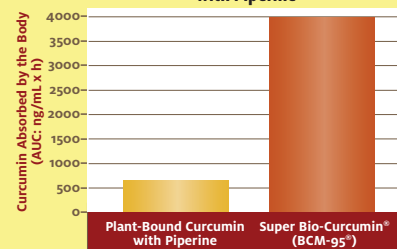
A bottle of 30 softgels of **Advanced Bio-Curcumin® With Ginger & Turmerones** (Item # 01808) retails for \$30. If a member buys four bottles during **Super Sale**, the price is reduced to **\$18.23** per bottle. The suggested dose for either of these highly **absorbable** curcumin supplements is one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

**To order either of these products,  
call 1-800-544-4440  
or visit [www.LifeExtension.com](http://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.

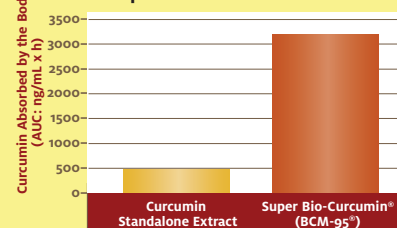
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Compared with Plant-Bound Curcumin with Piperine<sup>3</sup>



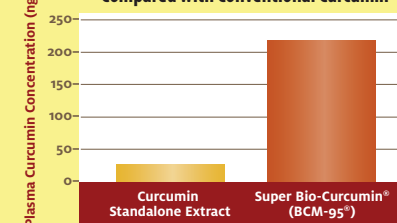
**Chart 1.** Super Bio-Curcumin® showed 6.3 times greater bioavailability (absorption and sustainability over eight hours) in humans compared with plantbound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin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

Absorption of Super Bio-Curcumin® in Humans Compared with Conventional Curcumin<sup>3</sup>



**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).

Absorption of Super Bio-Curcumin® in Rats Compared with Conventional Curcumin<sup>8</sup>



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

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# 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.<sup>1</sup> 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**.<sup>2</sup>

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.<sup>3-11</sup> 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.”<sup>12-14</sup> As junk-laden cells accumulate, they emit signals that generate low levels of **inflammation**.<sup>15</sup> 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**.<sup>15</sup> 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.<sup>15</sup>

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.<sup>8,10,16-18</sup> 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.<sup>19,20</sup> AMPK acts as a master switch to regulate cell functions such as uptake of

glucose, burning of fats, and formation of new mitochondria.<sup>15,21-25</sup>

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

Primate studies validate age-delaying effects when **calorie restriction** is properly executed.<sup>32-37</sup> 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**.<sup>15</sup> As **AMPK** activity declines, waste products (cellular junk) accumulate and eventually render our cells dysfunctional.<sup>15</sup>







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.<sup>38-40</sup>

**AMPK** augments cellular housekeeping. Reduced AMPK signaling, on the other hand, can exacerbate common problems related to cellular dysfunction like **heart failure**.<sup>41</sup> 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**.<sup>42</sup> **AMPK** improves **insulin sensitivity**,<sup>9,15</sup> 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.<sup>15,39,43,45</sup> To purge the body of these senile cells, strong **AMPK signaling**<sup>44</sup> is needed to facilitate the beneficial self-removal process.

### Combatting Cellular Stress

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

**AMPK** triggers signaling pathways that *improve* cell stress response.<sup>52</sup>

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**.<sup>15</sup>

### 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).<sup>15,53,54</sup> **SIR** stands for "silent information regulator."<sup>55</sup>

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

**Resveratrol** supplements have become popular because of their ability to enhance **SIRT1**.<sup>66-68</sup> **Resveratrol** may do this by boosting **AMPK**.<sup>69</sup> 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.<sup>70</sup> **P53** is known as a tumor-suppressor gene and loss of **p53** predisposes cells to **malignancy**.<sup>71-73</sup> **P53** is also involved in regulating cell metabolism and self-destruction (apoptosis) of senescent cells.<sup>74-76</sup>

**Nuclear factor-kappa beta** (NF- $\kappa$ B) is an internal cell signal that induces **chronic inflammation**.<sup>77,78</sup> We take nutrients like **curcumin** to suppress **NF- $\kappa$ B** activation.<sup>79,80</sup>

By maintaining higher **AMPK** activity, our functional **p53** is protected, while pro-inflammatory **NF- $\kappa$ 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**.<sup>3-9,15,80-86</sup>

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

Cellular **stress resistance** improves in response to greater **AMPK activation**.<sup>15</sup>

Increased AMPK activity can extend life span in lower organisms.<sup>15,88,89</sup> 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.<sup>90,91</sup> The ability of **metformin** to boost AMPK activity has caused some people to call metformin “**exercise in a bottle**.”<sup>92-95</sup>

In response to reduced calorie intake, cells activate AMPK<sup>96</sup> as a survival mechanism.<sup>28,29</sup> This beneficial AMPK activation vanishes when normal food consumption resumes.<sup>26,27</sup>

Nutrients like **resveratrol** and **quercetin** have some effect on activating AMPK, but are probably not as impactful as **metformin**.<sup>18,97</sup> 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**.<sup>98</sup>

## 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**.<sup>99</sup>

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

- **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 signals<sup>101</sup> and distorts hormone balance.<sup>102-104</sup> 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.<sup>2</sup> 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<sup>105,106</sup> and liver<sup>107-109</sup> is often accompanied by the reduction in AMPK activity similar to what occurs during aging.<sup>15,110</sup> 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.<sup>111</sup>

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

**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.

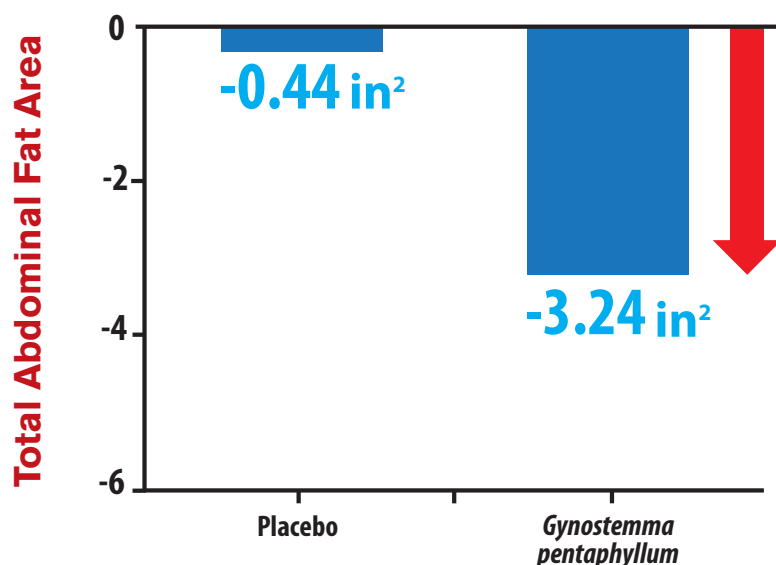
This year's **Super Sale** ends **February 2, 2015**. This provides plenty of time to create a list of the nutrient formulas you need for the upcoming year.

For longer life,



William Faloon

### Marked Reduction In Abdominal Fat



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

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

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

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

<sup>1</sup> 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

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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. Albion® is a registered trademark of Albion Laboratories, Inc.

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

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

## 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:

<b>Vitamin K1</b> (as phytonadione)	<b>1,000 mcg</b>
<b>Vitamin K2</b> (as menaquinone-4)	<b>1,000 mcg</b>
<b>Vitamin K2</b> (as menaquinone-7)	<b>200 mcg</b>
<b>Gamma E Tocopherol</b>	<b>245 mg</b>
<b>Chlorophyllin</b>	<b>100 mg</b>
<b>MacuGuard™ Carotenoid Phospholipid Blend Phospholipids, marigold extract</b> (flower) [providing 10 mg free lutein, 4 mg meso-zeaxanthin & trans-zeaxanthin]	<b>145 mg</b>

<b>C3G (Cyanidin-3-glucoside)</b> [from European black currant extract (fruit)]	<b>2.2 mg</b>
<b>Sesame seed lignan extract</b>	<b>20 mg</b>
<b>Lycopene</b> proprietary blend [from Micronized Lycopene and Tomat-O-Red® natural tomato extract (fruit)]	<b>10 mg</b>
<b>Vitamin B12</b>	<b>300 mcg</b>
<b>Vitamin C</b>	<b>95 mg</b>

**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.

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.





# 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.<sup>1</sup>

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

**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.<sup>5</sup> Studies show **increased** AMPK activity supports reduced fat storage,<sup>6</sup> new mitochondria production,<sup>7</sup> and the promotion of healthy blood glucose and lipids already within normal range.<sup>4</sup>

### 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!<sup>8-10</sup> 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.<sup>11</sup>

### Trans-Tiliroside

*Trans-tiliroside*, extracted from plants such as **rose hips**, also boosts **AMPK** activation, but triggers different downstream metabolic benefits than *G. pentaphyllum*.<sup>12-14</sup> 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.<sup>15</sup>

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

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To order **AMPK Activator** at low **Super Sale** prices,  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)



# 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**.



Item# 01914  
Capsules



Item# 01915  
Tablets

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

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

A bottle containing 120 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](http://www.LifeExtension.com)**



\*Ratings based on results of the 2014 ConsumerLab.com Survey of Vitamin & Supplement Users. More information at [www.consumerlab.com/survey2014](http://www.consumerlab.com/survey2014).

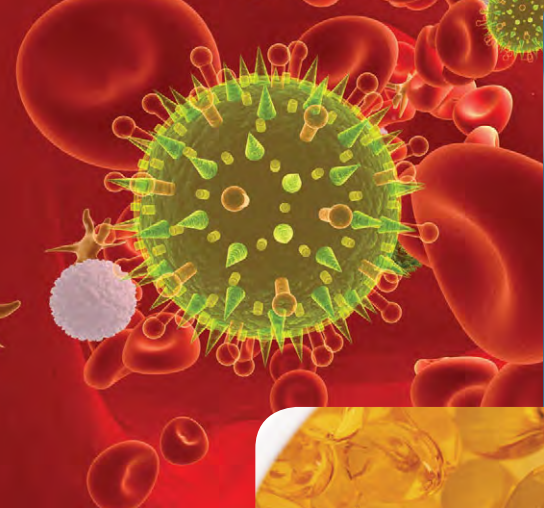
Contains soybeans. Due to the source of the kelp, this product may contain fish and shellfish.

\*Available at: [https://chromadex.com/wpresources/Upload/Article/Literature/Ingredient/IngredientSaleSheets\\_NIAGEN\\_V0114b\\_pw.pdf](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.

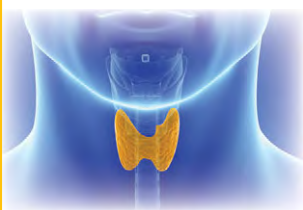
**Editor's Note:** "We have been investigating Montmorency tart cherries for several years because they're a unique fruit with a high concentration of anthocyanins," commented Dr. Howatson, from the Department of Sport, Exercise, and Rehabilitation, Northumbria University. "Our current study was conducted 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.

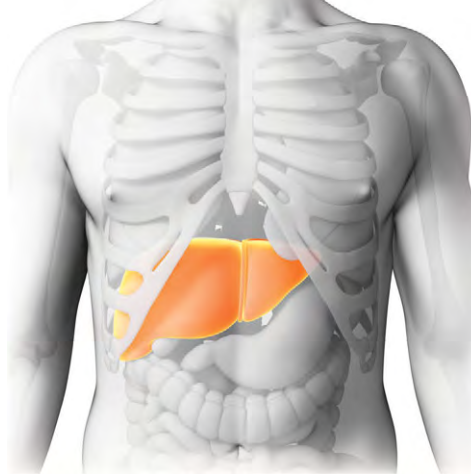
In previous research, the Salk Institute scientists found that a modified form of vitamin D inactivated liver stellate cells, which become activated during injury. Chronic activation of stellate cells that occurs near a tumor fuels its growth as well as surrounding it with a barrier. After uncovering 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

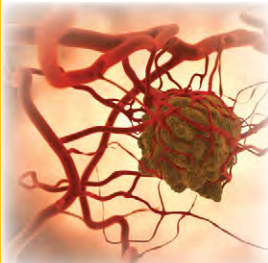
An article published in *PLOS One* reported that BCM-95® curcumin altered the microenvironment of a colorectal cancer cell culture model, thereby reducing tumor-promoting factors and potentially enhancing chemotherapy effectiveness.\*

Constanze Buhrmann 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.\*

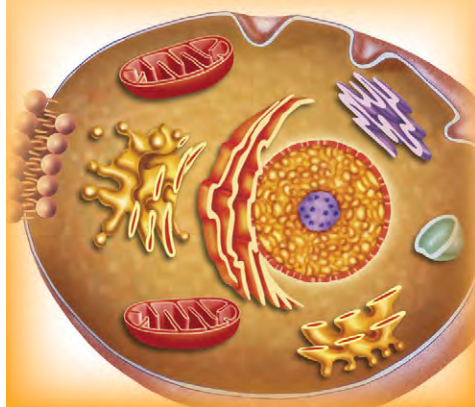
"Because mitochondria are a target for melatonin action, the goal of this study was to investigate the effects of melatonin on mitochondrial function in white and beige inguinal adipose tissue of Zucker diabetic fatty rats," write authors Ahmad Agil and colleagues.

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.<sup>1</sup> 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 declines<sup>2</sup> with a concurrent weakening of normal immune functions.<sup>3</sup>

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™**.<sup>4</sup>

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.<sup>5</sup>

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.

## References

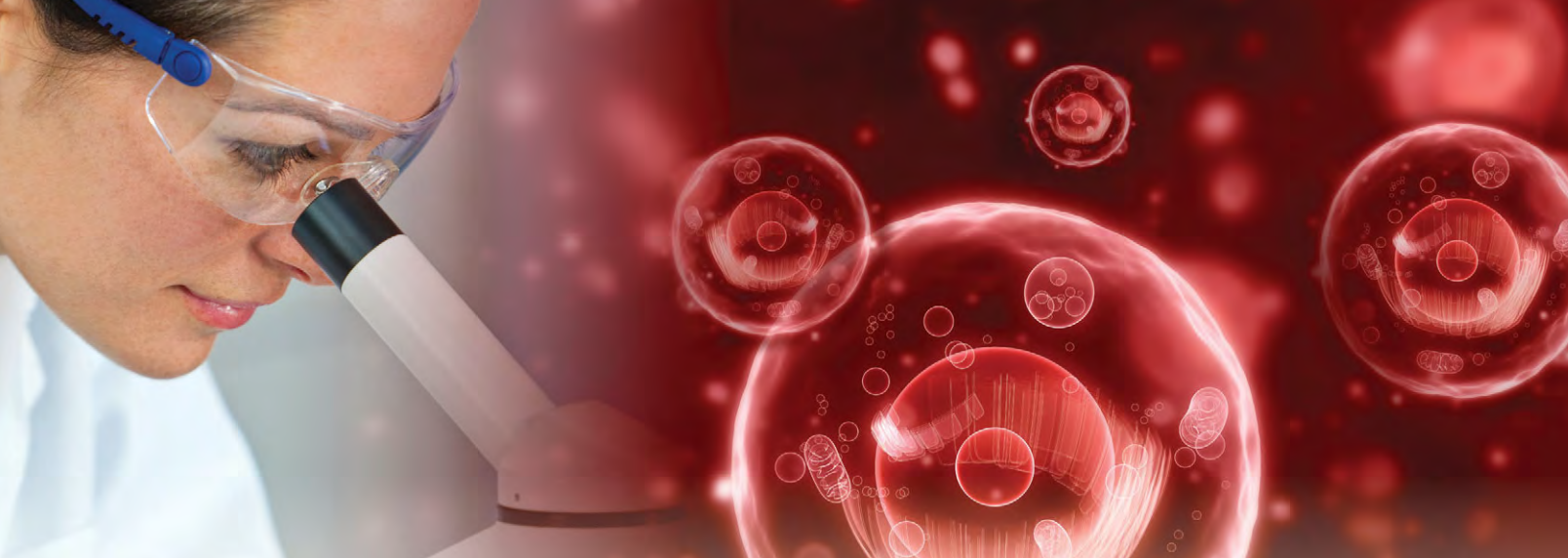
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Item # 01903

To order Life Extension® NK Cell Activator™, call 1-800-544-4440 or visit [www.LifeExtension.com](http://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.<sup>1-5</sup>
- **PQQ:** This breakthrough micronutrient has been shown to trigger **mitochondrial biogenesis**—the growth of **new** mitochondria in aging cells!<sup>6</sup> PQQ also activates genes involved in protecting the delicate structures within the mitochondria.<sup>7-10</sup>
- **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.<sup>11-16</sup>
- **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.<sup>16-19</sup> Benfotiamine protects endothelial cell integrity from the effects of high glucose levels. In addition, benfotiamine exhibits direct antioxidative capacity and supports DNA function.<sup>20</sup>
- **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.<sup>21-24</sup>

- **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.<sup>25-28</sup>
- **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.<sup>29</sup>

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:**

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



**Item # 01768**

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Bio-Enhanced® is a registered trademark of GeroNova Research, Inc. ArginoCarn® is a registered trademark of Sigma-tau HealthScience, and is manufactured exclusively under U.S. production patent 6,703,042 and worldwide production patent EP1202956. The combination of Acetyl-L-Carnitine and Alpha Lipoic Acid is patented by Sigma-tau under U.S. patent 6,365,622. BioPQQ® is a registered trademark of MGC (Japan).

**To order Mitochondrial Energy Optimizer with BioPQQ®, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

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



# PQQ Promotes Formation of New Mitochondria

## Critical Importance of Mitochondria

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

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

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

## Vital Protection for the Aging Heart and Brain

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

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

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

## 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)

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

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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.<sup>1-4</sup> In addition, excessive abdominal fat is also associated with Alzheimer’s disease and osteoporosis.<sup>5-9</sup>

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.<sup>10</sup> 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.<sup>11</sup> In one study, individuals lost, on average, nearly **two full inches** of waist circumference—about **two belt sizes**!<sup>11</sup>

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

Consumption of this natural **peptide complex** decreases food intake<sup>11</sup> and reduces new abdominal fat deposition.<sup>14</sup> 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.<sup>15,16</sup> The other fat that accumulates inside the abdominal region (stomach, liver, and other abdominal organs) is referred to as **visceral** fat.<sup>3,4,17</sup>

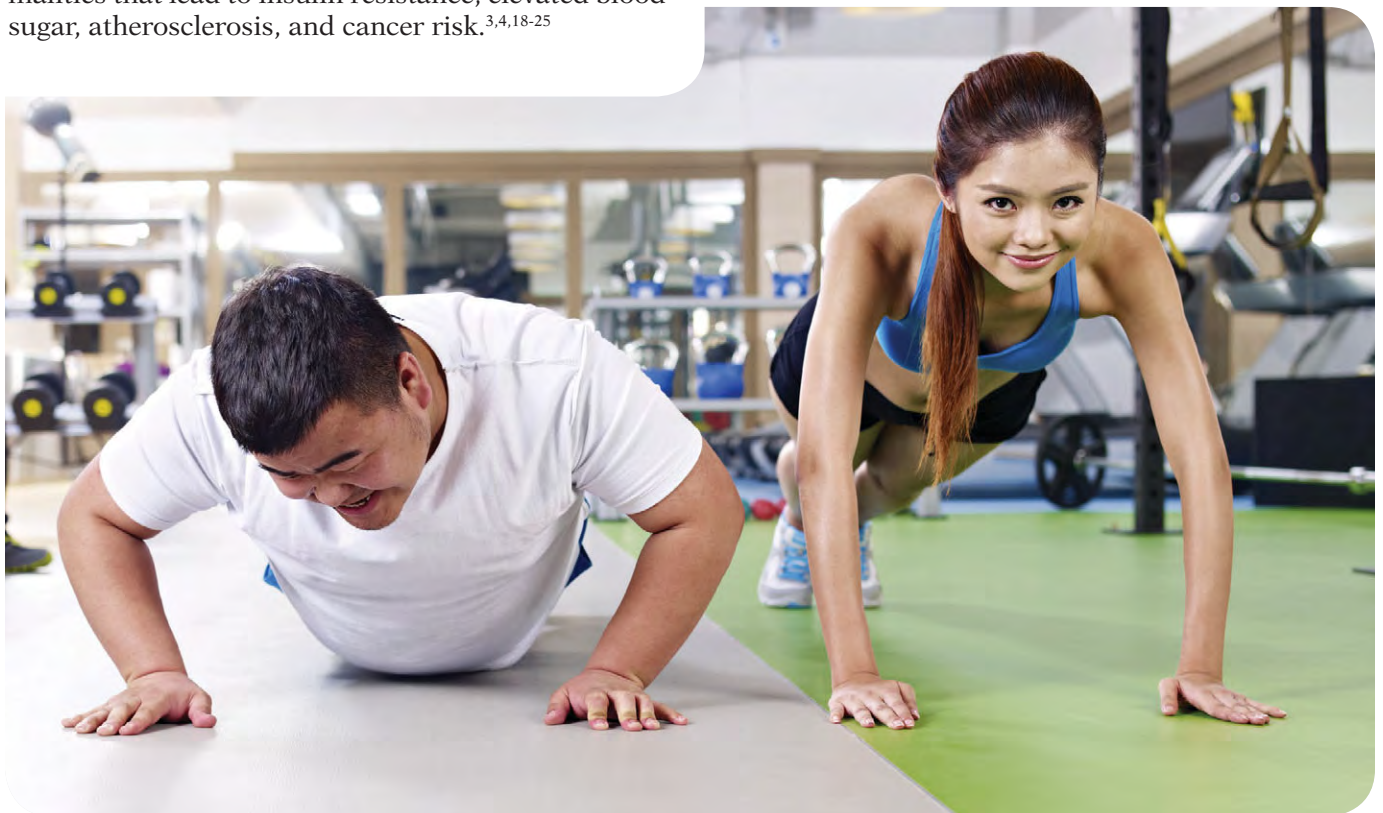
Mainstream physicians are only now coming to grips with the dangers of both subcutaneous and visceral abdominal fat and the ominous implications for their patients' health and longevity. Unlike normal subcutaneous fat stores found elsewhere in the body, both subcutaneous abdominal fat and visceral fat 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.<sup>3,4,18-25</sup>

Studies reveal that excess fat stored in the abdomen is associated with a:<sup>1,4,26</sup>

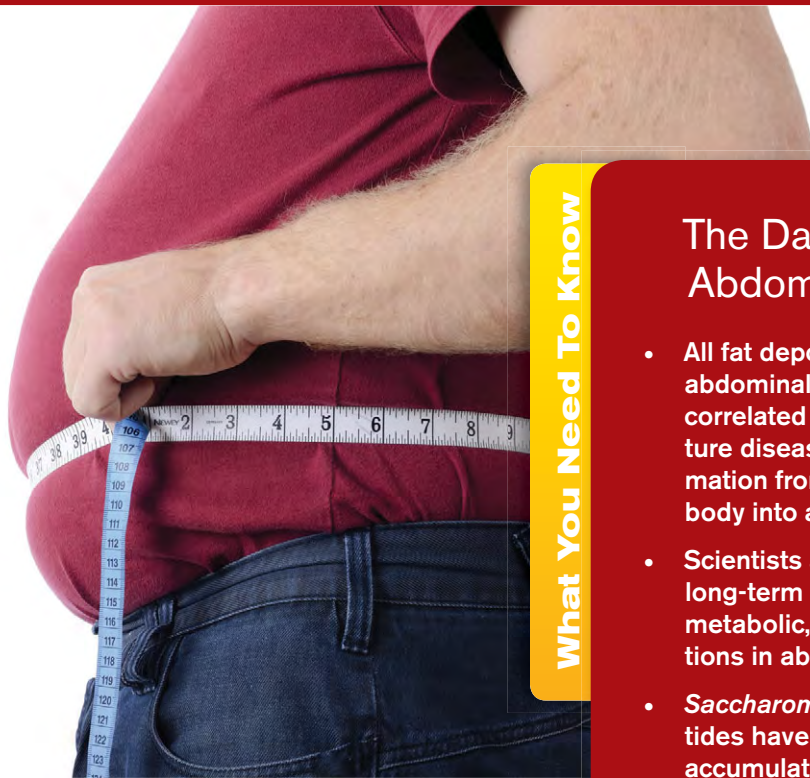
- **44%** increase in cardiovascular disease risk,
- **43%** increase in cancer risk,
- **233%** increase in risk of death from all causes,
- **700%** increase in cardiovascular death risk,
- **116%** increase (in women) in the risk of a recurrent cardiovascular event of any kind following a known heart 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.<sup>27-34</sup>

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.<sup>35</sup> 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),<sup>11,36</sup> as well as other signaling molecules involved in appetite production and control, such as *nitric oxide synthase* (NOS) and *vasoactive intestinal peptide* (VIP).<sup>37</sup>
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).<sup>14,38</sup> 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.<sup>39</sup> 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.<sup>14,36,37,40</sup>

### 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.<sup>15</sup>

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.<sup>4,17,18</sup>

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.<sup>1-3</sup>

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.<sup>4,42</sup> 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.<sup>1,3,4,26</sup>

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.<sup>43</sup> This research supports the observation that having a waist circumference out of proportion to BMI is an important cardiovascular risk factor.<sup>43</sup>

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.<sup>36,37</sup> Sophisticated brain imaging demonstrated that the supplemented rats experienced favorable modulation of signaling molecules involved in appetite regulation.<sup>37</sup>

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

Researchers at the same university conducted another study utilizing rats fed a high-fat diet.<sup>40</sup> 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.

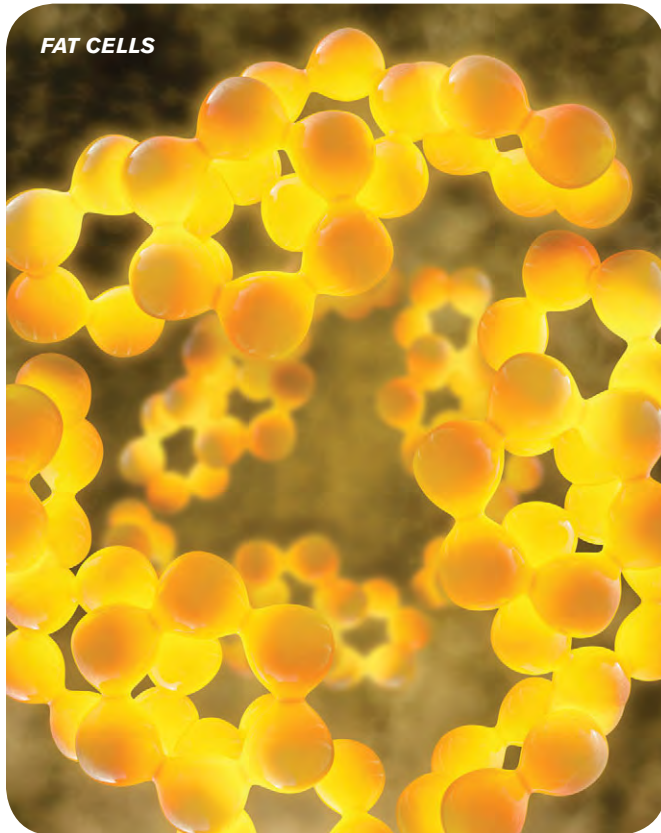
### Human Studies

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.<sup>12</sup> 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**.<sup>12</sup>







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.<sup>13</sup> 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.<sup>11</sup>

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.<sup>11</sup>

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**.<sup>11</sup> 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),<sup>41</sup> supplemented individuals on average lost **two full inches** of waist circumference, or about **two belt sizes**!<sup>11</sup>
- 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 cm<sup>2</sup> (2.69 inches<sup>2</sup>)** in supplemented patients and **7.06 cm<sup>2</sup> (1.09 inches<sup>2</sup>)** 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.

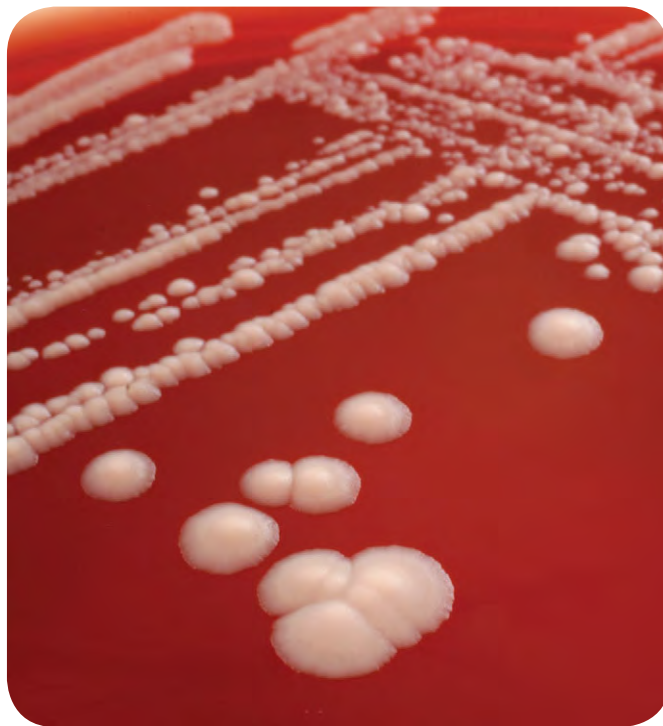
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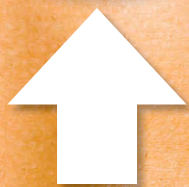
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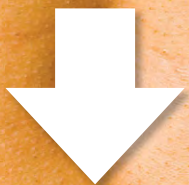
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# TARGET UNWANTED ABDOMINAL FAT



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.<sup>1</sup>

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

**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).<sup>2</sup>
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).<sup>3,4</sup>

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.<sup>2</sup>

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:**

<b>Eatless™ peptide complex (<i>S. cerevisiae</i>)</b>	<b>500 mg</b>
--	---------------

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®  
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call 1-800-544-4440  
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Life Extension® members are longevity enthusiasts who take extraordinary steps to stave off disease, aging, and death. When members buy products from the Life Extension Foundation Buyers Club, they are assured of receiving the highest quality products based on the latest scientific studies that demonstrate benefits.

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	Our Low Retail Price	<b>SUPER SALE</b> Member-Volume Discount Price Per Bottle
<b>Super Omega-3 EPA/DHA with Sesame Lignans &amp; Olive Fruit Extract</b> <b>120 softgels, Item # 01482</b> 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.	\$32	<b>\$15.34</b> (ten-bottle purchase)
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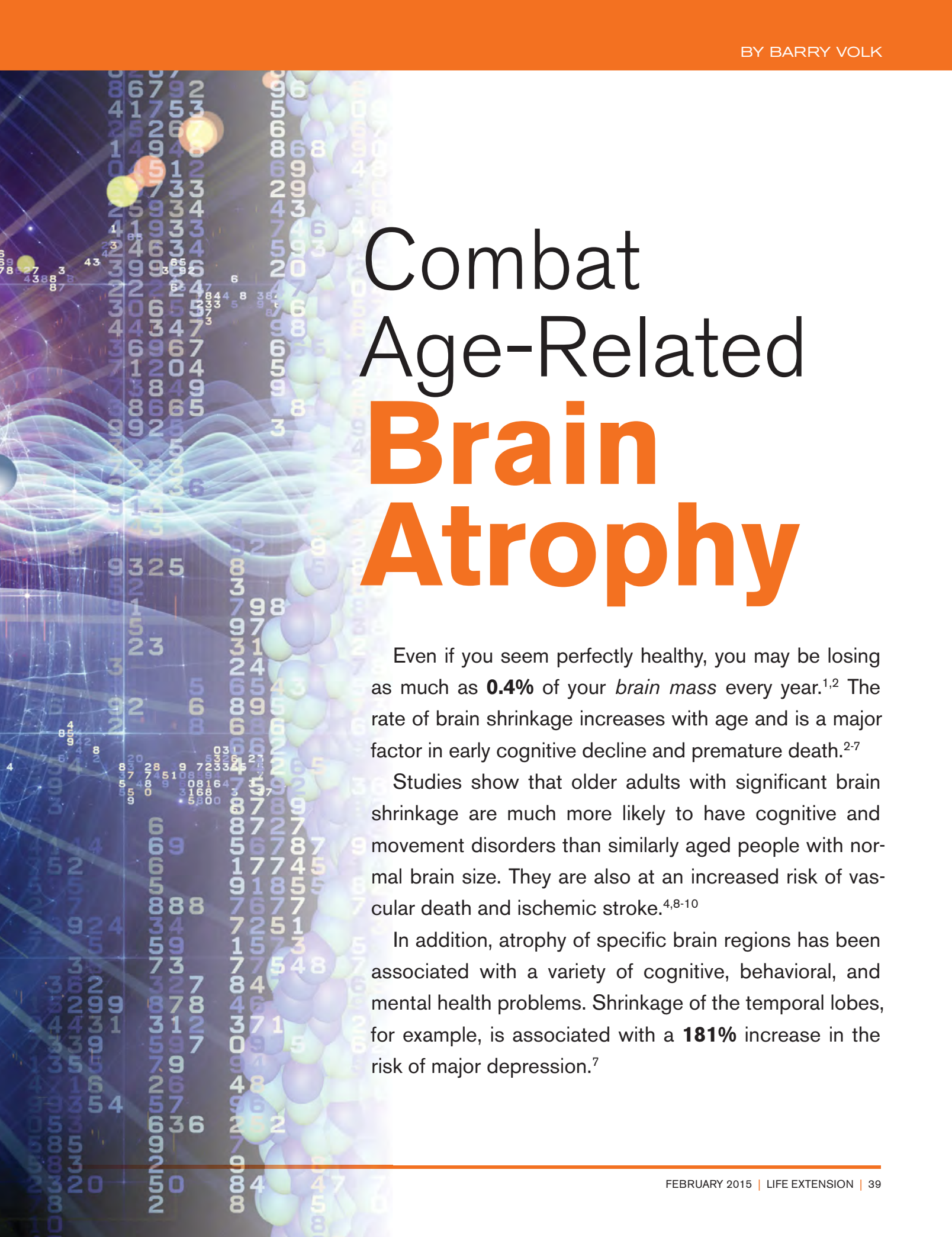
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The background of the page is a complex, abstract composition. It features a grid of numbers in various colors (blue, green, yellow, orange) that appear to be floating or falling. Overlaid on this is a faint, glowing image of a human brain, possibly a scan or a model, with some areas highlighted in blue and white. The overall aesthetic is high-tech and scientific.

# 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.<sup>1,2</sup> The rate of brain shrinkage increases with age and is a major factor in early cognitive decline and premature death.<sup>2-7</sup>

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.<sup>4,8-10</sup>

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.<sup>7</sup>

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,<sup>5</sup>
- In a study of people aged 85, **temporal lobe atrophy** is associated with a **60%** increase in the risk of dying,<sup>2</sup>
- Severe **atrophy of the frontal lobe** (behind the forehead) increases the risk of death by **30%**.<sup>2</sup>

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.<sup>2</sup>

Even though brain shrinkage is progressive, a growing number of neuroscientists believe that brain shrinkage can be *slowed* or even *reversed*.<sup>11-13</sup> 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.<sup>14</sup>

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.<sup>15</sup> 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.<sup>10</sup>





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.<sup>16</sup>

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.<sup>17</sup>

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).<sup>18</sup> 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.<sup>19-22</sup>

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.<sup>13,23</sup>

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.<sup>24,25</sup> 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.<sup>13,26</sup>

Remarkably, it has been found that brain shrinkage due to high homocysteine levels must reach a critical level before cognitive decline sets in.<sup>21</sup> 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.<sup>27</sup>



## 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**,<sup>28</sup> 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.<sup>29-31</sup>

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.<sup>32,33</sup>

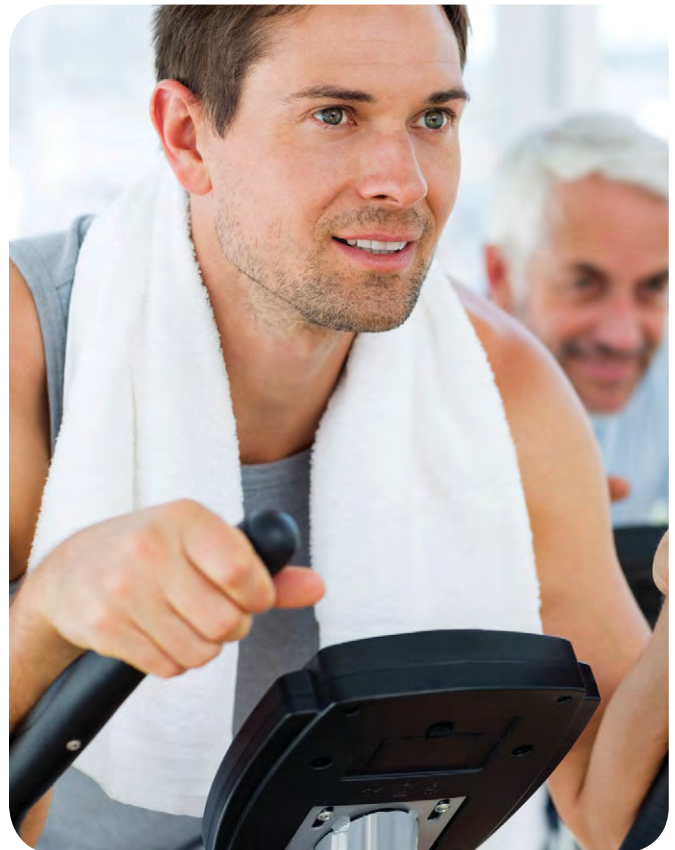
In addition to causing brain shrinkage, studies now suggest that diabetes induces toxic, misfolded proteins quite similar to those found in neurodegenerative diseases such as Alzheimer's, pointing to yet another way that diabetes can damage brain cells.<sup>34</sup> Indeed, diabetes and Alzheimer's disease 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,<sup>35,36</sup> blood vessel abnormalities, and problems with energy production in mitochondria.<sup>37,38</sup>

### Obesity And Your Brain

Like diabetes, obesity is a known cause of brain atrophy.<sup>39</sup> 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.<sup>40</sup>

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

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.<sup>42</sup> 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.<sup>42</sup>





## 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.<sup>43</sup> Similarly, increases in brain shrinkage are associated with decreased quality of sleep as well.<sup>44</sup>

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.<sup>6</sup>

## Smoking And Drinking

**Smoking** has been recognized as a cause of brain shrinkage since at least 1987.<sup>45,46</sup> 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.<sup>47</sup>

**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,<sup>48</sup> heavy drinkers are **80%** more likely than nondrinkers to sustain frontal lobe shrinkage, compared with nondrinkers,<sup>49</sup> and **32%** more likely to have enlargement of the ventricles, indicating shrinkage from within.<sup>50</sup> (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 homocysteine<sup>51</sup> (and elevated homocysteine, as we have seen, leads to significant brain shrinkage and dementia, especially when B-vitamins are deficient).<sup>18,27,52,53</sup>

Elderly people are now generally advised to maintain optimal B-vitamin status—and for good reason.<sup>13,54</sup> 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.<sup>53,55</sup>

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.<sup>56</sup>

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.<sup>56</sup> 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.<sup>57</sup> 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.<sup>58</sup>

### **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.<sup>59,60</sup>

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

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.<sup>64</sup>

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.<sup>65</sup> 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.<sup>66</sup>

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.<sup>67,68</sup> 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.<sup>69</sup> Animal studies reveal that supplementing with pomegranate juice slows the development of Alzheimer-like disease, a major cause of brain atrophy.<sup>69-71</sup> This protection may arise from the ability of the polyphenols in pomegranate to slow or stop brain cell death.<sup>72</sup>

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.<sup>73,74</sup>

### 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.<sup>75</sup> 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.<sup>76</sup> 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.<sup>77</sup>

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.<sup>78</sup> 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<sup>+</sup> Cell Regenerator

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

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

## How To Boost NAD<sup>+</sup> Levels Within Your Cells

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

For the first time, aging humans have an effective and affordable method to boost the critical **NAD<sup>+</sup>** 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** formula is **NAD<sup>+</sup> Cell Regenerator™**.

## Multiple Benefits Of Increasing NAD<sup>+</sup> Cellular Levels

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

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

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

The suggested daily dose of one **NAD<sup>+</sup> Cell Regenerator™** capsule provides:

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Item # 01904

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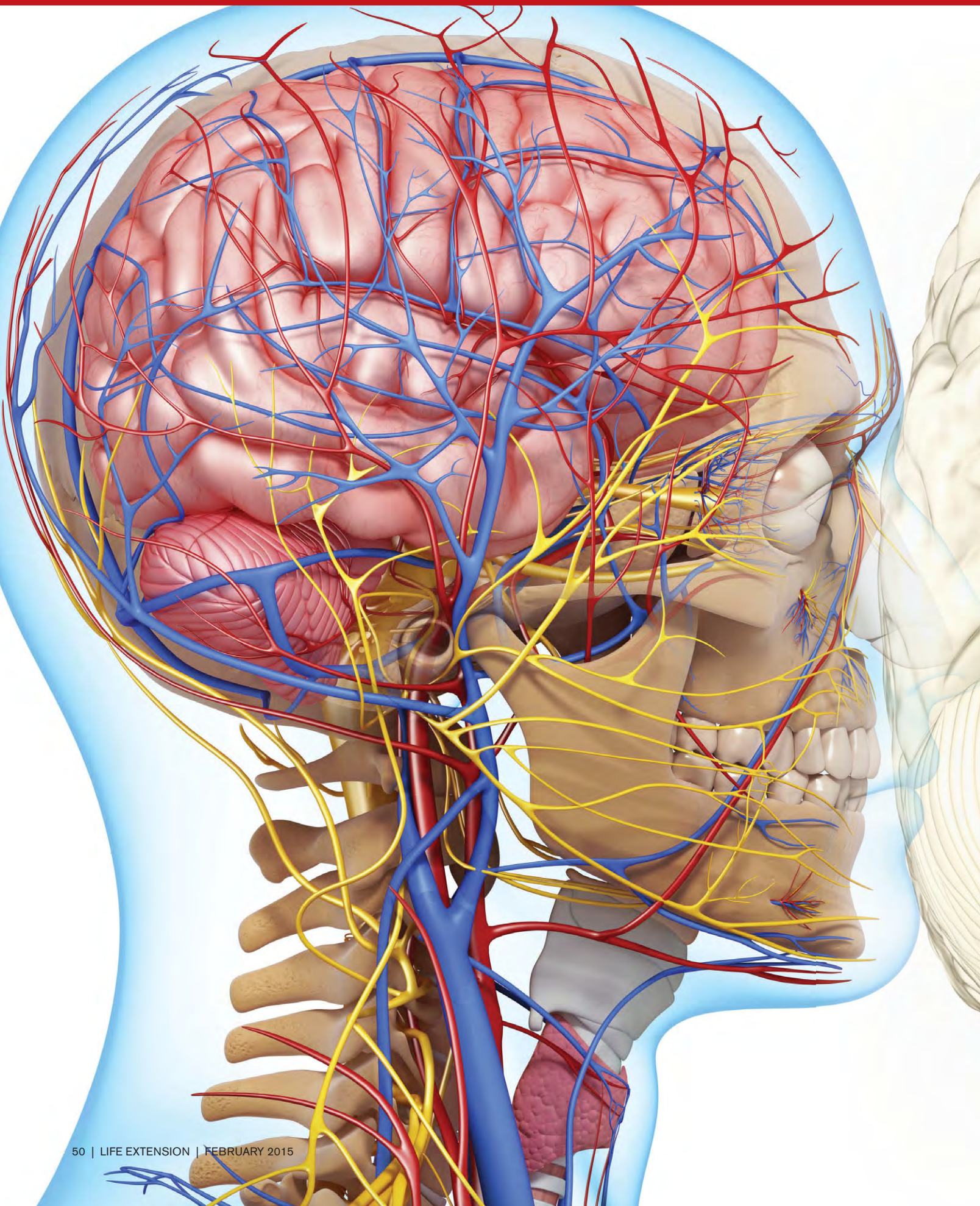
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Phosphatidylserine (from Sharp-PS <sup>®</sup> )	100 mg
Brain Shield <sup>®</sup> (Gastrodin)	50 mg
Vinpocetine	20 mg
Leucoselect <sup>®</sup> Grape Extract (seed)	150 mg
Wild Blueberry Extract	150 mg
BlueActiv <sup>™</sup> Sensoril <sup>®</sup> Ashwagandha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

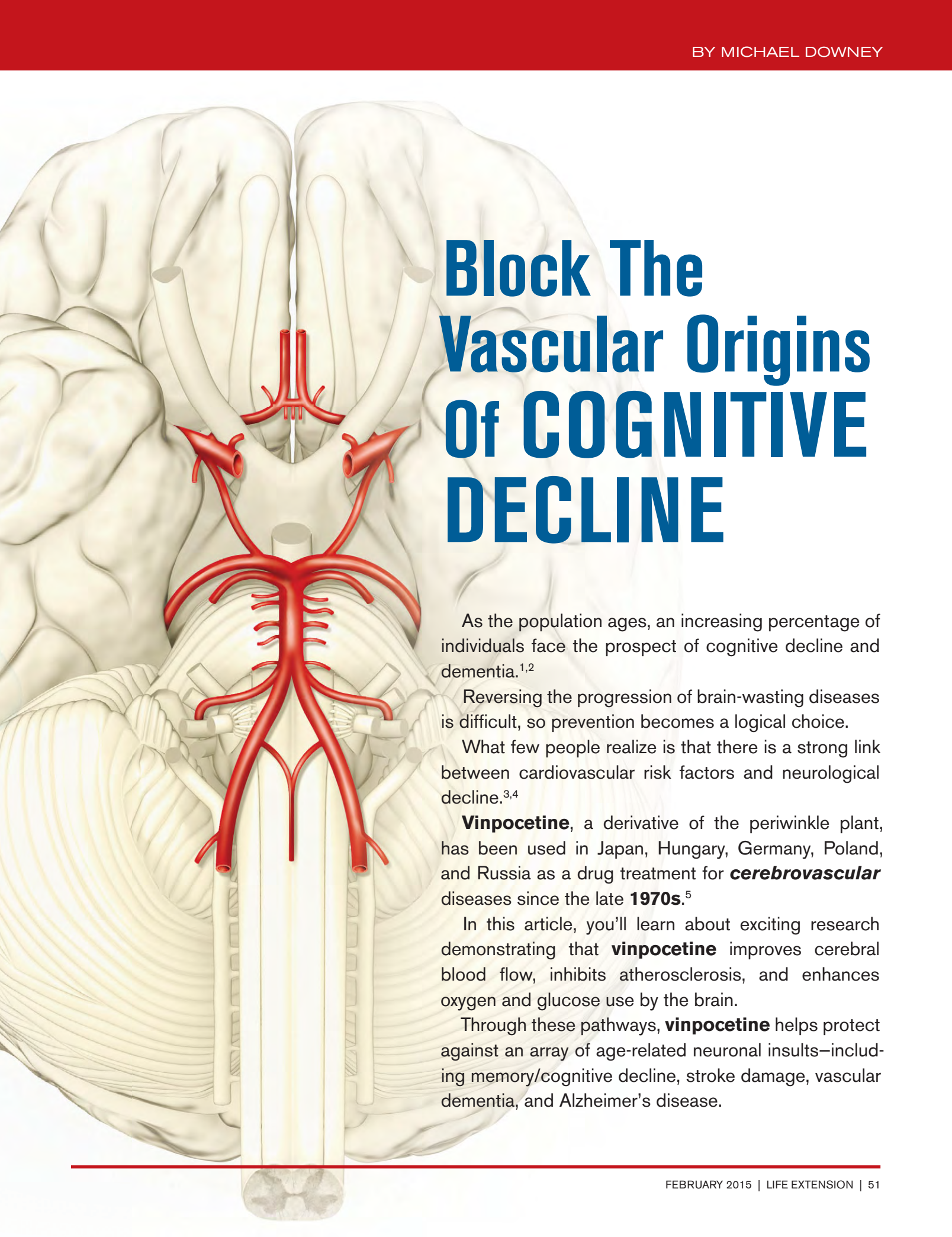
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# Block The Vascular Origins of COGNITIVE DECLINE

As the population ages, an increasing percentage of individuals face the prospect of cognitive decline and dementia.<sup>1,2</sup>

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.<sup>3,4</sup>

**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**.<sup>5</sup>

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.<sup>6</sup>

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.<sup>6</sup>

By the early **1990s**, researchers were finding links between heart disease and the beginning stages of Alzheimer's.<sup>6</sup> 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.<sup>7</sup>

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**.<sup>6</sup>

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.<sup>6</sup>

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.<sup>6</sup>

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.<sup>6</sup>

Total cerebral blood flow is **20%** lower in Alzheimer's disease patients than in those without dementia.<sup>7</sup> 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.<sup>6</sup>

## Effects Of Hypoperfusion On The Brain

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

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.<sup>6</sup> 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.<sup>6</sup>

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.<sup>6</sup>





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.<sup>24</sup> 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.<sup>25</sup> 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.<sup>26</sup>

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.<sup>6</sup>

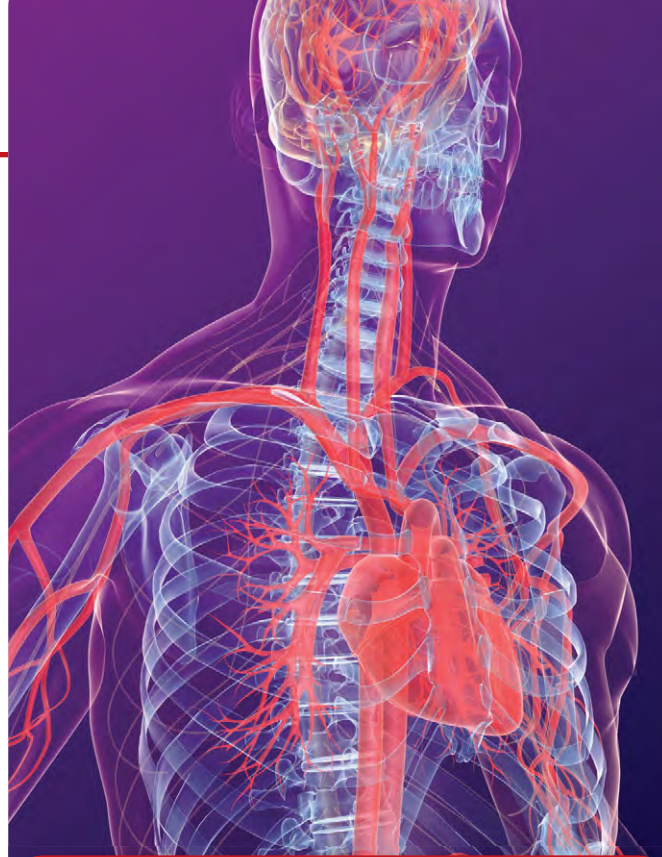
This suggestion—that hypoperfused neurons may still be rescued—has been supported by clinical research on the human brain.<sup>6</sup>

Accumulating evidence now shows that **vinpocetine**, a derivative of *vincamine* from the periwinkle plant,<sup>5</sup> 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.<sup>27</sup> 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.<sup>28</sup> 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.<sup>29</sup> As a result, evidence shows enhanced cerebral blood flow in patients with cerebrovascular disorders.<sup>28</sup>

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.<sup>28</sup>



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).<sup>28</sup>

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

Studies also show that vinpocetine enhances cerebral metabolism.<sup>28</sup> It accomplishes this by increasing the brain's oxygen<sup>30</sup> and glucose uptake from the blood<sup>31-34</sup> and by increasing neuronal production of ATP (adenosine triphosphate), a molecule that stores and transports chemical energy within cells for metabolism.<sup>35</sup>

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.<sup>28</sup>

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.<sup>28</sup>

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.<sup>36</sup>

## 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.<sup>37</sup>

### 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.<sup>38</sup>

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.<sup>39</sup>

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.<sup>28</sup>

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.<sup>37</sup>



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.<sup>40</sup>

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.”***<sup>41</sup>

### Alzheimer’s Disease

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

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.<sup>43</sup>

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.<sup>44</sup>

### 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.”***<sup>33</sup>

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

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.<sup>27</sup> Another study on mice and in cultured macrophages<sup>45</sup> 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.<sup>46</sup> The investigators discovered a novel role for vinpocetine in blocking the pathogenesis of atherosclerosis, at least partially through suppression of LOX-1 signaling.<sup>45</sup> ***“Given the excellent safety profile of vinpocetine, this study suggests vinpocetine may be a therapeutic candidate for treating atherosclerosis,”***<sup>45</sup> 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.<sup>47</sup>

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.<sup>48</sup>

### ***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.<sup>49</sup>

### ***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.<sup>50</sup>

### ***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.<sup>51</sup>

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.<sup>52</sup>

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.<sup>53,54</sup>





## Safety

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

## 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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## 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 **IBC** (*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.<sup>1-4</sup>

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

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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Item # 01468

Item # 01469

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

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



# 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.<sup>1-8</sup>

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

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:**

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

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

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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.<sup>1</sup>
- Promote memory.<sup>2</sup>
- Support healthy blood flow inside the brain.<sup>3</sup>
- Promote overall nervous system health.<sup>4</sup>
- Supports normal blood viscosity within the brain.<sup>5</sup>

## 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.<sup>6</sup> 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.<sup>7</sup>

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

## 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.<sup>9</sup>

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.



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# 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.<sup>1</sup> 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.<sup>2</sup> 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.<sup>3-5</sup> An apparent advance arrived with the development of a preparation that could simply be **inhaled**.<sup>6</sup>

While the FDA had deemed this novel insulin preparation safe and effective, many questions regarding its long-term health effects remained unresolved.<sup>7-9</sup> 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.<sup>10-12</sup> 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.<sup>13</sup>

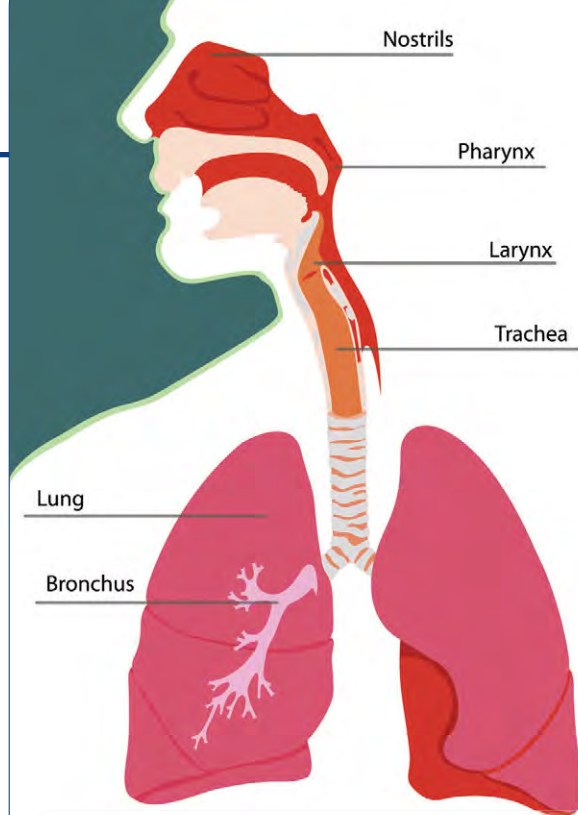
Unfortunately, on June 27, 2014, the FDA approved another inhaled insulin drug.<sup>7</sup> It is obvious that the FDA did not thoroughly look at the ill effects of inhaled insulin.

### 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.<sup>14,15</sup> Insulin facilitates various cellular metabolic functions. In addition to removing excess sugar from the blood, insulin also promotes cell division.<sup>16,17</sup>

Type I diabetes is characterized by a lack of insulin in the blood due to a deficiency of its production in the pancreas.<sup>18</sup> In type II diabetes, the pancreas does produce insulin, but the body's cells (estimated to be around 37 trillion in adults)<sup>19</sup> 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.<sup>20</sup> In the later stages of type II diabetes, the pancreas fails to secrete enough insulin,<sup>21</sup> 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.<sup>22,23</sup> 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.<sup>24</sup> 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.<sup>2</sup> 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.<sup>25</sup> There is even possible development of microneedles to deliver insulin subcutaneously, along with various transdermal and transmucosal delivery of insulin without needles.

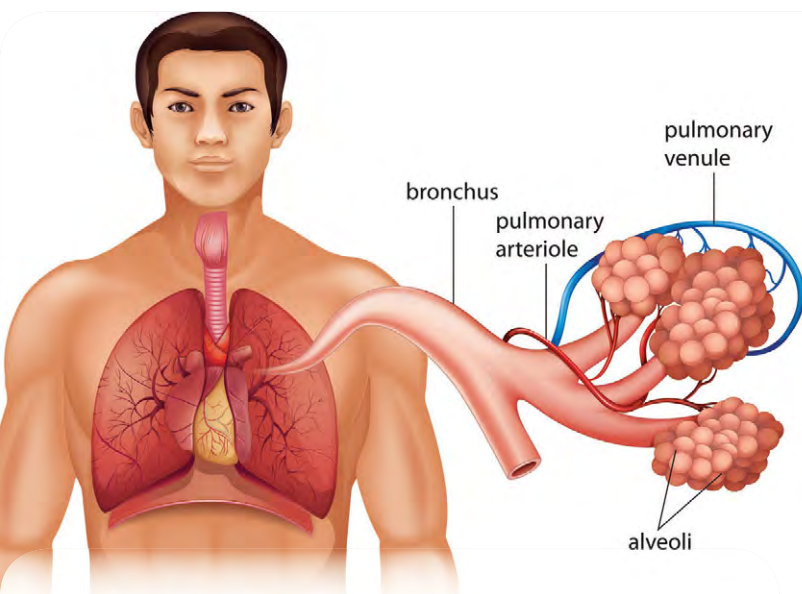


## Risk Of Using Inhaled Insulin

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.<sup>6,26</sup>

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).<sup>27</sup> 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.<sup>28</sup>

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.<sup>29</sup>



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.<sup>30</sup> 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.<sup>31,32</sup>

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.<sup>32</sup> 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,<sup>7,46,47</sup> 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,<sup>33</sup> which causes coughing, shortness of breath, sore throat, and dry mouth.<sup>34,35</sup>
- 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.<sup>36,37</sup>
- Exacerbation of existing conditions in asthmatics that would require more inhaled insulin to control blood sugar.<sup>7,38</sup> 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.<sup>39</sup>
- Adverse effects in people with pre-existing respiratory diseases such as chronic bronchitis, tuberculosis, tumors, and other chronic lung afflictions.<sup>8</sup>
- Increased insulin antibodies. In one study, inhaled insulin increased the level of insulin antibodies in the body from baseline levels of **6 to 35%.**<sup>40</sup> 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.<sup>13</sup> 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).<sup>41-43</sup>

If you visit [www.pubmed.gov](http://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,<sup>32,44,45</sup> 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.<sup>48</sup>

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.<sup>49</sup>

### 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.

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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.<sup>12</sup>

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**<sup>3-18</sup>—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*).<sup>5</sup>
- Promotes insulin sensitivity.<sup>6</sup>
- Regulates *PPAR-gamma*, a metabolic thermostat controlling glucose metabolism.<sup>6,7</sup>
- Regulates the enzyme *alpha-amylase*, which in turn controls the release of sugar found in starch.<sup>3,4</sup>

#### 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.<sup>8-10</sup>
- Supports glucose transporter *GLUT4* that moves glucose out of the bloodstream and into muscle and liver cells.<sup>11,12</sup>
- Promotes insulin sensitivity.<sup>13</sup>

#### Phloridzin

Phloridzin is a natural polyphenol found in various fruit trees.<sup>14</sup> 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.<sup>15,16</sup>
- Targeting carrier protein *SGLT2*, in turn supporting glucose elimination via urine.<sup>17,18</sup>

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:

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

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](http://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:

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



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



## 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**.<sup>1</sup>

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!<sup>2</sup>

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.

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

<i>Trans</i> -Resveratrol	250 mg
NIAGEN® Nicotinamide Riboside	100 mg
Grape-Berry Actives	40 mg
Quercetin	60 mg
<i>Trans</i> -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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Item# 01930



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.

If DYS426 is 12 and DYS392 is probably a member of ha

is 12 and DYS392  
one is 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 annually<sup>1</sup> and causes devastating cognitive, emotional, and physical deficits.<sup>2</sup>

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.<sup>2</sup>

Innovative physicians are discovering that brain trauma can trigger deficiencies in certain **hormones**.<sup>2</sup> 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.<sup>3</sup>

## Traumatic Brain Injury (TBI)

Survivors of traumatic brain injury (TBI) suffer from a broad spectrum of effects that often only show up decades later<sup>4</sup> and continue to get progressively worse.

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

TBI is caused by both primary and secondary injury.<sup>5</sup> Primary injury<sup>6</sup> occurs from the forces at the time of injury and is believed to be irreversible.<sup>7</sup>

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.<sup>8</sup>

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.<sup>9</sup>

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,<sup>10</sup> 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.<sup>11</sup> CTE develops in about **20%** of pro boxers.<sup>12</sup>

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.<sup>13</sup> But years before being named to the Pro Football Hall of Fame in 2003, he began showing TBI symptoms.<sup>14</sup>

“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?’”<sup>15</sup>

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.<sup>16</sup> Amyloid and tau are implicated in neurodegenerative diseases, such as Alzheimer's.<sup>17</sup>

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.<sup>18</sup> Evidence suggests that a high portion of retired football players develop CTE.<sup>19,20</sup>

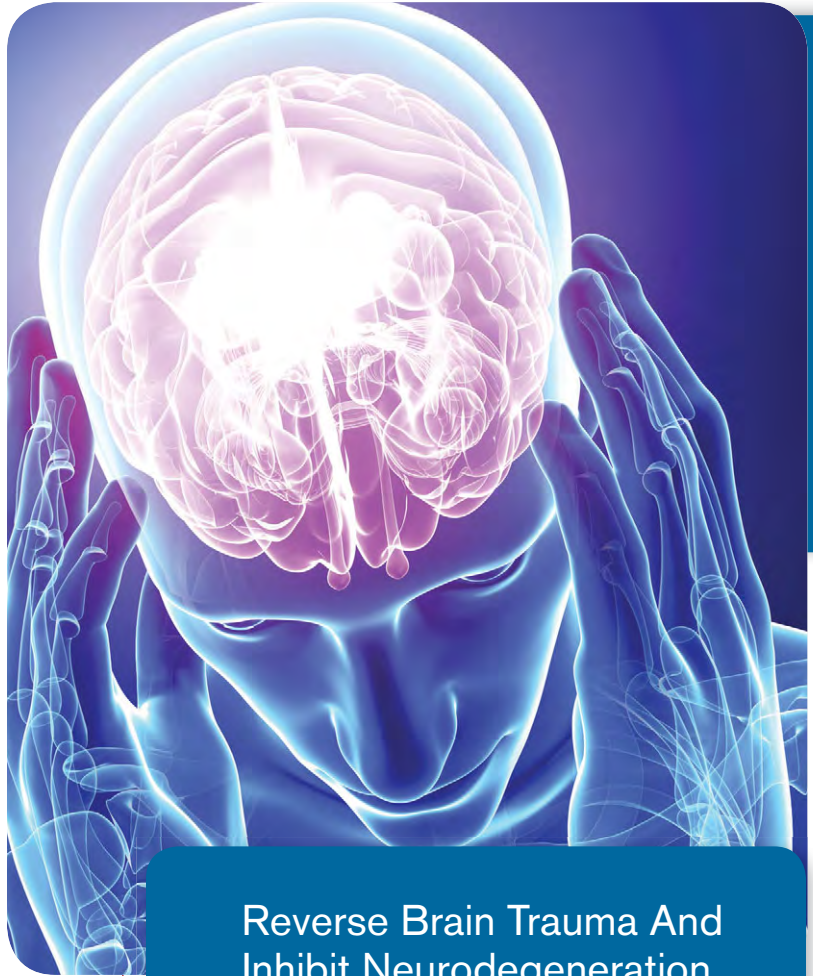
The autopsy conducted on ex-NFL safety André Waters after his 2006 death showed CTE, with substantial deposition of tau and neurofibrillary tangles—and a fatal, self-inflicted gunshot wound to the head.<sup>21</sup> Prior to his suicide, Waters had suffered from cognitive and neuropsychiatric impairment, including chronic depression, suicide attempts, insomnia, paranoia, and impaired memory.<sup>22</sup> 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.<sup>21</sup>

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.<sup>23</sup>

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.<sup>23</sup>

***"But PET scans can be clearly indicative and diagnostic for CTE,"*** disagrees Gino Tuter 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."<sup>24,25</sup>

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.<sup>60</sup>

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.<sup>61</sup>

Bioidentical hormones, however, are plant-based hormone substances that precisely match the molecular structure and functionality of human hormones. Dr. Tuter'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.<sup>62</sup> 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. Tuter, 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 Tuter 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 Tuter. “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. Tuter 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® is a pellet-implant delivery system of bioidentical hormones.<sup>26</sup>

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.<sup>26</sup>

This novel technique was first developed in Europe in 1935<sup>27</sup> and brought to the US four years later by the late Dr. Robert B. Greenblatt.<sup>28</sup> 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 Tuter. “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. Tuter'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 Tutura. “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 Tutura’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.

Tutura 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,<sup>29</sup> affecting at least **50 to 76%** of victims.<sup>30-32</sup> Sometimes hypopituitarism diagnoses are not made for more than 20 years after the injury.<sup>33</sup>

## 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.<sup>63</sup> 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.<sup>34</sup> Growth hormone binds to receptors found in the brain, especially in regions responsible for learning and memory.<sup>35,36</sup>

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.<sup>37</sup>

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.<sup>29</sup>

As a hormone that can penetrate the blood brain barrier, estradiol promotes neuronal growth.<sup>38</sup> 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.<sup>39</sup>

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

Recent findings,<sup>43</sup> confirming 27 prior studies,<sup>44</sup> 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.<sup>45</sup>

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

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.<sup>50</sup> Also, nicotinamide—when combined with progester-



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

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.<sup>52-54</sup>

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.<sup>3</sup>

And just as Dr. Tuter 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 disease<sup>3</sup>—the sixth-leading cause of death in the US.<sup>56</sup>

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.<sup>3</sup>

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.<sup>57</sup>

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.<sup>57</sup> 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.<sup>58</sup>

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.<sup>4</sup> Tuter 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.<sup>59</sup>

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](http://www.sottopelletherapy.com) or call 480-874-1515 to set up an appointment.

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### 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

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

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320 mg	Maca
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	Norway Spruce lignan extract



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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.<sup>1</sup> Research points to sage's power to help lower glucose, cholesterol, and triglyceride levels in diabetics,<sup>2</sup> enhance mood and cognitive performance,<sup>3</sup> inhibit inflammation,<sup>4,5</sup> and reduce the hot flashes of menopause.<sup>6</sup> But perhaps most remarkable, experts now recognize the memory-enhancing capacity of sage in individuals with<sup>7</sup> and without<sup>8</sup> 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.<sup>9</sup>

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, ursonic 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.<sup>1</sup>

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

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

## 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).<sup>2</sup>

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

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.<sup>16</sup>

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."<sup>8</sup>

## 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.<sup>3</sup>

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."<sup>3</sup>



## 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.<sup>17</sup>

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

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.<sup>19</sup>

Sage extracts have been shown to inhibit NF- $\kappa$ B, 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.<sup>19</sup>

This review also found that sage extracts can:<sup>19</sup>

- Decrease pro-inflammatory interleukin-6 (IL-6),
- Inhibit release of tumor necrosis factor (TNF- $\alpha$ ), 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:<sup>20</sup>

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%**.<sup>2</sup>

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.<sup>6</sup>

## 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,  
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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.<sup>1</sup>

To maintain health, the current Reference Daily Intake (RDI) of magnesium for adults is **310 to 420 mg** a day.<sup>2,3</sup> 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.<sup>4,5</sup>

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.<sup>6</sup> 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.<sup>7-9</sup>

### 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.<sup>10</sup> Continual low intake and absorption produces changes in biochemical pathways, which can increase the development of a wide array of disease and illness.<sup>11</sup>

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.<sup>7,12-15</sup>

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.<sup>16-18</sup> Emerging research shows low magnesium levels are associated with cardiovascular and high all-cause mortality.<sup>19</sup> Numerous studies recognize the value of magnesium in the presentation of lifestyle-related diseases such as heart disease, diabetes, and metabolic syndrome.<sup>20-22</sup> 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.<sup>23</sup> Research priorities include refining the magnesium requirement and understanding how a magnesium deficiency influences the incidence of inflammatory-related disorders.<sup>24</sup>

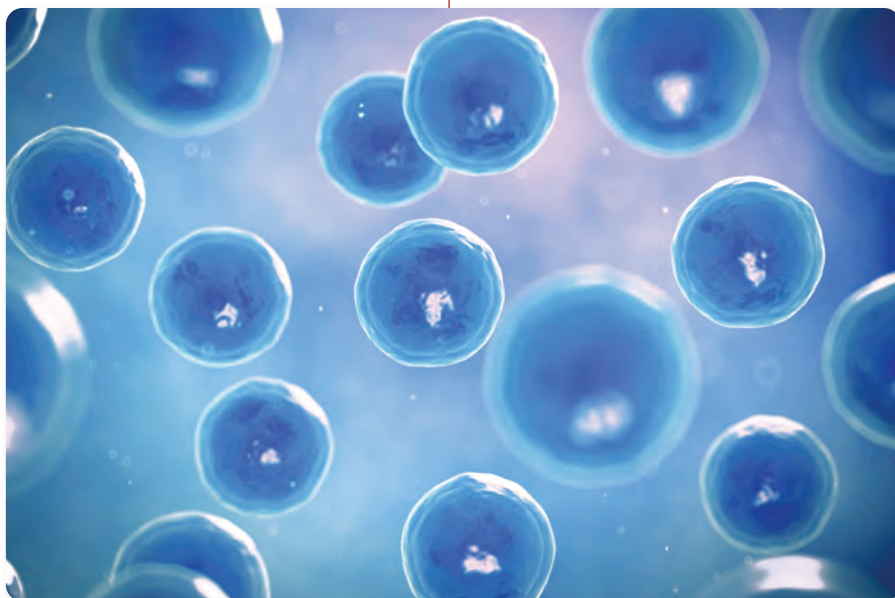
### Magnesium, Medication, And Health Care Providers

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

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.<sup>28-30</sup>

Medications, including over-the-counter drugs, deplete your body of critical nutrients. This exacerbates the existing problem most Americans suffer from—a nutrient deficiency.<sup>31</sup> 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.<sup>32,33</sup>

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.<sup>34,35</sup> 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.<sup>36</sup>







## 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.<sup>37,38</sup> 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.<sup>39</sup> 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 Magnesium<sup>40</sup>

### 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)
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- Levonorgestrel (birth control)

Kimmi Stultz, PharmD, CPH is a member of the American Pharmacists Association Foundation, American Academy of Anti-Aging Medicine, and a clinical pharmacy educator for the Life Extension Foundation®.

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!<sup>1</sup>

2. **Celery seed extract** contains **3-n-butylphthalide (3nB)**, which supports a healthy inflammatory response that is critical to maintaining a healthy circulatory system.<sup>2</sup> **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.<sup>3,4</sup>

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!<sup>5</sup>

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.

To order Advanced Olive Leaf Vascular Support with Celery Seed Extract, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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

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

<b>Benolea® Olive extract (leaf)</b>	<b>1,000 mg</b>
[standardized to 16% oleuropein (160 mg)]	
<b>Celery3nB™ Celery seed extract</b>	<b>300 mg</b>
[standardized to 42.5% phthalides (butylphthalide and sedanolide (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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# 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**.<sup>1</sup>

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.<sup>2</sup>

## 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.<sup>1,3</sup> Studies using *magnesium-L-threonate* show this unique form of magnesium maintains the quantity of synaptic connections between brain cells and inhibits the dysregulation of signaling pathways.<sup>1</sup>

## 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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To order **Neuro-Mag™ Magnesium L-Threonate Capsules** or Powder call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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Item # 01602



Item # 01603



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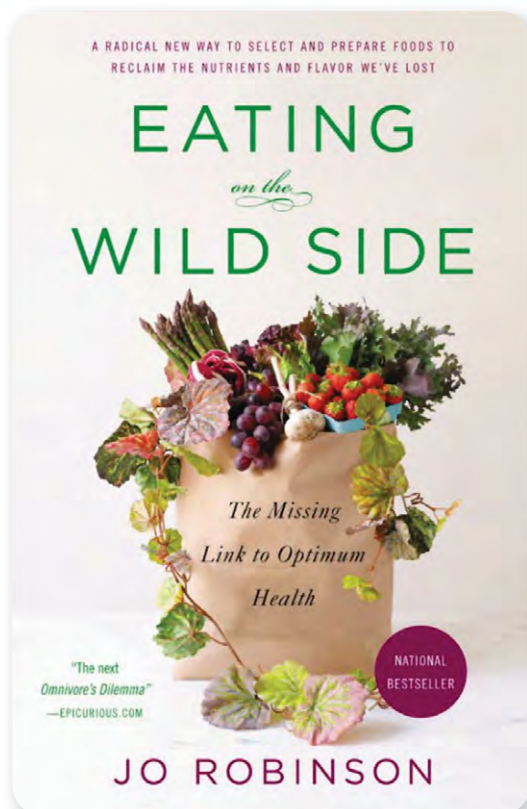


## Eating On The Wild Side

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*<sup>®</sup>, 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 19<sup>th</sup> and 20<sup>th</sup> 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 21<sup>st</sup> 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 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.

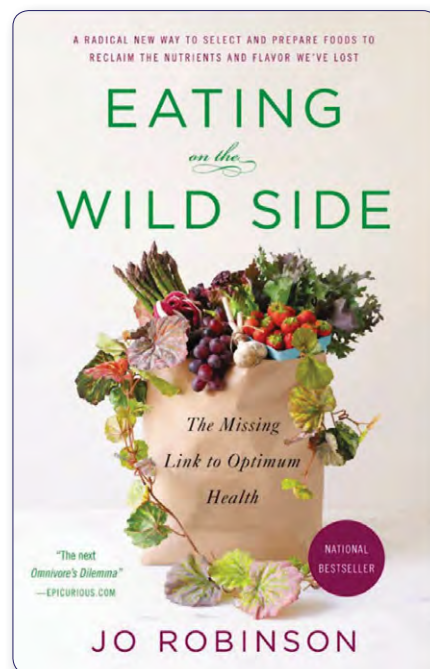
**LE:** I think we've provided the readers with great advice on how to get the most nutrition from the foods they eat—and which foods to choose and what to avoid. Thank you. ●

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

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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## MOST POPULAR PANELS

### Life Extension Member Pricing

<p><b>COMPREHENSIVE PANELS</b></p> <p><b>MALE LIFE EXTENSION PANEL (LC322582) \$269</b>  <b>Chemistry Profile</b> includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. <b>CBC</b> includes immune (white) cell count, red blood cell count and platelet count. Also includes: <b>C-Reactive Protein</b>, <b>DHEA-S</b>, <b>TSH for thyroid function</b>, <b>Estradiol</b>, <b>Vitamin D 25- hydroxy</b>, <b>Hemoglobin A1c</b>, <b>Homocysteine</b>, <b>Free Testosterone</b>, <b>Total Testosterone</b>, <b>PSA (prostate-specific antigen)</b></p>	<p><b>THE CBC/CHEMISTRY PROFILE (LC381822) \$35</b>  <b>Note:</b> This CBC/Chemistry Profile is included in many Life Extension panels. Please check panel descriptions.</p> <p><b>CARDIOVASCULAR RISK PROFILE</b>  Total Cholesterol      Cholesterol/HDL Ratio  HDL Cholesterol      Estimated CHD Risk  LDL Cholesterol      Glucose  Triglycerides      Iron</p> <p><b>LIVER FUNCTION PANEL</b>  AST (SGOT)      Total Bilirubin  ALT (SGPT)      Alkaline Phosphatase  LDH</p>
<p><b>FEMALE LIFE EXTENSION PANEL (LC322535) \$269</b>  <b>Chemistry Profile</b> includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. <b>CBC</b> includes immune (white) cell count, red blood cell count and platelet count. Also includes: <b>C-Reactive Protein</b>, <b>DHEA-S</b>, <b>TSH for thyroid function</b>, <b>Estradiol</b>, <b>Progesterone</b>, <b>Hemoglobin A1c</b>, <b>Homocysteine</b>, <b>Free Testosterone</b>, <b>Total Testosterone</b>, <b>Vitamin D 25- hydroxy</b></p>	<p><b>KIDNEY FUNCTION PANEL</b>  BUN      BUN/Creatinine Ratio  Creatinine      Uric Acid</p> <p><b>BLOOD PROTEIN LEVELS</b>  Total Protein      Globulin  Albumin      Albumin/Globulin Ratio</p> <p><b>BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE</b>  Red Blood Cell Count      Monocytes  White Blood Cell Count      Lymphocytes  Eosinophils      Platelet Count  Basophils      Hemoglobin  Polys (Absolute)      Hematocrit  Lymphs (Absolute)      MCV  Monocytes (Absolute)      MCH  Eos (Absolute)      MCHC  Baso (Absolute)      Polynucleated Cells  RDW</p>
<p><b>WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028) \$275</b>  CBC/Chemistry profile (see description at right), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin A1c, Vitamin D 25-hydroxy, C-reactive protein (high sensitivity), and Ferritin.</p>	<p><b>BLOOD MINERAL PANEL</b>  Calcium      Sodium  Potassium      Chloride  Phosphorus      Iron</p>
<p><b>WEIGHT LOSS PANEL-BASIC (LC100027) \$130</b>  CBC/Chemistry profile (see description above right), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Insulin and Hemoglobin A1c.</p>	<p><b>COMPREHENSIVE THYROID PANEL (LC100018) \$199</b>  TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA</p>
<p><b>MALE HORMONE ADD-ON PANEL (LCADDM)* \$155</b>  <b>Pregnenolone and Dihydrotestosterone (DHT)</b>  To provide an even more in-depth analysis of a man's hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.</p>	<p><b>FOOD SAFE ALLERGY TEST** (LCM73001) \$198</b>  This test measures delayed (IgG) food allergies for 95 common foods.</p>
<p><b>FEMALE HORMONE ADD-ON PANEL (LCADDF)* \$125</b>  <b>Pregnenolone and Total Estrogens</b>  To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.</p>	<p><b>ADRENAL FUNCTION PANEL (LC100021) \$136</b>  DHEA-S, AM/PM Cortisol, Glucose, Insulin, Lipid Panel, RBC magnesium</p>
<p><b>LIFE EXTENSION THYROID PANEL (LC304131) \$75</b>  TSH, T4, Free T3, Free T4.</p>	<p><b>HEALTHY AGING PANEL-COMPREHENSIVE† (LC100026) \$249</b>  CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Homocysteine, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Free T3, Free T4, Ferritin, Urinalysis, Fibrinogen, and Insulin.</p>
<p><b>FEMALE COMPREHENSIVE HORMONE PANEL* (LC100011) \$299</b>  CBC/Chemistry Profile (see description above right), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.</p>	<p><b>HEALTHY AGING PANEL-BASIC† (LC100025) \$149</b>  CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Ferritin, and Insulin.</p>
<p><b>MALE COMPREHENSIVE HORMONE PANEL* (LC100010) \$299</b>  CBC/Chemistry Profile (see description above right), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.</p>	<p><b>VAP™ TEST* (LC804500) \$90</b>  The VAP™ cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.</p> <p><b>VAP™ PLUS* (LC100009) \$330</b>  VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy.</p>

\* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit and will incur an additional \$35 charge. If the customer is having blood drawn at a LabCorp facility, this extra charge does not apply.

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





## Other Popular Tests and Panels Life Extension Member Pricing

<input type="radio"/> <b>NUTRIENT PANEL<sup>†</sup> (LC100024)</b>	<b>\$349</b>	<input type="radio"/> <b>HORMONES</b>	<b>\$61</b>
Vitamin B12, Folate, Vitamin D 25-hydroxy, Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC magnesium.		<input type="radio"/> <b>DHEA-SULFATE (LC004020)</b>	This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.
<input type="radio"/> <b>ENERGY PROFILE (LC100005)</b>	<b>\$375</b>	<input type="radio"/> <b>MALE BASIC HORMONE PANEL (LC100012)</b>	<b>\$75</b>
CBC/Chemistry Profile (see description previous page), Epstein-Barr Virus antibodies (IgG and IgM), Cytomegalovirus Antibodies (IgG and IgM), Ferritin, Total and Free Testosterone, DHEA-S, Free T3, Free T4, Cortisol, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Insulin.		<input type="radio"/> <b>FEMALE BASIC HORMONE PANEL (LC100013)</b>	<b>\$75</b>
<input type="radio"/> <b>ANEMIA PANEL* (LC100006)</b>	<b>\$86</b>	<input type="radio"/> <b>DHYDROTESTOSTERONE (DHT)* (LC500142)</b>	<b>\$99</b>
CBC/Chemistry Profile (see description previous page), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.		<input type="radio"/> <b>ESTRADIOL (LC004515)</b>	<b>\$33</b>
<input type="radio"/> <b>INFLAMMATION PANEL (LC100007)</b>	<b>\$135</b>	<input type="radio"/> <b>INSULIN FASTING (LC004333)</b>	<b>\$25</b>
CBC/Chemistry Profile (see description previous page), C-Reactive Protein (high sensitivity), Sedimentation Rate, Rheumatoid (RA) Factor, Antinuclear Antibodies (ANA) Screen.		<input type="radio"/> <b>PREGNENOLONE* (LC140707)</b>	<b>\$116</b>
<input type="radio"/> <b>THYROID ANTIBODY PROFILE (LC100004)</b>	<b>\$99</b>	<input type="radio"/> <b>PROGESTERONE (LC004317)</b>	<b>\$55</b>
Thyroid Antithyroglobulin Antibody (ATA) and Thyroid Peroxidase Antibody (TPO).		<input type="radio"/> <b>SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)</b>	<b>\$33</b>
<input type="radio"/> <b>CARDIAC PLUS* (LC100008) \$145</b>		<input type="radio"/> <b>GENERAL HEALTH</b>	
CBC/Chemistry profile (see description previous page), Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Fibrinogen, Homocysteine.		<input type="radio"/> <b>VITAMIN D (25OH) (LC081950)</b>	<b>\$47</b>
<input type="radio"/> <b>Lp-PLA2 (PLAC<sup>®</sup> TEST) (LC123240)</b>	<b>\$125</b>	<input type="radio"/> <b>FERRITIN (LC004598)</b>	<b>\$28</b>
This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.		<input type="radio"/> <b>VITAMIN B12/FOLATE (LC000810)</b>	<b>\$33</b>
<input type="radio"/> <b>GLYCOMARK (LC500115)</b>	<b>\$99</b>		
This test measures your average <b>maximum</b> glucose over the past two weeks and is an effective tool in monitoring postmeal glucose control.			
<input type="radio"/> <b>CANCER RISK TESTING</b>			
<input type="radio"/> <b>IGF-1 (LC010363)</b>	<b>\$75</b>		
High levels of IGF-1 (Insulin-like growth factor) are associated with breast and prostate cancer.			
<input type="radio"/> <b>NATURAL KILLER CELL SURFACE ANTIGEN (LC505016)</b>	<b>NEW \$110</b>		
Natural Killer (NK) Cells are highly selective white blood cells found in our immune system. They patrol the body looking for cells that are infected with cancer or other viruses. This test measures the number of natural killer cells but it does not measure their activity.			
<input type="radio"/> <b>PSA (PROSTATE SPECIFIC ANTIGEN) (LC010322)</b>	<b>\$31</b>		
Screening test for prostate disorders and possible cancer.			
<input type="radio"/> <b>GALECTIN-3 (LC004110)</b>	<b>\$90</b>		
Increased concentrations of galectin-3 are prevalent in growing cancers such as prostate, ovarian and breast.			

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

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

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

## ORDER LIFE-SAVING BLOOD TESTS FROM VIRTUALLY ANYWHERE IN THE US!

### TERMS AND CONDITIONS

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

Signature of Life Extension Member

X

Life Extension Foundation Members only

MEMBER NO.

☐ Male ☐ Female

Name

Date of Birth  
(required) / /

Address

City

State

Zip

Phone

Credit Card No.

Expiration Date /

Mail your order form to:

**LifeExtension<sup>®</sup>**  
National Diagnostics, Inc.

3600 West Commercial Boulevard  
Fort Lauderdale, FL 33309

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

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

Certain restrictions apply for residents of MA, NY, NJ, RI, and PA. Customers in MA, NY, NJ, and RI will receive a blood draw kit, and an additional local blood draw fee may be incurred. PA customers must go to LabCorp for their blood draw; we are unable to send kits of any kind.

# PRODUCTS

## AMINO ACIDS

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

## BONE & JOINT HEALTH

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

## BRAIN HEALTH

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

## DIGESTIVE

Bifido GI Balance  
Carnosoothe w/PicroProtect  
Digest RC™  
Esophageal Guardian  
Enhanced Super Digestive Enzymes  
Extraordinary Enzymes  
FlorAssist® Probiotic  
Gutsy Chewy Digestive Tablets  
Pancreatin  
Regimint  
Theralac Probiotics

## DURK AND SANDY PRODUCTS

Blast™  
Inner Power™

## EYE CARE

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

## FIBER

AppleWise Polyphenol  
Fiber Food  
TruFiber®  
WellBetX PGX® plus Mulberry

## FOOD

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

## HAIR CARE

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

## HEART HEALTH

AppleWise Polyphenol  
Advanced Lipid Control  
Advance Olive Leaf Vascular Support  
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®  
PhosphOmega®  
Policosanol  
PROVINAL® Purified Omega-7  
Pycnogenol® French Maritime Pine Bark Extract  
Red Yeast Rice  
Super Absorbable CoQ10™ with d-Limonene  
Super Omega-3 EPA/DHA with Sesame  
Lignans & Olive Fruit Extract  
Super 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  
Kyoic® Garlic Formula 102 + 105  
Kyoic® 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-Arginate  
Mitochondrial Basics w/BioPQQ®  
Mitochondrial Energy Optimizer w/BioPQQ®  
Optimized Carnitine with GlycoCarn®  
Super Absorbable CoQ10™ with d-Limonene  
Super Alpha Lipoic Acid with Biotin  
Super R-Lipoic Acid  
Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

## MOOD RELIEF

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

No.		Retail Each	Member Each	Qty	Total
<b>A</b>					
01524	<b>ACETYL-L-CARNITINE</b> - 500 mg, 100 veg. caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
01525	<b>ACETYL-L-CARNITINE ARGINATE</b> - 100 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01628	<b>ADRENAL ENERGY FORMULA</b> - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01630	<b>ADRENAL ENERGY FORMULA</b> - 120 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	42.00	31.50		
01828	<b>ADVANCED LIPID CONTROL</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	<b>ADVANCED ORAL HYGIENE</b> - 60 mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	<b>AHCC</b> - 500 mg, 30 caps	59.98	44.99		
00457	<b>ALPHA-LIPOIC ACID w/BIOTIN (SUPER)</b> - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01907	<b>AMPK ACTIVATOR</b> - 90 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01440	<b>ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO</b> - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01509	<b>ANTI-ADIPOCYTE FORMULA w/MERATRIM® &amp; INTEGRA LEAN® (ADVANCED)</b> - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01625	<b>APPLEWISE POLYPHENOL EXTRACT</b> - 600 mg, 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	<b>ARGININE/ORNITHINE</b> - 500/250, 100 caps	17.99	13.49		
00038	<b>ARGININE/ORNITHINE POWDER</b> - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	<b>(L)-ARGININE CAPS</b> - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01617	<b>ARTHROMAX® w/THEAFLAVINS &amp; APRESFLEX®</b> - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01618	<b>ARTHROMAX® ADVANCED w/UC-II® &amp; APRESFLEX®</b> - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01404	<b>ARTHRO-IMMUNE JOINT SUPPORT</b> - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00919	<b>ARTICHOKE LEAF EXTRACT</b> - 500 mg, 180 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01533	<b>ASCORBYL PALMITATE</b> - 500 mg, 100 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
00888	<b>ASHWAGANDHA EXTRACT (OPTIMIZED)</b> - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
01805	<b>ASIAN ENERGY BOOST</b> - 90 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01066	<b>ASPIRIN</b> - 81 mg, 300 enteric coated tablets	6.00	4.50		
	Buy 4 bottles, price each	5.33	4.00		
01720	<b>ASTAXANTHIN WITH PHOSPHOLIPIDS</b> - 4 mg, 30 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
<b>B</b>					
00920	<b>BENFOTIAMINE w/ THIAMINE</b> - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	<b>BENFOTIAMINE (MEGA)</b> - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		

**SUB-TOTAL OF COLUMN 1**

FEBRUARY 2015

**SUPER SALE SAVINGS ON ALL PRODUCTS**  
To order call 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
01206	<b>BERRY COMPLETE</b> - 30 veg. caps	\$21.00	\$15.75		
	Buy 4 bottles, price each	18.67	14.00		
01496	<b>BERRY COMPLETE w/ACAI (ENHANCED)</b> - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	<b>BETA-CAROTENE</b> - 25,000 IU, 100 softgels	11.25	8.44		
01622	<b>BIFIDO GI BALANCE</b> - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	<b>BILBERRY EXTRACT</b> - 100 mg, 100 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01512	<b>BIOACTIVE MILK PEPTIDES</b> - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	<b>BIO-COLLAGEN w/PATENTED UC-II®</b> - 40 mg, 60 small caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	<b>BIOSIL™</b> - 5 mg, 30 veg. caps	18.95	15.16		
*01007	<b>BIOSIL™</b> - 1 fl oz	31.99	25.59		
00102	<b>BIOTIN</b> - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
01709	<b>BLACK CUMIN SEED OIL</b> - 60 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01710	<b>BLACK CUMIN SEED OIL w/BIO-CURCUMIN®</b> - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01008	<b>BLAST™</b> - 600 grams of powder	26.95	20.21		
70000	<b>BLOOD PRESSURE MONITOR</b> - ARM CUFF (medium)	99.95	49.99		
70004	<b>BLOOD PRESSURE MONITOR</b> - WRIST (cuff)	69.95	52.46		
01214	<b>BLUEBERRY EXTRACT</b> - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	<b>BLUEBERRY EXTRACT w/ POMEGRANATE</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01506	<b>BONE FORMULA (DR. STRUM'S INTENSIVE)</b> - 300 caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01726	<b>BONE RESTORE</b> - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01727	<b>BONE RESTORE w/VITAMIN K2</b> - 120 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01725	<b>BONE STRENGTH FORMULA w/KOACT®</b> - 120 caps	45.00	33.75		
	Buy 4 bottles, price each	40.00	30.00		
00313	<b>BONE-UP®</b> - 240 caps	28.95	21.71		
	Buy 4 bottles, price each	27.21	20.41		
01379	<b>BOOSTER</b> - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01980	<b>BOOSTER w/MACUGUARD™ OCULAR SUPPORT (SUPER)</b> - 60 softgels	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
01661	<b>BORON</b> - 3 mg, 100 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		
00202	<b>BOSWELLA</b> - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	30.00	22.50		
01802	<b>BRAIN SHIELD® GASTRODIN</b> - 60 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01253	<b>BRANCHED CHAIN AMINO ACIDS</b> - 90 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.00	12.75		
01699	<b>BREAST HEALTH FORMULA</b> - 60 caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	<b>BRITE EYES III</b> - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		

**SUB-TOTAL OF COLUMN 2**

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](http://www.LifeExtension.com/SuperSale)

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01203	<b>BROMELAIN (SPECIALLY-COATED)</b> - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	\$21.00 19.00	\$15.75 14.25		
00884	<b>BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID</b> - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
<b>C</b>					
01653	<b>CALCIUM CITRATE w/VITAMIN D</b> - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
01651	<b>CALCIUM D-GLUCARATE</b> - 200 mg, 60 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
***01823	<b>CALREDUCE SELECTIVE FAT BINDER</b> - 120 mint chewable tablets Buy 4 bottles, price each	45.00 38.00	33.75 28.50		
01700	<b>CARDIO PEAK™ w/STANDARDIZED HAWTHORN &amp; ARJUNA</b> - 120 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00916	<b>CARNITINE w/GLYCOCARN® (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01532	<b>L-CARNITINE</b> - 500 mg, 30 veg. caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01258	<b>CARNOSOOTHE w/PICROPROTECT™</b> - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01687	<b>CARNOSINE (SUPER)</b> - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	<b>CAT MIX</b> - 100 grams powder Buy 4 jars, price each	15.00 12.00	11.25 9.00		
01891	<b>CHILDREN'S FORMULA LIFE EXTENSION MIX™</b> - 100 chewable tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00550	<b>CHLORELLA</b> - 500 mg, 200 tablets	23.50	17.63		
01571	<b>CHLOROPHYLLIN</b> - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	<b>CHO-LESS™</b> - 90 capsules	35.00	26.25		
01477	<b>CHROMIUM ULTRA</b> - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	<b>CHROMIUM W/CROMINEX® 3+ (OPTIMIZED)</b> - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
01503	<b>CINSULIN® W/INSEAL® AND CROMINEX® 3+</b> - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
01906	<b>CISTANCHE (STANDARDIZED)</b> - 30 veg. caps Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01818	<b>CITRIMAX® (SUPER)</b> - 180 veg. caps Buy 4 bottles, price each	40.00 38.00	30.00 28.50		
00818	<b>CLA BLEND w/SESAME LIGNANS (SUPER)</b> - 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	<b>CLA BLEND w/GUARANA &amp; SESAME (SUPER)</b> -3,000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01896	<b>COGNITEX® w/BRAIN SHIELD®</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	60.00 52.00 48.00	45.00 39.00 36.00		
01897	<b>COGNITEX® w/PREGNENOLONE &amp; BRAIN SHIELD®</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	62.00 53.00 50.00	46.50 39.75 37.50		
01421	<b>COGNITEX® BASICS</b> - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		

**SUB-TOTAL OF COLUMN 3**

No.		Retail Each	Member Each	Qty	Total
01659	<b>COGNIZIN® CDP CHOLINE CAPS</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$36.00 34.00	\$27.00 25.50		
01735	<b>COMPLETE B-COMPLEX</b> - 60 veg. caps Buy 4 bottles, price each	10.00 9.00	7.50 6.75		
01998	<b>COMPREHENSIVE NUTRIENT PACKS ADVANCED</b> - 30 packs Buy 4 boxes, price each	90.00 82.00	67.50 61.50		
00119	<b>COPPER CAPSULES</b> - 2 mg, 100 caps	9.91	7.43		
00949	<b>COQ10 w/ α-LIMONENE (SUPER-ABSORBABLE)</b> - 50 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	25.00 22.00 20.00	18.75 16.50 15.00		
00950	<b>COQ10 w/ α-LIMONENE (SUPER-ABSORBABLE)</b> - 100 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	66.00 60.00 56.00	49.50 45.00 42.00		
01226	<b>COQ10 (SUPER-UBIQUINOL)</b> - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	56.00 48.00 44.00	42.00 36.00 33.00		
01733	<b>COQ10 w/BIOPOQ® (SUPER UBIQUINOL)</b> - 100 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	54.00 44.00 40.00	40.50 33.00 30.00		
01426	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 52.00 48.00	46.50 39.00 36.00		
01425	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 46.00 42.00	43.50 34.50 31.50		
01427	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -50 mg, 30 softgels Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01431	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -200 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 52.00 48.00	46.50 39.00 36.00		
80154	<b>COSMESIS ADVANCED LIGHTENING CREAM</b> - 1 oz jar Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80155	<b>COSMESIS ADVANCED PEPTIDE HAND THERAPY</b> - 4 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80152	<b>COSMESIS ADVANCED TRIPLE PEPTIDE SERUM</b> - 1 oz bottle Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80140	<b>COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS</b> - .33 oz Buy 2 bottles, price each	49.00 42.00	36.75 31.50		
80139	<b>COSMESIS AMBER SELF MICRODERMABRASION</b> - 2 oz Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80118	<b>COSMESIS ANTI-AGING MASK</b> - 2 oz Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80151	<b>COSMESIS ANTI-AGING REJUVENATING FACE CREAM</b> - 2 oz jar Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80153	<b>COSMESIS ANTI-AGING REJUVENATING SCALP SERUM</b> - 2 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80134	<b>COSMESIS ANTI-GLYCATION SERUM</b> - 1 oz w/BLUEBERRY & POMEGRANATE EXTRACTS Buy 2 bottles, price each	33.00 31.35	24.75 23.51		
80133	<b>COSMESIS ANTIOXIDANT FACIAL MIST</b> - 2 oz Buy 2 bottles, price each	32.00 30.40	24.00 22.80		
80127	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM</b> - 2 oz Buy 2 jars, price each	45.00 42.80	33.75 32.10		
80128	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB</b> - 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

No.		Retail Each	Member Each	Qty	Total
<b>C CONTINUED</b>					
80117	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz</b>	\$64.00	\$48.00		
	Buy 2 jars, price each	57.49	43.12		
80121	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz</b>	58.00	43.50		
	Buy 2 jars, price each	51.04	38.28		
80105	<b>COSMESIS ANTI-REDNESS &amp; ADULT BLEMISH LOTION - 1 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80147	<b>COSMESIS BIOFLAVONOID CREAM - 1 oz jar</b>	46.00	34.50		
	Buy 2 jars, price each	39.00	29.25		
80144	<b>COSMESIS BROCCOLI SPROUT CREAM - 1 oz</b>	46.00	34.50		
	Buy 2 jars, price each	39.00	29.25		
80120	<b>COSMESIS CORRECTIVE CLEARING MASK - 2 oz</b>	64.50	48.38		
	Buy 2 jars, price each	56.76	42.57		
80141	<b>COSMESIS DNA REPAIR CREAM - 1 oz jar</b>	49.00	36.75		
	Buy 2 jars, price each	42.00	31.50		
80108	<b>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz</b>	74.95	56.21		
	Buy 2 bottles, price each	65.95	49.46		
80123	<b>COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz</b>	69.50	52.13		
	Buy 2 jars, price each	61.16	45.87		
80107	<b>COSMESIS FINE LINE-LESS - 1 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80131	<b>COSMESIS HAIR SUPPRESS FORMULA - 4 oz</b>	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80137	<b>COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz</b>	53.00	39.75		
	Buy 2 jars, price each	45.43	34.07		
80115	<b>COSMESIS HEALING MASK - 2 oz</b>	64.50	48.38		
	Buy 2 bottles, price each	56.76	42.57		
80102	<b>COSMESIS HEALING VITAMIN K CREAM - 1 oz</b>	79.50	59.63		
	Buy 2 bottles, price each	69.96	52.47		
80109	<b>COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz</b>	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80110	<b>COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz</b>	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80138	<b>COSMESIS HYDRATING ANTIOXIDANT FACE MIST - 4 oz</b>	39.95	29.96		
	Buy 2 bottles, price each	38.00	28.50		
80103	<b>COSMESIS LIFTING &amp; TIGHTENING COMPLEX - 1 oz</b>	74.50	55.88		
	Buy 2 tubes, price each	65.56	49.17		
80146	<b>COSMESIS LYCOPENE CREAM - 1 oz jar</b>	28.00	21.00		
	Buy 2 jars, price each	25.40	19.05		
80135	<b>COSMESIS MELATONIN CREAM - 1 oz</b>	33.00	24.75		
	Buy 2 jars, price each	27.10	20.33		
80114	<b>COSMESIS MILD FACIAL CLEANSER - 8 oz</b>	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80122	<b>COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz</b>	64.00	48.00		
	Buy 2 jars, price each	56.32	42.24		
80111	<b>COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz</b>	74.00	55.50		
	Buy 2 bottles, price each	65.12	48.84		
80106	<b>COSMESIS REJUVENATING SERUM - 1 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80150	<b>COSMESIS RENEWING EYE CREAM - 1/2 oz</b>	65.00	48.75		
	Buy 2 jars, price each	57.00	42.75		
80142	<b>COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz</b>	46.00	34.50		
	Buy 2 bottles, price each	39.00	29.25		

**SUB-TOTAL OF COLUMN 5**

FEBRUARY 2015

**SUPER SALE SAVINGS ON ALL PRODUCTS**  
To order call 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
80112	<b>COSMESIS SKIN LIGHTENING SERUM - 1/2 oz</b>	\$85.00	\$63.75		
	Buy 2 bottles, price each	74.80	56.10		
80130	<b>COSMESIS SKIN STEM CELL SERUM - 1 oz</b>	74.00	55.50		
	Buy 2 bottles, price each	69.00	51.75		
80143	<b>COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar</b>	66.00	49.50		
	Buy 2 jars, price each	58.00	43.50		
80148	<b>COSMESIS TIGHTENING &amp; FIRMING NECK CREAM - 2 oz jar</b>	39.00	29.25		
	Buy 2 jars, price each	35.00	26.25		
80116	<b>COSMESIS ULTRA LIP PLUMPER - 1/3 oz</b>	64.00	48.00		
	Buy 2 bottles, price each	56.32	42.24		
80101	<b>COSMESIS ULTRA WRINKLE RELAXER - 1 oz</b>	89.95	67.46		
	Buy 2 bottles, price each	79.76	59.82		
80113	<b>COSMESIS UNDER EYE REFINING SERUM - 1/2 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80104	<b>COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80129	<b>COSMESIS VITAMIN C SERUM - 1 oz</b>	85.00	63.75		
	Buy 2 bottles, price each	74.80	56.10		
80136	<b>COSMESIS VITAMIN D LOTION - 4 oz</b>	36.00	27.00		
	Buy 2 bottles, price each	33.66	25.25		
80145	<b>COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz</b>	28.00	21.00		
	Buy 2 jars, price each	26.00	19.50		
80149	<b>COSMESIS YOUTH SERUM - 1 oz</b>	65.00	48.75		
	Buy 2 bottles, price each	57.00	42.75		
00862	<b>CRAN-MAX® - 500 mg, 60 veg. caps</b>	17.50	13.13		
	Buy 4 bottles, price each	15.00	11.25		
01424	<b>CRAN-MAX® with UTI-ROSE™ (OPTIMIZED) - 60 veg. caps</b>	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01529	<b>CREATINE CAPSULES - 120 veg. caps</b>	10.95	8.21		
	Buy 4 bottles, price each	9.25	6.94		
01746	<b>CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla)</b>	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01429	<b>CR MIMETIC LONGEVITY FORMULA - 60 veg. caps</b>	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
*33840	<b>CRWAY GREAT GLUCOSE CONTROL CD</b>	98.00	82.00		
**CRWAY	<b>CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE</b>	195.00	195.00		
00407	<b>CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps</b>	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
01808	<b>CURCUMIN® w/GINGER &amp; TURMERONES (ADVANCED BIO)-30 softgels</b>	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01804	<b>CYTOKINE SUPPRESS™ w/EGCG - 30 veg. caps</b>	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
<b>D</b>					
00658	<b>7-KETO® DHEA METABOLITE - 25 mg, 100 caps</b>	\$28.00	\$21.00		
	Buy 4 bottles, price each	24.00	18.00		
01479	<b>7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps</b>	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01640	<b>DHA (VEGETARIAN SOURCED) - 30 veg. softgels</b>	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00607	<b>DHEA - 25 mg, 100 tablets (dissolve in mouth)</b>	14.00	10.50		
	Buy 4 bottles, price each	11.75	8.81		
01478	<b>DHEA COMPLETE - 60 veg. caps</b>	48.00	36.00		
	Buy 4 bottles, price each	43.20	32.40		

**SUB-TOTAL OF COLUMN 6**

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](http://www.LifeExtension.com/SuperSale)

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
00335	<b>DHEA</b> - 25 mg, 100 caps Buy 4 bottles, price each	\$18.00 15.00	\$13.50 11.25		
00454	<b>DHEA</b> - 15 mg, 100 caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
00882	<b>DHEA</b> - 50 mg, 60 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01689	<b>DHEA</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01358	<b>DIGEST RC</b> - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	<b>DIGESTIVE ENZYMES (ENHANCED SUPER)</b> - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
01671	<b>D,L-PHENYLALANINE CAPSULES</b> - 500 mg, 100 veg. caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
01540	<b>DMAE BITARTRATE</b> - 150 mg, 200 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00059	<b>DMG</b> - 125 mg, 60 tablets Buy 4 boxes, price each	24.80 22.69	18.60 17.02		
01570	<b>DNA PROTECTION FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
00544	<b>DOG MIX</b> - 100 grams powder Buy 4 jars, price each	19.50 16.00	14.63 12.00		
00321	<b>DR. PROCTOR'S ADVANCED HAIR FORMULA</b> - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	<b>DR. PROCTOR'S HAIR FORMULA SHAMPOO</b> - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	<b>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE</b> - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
<b>E</b>					
01528	<b>ECHINACEA EXTRACT</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01498	<b>ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™</b> - 60 softgels Buy 4 bottles, price each	56.00 52.00	42.00 39.00		
00997	<b>ENDOTHELIAL DEFENSE™ w/GLISODIN®</b> - 60 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00625	<b>EPA/DHA (MEGA)</b> - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01737	<b>ESOPHAGEAL GUARDIAN</b> (Berry flavor) - 60 chewable tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01042	<b>EUROPEAN LEG SOLUTION DIOSMIN 95</b> - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01706	<b>EXTRAORDINARY ENZYMES</b> - 60 caps Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
01514	<b>EYE PRESSURE SUPPORT w/MIRTOGENOL®</b> - 30 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
<b>F</b>					
01054	<b>FACE MASTER® PLATINUM</b>	\$199.00	\$199.00		
00965	<b>FAST-ACTING JOINT FORMULA</b> - 30 caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01717	<b>FAST-C® w/DIHYDROQUERCETIN</b> - 120 veg. tabs Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
20053	<b>FEM DOPHILUS®</b> - 30 caps	25.95	19.46		
20055	<b>FEM DOPHILUS®</b> - 60 caps	39.95	29.96		

**SUB-TOTAL OF COLUMN 7**

No.		Retail Each	Member Each	Qty	Total
01064	<b>FEMMESENSE MACAPAUZE®</b> - 120 veg. caps	\$34.99	\$26.24		
01728	<b>FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED)</b> - 30 veg. caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
01670	<b>FIBER FOOD CAPS</b> - 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	<b>FIBRINOGEN RESIST™</b> - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
01749	<b>FLAX SEED (ORGANIC GOLDEN GROUND)</b> - 14 oz.	11.67	8.75		
01821	<b>FLORASSIST® HEART HEALTH PROBIOTIC</b> - 60 caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01825	<b>FLORASSIST® PROBIOTIC</b> - 30 liquid caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01439	<b>FOLATE (OPTIMIZED) (L-METHYL FOLATE)</b> 1,000 mcg - 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01641	<b>FOLIC ACID + B12 CAPSULES</b> - 200 veg. caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01544	<b>FORSKOLIN</b> - 10 mg, 60 veg. caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
01513	<b>FUCOIDAN w/MARITECH® 926 (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
00993	<b>FUCOXANTHIN-SLIM™</b> - 90 softgels Buy 4 bottles, price each	44.00 39.00	33.00 29.25		
<b>G</b>					
00559	<b>GAMMA E TOCOPHEROL/TOCOTRIENOLS</b> - 60 softgels Buy 4 bottles, price each	\$42.00 37.00	\$31.50 27.75		
00759	<b>GAMMA E TOCOPHEROL w/SESAME LIGNANS</b> - 60 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01394	<b>(OPTIMIZED) GARLIC</b> - 200 veg. caps Buy 4 bottles, price each	24.95 21.00	18.71 15.75		
01301	<b>GH PITUITARY SUPPORT DAY FORMULA</b> - 120 tabs Buy 4 bottles, price each	48.00 44.00	36.00 33.00		
01302	<b>GH PITUITARY SUPPORT NIGHT FORMULA</b> - 120 veg. caps Buy 4 bottles, price each	25.00 22.50	18.75 16.88		
***01228	<b>GINGER FORCE®</b> - 60 softgels	31.95	23.96		
01658	<b>GINKGO BILOBA CERTIFIED EXTRACT™</b> - 120 mg, 365 veg. caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
01648	<b>GINKGO EXTRACT 28/7 (SUPER)</b> - 120 mg, 100 veg. caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
00756	<b>GLA WITH SESAME LIGNANS (MEGA)</b> - 60 softgels Buy 4 bottles, price each	19.50 18.00	14.63 13.50		
00345	<b>(L) GLUTAMINE CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00141	<b>(L)-GLUTAMINE POWDER</b> - 100 grams Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00522	<b>GLUCOSAMINE/CHONDROITIN CAPSULES</b> - 100 caps Buy 4 bottles, price each	38.00 32.00	28.50 24.00		
01541	<b>GLUTATHIONE, CYSTEINE &amp; C</b> - 100 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00314	<b>L-GLUTATHIONE (MEGA)</b> - 250 mg, 60 caps	39.64	29.73		
01731	<b>GLYCEMICPRO™ TRANSGLUCOSIDASE</b> - 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

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
<b>G CONTINUED</b>					
01669	<b>GLYCINE</b> - 1,000 mg, 100 veg. caps	\$12.00	\$9.00		
	Buy 4 bottles, price each	10.80	8.10		
01091	<b>GRAPE EXTRACT w/RESVERATROL (WHOLE)</b> - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01411	<b>GRAPE SEED EXTRACT w/RESVERATROL &amp; PTEROSTILBENE</b> - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01604	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 200 mg, 90 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01620	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 400 mg, 90 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00953	<b>GREEN TEA EXTRACT (MEGA)</b> - lightly caffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	24.00	18.00		
00954	<b>GREEN TEA EXTRACT (MEGA)</b> - decaffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	24.00	18.00		
01545	<b>GUTSY CHEWY DIGESTIVE (CITRUS FLAVOR)</b> - 8 tablets	11.50	8.63		
01546	<b>GUTSY CHEWY DIGESTIVE (WILD BERRY FLAVOR)</b> - 8 tablets	11.50	8.63		
<b>H</b>					
01074	<b>5 HTP</b> - 100 mg, 60 caps	\$27.95	\$20.96		
01738	<b>HCA (GARCINIA)</b> - 90 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
01393	<b>HEPATOPRO</b> - 900 mg, 60 softgels	50.00	37.50		
	Buy 4 bottles, price each	46.00	34.50		
01435	<b>HOMOCYSTEINE RESIST</b> - 100 veg caps	24.00	18.00		
	Buy 4 bottles, price each	21.60	16.20		
01527	<b>HUPERZINE A</b> - 200 mcg, 60 veg caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00661	<b>HYDRODERM®</b> - 1 oz	79.95	59.96		
	Buy 2 bottles, price each	65.33	49.00		
<b>I</b>					
*01060	<b>i26® HYPERIMMUNE EGG</b> - 140 grams powder	\$54.99	\$46.75		
01704	<b>IMMUNE MODULATOR W/TINOFEND®</b> - 60 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
00955	<b>IMMUNE PROTECT W/PARACTIN®</b> - 30 veg. caps	29.50	22.13		
	Buy 4 bottles, price each	26.55	19.91		
01905	<b>IMMUNE SENESCENCE PROTECTION FORMULA™</b> - 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01049	<b>INNERPOWER™</b> - 530 grams powder	42.00	31.50		
01674	<b>INOSITOL CAPSULES</b> - 1,000 mg, 360 veg. caps	62.00	46.50		
	Buy 4 bottles, price each	58.00	43.50		
01292	<b>INTEGRA-LEAN® AFRICAN MANGO IRVINGIA</b> - 150 mg, 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01248	<b>IODINE COMPLETE (ADVANCED)</b> - 180 tablets	46.00	36.50		
01677	<b>IRON PROTEIN PLUS</b> - 300 mg, 100 caps	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
01492	<b>IRVINGIA W/PHASE 3™</b> - 120 veg. caps	56.00	42.00		
	<b>CALORIE CONTROL COMPLEX (OPTIMIZED AFRICAN MANGO)</b>				
	Buy 4 bottles, price each	48.00	36.00		
<b>J, K</b>					
00056	<b>JARRO-DOPHILUS EPS™</b> - 60 veg. caps	\$22.95	\$17.21		
01759	<b>JARRO-DOPHILUS EPS™</b> - 30 caps	39.95	29.96		
01724	<b>K w/ADVANCED K2 COMPLEX (SUPER)</b> - 90 softgels	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		

**SUB-TOTAL OF COLUMN 9**

FEBRUARY 2015

**SUPER SALE SAVINGS ON ALL PRODUCTS**  
To order call 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
01600	<b>KRILL HEALTHY JOINT FORMULA</b> - 30 softgels	\$32.00	\$24.00		
	Buy 4 bottles, price each	29.00	21.75		
01050	<b>KRILL OIL PHOSPHOMEGA™</b> - 60 softgels	33.95	25.46		
00316	<b>KYOLIC® GARLIC FORMULA 102</b> - 200 veg. caps	26.45	19.84		
00214	<b>KYOLIC® GARLIC FORMULA 105</b> - 200 caps	27.45	20.59		
00789	<b>KYOLIC® RESERVE</b> - 600 mg, 120 caps	27.95	20.96		
<b>L</b>					
01681	<b>LACTOFERRIN (APOLACTOFERRIN) CAPS</b> - 60 caps	\$52.00	\$39.00		
	Buy 4 bottles, price each	48.00	36.00		
00020	<b>LECITHIN</b> - 16 oz. granules	15.00	11.25		
	Buy 4 jars, price each	12.50	9.38		
01955	<b>LIFE EXTENSION MIX™</b> - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01957	<b>LIFE EXTENSION MIX™ W/EXTRA NIACIN</b> - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01954	<b>LIFE EXTENSION MIX™</b> - 490 caps	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01956	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
01965	<b>LIFE EXTENSION MIX™</b> - 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01967	<b>LIFE EXTENSION MIX™ W/EXTRA NIACIN</b> 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01964	<b>LIFE EXTENSION MIX™</b> - 490 caps w/o copper	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01966	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
01608	<b>LIVER EFFICIENCY FORMULA</b> - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01639	<b>5-LOX INHIBITOR W/APRESFLEX®</b> - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01678	<b>L-LYSINE</b> - 620 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
00455	<b>LYCOPENE EXTRACT (MEGA)</b> - 15 mg, 90 softgels	35.00	26.25		
	Buy 4 bottles, price each	30.00	22.50		
<b>M</b>					
01885	<b>MACUGUARD™ OCULAR SUPPORT</b> - 60 softgels	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
01886	<b>MACUGUARD™ OCULAR SUPPORT w/ASTAXANTHIN</b> - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01459	<b>MAGNESIUM CAPS</b> - 500 mg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	10.00	7.50		
01682	<b>MAGNESIUM CITRATE</b> - 160 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	7.50	5.63		
01668	<b>MELATONIN</b> - 300 mcg, 100 veg. caps	5.75	4.31		
	Buy 4 bottles, price each	5.00	3.75		

**SUB-TOTAL OF COLUMN 10**

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](http://www.LifeExtension.com/SuperSale)

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01083	<b>MELATONIN</b> - 500 mcg, 200 veg. caps	\$18.00	\$13.50		
	Buy 4 bottles, price each	16.00	12.00		
00329	<b>MELATONIN</b> - 1 mg, 60 caps	5.00	3.75		
	Buy 4 bottles, price each	4.63	3.47		
00330	<b>MELATONIN</b> - 3 mg, 60 caps	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01786	<b>MELATONIN TIME RELEASE</b> - 3 mg, 60 veg. tabs	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
00331	<b>MELATONIN</b> - 10 mg, 60 caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
00332	<b>MELATONIN</b> - 3 mg, 60 veg. lozenges	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01734	<b>MELATONIN</b> (Fast Acting Liquid) - 3 mg (Natural Citrus-Van)	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
01787	<b>MELATONIN TIME RELEASE</b> - 300 mcg, 100 veg. tabs	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
01788	<b>MELATONIN TIME RELEASE</b> - 750 mcg, 60 veg. tablets	8.00	6.00		
	Buy 4 bottles, price each	7.00	5.25		
01536	<b>METHYLCOBALAMIN</b> - 1 mg, 60 veg. lozenges (vanilla)	9.95	7.46		
	Buy 4 bottles, price each	8.00	6.00		
01537	<b>METHYLCOBALAMIN</b> - 5 mg, 60 veg. lozenges (vanilla)	32.00	24.00		
	Buy 4 bottles, price each	25.00	18.75		
	Buy 10 bottles, price each	23.00	17.25		
00709	<b>MIGRA-EEZE™ (BUTTERBUR)</b> - 60 softgels	29.50	22.13		
	Buy 4 bottles, price each	26.33	19.75		
01800	<b>MIGRA-MAG w/BRAIN SHIELD®</b> - 90 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01522	<b>MILK THISTLE (EUROPEAN)</b> - 60 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
01822	<b>MILK THISTLE (EUROPEAN)</b> - 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01817	<b>MILK THISTLE (EUROPEAN)</b> - 120 softgels	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01698	<b>MIRAFORTE w/STANDARDIZED LIGNANS (SUPER)</b> - 120 caps	62.00	46.50		
	Buy 4 bottles, price each	56.00	42.00		
01769	<b>MITOCHONDRIAL BASICS w/BIOPQQ®</b> - 30 caps	52.00	39.00		
	Buy 4 bottles, price each	42.00	31.50		
01768	<b>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ®</b> - 120 caps	94.00	70.50		
	Buy 4 bottles, price each	78.00	58.50		
00065	<b>MK-7</b> - 90 mcg, 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
00451	<b>MSM (METHYLSULFONYLMETHANE)</b> - 1,000 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	11.95	8.96		
<b>N</b>					
01534	<b>N-ACETYL-L-CYSTEINE</b> - 600 mg, 60 veg. caps	\$14.00	\$10.50		
	Buy 4 bottles, price each	13.50	10.13		
01904	<b>NAD+ CELL REGENERATOR™</b> - 100 mg, 30 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	26.00	19.50		
00066	<b>NATTOKINASE</b> - 60 softgels	25.50	19.13		
01807	<b>NATURAL APPETITE SUPPRESS (ADVANCED)</b> - 60 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
00984	<b>NATURAL BP MANAGEMENT</b> - 60 tablets	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		

**SUB-TOTAL OF COLUMN 11**

No.		Retail Each	Member Each	Qty	Total
01892	<b>NATURAL ESTROGEN</b> - 60 veg. tabs	\$38.00	\$28.50		
	Buy 4 bottles, price each	34.00	25.50		
01221	<b>NATURAL FEMALE SUPPORT</b> - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01471	<b>NATURAL GLUCOSE ABSORPTION CONTROL</b> - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01626	<b>NATURAL SEX FOR WOMEN ® 50+ (ADVANCED)</b> - 90 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	45.33	34.00		
01444	<b>NATURAL SLEEP®</b> - 60 veg. caps	13.00	9.75		
	Buy 4 bottles, price each	10.00	7.50		
01551	<b>NATURAL SLEEP® w/ MELATONIN (ENHANCED)</b> - 30 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01511	<b>NATURAL SLEEP® w/o MELATONIN (ENHANCED)</b> - 30 caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01445	<b>NATURAL SLEEP® MELATONIN</b> - 5 mg, 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00987	<b>NATURAL STRESS RELIEF</b> - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01603	<b>NEURO-MAG™ MAGNESIUM L-THREONATE</b> - 90 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01602	<b>NEURO-MAG™ L-THREONATE w/CALCIUM &amp; VITAMIN D</b> 225 grams - Lemon flavor	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01903	<b>NK CELL ACTIVATOR™</b> - 30 veg. tablets	45.00	33.75		
	Buy 4 bottles, price each	42.00	31.50		
00373	<b>NO-FLUSH NIACIN</b> - 800 mg, 100 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
<b>O</b>					
01824	<b>OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRAT(ADVANCED)</b> 500 mg, 60 veg. caps • Buy 4 bottles, price each	\$36.00	\$27.00		
		32.00	24.00		
01819	<b>OMEGA WITH KRILL &amp; ASTAXANTHIN (SUPER)</b> - 120 softgels	45.00	33.75		
	Buy 4 bottles, price each	42.00	31.50		
	Buy 10 bottles, price each	33.00	24.75		
01483	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
	Buy 10 bottles, price each	12.50	9.38		
01482	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	22.73	17.05		
01484	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 enteric coated softgels	34.00	25.50		
	Buy 4 bottles, price each	31.00	23.25		
	Buy 10 bottles, price each	24.00	18.00		
01485	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 enteric coated softgels	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
	Buy 10 bottles, price each	14.00	10.50		
01619	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL)</b>	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	23.00	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

No.		Retail Each	Member Each	Qty	Total
CONTINUED					
01901	ONE-PER-DAY - 60 tablets	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01328	ONLY TRACE MINERALS - 90 veg. caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
P					
01789	PALMETTOGUARD™ SAW PALMETTO w/BETA SITOSTEROL - 30 softgels	\$15.00	\$11.25		
	Buy 12 bottles, price each	12.00	9.00		
01790	PALMETTOGUARD™ SUPER SAW PALMETTO/- 60 softgels NETTLE ROOT W/BETA-SITOSTEROL	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
	Buy 12 bottles, price each	24.00	18.00		
00073	PANCREATIN - 500 mg, 50 caps	13.22	9.92		
01323	PEAK ATP® WITH GLYCOCARN® - 60 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	50.00	37.50		
00342	PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder	109.95	82.46		
01080	PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps	79.95	59.96		
01811	PEONY IMMUNE - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
00673	PGX™ PLUS MULBERRY (WELLBETX®) -180 veg. caps	34.95	26.21		
00865	PHARMA GABA® - 60 chewable tablets	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01676	PHOSPHATIDYL SERINE CAPS - 100 mg, 100 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
01390	PHOSPHOMEGA® - 60 softgels	39.95	26.96		
01436	POLICOSANOL - 10 mg, 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	15.00	11.25		
01423	POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels	24.00	18.00		
	Buy 4 bottles, price each	21.00	15.75		
00956	POMEGRANATE EXTRACT - 30 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.55	13.16		
01797	POMI-T® - 60 veg. caps	33.33	25.00		
	Buy 4 bottles, price each	30.00	22.50		
00577	POTASSIUM IODIDE - 1 box, 14 tablets	6.95	5.21		
	Buy 4 boxes, price each	5.25	3.94		
01500	PQQ CAPS W/BIO PQQ® - 10 mg, 30 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	18.00	13.50		
	Buy 10 bottles, price each	16.00	12.00		
01647	PQQ CAPS W/BIO PQQ® - 20 mg, 30 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	32.00	24.00		
	Buy 10 bottles, price each	28.00	21.00		
00302	PREGNENOLONE - 50 mg, 100 caps	26.00	19.50		
	Buy 4 bottles, price each	22.00	16.50		
00700	PREGNENOLONE - 100 mg, 100 caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
***01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
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	35.00	26.25		
	Buy 4 bottles, price each	32.00	24.00		
01898	PROSTATE FORMULA (ULTRA NAT) 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
	Buy 12 bottles, price each	32.00	24.00		

SUB-TOTAL OF COLUMN 13

## SUPER SALE SAVINGS ON ALL PRODUCTS To order call 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
01742	PROTEIN-ISOLATE (WHEY) VANILLA - 1 lb. powder	\$30.00	\$22.50		
	Buy 4 jars, price each	27.00	20.25		
01743	PROTEIN-ISOLATE (WHEY) CHOCOLATE - 1 lb. powder	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01770	PROTEIN CONCENTRATE (New Zealand Whey) Vanilla - 520 gr	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		
01771	PROTEIN CONCENTRATE (New Zealand Whey) Chocolate - 660 gr	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		
01812	PROVINAL® PURIFIED OMEGA-7 - 30 softgels	27.00	20.25		
	Buy 4 bottles, price each	24.00	18.00		
01508	PTEROPURE® - 50 mg Pterostilbene 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01209	PUMPKIN SEED EXTRACT (WATER-SOLUBLE) - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01587	PURE PLANT PROTEIN - Veg. Vanilla 540 grams powder	38.00	28.50		
	Buy 4 jars, price each	35.00	26.25		
01637	PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT-100 mg, 60 veg. caps	64.00	48.00		
	Buy 4 bottles, price each	60.00	45.00		
01217	PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
Q, R					
01309	QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01030	RED YEAST RICE (Bluebonnet)- 600 mg, 60 veg. caps	16.95	13.56		
00605	REGIMINT - 60 enteric-coated caps	19.95	14.96		
	Buy 4 bottles, price each	18.67	14.00		
01708	REISHI EXTRACT MUSHROOM COMPLEX - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01448	REJUVENEX® BODY LOTION - 6 oz	24.00	18.00		
	Buy 4 tubes, price each	19.80	14.85		
	Buy 8 tubes, price each	17.00	12.75		
01621	REJUVENEX® FACTOR FIRMING SERUM - 1.7 oz	65.00	48.75		
	Buy 2 bottles, price each	50.66	38.00		
	Buy 6 bottles, price each	38.52	28.89		
01220	REJUVENEX® (ULTRA) - 2 oz	52.00	39.00		
	Buy 2 jars, price each	48.00	36.00		
	Buy 4 jars, price each	44.00	33.00		
	Buy 8 jars, price each	39.93	29.95		
00676	REJUVENIGHT® (ULTRA) - 2 oz	39.95	29.96		
	Buy 4 jars, price each	36.00	27.00		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01930	RESVERATROL W/NAD+ CELL REGENERATOR™ (OPTIMIZED) - 30 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	36.00	27.00		
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	41.33	31.00		
00889	RHODIOLA EXTRACT - 250 mg, 60 veg. caps	11.75	8.81		
	Buy 4 bottles, price each	10.58	7.94		
01900	RIBOGEN™ FRENCH OAK WOOD EXTRACT - 200 mg, 30 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	33.00	24.75		
00972	(D) RIBOSE POWDER - 150 grams	27.50	20.63		
	Buy 4 jars, price each	24.75	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](http://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		
<b>S</b>					
01432	SAFFRON w/SATIEREAL® (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
00358	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets Buy 8 boxes, price each	16.00 14.00	12.00 10.50		
00453	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00557	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets Buy 6 boxes, price each	28.00 24.00	21.00 18.00		
01055	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01740	SEA-IODINE™ - 1,000 mcg, 60 veg. caps Buy 4 bottles, price each	8.00 7.20	6.00 5.40		
00046	SELENIUM - 2 oz dropper bottle	11.95	8.96		
01679	SE-METHYL L-SELENOCYSTEINE - 200 mcg, 100 veg. caps Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00318	SERRAFLAZYME - 100 tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00284	SHARK LIVER OIL (NORWEGIAN) - 1,000 mg, 30 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01684	SILYMARIN - 100 mg, 50 veg. caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01596	SKIN RESTORING PHYTCERAMIDES w/LIPOWHEAT® - 30 veg. liquid caps Buy 4 bottles, price each	25.00 23.00	18.75 17.25		
00961	SODZYME® w/GLISODIN® AND WOLFERRY - 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		
<b>T</b>					
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
<b>V</b>					
00213	<b>VANADYL SULFATE</b> - 7.5 mg, 100 veg. tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00408	<b>VENOTONE</b> - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	<b>VINPOCETINE</b> - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
00372	<b>VITAMIN B3 NIACIN</b> - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	<b>VITAMIN B5</b> - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
01535	<b>VITAMIN B6</b> - 250 mg, 100 veg. caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	<b>VITAMIN B12</b> - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 60 veg. tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 250 veg. tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	<b>VITAMIN C (BUFFERED) POWDER</b> - 454.6 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
01736	<b>(EFFERVESCENT) VITAMIN C-MAGNESIUM CRYSTALS</b> - 180 grams	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01732	<b>VITAMIN D3</b> - 2,000 IU, 1 fl oz, Mint flavor	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	<b>VITAMIN D3</b> - 1,000 IU, 90 softgels	7.00	5.25		
	Buy 4 bottles, price each	6.00	4.50		
01751	<b>VITAMIN D3</b> - 1,000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	<b>VITAMIN D3</b> - 5,000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	<b>VITAMIN D3</b> - 7,000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01758	<b>VITAMIN D3 w/SEA-IODINE™</b> - 5,000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
00864	<b>VITAMIN D3</b> Liquid Emulsion - 2,000 IU, 1 oz.	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01741	<b>VITAMINS D AND K w/SEA-IODINE™</b> - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01763	<b>VITAMIN E (NATURAL)</b> - 400 IU, 100 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	26.00	19.50		
01225	<b>VITAMIN K2 (LOW-DOSE)</b> - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
<b>X</b>					
00409	<b>XYLIWHITE™ MOUTHWASH</b> - 16 oz	\$10.00	\$7.50		
<b>W</b>					
01902	<b>WAIST-LINE CONTROL™</b> - 120 veg. caps	\$42.00	\$31.50		
	Buy 4 bottles, price each	38.00	28.50		
01826	<b>WEIGHT MANAGEMENT FORMULA</b> - 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**  
To order call 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
<b>Z</b>					
01813	<b>ZINC HIGH POTENCY</b> - 50 mg, 90 veg. caps	\$7.95	\$5.96		
	Buy 4 bottles, price each	7.00	5.25		
01561	<b>ZINC GLUCONATE/OXIDE LOZENGES</b> - 18.75 mg, 60 veg. lozenges	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
01961	<b>ZINC ACETATE LOZENGES (ENHANCED)</b> - 18.75 mg, 30 veg. lozenges	12.00	9.00		
	Buy 2 bottles, price each	8.00	6.00		
***01051	<b>ZYFLAMEND® WHOLE BODY</b> - 120 softgels	64.95	48.71		

**SUB-TOTAL OF COLUMN 18**

**GIVE THE GIFT of  
HEALTH with a  
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GIFT CARD!**



**GIVE THE LIFE-ENHANCING  
BENEFITS OF LIFE EXTENSION®  
WITH A GIFT OF  
\$10, \$25, \$50 OR \$100**

**To order a  
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for someone special,  
call 1-800-544-4440**

\* These products are not 25% off retail price.

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

\*\*\* Due to license restrictions, this product is not for sale to customers outside of the USA.

† Member pricing not valid on this item.

†† Due to license restrictions, this product is not for sale to Canada.

††† Due to license restrictions, this product is not for sale to customers outside of the USA and Canada.



## ORDER SUBTOTALS

SUB-TOTAL COLUMN 1	
SUB-TOTAL COLUMN 2	
SUB-TOTAL COLUMN 3	
SUB-TOTAL COLUMN 4	
SUB-TOTAL COLUMN 5	
SUB-TOTAL COLUMN 6	
SUB-TOTAL COLUMN 7	
SUB-TOTAL COLUMN 8	
SUB-TOTAL COLUMN 9	
SUB-TOTAL COLUMN 10	
SUB-TOTAL COLUMN 11	
SUB-TOTAL COLUMN 12	
SUB-TOTAL COLUMN 13	
SUB-TOTAL COLUMN 14	
SUB-TOTAL COLUMN 15	
SUB-TOTAL COLUMN 16	
SUB-TOTAL COLUMN 17	
SUB-TOTAL COLUMN 18	

## ORDER TOTALS

Sub-Total A (Sub-total of Columns 1 through 18)

**SUPER SALE DEDUCT 10% (Subtotal x 10%)**  
**Ends 02/02/15**

Postage And Handling (Any size order, continental U.S.) **\$5.50**

C.O.D.s (Add \$7 for C.O.D. orders)

Shipping 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.

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

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**P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198**  
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PRINT MEMBERSHIP NO. FOR MEMBER DISCOUNT

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- ☐ CHECK HERE FOR C.O.D. ORDERS
- ☐ CHECK HERE FOR UPS BLUE LABEL (2ND DAY)
- ☐ CHECK HERE FOR UPS RED LABEL (OVERNIGHT)

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CITY/STATE/ZIP-POSTAL CODE  COUNTRY

PHONE  FAX

VISA/MASTERCARD/AMEX/DISCOVER #

EXP. DATE

SIGNATURE

### SHIP TO ADDRESS

NAME  E-MAIL

ADDRESS

CITY/STATE/ZIP-POSTAL CODE  COUNTRY

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33872	GET SERIOUS • by Brett Osborn, MD	2014	\$24.95	\$18.71		
33868	TOXIN TOXOUT: GETTING HARMFUL CHEMICAL OUT OF OUR BODIES AND OUR WORLD • by Bruce Lourie and Rick Smith	2014	\$25.99	\$19.49		
33871	DOCTORED RESULTS: THE SUPPRESSION OF LAETRILE AT SLOAN-KETTERING INSTITUTE • by Ralph W. Moss, PhD	2014	\$19.95	\$14.96		
33867	THE COMPLETE MEDITERRANEAN DIET • by Michael Ozner, MD	2014	\$19.95	\$14.96		
33869	UNLEASH THE POWER OF THE FEMALE BRAIN • by Daniel Amen, MD	2014	\$16.00	\$12.00		
33870	MAGNIFICENT MAGNESIUM • by Dennis Goodman, MD	2014	\$14.95	\$11.21		
33866	HEART, AN AMERICAN MEDICAL ODYSSEY • by Dick Cheney & Jonathan Reiner, MD	2014	\$28.00	\$21.00		
33864	THE SUPPLEMENT PYRAMID • by Michael A. Smith, MD	2014	\$24.95	\$18.71		
DPT05	DISEASE PREVENTION AND TREATMENT, EXPANDED FIFTH EDITION (hardcover) Buy 4 books, price each	2014	\$39.95 \$36.00	\$39.95 \$36.00		
33865	THE RESTORATION OF THE HUMAN BODY [IN 7 PARTS] • by Sergey A. Dzigan, MD, PhD	2014	\$29.95	\$22.46		
33862	I'M TOO YOUNG FOR THIS • by Suzanne Somers	2013	\$26.00	\$19.50		
33835	PHARMOCRACY • by William Faloon Buy 4 books, price each •	2011	\$24.00	\$9.60 \$8.00		
33958	THE VITAMIN D SOLUTION • by Michael F. Holick, PhD, MD (paperback)	2013	\$16.00	\$12.00		
33861	THE SOUTH BEACH DIET GLUTEN SOLUTION • Dr. Arthur Agatston	2013	\$25.99	\$19.49		
33859	THE BLOOD SUGAR SOLUTION • by Mark Hyman, MD	2013	\$27.99	\$20.99		
33855	POWER FOODS FOR THE BRAIN • by Neal D. Barnard, MD	2013	\$26.99	\$20.24		
33854	THE GREAT CHOLESTEROL MYTH • by Jonny Bowden, PhD, CNS and Stephen Sinatra, MD	2012	\$19.99	\$14.99		
33852	THE MAGIC OF CHOLESTEROL NUMBERS • by Dr. Sergey Dzigan	2012	\$29.95	\$22.46		
33848	YOUR BEST INVESTMENT SECRETS TO A HEALTHY BODY AND MIND • by Edwin Lee, MD	2012	\$24.95	\$18.71		
33847	THE FATIGUE SOLUTION • by Dr. Eva Cwynar	2012	\$24.95	\$18.71		
33844	ABUNDANCE: THE FUTURE IS BETTER THAN YOU THINK • by Steven Kotler and Petere Diamandis	2012	\$26.99	\$20.24		
33843	BOMBSHELL • by Suzanne Somers	2012	\$26.00	\$19.50		
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33842	HEART ATTACK PROOF • by Michael Ozner, MD	2012	\$19.95	\$14.96		
33838	YOUR GUIDE TO HEALTHY SKIN THE NATURAL WAY • by Gary Goldfaden, MD	2012	\$26.00	\$15.00		
33833	THE LIFE PLAN • by Jeffrey S. Life, MD, PhD	2011	\$26.00	\$19.50		
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33816	FDA: FAILURE, DECEPTION, ABUSE • by Life Extension Foundation	2010	\$20.00	\$15.00		
33815	KNOCKOUT • by Suzanne Somers	2009	\$25.99	\$17.00		
33812	LIFE OVER CANCER • by Keith Block, MD (hardcover)	2009	\$25.00	\$18.75		
33809	TESTOSTERONE FOR LIFE • by Abraham Morgentaler, MD	2008	\$16.95	\$11.87		
33696	LIFE EXTENSION REVOLUTION • by Philip Lee Miller, MD (paperback)	—	\$16.00	\$12.00		
33805	MIAMI MEDITERRANEAN DIET WITH 300 RECIPES • by Michael D. Ozner, MD, FACC, FAHA (hardcover)	2008	\$24.95	\$16.25		
33906	THE MIGRAINE CURE • by Sergey Dzigan, MD, PhD	2006	\$24.00	\$15.60		
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33828	THE SEXY YEARS • by Suzanne Somers (paperback)	2004	\$15.00	\$10.50		
33803	WHAT YOUR DOCTOR MAY NOT TELL YOU ABOUT DIABETES • by Steven V. Joyal, MD	2008	\$14.99	\$10.49		
Sub-Total (U.S. Dollars)						
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PRICES SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE NOTIFY THE LIFE EXTENSION FOUNDATION* OF ANY ADDRESS CHANGE						<b>TOTAL</b>

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[www.LifeExtension.com/vitamins-supplements/shipping/shipping-information.htm](http://www.LifeExtension.com/vitamins-supplements/shipping/shipping-information.htm)

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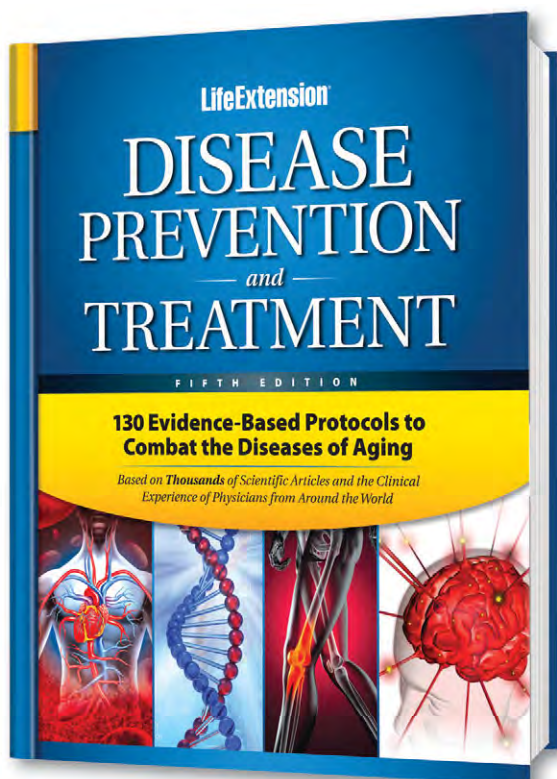
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## FREE Gift to New Members

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



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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.

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

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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.

Name

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City  ST  ZIP

Email  Phone

☐ Check enclosed (payable to Life Extension Foundation®)

☐ Charge my cc:

Card #  Exp.



# SUPPORT FOR THE AGING IMMUNE SYSTEM

## DUAL-MECHANISM IMMUNE SENESENCE 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.<sup>1</sup>

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.<sup>2,3</sup>

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**.<sup>4</sup>

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!<sup>5</sup>

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.<sup>6</sup>

### **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.<sup>7</sup>

**Reishi** extracts boost the function of innate immune cells, the immune system's first line of defense.<sup>7-9</sup>

It has long been known that **Reishi's** unique polysaccharides, triterpenes, and other constituents<sup>10</sup> enhance the body's hematopoietic stem cells, macrophages, and other crucial immune factors.<sup>11-13</sup> Animal research shows **Reishi** supports multiple aspects of immune function and longevity.<sup>14</sup>



### 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:

<b>Cistanche tubulosa extract</b> (stem and leaf) [std. to 22% echinacosides (46.2 mg)]	<b>210 mg</b>
<b>Reishi mushroom</b> ( <i>Ganoderma lucidum</i> ) <b>extract</b> (Fruit body) [std to 13.5% polysaccharides (132.3 mg) and 6% triterpenes (58.8 mg)]	<b>980 mg</b>
<b>Reishi mushroom</b> ( <i>Ganoderma lucidum</i> ) <b>spore</b>	<b>150 mg</b>

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:

<b>Cistanche tubulosa extract</b> (stem and leaf) [std. to 22% echinacosides (46.2 mg)]	<b>210 mg</b>
<b>Vitamin C</b> (as ascorbyl palmitate)	<b>2 mg</b>

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](http://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.<sup>1-8</sup>

**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.<sup>9</sup>

To order Super K with Advanced K2  
Complex or Super Booster, call 1-800-544-4440  
or visit [LifeExtension.com](http://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

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**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**.<sup>1-12</sup>

**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.<sup>12</sup>

**Life Extension®** improves this a step further by adding **shilajit** to its **ubiquinol** formulas. The result is a doubling of CoQ10 levels in **mitochondria**.<sup>13</sup>

When **CoQ10** and **shilajit** are combined, there is a **56% increase** in energy production in the **brain** and **144% energy increase** in muscle.<sup>14</sup>

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](http://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.



## WHAT'S INSIDE

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# LifeExtension®

Magazine



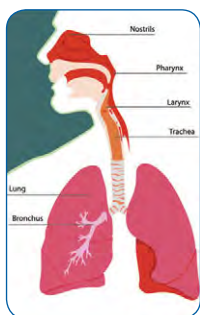
### 38 COMBAT AGE-RELATED BRAIN SHRINKAGE

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.



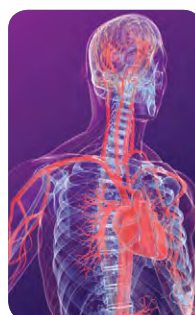
### 26 DEADLY IMPACT OF EXCESS ABDOMINAL FAT

Excess abdominal fat sharply increases risk of common age-related diseases. Clinical studies demonstrate that a novel **peptide** complex suppresses appetite, decreases food intake, and reduces abdominal fat deposition.



### 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.



### 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.



### 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.



### 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.