

A PRESCRIPTION DRUG VIRTUALLY EVERYONE NEEDS

# LifeExtension®

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

February 2012

## REMARKABLE *REVERSAL* of BRAIN AGING!

Doctors Overlook  
Leading Cause of  
Premature Death

Proven Methods  
Slash Elevated  
Glucose

Suppress  
Inflammatory  
Joint Damage

**PLUS-**  
Low-carb Diet Slows Tumor Growth  
Aspirin Slashes Hereditary Cancer Risk  
Fish Oil Reduces Prostate Cell Proliferation



# SUPER SALE

The annual **SUPER SALE** enables members to obtain premium grade supplements at prices substantially **below** what commercial companies charge.

When members buy products from the **Life Extension Foundation Buyers Club**, they know that the **quality** of the products are backed by the organization's commitment to achieving an indefinitely extended life span. What follows are a few examples of the **savings** members enjoy during the **SUPER SALE**.

	<b>Retail</b>	<b>Member SUPER SALE Discount Price Per Bottle</b>
<b>Super Omega-3 EPA/DHA with Sesame Lignans &amp; Olive Fruit Extract</b> , 120 softgels, Item # 01482 Super-refined EPA/DHA fish oil plus sesame lignans and potent olive fruit extract to provide critical omega-3 fatty acids and essential components of the Mediterranean diet	<b>\$32</b>	<b>\$16.81</b> <i>(ten-bottle purchase)</i>
<b>PQQ Caps with BioPQQ™</b> , 10 mg, 30 vegetarian capsules, Item # 01500 Promotes mitochondrial biogenesis (generation of new mitochondria) in aging cells.	<b>\$24</b>	<b>\$14.85</b> <i>(four-bottle purchase)</i>
<b>Bone Restore</b> , 150 capsules, Item # 01611 Highly absorbable forms of calcium combined with other critical bone protecting nutrients.	<b>\$22.50</b>	<b>\$13.16</b> <i>(four-bottle purchase)</i>
<b>Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™</b> 100 mg, 60 softgels, Item # 01426 The superior ubiquinol form of CoQ10 plus an organic compound (shilajit) shown to double mitochondrial CoQ10 levels.	<b>\$62</b>	<b>\$35.10</b> <i>(ten-bottle purchase)</i>
<b>ArthroMax™ Advanced with UC-II® and AprèsFlex™</b> , 60 capsules, Item # 01618 Promotes joint health with two <u>new</u> active ingredients.	<b>\$36</b>	<b>\$21.60</b> <i>(four-bottle purchase)</i>
<b>Super Bio-Curcumin®</b> , 60 vegetarian capsules, Item # 00407 Super-absorbable formulation promotes healthy DNA. Absorbs <u>six</u> times greater than conventional curcumin.	<b>\$38</b>	<b>\$23.63</b>
<b>Ultra Natural Prostate Formula with AprèsFlex™ &amp; Standardized Lignans</b> , 60 softgels, Item # 01695 Improve prostate protection with AprèsFlex™ that helps suppress 5-LOX.	<b>\$38</b>	<b>\$21.60</b> <i>(twelve-bottle purchase)</i>
<b>Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G</b> , 60 softgels, Item # 01586 Supports night vision and macular density.	<b>\$42</b>	<b>\$25.65</b> <i>(four-bottle purchase)</i>
<b>Life Extension Mix™</b> , 315 tablets, Item # 01655 High-potency multi-nutrient formula now with potent anthocyanins from maqui berry and proanthocyanins from tart cherry at no extra cost.	<b>\$98</b>	<b>\$46.91</b> <i>(ten-bottle purchase)</i>
<b>Super Booster Softgels with Advanced K2 Complex</b> 60 softgels, Item # 01590 A convenient <u>one</u> -per-day softgel that includes optimal potencies of gamma-tocopherol, sesame lignans, lycopene, lutein, ginkgo, selenium, and both forms of vitamin K2.	<b>\$42</b>	<b>\$25.65</b> <i>(four-bottle purchase)</i>

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.

The **SUPER SALE** extends to **January 31, 2012**. Members traditionally take advantage of the **SUPER SALE** to stock up on a year's supply of their favorite supplements. To place your order, **call 1-800-544-4440** or visit **www.lef.org** (**SUPER SALE** pricing available only to members in the US, Canada, and England.)

## REPORTS



### 42 PROTECT JOINTS FROM IMMUNE ATTACK

Scientists at **Stanford University** found that the **inflammatory joint damage** observed in osteoarthritis is caused by the same autoimmune dysfunction as rheumatoid arthritis. A patented **type II collagen** safely regulates the immune system, shielding delicate joint tissue from arthritic autoimmune attacks. Its action may be enhanced when combined with *Boswellia serrata* and other joint-renewing nutrients.



### 56 THE PRESCRIPTION DRUG VIRTUALLY EVERYONE NEEDS

The low-cost anti-diabetic drug **metformin** is one of the few prescription drugs **Life Extension®** recommends *everyone* consider taking. Recent data powerfully validate our longstanding position. In a group of **8,000** diabetics, cancer rates were slashed by **54%** over a ten-year period compared to the general population.



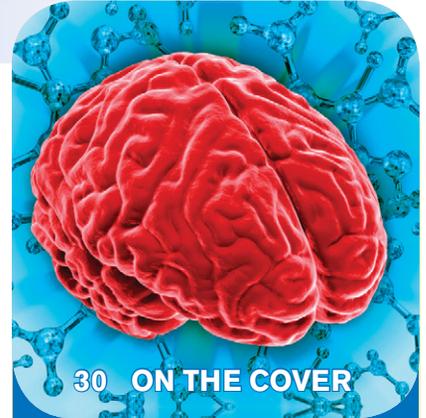
### 66 SUPPRESS DEADLY AFTER-MEAL BLOOD SUGAR SURGES

Surges in blood sugar after *each meal* can reach diabetic levels that last for hours or even days. A novel **green coffee bean extract** has been shown to *neutralize* a key enzyme that facilitates these lethal after-meal glucose “spikes.” In human trials, it yielded a remarkable **24%** drop in after-meal blood sugar in just **30 minutes** and an average reduction of **32%** after two hours!



### 80 PROVEN METHODS TO SLASH ELEVATED GLUCOSE LEVELS

Risk of heart disease and diabetic complications increases with **fasting glucose** above **85 mg/dL** and **postprandial glucose** above **140 mg/dL**. Yet many people have difficulty maintaining **fasting glucose** readings below **100 mg/dL**. Here we outline nutrients, hormones, drugs, and lifestyle changes that can help you impede glucose absorption, improve insulin sensitivity—and maintain healthy glucose levels.



30 ON THE COVER

### BREAKTHROUGH REVERSAL OF BRAIN AGING

Alzheimer's disease is the **sixth** leading cause of death among aging individuals in the United States. A team of **MIT** researchers has identified a form of magnesium that targets correctable factors involved in Alzheimer's onset. It concentrates more efficiently in the brain than conventional magnesium, rebuilding ruptured synapses and *restoring* neuronal connections. In one experimental model, this superior **magnesium-L-threonate** induced a **100%** improvement in long-term memory!

## DEPARTMENTS



### 7 DOCTORS OVERLOOK LEADING CAUSE OF PREMATURE DEATH

Despite a virtual mountain of scientific data showing the lethal dangers of **high blood sugar**, mainstream doctors are allowing their patients to needlessly suffer and die. It is not just elevated **fasting glucose** that leads to **diabetic complications** in non-diabetics. Startling findings reveal excess **after-meal** glucose surges inflict frightening damage throughout the body and are involved in the leading causes of death in America.

### 21 IN THE NEWS

Resveratrol mimics calorie restriction in clinical trial; whey protein prevents muscle loss in dieting older women; fish oil reduces prostate cancer growth; and more.

### 91 SUPERFOODS: CELEBRATE CILANTRO

From digestive aid and anti-inflammatory to antibacterial and glucose control weapon, **cilantro** and its seed **coriander** should become a regular part of your dietary regimen.



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Post your questions, add your comments, and access useful information on health, nutrition, prevention, anti-aging, and more.

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PURE, HEART HEALTHY

# Super Omega-3

## EPA/DHA



Item # 01482

Just four softgels of **SUPER OMEGA-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract** provide:

<b>EPA Pure+™ Extract</b> (eicosapentaenoic acid)	<b>1400 mg</b>
<b>DHA Pure+™ Extract</b> (docosahexaenoic acid)	<b>1000 mg</b>
<b>Olive Fruit Extract</b> [std. to 6.5% polyphenols (39 mg), 1.73% hydroxytyrosol/tyrosol (10.4 mg), 0.5% verbascoside/oleuropein (3 mg)]	<b>600 mg</b>
<b>Sesame Seed Lignan Extract</b>	<b>20 mg</b>

There's no debating the power of **omega-3** fatty acids. From support for **heart health** and **brain function** to help with **inflammation**, their broad-spectrum benefits have been firmly established in a wealth of studies.<sup>1-9</sup>

To ensure the purest, most stable, and easy-to-tolerate fish oil supplement, **Life Extension® SUPER OMEGA-3 EPA/DHA** is *molecularly distilled*. This proprietary process ensures any pollutants are reduced to virtually undetectable levels. The result? Our fish oil enjoys a **5-star rating** for **purity, quality, and concentration** from the **International Fish Oil Standards program (IFOS)**—the highest possible ranking from the world's premier testing laboratory.

### Sesame Lignans and Standardized Olive Fruit Extract for Enhanced Benefits

Fish oils (and other fatty acids) have a tendency to oxidize, rendering them nutritionally inferior. Scientific studies show that when added to fish oil, **sesame lignans** safeguard against oxidation and direct fatty acids toward pathways that help with inflammatory reactions.<sup>10</sup>

To further emulate the benefits of a **Mediterranean diet**, **Super Omega-3** delivers standardized, high-potency **olive fruit extract**. Research shows that **fish oil** combined with **olive oil** help with inflammation better than fish oil alone.<sup>11</sup>

Olive also contains the compounds **hydroxytyrosol**, **tyrosol**, and **oleuropein**. Together these nutrients counter the action of free radicals, delay aging in specialized skin cells, prevent undesirable LDL oxidation, and help maintain normal platelet activation.<sup>12-15</sup>

**Super Omega-3** supplies the equivalent content of **6 ounces of extra virgin olive oil**. Take two softgels twice daily with meals.

A bottle containing 120 softgels of **Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract** retails for \$32. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$18.90** per bottle. If **10 bottles** are purchased, the cost is just **\$16.81** per bottle. (Item # 01482)

### Introducing a **SMALLER SOFTGEL** for easier swallowing!

Some members have requested we make **Super Omega-3** available in a smaller capsule for easier swallowing. We have accomplished this by making **half-size** softgels available.

A bottle containing 240 half-size softgels of **Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract** retails for \$32. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$18.90** per bottle. If **10 bottles** are purchased during **Super Sale**, the cost is just **\$16.81** per bottle. (Item # 01619)

For those with sensitive stomachs, **Super Omega-3** is also available with **enteric coating** and retails for **\$34**. If a member buys four bottles, the price is reduced to **\$20.93** per bottle. If **10 bottles** are purchased during **Super Sale**, the cost is just **\$18.90** per bottle. (Item # 01484)

To order the most advanced fish oil supplement, **Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract (with or without enteric coating)**, call **1-800-544-4440** or visit **www.LifeExtension.com**

**CAUTION:** If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product. Contains fish (anchovy, mackerel), sesame, and corn.

#### References:

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Supportive but not conclusive evidence shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease.

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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.

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



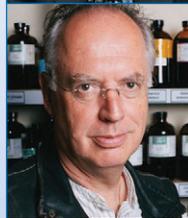
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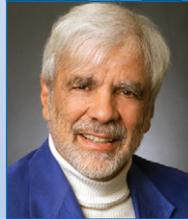
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Combining CoQ10 and **shilajit** produced a **56%** increase in energy production in the **brain**, and in muscle there was a **144%** increase in energy production.<sup>2</sup>

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**Shilajit** boosts CoQ10's beneficial effects by stabilizing CoQ10 in the superior **ubiquinol** form, which *prolongs* its action at the cellular level.<sup>3,4</sup> Additionally, **shilajit** facilitates the more efficient *delivery* of CoQ10 into the mitochondria, which results in enhanced cellular energy.<sup>5-9</sup>

Shilajit helps the mitochondria convert fats and sugars into the body's main source of energy, ATP (adenosine triphosphate).<sup>5-9</sup>

Combining **ubiquinol CoQ10** with **shilajit** generates a powerful *synergy* that supports more youthful cellular energy production than CoQ10 alone.<sup>2,4,5</sup>

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# Doctors Overlook Leading Cause of Premature Death



BY WILLIAM FALOON



**Diabetes** is defined as a disease in which a person has **high blood sugar**.

The problem is that physicians are failing to determine how **low blood glucose** needs to be to protect against dreaded **diabetic complications**.

In a series of published studies, the definition of what constitutes diabetes, (or said differently, a person with **high blood sugar**) is about to be turned upside down.

This is not a trivial matter. The term “**diabetic complications**” encompasses the most common diseases of aging, ranging from kidney failure<sup>1-3</sup> and blindness,<sup>4-6</sup> to heart disease,<sup>7-12</sup> stroke,<sup>13,14</sup> neuropathy,<sup>15,16</sup> and even cancer.<sup>17-22</sup> This means that most degenerative disease can be traced back to **undiagnosed glucose control** problems, which we assert will soon become the new definition of **diabetes**.

**High blood sugar** appears to be the leading killer today, yet the medical mainstream is not properly diagnosing or treating it. The tragic result is an epidemic of **diabetic complications** that cripple and kill millions of Americans because simple steps are not being taken to suppress **after-meal** glucose spikes.

As you are about to learn, it is not just elevated **fasting glucose** that creates diabetic complications. **Excess after-meal glucose surges** have turned into a silent diabetes plague, thus mandating new steps be taken to protect against what may be the leading cause of premature death.

## AS WE SEE IT

### Fasting Glucose Is a Delayed Marker of Diabetes

When people take blood tests to measure glucose levels, they are asked to fast for **8 to 12 hours**. Doctors ask for this 8-12 hour fast because they want a consistent baseline to measure glucose and lipids in comparison with the general population.

There is one problem with this. A person who suffers from dangerously **high blood sugar** several hours *following* a typical meal may artificially *drop* their **fasting glucose** to a safe range after fasting 8 or more hours. A person's ability to clear their blood of excess glucose 8-12 hours after eating may persist for decades, thus *masking* what may be a dangerous postprandial (after-meal) spike in glucose.

Even tests that measure long-term glycemic control like **hemoglobin A1c** may not adequately detect these post-meal glucose surges.

This means that many of us spend a part of our day in an acute **diabetic state**. The lethal impact of these **multi-hour glucose surges**

is just now being understood. As you will read, **diabetic complications** can develop years or even decades before full-blown **type 2 diabetes** is diagnosed.

### Consequences of Post-meal Glucose Surges

What happens in your blood during the first several hours after ingesting a high-carbohydrate meal has a lot to do with your risk of acquiring **diabetic complications**, even if you have not yet developed **diabetes** (as defined today).

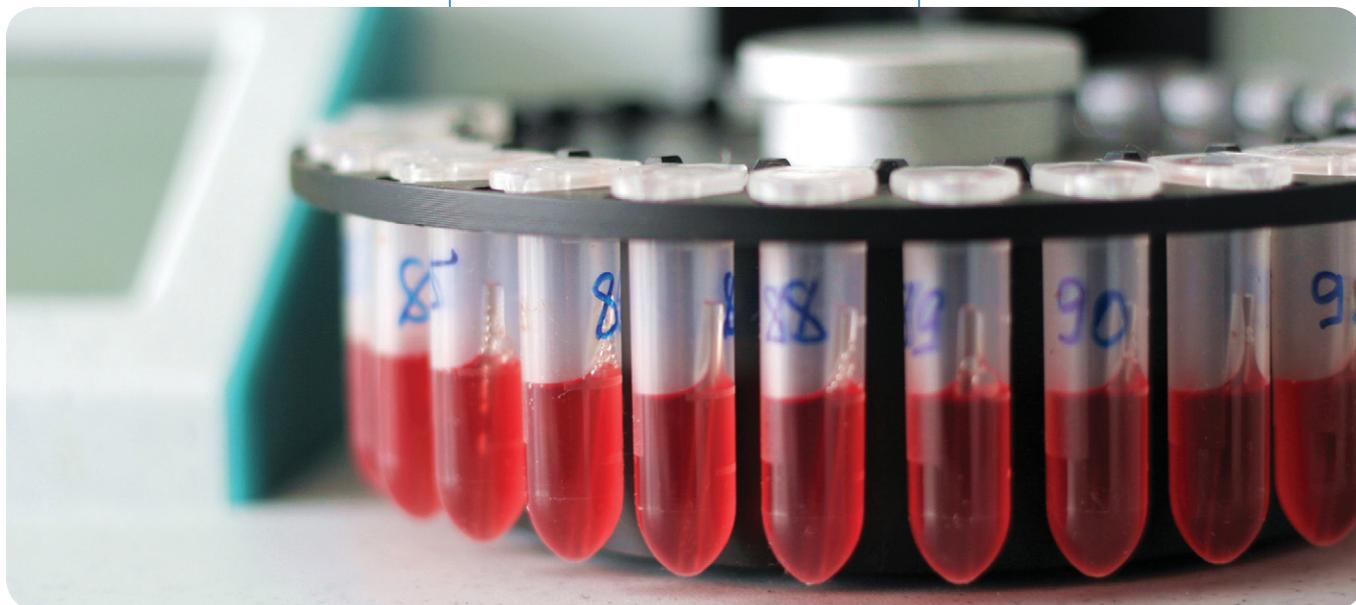
Glucose levels naturally rise in your blood after a high-carbohydrate meal and if you are healthy, glucose will quickly drop back to pre-meal ranges. If glucose rises too much and stays *elevated too long*, however, a tremendous amount of tissue damage is inflicted.<sup>23-27</sup>

Diabetics have sharply higher rates of heart attacks compared to non-diabetics.<sup>28-30</sup> Yet even in many not considered diabetic, heart attack rates are **40% higher** when **fasting glucose** levels are above

**85 mg/dL**.<sup>31</sup> In a study where after-meal glucose spikes were **impeded**, heart attacks rates dropped an astounding **91%**.<sup>32</sup> Even when someone suffers a heart attack, the amount of damage to the heart muscle is *significantly reduced* when steps are taken ahead of time to reduce post-meal glucose surges.<sup>32-36</sup>

The Honolulu Heart Program found that the risk of coronary artery disease correlated with glucose levels measured one hour after a 50-gram oral glucose load. **The incidence of coronary artery disease was twice as high in patients with postprandial glucose levels between 157 and 189 mg/dL compared to those with levels under 144 mg/dL**.<sup>37</sup> Another study showed the incidence of **sudden death** was **doubled** with postprandial glucose levels of **225 mg/dL** or higher.<sup>38</sup>

The Whitehall Study of British male civil servants showed that **blood glucose levels of 96 mg/dL or higher two hours after a meal were associated with a two-fold increase in mortality from coronary artery disease**.<sup>39</sup>





Another British study, the Islington Diabetes Survey, reported that the incidence of **major coronary artery disease** was **17%** in subjects with **impaired glucose tolerance**, typically defined as **2-hour postprandial glucose levels of 140-199 mg/dL**, compared with **9%** in subjects with **normal glucose tolerance**.<sup>40</sup> The Oslo Study indicated that **risk of fatal stroke in diabetic patients increased by 13% for each 18 mg/dL elevation in postprandial glucose**.<sup>41</sup>

These studies consistently show **sharply** higher **vascular disease** in those with higher postprandial (after-meal) glucose spikes.

### Diabetic Complications Seen in Non-diabetics

**Peripheral neuropathy** involves burning, tingling, and loss of sensation, usually of the lower extremities. It is a common diabetic complication that if left unchecked can result in gangrene that requires amputation to save the patient's life.<sup>42,43</sup>

A study showed that many *non-diabetics* whose glucose elevates to **140 mg/dL** or higher after an oral glucose tolerance test suffered the same type of neuropathy as seen in full-blown diabetics. These patients' **fasting glucose** and **hemoglobin A1c** levels were not high, but if their blood glucose levels remained above **140 mg/dL**

two hours after ingesting 75 grams of pure glucose (a glucose tolerance test), there was a sudden and significant increase in incidence of diabetic neuropathy signs and symptoms.<sup>44</sup>

Another study found that **56%** of neuropathy patients had glucose tolerance levels that fell in the pre-diabetic range, and these individuals suffered damage to their small nerve fibers.<sup>45</sup> It has been anecdotally reported that neuropathic pain in the feet of patients worsens when glucose levels exceed **140 mg/dL** and diminish when glucose is dropped below this range.<sup>44,46</sup>

**Retinopathy** occurs when high blood sugar damages tiny blood vessels in the retina of the eye. It is one of the most feared diabetic complications as it can lead to blindness. The American Diabetes Association thought that retinopathy did not occur until a glucose tolerance test showed glucose levels well over **200 mg/dL** after two hours. However, in a large population study, one out of every twelve people with **pre-diabetes** showed signs of retinopathic changes occurring in their eyes. This study classified pre-diabetes as fasting glucose between **100-125 mg/dL** or two-hour glucose tolerance readings between **150-199 mg/dL**. These findings show that post-meal glucose spikes over **150 mg/dL** are associated with tiny blood vessel changes that lead to diabetic retinopathy.<sup>4</sup>

Diabetics have higher rates of **cancer** that have been attributed to higher blood sugar and insulin levels.<sup>47-49</sup> When glucose is elevated, the pancreas secretes excess insulin in an attempt to normalize it. Higher insulin levels are believed to stimulate cancer cell proliferation. A study that tracked 10,000 people for 10 years showed substantial increase in cancer in those with fasting glucose over **110 mg/dL** or two-hour postprandial glucose levels over **160 mg/dL**.<sup>50</sup>

Excess glucose also increases **triglyceride** levels, another vascular risk factor.<sup>51</sup> Certain drugs like metformin that lower glucose and insulin also reduce artery-clogging triglycerides.<sup>52,53</sup>

These and other studies demonstrate that those who are unable to control their glucose peaks are prone to suffer **diabetic complications**. All of this confirms what *Life Extension*<sup>®</sup> previously published about the urgent need to protect against after-meal surges of glucose, insulin, and triglycerides.

Clearly, the body does not like to be inundated with after-meal glucose spikes, yet too many Americans suffer from **excess postprandial glucose** throughout most of the day, and their doctors are not paying attention to the lethal risks this poses.

Not only do glucose spikes acutely damage tissues, but they unfavorably alter gene expression in a way that may accelerate aging processes.<sup>54,55</sup> This is one reason why calorie restriction has yielded such robust extensions in life span, along with sharply lower risks of degenerative diseases. Fortunately, there are several proven ways to curb after-meal glucose spikes that do **not** require severe calorie restriction.



### High Glucose Destroys Insulin-producing Cells

Not only do after-meal glucose surges create lethal diabetic complications, but they directly cause the destruction of the **insulin-producing beta cells** in the pancreas. Once enough beta cells die, there is insufficient insulin to control blood glucose levels. It is usually at this time of spiraling fasting glucose levels that full-blown **type 2 diabetes** is diagnosed...sometimes decades after **high blood sugar** has *already* damaged every tissue in the body.<sup>56,57</sup>

Beta cells secrete insulin in response to increases in blood glucose. Unfortunately, beta cells are quite sensitive to even slight increases in blood sugar. There is evidence of beta cell dysfunction when glucose levels stay over 100 mg/dL for more than a few hours.<sup>58</sup>

When analyzing this data further, scientists found that even small incremental increases in glucose over a two-hour period result in detectable beta cell failure. This study showed that more beta cells fail as a person's blood sugar rose even within the so-called "normal range."<sup>58</sup>

Another study showed that beta cells start to die off when **fasting glucose** is over **110 mg/dL**—a level that many doctors tell their patients not to worry about.<sup>59</sup> This study indicates that people are killing off their vital insulin-producing beta cells by allowing glucose to spike too high after meals. Once enough beta cells have died, people become insulin-dependent diabetics with markedly shortened life spans. As we now know, when someone has **fasting glucose** over **110**, it means they usually spend *several hours after meals* with sharply *higher* glucose levels.

Laboratory studies show that prolonged exposure to high sugar levels destroys beta cells. When these beta cells are removed from high-sugar mediums, they can recover, but *only if they were removed before a certain amount of time had passed*.<sup>60,61</sup>

A huge portion of the population spends most of their day with glucose levels above those shown to injure or kill insulin-secreting beta cells. This explains how **high blood sugar** is in itself a direct cause of the destruction of beta cells needed for insulin production. It used to be thought that beta cells "burned out" because they were forced to overproduce insulin

to suppress high blood sugar levels. We now know that high blood sugar itself is killing vital beta cells.

Said differently, many **type 2 diabetes** cases are not caused because of insufficient insulin production. Instead, **high blood sugar** destroys beta cells, thus causing chronically elevated blood sugar (because of insufficient insulin secretion) that is eventually diagnosed as **type 2 diabetes**. The obvious solution is to keep after-meal glucose levels suppressed so beta cells don't die!

### A New Definition of Diabetes

Diabetes should be re-defined as *"a disease in which a person has acute blood sugar spikes and/or chronically elevated blood sugar levels high enough to increase disease risk."*

The definition could be elaborated to include anyone with **fasting glucose** above **85 mg/dL** and/or a 75-gram oral glucose tolerance test load that shows a rise from fasting glucose greater than **40 mg/dL** after two hours. What this means is that if a person's fasting glucose is **80 mg/dL**, and their postprandial level is higher than **120 mg/dL** two hours after a glucose tolerance test, they have *less-than-optimal* glycemic control that should be treated.

The upper-limit number for after-meal glucose (120 mg/dL) in the preceding paragraph reflects ranges sought in people who practice **calorie restriction**. Others may argue that glucose-suppressing treatment should not be initiated until glucose readings are over **140 mg/dL** two hours after an oral glucose challenge.<sup>23</sup> This higher upper limit *after-meal* glucose level (140 mg/dL) is more practical for most aging humans to strive for.

It is advantageous for all aging individuals to strive for **fasting glucose** levels below 86 mg/dL, which may not be feasible in everyone, as some of us are predisposed to higher glucose levels despite aggressive interventions.

In any case, aging humans should view every meal (especially those high in carbohydrates) as a direct threat to their health and longevity. Proven methods should thus be implemented prior to all large meals to blunt postprandial glucose surges. This includes inhibiting *amylase*<sup>62-67</sup> and *glucosidase*<sup>68,69</sup> enzymes to impede absorption of glucose into the bloodstream, along with special fibers<sup>70-72</sup> that delay emptying of food into the small intestine where rapid absorption of glucose from carbohydrate foods occurs.

Nutrients, hormones, and drugs (already used by many **Life Extension** members) improve *insulin sensitivity*, which facilitates more efficient removal of glucose from the blood.<sup>73-81</sup>

Despite impeding glucose absorption and improving cellular glucose utilization, too many health-conscious members are not adequately controlling their blood glucose levels.

The good news is that a standardized **green coffee bean extract** has demonstrated robust after-meal reductions in glucose spikes and functions via *novel mechanisms* not previously available.<sup>82,83</sup>

## Why Do Aging People Have Too Much Glucose?

We know that overconsumption of calories (especially refined carbohydrates) will acutely spike blood glucose and can eventually result in chronically elevated fasting glucose, which is how diabetes is defined today.

Yet as people age, and pay closer attention to their diets, they still often suffer after-meal glucose surges that result in their bloodstreams being bloated with *too much* glucose for *too many* hours. This is caused by a variety of factors, including reduced *insulin sensitivity* that disables the ability of muscle cells to remove surplus glucose from blood for conversion to energy.

There are other reasons, however, why certain individuals have not been able to reduce their glucose to safe ranges.

## The Hidden Causes of Glucose Overload

A lesser-known cause of **glucose overload** is that glucose stored in the body's tissues (primarily the liver) is inappropriately released into the bloodstream. This pathological release of glucose occurs even though there is plenty of sugar in the blood from a meal that was just eaten.

In those with healthy metabolisms, the liver stores glucose (as glycogen) and only releases enough to maintain a constant blood sugar

## How Excess After-Meal Glucose Causes Vascular Damage

Below are three specific mechanisms by which elevated **postprandial glucose** inflicts damage to our arteries, which subsequently increases risk of stroke, heart attack, kidney failure and other diabetic complications:

1. **Endothelial dysfunction.** A consequence of postprandial hyperglycemia is activation of protein kinase C in the endothelium which increases adhesion molecules that facilitate leukocyte uptake into the blood vessel wall. Hyperglycemia also increases expression of the vasoconstrictor endothelin; and induces platelet aggregation, all of which causes or accelerates atherosclerosis.<sup>99,100</sup>
2. **Hypercoagulability.** Excess postprandial plasma glucose levels increase hypercoagulability resulting from increased thrombin production and decreased fibrinogen breakdown. These, in turn, result from the overproduction of plasminogen activator inhibitor, which directly inhibits tissue plasminogen activator activity. This sets the stage for an abnormal blood clot forming in an artery that can cause acute heart attack or stroke.<sup>101</sup> Hypercoagulability also facilitates progression of atherosclerotic plaque. Control of postprandial hyperglycemia reverses this hypercoagulable state.
3. **Glycation.** High postprandial glucose levels result in vascular protein and lipid glycation. Glycated LDL particles are more easily oxidized and taken up by macrophages through the scavenger receptor. This leads to higher foam cell production, and, ultimately, atherosclerotic plaque.<sup>102,103</sup> The formation of advanced glycation end products in the collagen of the vessel wall directly accelerates the atherosclerotic process.<sup>104</sup>

These mechanisms clearly show the devastating consequences of **high blood sugar** on the vascular system.

## AS WE SEE IT

level to protect against hypoglycemic events. This is called **glycogenolysis**.<sup>84</sup> In healthy individuals, glycogenolysis is suppressed by **90%** in the liver after a meal to protect against blood glucose overload.<sup>85,86</sup>

As people age and their blood sugar rises, this delicate balance destabilizes. High postprandial blood sugar stimulates an enzyme called **glucose-6-phosphatase**, which in turn prompts the **excess release** of **stored glucose** from tissues, even though there is already abundant glucose in the blood.

People with high blood sugar levels lose control over normal glucose tissue *release*. Instead of turning it off in response to glucose flooding into their bloodstream from their last meal, they release too much. This contributes to the deadly after-meal glucose spikes that cause **diabetic complications** even among non-diabetics.

The **glucose-6-phosphatase** enzyme has another dark side. It facilitates the **creation** of glucose from other substrates (amino acids, fatty acids, or lactate) in the body. This creation of **new** glucose is called **gluconeogenesis**.<sup>87</sup>

The significance of this process is that it explains how the body can break down any food (protein, fat or carbohydrate) into glucose. **Gluconeogenesis** is what causes some people to have **high blood sugar** even though they follow a “low-carb” diet.

Elevated **glucose-6-phosphatase** prompts the *release* and *creation* of **new glucose** into the blood, whether or not you consume *any* carbohydrate calories. This twin phenomenon of **glycogenolysis** (release of stored glucose) and **gluconeogenesis** (creation of new glucose) explains why so many aging people suffer high blood sugar levels.

For some people, even if they follow reduced-calorie diets, their bodies may still **create** too much glucose internally due to excess **glucose-6-phosphatase**.

To understand why excess **glucose-6-phosphatase** is so deadly, aging people barely have the capacity to safely metabolize the calories they ingest throughout the day. As the body creates and releases too much glucose in the presence of excess **glucose-6-phosphatase**, each additional calorie can add to

glucose spikes. So when a meal is consumed, glucose flows into the bloodstream. This in turn causes total blood glucose levels to **skyrocket** not just from the ingested carbohydrates, but also through the twin processes of **gluconeogenesis** and **glycogenolysis**. Blood sugar levels can then remain elevated for most of the day.

Suppression of **glucose-6-phosphatase** is thus a critical missing link to blunting after-meal (postprandial) glucose surges that are an underlying cause of so many horrific (diabetic) complications.

### **Green Coffee Bean Extract Suppresses Glucose-6-Phosphatase**

A number of population studies identified **coffee drinkers** (who drank at least five cups a day) as being substantially less likely to get **type 2 diabetes**.<sup>88</sup>

Further research has suggested the compound responsible for this beneficial action on glucose metabolism is **chlorogenic acid** that is found abundantly in raw coffee beans.





## AS WE SEE IT

### Dangers of After-meal Glucose Spikes

When after-meal glucose levels surge above 140 mg/dL, risks of virtually all degenerative diseases increase.

Remember that you should strive for **fasting glucose** levels of no greater than **85 mg/dL** (optimal range: 70-85 mg/dL). In response to eating, your blood glucose reading should increase no more than **40 mg/dL** above your fasting value. This means if your fasting glucose is **80**, your after-meal glucose should be no higher than **120 mg/dL**.

The dangers of high glucose are so strongly evident that the International Diabetes Federation has warned that non-diabetics with postprandial glucose above **140 mg/dL** (normally measured two hours after a meal) are at significant risk for many disorders including:<sup>105</sup>

- Retinal damage to the eye
- Arterial blockage
- Oxidative stress
- Increased inflammation
- Endothelial dysfunction
- Reduced coronary blood flow
- Increased cancer risk

Life Extension has developed a wide range of programs to enable members to take precautions before meals to protect against damaging surges of blood glucose.

What **chlorogenic acid** does is inhibit the enzyme **glucose-6-phosphatase**, which reduces the **release** and **creation** of excess **glucose** in the body.<sup>89,90</sup> This unique dual property of **chlorogenic acid** provides a powerful new weapon in our quest to attain optimal fasting and postprandial glucose levels.

In a clinical trial of 56 subjects, 100 grams of glucose was given as an oral glucose challenge test. Study subjects were given escalating doses of **standardized green coffee bean extract** to measure its ability to reduce the postprandial glucose surge. At a dose of **400 mg of green coffee bean extract**, there was a remarkable **32% reduction** in the postprandial glucose surge.<sup>82</sup> This translates into someone who normally suffers a

dangerous postprandial blood glucose surge of **160 mg/dL** reducing it to a safe **109 mg/dL**.

An article in this month's issue describes the multi-faceted benefits of **green coffee berry extract** standardized for **chlorogenic acid**. If all it did was suppress after-meal glucose spikes, it would be well worth considering for anyone who has not been able to achieve optimal glucose control. Like so many other natural polyphenols, **chlorogenic acid** has demonstrated a wide range of additional protective properties.<sup>91-95</sup>

### Mitigating the Oxidative Flame-thrower

A common complaint amongst newly-diagnosed diabetics is why so many complications develop so

quickly. What they fail to understand is their delicate tissues may have been under assault from **after-meal glucose surges** for decades before full-blown **type 2 diabetes** was diagnosed.

In the presence of excess glucose, tissues of the body undergo a hyper-oxidation effect analogous to being torched with a military flame-thrower.

While antioxidants can suppress some of the oxidative flame, it is critical to block the underlying catalysts, which are the **high blood sugar** levels so many aging individuals suffer after every heavy meal.

Scientific studies substantiate that acute damage occurs during **after-meal glucose spikes**, yet mainstream medicine continues to ignore this deadly phenomenon. On page 80 of this issue is an article about nutrients, hormones, and drugs that can help safely suppress fasting and postprandial glucose levels.

### Advanced Nutrient Formulas at Year's Lowest Prices

Life Extension members take advantage of the annual **Super Sale** to acquire our most up-to-date nutrient formulations at **extra-discounted** prices.

Virtually every year, we upgrade our formulas to provide even more effective health-sustaining nutrients.

Last year we introduced PQQ (pyrroloquinoline quinone) to induce the creation of new mitochondria in aging cells.<sup>96</sup> **PQQ** became an overnight blockbuster as **Life Extension** members were astutely aware of the critical importance that healthy mitochondria play in forestalling aging processes. Mitochondrial *insufficiency*, in fact, is involved in the

# AS WE SEE IT

promotion of **type 2 diabetes** via its debilitating effects on cellular glucose utilization.<sup>97,98</sup>

In this month's issue, you'll discover a missing link that causes aging people to suffer acute post-meal glucose surges that trigger common age-related disorders. The good news is that most of you have been taking steps to shield your bloodstream against these acute glucose spikes. With the introduction of low-cost **green coffee bean extract**, aging humans can exert greater control over their blood glucose levels than ever before.

## Save Money While Supporting Research

Every time you purchase a Life Extension product, you contribute to research aimed at extending healthy human life span. The **Life Extension Foundation**® continues to fund a record number of scientific projects, while battling incompetent bureaucrats who seek to suffocate medical innovation.

During the traditional winter **Super Sale**, all Life Extension formulas are **discounted** so that members can obtain up-to-date versions at the lowest prices of the year.

Until January 31, 2012, members take advantage of Super Sale **discounts** to stock up on cutting-edge formulas designed to circumvent the underlying mechanisms of aging.

For longer life,



William Faloon

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Brain degeneration affects all aging adults. Enhancing communication between neurons may hold the key to maintaining youthful cognition and memory.

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

To bolster UMP's impact on brain function, Cognitex® contains **Sharp-PS® GOLD** to promote normal neuronal cell membrane activities and structure. With this structure in place, **vinpocetine** enhances circulation and oxygenation of brain cells while **phospholipid-grape seed extract** improves blood vessel tone and elasticity, thus boosting oxygen flow to the brain.

**Wild blueberry extract** is included to protect against free-radical damage, and **pregnenolone** has shown beneficial properties as well.

In order to protect against inflammation to a healthy brain, a **proprietary NeuroProtection Complex Blend** contains standardized extracts of hops, ginger, and rosemary — all known to have anti-inflammatory capabilities.

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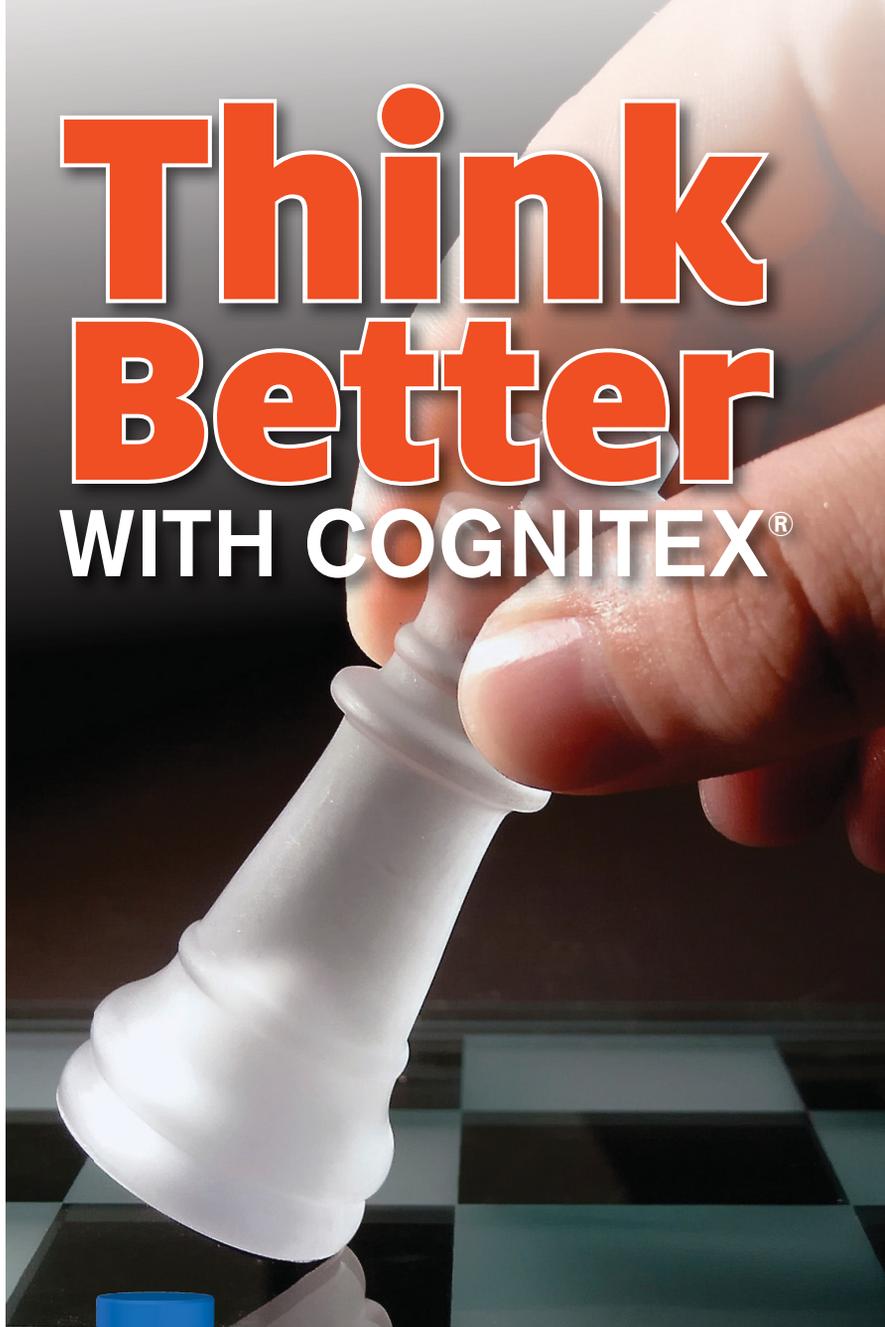
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Contains fish (wild herring, blue whiting), soybeans, corn, and rice.

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Pregnenolone	50 mg
Vinpocetine	20 mg
Phospholipid-Grape Seed Extract	150 mg
Wild Blueberry Extract ( <i>Vaccinium angustifolium</i> )	150 mg
Sensoril® Ashwagandha Extract ( <i>Withania somnifera</i> )	125 mg
Uridine-5'-Monophosphate (disodium)	50 mg
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# VITAMIN C TO THE MAX

Vitamin C's popularity is undeniable—and so are its benefits! It has been over 80 years since this critical vitamin was isolated, and its importance in our diet cannot be overstated. However, since humans don't manufacture **vitamin C** internally, it must be obtained through dietary sources or supplements.

This can be problematic because **vitamin C** is a *water-soluble* nutrient that is quickly oxidized and released by the body, which means that for those seeking vitamin C's optimal health benefits they have to consume the vitamin several times a day.<sup>1</sup>

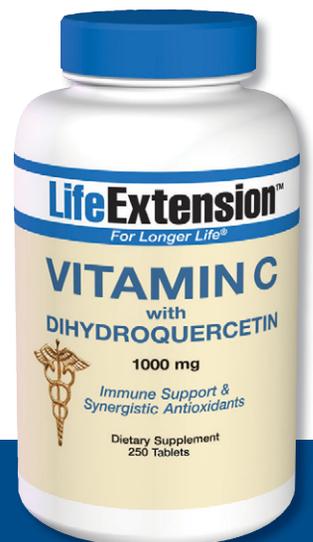
Fortunately, a *flavonoid* antioxidant known as *dihydroquercetin* functions as a **vitamin C** "supercharger." Studies demonstrate that *dihydroquercetin* acts to inhibit the oxidation of **vitamin C**, thereby helping to maintain its concentration and to recycle **vitamin C** throughout the body.<sup>2,3</sup> This synergistic relationship between *dihydroquercetin* and **vitamin C** greatly enhances the efficacy of both molecules in the body's organs and tissues.

**Vitamin C with Dihydroquercetin** was formulated for those seeking to obtain optimal efficacy and antioxidant protection from their vitamin C supplement. The suggested daily dose of one tablet of this formula supplies **1,000 mg** of **vitamin C** (as ascorbic acid), along with **10 mg** of *dihydroquercetin-3-rhamnoside*, a highly bioavailable form of dihydroquercetin derived from grape leaf extract.

A bottle containing 250 tablets of **Vitamin C with Dihydroquercetin** retails for \$25.50. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$15.69 per bottle**.

**References:**

1. *PLoS Med.* 2005 Sep;2(9):e307; author reply e309.
2. *Am J Clin Nutr.* 1988 Sep;48(3):601-4.
3. *J Food Tech.* 1969;4:255-67.



To order **VITAMIN C with Dihydroquercetin**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

# Take Control of After-Meal Glucose Spikes With CoffeeGenic™ Green Coffee Extract

## Support for 24-Hour-A-Day Healthy Glucose Metabolism

People who take extraordinary steps to limit their **carbohydrate** exposure may *still* be experiencing higher-than-desired blood sugar throughout the day.

The reason? **Blood sugar can surge to dangerously high levels that can last for hours following meals and even the entire day!**

Studies show even in people with normal *fasting* glucose, gaining control of **after-meal** surges may provide additional support for cardiovascular and metabolic health.<sup>1-3</sup>

To address this widespread problem, a natural compound is now available called **CoffeeGenic™ Green Coffee Extract**. This *next-generation* glucose control compound was shown to induce a remarkable **32%** drop in **after-meal** blood sugar!<sup>1</sup>

## Multi-Targeted Defense with Novel Green Coffee Compound

At the core of **CoffeeGenic™ Green Coffee Extract's** power to favorably modulate *after-meal* glucose levels is **chlorogenic acid**, a polyphenol found in the **green coffee bean**.

**Chlorogenic acid** has been shown to **inhibit** excess activity of the **glucose-6-phosphatase** enzyme.<sup>4,5</sup> This enzyme triggers glucose formation from non-carbohydrate substrates and glycogen release from the liver, both of which can create excess glucose in the blood.<sup>6</sup> Neutralizing excess **glucose-6-phosphatase** is essential for most people to achieve **optimal glucose control**.

Another means by which **chlorogenic acid** supports healthy after-meal glucose levels is by targeting the **alpha-glucosidase** enzyme. This intestinal enzyme breaks apart complex sugars and enhances their absorption into the bloodstream.<sup>7</sup>

Chlorogenic acid also increases the signal protein for insulin receptors in liver cells.<sup>8</sup>

## Patented Extraction Process, Standardized for Maximum Potency

Why *green* coffee bean extract?

Coffee grows on trees and the fruit is a berry. The berry contains green seeds, which are the "beans." The outer part of the berry is washed away to get to the seeds. The seed has a higher amount of **phenolic acids** (50%) than the berry (about 35%).

The problem with the roasted coffee you drink is that much of the beneficial phenolic content of the coffee bean is destroyed during the roasting process.

**CoffeeGenic™ Green Coffee Extract** is produced through a patented extraction process to deliver an extraordinarily high proportion of **chlorogenic acid** for maximum potency.

The coffee beans sourced for **CoffeeGenic™ Green Coffee Extract** are organically grown.

For optimal benefit, one vegetarian capsule of **CoffeeGenic™ Green Coffee Extract** should be taken before heavy meals. Green Coffee extract is standardized to **50% chlorogenic acid**.

### ● CoffeeGenic™ Green Coffee Extract (200 mg) • Item #01604

(Each serving contains approximately 6 mg caffeine)

A bottle containing **90 200 mg vegetarian capsules** of **CoffeeGenic™ Green Coffee Extract** retails for \$25. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$14.85** per bottle.



Item #01604

### ● CoffeeGenic™ Green Coffee Extract (400 mg) • Item #01620

(Each serving contains approximately 12 mg caffeine)

A bottle containing **90 400 mg vegetarian capsules** of **CoffeeGenic™ Green Coffee Extract** retails for \$38. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$22.95** per bottle.



Item #01620

For those wishing to pursue *multi-nutrient* strategies to support optimal after-meal glucose control, see additional Life Extension® formulas featuring **green coffee bean extract** in this issue.

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To order any of the new **CoffeeGenic™ Green Coffee Extract** formulas,  
call **1-800-544-4440** or visit **www.LifeExtension.com**

# Preserve Youthful Cellular ENERGY

## with Next-Generation LIPOIC ACID

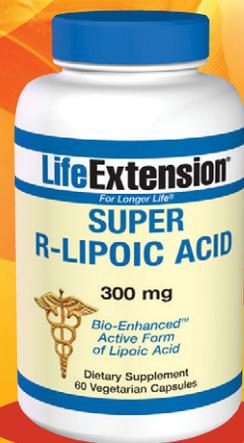
Published studies have shown the critical importance of **lipoic acid** in supporting healthy mitochondrial function.

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

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

**CAUTION:** Because this product may lower blood glucose, consult your healthcare provider before taking this product if you are taking glucose lowering medication.

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



Item # 01208

To order **Super R-Lipoic Acid**,  
call **1-800-544-4440** or  
visit [www.LifeExtension.com](http://www.LifeExtension.com)

A bottle of **Super R-Lipoic Acid** containing 60 vegetarian capsules retails for \$49. If a member buys four bottles during **Super Sale**, the cost is only **\$30.38 per bottle**. Each capsule contains **300 mg** of stabilized, Bio-Enhanced® **Super R-lipoic acid** supplying **240 mg** of **R-lipoic acid**. Suggested dose is one capsule each day.

Contains rice.

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



## IN THE NEWS

### Sugary Drinks May Increase Heart Disease Risks for Women

A presentation at the American Heart Association's annual meeting in Orlando, Florida stated that women's risk for developing heart disease and diabetes may increase if they consume two or more sugar-sweetened drinks daily.\*

The announcement was based on a study performed by Christina Shay and her colleagues at the University of Oklahoma Health Sciences Center. Shay assessed the drinking habits of over 4,100 women and men aged 45 to 84 from various ethnic groups with questionnaires. None of the participants had heart disease at the start of the program. The researchers evaluated each individual for weight gain, waist circumference, cholesterol levels, triglycerides, and glucose over a five-year span.

The evaluation found that middle-aged women who drank two or more sugary drinks a day were close to four times as likely to have high levels of dangerous blood fats called triglycerides and impaired blood sugar levels, known as prediabetes. The same results were not found in men.



**Editor's Note:** Life Extension® has long warned about the dangers of elevated blood sugar and has urged readers to avoid sugary beverages at all costs.

—J. Finkel

\* American Heart Association's Scientific Sessions 2011. Orlando, Florida. November 12-16, 2011.

### Resveratrol Mimics Calorie Restriction's Effects on Metabolism in Clinical Trial

Patrick Schrauwen and his associates report in *Cell Metabolism* that men supplementing with resveratrol experienced metabolic effects similar to those observed in animal studies of calorie restriction.\* Resveratrol is a compound that occurs in red grapes, wine, and other plant foods. The current trial is the first to evaluate resveratrol's metabolic effects in humans.

In a randomized, crossover study, eleven obese men received a placebo or 150 milligrams trans-resveratrol for 30 days each. Body mass index, whole-body energy expenditure, lipid storage, plasma markers of metabolic function, and other values were measured before and after treatment.

"We demonstrate beneficial effects of resveratrol supplementation for 30 days on the metabolic profile in healthy obese males, which seems to reflect effects observed during calorie restriction," the authors write. "Although most of the effects that we observed were modest, they were very consistently pointing toward beneficial metabolic adaptations."

**Editor's Note:** The authors conclude that, "Future studies should investigate the long-term and dose-dependent metabolic effects of resveratrol supplementation in order to further establish whether resveratrol supplementation has the potential to overcome the metabolic aberrations that are associated with obesity in humans."

—D. Dye

\* *Cell Metab.* 2011 Nov 2;14(5):612-22.

## Whey Prevents Loss of Essential Muscle in Dieting Older Women

Age-related loss of muscle mass, called sarcopenia, negatively impacts an aging adult's ability to function through daily life tasks, such as climbing stairs and lifting grocery bags. During a period of restricted calories, such as experienced while dieting, the loss of muscle mass is often accelerated further.

Whey protein may be able to counter that loss of muscle during a diet. In a recent six-month, double-blind study, 31 postmenopausal obese women were divided into two groups.\* Both groups followed a 1,400-calorie restricted diet based on the USDA's recommendations. One group received a 50 g whey protein supplement (2 x 25g) in the morning and evening; the other received carbohydrates in the form of maltodextrin at an equal dose.

This study found that women fed the whey not only lost 3.9% more weight using the whey, but gained 5.8% more thigh muscle vs. the group getting the additional carbohydrates. Whey protein has a number of mechanisms that assist with weight loss and this latest study that finds it may preserve muscle mass adds to the long list of possible benefits of whey.

—W. Brink

\* *J Gerontol A Biol Sci Med Sci*. 2011 Nov;66(11):1218-25.

## Supplementing a Low-Fat Diet with Fish Oil Reduces Prostate Cancer Growth

In an article published in *Cancer Prevention Research*, William Aronson and his associates report a benefit for a low-fat diet supplemented with fish oil in retarding the growth of prostate cancer.\*

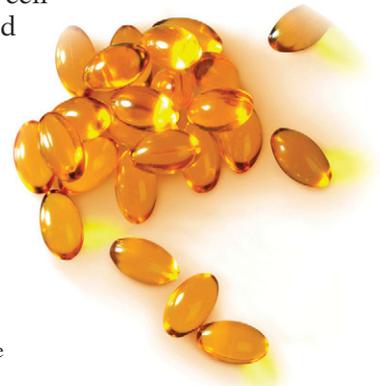
The current trial enrolled prostate cancer patients scheduled for surgical removal of the prostate gland. Four to 6 weeks prior to surgery, the men were divided to receive a diet in which 15% of calories were provided by fat, supplemented with 5 grams of fish oil per day.

Men who received fish oil had higher cell membrane levels of omega-3 and reduced omega-6 fatty acids at the end of the treatment period. Examination of the excised prostate glands found a reduced rate of cell proliferation in the fish oil-supplemented group as evidenced by staining with an antibody against a protein involved in cell growth.

**Editor's Note:** Fish oil is high in the omega-3 fatty acids eicosapentaenoic acid and docosahexaenoic acid that help combat pro-inflammatory compounds such as 5-lipoxygenase and leukotriene B4 that stimulate prostate cancer cell propagation.

—D. Dye

\* *Cancer Prev Res (Phila)*. 2011 Oct 25.



## Regular Aspirin Use Cuts Hereditary Cancer Risk in Half

A study reported in *Lancet* found that using aspirin on a regular basis reduces the risk of developing hereditary cancers by 50% among those with an inherited disorder known as Lynch syndrome.\* Lynch syndrome is caused by defects in genes responsible for detecting and repairing damaged DNA, which significantly increases the risk of cancer (primarily of the colon or uterus) in those affected by the disorder.

Professor Patrick Morrison of Queen's University in Belfast and his colleagues analyzed data from nearly a thousand men and women with Lynch syndrome for the current study. In a decade of follow-up (sometimes a little longer), approximately 15% of the participants who reported regular aspirin use developed cancer, compared to 30% of those who did not regularly use the drug. The researchers suggest that aspirin could be destroying precancerous cells.

**Editor's Note:** Dr. Morrison added that, "We aim now to go forward with another trial to assess the most effective dosage of aspirin for hereditary cancer prevention and to look at the use of aspirin in the general population as a way of reducing the risk of bowel cancer."

—D. Dye

\* *Lancet*. 2011 Oct 27.



## N-acetyl Cysteine Helps Reverse DNA Damage Associated with Premature Aging

*Human Molecular Genetics* published a report concerning the discovery of a possible benefit for N-acetyl cysteine (NAC) in preventing and repairing DNA damage in Hutchinson-Gilford progeria syndrome (HGPS), one of several inherited diseases known as a laminopathies.\*

Christopher J. Hutchison and his associates note that, "Fibroblasts from patients with the severe laminopathy diseases, restrictive dermopathy and Hutchinson Gilford progeria syndrome are characterized by poor growth in culture, the presence of abnormally shaped nuclei, and the accumulation of DNA double-strand breaks." The team determined that the poor growth and double-strand breaks observed in the diseases are caused by high amounts of reactive oxygen species, as well as increased sensitivity to oxidative stress. While tests of normal fibroblasts showed efficient repair of double-strand breaks induced by reactive oxygen species, these breaks were unrepairable in fibroblasts from patients with laminopathy diseases. However, administration of NAC reduced DNA double-strand breaks, eliminated unrepairable reactive oxygen species-induced breaks, and improved growth.

**Editor's Note:** Hutchinson-Gilford progeria syndrome is a disease of premature aging in children that results in growth failure, the early appearance of degenerative diseases, and death between 8 and 21 years of age. "We've found that DNA damage can be controlled and our findings could be an important step to helping both children with progeria and older people to live lives that are less debilitating in terms of health problems," Dr. Hutchison remarked.

—D. Dye

\* *Hum Mol Genet.* 2011 Oct 15;20(20):3997-4004.

## Long-Term Pomegranate Consumption Associated with Reduction of Cardiovascular Risk Factors in Dialysis Patients

A presentation at the American Society of Nephrology's Annual Kidney Week revealed the finding of Lilach Shema, PhD, and colleagues of a benefit for pomegranate juice in the prevention of increased heart disease risk factors in patients undergoing hemodialysis for kidney failure.\*

One hundred and one dialysis patients were randomized to receive approximately 3.5 ounces pomegranate juice or a placebo three times per week for one year. Blood pressure, antihypertensive drug use, serum lipids, and carotid artery intima-media thickness (which measures atherosclerotic plaque) were assessed before and after the treatment period.

At the study's conclusion, 22% of those who received pomegranate juice reported using fewer antihypertensive medications, compared with 7.7% of the placebo group. Blood pressure, triglycerides, and high-density lipoprotein cholesterol levels improved over time among those who received pomegranate juice, but not in those who received a placebo.

**Editor's Note:** While atherosclerosis increased in half of subjects who received a placebo, just 5% of those who received pomegranate experienced an increase and 25% had a decrease. No placebo patients experienced improvements.

—D. Dye

\* American Society of Nephrology's Annual Kidney Week. Philadelphia, Pennsylvania. November 8-13, 2011.



## Reduced Vitamin C Intake Among Heart Failure Patients Associated with Increased Mortality Over One Year

At the American Heart Association's Scientific Sessions 2011, it was reported that heart failure patients have a greater risk of inflammation and death over follow-up when consuming a diet that provides an inadequate amount of vitamin C.\*

Eun Kyeong Song, PhD, and associates measured C-reactive protein (CRP) in 212 men and women diagnosed with heart failure. Food diaries were analyzed for the intake of vitamin C. Participants were followed for a year, during which 61 subjects experienced cardiac events or death due to cardiac causes.

Having a low intake of vitamin C was associated with a **2.4 times** greater risk of having elevated CRP levels compared to those whose intake was adequate. Subjects who had reduced dietary vitamin C and high CRP had almost twice the risk of dying from cardiovascular disease over follow-up than those who had a greater intake of the vitamin and lower CRP levels.

**Editor's Note:** C-reactive protein (CRP) increases with inflammation and is a risk factor for heart disease.

—D. Dye

\* American Heart Association's Scientific Sessions 2011. Orlando, Florida. November 12-16, 2011.

## BPA Levels Rise 1,221% After Five Days Eating Canned Soup

Researchers from the Harvard School of Public Health recently reported in the *Journal of the American Medical Association* that volunteers who had one can of soup per day for five days had urine BPA (bisphenol A) levels rise by over 1,221% compared to people who consumed fresh soup over the same time period.\*

Bisphenol A or BPA, is an organic compound that is used to make polycarbonate plastic and epoxy resins. It is added to the lining of foods and drink cans and some studies have shown that it interferes with reproductive development in animals. BPA levels have also been associated with a higher risk of developing several diseases and conditions, including obesity, type 2 diabetes, and cardiovascular diseases.

The lead author, doctoral student Jenny Carwile stated that, "Previous studies have linked elevated BPA levels with adverse health effects. The next step was to figure out how people are getting exposed to BPA. We've known for a while that drinking beverages stored in certain hard plastics can increase the amount of BPA in your body. This study suggests that canned foods may be an even greater concern, especially given their wide use."

**Editor's note:** Life Extension went to great lengths to encase its cruciferous vegetable soups in pouches that are free of BPA.

—J. Finkel

\* *JAMA*. 2011 Nov 23;306(20):2218-20.

## Stroke Risk Declines with Greater Number of Healthy Lifestyle Factors

The *Archives of Internal Medicine* reports that the greater number of healthy lifestyle factors one has, the more protection one gains against stroke.\*

Gang Hu, MD, PhD, and colleagues analyzed data from 17,287 men and 19,399 women who participated in surveys in 1982, 1987, 1992, 1997, and 2002. Participants were followed through 2007, during which 1,167 ischemic strokes and 311 hemorrhagic strokes occurred.

Lifestyle factors evaluated in the study included being a non-smoker, having a body mass index of less than 25, engaging in light to moderate physical activity, consuming vegetables at least three times per week, and having a light to moderate weekly intake of alcohol. Compared to the risk of stroke experienced by those having one or fewer factors, having two, three, four, and five factors was associated with a 34%, 43%, 49%, and 67% adjusted reduction.

**Editor's Note:** When stroke was analyzed according to type, having two, three, four, and five factors was associated with a 33%, 40%, 50%, and 70% lower risk of ischemic stroke and a 37%, 51%, 51%, and 60% decreased risk of hemorrhagic stroke.

—D. Dye

\* *Arch Intern Med*. 2011 Nov 14;171(20):1811-8.



## Low-Carb Diet May Slow Tumor Growth

Researchers from the Terry Fox Laboratory in Vancouver, British Columbia recently concluded that a diet low in carbohydrates may slow the growth of tumors.\*

During their study, scientists compared the effects of a low-carbohydrate diet to that of a typical "Western" diet in a group of mice. A typical "Western" diet is characterized as being high in carbohydrates and low in protein. The mice were divided into two sub-groups, with one group eating a high-protein, low-carbohydrate diet, and another eating the reverse. Both groups were fed equal calories.

The researchers found that both murine (mice) and human carcinomas grew slower in mice fed diets containing low carbohydrates/high protein compared with a Western diet. Mice fed the lower carbohydrate diet exhibited lower blood glucose, insulin, and lactate levels. In an important development for *Life Extension*<sup>®</sup> readers, mice that were genetically predisposed to develop breast cancer that were fed a Western diet had rates of cancer nearly 50% by the age of one year, whereas no tumors were detected in mice being fed the low-carbohydrate diet over the same time period. This study supports the concept that many cancers may be influenced by chronically elevated blood sugar levels and associated hormones.

—W. Brink

\* *Cancer Res*. 2011 Jul 1;71(13):4484-93.



Next-Generation Formula

## Enhanced Berry Complete with RZD™ Açai



### Another Breakthrough in Antioxidant Defense!

In 2008, Life Extension® introduced **Berry Complete**, a unique, high-potency blend of extracts from Nature's most powerful free radical fighters.<sup>1-5</sup> The antioxidant strength of just one capsule equaled **more than 50%** of the recommended five daily servings of fruits and vegetables.

Last year we introduced an *even more* powerful antioxidant formula. A single capsule of the new **Enhanced Berry Complete with RZD™ Açai** delivers an antioxidant value equivalent to **more than 100%** of the recommended daily fruit and vegetable intake.

It is also the first antioxidant formula to use a cutting-edge extraction technology called **Radiant Zone Drying™**. This patented process delivers the most *complete* nutritional profile of the açai berry—for a breakthrough in antioxidant defense.

#### ORAC: A Measure of Antioxidant Power

To measure the antioxidant strength of various foods, scientists use what is known as the ORAC index. While berries score higher than most fruits and vegetables, açai boasts one of the *highest* ORAC values known to modern science.

Unfortunately, most commercial products containing açai do not reflect the full nutritional content of the fruit. Only a *fraction* of its phenolic content survives industrial processing, handling, and storage.

RZD™ extraction technology allows for optimal delivery of açai polyphenols, including highly beneficial **anthocyanins, proanthocyanidins, and flavonoids**, along with **essential fatty acids** and other vital compounds.

Why should this matter to you? It's more than a matter of antioxidant potency. In 2010, a team of researchers reported for the first time that açai, blueberry, and

strawberry polyphenols may provide targeted support for cellular metabolic processes that promote neural and cognitive health in the aging brain.<sup>6</sup> But you need the *complete* polyphenolic profile to get the benefit.

Each vegetarian capsule of Enhanced Berry Complete with RZD™ Açai also contains standardized extracts of high-ORAC value foods including:

Blackcurrant	Grape
Blackberry	Cranberry
Elderberry	Prune
Wild blueberry	Strawberry
Wild bilberry	Pomegranate
Sweet cherry	Black soybean hull
Tart cherry	Blue corn
Raspberry	

Item #01406

Enhanced Berry Complete with RZD™ Açai gives you a convenient way to obtain a broad spectrum of seasonal, hard-to-find, highly perishable foods, for optimal antioxidant value.

A bottle containing 60 vegetarian capsules of **Enhanced Berry Complete with RZD™ Açai** retails for \$29. If a member buys four bottles during **Super Sale**, the cost is just **\$17.55** per bottle.

Contains soybeans. Contains corn.

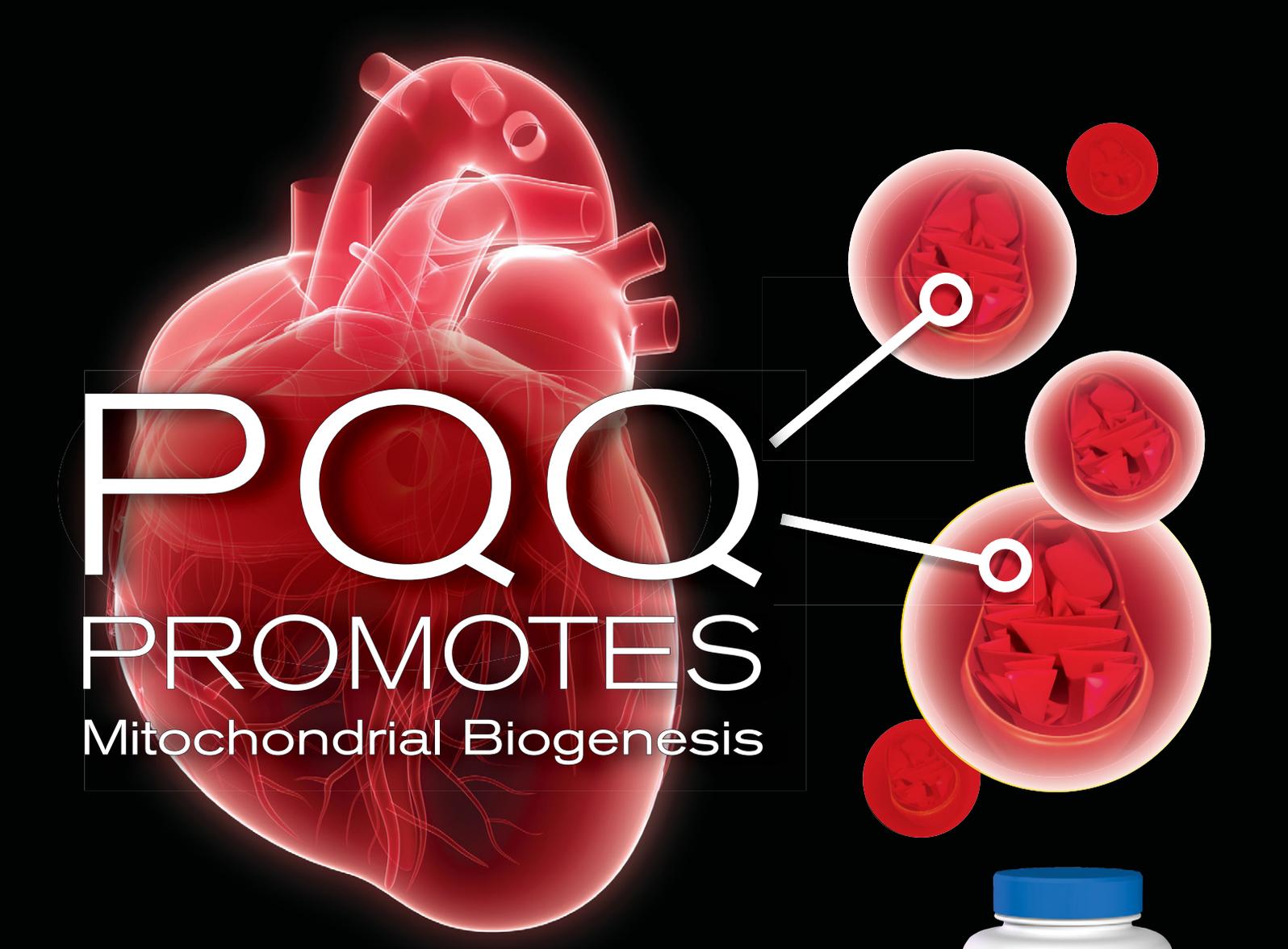
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6. American Chemical Society. Aug 23, 2010.

RZD™ and Radiant Zone Drying™ are trademarks of Columbia Phytotechnology, LLC.



To order **Enhanced Berry Complete with RZD™ Açai**, call **1-800-544-4440** or visit **www.LifeExtension.com**



# PQQ

## PROMOTES

### Mitochondrial Biogenesis

## Critical Importance of Mitochondria

Back in 1983, **Life Extension®** was the first to introduce **CoQ10** as a proven method to enhance **mitochondrial** energy production.

**CoQ10** has since gained universal recognition for its role in supporting cellular performance throughout the body.<sup>1-6</sup>

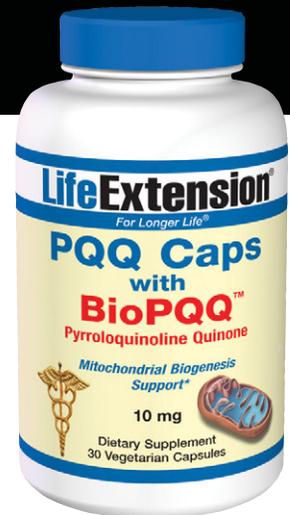
In an unprecedented breakthrough, a compound called **PQQ** (*pyrroloquinoline quinone*) has been shown to support **mitochondrial biogenesis**—the spontaneous generation of **new mitochondria** in aging cells.<sup>7</sup>

**PQQ** is available as a low-cost dietary supplement.

**Mitochondria** are cellular energy generators that supply virtually all the power your body requires for a healthy life span. An abundance of published studies underscores the critical importance of the **mitochondria** to overall health, especially as we age.<sup>8-14</sup> Energy-intensive organs like the heart and brain are *dense* with mitochondria.

Until recently, the only natural ways for aging individuals to increase the number of mitochondria in their bodies were long-term calorie restriction or exhaustive physical activity—which are difficult or impractical for most people to implement.

**PQQ** offers a viable alternative.



Item #01500

## The Ultimate Cell Rejuvenator

The enormous amount of energy generated within the mitochondria exposes them to constant free radical attack. The resulting **mitochondrial decay** is a hallmark of aging.

PQQ protects and augments delicate mitochondrial structures to promote *youthful* cellular function in **three** distinct ways:

- **Antioxidant power.** Like CoQ10, PQQ is a highly potent antioxidant. Its extraordinary molecular stability enables it to facilitate thousands of biochemical reactions in the mitochondria, without breaking down, for maximum antioxidant and bioenergetic support.<sup>15</sup>
- **Favorably modulates gene expression.** PQQ activates *genes* that promote formation of **new mitochondria**<sup>7</sup>—and beneficially interacts with genes directly involved in mitochondrial health. These same genes also support **healthy body weight**, normal **fat** and **sugar metabolism**, and **youthful cellular proliferation**.<sup>16</sup>
- **Mitochondrial defense.** Mitochondria possess their *own* DNA, distinct from the DNA contained in the nucleus. Unfortunately, compared to nuclear DNA, mitochondrial DNA is relatively unprotected. PQQ's antioxidant potency and favorable gene expression profile act to support mitochondrial defense.

## Vital Protection for the Aging Heart and Brain

PQQ is an **essential nutrient**, meaning your body cannot make it on its own. 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>17,18</sup> This comes as no surprise, given how much energy these vital organs need.

Research shows that **PQQ** supports **heart cell function** in the presence of free radicals and promotes blood flow in heart muscle.<sup>19</sup>

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>20</sup>

## A Breakthrough Weapon in the Battle Against Aging

**Life Extension**® has identified a purified, highly potent form of PQQ from Japan that is produced through a natural fermentation process. The result is the highest quality PQQ available on the market today called **BioPQQ™**.

A bottle containing **30 10 mg** vegetarian capsules of **PQQ Caps with BioPQQ™** retails for \$24. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$14.85** per bottle.

A 10 mg dose of **PQQ** is also included in the **Mitochondrial Energy Optimizer with BioPQQ™** and **Mitochondrial Basics with BioPQQ™** formulas.

Contains rice.



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

BioPQQ™ is a trademark of MGC (Japan).

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# ADVANCED Anti-Adipocyte FORMULA

## CELLULAR SUPPORT FOR HEALTHY BODY WEIGHT

If you're struggling to maintain healthy body weight, you're not alone. Up to **65%** of Americans face the same challenge.<sup>1</sup> Even a modest increase in fat pounds can have an impact on overall health, especially when it's stubborn belly or visceral fat.

The problem is that conventional methods to combat *age-related* changes that predispose us to weight gain have proven *ineffective*. Adjustments in diet and lifestyle alone are often not enough. But there's hope . . .

### State-of-the-Art Dual Plant Extract Technology

To help maturing individuals deal effectively with this serious health issue, **Life Extension**® introduces a brand new, clinically validated solution: **Advanced**

### Anti-Adipocyte Formula with AdipoStat and Integra-Lean® African Mango Irvingia.

**AdipoStat** is the first dietary intervention to support healthy body weight using these innovative approaches.<sup>2</sup> Through multiple pathways, it targets the mechanisms by which fat-storing cells or **adipocytes** become bloated and metabolically dysfunctional.

This widely overlooked *cellular* condition leads to excess fat accumulations in the belly and throughout your body.

After careful scientific analysis of over **1,000** plant extracts,<sup>2</sup> researchers identified the two species included in **AdipoStat** that target adipocytes: **Sphaeranthus indicus** flower (*S. indicus*) and the **mangosteen** fruit (*Garcinia mangostana*).

Optimal results were shown in studies when these two **plant extracts** were combined.

## Three Ways to Fight Fat Cell Derangements

**AdipoStat** functions via the following mechanisms to support healthy body weight:<sup>2</sup>

1. **AdipoStat** targets adipocyte (fat cell) creation.
2. **AdipoStat** impedes adipocyte growth (adipogenesis).
3. **AdipoStat** induces fat in adipocytes to break down (lipolysis).

## Success in Clinical Trials

**AdipoStat**'s performance in clinical studies indicates it can safely deliver impressive results.

In a key study, 30 adults with difficulty maintaining healthy body weight ingested **800 mg per day of AdipoStat** while following a 2,000-calorie-per-day diet and were asked to walk just 30 minutes five days a week. A group of equal size was given placebo.<sup>3</sup>

After just eight weeks, the **AdipoStat** group:

- Lost **4.05 inches** of harmful belly fat—**2.0** times the placebo group.
- Experienced a **2.05** drop in body mass index (BMI)—**3.9** times over placebo.
- Shed **11.4 pounds** of total body weight—**3.7** times over placebo.

These improvements began to emerge after just **14** days.<sup>3</sup>

After eight weeks, the **AdipoStat** group saw a noticeable drop in **waist-to-hip ratio**,<sup>3</sup> indicating they experienced **fat loss** in the **abdominal** area, where excess fat mass is associated with serious health issues.

They also exhibited favorably elevated levels of a hormone called **adiponectin**.<sup>2</sup> Adiponectin sends command signals that determine how big your fat cells get, how much they break down (*lipolysis*), and how often they are produced (*adipogenesis*).<sup>4</sup>

A second human clinical trial yielded similar results, confirming **AdipoStat**'s beneficial effects.<sup>2</sup>

## The AdipoStat Formulas

There are two ways you can easily incorporate **AdipoStat** into your daily supplement program.

The first option is to take **AdipoStat** by itself. The daily dose of one vegetarian capsule of **Anti-Adipocyte Formula with AdipoStat** taken 30 minutes before each of the two heaviest meals of the day provides:

**AdipoStat** Proprietary Blend ..... **800 mg**  
(*Sphaeranthus indicus* extract and  
*Garcinia mangostana* extract)

The second option enables consumers to obtain the same dose of **AdipoStat** along with the highly popular **Integra-Lean® African Mango** (*Irvingia gabonensis*). **Irvingia** operates via additional mechanisms to combat surplus fat storage, including inhibition of **glycerol-3-phosphate dehydrogenase**,<sup>5</sup> an enzyme involved in the conversion of glucose and triglycerides into adipocyte fat storage.

The **Advanced Anti-Adipocyte Formula with AdipoStat and Integra-Lean® African Mango Irvingia** supplies **800 mg of AdipoStat** and **300 mg** of proprietary *Irvingia* extract in the same suggested daily serving of one vegetarian capsule 30 minutes before each of the two heaviest meals.



### Anti-Adipocyte Formula with AdipoStat

Item # 01510

A bottle containing **60** vegetarian capsules of **Anti-Adipocyte Formula with AdipoStat** retails for \$35. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$21.60** per bottle.



### Advanced Anti-Adipocyte Formula with AdipoStat and Integra-Lean® African Mango Irvingia

Item # 01509

A bottle containing **60** vegetarian capsules of **Advanced Anti-Adipocyte Formula with AdipoStat and Integra-Lean® African Mango Irvingia** retails for \$39. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$24.30** per bottle.

**Integra-Lean®** Irvingia is protected by U.S. Patent No. 7,537,790. Other patents pending. **AdipoStat** is a proprietary ingredient derived from natural plant extracts exclusively distributed by InterHealth N.I.

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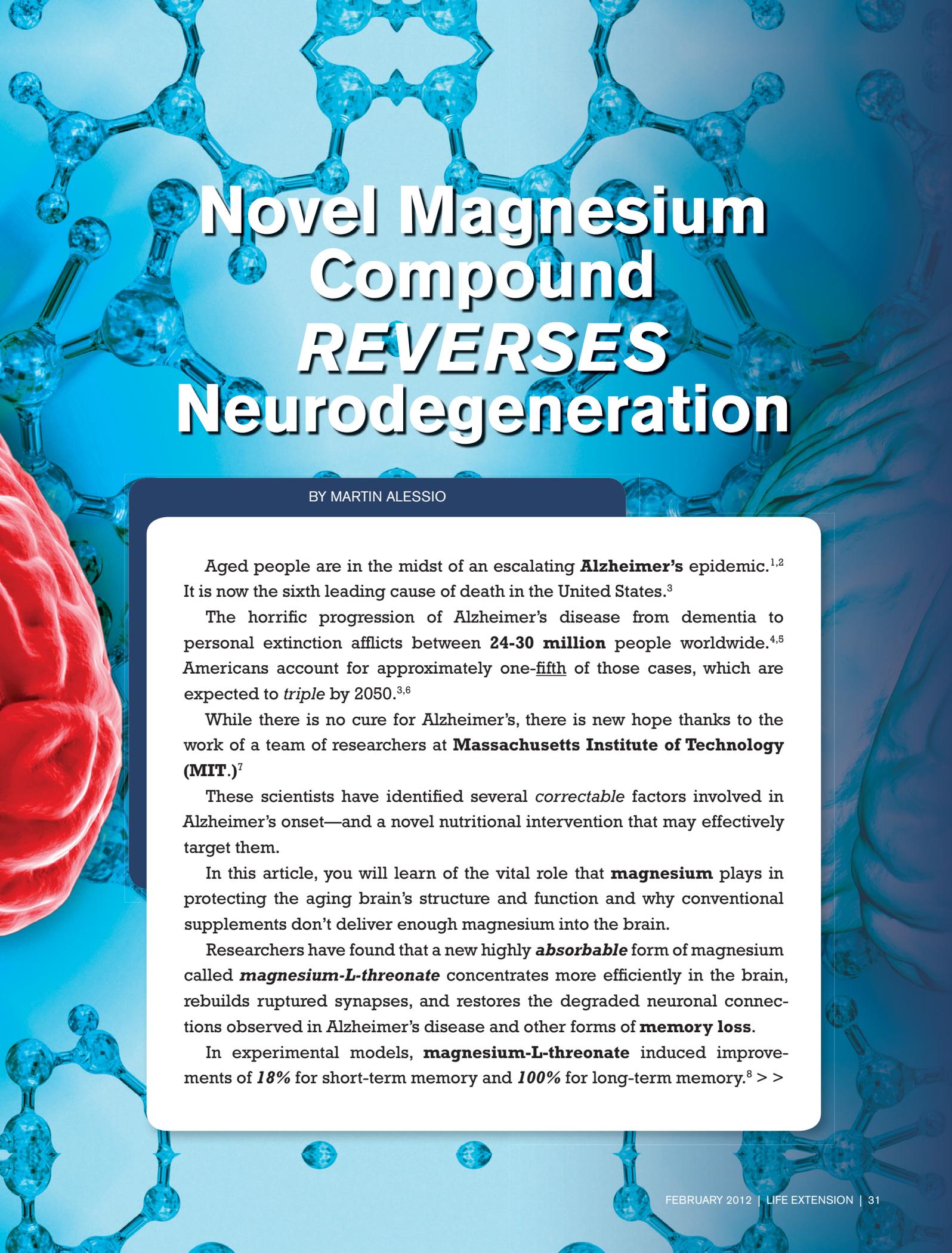
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These products are designed to target several critical factors involved in age-related weight gain. Those who ingest more calories than what their body has the metabolic capacity to utilize will not see results. This is because some people are ingesting so many excess calories that no matter how much their metabolic rate is increased, or how much improvement occurs in their after-meal blood sugar and triglyceride levels, or by how much youthful insulin sensitivity and other body fat-regulating systems are restored, they are overwhelming the metabolic capacity to utilize these calories. This will result in excess calories being stored in adipocytes. One cannot consume limitless calories and expect to shed fat pounds by taking drugs, nutrients, and/or hormones that demonstrate weight loss in clinical studies.

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# Novel Magnesium Compound *REVERSES* Neurodegeneration

BY MARTIN ALESSIO

Aged people are in the midst of an escalating **Alzheimer's** epidemic.<sup>1,2</sup> It is now the sixth leading cause of death in the United States.<sup>3</sup>

The horrific progression of Alzheimer's disease from dementia to personal extinction afflicts between **24-30 million** people worldwide.<sup>4,5</sup> Americans account for approximately one-fifth of those cases, which are expected to *triple* by 2050.<sup>3,6</sup>

While there is no cure for Alzheimer's, there is new hope thanks to the work of a team of researchers at **Massachusetts Institute of Technology (MIT)**.<sup>7</sup>

These scientists have identified several *correctable* factors involved in Alzheimer's onset—and a novel nutritional intervention that may effectively target them.

In this article, you will learn of the vital role that **magnesium** plays in protecting the aging brain's structure and function and why conventional supplements don't deliver enough magnesium into the brain.

Researchers have found that a new highly **absorbable** form of magnesium called **magnesium-L-threonate** concentrates more efficiently in the brain, rebuilds ruptured synapses, and restores the degraded neuronal connections observed in Alzheimer's disease and other forms of **memory loss**.

In experimental models, **magnesium-L-threonate** induced improvements of **18%** for short-term memory and **100%** for long-term memory.<sup>8</sup> > >

## Magnesium Deficiency: An Overlooked Cause of Neurologic Decay

Half of all aging individuals in the developed world are magnesium deficient, a nutritional deficit that worsens over time.

Confirmatory data show that Americans are no exception.<sup>9,10</sup> For instance, American women consume just **68%** of the recommended daily intake of magnesium.<sup>11</sup>

Magnesium has long been known as a key nutrient for optimal brain function. More recently, scientists have found it specifically promotes learning and memory as a result of its beneficial effect on **synaptic plasticity and density**.<sup>7,8,12</sup>

Magnesium works with calcium to modulate “ion channels” that open in response to nerve impulses, which in turn trigger neurotransmitter release. The most important of those channels is controlled by a complex called the **NMDA receptor**.<sup>13,14</sup> NMDA receptors play an important role in promoting neural plasticity and synaptic density, the structural underpinnings of memory.<sup>15-17</sup>

Magnesium *deficiency* can cause symptoms ranging from **apathy** and **psychosis** to **memory** impairment.<sup>13,18</sup> Insufficient magnesium slows brain recovery following injury from trauma<sup>19</sup> and in laboratory studies *accelerates* cellular aging.<sup>20</sup>

Ominously, magnesium deficiency may produce no overt symptoms in its initial stages.<sup>21</sup>

Part of the problem is that it is difficult for the body to maintain sufficiently high concentrations of magnesium in the brain.<sup>8</sup>

For this reason, researchers have long sought ways that higher magnesium brain concentrations might be achieved and sustained.

### A Breakthrough Form of Magnesium

Scientists have been challenged to find a way to raise magnesium levels in the brain.<sup>8</sup> Even intravenous infusions cause only a modest elevation of magnesium levels in the central nervous system.<sup>22</sup>

An innovative team of researchers from the **Massachusetts Institute of Technology** (MIT) recently found a way to surmount this obstacle. They formulated a new magnesium compound called **magnesium-L-threonate** or **MgT** that in lab tests allows for oral administration while *maximizing* magnesium “loading” into the brain.<sup>7,8</sup>

Based on prior research, they meticulously documented that **increased levels of magnesium in the brain promote synaptic density and plasticity** in the hippocampus.<sup>14</sup> Up until now, however, no widely

available forms of magnesium met the criteria needed for **rapid absorption and efficient transfer** into the central nervous system.<sup>8</sup>

By contrast, MgT yielded compelling results.

MgT oral supplements increased magnesium levels in spinal fluid, an index of measurement in brain magnesium by about **15%**, while none of the other magnesium compounds tested produced significant elevations.<sup>8</sup> While a 15% increase may not sound like a lot, it induced a profound effect on neurological function.

To evaluate the effects of MgT on memory, the researchers tested it against currently available magnesium compounds. They used a simple assessment of learning and memory called the **Novel Object Recognition Test** or NORT. A high NORT score means that the animal is good at recognizing and identifying new objects, a skill that is critical in aging humans as well.<sup>8</sup> NORT is a good test of function in the **hippocampus**, which is rich in the NMDA receptors so closely controlled by magnesium.<sup>23</sup>

The researchers put aged animals through the NORT test, supplementing them with MgT or one of the commercially available magnesium compounds. Only MgT significantly enhanced both short- and long-term memory, boosting scores by **15%** for short-term memory and **54%** for long-term memory compared to magnesium citrate.<sup>8</sup>



## Better Function of Memory-Forming Synaptic Connections

Given the effect of MgT in increasing *synaptic* density and plasticity in experimental animals (rats), the research team asked the obvious next question, “Do those changes lead to an increase in the number of neurotransmitter release sites, and, subsequently, to enhanced signal transmission?”<sup>8</sup> That, after all, is the hallmark of learning and memory.

Using high-tech microscopic measuring devices, the team demonstrated that the magnesium elevation in brain tissue observed in *MgT* supplementation **increases the number of functioning neurotransmitter release sites.**<sup>8</sup> This effect could be likened to increasing the number of soldiers on the battlefield: when the call to action comes, a much larger force is prepared to perform.

The final question to be addressed in this series of studies was whether the increased density of *synaptic connections* directly correlated with the observed improvements in memory created by MgT supplementation.

The researchers systematically plotted out the time-course of the increase in synaptic density following MgT supplementation, and found that it directly paralleled the improvements in memory.<sup>8</sup> They also found that when MgT supplementation was stopped, the *density* of synaptic connections dropped back to baseline, further confirming the correlation. They found that MgT supplementation boosted **all of the animals’ performance**, not just average performance.

## Improvement in Spatial Short-Term Memory

*Spatial working memory* is an essential memory function, helping you remember where things are and where you are in relation to the world over the short term. It is working memory that enables you to find your car keys as you head out the door or return to the correct page in the magazine you were reading a few minutes ago.

The MIT researchers tested spatial working memory in experimental animals. Without treatment, both young and old animals forgot the correct choice about **30%** of the time. After 24 days of MgT supplementation, however, both young and old animals had improved this measurement of memory performance by more than **17%**.<sup>8</sup>

Even more impressive, by 30 days of supplementation, the older animals’ performance became **equal to that of their younger counterparts**. Since the older animals were more forgetful at baseline than



## Novel Magnesium Compound Halts Neurologic Decay

- Levels of Alzheimer’s disease and associated memory loss among aging Americans are reaching epidemic levels.
- The neurodegenerative processes involved in memory loss results from deterioration of connectivity between brain cells but are not a “natural function” of aging.
- Low magnesium status can *accelerate* brain cell aging and memory loss.
- Standard magnesium offers limited protection to brain cells.
- Magnesium-L-threonate is a new form of magnesium that dramatically boosts levels of magnesium in the brain.
- Boosting brain magnesium with magnesium-L-threonate enhances synaptic density and plasticity, the structural basis of learning and memory.
- In numerous experimental models, supplementation with magnesium-L-threonate has been shown to *enhance* memory and cognitive performance in multiple tests.

the younger animals that meant that the **older animals had a larger percentage memory improvement** (nearly 19%) than the younger animals' more modest 13%.<sup>8</sup>

When MgT supplementation was suspended, the memory-enhancing effects persisted in younger animals, but in older animals spatial working memory performance declined dramatically, returning to baseline within 12 days.<sup>8</sup> When MgT supplementation to the older animals was resumed, however, *their memory performance was restored in 12 days.*

In other words, **magnesium-L-threonate improved memory in both old and young animals**, but had a substantially greater effect on aged individuals—the very ones most in need of memory enhancements.



### Enhanced Spatial Long-Term Memory

**Long-term spatial memory** is crucial for older individuals. It's how you remember where you live or how to get to the grocery store. Loss of spatial long-term memory is one of the main reasons that older people with dementia get lost running even simple errands.

To test spatial long-term memory in MgT-supplemented animals, the researchers used a maze that required the animal to swim and find a submerged platform on which to rest. Again, both old and young animals supplemented with magnesium-L-threonate **learned significantly faster** than untreated animals during the training sessions.<sup>8</sup>

One hour after the training period, the researchers removed the submerged platform, causing the animals to have to search for its last location. Both young and old supplemented and unsupplemented animals remembered where the platform had been over the short term and were searching for it in the correct quadrant of the maze.

But after 24 hours, a remarkable difference was observed. Untreated animals, both young and old, completely forgot where the platform had been hidden, randomly searching in all quadrants of the maze. Supplemented animals, on the other hand, continued to search in the correct part of the maze more than **twice as long** as they looked in incorrect areas.<sup>8</sup> That translated into improvements in spatial long-term memory of **122%** in younger supplemented animals, and nearly **100%** in older supplemented animals.

In short, **MgT supplementation doubled the accuracy of long-term spatial memory** in older animals, and more than doubled it in younger animals.

### Better Recall

One critical memory function is the ability to bring up an important memory based on only partial information, a function called **pattern completion**.<sup>8</sup> You use pattern completion memory to find your way around a familiar neighborhood after dark or following a heavy snowstorm. In both cases, some familiar cues are gone, but a healthy brain will fill in the missing details by completing a recognizable pattern.

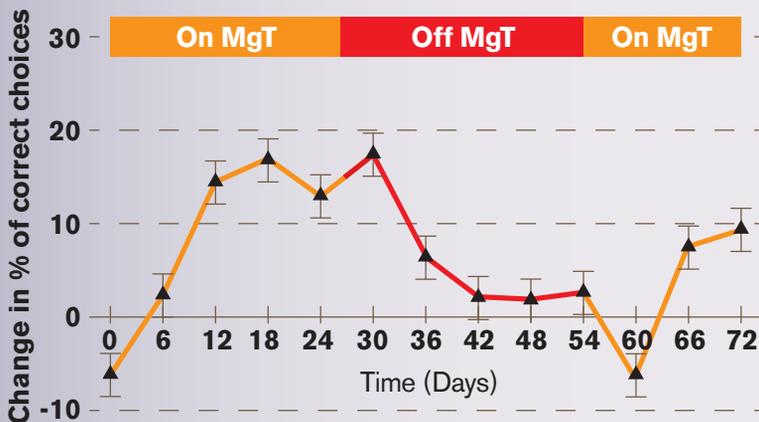
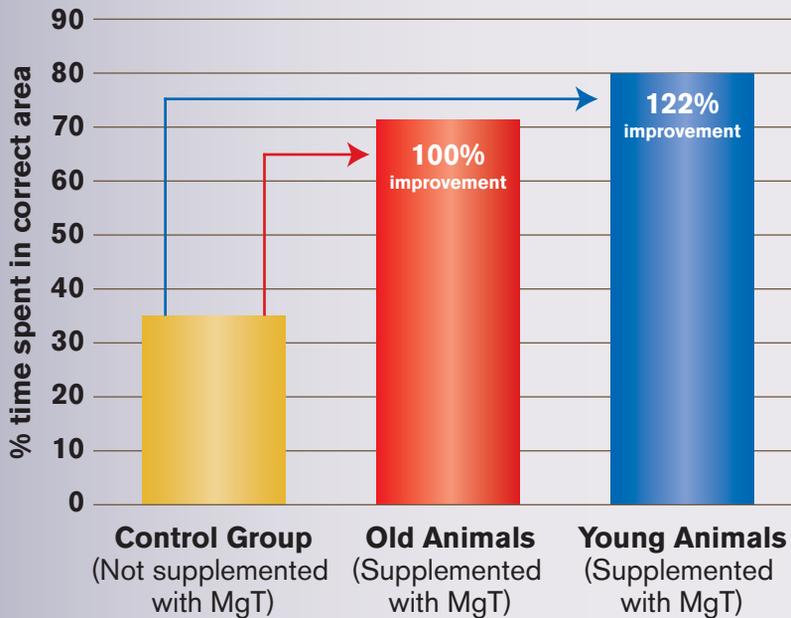


Figure 1: Enhancement of spatial working memory by MgT in older animals. MgT supplementation improved spatial working memory by nearly 19% in older animals.

When supplementation was stopped, memory returned to baseline within 12 days. When supplementation was re-initiated, memory improvements were restored in 12 days.

### MgT Supplementation Enhances Long-term Memory



The graph above shows memory improvement in young and old animals after only 12 days of magnesium-L-threonate (MgT) supplementation.

As described on the previous page, when researchers removed some of the external visual cues from the water maze, younger animals had no particular difficulty finding their way to the hidden platform during the first 24-hour period. Older animals, on the other hand, demonstrated *substantial impairment when familiar cues were missing*, spending more than twice as much time searching for the missing platform. When given MgT for 30 days, however, older animals performed as well as the younger ones, quickly finding the platform even when many of the external cues were unavailable.<sup>8</sup>

In human terms, this kind of improvement could mean the difference between a *routine trip* to the grocery store at dusk versus getting lost in the dark.

Having successfully demonstrated that magnesium-L-threonate (MgT) improves multiple forms of learning and memory in living animals, the research team sought to explore the cellular and molecular basis of that improvement. They wanted to understand in a detailed fashion just what changes the MgT was producing in the brains of older animals that helped them form stronger, more stable memories.

What they determined was compelling.

### Increased Brain Cell Signaling

The first step was to determine the effects of MgT supplementation on signaling between brain cells mediated by what are known as **NMDA receptors**. These receptors operate through varying concentrations of calcium and magnesium in brain tissue, making them a logical point of observation.

The first finding was that *MgT treatment in animals resulted in stronger signaling* at essential brain cell synapses.<sup>8</sup> This increase in signaling was accomplished by a **60%** increase in production of new NMDA receptors and by increases of up to **92%** in related proteins that play essential supporting roles in brain signal transmission.<sup>8</sup>

### Higher Memory-Forming Synaptic Plasticity and Density

*Synaptic plasticity*, or the ability to rapidly change the number and strength of brain cell synapses, is critical to the brain's ability to form, retain, and retrieve memories. The research team compared synaptic plasticity in the brains of MgT-supplemented animals versus controls.<sup>8</sup>

They found that production of a very special *sub-unit* of the NMDA receptor, one closely associated with synaptic plasticity, was *selectively enhanced by MgT supplementation*.<sup>8</sup> This molecular change is known to cause potent long-term *increases in synaptic strength*, and hence a greater capacity for information storage and memory.<sup>8,24-26</sup>

The result of these increases in NMDA receptor numbers was a **52% enhancement** in long-term potentiation,<sup>8</sup> which is the *cellular equivalent of memory formation* in the brain tissues of MgT-supplemented animals.<sup>27,28</sup>

Memory depends not only on synaptic plasticity, but also on the healthy physical structure of synapses between brain cells. Unfortunately, **synaptic connections in the memory-rich hippocampus region of the brain decline with aging**, which directly correlates with memory loss.<sup>8,29,30,31</sup>

One of the most vital structures to be found at brain cell synapses is the *synaptic bouton*, from the

## Mechanisms of Brain Aging and Memory Loss

Every memory you have, even those you've lost, produces physical changes in your brain. Memories form and are stored in multiple brain regions, but the most active and essential area is the **hippocampus**, a small, sea horse-shaped structure deep in the center of your brain.

Hippocampal memory enables you to recognize and distinguish between old friends and new acquaintances, or to find your way around a well-known floor plan. It is also used to comprehend and navigate new experiences based on old ones.

This puts the hippocampus squarely at the center of your ability to assimilate new information and integrate it with what you already know. As you learn and experience new events, cells in your memory centers tighten and enhance their neuronal connections, known as **synapses**.<sup>35</sup>

The ability of brain cells to quickly form new synapses and remove old ones is referred to as **neurologic plasticity**. Large numbers of synapses, and a high density of specialized synaptic structures called **boutons**, promote rapid retrieval and processing of the information stored by connected cells.<sup>36</sup> In essence, neuronal plasticity is the physical equivalent of **learning**, while synaptic density is roughly the equivalent of **memory**.

Young brains exhibit high levels of neurologic plasticity that produce large numbers of interconnected synapses. That's why young people learn quickly and have strong memories.

With aging, however, the numbers of synapses, and the ability to rapidly form new ones, steadily declines.<sup>37</sup> And that's just in "normal" aging.<sup>29</sup> People with **Alzheimer's disease**, or its precursor, mild cognitive impairment (MCI) experience more rapid loss of both plasticity and synaptic number.<sup>30,38-40</sup> And that's when memories begin to fade, or worse, to be lost entirely.

Since time immemorial, people have suspected that specific nutrients can positively affect cognitive functions such as learning and memory.<sup>41</sup> It's now known that many nutrients can actually modify aging brain function, in part by increasing formation of brain synapses.<sup>42</sup>

**Magnesium has been established as having a positive impact on both neural plasticity and synaptic density.**<sup>7,8,12</sup>

French word for button. When an electrical impulse reaches a pre-synaptic bouton, and ample calcium and magnesium are present, neurotransmitters are released to **transmit the impulse** to the next neuron in line. The **greater the number and density** of synaptic boutons, the **stronger the electrochemical signal** that the synapse can produce, and the **more sustained the memory** that is created.<sup>32</sup>

When the researchers examined the brains of control and MgT-supplemented animals under a high-power microscope, they readily detected much greater densities of synaptic bouton proteins in tissues from the supplemented animals. Those proteins are essential for neurotransmitter release in the several regions of the hippocampus vital for memory formation and retrieval.<sup>8</sup> Remarkably, the **density** of the synaptic boutons was **closely correlated with the memory performance** of each individual animal on the novel object recognition test.

## Near-Term Research

The MIT team is rapidly putting in place two human studies of MgT on memory function, with results expected in the near future. Meanwhile, they have recently discovered several new roles for MgT in managing memory, in this case unwanted memories of the kind associated with **post-traumatic stress disorder** (PTSD).

Fear memories are expressed in response to objects or events previously linked with a potential danger. Over time, fearful reactions can dissipate when the triggering event is experienced in a safe environment.

Animal studies reveal that MgT enhances this process, so that events which previously caused an emotional response no longer trigger fear.<sup>33,34</sup> MgT helps the pre-frontal region of the brain block the return of old fear memories.<sup>33,34</sup>

Research reveals that MgT works by enhancing neural plasticity in the hippocampus and prefrontal cortex.<sup>34</sup> These findings led the researchers to recommend that elevating brain magnesium with MgT be used to dampen traumatic memories and treat PTSD, anxiety, and depression.<sup>33,34</sup>

## Summary

Levels of Alzheimer's disease and associated memory loss among aging Americans are reaching epidemic levels.

The neurodegenerative processes involved in memory loss result from deterioration of connectivity between brain cells but are not a natural function of aging. Memory loss is now known to be associated

with loss of *synaptic density* and plasticity in the brain. Low magnesium levels may contribute to such losses.

**Magnesium-L-threonate (MgT)**, a new magnesium compound, boosts brain magnesium levels better than standard supplements. Studies reveal that MgT produces dramatic increases in synaptic density and plasticity, resulting in similar improvements in memory function itself. ●

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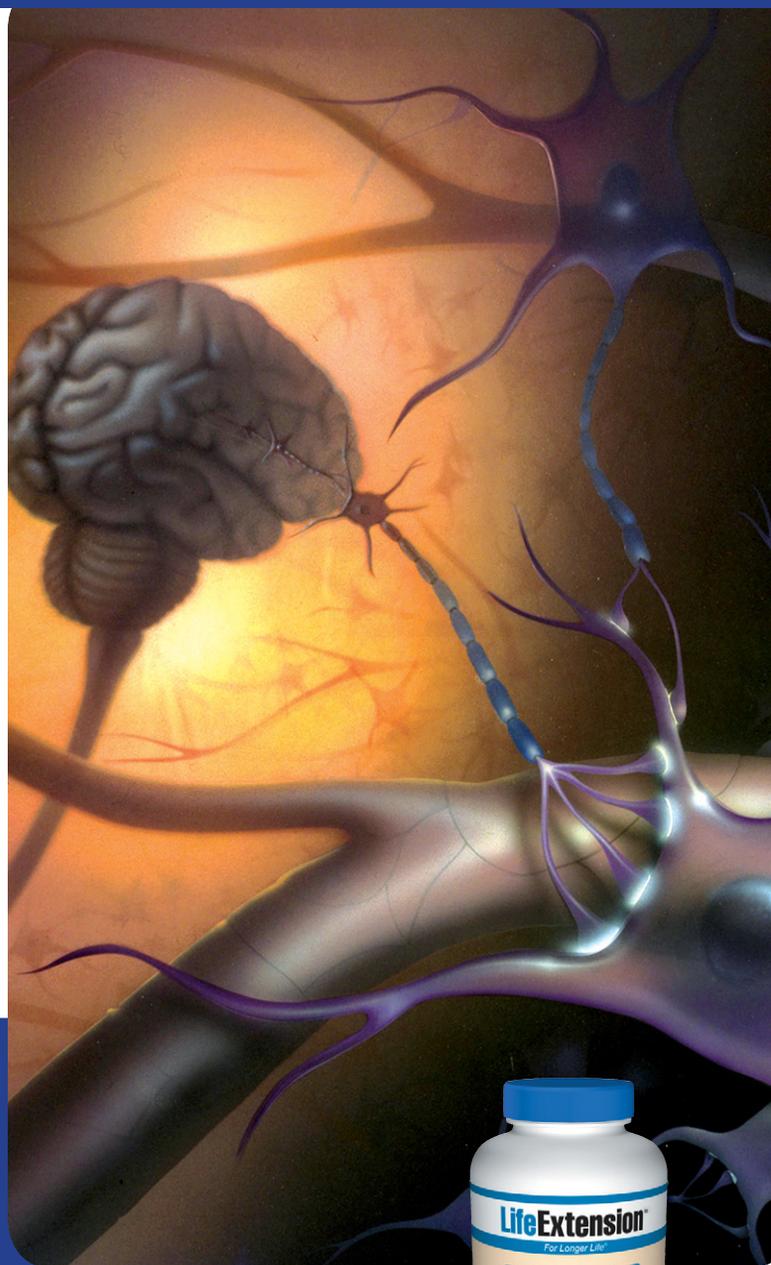
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# **HALF OF AGING HUMANS IN THE DEVELOPED WORLD ARE MAGNESIUM DEFICIENT!**<sup>1</sup>

## **YOU MAY BE ONE OF THEM.**

Optimal amounts of magnesium may now be obtained in a novel, highly *absorbable* form called **Neuro-Mag™ Magnesium L-Threonate**, available in **capsules** or **tasty lemon-flavored powder**.

### **A Critical Brain Booster. . .**

Magnesium is needed for more than **300** biochemical reactions in the body.<sup>2</sup>

Long known for its role in cardiovascular<sup>3-5</sup> and bone health,<sup>6</sup> energy metabolism<sup>7</sup> and mood,<sup>8</sup> researchers are now focusing *intensely* on magnesium's benefits for **cognitive function**.<sup>2</sup>

Unfortunately, it is very *hard* for your body to maintain optimal levels of magnesium in the **brain**.<sup>2</sup> This problem is of *special concern* for maturing individuals, as magnesium deficiency *increases* over time.<sup>1</sup>

### **Scientifically Advanced, Lab Tested**

Most commercially available magnesium supplements are not readily absorbed into the central nervous system.

To overcome this obstacle, an innovative form of magnesium is being introduced called **Neuro-Mag™**, shown to specifically target the aging brain and nervous system.

In pre-clinical models, **L-threonate** contained in **Neuro-Mag™** boosted magnesium levels in spinal fluid by an impressive **15%** compared to no increase with conventional magnesium.<sup>2</sup>

Even more compelling, animal models revealed improvements of **18%** for short-term memory and **100%** for long-term memory using the **Neuro-Mag™** form of magnesium.<sup>2</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 this supplies a modest **144 mg** of elemental magnesium, its superior *absorption* into the bloodstream and nervous system make it a preferred choice for aging humans to supplement with.

This highly absorbable brain health-supporting magnesium is also available in a good tasting powder mix called **Neuro-Mag™ Magnesium L-Threonate with Calcium and Vitamin D3 Powder**. In addition to its appealing lemon flavor, the one-scoop per day serving size supplies the same amount of magnesium plus **500 mg** of **calcium** (as calcium lactate gluconate—a highly *soluble* form of calcium) and **1,000 IU** of **vitamin D3**.

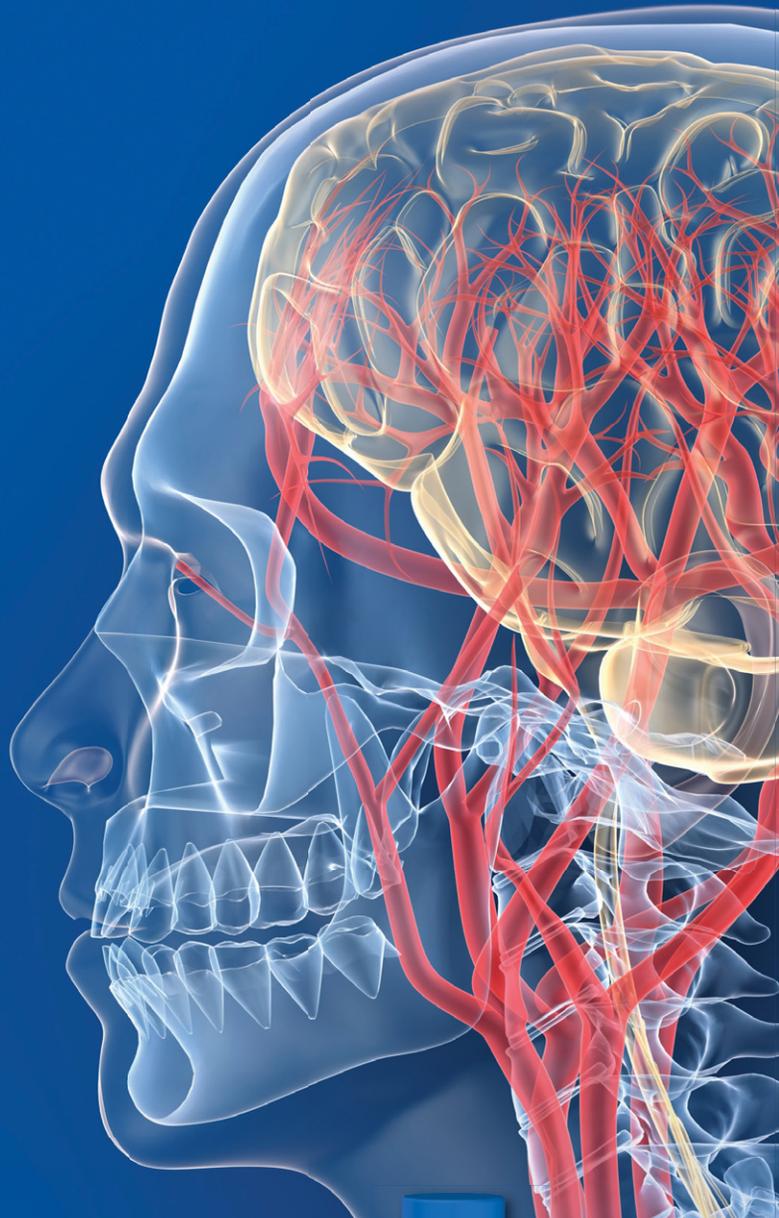
This offers maturing individuals an easy way to obtain these key nutrients in one simple formula.

A bottle containing 90 vegetarian capsules of **Neuro-Mag™ Magnesium L-Threonate** or **30** scoops of **Neuro-Mag™ Magnesium L-Threonate with Calcium and Vitamin D3 Powder** retails for \$40. If a member buys four bottles during **Super Sale**, the price is reduced to **\$24.30** per bottle. **Contains corn.**

Magtein™ is a trademark of Magceutics, Inc, distributed exclusively by AIDP, Inc. Patent pending.

#### **References**

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Item #01603



Item #01602

# Discount Prices For Premium-Quality Products



*Life Extension*® members are longevity enthusiasts, willing to 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.

The **large discounts** available to Foundation members enable them to purchase **premium-quality** supplements at prices substantially below those charged by commercial companies.

Here are some examples of **savings** members enjoy during the annual

## Super Sale:

	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> 120 softgels, Item # 01482 Super-refined EPA/DHA fish oil plus sesame lignans and potent olive fruit extract to provide critical omega-3 fatty acids and essential components of the Mediterranean diet.	\$32	<b>\$16.81</b> (ten-bottle purchase)
<b>Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™</b> 100 mg, 60 softgels, Item # 01426 The superior ubiquinol form of CoQ10 plus an organic compound (shilajit) shown to double mitochondrial CoQ10 levels.	\$62	<b>\$35.10</b> (ten-bottle purchase)
<b>Life Extension Mix™ • 315 tablets, Item # 01655</b> High-potency multi-nutrient formula now with potent anthocyanins from Maqui berry and proanthocyanidins from tart cherry at no extra cost.	\$98	<b>\$46.91</b> (ten-bottle purchase)
<b>Vitamin D3 with Sea-Iodine™ • 5,000 IU, 60 vegetarian capsules, Item # 01372</b> High-potency vitamin D to assure adequate intake of this essential nutrient plus 1000 mcg of Sea-Iodine™.	\$14	<b>\$8.44</b> (four-bottle purchase)
<b>Ultra Natural Prostate Formula with AprèsFlex™ &amp; Standardized Lignans</b> 60 softgels, Item # 01695 Improve prostate protection with AprèsFlex™ that helps suppress 5-LOX.	\$38	<b>\$21.60</b> (twelve-bottle purchase)
<b>Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract *</b> Natural Blueberry flavor powder, 414 grams, 60 servings, Item # 01693 Four ingredients to impede glucose-lipid absorption and combat age-associated weight gain, plus green coffee bean extract.	\$60	<b>\$36.45</b> (four-bottle purchase)
<b>Super K with Advanced K2 Complex • 90 softgels, Item # 01224</b> Three forms of vitamin K to help promote arterial health and bone support. One per day formula.	\$26	<b>\$15.53</b> (four-bottle purchase)
<b>PQQ Caps with BioPQQ™ • 10 mg, 30 vegetarian capsules, Item # 01500</b> Promotes mitochondrial biogenesis (generation of new mitochondria) in aging cells.	\$24	<b>\$14.85</b> (four-bottle purchase)
<b>DHEA (Dehydroepiandrosterone) • 25 mg, 100 capsules, Item # 00335</b> A hormone that declines with aging, benefits overall health.	\$15	<b>\$8.44</b> (four-bottle purchase)
<b>Mitochondrial Energy Optimizer with BioPQQ™ • 120 capsules, Item # 01568</b> To maintain healthy cellular function, protein structural integrity, and mitochondrial biogenesis.	\$94	<b>\$56.70</b> (four-bottle purchase)
<b>SAMe • 400 mg, 20 enteric-coated tablets, Item # 00557</b> S-adenosylmethionine in double-strength potency for mood elevation.	\$28	<b>\$16.20</b> (six-box purchase)
<b>Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G</b> 60 softgels, Item # 01586 Supports night vision and macular density.	\$42	<b>\$25.65</b> (four-bottle purchase)
<b>Optimized Resveratrol with Synergistic Grape-Berry Actives</b> 250 mg, 60 vegetarian capsules, Item # 01430 High potency <i>trans</i> -resveratrol with quercetin, plus <i>trans</i> -pterostilbene and fisetin to support DNA "longevity genes." One per day resveratrol formula.	\$46	<b>\$27.90</b> (four-bottle purchase)

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.

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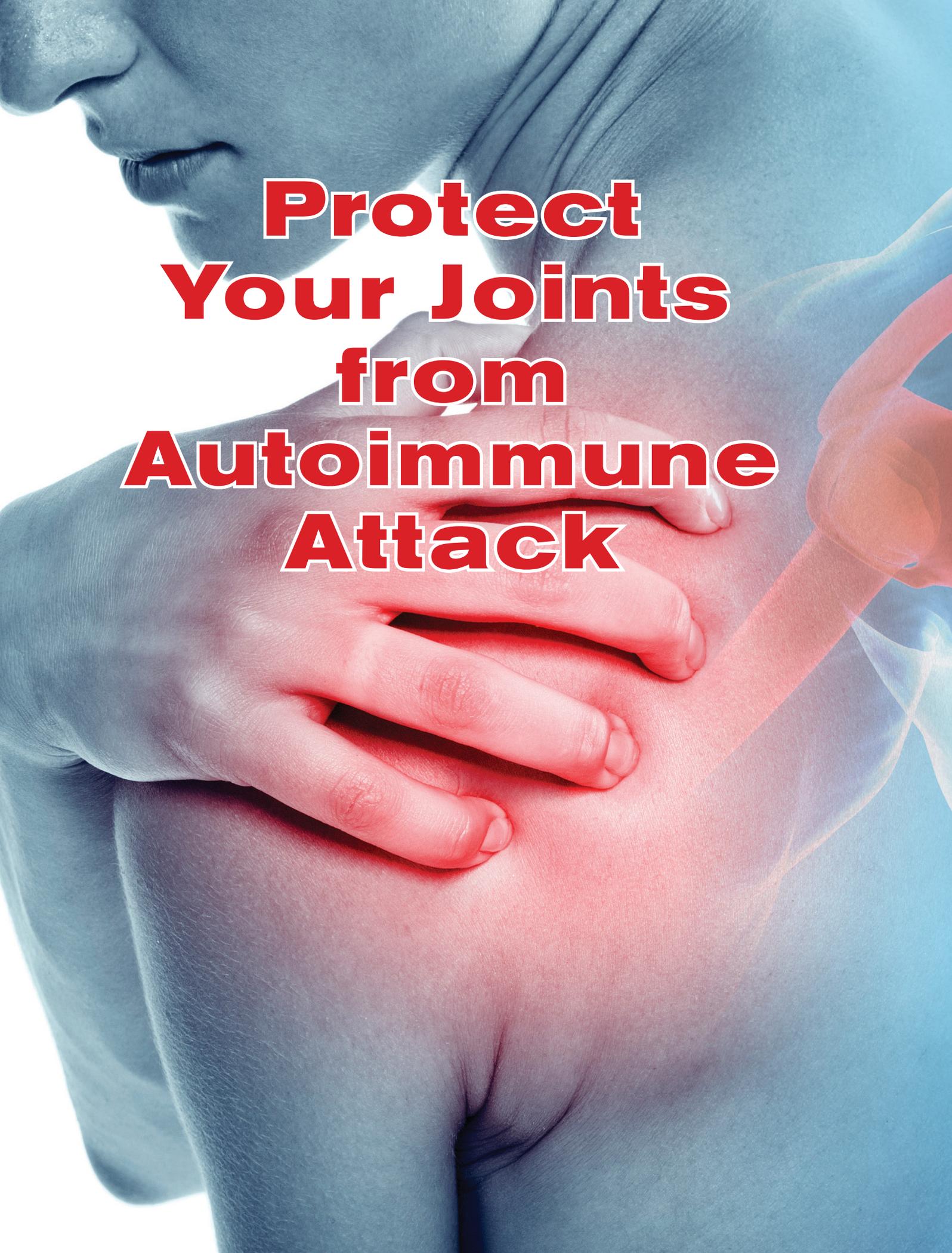
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<b>Bone Restore • 150 capsules, Item # 01611</b> High-potency bone protection formula with FruiteX B® OsteoBoron® and Magnesium citrate.	<b>\$22.50</b>	<b>\$13.16</b> (four-bottle purchase)
<b>Cognitex with NeuroProtection Complex • 90 softgels, Item # 00922</b> Optimal support for the brain. Includes glyceryl-phosphoryl-choline, vinpocetine, phosphatidylserine, Sharp-PS® GOLD PS-DHA, uridine 5'-monophosphate, and others. Also contains pregnenolone.	<b>\$74</b>	<b>\$43.20</b> (twelve-bottle purchase)
<b>Advanced Anti-Adipocyte Formula with AdipoStat &amp; Integra-Lean® African Mango Irvingia* • 60 vegetarian capsules, Item # 01509</b> Provides cellular support for healthy body weight.	<b>\$39</b>	<b>\$24.30</b> (four-bottle purchase)
<b>Acetyl-L-Carnitine Arginate • 100 capsules, Item # 00788</b> Patented form of carnitine to support healthy neurite growth for optimal brain health.	<b>\$59</b>	<b>\$34.42</b> (four-bottle purchase)
<b>Triple Action Cruciferous Vegetable Extract • 60 vegetarian capsules, Item # 01468</b> Comprehensive cruciferous plant extract formulation, with apigenin, for optimal cellular health.	<b>\$24</b>	<b>\$14.85</b> (four-bottle purchase)
<b>Prelox® Natural Sex for Men® • 60 tablets, Item # 01373</b> Supports healthy endothelial function and blood flow for maximum male performance.	<b>\$52</b>	<b>\$32.40</b> (four-bottle purchase)
<b>Super R-Lipoic Acid • 300 mg, 60 vegetarian capsules, Item # 01208</b> Superior efficacy compared to alpha-lipoic acid—supplies 240 mg of stabilized R-lipoic acid.	<b>\$49</b>	<b>\$30.38</b> (four-bottle purchase)
<b>ArthroMax™ Advanced with UC-II® and AprèsFlex™ • 60 capsules, Item # 01618</b> Promotes joint health and may promote comfortable joint structure and function.	<b>\$36</b>	<b>\$21.60</b> (four-bottle purchase)
<b>CoffeeGenic™ Green Coffee Extract • 200 mg, 90 vegetarian capsules, Item # 01604</b> Convenient source of chlorogenic acid to help maintain healthy blood glucose levels.	<b>\$25</b>	<b>\$14.85</b> (four-bottle purchase)
<b>Krill Healthy Joint Formula • 30 softgels, Item # 01600</b> Healthy joint formula provides targeted support for aging joints through a proprietary blend of krill oil, hyaluronic acid, and astaxanthin. One small softgel a day formula.	<b>\$32</b>	<b>\$19.58</b> (four-bottle purchase)
<b>Natural Stress Relief • 30 vegetarian capsules, Item # 00987</b> With lemon balm extract to reduce anxiety and sleeplessness, and pure L-theanine to promote relaxation without drowsiness.	<b>\$28</b>	<b>\$16.20</b> (four-bottle purchase)
<b>Gamma E Tocopherol with Sesame Lignans • 60 softgels, Item # 00759</b> Provides the critical gamma tocopherol form of vitamin E plus sesame lignans to enhance the free radical scavenging benefits of alpha and gamma tocopherols.	<b>\$32</b>	<b>\$19.58</b> (four-bottle purchase)
<b>Super Bio-Curcumin® • 400 mg, 60 vegetarian capsules, Item # 00407</b> Super-absorbable formulation promotes healthy lipids, joint function, and healthy DNA. Absorbs <u>six</u> times greater than conventional curcumin.	<b>\$38</b>	<b>\$23.63</b> (four-bottle purchase)
<b>Super Booster Softgels with Advanced K2 Complex • 60 softgels, Item # 01590</b> A convenient <u>one</u> per day softgel that includes optimal potencies of gamma-tocopherol, sesame lignans, lycopene, lutein, ginkgo, chlorophyllin, selenium and both forms of vitamin K2.	<b>\$42</b>	<b>\$25.65</b> (four-bottle purchase)
<b>Skin Restoring Ceramides with Lipowheat™ • 30 liquid capsules, Item # 01502</b> Rehydrates aged skin.	<b>\$25</b>	<b>\$15.53</b> (four-bottle purchase)

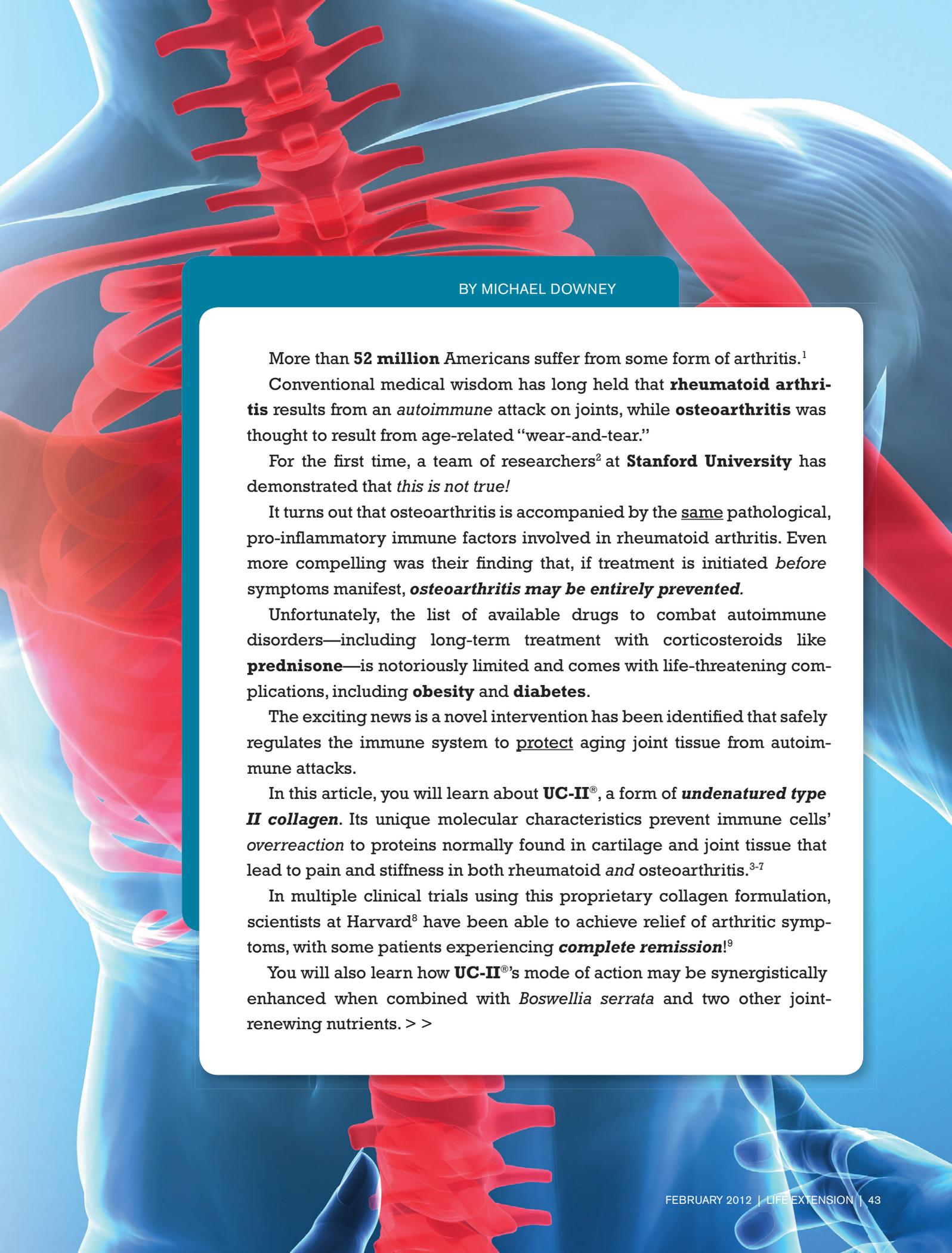
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A close-up photograph of a person's hands holding their knee, suggesting joint pain. The image is overlaid with a semi-transparent anatomical diagram of a knee joint. The text is centered over the image in a bold, red font with a white outline.

**Protect  
Your Joints  
from  
Autoimmune  
Attack**



BY MICHAEL DOWNEY

More than **52 million** Americans suffer from some form of arthritis.<sup>1</sup>

Conventional medical wisdom has long held that **rheumatoid arthritis** results from an *autoimmune* attack on joints, while **osteoarthritis** was thought to result from age-related “wear-and-tear.”

For the first time, a team of researchers<sup>2</sup> at **Stanford University** has demonstrated that *this is not true!*

It turns out that osteoarthritis is accompanied by the same pathological, pro-inflammatory immune factors involved in rheumatoid arthritis. Even more compelling was their finding that, if treatment is initiated *before* symptoms manifest, **osteoarthritis may be entirely prevented.**

Unfortunately, the list of available drugs to combat autoimmune disorders—including long-term treatment with corticosteroids like **prednisone**—is notoriously limited and comes with life-threatening complications, including **obesity** and **diabetes.**

The exciting news is a novel intervention has been identified that safely regulates the immune system to protect aging joint tissue from autoimmune attacks.

In this article, you will learn about **UC-II®**, a form of **undenatured type II collagen**. Its unique molecular characteristics prevent immune cells’ *overreaction* to proteins normally found in cartilage and joint tissue that lead to pain and stiffness in both rheumatoid *and* osteoarthritis.<sup>3-7</sup>

In multiple clinical trials using this proprietary collagen formulation, scientists at Harvard<sup>8</sup> have been able to achieve relief of arthritic symptoms, with some patients experiencing **complete remission!**<sup>9</sup>

You will also learn how **UC-II®**’s mode of action may be synergistically enhanced when combined with *Boswellia serrata* and two other joint-renewing nutrients. > >

The Stanford team's discovery of the autoimmune link between osteoarthritis and rheumatoid arthritis was first presented in late 2011.

A group of 25 scientists concluded that the development of osteoarthritis is in great part driven by *low-grade inflammatory processes*.<sup>2,10</sup> Specifically, the researchers discovered that the body launches an orchestrated, powerful attack on the *synovial joints* via signaling proteins normally used to fight infections. This *autoimmune* response, they reported, plays a key role in osteoarthritis onset.<sup>2</sup>

**Synovial joints** are the most common joint types in the human body. They contain soft-tissue cushioning in addition to cartilage, along with synovial fluid, a natural lubricant. Knees, hips, and shoulders are just a few of the commonly arthritic joints that fall into this category.

What the Stanford team found was that low-grade inflammation is not merely an early symptom of osteoarthritic cartilage destruction in synovial joints—it is the trigger that causes it. The study also revealed that by targeting the autoimmune derangements that occur early on in the development of osteoarthritis, *arthritis might be completely preventable*.

They went on to point out that drugs intended to inhibit the arthritic reaction (like corticosteroids) paradoxically *compromise* the immune system.<sup>2</sup> It would be far safer, they reported, if a natural way to turn off the body's abnormal response were available.

### Novel Method to Target the Pathologic Immune Response

These compelling new findings coincided with the development of a *natural* intervention shown to protect tissues in aging joints called **undenatured type II collagen**.

Here's how it works.

Joints are lined with **cartilage** that both lubricates joints and absorbs physical impacts, preserving ease of motion and comfort. The bulk of the cartilage in your joints consists of **collagen**, a biomolecular protein critical to **reducing friction** and **keeping joints youthful**.

Osteoarthritis and rheumatoid arthritis both involve the **structural degradation** and gradual **destruction** of cartilage in aging joints.<sup>7,11,12</sup> **Osteoarthritis** was long thought to be a consequence of simple "wear-and-tear" on joints (and hence largely inevitable).<sup>7</sup> Rheumatoid arthritis, on the other hand, was recognized as an inflammatory autoimmune disease that arises when the body mistakenly attacks its own tissues, in this case the joint linings and cartilage.<sup>7</sup>

We now know that both arise from **pro-inflammatory immune factors**.

Intrinsic to this process is the mobilization of "killer" T-cells into the joints by **exposed collagen** within the synovial lining.<sup>7,8</sup>

Under normal conditions, collagen elicits no immune response. It is **exposed collagen** that immune cells mistakenly identify as invasive, foreign molecules.<sup>7</sup> In response to the "threat," **inflammatory cytokines** are released that draw in more "killer" **T-cells**.<sup>13</sup> Those cells bombard exposed cartilage with toxic chemicals in order to destroy it, creating **oxidative stress** and **further inflammation** in the process.

Over time, these continuous biomolecular insults **erode** and **disintegrate** the cartilage that lubricates and functions as a shock-absorber in joints.

The resulting **pain** can become chronic and debilitating in lockstep with sensations of friction or grinding involved in joint movement. While less acute at rest, this pain is exacerbated by walking, standing, or any form of weight-bearing.<sup>14,15</sup> Osteoarthritis sufferers often experience joint stiffness or immobility after periods of inactivity, for instance upon waking or after a long period of sitting.<sup>14</sup>



## UC-II® Triggers Specific Oral Tolerance for Lasting Joint Relief

In both osteoarthritis and rheumatoid arthritis, the chief cause of autoimmune response is **exposed collagen** and the ensuing attack by sensitized killer T-cells.<sup>7,16</sup>

Suppose an effective means of *regulating* killer T-cells before they encountered exposed collagen could be developed? This would “re-train” them to treat exposed collagen as a harmless substance and prevent joint degradation and destruction.

In 2000, the first hint of just such an intervention emerged.

A team of scientists at the University of Nebraska was surprised to find that **chicken soup** prevented the mobilization of immune system cells to sites of inflammation.<sup>17</sup> Upon further analysis, it was not vegetables but a **soluble component** of the **chicken broth** itself that exerted this anti-inflammatory activity.

The researchers believe that it was likely the **collagen** from chicken bones in the broth that was the source of this beneficial anti-inflammatory effect.

Owing to its *particular* molecular structure, the chicken-derived type II collagen in **UC-II®** acts as a kind of “**reverse vaccine**,” one that *regulates* the immune system so that it stops mobilizing attacks against proteins normally found in healthy joint cartilage.

It does so by inducing what immunologists call **specific oral tolerance**—the *desensitization* of immune response to specific agents via an orally administered intervention. This is why UC-II® may be likened to a kind of oral vaccine that *reverses* T-cell attacks on exposed cartilage.

Scientists at **Harvard** first studied the effects of UC-II® on human patients with rheumatoid arthritis, long established as an autoimmune disorder. In a randomized, double-blind trial of **60** patients, undenatured type II chicken collagen produced a **significant decrease** in the number of swollen and painful joints within **3 months**, compared to the placebo group. In fact, **14%** of patients achieved **complete remission**. No side effects were found.<sup>8</sup>

Later, a much larger study of **274** rheumatoid arthritis patients confirmed this finding, as did a study on patients with *juvenile rheumatoid arthritis*, a particularly aggressive form of this disease.<sup>18</sup>

Turning their attention to osteoarthritis, scientists tested **undenatured type II chicken collagen** on horses and dogs. They noted a reduction of **88%** in measurable pain among horses given this formulation.<sup>16</sup> In one study, moderately arthritic dogs given the undenatured collagen formulation were able to



What You Need to Know

## New Way to Combat Rheumatoid and Osteoarthritis

- The most common joint disease, osteoarthritis, was long viewed as a disease of wear-and-tear. New findings reveal that it is one of a number of disorders caused by an abnormal response of the immune system.
- Instead of the traditionally prescribed *NSAIDs* and *immune suppressants*, a revolutionary and side effect-free form of **undenatured type II collagen** called **UC-II®** has been shown to desensitize the immune system and prevent pro-inflammatory autoimmune attacks on aging joints.
- **Undenatured type II chicken collagen** has been shown in studies to be capable of activating the pathway known as *induced oral tolerance*, which teaches the immune system to correctly recognize exposed cartilage proteins as the body's own tissues—instead of foreign microbes—thus preventing an inflammatory attack, a newly recognized cause of osteoarthritis.
- The anti-inflammatory action of a novel composition of **AKBA**-enriched *Boswellia serrata*—and two joint-protective nutrients, **glucosamine sulfate** and **boron**, now available in highly bioactive formulations—can further boost the ability of undenatured type II chicken collagen to fight osteoarthritis, the painful condition behind so many visits to primary care physicians.

## Why “Undenatured” Type II Collagen?

As discussed earlier, immune system **T-cells** are tasked with recognizing and distinguishing between “self” molecules and “foreign” ones. They do this important work by responding to very specific molecular shapes and **3-dimensional structures**.<sup>41</sup> If **T-cells in the blood** are simply exposed, without any “training,” to a previously unrecognized protein structure (such as those found on joint collagen) they react violently and trigger a **massive inflammatory response** to destroy the protein.<sup>42</sup>

This is why, when scientists want to create an animal model of arthritis, they inject collagen into their subjects, sensitizing the T-cells **in their blood** to the protein.<sup>43</sup> Those **circulating T-cells** set up inflammation in the animal’s joints, with their rich supplies of collagen.

If T-cells are given adequate preparation, however, they can be “taught” that a specific molecule is a friend rather than a foe. Where does such T-cell “training” take place?

In the **intestinal tract**, specifically the lower end of the small intestine, which is rich in collections of immune tissue called **Peyer’s patches**. Peyer’s patches act as “training centers” for T-cells, exposing them to all sorts of molecular shapes that are natural components of the food we eat.<sup>44</sup> In that fashion, we **desensitize our immune systems** and develop a natural **tolerance** to new foods without having constant allergic or inflammatory reactions.<sup>44</sup>

So, by providing **native collagen** of the right 3-dimensional structure to the **digestive tract**, rather than to the bloodstream directly, we can “educate” our T-cells to ignore collagen when they encounter it in joints.<sup>5,41</sup> Scientists say that this enables people to develop **oral tolerance** to collagen.<sup>45,46</sup>

And **oral tolerance to collagen powerfully suppresses joint inflammation**, as has been shown in numerous laboratory studies.<sup>5,47,48</sup> Oral administration of soluble type II collagen even prevents arthritis induced experimentally by collagen injections.<sup>45,46</sup>

But **not just any collagen works**. Typical commercial processing causes collagen to become **denatured**, uncoiling from its normal helical shape and losing its 3-dimensional structure. Denatured collagen has no beneficial effects on joint inflammation.<sup>48</sup>

A more natural form of collagen, called **undenatured type II collagen**, or **UC-II®**, has recently been developed. **UC-II®** is a highly effective product derived from chicken breast cartilage, a rich source of natural collagen.<sup>49</sup> **UC-II®** retains *its original 3-dimensional molecular structure*, keeping it recognizable by T-cells in Peyer’s patches. And **UC-II** is **robust** enough to survive the harsh conditions in the stomach and small intestine, arriving at Peyer’s patches with **its molecules intact**.<sup>41</sup>

place more weight on sore limbs, and use them more naturally, relative to those given placebo, or those given chondroitin plus glucosamine.<sup>19</sup>

The gold standard of scientific evidence is a *randomized, double-blind, clinical study on humans*. In a study of this type involving **52** adult human volunteers with osteoarthritis, who had an average age of 59, scientists found that in just **90 days**, undenatured type II chicken collagen produced “**significant enhancement** in daily activities suggesting an improvement in their quality of life.”<sup>14</sup>

In this trial, using the standardized WOMAC (Western Ontario McMaster Osteoarthritis Index) scale, scientists found that **40 mg a day** of undenatured type II chicken collagen reduced osteoarthritis symptoms by **33%** in **90 days**. By comparison, the combination of **1,500 mg** a day of glucosamine and **1,200 mg** a day of chondroitin sulfate reduced WOMAC scores by only **14%**.<sup>14</sup>

Pain scores on the visual analog scale (VAS) decreased **40%** for the collagen group, while pain scores for the glucosamine/chondroitin group decreased just **15%**.<sup>14</sup>

Finally, using the Lequesne’s functional index score—which measures pain during daily activities, such as walking—the study team found that undenatured type II chicken collagen reduced this score by **20%**, while the combination of glucosamine and chondroitin lowered the score by only **6%**. All results were observed in just **90 days**.<sup>14</sup>

So scientific studies have established that a dosage of **40 mg a day** of undenatured type II chicken collagen induces oral tolerance to exposed collagen—inhibiting the arthritic immune response that inflames joints, degrades cartilage and bone, and as a result, further inflames joints in a vicious and degenerative cycle.<sup>8,9,14,16,18,19</sup>

## Neutralizing the Pro-inflammatory 5-LOX Enzyme

Incorporating a safe anti-inflammatory agent in a joint protection program may provide an additional layer of defense against arthritic damage and pain, by helping to eliminate the immune trigger.

In traditional Indian medicine, the gum resin of *Boswellia serrata* is associated with alleviating inflammatory diseases such as arthritis. Double-blind, placebo-controlled studies have shown boswellia decreases swelling and pain in patients with osteoarthritis of the knee.<sup>20</sup>

Various compounds within boswellia exert an anti-inflammatory action that is different from most anti-inflammatory agents: they inhibit the pro-inflammatory enzyme *5-lipoxygenase* or **5-LOX**.

A highly bioactive boswellia compound—called **3-O-acetyl-11-keto- $\beta$ -boswellic acid**, or AKBA—directly binds to and selectively inhibits **5-LOX**.<sup>21,22</sup> This prevents 5-LOX from facilitating the production of *leukotriene*, a pro-inflammatory compound

that damages cartilage and joints. AKBA also reduces pro-inflammatory *leukocyte elastase* activity.<sup>21</sup> The problem up to now has been limited bioavailability of AKBA following oral administration.

Fortunately, researchers have developed a boswellia formulation with enhanced bioavailability. Scientists administering this patented boswellia compound to animals found that it increased the bioavailability of AKBA in the systemic circulation by **52%**, compared with a standard boswellia extract.<sup>21</sup>

The researchers concluded that the AKBA-rich boswellia product “consistently...confers better anti-inflammatory efficacy,” and “provides more potential benefits in recovering articular cartilage damage... due to inflammatory insult in arthritis such as osteoarthritis or rheumatoid arthritis.”<sup>21</sup>

In a double-blind, randomized, placebo-controlled study on human patients with osteoarthritis, **100 mg** of the patented AKBA-enriched boswellia extract inhibited the cartilage-degrading enzyme **MMP-3**, and exhibited an anti-inflammatory action that was superior to a standard boswellia extract. Benefits were seen as early in the 90-day study as **7 days**. The journal-published report described the formulation as a “novel synergistic composition.”<sup>23</sup>

## Additional Nutrients to Rebuild Aging Joints

In addition to inducing oral tolerance in the immune system, and blocking pro-inflammatory 5-LOX enzymes—it is important to support the structure of healthy joints.

Two of these nutrients—*glucosamine sulfate* and a patented form of *boron*—round out an effective anti-arthritis program by protecting existing cartilage and synovial fluid in the joint, as well as providing nutritional support for healthy joint structure.

### Glucosamine

Glucosamine is a component of cartilage that has been shown to be joint-protective. While generally viewed as a partial treatment for osteoarthritis, research suggests it may also be effective against rheumatoid arthritis.<sup>24</sup>

*Inflammatory cytokines* are directly implicated in the development and progression of osteoarthritis. In the lab, researchers found that glucosamine produces a **four-fold reduction** in inflammatory cytokine-induced gene expression.<sup>25</sup>

In another lab study, glucosamine successfully inhibited a number of pro-inflammatory factors (*nuclear factor-kappaB* activity, *prostaglandin E2*, and the gene expression of COX-2) supporting its use “as





a *symptom- and structure-modifying drug* in the treatment of [osteoarthritis].<sup>26</sup>

Glucosamine was also found to prevent joint cartilage degradation in the lab, providing “further support for the use of glucosamine in treatment or prevention of cartilage loss.”<sup>27</sup>

Turning their attention to humans, scientists conducted a randomized, double-blind study of patients with osteoarthritis of the knee. They compared **1,500 mg a day** of glucosamine to **1,200 mg a day** of ibuprofen for two weeks for effectiveness and side effects. They concluded that glucosamine “is a selective drug for osteoarthritis, as effective on the symptoms of the disease as NSAIDs [non-steroidal anti-inflammatory drugs] but significantly better tolerated.”<sup>28</sup>

When scientists orally administered glucosamine to human osteoarthritis patients in therapeutic doses of **1,500 mg a day**, they found it to be *bioavailable* both systemically and within the joints.<sup>29</sup>

Not all studies show that glucosamine by itself confers relief from osteoarthritis.<sup>30-33</sup> These studies showing lack of efficacy strongly underscore the need for arthritis sufferers to utilize a multi-modal approach.

### **Boron**

The trace element *boron* influences calcium and magnesium metabolism and can inhibit pro-inflammatory factors, while potentially helping to maintain bone growth and density.<sup>34-37</sup>

In a review of previous studies, scientists found that boron exerts favorable immunomodulatory effects on the inflammatory process, decreasing joint swelling and improving restricted movement. Boron was also found to inhibit *lipooxygenase* (LOX)—an enzyme that triggers the inflammatory cascade—and this inhibitory effect on LOX decreases levels of inflammatory **leukotrienes**.<sup>38</sup>

In a double-blind pilot study in people with severe osteoarthritis, scientists found that of those who started the trial, **50%** of those taking boron improved; and of those completing the trial, **71%** of those taking boron improved; but only **10%** of those taking placebo improved. No side effects were observed.<sup>39</sup>

In another study, bone samples were taken from fracture patients and compared to samples from osteoarthritis patients and to control bone samples. Researchers found no differences between fracture and control bone samples, but samples of bone from areas adjacent to osteoarthritic joints showed reduced mineral content, including a lower level of boron. This may indicate that there is a more rapid turnover of bone in these afflicted joints, and that boron—used as a bone-building material—is quickly depleted.<sup>40</sup>

Scientists have now developed and patented a form of boron that is identical to that found in plants, making it highly bioavailable. A dose of just **1.5 mg** of the patented form of boron may provide a key constituent for rebuilding the damaged bones and joints of osteoarthritis patients.

Glucosamine and boron—two natural, joint-supporting nutrients—may be key supporting players for the beneficial effects of **undenatured type II chicken collagen** and the inflammation-blocking action of the patented, more *absorbable* form of *Boswellia serrata*.

### **Summary**

A team of Stanford researchers recently demonstrated that both rheumatoid and osteoarthritis are triggered by an abnormal immune response.

Arthritis is traditionally treated with side effect-prone anti-inflammatory and immune-suppressing drugs. A unique compound has been developed that is capable of safely and naturally *desensitizing* the immune system so that it “learns” to stop launching the attacks on aging joints that cause arthritis pain and swelling.

Through a pathway known as induced oral tolerance, **undenatured type II chicken collagen** retrains the immune system to correctly recognize exposed cartilage proteins as the body’s own tissues—instead

of incorrectly seeing them as foreign microbes—thus preventing the inflammatory and destructive attack that causes osteoarthritic joint pain and stiffness.

Supported by the anti-inflammatory action of a novel composition of AKBA-enriched *Boswellia serrata*—and further boosted by the joint-rebuilding nutrients, glucosamine sulfate and boron, **40 mg a day** of undenatured type II chicken collagen may halt the abnormal immune process that strikes arthritis sufferers. ●

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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## Complete Relief—Without a Potentially Life-Threatening Procedure\*

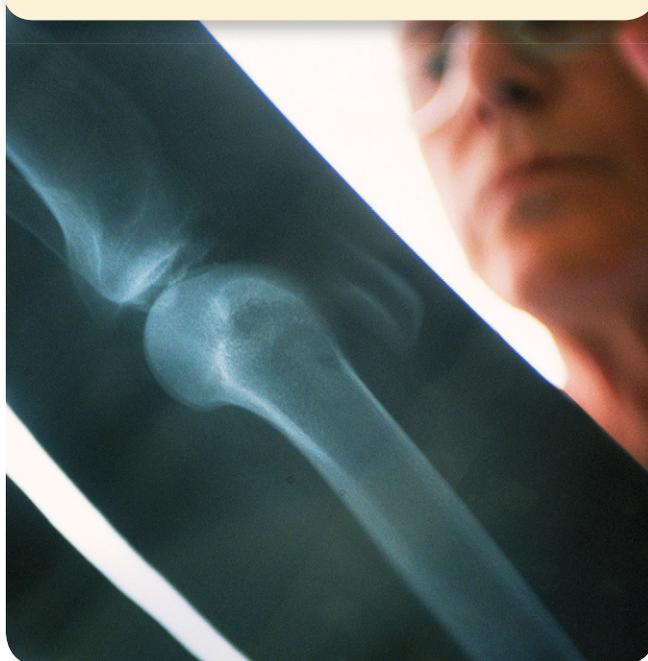
An 88-year-old female presented with knee cartilage degeneration, severe pain, and bone spurs. Her doctors advised that she undergo **total knee replacement surgery** as the best option.<sup>50</sup>

Total knee replacement comes with significant risks and complications, especially in maturing individuals. These include:

- Blood clots in the legs that can travel to the lungs (pulmonary embolism)
- Urinary tract infection,
- Nausea and vomiting (related to pain medication)
- Chronic knee pain and stiffness
- Bleeding into the knee joint
- Nerve damage
- Blood vessel injury
- Infection of the knee which can require re-operation

Ultimately the patient opted for the recommended **40 mg** per day dose of a proprietary ingredient supplying 10 mg of undenatured type II collagen. Within three years, at age 91, she achieved restored mobility and is able to climb five flights of stairs without aid or rest.

\* Reprinted from *Life Extension*® Winter 2011-2012 *Super Sale* Edition.



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# 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 plant extract that has been shown to modulate these dangerous 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 prevents induction of DNA damage.<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 **\$56.70** per bottle. **Contains soybeans.**

### Just four capsules of Mitochondrial Energy Optimizer with BioPQQ™ provide:

Carnosine	1000 mg
ArginoCarn® Acetyl-L-carnitine arginate DiHCl	675 mg
Bio-Enhanced® R-Lipoic acid (microencapsulated)	150 mg
Benfotiamine	150 mg
Pyridoxal 5'-Phosphate	100 mg
BioPQQ™	10 mg
Luteolin	8 mg



Item # 01568

To order Mitochondrial Energy Optimizer with BioPQQ™, 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. This product is not intended to diagnose, treat, cure, or prevent any disease.



Next-Generation Formula . . .

# ArthroMax™ Advanced with UC-II® and AprèsFlex™

## Now with Dual-Action Support for Aging Joints!

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

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

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

## Better Absorption for Optimum Benefit

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

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

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

\*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.

## ArthroMax™ Advanced with UC-II® and AprèsFlex™

In addition to AprèsFlex™, the new ArthroMax™ contains a novel standardized chicken cartilage: UC-II®. New data show it helps with immune issues that can impact joint discomfort and ease of motion in aging individuals.

Two capsules of the new **ArthroMax™ Advanced with UC-II® and AprèsFlex™** provide the following nutrients in one convenient, joint-protecting formula:

UC-II® standardized chicken cartilage	40 mg
Glucosamine sulfate 2KCl (from corn)	1500 mg
AprèsFlex™ ( <i>Boswellia serrata</i> ) extract	100 mg
Boron (calcium fructoborate as patented FruiteX B® OsteoBoron®)	1.5 mg



Item# 01618

The retail price of a bottle of 60 capsules of **ArthroMax™ Advanced with UC-II® and AprèsFlex™** is \$36. If a member buys four bottles during **Super Sale**, the price is reduced to **\$21.60** per bottle.

To order the new **ArthroMax™ Advanced with UC-II® and AprèsFlex™** or **ArthroMax™ with Theaflavins and AprèsFlex™**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

Contains corn.

AprèsFlex™ is a trademark of Laila Nutraceuticals exclusively licensed to PL Thomas—Laila Nutra LLC. International patents pending. FruiteX B® and OsteoBoron® are registered trademarks of VDF FutureCeuticals, Inc. U.S. Patent No. 5,962,049.

UC-II® is a registered trademark of InterHealth N.I. UC-II® brand undenatured type II collagen. U.S. Patents 5,645,851, 5,637,321, 5,529,786, 5,750,144, 7,083,820, EPO Patent EP1435906B1, U.S. and world-wide patents pending.

## ArthroMax™ with Theaflavins and AprèsFlex™

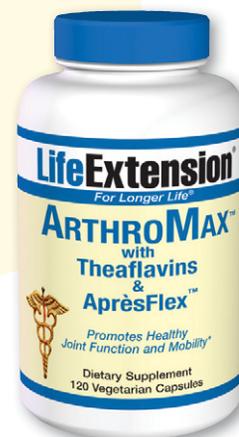
ArthroMax is also available with **Black Tea Theaflavins** (without UC-II®) to protect against immune attack in the joints via a separate mechanism.

Inflammatory reactions are regulated by a series of "cytokines" produced in the body. Normal aging results in an unfavorable balance of these cytokines that contributes to persistent inflammatory conditions. Studies have shown that a special fraction found in **black tea** suppresses proinflammatory cytokines at the genomic level. Scientists have found that these compounds called **theaflavins** uniquely downregulate the expression of genes and cytokines associated with inflammatory conditions.

**ArthroMax™ with Theaflavins** formula provides these bioactive **theaflavin** fractions along with **methylsulfonylmethane (MSM)**, which contains sulfur components that are critically important in maintaining comfortable joint function.\* ArthroMax™ with Theaflavins also contains **FruiteX B® OsteoBoron®**, a patented form of boron that is identical to natural plant forms found in food. Considered more bioavailable than other forms of boron, **FruiteX B® OsteoBoron®** also supports healthy bones and joints.\*

AprèsFlex™ ( <i>Boswellia serrata</i> ) extract	100 mg
Glucosamine sulfate 2KCl (from corn)	2000 mg
Methylsulfonylmethane (MSM)	1000 mg
Black Tea ( <i>Camellia sinensis</i> ) (decaf.) extract	440 mg
Boron (calcium fructoborate as patented FruiteX B® OsteoBoron®)	1.5 mg

The retail price of a bottle of 120 vegetarian capsules of **ArthroMax™ with Theaflavins and AprèsFlex™** is \$44. If a member buys four bottles during **Super Sale**, the price is reduced to **\$27** per bottle.



Item# 01617

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Introducing

# KRILL HEALTHY JOINT FORMULA

TARGETED SUPPORT  
FOR OPTIMAL JOINT  
FUNCTION AND MOBILITY



Maintaining healthy, flexible joints is essential to quality of life. Joint stiffness and discomfort can stand in the way of performing even simple everyday tasks.

Most people do not obtain critical nutrients shown to support youthful joint function and mobility.

To meet this urgent need, **Life Extension®** introduces **Krill Healthy Joint Formula**, a patent-pending blend of deep-sea **whole krill oil** sourced in Antarctica, combined with **hyaluronic acid** and **astaxanthin**.

In a recent clinical trial involving over 100 maturing individuals, a **55% reduction** in joint discomfort was observed in less than three months, with **63%** of participants maintaining ease of motion.<sup>1</sup>

### THREE SYNERGISTIC COMPOUNDS FOR SUPERIOR BENEFIT

The data reveals that the fatty acids found in krill oil are particularly effective for joint health.<sup>2</sup> These unique fatty acids have been shown to *specifically target joint tissue*.<sup>2,3</sup>

**Hyaluronic acid** occurs naturally in the joints,<sup>4</sup> where it acts to lubricate and cushion against repeated physical impacts.<sup>5</sup> Because it forms a major component of cartilage and soft tissue,<sup>4</sup> it is widely used to promote joint health.<sup>4-8</sup>

The difficulty has been that hyaluronic acid is a large molecule not well absorbed by the body. When combined with krill oil, it has been shown to reach significantly *higher* levels in the bloodstream than in standalone form.<sup>8</sup>

Krill oil is a natural source of the antioxidant carotenoid **astaxanthin**. Astaxanthin works in multiple ways, including suppression of free radical activity and enhanced mitochondrial function.<sup>9</sup> It also maintains krill oil's molecular stability.

Most commercially available krill oils do not contain significant amounts of astaxanthin because it is nearly eliminated during processing. **Krill Healthy Joint Formula** is *fortified* with astaxanthin, for maximum stability and superior benefit.

### JUST ONE SOFTGEL DAILY

The suggested daily serving of one **Krill Healthy Joint Formula** softgel daily supplies **353 mg** of this proprietary blend.

A bottle containing **30** softgels of **Krill Healthy Joint Formula** retails for \$32. If a member buys four bottles during **Super Sale**, the price is reduced to **\$19.58** per bottle. Just one softgel a day of **Krill Healthy Joint Formula** duplicates successful human clinical trials.

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A person wearing a white lab coat is shown from the chest down. They are holding a clear glass of water in their right hand and a single yellow pill in their left palm. The background is blurred, showing other people in white lab coats. The text is overlaid in the center of the image.

**Can a  
Diabetes Drug  
Prevent  
Cancer Death?**

BY JAMES SAFTIG

With its near-perfect safety record, low cost, and favorable side-effect profile, the anti-diabetic drug **metformin** is one of the few FDA-approved drugs **Life Extension**<sup>®</sup> recommends its members should take every day.<sup>1</sup>

Between 1990 and 2011 alone,<sup>1</sup> over **1,000** published studies have yielded confirmatory data on its numerous anti-aging properties, from weight loss and glucose control to cardiovascular disease and cancer defense.

As the medical establishment continues to *ignore* this mounting body of evidence, ongoing research powerfully validates our position.

In one of the largest studies of its kind, a team of scientists analyzed cancer risk among **8,000** diabetics treated with metformin.<sup>2</sup> Over a 10-year period, they observed a **54%** lower incidence of all cancers compared to the general population.

Metformin not only exerted a major protective effect against cancer development, but those who developed cancer exhibited a *significantly higher survival rate*, including those with malignant cancers of the **lung, colon, and breast**. Of equal significance was the finding that the earlier the metformin regimen was initiated, the greater the preventive benefit.

Given that diabetics are predisposed to a horrifically wide array of cancers—of the breast, colon, liver, pancreas, kidney, endometrium (uterine lining), among others<sup>3-5</sup>—these results have *profound* implications for all maturing individuals.

In this article, the most recent data supporting metformin's **anti-cancer** mechanisms are detailed. You will learn of its specific mechanisms of action, which shed further light on the link between obesity, diabetes, and cancer initiation. You will also discover how metformin induces cancer cell death at their earliest stages of development via *metabolic* pathways that also promote **weight loss and optimal glucose control**. > >

## Metformin Slashes Cancer Risk in Multiple Clinical Trials

The study cited in the introduction of this article (54% lower risk of cancer) was of such medical importance as to merit an accompanying editorial by noted cancer epidemiologist Bruce B. Duncan, MD, PhD.<sup>6</sup> Duncan observed that this was the most compelling amongst a rapidly growing set of studies, all suggesting that metformin might induce *profound* effects in preventing a wide range of cancers while improving prognosis in people who do develop malignancies.<sup>6</sup>

Additional supportive studies validate these findings.<sup>6</sup> In a cohort study of more than **12,000** patients, metformin users died of cancer **30%** less often than those taking another category of drug called *sulfonylureas* (including DiaBeta® and Glucotrol®).<sup>6,7</sup> Of equal and even greater significance, people taking insulin had a **90%** greater death rate than the metformin users in that study.<sup>6</sup>

In a second study of different design, people taking metformin for diabetes control for more than 36 months had a **72%** lower risk of developing cancer than those on other regimens.<sup>6,8</sup> Similarly, in a third study, metformin users had a **62%** lower risk of developing cancer, compared with those who had never used metformin.<sup>6,9</sup> Of significance, that study also showed an increased risk of cancer in people who were taking insulin or oral antidiabetes drugs other than metformin.

There's additional evidence that metformin not only prevents cancer from developing, but also helps to improve the prognosis in patients who do develop tumors. In one study of breast cancer patients on

chemotherapy, **24%** of those who were also taking metformin had a complete response rate, compared with just **8%** for those not taking it.<sup>6,10</sup> As a result of these "incidental" findings, scientists have initiated several clinical trials to examine the impact of metformin as formal additional treatment for breast and other cancers.<sup>6,11</sup>

Numerous recent studies further support a close association between metformin use and substantially reduced cancer incidence, along with improved survival.<sup>12-16</sup>

These observations raise the question, "*Why should a diabetes drug protect against cancer?*"<sup>6</sup>

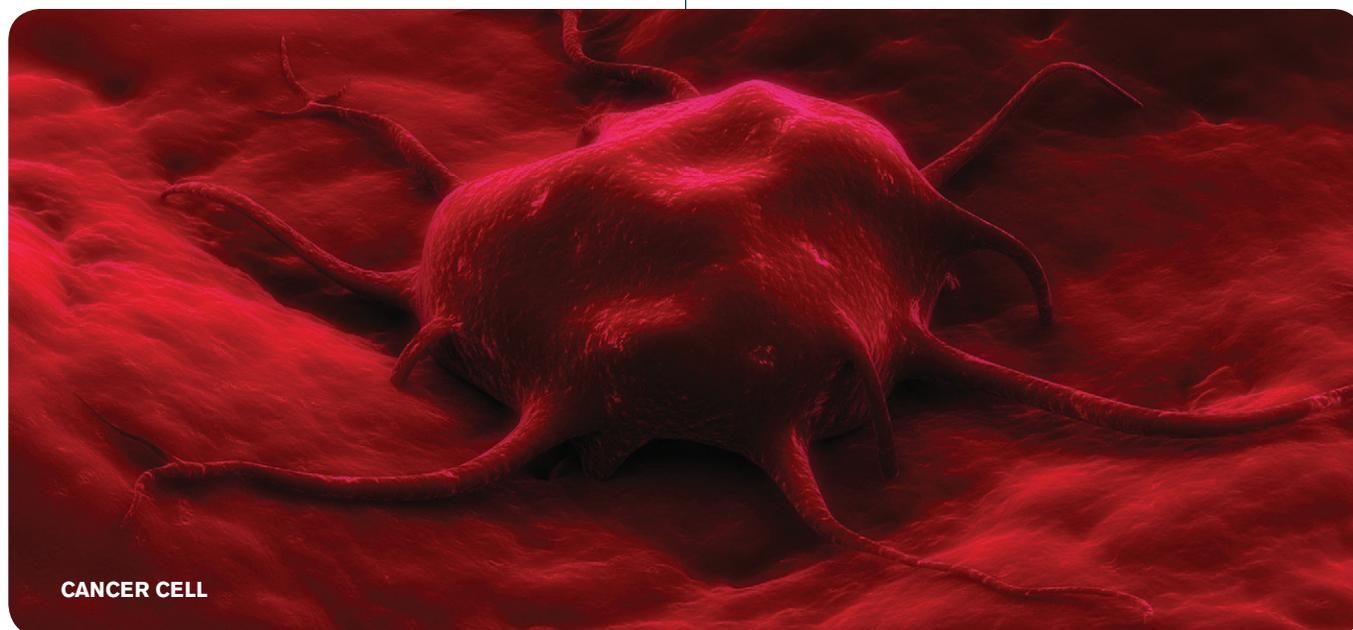
The answer is both simple and surprising.

### Diabetes and Cancer Initiation: How Metformin Works

Years of clinical analysis have confirmed the link between obesity and diabetes, conditions whose co-occurrence has given rise to the term **diabetes**.

Diabetes is a direct causative factor in the development of a wide range of cancers. Diabetics have as much as a **41%** increased risk for virtually *all* cancer types compared to healthy people. Elevated blood sugar alone increases the risk of certain cancers, including those of the kidney, pancreas, and skin (melanoma).<sup>6,17,18</sup>

Obesity increases cancer risk for more than a dozen different cancers.<sup>6</sup> A **59%** increase in cancer risk has been documented for every 5-unit increase in body mass index (BMI) alone.<sup>6,19</sup> Studies show that obesity is responsible for up to **20%** of cancer deaths in women.<sup>20</sup>



CANCER CELL

The link between diabetes and cancer points to the *underlying mechanisms of action* by which metformin works as a cancer-preventing agent.

Metformin operates at the molecular level by activating *adenosine monophosphate-activated protein kinase* or **AMPK**, a molecule essential to life. AMPK or its molecular analogs are present in virtually all living organisms.<sup>6,21</sup> It also happens to be intimately involved in cellular processes whose dysregulation play a central role in both diabetes and cancer initiation.

Diabetes and obesity result from various metabolic derangements. Cancer results from disordered regulation of cell growth. AMPK is critical to normal regulation of both metabolism and cell growth, as a result of millions of years of evolutionary development.<sup>6</sup>

As a fuel-sensor and metabolic master switch, AMPK recognizes and responds to changes in cellular energy levels, determining how fats and carbohydrates will be used in storing or utilizing energy.<sup>6</sup> In metabolic terms, AMPK tells cells to conserve and generate new energy stores. In so doing, it lowers sugar output from the liver, **increases glucose uptake** from the blood, maintains **insulin sensitivity**, and ultimately **lowers blood sugar**.<sup>6,21</sup>

AMPK exerts similar effects in terms of regulating cell growth and replication, instructing cells to conserve energy, slowing and often shutting down aberrant cell growth entirely. In essence, when AMPK is activated, *incipient cancer cells starve themselves to death* for lack of adequate energy supplies.<sup>22</sup>

We can naturally activate AMPK in our bodies through several time-honored mechanisms. Calorie restriction lowers cellular energy stores and activates AMPK.<sup>23</sup> Known to increase life span in virtually all species, calorie restriction has been shown to reduce cancer incidence and death in primate studies.<sup>24,25</sup> And a recent study showed that gastric bypass surgery not only produced sustained weight loss, but also reduced cancer incidence by **42%** in women patients (no effect was seen in men).<sup>6,26</sup>

Exercise is another strong natural activator of AMPK, and studies show that people with the highest levels of physical activity are protected against cancers of the lung and colon by as much as **30%**.<sup>6,27,28</sup>

Exercise and weight loss are lifestyle changes that most of us need to make, while bariatric surgery and massive calorie restriction have more limited appeal and application as means of activating AMPK and lowering cancer risk.



## Metformin Combats Diabetes and Cancer

- The anti-diabetic drug **metformin** was recently shown to slash risk of all cancers by **54%** among **8,000** diabetics over a 10-year period.
- Prognosis among those under study who developed cancer was also significantly improved, including cancers of the **lung, colon, and breast**.
- Supportive epidemiological studies reveal that people taking metformin for glucose control have markedly reduced rates of cancer, despite the higher cancer risks imposed by diabetes and obesity.
- Detailed molecular analyses are elucidating the mechanisms by which metformin prevents cancer.
- Metformin works through a common mechanism to lower blood glucose and to reduce cancer risk, shedding new light on the intimate relationship between diabetes, obesity, and cancer.
- Laboratory and clinical data now strongly suggest that metformin can prevent cancers of the colon, lung, and breast, even in non-diabetic individuals.
- If you are concerned about lowering your cancer risk and improving your metabolic profile, ask your doctor about starting a metformin regimen at a dose of **250-500 mg** twice a day.



Metformin, a natural product of the French lilac,<sup>29</sup> is a safe, readily available, and inexpensive way to activate AMPK and starve cancer cells of their energy supplies.<sup>6,30,31</sup> In doing so, metformin powerfully restores healthy regulation—both of metabolic factors and of those that regulate cell growth.

Let's now examine how metformin *halts* incipient cancers by quelling abnormal cellular proliferation, one of the earliest steps in cancer development.

### Metformin's Anti-Cancer Power Confirmed in Lab Studies

Healthy, normal people develop incipient cancer cells in their bodies daily; these cells are normally destroyed by a number of natural processes. When those processes break down, the cancer cells are free to proliferate and form a tumor. An ideal anti-cancer drug, then, would eliminate these altered, "pre-cancerous" cells before they could replicate and become invasive and malignant.<sup>32</sup>

Even in their earliest stages, aggressive cancer cells are notoriously energy-hungry, burning calories at a frenetic rate as they grow out of control.<sup>33</sup> For that reason, **targeting cancer cell metabolism** now stands at the forefront of cancer prevention research.<sup>34</sup> With its potent ability to shut off the cellular energy pipeline by activating AMPK, metformin is showing its value in preventing or slowing a host of cancer types in laboratory studies.

The consequences of AMPK activation by metformin are numerous. Metformin, added to cultures of many different cancer cell types, blocks proliferation by "stalling" cells at one of several phases of the cell replication cycle, preventing them from reproducing.<sup>34-37</sup> Metformin's ability to starve cancer cells of energy also enhances the rate of cell death by the process known as apoptosis, one of the body's natural means of cancer control.<sup>34,38</sup>

Perhaps the most detailed picture of metformin's antiproliferative actions comes from a 2011 study in France.<sup>38</sup> Researchers there added metformin to melanoma skin cancer cells in culture, and monitored the effects. At 24 hours, metformin had starved the cancer cells to the point that their replicative cell cycle was arrested. By 72 hours, the cells underwent **autophagy**, a mechanism whereby starving cells literally "eat themselves" in a desperate attempt to survive. And by 96 hours, the cancer cells began dying off *en masse* by apoptosis.

Several additional antiproliferative mechanisms have recently been demonstrated for metformin in addition to its effects on the AMPK energy-sensing pathway.<sup>35,39-42</sup> That ability to act by multiple mechanisms is called **pleiotropy**. It is powerfully beneficial because it prevents development of resistance to any one pathway. Pleiotropy is seen much more commonly with natural products such as metformin than with mono-targeted pharmaceutical drugs.

### Caution

Using metformin may increase the risk of lactic acidosis, a rare but potentially fatal buildup of lactic acid in the blood. Since congestive heart failure, kidney impairment, and liver problems increase the risk of lactic acidosis, individuals with these conditions are advised against using metformin. Individuals with type 1 diabetes should not take the drug. People who have recently suffered a heart attack or stroke and those who have recently undergone surgery or are severely dehydrated are more vulnerable to lactic acidosis.<sup>63-65</sup> Consult with your doctor if any of these conditions applies to you or if you are pregnant, planning to become pregnant, or breastfeeding.

Lactic acidosis is a medical emergency. Its symptoms include muscle pain, difficulty breathing, sleepiness, feeling extremely weak or tired, and abdominal pain with nausea, vomiting, or diarrhea.<sup>63-65</sup> If you believe you are suffering from lactic acidosis, seek medical attention immediately.

The combined effect of all of metformin's pleiotropic mechanisms is a marked reduction of tumor growth in lab animals implanted with human cancer cells.<sup>36,43</sup> To date, metformin-induced antiproliferative effects have been demonstrated in cancers of the brain, lung, breast, ovary, prostate, and colon.<sup>35-38,44-47</sup> And human studies are now showing important reductions in various tumor markers when metformin is provided to breast cancer patients prior to tumor surgery.<sup>48</sup> Importantly, in breast cancer cells, metformin is most active against cancer strains that are resistant to standard chemotherapy drugs.<sup>46</sup>

### Metformin Prevents Cancers in Non-Diabetic Individuals

Perhaps the most exciting news to come out of the recent surge in interest in metformin is that the drug can prevent cancers from forming in animals and humans who are not diabetic. As a "mimicker" of a calorie-restricted state, that might be expected of metformin, given that calorie restriction is such a potent cancer-preventive strategy.<sup>33,49-51</sup>

Since 2008, a small explosion of studies has appeared demonstrating how effective metformin can be in this context, ultimately suggesting that it should be taken regularly by anyone who wants to reduce their risk of dying from cancer.

Research now demonstrates that metformin, provided orally to lab animals, prevents deadly colorectal cancers<sup>52</sup> (the second leading cause of cancer deaths in the US, and an astonishingly preventable disease).<sup>53</sup> Metformin suppresses intestinal polyp growth, a precursor of colorectal cancer, in mice predisposed to that disease.<sup>54</sup> And, in a study of chemically induced colon cancer, metformin significantly reduced formation of so-called "aberrant crypt foci," which in humans represent an early stage in cancer development.<sup>55</sup>

Those studies led to the first human study of metformin as a cancer preventive agent in non-diabetic people. Researchers studied 26 non-diabetic people with aberrant crypt foci that had been found on routine colonoscopy.<sup>56</sup> They randomly assigned them to receive metformin **250 mg per day**, or no treatment, and then performed repeat colonoscopy one month later. The metformin group had a significant decrease in the number of aberrant crypt foci, from nearly **9** per patient down to about **5** per patient, while control patients had no change. This represents a 55%



### Metformin and Colon Cancer Prevention

Colorectal cancer poses a lethal threat to maturing individuals in this country. Excluding skin cancers, it ranks third among the most common cancers in both men and women.<sup>66</sup> An estimated **141,000** new cases were diagnosed in 2011 alone.<sup>67</sup>

Now, a newly published study indicates metformin may provide *frontline* protection.<sup>68</sup>

In the October 2011 issue of *Diabetes Care*, a team of researchers presented results of a meta-study involving nearly **110,000** type 2 diabetics.<sup>68</sup> As **Life Extension**<sup>®</sup> members know, impaired glucose control and diabetes significantly *boost* cancer risk across the board. Colon cancer is no exception—diabetics are at **30%** greater risk than the general population.<sup>69</sup>

Compared to individuals taking all other anti-diabetic treatments, metformin users experienced a **37% lower\*** risk of colorectal cancer!<sup>68</sup>

\* While this review provides compelling data in support of the protective role of metformin against colorectal cancer, it should be noted that the trials included were observational in nature; the protective effects of metformin must still be fully substantiated in clinical intervention trials.

reduction in this cancer precursor in patients taking low-dose metformin.

Chemoprevention studies now also demonstrate similar effects in other cancers. Mice supplemented with oral metformin, exposed to a potent tobacco carcinogen, developed **53% fewer lung cancers** than did control animals.<sup>57</sup> And when metformin was administered by injection, that protection rate rose to **72%**.

Breast cancer prevention would represent a huge forward stride in extending human life span and reducing suffering. There's encouraging data here as well. Mice given metformin in their drinking water for 13 days prior to injection with a powerful breast carcinogen had significantly delayed onset of tumor development.<sup>58</sup> Several other studies have demonstrated that metformin-supplemented mice experience a reduction in proliferation of cancer-prone breast cells and inhibition of tumor growth.<sup>31</sup>

There is now a tremendous body of literature showing that metformin prevents cancer cells from



proliferating, and moreover it prevents clinically relevant human cancers from developing, even in non-diabetic, non-obese individuals.<sup>59</sup> As a result, one might expect to see large clinical trials of metformin in healthy older adults as a cancer chemopreventive agent.

Sadly, even though calls for such studies are gathering strength, to date no trial has been designed, let alone implemented.<sup>60-62</sup> Given metformin's impressive safety record over nearly 50 years of clinical use,<sup>43</sup> there is simply no reason for sensible people to wait for an "official" medical establishment recommendation. People who are concerned about their growing risk of cancer should simply speak to their physicians now, and present them with a synopsis of the data, so that they can begin potentially lifesaving use of metformin today.

### Summary

The anti-diabetic drug **metformin** was recently shown to slash risk of all cancers by **54%** among **8,000** diabetics over a 10-year period while *significantly* improving prognosis among those who developed cancer, including cancers of the **lung, colon, and breast**.

Diabetes and obesity are twin risks for cancer development. Metformin offers powerful protection against cancer in those populations. Aggressive scientific research is revealing that metformin's action, activating the cellular energy sensor AMPK, is the key to both its metabolic benefits and its cancer chemopreventive capabilities.

Both human and animal studies definitively confirm that metformin lowers cancer risk dramatically while also preventing new cancer formation, in both diabetic and non-diabetic individuals. Metformin's 50-year safety record, coupled with its low cost and favorable side effect profile, provide an ironclad rationale for most aging humans to consider taking metformin. ●

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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# All the **K** ... One a Day

There are **three forms** of **vitamin K** that the human body can utilize to promote **arterial health** and **bone support**.<sup>1-8</sup>

**Life Extension®'s Super K with Advanced K2 Complex** provides the *dynamic trio* of vitamin K forms in **one softgel**, including **vitamin K1**, **vitamin K2 (MK-4)**, and **vitamin K2 (MK-7)**.

**Vitamin K1** is the form of vitamin K that is found in green vegetables. **K1** is tightly bound to plant fiber, so only a fraction is *absorbed* into the bloodstream. Supplementation ensures ample **K1** blood levels.

**Vitamin K2** is usually found in meats, dairy, and egg yolks. Since you may be avoiding these foods for health reasons, ingesting a **K2** supplement is *essential*. **MK-4** is the most *rapidly absorbed* form of **K2**, and **MK-7** boasts a very *long half-life* in the body, making both forms the *perfect complement* to any **vitamin K** regimen.<sup>9</sup>

The retail price for a bottle containing **90 softgels** (three-month supply) is \$26. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$15.53 per bottle**.

**Super K formula provides in just one daily softgel:**

<b>Vitamin K1</b>	<b>1000 mcg</b>
<b>Vitamin K2 (MK-4)</b>	<b>1000 mcg</b>
<b>Vitamin K2 (MK-7)</b>	<b>100 mcg</b>



Item #01224

The same **Super K** formula consisting of Vitamin K1, K2 (MK-4) and 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** softgels.

Contains tree nuts (coconut).

#### Warning to Coumadin® (warfarin) Drug Users

Patients prescribed vitamin K-antagonist anti-coagulant 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 vitamin 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 the vitamin K you supplement with. Life Extension provides several forms of low-dose vitamin K for physician consideration.

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

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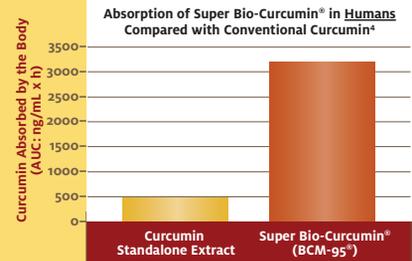
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These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

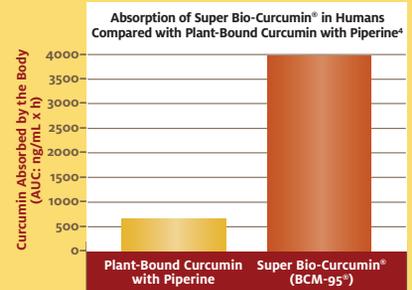
# ARE YOU GETTING Curcumin's BENEFITS?



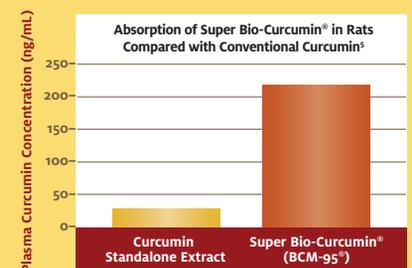
## How Much Curcumin Are You Absorbing?



**Chart 1.** Super Bio-Curcumin® (BCM-95®) showed 6.9 times greater bioavailability (absorption and sustainability over 8 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 8 hours).



**Chart 2.** Super Bio-Curcumin® (BCM-95®) showed 6.3 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with plant-bound 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 8 hours).



**Chart 3.** Bioavailability in rats fed with BCM-95® is 7.8 times higher than conventional curcumin.

**Curcumin** is the health-promoting trace compound derived from the Indian spice **turmeric**. But not all turmeric is alike.

The curcumin found in the vast majority of dietary supplements is derived from turmeric that is **nutritionally inferior**.

Why? Almost all growers harvest turmeric at the point when the turmeric root turns its signature yellow color, but *before* it has fully matured.

The turmeric root requires more time in the ground for highly beneficial phytonutrients called **curcuminoids** and **sesquiterpenoids** to attain peak concentrations.

**Life Extension®**'s **Super Bio-Curcumin®** derives from turmeric that is organic, cultivated to maturity, then specially transported and processed to preserve and deliver the root's most complete nutritional profile.

In recent studies comparing the effects of standard curcumin against turmeric extracts comparable to **Super Bio-Curcumin®**, researchers observed:<sup>1,2</sup>

- Nearly twice the support for **immune** health.
- Approximately twice the support for **inflammatory** issues.
- Almost double the **antioxidant** support.

A separate study indicated that an antioxidant-rich curcumin extract<sup>3</sup> provided powerful support for heart health.

## Unrivalled Potency and Absorbability with BCM-95®

Curcumin is neither absorbed nor *retained* well in the blood, which is another challenge facing those who wish to maximize its benefits.

The highly popular **Super Bio-Curcumin®** uses **BCM-95®**, a patented, *bioenhanced* preparation of curcumin. It has been shown to reach **7 times higher concentration** in the blood than standard curcumin.<sup>4</sup>

The graphs on this page illustrate that one 400 mg vegetarian capsule per day of **Super Bio-Curcumin®** supplies the equivalent of **2,500-2,800 mg** of commercial curcumin supplements.

A bottle containing 60 vegetarian capsules of **Super Bio-Curcumin®** retails for \$38. If a member buys four bottles during **Super Sale**, the price is reduced to only **\$23.63** per bottle.

Contains rice.



Item #00407

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

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U.S. Patent Nos. 7,883,728, 7,736,679 and 7,879,373.

**To order Super Bio-Curcumin®  
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or visit [www.LifeExtension.com](http://www.LifeExtension.com)**



**Suppress Deadly  
After-Meal  
Blood Sugar Surges**

BY DANIEL BECKER

High blood sugar is fast becoming the leading *preventable* killer of maturing individuals in the United States. In addition to the **26 million** Americans with diabetes, the Centers for Disease Control estimate that ***more than a third of the general population is now pre-diabetic.***<sup>1</sup>

This may be just the tip of the iceberg.

As **Life Extension**® members know, recent data confirm that risk for most degenerative diseases and death rise dramatically when fasting blood glucose exceeds **85 mg/dL.**<sup>2</sup>

Yet the medical establishment persists in defining readings up to **99 mg/dL** as “safe.” By this measure, **virtually all of us are vulnerable to diabetic complications.**

Even more alarming is widespread physician ignorance of the stealth danger posed by blood sugar surges after *meals* that can reach diabetic levels and last for hours—or even days.

These ***after-meal glucose “spikes”*** inflict silent damage to cells via multiple mechanisms and have been linked to **cardiovascular disease, cancer, Alzheimer's disease, kidney failure, and retinal damage.**<sup>3-16</sup>

The good news is there are documented ways to suppress deadly after-meal glucose surges.

The most recent is a **green coffee bean extract** shown to *neutralize* a key enzyme that facilitates after-meal glucose surges.

When tested on humans in a placebo-controlled study, this natural extract produced an extraordinary **24% drop** in after-meal blood sugar in just **30 minutes!**<sup>17</sup> > >

## Silent Epidemic of High Blood Sugar

The percentage of adults suffering from dangerous, chronically high blood sugar has been *vastly* underestimated.

Currently, you aren't considered diabetic unless your fasting blood glucose is higher than **125 mg/dL**. The range from **100-125 mg/dL** is considered "pre-diabetic," while anything lower is defined as normal.

Unfortunately, your risk for age-related disease is far greater at these "normal levels" than has been previously recognized. Optimal fasting glucose should be within the range of **70-85 mg/dL**.

A recent study of **46,000** middle-aged individuals revealed that more than **80%** had fasting blood sugar of **85 mg/dL** or higher.<sup>18</sup> A similar epidemiological analysis of **11,000** middle-aged and older people found that more than **85%** had fasting blood sugar of **85 mg/dL** or higher.<sup>19</sup>

As **Life Extension®** has long warned, a thorough survey of the scientific literature confirms that maturing individuals with blood sugar levels in these ranges—below 100 mg/dL—are nonetheless at *substantially* increased risk of virtually all degenerative diseases, including:

- Cancer<sup>4,20-29</sup>
- Cardiovascular disease<sup>5,9-15,17,30,31</sup>
- Alzheimer's disease<sup>17,32,33</sup>
- Kidney disease<sup>8,34</sup>
- Pancreatic dysfunction<sup>35</sup>
- Diabetic retinopathy (which can lead to blindness)<sup>6,36</sup>
- Neuropathy (nerve pain and dysfunction)<sup>37,38</sup>

One team of researchers found that the risk of developing diabetes itself was increased more than **seven-fold** in people with fasting glucose levels of **105-109 mg/dL**, compared with people with fasting glucose levels **less than 85 mg/dL**.<sup>19</sup>



An analysis of **1,800** maturing individuals revealed that **coronary artery disease** rates over a 10-year period in individuals currently defined as "**pre-diabetic**" were *nearly identical* to those with **full-blown diabetes**.<sup>39</sup>

A similar analysis of **33,230** men found that high glucose within the "normal" range was independently associated with a **38%** increase in deaths from **digestive tract cancers**.<sup>40</sup>

These results underscore the critical need to **re-define diabetes** as fasting glucose above **85 mg/dL**.

### Undetected Daily Diabetic Glucose Levels?

Conventional medicine's approach to glucose control goes beyond the problem of *outdated reference ranges*. Fasting blood glucose concentrations alone do not identify individuals with an increased risk of glucose-related disease onset because *they do not detect dangerous after-meal glucose spikes*.<sup>41,42</sup>

**Table 1: Increased Health Risks in People with "Normal" Glucose Levels**

Condition	Glucose Levels (mg/dL)	Increased Risk
Developing Type 2 Diabetes	100-104	Up to 283% <sup>19</sup>
Stomach Cancer	95-105	Up to 130% <sup>49</sup>
First-time Heart Attack	Above 88	242% <sup>47</sup>
Need for Coronary Bypass or Stent Procedure	Above 95	73% <sup>50</sup>

The current diagnostic of fasting glucose readings is only a snapshot that does not adequately measure of an aging individual's hour-to-hour glucose status over the course of the entire day.

By definition, fasting blood glucose tests are conducted eight or more hours or more *after* your last meal. This method *fails* to account for a vital risk marker specific to you as an individual: after each meal, your blood sugar rises sharply for at least two hours before returning to normal.

Depending on the number and frequency of meals consumed, *an aging individual may sustain dangerously high blood sugar throughout the day that will not be detected by conventional measures.*

A mounting body of scientific evidence suggests that **after-meal** glucose spikes inflict as much or more damage than high **fasting** blood sugar.<sup>43-46</sup>

For example, in aging individuals with “normal” blood sugar readings and “normal” glucose-tolerance tests, heart attack risk increases by **58%** for a **21 mg/dL** increase in *after-meal* blood sugar.<sup>47</sup> And for a similar after-meal increase, *risk of cardiac death* increases by 26%.<sup>48</sup>

This means that if your blood sugar surges 63 mg/dL after a meal, your risk of cardiac death increases nearly **twofold**.

One research team found that risk of stroke increased when fasting glucose rose above **83 mg/dL**. And every **18 mg/dL** increase beyond **83 mg/dL** resulted in a **27%** greater risk of dying from stroke!<sup>5</sup>

This means that an individual with a fasting blood glucose level of **119 mg/dL** has a **54%** higher risk of stroke-related death compared to an individual whose fasting blood glucose is only **83 mg/dL**. If you wonder why stroke continues to disable and kill so many—despite better control of hypertension than ever—look no further than the epidemic of **high blood glucose** plaguing aging humans.

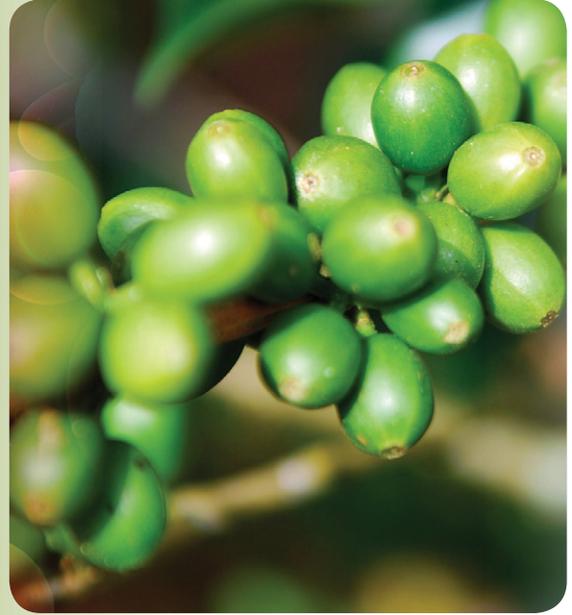
These alarming data underscore the vital importance of *suppressing after-meal* glucose surges and controlling **fasting** blood glucose in order to prolong healthy life span.

### The Little-Known Enzyme Behind Chronic Blood Sugar Overload

Most people think blood sugar levels are determined by the amount of carbohydrates or sugar they eat and how well their pancreas is working.

The truth is more complex.

You won't hear this from most physicians, but your *liver* also plays a key role in regulating blood sugar, one that contributes directly to dangerous blood glucose surges after heavy meals.



## Control After-Meal Glucose Surges

- Elevated blood sugar is a silent danger that increases the risk of cardiovascular disease, cancer, Alzheimer's, kidney disease, neuropathy, and retinal damage.
- More than a third of the American population is estimated to be pre-diabetic.
- Currently, fasting blood sugar levels higher than 125 mg/dL are considered diabetic and levels between 100-125 mg/dL are considered pre-diabetic.
- Life Extension advises that optimal fasting blood glucose levels are in the range of 70-85 mg/dL. A growing body of evidence shows that tissue damage and disease risk increase when fasting blood glucose levels are above 85 mg/dL.
- Coffee consumption has been associated with a decreased risk of developing type 2 diabetes.
- A beneficial compound in coffee called chlorogenic acid has been credited with coffee's glucose-lowering effects.
- In a clinical trial, individuals who received 400 mg of a green coffee berry extract containing 50% chlorogenic acid prior to an oral glucose challenge demonstrated a 32% reduction in blood glucose at 2 hours.

## How Much Coffee to Drink or Chlorogenic Acid to Take?

Increased **coffee** consumption results in a substantially reduced risk of diabetes.<sup>57-61</sup>

The prestigious journal *The Lancet* published a 2002 population study that included over **17,000** people. The researchers found a **50%** lower risk of diabetes among those who consumed **7 cups** of coffee a day compared to those who drank only **2 cups** a day.<sup>61</sup>

So why not just drink more coffee?

Coffee “beans” are the seeds contained inside the plant’s fruit, the coffee berry. They possess a significantly higher proportion of beneficial phenolic acids (**50%**) than the berry (about **35%**).

An analysis of the proprietary green coffee bean extract used in clinical studies cited in this article reveals that just **350 mg** supplies the same amount of chlorogenic acid found in **14 cups** of dark roast coffee. The problem with dark roasted coffees is that the roasting process removes too many beneficial polyphenols such as **chlorogenic acid**.

**Green coffee bean extract** also supplies the antioxidant compound **ferulic acid**, shown to exert a therapeutic anti-glucose effect in tandem with chlorogenic acid.<sup>61</sup>

After analyzing the blood of subjects given this green coffee bean extract, one 2008 study published in the *Journal of Nutrition* confirmed the presence

in their blood samples of the same major phenolic compounds—including **chlorogenic acid**—provided by drinking roasted, brewed coffee. The researchers added that the compounds in green coffee bean extract were highly absorbable and readily metabolized in humans.<sup>76</sup>

In addition to their high absorption rate, the compounds in green coffee bean extract are believed to furnish **stronger glucose-lowering protection** than roasted coffee. That’s because *roasting destroys much of the coffee bean’s beneficial content*.

Conventional “lightly roasted” coffee provides about **92** milligrams of chlorogenic acid per cup. Heavily roasted coffee provides far less chlorogenic acid. A cup of a new “polyphenol-retaining” coffee (with chlorogenic acid added back in after roasting) provides **172** mg of chlorogenic acid. So drinking one or two cups of this new **polyphenol-retaining** coffee provides **172 to 344** mg of **chlorogenic acid**, which are in ranges shown to demonstrate therapeutic efficacy.

**Green coffee bean extracts** are available in new dietary supplements that provide either **200** or **400** mg of **chlorogenic acid** per serving. The typical dose for most people is 200 mg of chlorogenic acid before most meals. Those with higher glucose levels should take 400 mg before most or all meals.

Under normal conditions, the liver keeps a certain amount of sugar in storage. If your blood sugar falls too low, it releases this stored sugar in order to boost blood glucose back to healthy levels in a process called **glycogenolysis**.

If its stores of sugar are depleted, your liver has another means at its disposal to boost blood sugar: *making sugar on its own from other sources, including fats and protein* through a process called **gluconeogenesis**.

Humans evolved this capability to prevent acute, potentially deadly hypoglycemia (low blood sugar) during near-starvation states.

In young, healthy individuals, both these processes—**sugar release** or **glycogenolysis** and blood sugar synthesis or **gluconeogenesis**—are naturally suppressed after a meal to prevent blood sugar from getting too high.

As you age, this balancing mechanism may become impaired. Your liver releases stored sugar and makes additional sugar after you finish a meal—*precisely when your body needs additional blood sugar the least*.

At the core of pathologic glycogenolysis (release of stored blood sugar) and gluconeogenesis (synthesis of new sugar) is the enzyme **glucose-6-phosphatase**. Heavy meals can activate this enzyme, which in turn tells your liver to release its sugar stores and helps it to make more sugar, despite the flood of glucose from the meal you just finished.

It is this age-related **dysregulation** of **glucose-6-phosphatase** activity that accounts for the difficulty many maturing individuals face in maintaining optimal glucose levels. The dual processes of **glycogenolysis** and **gluconeogenesis** triggered by **glucose-6-phosphatase** can keep blood sugar high even with a lower-calorie or low-carbohydrate diet since glucose can *also* be synthesized from proteins and fats. (Note those who practice calorie restriction are usually able to keep their fasting glucose below 86 mg/dL and after-meal glucose surges below 120 mg/dL.)

*Suppressing* the activity of **glucose-6-phosphatase** is a cornerstone strategy in maintaining control of after-meal blood sugar spikes and limiting their potentially destructive impact.

In the quest to identify compounds that might favorably target the glucose-6-phosphatase enzyme, researchers turned their attention to the fact that heavy coffee drinkers enjoyed dramatically lower risk of diabetes.

### Chlorogenic Acid Combats Excess Glucose

An abundance of studies confirms that, in addition to protection against various diseases,<sup>5,51-56</sup> increased **coffee** consumption results in a substantially reduced risk of diabetes.<sup>56-61</sup>

The prestigious journal *Lancet* published a 2002 population study that included over **17,000** people. The researchers found a **50%** lower risk of diabetes among those who consumed **7 cups** of coffee a day compared to those who drank only **2 cups** a day.<sup>61</sup>

Coffee's anti-diabetic benefits are dose-dependent. In other words, the more you drink, the greater the benefit. And therein lies the problem: drinking seven cups or more of coffee every day is impractical for most

people. This set researchers on a quest to uncover the specific glucose-lowering agents contained in coffee.

Coffee's contents are complex, containing more than 1,000 discrete compounds.<sup>62</sup>

Compelling new data reveal that the **chlorogenic acid** content in coffee is primarily responsible for its glucose-lowering effects via several interesting mechanisms.<sup>63,64</sup>

Chlorogenic acid inhibits the **glucose-6-phosphatase** enzyme that stimulates glycogenolysis and gluconeogenesis.<sup>65,66</sup> As discussed earlier, excessive activity of this enzyme contributes to dangerous after-meal blood sugar spikes and high blood glucose levels between meals.<sup>67</sup>

Chlorogenic acid directly inhibits glucose absorption from the intestinal tract. Studies show that coffee with a high chlorogenic acid content delays intestinal glucose absorption.<sup>59</sup>

Chlorogenic acid inhibits the intestinal enzyme **alpha-glucosidase** that breaks apart complex sugars and enhances their absorption.<sup>68</sup> Slowing the breakdown of those common sugars (including sucrose, or table sugar), dramatically limits after-meal glucose spikes.

Chlorogenic acid-rich plant extracts have been shown to reduce fasting blood glucose values by more than **15%** in diabetic patients with poor response to medication.<sup>69</sup> A similar effect was seen in healthy volunteers, whose intestinal absorption of glucose was reduced by 7% following a chlorogenic acid-enriched coffee drink.<sup>70</sup> And a chlorogenic acid supplement of 1 gram reduced glucose levels by 13 mg/dL, 15 minutes after an oral glucose challenge, demonstrating its ability to **lower the after-meal spike** in humans.<sup>71</sup>

### Skyrocketing Rates of Diabetes

In 2008, there were an estimated 347 million people with diabetes in the world, up from 153 million just 30 years earlier.<sup>86</sup> Researchers attributed about 70% of that increase to the global population explosion, but the remaining 30% are related to the rapid rise in overweight and obesity.<sup>87</sup>

Another reason for the sharp rise is that epidemiologists are finally recognizing that standard definitions of diabetes are inadequate. Simply measuring fasting blood glucose fails to detect up to 70% of people with disturbances in blood glucose regulation.<sup>88</sup> An oral glucose tolerance test is required to detect such disturbances, particularly dangerous after-meal sugar spikes.

What this means for you is that you simply cannot assume that you are not diabetic just because your routine fasting blood sugar measurement was normal. Know the facts, and take proper steps to ensure that you protect your tissues from the twin threats of chronically elevated blood glucose and after-meal sugar spikes.



## Disease Risks of High-Normal Blood Sugar

**Cancer:** Numerous studies—including one published in the May 17, 2010, online issue of *The Oncologist* that was so large that it included half of all type 2 diabetics in Sweden<sup>20</sup>—have found that the risk for cancer increases among diagnosed diabetics.<sup>14,23,24</sup> Rising in lock-step with glucose levels as they edged up within the normal range were the risks for cancers of the endometrium, pancreas, colon, and colorectal tumors of a more aggressive nature.<sup>21,25,26,28,29</sup>

**Cardiovascular disease:** Subjects showed risks for cardiovascular events, cardiovascular disease, and cardiovascular mortality that increased in direct relation to elevated—but still high-normal—glucose levels.<sup>9,11-13,15</sup> One researcher commented that within limits, lower glucose levels, even among those without diabetes, resulted in lower cardiovascular risk. Coronary artery disease risk was twice as high in patients with impaired glucose tolerance, compared with patients with more normal glucose tolerance.<sup>77</sup> While diabetes is defined as experiencing regular after-meal glucose levels of **200 mg/dL**, one research team found a risk for stroke that increased as fasting glucose levels rose above **83 mg/dL**. In fact, every **18 mg/dL** increase beyond **83** resulted in a **27%** greater risk of dying from stroke.<sup>5</sup>

**Cognitive impairment:** As blood sugar rose—whether within the normal or the diabetic ranges—the risk for this mild cognitive impairment and dementia increased.<sup>32,33</sup>

**Kidney disease:** Surges in blood sugar promoted a greater production of fibrous kidney tissue—which causes kidney disease—than a high but constant blood sugar level.<sup>8</sup> The study authors suggested it

may be fluctuations in glucose—more than the levels themselves—that produce the vascular complications implicated in kidney damage. Another study found a direct increase in chronic kidney disease as levels of hemoglobin A1c (a marker of long-term glucose control) rose.<sup>34</sup>

**Pancreatic dysfunction:** Beta cells located in the pancreas produce the insulin that helps control blood sugar. But high glucose levels can make these cells dysfunctional, raising the risk of type 2 diabetes. Researchers discovered that mild beta cell dysfunction was already detectable in those whose glucose levels spiked two hours after eating, despite staying completely within the range considered by the medical establishment to be normal.<sup>35</sup>

**Diabetic retinopathy:** High glucose levels precipitate diabetic retinopathy—damage to the retina that can lead to blindness. In one study, retinopathy was diagnosed in **13%** of people who later progressed to diabetes and in **8%** of those who never progressed to diabetes.<sup>7</sup>

**Neuropathy:** As expected, patients with nervous system damage (*neuropathy*) whose *postprandial* (after-meal) glucose readings were above the diabetic threshold, showed damage to their large nerve fibers. However, neuropathy patients whose glucose readings—although elevated—remained well within the **normal** range still showed damage to their small nerve fibers. Within any blood sugar range, reported the journal *Neurology* in 2003, the higher the glucose, the greater the involvement of the large nerve fibers.<sup>37</sup> Another nerve damage study in 2006 confirmed these results.<sup>38</sup>

A chlorogenic acid-rich extract of green coffee beans is also effective in animal studies against weight gain, reducing total weight and body fat accumulation by inhibiting fat absorption and preventing new fat production in liver tissue.<sup>72,73</sup> Chlorogenic acid reduces liver fat content in animal studies as well, a vital factor in reducing the impact of overweight and obesity.<sup>74</sup>

### Compelling Confirmatory Data

A team of Japanese researchers recorded a **43%** drop in blood sugar levels after administering **green coffee bean extract** to mice after a heavy meal.<sup>75</sup>

In a clinical trial presented in 2011, researchers gave different dosages of *standardized* green coffee

bean extract, each containing **50%** chlorogenic acid, to **56** people. Next, they gave the participants **100 grams** of glucose in an *oral glucose challenge test*. The oral glucose tolerance test is a standard method of gauging an individual's response to *after-meal* sugar exposure.

Blood sugar levels dropped by an increasingly greater amount as the test dosage of green coffee bean extract was raised, from **100 mg** up to **400 mg**. At the **400 mg** dosage, there was a full **32%** decrease in blood sugar—**two hours** after glucose ingestion.<sup>17</sup>

This means that if you had a dangerous after-meal glucose reading of **160 mg/dL**, the proprietary green coffee bean extract would slash it to **109 mg/dL**.

These findings are in line with supportive data demonstrating green coffee bean extract's numerous glucose-fighting mechanisms of action.

Other models reveal that chlorogenic acid favorably modulates gene expression to enhance the activity of liver cells and increase levels of the hormone *adiponectin*, which enhances insulin sensitivity and exerts anti-inflammatory, anti-diabetic, and anti-atherogenic effects.<sup>76</sup>

### Summary

Twenty-six million Americans are now considered diabetic, while more than one in three are *pre-diabetic*. Recent data confirm that your risk for degenerative disease and premature death increases substantially when fasting blood glucose exceeds **85 mg/dL**. Yet the medical establishment persists in defining readings up to **99 mg/dL** as "safe."

Also overlooked in the effort to combat today's diabetes epidemic is the insidious process of *after-meal blood sugar surges*. Regardless of whether your fasting glucose readings are "normal," these surges can cause a diabetic-like state in the body that lasts for hours, inflicting undetected, system-wide damage to healthy tissues.

Driving this danger is the little-known role your liver plays in creating and releasing *additional* glucose into the blood. This process, which regulates

blood sugar in the absence of food when you're young, becomes detrimentally stimulated after heavy meals by the enzyme *glucose-6-phosphatase* as you age. The result is a dangerous flood of sugar into your bloodstream after every meal.

A breakthrough weapon to control these after-meal blood sugar surges has been identified: **green coffee bean extract**. It contains a compound called *chlorogenic acid* shown to target *glucose-6-phosphatase* and *blunt* post-consumption blood sugar levels by up to **32%** in human trials. ●

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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## Understanding Gluconeogenesis

The enzyme **glucose-6-phosphatase** (G6P) helps to produce dangerous after-meal blood sugar spikes in two ways. It releases glucose from its storage area in the liver, and it promotes formation of new glucose molecules from non-sugar sources.<sup>78</sup> The latter process is called gluconeogenesis.

Traditionally, scientists have assumed that amino acids from proteins were the only precursors of glucose in gluconeogenesis.<sup>79</sup> Recent discoveries, however, suggest that fatty acids are also important precursors of this dangerous source of excess glucose.<sup>79,80</sup>

Fatty acids contribute to gluconeogenesis by at least three mechanisms. First, excessive fatty acids stimulate gluconeogenesis and provide G6P the energy it needs to convert traditional substrates such as amino acids into glucose.<sup>81-84</sup> Second, when triglycerides break down to fatty acids, glycerol is released, and then converted into glucose by gluconeogenesis.<sup>85</sup> Finally, advanced computer models have revealed new pathways by which fatty acids are directly converted into glucose; the final steps in those pathways involve G6P.<sup>79</sup>

These discoveries provide further insight into the causes of the deadly after-meal glucose spikes. They also provide further incentives to block the enzymes that participate in gluconeogenesis, such as G6P. Green coffee extracts are an excellent source of G6P-blocking nutrients.



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# Comprehensive Glucose Control

JUST ONE CAPSULE BEFORE MEALS

**Chlorogenic acid** found in **green coffee bean extract** has been clinically shown to limit dangerous **after-meal glucose** surges.<sup>1</sup>

Some individuals need additional support for healthy glucose control.

**Life Extension**® has combined five nutrients into one capsule that provides multi-targeted approaches to glucose control and healthy body weight.

**CoffeeGenic™ Green Coffee Extract with Glucose Control Complex** contains:

- **Green Coffee Bean Extract** standardized to **50% chlorogenic acid**. Research shows this extract inhibits **glucose-6-phosphatase**, which results in a significant reduction in **after-meal** glucose elevations. Take one capsule 20-30 minutes before each meal to obtain optimal benefits.
- **InSea<sup>2®</sup>**, a proprietary form of seaweed extract that blocks the action of **glucosidase** and **amylase**, enzymes used to break down carbohydrates into glucose, facilitating its transport into the bloodstream. In laboratory animal studies, InSea<sup>2®</sup> reduced after-meal fluctuations in blood sugar by up to **90%** when compared to non-supplemented animals and reduced blood insulin levels by as much as **40%**.<sup>2</sup>
- **Chromium** *optimized* with standardized extract of **Indian gooseberry** and a proprietary form of an adaptogen called **shilajit**. This state-of-the-art **Crominex® 3+** complex also supports healthy cellular glucose utilization.<sup>3-7</sup>
- **Integra-Lean®** African Mango (*Irvingia gabonensis*) extract helps slow the rate of carbohydrate absorption from the intestines, thereby reducing the caloric impact of starchy and sugary foods.<sup>8</sup> It also moderates **glycerol-3-phosphate dehydrogenase** enzyme activity to reduce the amount of ingested starches that are converted to triglycerides and stored as fat.
- **Green tea extract** to boost resting metabolic rate and inhibit genes involved in adipogenesis.
- **Iodine** is a trace element involved in the production of thyroid hormones primarily responsible for regulating metabolism, thereby promoting healthy glucose absorption into cells, where it is used to produce energy.

Each vegetarian capsule of **CoffeeGenic™ Green Coffee Extract with Glucose Control Complex** provides:

<b>CoffeeGenic™ Green Coffee (Coffea arabica) Extract</b> (bean) [std to 50% Chlorogenic acid (100 mg)]	<b>200 mg</b>
<b>Iodine</b> (typical value naturally occurring from <i>Ascophyllum nodosum</i> and <i>Fucus vesiculosus</i> )	<b>25 mcg</b>
<b>Chromium</b> [as Crominex® 3+ chromium stabilized with Capros® ( <i>Phyllanthus emblica</i> ) Extract (fruit) and PrimaVie® Shilajit]	<b>150 mcg</b>
<b>InSea<sup>2®</sup></b> [proprietary composition of demineralized polyphenols from brown seaweeds Kelp ( <i>Ascophyllum nodosum</i> ) and Bladderwrack ( <i>Fucus vesiculosus</i> )]	<b>125 mg</b>
<b>Integra-Lean® African Mango (Irvingia gabonensis)</b> proprietary Extract (seed)	<b>100 mg</b>
<b>Green Tea (Camellia sinensis) Decaffeinated Extract</b> (leaf) [std. to 98% polyphenols by UV (98 mg), 45% EGCG by HPLC (45 mg)]	<b>100 mg</b>

**CoffeeGenic™ Green Coffee Extract with Glucose Control Complex**

(Each serving contains approximately 7 mg caffeine)

Item #01607\*

A bottle containing **90 200 mg vegetarian capsules** of **CoffeeGenic™ Green Coffee Extract with Glucose Control Complex** retails for \$58. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$35.10** per bottle.

**CAUTION:** Because these products may lower blood glucose, consult your healthcare provider before taking these products if you are taking blood glucose-lowering medication.

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To order **CoffeeGenic™ Green Coffee Extract with Glucose Control Complex**, call **1-800-544-4440** or visit **www.LifeExtension.com**



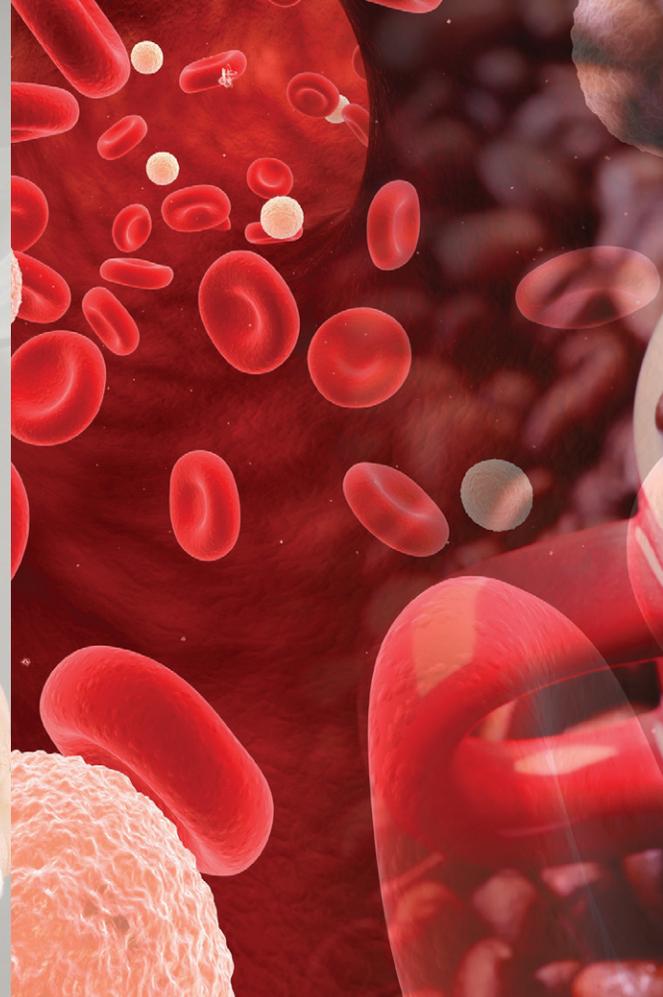
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\*These supplements should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.

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.



**Breakfast Blend  
and  
Decaffeinated Roast**



**NEW**

# Rich Rewards Polyphenol-Retained Coffee

### The Healthy Gourmet Choice

Not all coffee provides the same powerful protection.<sup>1-13</sup> When it comes to obtaining coffee's full range of health benefits, *most people aren't getting their money's worth!* The reason? Most of the coffee bean's polyphenol content is **destroyed** during the roasting process required to create a dark, rich blend. Among the most beneficial of these polyphenols is **chlorogenic acid**, a potent antioxidant that promotes optimal health.

### A Patented Organic Roast

Life Extension®'s new **Rich Rewards Breakfast Blend** and **Decaffeinated Roast** are made using a patented, 100% *natural* process called **HealthyRoast™**. It delivers a more complete nutritional profile of the coffee bean, yielding **chlorogenic acid** levels *far greater* than other premium brands. Handpicked deep in the rainforests of Central America, **Rich Rewards** consists exclusively of **100% certified USDA organic arabica** coffee beans, gently roasted in small batches and ground for easy brewing.

### Comparison of Conventional Coffee to Life Extension's Rich Rewards Blend

	Chlorogenic Acid		Chlorogenic Acid
Conventional Coffee (Caffeinated)	92 mg	Rich Rewards Coffee Blend (Caffeinated)	172 mg
Conventional Coffee (Decaffeinated)	52 mg	Rich Rewards Coffee Blend (Decaffeinated)	132 mg

This chart shows Life Extension's **Rich Rewards Coffee Blend** has up to **254% more chlorogenic acid**, which can enable one to obtain the benefits of heavy coffee drinking in half the number of cups.



### Savory Taste Without Stomach Upset

Have you given up coffee because it upsets your stomach? With **Rich Rewards**, you can enjoy coffee again. The **HealthyRoast™** process also preserves special, naturally occurring compounds in coffee that soothe your stomach.

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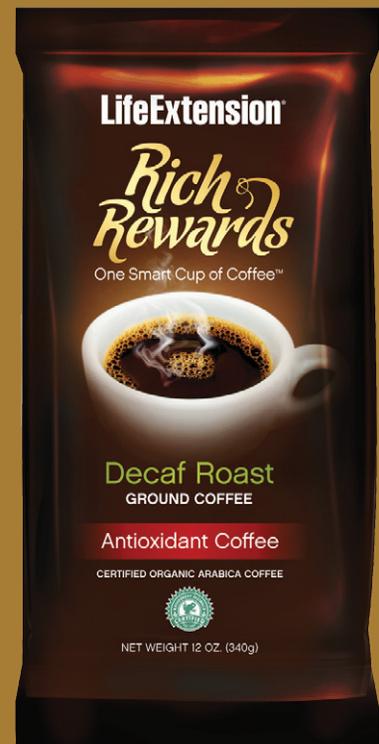
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\* US Patent 6,723,368.



Item #1609

A 12 oz bag of **Life Extension® Rich Rewards Breakfast Blend** retails for \$13. During **Super Sale**, members pay only **\$8.78** per bag. Item #1609



Item #1610

A 12 oz bag of **Life Extension® Rich Rewards Decaffeinated Roast** retails for \$14. During **Super Sale**, members pay only **\$9.45** per bag. Item #1610



# Proven Methods to Reduce *Fasting and Postprandial* Glucose Levels

BY WILLIAM FALOON

Scientific studies indicate that any amount of **fasting glucose** over **85 mg/dL** incrementally adds to heart attack risk.<sup>1</sup>

Postprandial glucose surges over **140 mg/dL** lead to diabetic complications, even in those who are not diabetic.

If you can choose an ideal fasting glucose reading, it would probably be around 74 mg/dL.<sup>2</sup> We know, however, that some people are challenged to keep their glucose under 100 mg/dL. What this means is that it is critically important for aging individuals to follow an aggressive program to suppress excess glucose as much as possible.

The good news is that many approaches that reduce glucose also lower **insulin**,<sup>3,4</sup> **LDL**,<sup>3,5-7</sup> **triglycerides**,<sup>3,8-10</sup> and **C-reactive protein**,<sup>11</sup> thereby slashing one's risk of vascular disease,<sup>9,12-14</sup> cancer,<sup>15-18</sup> dementia,<sup>19-23</sup> and a host of other degenerative disorders.

This month's issue featured an in-depth review of **green coffee bean extract** that has been shown to reduce postprandial glucose levels by an average of **32%**.<sup>24</sup> It functions by inhibiting the **glucose-6-phosphatase** enzyme that enables the body to create new surplus glucose and inappropriately release stored glucose from tissues.

To achieve optimal glucose levels, some people will need to take steps to impede glucose absorption and improve insulin sensitivity. In this section, we succinctly describe drugs, hormones, nutrients, and lifestyle changes that facilitate healthy glucose levels. >>

## Nutrient Options

Since **Life Extension**® members know it is best to take dietary supplements with meals, it should not be difficult for them to make it a routine practice to shield their bloodstream from excessive calorie absorption by taking the proper nutrients before most meals.

An efficient way of obtaining nutrients that can impede the impact of carbohydrate and fat foods when taken before meals is a powdered drink mix that provides the nutrients in the box below.

### Nutrients that Reduce the Impact of Excess Calorie Intake

#### **Propolmannan 2,000 mg**

**Mechanism(s):** Slows gastric emptying to delay rapid carbohydrate absorption. It also provides a viscous barrier that binds bile acids that normally facilitate fat absorption.<sup>25-27</sup>

#### **Phaseolus vulgaris 445 mg**

**Mechanism(s):** Inhibits the amylase digestive enzyme used to break down carbohydrate foods for eventual absorption into the blood as glucose.<sup>10,28</sup>

#### **Irvingia gabonensis 150 mg**

**Mechanism(s):** Inhibits amylase and functions via three additional mechanisms to internally regulate glucose and triglyceride metabolism.<sup>29-31</sup>

#### **Green Tea Extract 100 mg and higher**

**Mechanism(s):** Inhibits the lipase digestive enzyme used to break down fatty foods and boosts internal utilization of glucose by boosting resting metabolic rate.<sup>32,33</sup>

We suggest taking a powdered drink mix containing these ingredients before the two heaviest meals of the day.

## For Sugar Addicts

For those whose glucose levels remain unacceptably high despite taking the powdered drink mix, there are encapsulated nutrients that work to specifically block the *sucrase* and *glucosidase* digestive enzymes. *Sucrase* breaks down sucrose to fructose and glucose, and *glucosidase* catalyzes the hydrolysis of the glyco-

sidic linkage to all carbohydrates to release smaller sugars. Blocking these enzymes reduces the amount of glucose absorbed from dietary sources. One capsule containing **L-arabinose** and a special brown seaweed extract should be taken before eating sucrose (table sugar)-containing foods.<sup>34-36</sup>

## Enhancing Insulin Sensitivity

Aging causes a loss of *insulin sensitivity*, which means that **glucose** that would normally be utilized by energy-producing cells instead either remains in the blood or converts to storage as **triglycerides** (in blood and fat cells) or glycogen in the liver.

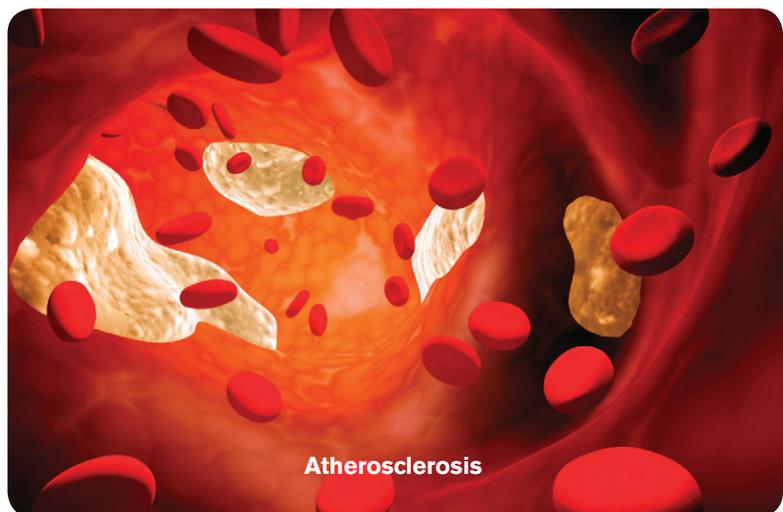
A **cinnamon extract** has been developed to enhance the ability of insulin to drive blood glucose into muscle cells. This **cinnamon** compound that enhances insulin sensitivity is combined with **brown seaweed extract** (to inhibit the glucosidase enzyme) to provide additive control over glucose levels.<sup>36-42</sup>

## Drug Options

An anti-diabetic drug that Life Extension suggests normal aging people consider taking to lower glucose is **metformin** (refer to article on page 56 of this month's issue about metformin and cancer risk reduction). It is available in low-cost generic form.

Metformin has a long history of safe human use, plus intriguing data to suggest that it may possess anti-aging properties.<sup>43,44</sup> We think that those with excess fasting blood glucose (above **80-85 mg/dL**) should ask their doctor about metformin even if they are not diagnosed as diabetic.

Some of the side benefits of metformin include weight loss<sup>45-47</sup> and triglyceride reduction,<sup>48-50</sup> which are in themselves proven heart attack risk-reducers.



## Metformin Dosing and Precautions

The dose of metformin varies considerably. The starting dose may be as low as **250-500** mg once a day with a meal. If hypoglycemia (low blood sugar) does not manifest, the dose of metformin may be increased to **500-850** mg taken before two or three meals, all under the supervision of your physician, of course. One side effect of metformin is that it can cause homocysteine levels to elevate.<sup>51</sup> This is less likely to happen to Life Extension members who already take nutrients that suppress homocysteine. Those with impaired kidney function or congestive heart failure may not be able to take metformin.

Metformin functions to reduce absorption of ingested carbohydrates,<sup>52-54</sup> suppress appetite,<sup>55,56</sup> enhance insulin sensitivity,<sup>57-59</sup> and most uniquely, metformin inhibits the release of stored liver glucose (glycogen) back into the blood.<sup>60-63</sup>

One of the problems that frustrates so many people who follow a low-calorie diet, yet have persistently elevated glucose levels, is that the liver improperly dumps too much glucose into the blood. This of course is a vital life function in a starvation state, but for aging individuals, excess hepatic release of glycogen (called gluconeogenesis) causes them to suffer chronically high glucose and insulin levels. Metformin inhibits gluconeogenesis.<sup>64,65</sup>

Another low-cost drug that lowers glucose levels is **acarbose**, which reduces the absorption of ingested carbohydrates by inhibiting the *glucosidase* and other sugar absorbing-enzymes in the small intestine. A typical dose is **50-100** mg of acarbose taken before each meal. Some people experience intestinal side effects, but otherwise, acarbose is highly efficacious in reducing blood glucose levels and reducing several cardiac risk markers in the blood.<sup>9,12,13</sup>

There are of course other FDA-approved drugs that will lower your glucose levels. Many of these drugs, however, function by mechanisms that carry side effect risks.

Life Extension stands on solid scientific ground in recommending that those with impaired glucose tolerance follow an aggressive program that involves eating healthier and smaller meals, exercising, and taking nutrients before meals that deflect the impact of excess calorie intake. Drugs like **metformin** may be considered for its multiple benefits that extend beyond mere glucose control. **Acarbose** should be utilized if glucose levels remain stubbornly high.



Cinnamon

White Bean

Green Tea

## Methods to Reduce Postprandial Glucose Levels

- Fasting blood glucose levels over 85 mg/dL increase heart attack risk.
- Postprandial glucose levels over 140 mg/dL may lead to complications associated with diabetes—even in those who are not diabetic.
- Nutritional, hormonal, dietary, and lifestyle methods that lower blood glucose can reduce cardiovascular risk factors, lessen cancer risk, and improve markers associated with longevity.
- Plant extracts such as propolmannan, irvingia extract, *Phaseolus vulgaris* (white bean) extract, green tea, and cinnamon can help reduce glucose levels and promote healthy insulin sensitivity.
- The anti-diabetes drug metformin helps promote healthy blood glucose and lipid levels while supporting weight loss efforts.
- Optimizing DHEA levels in men and women and testosterone levels in men may help promote optimal glucose levels and insulin sensitivity.
- Healthy lifestyle choices such as calorie restriction, exercise, consuming a Mediterranean diet, and avoiding dietary sugars further support healthy blood glucose levels.



### Hormone Options

Normal aging is accompanied by a sharp decline in **hormones** that are involved in maintaining insulin sensitivity and hepatic glucose control.

Restoring DHEA (dehydroepiandrosterone) levels to youthful ranges in men and women may help enhance insulin sensitivity and glucose metabolism in the liver.<sup>66-70</sup>

Progressive doctors are realizing that in men, a **testosterone** deficiency can induce a serious reduction of *insulin sensitivity*. For men, restoring youthful levels of testosterone has been shown to be particularly beneficial in facilitating glucose control.<sup>71</sup> Blood tests can assess your hormonal status so a man can replenish testosterone (and DHEA) to more youthful ranges. Optimal **free testosterone** blood levels in men are between **20-25** pg/mL.<sup>72</sup>

Life Extension has published articles showing that diabetic men can derive enormous benefits by restoring testosterone to youthful ranges, as opposed to overloading the body with excess insulin as mainstream doctors continue to do.<sup>73-75</sup>

### Dietary Options

People can achieve remarkable control over glucose levels by altering their diet and exercising more. Below are three dietary options to consider:

1. Consume a **low-calorie diet** (often less than 1,400-1,800 calories a day). Most people cannot adhere to this kind of low-calorie diet.<sup>76</sup>
2. Consume a **Mediterranean diet**, with lots of fresh fruits and vegetables, fish and beans as protein sources, and omega-3 and monounsaturated fats (olive oil), while avoiding saturated fats, refined carbohydrates, cholesterol-laden foods, excess omega-6 fats, and most animal products. An increasing percentage of health-conscious Americans are adopting this kind of diet.<sup>77-79</sup>
3. Avoid sugary fruit juices (almost all fruit juices contain too many sugars) and beverages spiked with fructose,<sup>80-84</sup> sucrose,<sup>85-89</sup> and/or high-fructose corn syrup.<sup>90-94</sup> Consume a low-glycemic index and low-glycemic load diet.<sup>95,96</sup>

### Summary

From a practical standpoint, achieving optimal glucose readings on your next blood test will probably involve a combination of the various approaches described in this section. Each individual will respond differently.

For some, a modest reduction in calorie intake and an increase in physical activity will sufficiently lower fasting and after-meal glucose levels. Most aging individuals, however, will need to take nutrients such as **green coffee berry extract** and other carbohydrate-enzyme inhibitors before heavy meals to impede the impact of ingested calories. Others should ask their doctor about prescription drugs such as metformin.

When one questions the importance of doing all this, please know that the incidence of pre-diabetes, metabolic syndrome, and type 2 diabetes is increasing at alarming rates. In fact, diseases related to glucose impairment are skyrocketing everywhere in the world that adopts unhealthy Western eating habits.

A medical catastrophe is predicted for the United States as the vast majority of the population is now overweight and suffers frighteningly high levels of glucose, insulin, and triglycerides.

The single most important component of one's longevity program may be the steps taken before meals to neutralize the toxic effects of excess calories most of us invariably ingest.

### Hormone Precautions

Men with pre-existing prostate cancer should avoid testosterone until their cancer is cured. Women with certain types of hormone-related cancers are advised to avoid DHEA until their cancer is cured. Men who replace testosterone are advised to test their blood within 60 days to make sure that their estrogen (estradiol) levels and prostate-specific antigen (PSA) are not increasing. Some men convert (aromatize) testosterone into estradiol. If this happens, there are drugs (like anastrozole) or nutrients that inhibit the aromatase enzyme to keep estradiol in the safe range of between 20-30 pg/mL. These blood tests, taken 60 days after testosterone therapy is initiated, can also detect liver or blood count *abnormalities* that in rare cases can be exacerbated by testosterone.

Life Extension urges all members to enact a personal program designed to suppress **fasting glucose** levels to ranges below 86 mg/dL and keep two-hour after-meal glucose surges below 120-140 mg/dL. Fortunately, there is a wide range of options that enable aging humans to accomplish this profoundly effective anti-aging feat.

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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NEW IMPROVED BLUEBERRY FLAVOR!

## Calorie Control Weight Management Formula Now with Green Coffee Bean Extract

Nearly **80%** of **highly motivated** people fail to achieve long-lasting **weight loss** with diet and lifestyle modifications alone.<sup>1</sup>

That's why the **Calorie Control Weight Management Formula** was designed.

Clinical studies validate that when overweight humans take just some of the **natural ingredients** in this formula combined with reduced calorie intake, there is a greater loss of body fat compared to diet alone.<sup>2-4</sup> **Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract** can help give you the winning edge when following a calorie-modulated weight loss program.

The new **Calorie Control Weight Management Formula** comes with a natural **blueberry flavor** that tastes far smoother than the original version. This powder mix is available in a 60-serving bottle and in individual **stick packs** that you can conveniently use when away from home.

Most important, each dose has been fortified with **200 mg** of **CoffeeGenic™ Green Coffee Extract** to suppress **after-meal** glucose surges<sup>5</sup> that can sabotage the best weight management programs.

To order any of the new  
**Calorie Control Weight  
Management Formulas with  
CoffeeGenic™ Green Coffee 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. These products are not intended to diagnose, treat, cure, or prevent any disease.

## Comprehensive Calorie Management

The **Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract**, is designed to be taken before the two heaviest daily meals to help neutralize the unwanted effects of caloric excess. The ingredients were chosen based on scientific findings that age-associated fat accumulation is at least partially caused by the loss of one's metabolic capacity to utilize ingested calories. Each scoop of this good-tasting powdered drink mix contains:

**1. CoffeeGenic™ Green Coffee Extract** standardized to **50% chlorogenic acid**. Research shows this extract inhibits **glucose-6-phosphatase**,<sup>6</sup> which results in a significant reduction in **after-meal** glucose elevations.<sup>5</sup> **CoffeeGenic™ Green Coffee Extract** also helps impede rapid absorption of starches and sugary foods by neutralizing enzymes that enhance their absorption into the bloodstream.<sup>7</sup>

**2. LuraLean®**. A proprietary fiber, **LuraLean®** swells in the stomach after ingestion with water to help reduce calorie consumption. LuraLean® binds to **bile acids** in the small intestine and helps transport them out of the body. These bile acids otherwise facilitate the digestion and assimilation of **dietary fat** into the bloodstream. LuraLean® also slows the rapid emptying of ingested food into the small intestine, thereby reducing the surge of **glucose** entering the bloodstream. LuraLean® works better than other fibers because its own enzymes have been removed, thus sparing it from degradation in the digestive tract. This enables LuraLean® to form a stable *viscous barrier* to help impede calorie absorption and maintain its sponge-like activity throughout the digestive tract. In placebo-controlled studies, LuraLean® has induced weight loss along with significant reductions in fasting lipid and post-meal glucose/insulin levels.<sup>8,9</sup>

**3. White kidney bean extract**. This natural plant extract inhibits the *amylase* enzyme in the digestive tract.<sup>10</sup> *Amylase* breaks down carbohydrates that are then absorbed into the bloodstream as glucose. **White kidney bean extract** has produced weight loss and abdominal fat reductions, along with significant reductions of triglycerides in placebo-controlled trials.<sup>4,10</sup>

**4. Irvingia gabonensis**. Extracted from the African mango, **irvingia** regulates **leptin** to decrease appetite and facilitate triglyceride removal from adipocytes; inhibits **glycerol-3-phosphate dehydrogenase** to reduce the conversion of glucose into glycerol in adipocytes; and up-regulates **adiponectin** to facilitate insulin sensitivity.<sup>11,12</sup> *Irvingia* has demonstrated favorable weight loss results in placebo-controlled trials.<sup>2</sup>

**5. Green Tea Phytosome**. This proprietary green tea extract **absorbs** much better into the bloodstream to boost *resting metabolic rate*.<sup>13</sup> In a controlled clinical study, this green tea phytosome induced **30.1 pounds** of weight loss when combined with a reduced-calorie diet.<sup>14</sup>

## Importance of Taking Calorie Control Weight Management Formula Before Heavy Meals

Once we accept the fact that weight loss requires more than diet and exercise alone, it becomes easy to understand the importance of taking the **Calorie Control Weight Management** formula before the two heaviest meals of the day.

Each appetizing blueberry flavored stick pack or scoop of the **new Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract**, powder provides:

<b>CoffeeGenic™ Green Coffee (Coffea arabica) Extract</b> (bean) [std to 50% Chlorogenic acid (100 mg)]	<b>200 mg</b>
<b>LuraLean® propolmannan</b> ( <i>Amorphophallus konjac</i> K. Koch, ssp. <i>Amorphophallus japonica</i> ) fiber Extract (root)	<b>2,000 mg</b>
<b>Phase 2® Phaseolus vulgaris white kidney</b> (bean) Extract	<b>445 mg</b>
<b>Integra-Lean® African Mango (Irvingia gabonensis)</b> proprietary extract (seed)	<b>150 mg</b>
<b>Tea Slender™ Green Tea Phytosome</b> Green Tea ( <i>Camellia sinensis</i> ) Phytosome Decaffeinated Extract (leaf) bound to phosphatidylcholine (from lecithin)	<b>150 mg</b>

### Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract • Item #01693\*

(Each serving contains approximately 6 mg caffeine)

A bottle containing 60 servings of **Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract** natural blueberry flavor powder retails for \$60. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$36.45** per bottle.

For added convenience of use, this new formula also comes in **60 individual stick packs**. Each box containing 60 servings of **Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract** natural blueberry flavor powder retails for \$64. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$40.50** per bottle. **Item #01694\***

Contains soybeans. Contains corn.

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**CAUTION:** Take at least two hours apart from medications. Because this product may lower blood glucose, consult your healthcare provider before taking this product if you are taking blood glucose-lowering medication. Taking fiber products without adequate liquid may increase the risk of choking. Consult your healthcare provider before taking this product if you have difficulty swallowing or esophageal narrowing.

**Integra-Lean®** Irvingia is protected by U.S. Patent No. 7,537,790. Other patents pending. Phase 2® is used under license. LuraLean® is a registered trademark of AHD International LLC.



Item #01693



Item #01694

\*These supplements should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.

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.

# Advanced RESVERATROL Formula

In 2003, the **Life Extension Foundation**® introduced a standardized **resveratrol** extract shown to favorably alter genes implicated in the aging process—many of the same genes that respond to **calorie restriction**.

Since then, we have identified additional compounds that simulate calorie restriction's ability to trigger youthful **gene expression**—the process by which genes transmit signals that slow certain aspects of aging.

Compelling evidence reveals that certain compounds found in berries, such as **pterostilbene** and **fisetin**, possess potent “longevity gene” activators that work in synergy with **resveratrol**. For example, **fisetin** (found in strawberries) has been shown to **stabilize** resveratrol in the body by shielding it from metabolic breakdown,<sup>1-10</sup> thus extending its beneficial effects.

## High-Potency Resveratrol with Synergistic Activators

Life Extension members gain access to standardized **trans-resveratrol** combined with plant extracts that favorably influence longevity gene expression. Unlike many commercial formulas, Life Extension standardizes to **trans-resveratrol**, which researchers contend is the most active constituent.

A bottle containing 60 vegetarian capsules of **Optimized Resveratrol with Synergistic Grape-Berry Actives** retails for \$46. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$27.90** per bottle. The suggested dose of one capsule a day provides:

<b>Trans-Resveratrol</b>	<b>250 mg</b>
<b>Grape-Berry Actives</b>	<b>85 mg</b>
<b>Quercetin</b>	<b>60 mg</b>
<b>Trans-Pterostilbene</b>	<b>0.5 mg</b>
<b>Fisetin</b>	<b>10 mg</b>

Contains yeast.

Item #01430

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

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To order Optimized Resveratrol,  
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.



## SUPER FOODS

BY ROBIN GETTLEMAN

### Time to Celebrate CILANTRO



When you choose to cook with cilantro, or the seeds of the plant that cilantro comes from, known as coriander, the simple act of spicing up your dishes becomes an easy way to spice up your health and boost your longevity. Cilantro is a power-packed flavor enhancer that contains an eye-popping amount of phytonutrients, including *borneol*, *carvone*, *camphor*, *elemol*, *geraniol*, and *linalool*, among the most prominent. It also contains popular flavonoids that *Life Extension*® readers are familiar with, such as *quercetin* and *apigenin*. Along with such incredible antioxidant potency, cilantro contains active phenolic compounds and is nutritionally dense in dietary fiber, manganese, iron, and magnesium.<sup>1</sup>

With such an impressive array of healthy properties, it's no wonder that cilantro has been used as a digestive aid, an

anti-inflammatory, an anti-bacterial agent, and as a weapon in the fight to control blood sugar levels, cholesterol, and unwanted, lethal free radical production.<sup>1,2</sup>

Cilantro tea has been used for centuries as both a digestive aid and a cleansing agent to remove toxins from the body.

# SUPER FOODS

## History

Specifically, cilantro refers to the leaves of the coriander plant, which is one of the oldest known spices in the world, dating back nearly 7,000 years. The herb has received mention in the Old Testament, was used as a spice by the Romans and Greeks, and was used by the ancient Greek physician, Hippocrates, for its medicinal properties.<sup>1</sup> Nearly two millennia after the “Father of Medicine” first acknowledged the potency of this herb, modern scientists are now beginning to fully understand its true power.<sup>2</sup>

## Benefits

### Diabetes Fighter

Moroccans have long used coriander as a treatment to combat diabetes, but until recently, very few studies had been done to validate this all-natural strategy against this insidious disease. Recently, a team of researchers from Morocco

aimed to investigate the potential hypoglycemic (and hypolipidemic) activity of coriander seeds after a single oral dose and after daily dosing for 30 days in normal and obese-hyperglycemic-hyperlipidemic (OHH) rats.<sup>3</sup>

In the study, a single dose of coriander extract suppressed hyperglycemia in obese-hyperglycemic-hyperlipidemic rats, and

normal blood sugar was achieved at 6 hours post-dose. The researchers noted that the extract decreased several components of the metabolic syndrome, decreased atherosclerotic indicators, and increased cardioprotective factors, which leads them to believe that coriander extract may have a cardiovascular protective effect.

### Attack Atherosclerosis

At first glance, the idea that a spice or an herb can help your body defend itself against atherosclerosis may seem hard to believe, but due to the large amount of quercetin in cilantro, a few dashes of this spice may make a big difference for you and your arteries.<sup>1</sup> Because flavonoids like quercetin are not made internally in the human body, we must rely on eating certain foods or ingesting certain supplements to obtain it. In this case, sprinkling cilantro in your recipes or on your dishes can give you an extra quercetin boost in addition to your supplements.

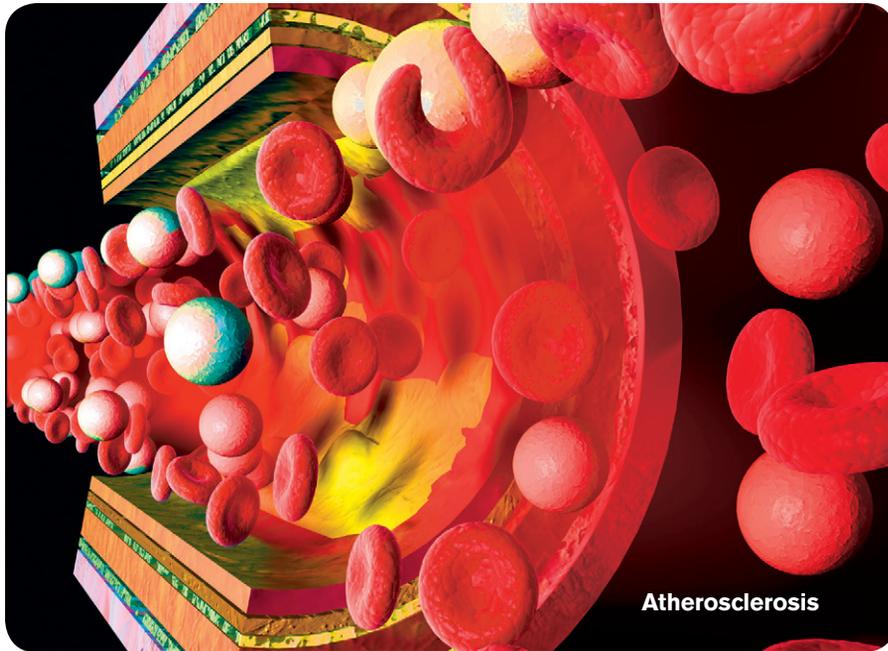
### Selecting the Right Cilantro<sup>2</sup>

1. Fresh cilantro is available in most farmers markets year-round.
2. Choose bunches of cilantro that are bright in color.
3. The leaves of cilantro can lose their luster quickly, so use it soon after you buy it.
4. If you must store cilantro, keep it attached to its roots, with the roots in water and the leaves covered in plastic.
5. If bought without roots, cover the cilantro with a damp cloth, refrigerate in a plastic bag with holes in it, and use within four or five days.



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Atherosclerosis

For a little more information about why quercetin is so important, we need to first examine the evolution of atherosclerosis in the human body. Atherosclerosis occurs when fatty materials or plaque build up in the artery. This usually happens when free radicals oxidize molecules known as low-density lipoprotein (LDL). When oxidized LDL molecules come into contact with a damaged endothelial lining, they stick, which sets off a series of reactions that contributes to the development of plaque build-up in arteries known as atherosclerosis.

Here is where rich sources of quercetin such as cilantro may be highly beneficial. By preventing LDL oxidation, quercetin may help intervene in the build-up of heart attack- and stroke-inducing plaque.<sup>4,6</sup> A study examining this very topic suggested that death from heart disease could be reduced, as the flavonoid quercetin showed signs that it could protect against damage to artery walls. It also shows promise in helping reduce high blood pressure that occurs as a result of artery narrowing.<sup>4,5</sup>

### Cilantro Tea for Toxin Removal

Cilantro tea has been used for centuries as both a digestive aid and a cleansing agent to remove toxins from the body. To help flush the toxins from your body, the tea can be made with two teaspoons of cilantro leaves steeped in one cup of hot water. For flavor, you may want to add honey, peppermint oil, or orange peel.

After steeping, drink the tea as you normally would. Once ingested, cilantro's power reveals itself, as it has shown in certain studies that it binds with harmful metals like lead and facilitates their removal from the body.<sup>7,8</sup>

This is important for those seeking a long, healthy life span, because toxic agents like heavy metals have been associated with a wide swath of health issues. ●

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





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

#### Five Easy Steps:

1. Call 1-800-208-3444 to discuss and place your order with one of our knowledgeable health advisors. (This order form can also be faxed to 1-866-728-1050 or mailed). Online orders can also be placed at [www.lifeextension.com](http://www.lifeextension.com).
2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit; whichever is applicable (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be sent directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable health advisors by calling 1-800-226-2370; or review the results with your personal physician.

It's that simple! Don't delay—call today!

#### For Our Local Members:

For those residing in the Ft. Lauderdale, Florida area, blood-draws are also performed at the Life Extension Nutrition Center from 9:00 am to 2:00 pm Monday through Saturday. Simply purchase the blood test and have it drawn with no wait! Our address is 5990 North Federal Highway, Ft. Lauderdale, FL, 33308-2633.

# Blood Testing The Ultimate Information

## MOST POPULAR PANELS

### Life Extension Member Pricing

- |   |   |
|---|---|
| <p><b>COMPREHENSIVE PANELS</b></p> <p>○ <b>MALE LIFE EXTENSION PANEL (LC322582)</b> <b>\$269</b><br/>           CBC/Chemistry Profile DHEA-S<br/>           Homocysteine TSH for thyroid function<br/>           Free Testosterone Total Testosterone<br/>           Estradiol SHBG<br/>           PSA (prostate-specific antigen)<br/>           C-Reactive Protein (high-sensitivity)</p> <p>○ <b>FEMALE LIFE EXTENSION PANEL (LC322535)</b> <b>\$269</b><br/>           CBC/Chemistry Profile DHEA-S<br/>           Estradiol Homocysteine<br/>           Progesterone TSH for thyroid function<br/>           Free Testosterone Total Testosterone<br/>           C-Reactive Protein SHBG (high sensitivity)</p> <p>○ <b>MALE WEIGHT LOSS PANEL (LCWLM)*</b> <b>\$299</b><br/>           CBC/Chemistry Profile DHEA-S<br/>           Insulin PSA<br/>           Free Testosterone (prostate-specific antigen)<br/>           Estradiol Total Testosterone<br/>           Free T3 TSH<br/>           C-Reactive Protein Free T4<br/>           (high sensitivity) SHBG</p> <p>○ <b>FEMALE WEIGHT LOSS PANEL (LCWLF)*</b> <b>\$299</b><br/>           CBC/Chemistry Profile DHEA-S<br/>           Progesterone Insulin<br/>           Free Testosterone Total Testosterone<br/>           Estradiol TSH<br/>           Free T3 Free T4<br/>           C-Reactive Protein SHBG (high sensitivity)</p> <p>○ <b>MALE HORMONE ADD-ON PANEL (LCADDM)*</b> <b>\$155</b><br/> <b>Pregnenolone and Dihydrotestosterone (DHT)</b><br/>           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>FEMALE HORMONE ADD-ON PANEL (LCADD)*</b> <b>\$125</b><br/> <b>Pregnenolone and Total Estrogens</b><br/>           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>LIFE EXTENSION THYROID PANEL (LC304131)</b> <b>\$75</b><br/>           TSH, T4, Free T3, Free T4.</p> <p>○ <b>MALE HORMONE RE-TEST PROFILE (LCRTM)*</b> <b>\$275</b><br/>           CBC/Chemistry Profile, DHEA-S, Dihydrotestosterone (DHT), Estradiol, PSA, Pregnenolone, Total and Free Testosterone, and TSH. Continual monitoring of hormone levels is necessary for men seeking to maintain optimal blood level values.</p> <p>○ <b>FEMALE HORMONE RE-TEST PROFILE (LCRTF)*</b> <b>\$250</b><br/>           CBC/Chemistry Profile, DHEA-S, Total Estrogen, Pregnenolone, Total and Free Testosterone, Progesterone, and TSH. Continual monitoring of hormone levels is necessary for women seeking to maintain optimal blood level values.</p> | <p>○ <b>THE CBC/CHEMISTRY PROFILE (LC381822)</b> <b>\$35</b><br/> <b>OVER 40 PARAMETERS TESTED</b><br/> <b>CARDIOVASCULAR RISK PROFILE</b><br/>           Total Cholesterol Cholesterol/HDL Ratio<br/>           HDL Cholesterol Estimated CHD Risk<br/>           LDL Cholesterol Glucose<br/>           Triglycerides Iron<br/> <b>LIVER FUNCTION PANEL</b><br/>           AST (SGOT) Total Bilirubin<br/>           ALT (SGPT) Alkaline Phosphatase<br/>           LDH<br/> <b>KIDNEY FUNCTION PANEL</b><br/>           BUN BUN/Creatinine Ratio<br/>           Creatinine Uric Acid<br/> <b>BLOOD PROTEIN LEVELS</b><br/>           Total Protein Globulin<br/>           Albumin Albumin/Globulin Ratio<br/> <b>BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE</b><br/>           Red Blood Cell Count Monocytes<br/>           White Blood Cell Count Lymphocytes<br/>           Eosinophils Platelet Count<br/>           Basophils Hemoglobin<br/>           Polys (Absolute) Hematocrit<br/>           Lymphs (Absolute) MCV<br/>           Monocytes (Absolute) MCH<br/>           Eos (Absolute) MCHC<br/>           Baso (Absolute) Polynucleated Cells<br/>           RDW<br/> <b>BLOOD MINERAL PANEL</b><br/>           Calcium Sodium<br/>           Potassium Chloride<br/>           Phosphorus Iron</p> <p><b>NOTE: CBC/Chemistry profile is included in the Male and Female Life Extension panels and Weight Loss Panels.</b></p> <p>○ <b>GENERAL HEALTH</b><br/> <b>HEMOGLOBIN A1C (HBA1C) (LC001453)</b> <b>\$31</b><br/>           Hemoglobin A1C evaluates long-term blood sugar control. Serum glucose sometimes reacts with important proteins in the body rendering them nonfunctional. Since this process, known as glycation is one of the leading theories of aging, Life Extension<sup>®</sup> believes everyone should check their A1C level.</p> <p>○ <b>VITAMIN D (25OH) (LC081950)</b> <b>\$47</b><br/>           This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.</p> <p>○ <b>FOOD SAFE ALLERGY TEST (LCM73001)</b> <b>\$174</b><br/>           This test measures delayed (IgG) food allergies for 95 common foods.</p> <p>○ <b>CYTOKINE PANEL (LCCYT)*</b> <b>\$399</b><br/>           Includes TNF-alpha, IL-6, IL-1 beta and IL-8. Cytokines are proteins that modulate the inflammatory response. This panel is used to identify elevated levels of specific cytokines.</p> <p>○ <b>OMEGA SCORE™™™ (LCOMEGA)</b> <b>\$131.25</b><br/>           Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.</p> <p>○ <b>COQ10* (COENZYME Q10) (LC120251)</b> <b>\$145</b><br/>           This test is used to check the blood level of CoQ10 and will enable more precise dosing for anyone seeking to achieve and maintain high levels of this critical antioxidant.</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.



## MOST POPULAR SINGLE TESTS

Life Extension Member Pricing

- |   |                |  |              |
|---|----------------|--|--------------|
| <input type="radio"/> <b>HORMONES</b><br><b>CORTISOL (LC004051)</b><br>This test is to measure adrenal function.  | <b>\$39</b>    | <input type="radio"/> <b>CARDIAC RISK</b><br><b>Lp-PLA2 (PLAC TEST)* (LC123240)</b><br>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.   | <b>\$125</b> |
| <input type="radio"/> <b>ADRENOCORTICOTROPIC HORMONE (ACTH)* (LC004440)</b><br>A pituitary function test useful in evaluating adrenocortical dysfunction.   | <b>\$91.50</b> | <input type="radio"/> <b>C-REACTIVE PROTEIN (HIGH-SENSITIVITY) (LC120766)</b><br>Measures inflammation factors in arteries. Recent studies indicate that C-reactive protein may be the most accurate risk factor for predicting heart attack and stroke.   | <b>\$42</b>  |
| <input type="radio"/> <b>DHEA-SULFATE (LC004020)</b><br>This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.   | <b>\$61</b>    | <input type="radio"/> <b>APOLIPOPROTEIN ASSESSMENT (APO A1 + APO B + RATIO) (LC216010)</b><br>This ratio correlates with risk of coronary artery disease and is useful in the presence of borderline elevations of cholesterol.  | <b>\$55</b>  |
| <input type="radio"/> <b>DIHYDROTESTOSTERONE (DHT)* (LC500142)</b><br>Measures serum concentrations of DHT.   | <b>\$99</b>    | <input type="radio"/> <b>FIBRINOGEN* (LC001610)</b><br>High levels of this blood-clotting factor increase the risk of heart attack and stroke.   | <b>\$31</b>  |
| <input type="radio"/> <b>ESTRADIOL (LC004515)</b><br>For men and women. Determines the proper amount in the body.   | <b>\$33</b>    | <input type="radio"/> <b>HOMOCYSTEINE (LC706994)</b><br>Can indicate if you are likely to have a heart attack or stroke. Even if you take folic acid, you still may have dangerously high levels of this artery-clotting metabolic debris that can be lowered with high doses of TMG and vitamin B6.   | <b>\$64</b>  |
| <input type="radio"/> <b>INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN 3 (IGFBP3) (LC140152)</b><br>Elevated levels in hypertensive individuals have been associated with a nine-fold increase of carotid arteriosclerosis.                        | <b>\$47</b>    | <input type="radio"/> <b>VAP™ TEST (LC804500)</b><br>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.  | <b>\$90</b>  |
| <input type="radio"/> <b>INSULIN FASTING* (LC004333)</b><br>Can predict those at risk of diabetes, obesity, and heart and other diseases.   | <b>\$42</b>    | <input type="radio"/> <b>MALE HEALTH</b><br><b>PSA (PROSTATE-SPECIFIC ANTIGEN) (LC010322)</b><br>Can provide an early warning sign for prostate disorders and possible cancer.   | <b>\$31</b>  |
| <input type="radio"/> <b>PREGNENOLONE* (LC140707)</b><br>Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.   | <b>\$116</b>   | <input type="radio"/> <b>FREE-PSA (INCLUDES TOTAL PSA)* (LC480780)</b><br>Recommended to determine if an elevated PSA is indicative of prostate cancer.  | <b>\$61</b>  |
| <input type="radio"/> <b>PROGESTERONE (LC004317)</b><br>Primarily for women. Determines the proper amount in the body.  | <b>\$55</b>    | <input type="radio"/> <b>BONE HEALTH</b><br><b>OSTEOCALCIN* (LC010249)</b><br>Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis.                      | <b>\$91</b>  |
| <input type="radio"/> <b>SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)</b><br>This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.                    | <b>\$33</b>    | <input type="radio"/> <b>DPD CROSS LINK URINE TEST (LC511105)</b><br>The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis. | <b>\$79</b>  |
| <input type="radio"/> <b>SOMATOMEDIN C (IGF-1) (LC010363)</b><br>Indicates growth hormone secretion levels. Low levels have been associated with atherosclerosis as well as all-cause mortality.  | <b>\$75</b>    |  |              |
| <input type="radio"/> <b>TOTAL AND FREE TESTOSTERONE (LC140103)</b><br>Determines whether testosterone replacement should be considered as a therapy for depression, abdominal obesity, low energy, poor mental performance, or loss of libido. | <b>\$99</b>    |  |              |

**Blood tests available only in the continental United States.**

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

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

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

Signature of Life Extension Member

X

Life Extension Foundation Members only

### MEMBER NO.

Male

Female

Name

Date of Birth (required)

/ /

Address

City

State

Zip

Phone

Credit Card No.

Expiration Date

/

Mail your order form to:

**LifeExtension**  
NATIONAL DIAGNOSTICS, INC.

3600 West Commercial Boulevard  
Fort Lauderdale, FL 33309

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

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

# Products

## AMINO ACIDS

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

## BONE & JOINT HEALTH

ArthroMax™ with Theaflavins and AprèsFlex™  
ArthroMax™ Advanced with UC-II® and  
AprèsFlex™  
Bone-Up™  
Bone Restore™  
Bone Strength Formula w/KoAct™  
Chondroitin Sulfate  
Chondrox  
Fast Acting Joint Formula  
Glucosamine Chondroitin Capsules

## BRAIN HEALTH

Acetyl-L-Carnitine  
Acetyl-L-Carnitine-Arginate  
CDP Choline Capsules  
Cognitex® with NeuroProtection Complex  
Cognitex® with Pregnenolone &  
NeuroProtection Complex  
Cognitex® Basics  
DMAE  
Ginkgo Biloba Certified Extract™  
Huperzine A  
Lecithin with B5 and BHA  
Lecithin Granules  
Methylcobalamin Lozenges  
Neuro-Mag™ Magnesium L-Threonate  
Optimized Ashwagandha Extract  
Phosphatidylserine Capsules  
Rhodiola Extract  
Super Ginkgo Extract  
Vinpocetine

## DIGESTIVE

Bromelain Powder  
Carnosoothe w/PicroProtect  
Daily Ginger®  
Digest RC™  
Enhanced Super Digestive Enzymes  
Florastor  
Intact Digest  
Life Flora™  
Natural EsophaGuard  
Pancreatin  
Primal Defense™  
Probiotic All-Flora®  
Probiotic Anti-Aging  
Probiotic Cleanse™  
Probiotic Colon™  
Regimint  
Theralac Probiotics

## DURK AND SANDY PRODUCTS

Blast™  
Dual-C  
Inner Power™  
Memory Upgrade™

## EYE CARE

Bilberry Extract  
Blackcurrant Freeze Dried Extract  
Brite Eyes III  
Eye Pressure Support with Mirtogenol®  
Overcast Polarized Sunglasses

Solarshield Sunglasses  
Super Zeaxanthin with Lutein &  
Meso-Zeaxanthin and C3G  
(Plus Astaxanthin also available)  
Vision Optimizer

## FIBER

Apple Pectin Powder  
Fiber Food  
Hi-Lignan® Nutri-Flax®  
WellBetX PGX® Soluble Fiber Blend

## FOOD

Asian Cruciferous Vegetable Soup  
Cruciferous Vegetable Soup  
Rich Rewards Coffee

## HAIR CARE

Dr. Proctor's Advanced Hair Formula  
Dr. Proctor's Shampoo  
Life Extension Shampoo and Conditioner  
Super-Absorbable Tocotrienols

## HEART HEALTH

Advanced Lipid Control  
Aspirin (Enteric Coated)  
Cho-Less™  
D-Ribose Capsules  
D-Ribose Powder  
Endothelial Defense™ with  
Full-Spectrum Pomegranate™  
Fibrinogen Resist  
Forskolin  
Garlicforce™  
Homocysteine Resist  
Krill Healthy Joint Formula  
Natural BP Management  
Peak ATP® with GlycoCarn®  
Policosanol  
Red Yeast Rice  
Super Absorbable CoQ10™ with *d*-Limonene  
Super Omega-3 EPA/DHA with Sesame  
Lignans & Olive Fruit Extract  
Super Ubiquinol CoQ10  
Super Ubiquinol CoQ10 with Enhanced  
Mitochondrial™ Support  
Sytrinol™  
Theaflavin Standardized Extract  
TMG Powder  
TMG Tablets

## HERBAL/PHYTO PRODUCTS

Artichoke Leaf Extract  
Astaxanthin  
Berry Complete  
Blueberry Extract  
Blueberry Extract w/Pomegranate  
Butterbur Extract w/Standardized  
Rosmarinic Acid  
Calcium D-Glucarate  
Cilantro Herbal Extract  
Citrus Bioflavonoid  
Enhanced Berry Complete with RZD™ Acai  
Floradix® Iron & Herbs  
Floravital® Iron & Herbs  
Full-Spectrum Pomegranate™  
Grapeseed Extract with Resveratrol &  
Pterostilbene  
Huperzine A with Natural Vitamin E  
Kyolic® Garlic Formula 105  
Kyolic® Reserve  
Mega Green Tea Extract  
Mega Green Tea Extract (Decaffeinated)  
(also w/CoffeeGenic Green Coffee extract)  
Mega Lycopene Extract  
Nutrim  
Optimized Ashwagandha Extract  
Optimized Garlic  
Pomegranate Extract  
Pomegranate Juice Concentrate  
ProGreens®  
Pure-Gar™  
Pycnogenol  
Optimized Quercetin  
Resveratrol with Synergistic Grape-Berry Actives  
Rhodiola Extract  
Rosmarinic Acid Extract  
Silymarin  
SODzyme™ with GliSODin®  
Stevia Extract

Super Bio-Curcumin®  
Super Ginkgo Extract  
Triple Action Cruciferous Vegetable Extract  
Venotone  
Whole Grape Extract

## HORMONES

7-Keto® DHEA  
DHEA  
DHEA Complete  
GH Pituitary Support Day Formula  
GH Pituitary Support Night Formula  
Melatonin  
Melatonin Timed Release  
Natural Estrogen with Pomegranate Extract  
Pregnenolone  
ProFem Cream  
Pure IGF  
Super Miraforte with Standardized Lignans

## IMMUNE ENHANCEMENT

Agave Digestive-Immune Support  
AHCC® (Active Hexose Correlated Compound)  
Aloe Vera Force™  
Buffered Vitamin C Powder  
Echinacea  
Enhanced Life Extension Whey Protein  
i26 Hyperimmune Egg  
Immune Protect with PARACTIN®  
Lactoferrin  
Lifeshield® Immunity™  
Maitake SX-Fraction  
Norwegian Shark Liver Oil  
Optimized Fucoidan w/Maritech® 926  
Primal Defense™  
ProBoost™ Thymic Protein A  
Pure Gar™  
Sambu® Guard  
Supercritical Oreganoforce™  
Thymic Immune Factors  
Ultimate Flora Advanced Immunity  
Vitamin C with Dihydroquercetin  
Zinc Lozenges with Vitamin C

## INFLAMMATORY REACTIONS

Arthro-Immune Joint Support  
ArthroMax™ with Theaflavins  
Boswella  
Boswella™ Topical Cream  
Bromelain (Specially-coated)  
DHA 240  
Emulsified Norwegian Cod Liver Oil  
Emulsified Super Twin EPA/DHA  
Fast Acting Joint Formula  
Ginger Force  
Krill Oil  
5-LOX Inhibitor w/AprèsFlex™  
Mega EPA/DHA  
Mega GLA with Sesame Lignans  
MSM  
Natural Relief 1222™ Cream  
Omega-3 Chewables  
Serraflazyme  
SODzyme™ with GliSODin® and Wolfberry  
Super Omega-3 EPA/DHA with Sesame  
Lignans & Olive Fruit Extract  
Tart Cherry  
Udo's Choice Oil  
Zyflamend Easy

## LIVER HEALTH

Branch Chain Amino Acids  
N-Acetyl Cysteine  
Liver Force  
Liver Efficiency Formula  
Certified European Milk Thistle  
Hepatopro  
SAME  
Silymarin

## MINERALS

Biosil  
Bone Restore  
Bone Strength Formula w/KoAct®  
Bone-Up™  
Boron Capsules  
Calcium Citrate with D3  
Chromium Ultra  
Copper  
Dr. Strum's Intensive Bone Formula  
Floradix® Iron & Herbs

Floravital® Iron & Herbs  
Iodoral  
Iron Protein Plus  
Magnesium  
Magnesium Citrate  
Mineral Formula for Men  
Mineral Formula for Women  
Only Trace Minerals  
Optimized Chromium w/Crominex® 3+  
OptiZinc  
Sea-Iodine™  
Selenium  
Se-Methyl L-Selenocysteine  
Strontium  
Vanadyl Sulfate  
Zinc/Vitamin C Lozenges

## MISCELLANEOUS

Blender  
Blood Pressure Monitor Arm Cuff Medium  
Cell Sensor Gauss Meter™  
CR Way Edition Advanced Dietary Software  
Empty Gelatin Capsules  
LifeShield® Breathe™  
The Capsule Filler Machine

## 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

Bioactive Milk Peptides  
Holy Basil  
LifeShield® Cordyceps  
L-Theanine  
5 HTP  
Enhanced Natural Sleep® w/ Melatonin  
Enhanced Natural Sleep® w/o Melatonin  
Natural Stress Relief  
Optimized TryptoPure™ Plus  
Stabilium® 200  
SAME  
St. John's Wort Extract  
Tryptopure™ L-Tryptophan

## MOUTH CARE

Advanced Oral Hygiene  
Mist Oral III™ with CoQ10  
Mouthwash w/Pomegranate  
Toothpaste

## MULTIVITAMIN

Children's Formula Life Extension Mix  
Comprehensive Nutrient Pack  
Life Extension Booster  
Life Extension Mix™ Capsules  
Life Extension Mix™ Powder  
Life Extension Mix™ Tablets  
Life Extension Mix™ w/o Copper Capsules  
Life Extension Mix™ w/o Copper Tablets  
Life Extension Mix™ w/Extra Niacin  
Life Extension Mix™ w/Extra Niacin w/o Copper  
Life Extension Mix™ w/Stevia Powder  
Life Extension Mix™ w/Stevia w/o Copper Powder  
Life Extension One-Per-Day  
Life Extension Two-Per-Day  
Super Booster Softgels w/Advanced K2 Complex

## PET CARE

Cat Mix  
Dog Mix

## PROSTATE & URINARY HEALTH

BetterWOMAN®  
Optimized Cran-Max® with UTIRose™  
5-LOXIN®  
(Water-Soluble) Pumpkin Seed Extract  
Super Saw Palmetto with Beta-Sitosterol  
Super Saw Palmetto/Nettle Root Formula  
w/Beta-Sitosterol  
Ultra Natural Prostate Formula

## SKIN CARE

Advanced Under Eye Serum with Stem Cells  
Amber Self MicroDermabrasion  
Anti-Aging Mask  
Anti-Glycation Serum  
Antioxidant Rejuvenating Foot Cream  
Antioxidant Rejuvenating Foot Scrub  
Antioxidant Rejuvenating Hand Cream  
Antioxidant Rejuvenating Hand Scrub  
Anti-Redness & Blemish Lotion  
Cellulite Suppress™ Formula  
Corrective Clearing Mask  
DermaWhey  
DNA Repair Cream  
Dual-Action MicroDerm Abrasion  
Elastin Collagen Body Firming Lotion  
Essential Plant Lipids Reparative Serum  
Face Master® Platinum  
Face Rejuvenating Antioxidant Cream  
Enhanced FernBlock® with Sendara™  
Fine Line-Less  
Hair Suppress Formula  
Healing Formula All-in-One Cream  
Healing Mask  
Hyaluronic Facial Moisturizer  
Hydrating Anti-oxidant Face Mist  
Hydroderm®  
Lavilin Underarm Deodorant  
Lifting & Tightening Complex  
LifeShield® Reishi  
Melatonin Cream  
Mild Facial Cleanser  
NaPCA w/Aloe Vera  
Neck Rejuvenating Antioxidant Cream  
New Face Solution  
Peel Off Cleansing Mask  
Pigment Correcting Cream  
(Ultra) Rejuvenex®  
Rejuvenex® Body Lotion  
RejuvenexX® Factor  
Rejuvenating Serum  
Resveratrol Anti-Oxidant Serum  
Skin Lightening Serum  
Skin Restoring Ceramides w/Lipowheat™  
Skin Stem Cell Serum  
Supercritical Omega 7™  
Sun Protection Spray  
Total Sun Protection Cream  
Ultra Rejuvenex®  
Ultra RejuveNight® w/ Progesterone  
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 K Healing Cream

## SOY

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

## SPECIAL PURPOSE FORMULA

Anti-Alcohol Antioxidants w/HepatoProtection Complex  
Benfotiamine w/Thiamine  
Breast Health Formula  
Butterbur Extract w/Standardized Rosmarinic Acid  
Chlorella  
Chlorophyllin w/Zinc  
Cleanse Smart  
Green Coffee Extract CoffeeGenic™ (also w/Glucose control)  
Coriolus Super Strength  
CR Mimetic Longevity Formula  
Cinsulin® w/InSea2™ and Crominex® 3+  
EDTA  
European Leg Solution Diosmin 95  
Fem Dophilus  
Femmenessence MacaPause®  
Flush & Be Fit  
GlucoFit™  
Ideal Bowel Support 299

Maitake SX-Fraction™  
Migra-eeze™  
Natural Female Support  
Organic Total Body Cleanse  
Pecta-Sol®  
Potassium Iodide  
PQQ Caps with BioPQQ™  
PteroPure™  
Prelox® Natural Sex for Men®  
Pyridoxal 5' - Phosphate  
Rosmarinic Acid Extract  
Ultra Prostate w/AprèsFlex™ Standardized Lignans

## SPORTS PERFORMANCE

Creatine Capsules  
Creatine Powder  
Enhanced Life Extension Protein  
DMG (N, N-dimethylglycine)  
Inosine  
L-Glutamine Capsules  
L-Glutamine Powder

## VITAMINS

Ascorbic Acid Powder  
Ascorbyl Palmitate Capsules  
B1  
B2  
B12  
Beta-Carotene  
Biotin Capsules  
Biotin Powder  
Buffered Vitamin C Powder  
Complete B Complex  
Folic Acid + B12  
Gamma E Tocopherol w/Sesame Lignans  
Gamma E Tocopherol/Tocotrienols  
Inositol Capsules  
Inositol Powder  
Mega Lycopene Extract  
Methylcobalamin  
MK-7  
No-Flush Niacin  
Optimized Folate  
PABA Capsules  
Super Ascorbate C Capsules  
Super Ascorbate C Powder  
Super K w/Advanced K2 Complex  
Supercritical Omega 7™  
Tocotrienols w/Sesame Lignans  
Vitamin A Nutrisorb  
Vitamin B3 (Niacin) Capsules  
Vitamin B6  
Vitamin B12 Tablets  
Vitamin C  
Vitamin D  
Vitamin D3  
Vitamin D3 w/Sea-Iodine™  
Vitamins D and K w/Sea-Iodine™  
Vitamin E  
Vitamin K1

## WEIGHT MANAGEMENT

Alli® Refill Pack  
Advanced Anti-Adipocyte Formula w/AdipoStat & Integra Lean®  
Anti-Adipocyte Formula w/AdipoStat  
Calorie Control Weight Management Formula w/CoffeeGenic™  
7-Keto DHEA  
DHEA Complete  
Fucoxanthin Slim™  
HCA  
Integra-Lean® Irvingia  
LuraLean® Caps Special Propolmannan Particle Size  
Optimized Irvingia w/Phase 3™ Calorie Control Complex  
Optimized Saffron with Satiereal®  
Natural Appetite Control  
Natural Glucose Absorption Control  
Stevia Liquid Extract  
Super CLA Blend w/Guarana and Sesame Lignans  
Super CLA Blend w/Sesame Lignans  
Udo's Choice Wholesome Fast Food Blend  
WellBetX PGX® Soluble Fiber Blend

# Buyers Club Order Form

**SUPER SALE SAVINGS ON ALL PRODUCTS**  
**To order call: 1-954-766-8433 or 1-800-544-4440**

No.		Retail Each	Member Each	Qty	Total
<b>A</b>					
00449	<b>ACETYL-L-CARNITINE</b> - 500 mg, 100 caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
00788	<b>ACETYL-L-CARNITINE ARGINATE</b> - 100 caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01308	<b>ADVANCED LIPID CONTROL</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01300	<b>ADVANCED ORAL HYGIENE</b> - 60 veg. 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		
	Buy 4 bottles, price each	53.33	40.00		
*46925	<b>ALLI® REFILL PACK</b> - 120 caps	69.95	58.00		
01375	<b>ALOE VERA FORCE™</b> - 60 veg. caps	31.95	23.96		
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		
01440	<b>ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO</b> - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
#01510	<b>ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT</b> - 60 veg. caps	35.00	26.25		
	Buy 4 bottles, price each	32.00	24.00		
#01509	<b>ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT &amp; INTEGRA LEAN® (ADVANCED)</b> - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
00105	<b>APPLE PECTIN POWDER</b> - 227 grams	14.75	11.06		
	Buy 4 bottles, price each	13.75	10.31		
01012	<b>ARGININE CAPS</b> - 800 mg, 200 caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01039	<b>ARGININE/ORNITHINE</b> - 500/250, 100 caps	16.00	12.00		
	Buy 4 bottles, price each	14.50	10.88		
00038	<b>ARGININE/ORNITHINE POWDER</b> - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01025	<b>(L)-ARGININE FREE-FORM POWDER</b> - 100 grams	15.98	11.99		
	Buy 4 bottles, price each	14.31	10.73		
^^^01617	<b>ARTHROMAX™ w/THEAFLAVINS &amp; APRÈSFLEX™</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; APRÈSFLEX™</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	28.00	21.00		
	Buy 4 bottles, price each	25.38	19.04		
00080	<b>ASCORBIC ACID POWDER</b> - 454 grams	38.00	28.50		
	Buy 4 bottles, price each	34.93	26.20		
00082	<b>ASCORBYL PALMITATE</b> - 500 mg, 100 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		

**SUB-TOTAL OF COLUMN 1**

No.		Retail Each	Member Each	Qty	Total
01066	<b>ASPIRIN</b> - 81 mg, 300 enteric coated tablets	\$6.00	\$4.50		
	Buy 4 bottles, price each	5.33	4.00		
00708	<b>ASTAXANTHIN</b> - 2 mg, 30 softgels	10.25	7.69		
<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		
01206	<b>BERRY COMPLETE</b> - 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	18.67	14.00		
01406	<b>BERRY COMPLETE w/RZD™ 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	10.98	8.24		
	Buy 4 bottles, price each	9.83	7.37		
00653	<b>BETTERWOMAN®</b> -40 caps	40.00	30.00		
	Buy 4 bottles, price each	38.00	28.50		
01073	<b>BILBERRY EXTRACT</b> - 100 mg, 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01512	<b>BIOACTIVE MILK PEPTIDES</b> - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
*01006	<b>BIOSIL™</b> - 5 mg, 30 veg. caps	18.95	15.16		
*01007	<b>BIOSIL™</b> - 1 fl oz	29.99	23.99		
00102	<b>BIOTIN</b> - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
00145	<b>BIOTIN POWDER</b> - 30 grams	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
01008	<b>BLAST™</b> - 600 grams of powder	26.95	20.21		
51526	<b>BLENDER</b> - 28 oz bottle	8.99	6.74		
70000	<b>BLOOD PRESSURE MONITOR-ARM CUFF</b> (medium)	99.95	64.97		
70001	<b>BLOOD PRESSURE MONITOR-WRIST</b> (travel size)	69.95	45.47		
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 veg. caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01611	<b>BONE RESTORE</b> - 150 caps	22.50	16.88		
	Buy 4 bottles, price each	19.50	14.63		
01211	<b>BONE STRENGTH FORMULA w/KOACT®</b> - 120 caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00313	<b>BONE-UP®</b> - 240 caps	24.95	18.71		
	Buy 4 bottles, price each	22.50	16.88		
01379	<b>BOOSTER</b> - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01590	<b>BOOSTER w/ADVANCED K2 COMPLEX (SUPER)</b> - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00621	<b>BORON</b> - 3 mg, 100 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		
00258	<b>BOSWELLA TOPICAL CREAM</b> - 4 oz	15.00	11.25		
	Buy 4 jars, price each	13.00	9.75		

**SUB-TOTAL OF COLUMN 2**

**OFFER ENDS JANUARY 31, 2012**  
**To order online visit [www.LifeExtension.com/SuperSale](http://www.LifeExtension.com/SuperSale)**

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01253	<b>BRANCHED CHAIN AMINO ACIDS</b> - 90 veg. caps Buy 4 bottles, price each	\$19.50 17.00	\$14.63 12.75		
00999	<b>BREAST HEALTH FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
00893	<b>BRITE EYES III</b> - 2 vials, 5 ml each Buy 4 boxes, price each	34.00 32.00	25.50 24.00		
00136	<b>BROMELAIN POWDER</b> - 100 grams Buy 4 bottles, price each	21.00 18.75	15.75 14.06		
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>					
01015	<b>CALCIUM CITRATE w/VITAMIN D</b> - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
00535	<b>CALCIUM D-GLUCARATE</b> - 200 mg, 60 caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
01693	<b>CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC™ GREEN COFFEE EXTRACT BLUEBERRY FLAVOR</b> - 414 grams powder Buy 4 jars, price each Buy 8 jars, price each	60.00 54.00 50.00	45.00 40.50 37.50		
01694	<b>CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC™ GREEN COFFEE EXTRACT BLUEBERRY FLAVOR</b> - 60 individual packs Buy 4 boxes, price each Buy 8 boxes, price each	64.00 60.00 56.00	48.00 45.00 42.00		
00118	<b>CAPSULE FILLER MACHINE FOR "00" CAPSULES</b> Buy 4 machines, price each	17.95 17.25	13.46 12.94		
00613	<b>CAPSULE FILLER MACHINE FOR "0" CAPSULES</b> Buy 4 machines, price each	17.95 17.25	13.46 12.94		
00916	<b>CARNITINE w/GLYCOCARN® (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01041	<b>L-CARNITINE</b> - 500 mg, 30 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		
01287	<b>CARNOSINE (SUPER)</b> - 500 mg, 90 caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	<b>CAT MIX</b> - 100 grams powder Buy 4 bottles, price each	15.00 12.00	11.25 9.00		
00390	<b>CDP CHOLINE CAPS</b> - 250 mg, 60 caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
00998	<b>CELL SENSOR-EMF DETECTION METER</b>	39.95	29.95		
01370	<b>CHILDREN'S FORMULA LIFE EXTENSION MIX™</b> - 100 chewable tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00550	<b>CHLORELLA</b> - 500 mg, 200 tablets Buy 4 bottles, price each	23.50 21.00	17.63 15.75		
01549	<b>CHLOROPHYLLIN w/ZINC</b> - 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
*01359	<b>CHO-LESS™</b> - 90 capsules	32.50	24.38		
00541	<b>CHOLINE CHLORIDE</b> - 16 oz liquid Buy 4 bottles, price each	14.95 14.00	11.21 10.50		
00364	<b>CHONDROITIN SULFATE CONCENTRATE</b> - 400 mg, 60 tablets Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01477	<b>CHROMIUM ULTRA</b> - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		

**SUB-TOTAL OF COLUMN 3**

No.		Retail Each	Member Each	Qty	Total
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		
00551	<b>CILANTRO HERBAL EXTRACT</b> - 1 oz Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01503	<b>CINSULIN® W/INSEA2™ AND CROMINEX® 3+</b> - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00069	<b>CITRUS BIOFLAVONOID</b> - 100 caps Buy 4 bottles, price each	16.79 15.56	12.59 11.67		
00818	<b>CLA BLEND W/SESAME LIGNANS (SUPER)</b> - 1000 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> -1000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01078	<b>CLEANSE SMART</b> - 60 caps	31.99	23.99		
00050	<b>COD LIVER OIL (EMULSIFIED)</b> - 12 fl oz (355 ml) Buy 4 bottles, price each	14.58 12.27	10.94 9.20		
00293	<b>COD LIVER OIL (EMULSIFIED)</b> - 100 softgels (Emulsified) Buy 4 bottles, price each	10.97 10.34	8.23 7.76		
00922	<b>COGNITEX® w/PREGNENOLONE &amp; NEUROPROTECTION COMPLEX</b> - 90 softgels Buy 4 bottles, price each Buy 12 bottles, price each	74.00 66.60 64.00	55.50 49.95 48.00		
00921	<b>COGNITEX® w/o PREGNENOLONE w/NEUROPROTECTION COMPLEX</b> - 90 softgels Buy 4 bottles, price each Buy 12 bottles, price each	72.00 64.00 62.00	54.00 48.00 46.50		
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		
00110	<b>COMPLETE B-COMPLEX</b> - 180 caps Buy 4 bottles, price each	21.50 18.00	16.13 13.50		
01595	<b>COMPREHENSIVE NUTRIENT PACK</b> - 30-day supply Buy 4 bottles, price each	189.00 171.00	141.75 128.25		
00119	<b>COPPER CAPSULES</b> - 2 mg, 100 caps Buy 4 bottles, price each	9.91 8.96	7.43 6.72		
00949	<b>COQ10™ w/ #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/ #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 52.00 48.00	42.00 39.00 36.00		
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 56.00 52.00	46.50 42.00 39.00		
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 53.00 50.00	43.50 39.75 37.50		
01427	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -50 mg, 30 softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
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 56.00 52.00	46.50 42.00 39.00		

**SUB-TOTAL OF COLUMN 4**

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

FEBRUARY 2012

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

# Buyers Club Order Form

**SUPER SALE SAVINGS ON ALL PRODUCTS**  
To order call: 1-954-766-8433 or 1-800-544-4440

No.		Retail Each	Member Each	Qty	Total
<b>C CONTINUED</b>					
*01053	<b>CORIOLUS SUPER STRENGTH</b> - 600 mg, 150 veg. caps	\$99.95	\$74.96		
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		
80134	<b>COSMESIS ANTI-GLYCATION SERUM</b> - 1 oz <b>W/BLEUBERRY &amp; POMEGRANATE EXTRACTS</b> 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		
80117	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM</b> - 2 oz Buy 2 jars, price each	64.00 57.49	48.00 43.12		
80121	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB</b> - 2 oz Buy 2 jars, price each	58.00 51.04	43.50 38.28		
80105	<b>COSMESIS ANTI-REDNESS &amp; BLEMISH LOTION</b> - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80120	<b>COSMESIS CORRECTIVE CLEARING MASK</b> - 2 oz Buy 2 jars, price each	64.50 56.76	48.38 42.57		
80141	<b>COSMESIS DNA REPAIR CREAM</b> - 1 oz jar Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80108	<b>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM</b> - 1 oz Buy 2 bottles, price each	74.95 65.95	56.21 49.46		
80123	<b>COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM</b> - 2 oz Buy 2 jars, price each	69.50 61.16	52.13 45.87		
80107	<b>COSMESIS FINE LINE-LESS</b> - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80131	<b>COSMESIS HAIR SUPPRESS FORMULA</b> - 4 oz Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80137	<b>COSMESIS HEALING FORMULA ALL-IN-ONE CREAM</b> - 1 oz Buy 2 jars, price each	53.00 45.43	39.75 34.07		
80115	<b>COSMESIS HEALING MASK</b> - 2 oz Buy 2 bottles, price each	64.50 56.76	48.38 42.57		
80109	<b>COSMESIS HYALURONIC FACIAL MOISTURIZER</b> - 1 oz Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80110	<b>COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER</b> - 1 oz Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80138	<b>COSMESIS HYDRATING ANTI-OXIDANT FACE MIST</b> - 4 oz Buy 2 bottles, price each	39.95 38.00	29.96 28.50		
80103	<b>COSMESIS LIFTING &amp; TIGHTENING COMPLEX</b> - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80135	<b>COSMESIS MELATONIN CREAM</b> - 1 oz Buy 2 jars, price each	33.00 27.10	24.75 20.33		
80114	<b>COSMESIS MILD FACIAL CLEANSER</b> - 8 oz Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80122	<b>COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM</b> - 2 oz Buy 2 jars, price each	64.00 56.32	48.00 42.24		
80111	<b>COSMESIS PIGMENT CORRECTING CREAM</b> - 1/2 oz Buy 2 bottles, price each	74.00 65.12	55.50 48.84		

**SUB-TOTAL OF COLUMN 5**

No.		Retail Each	Member Each	Qty	Total
80106	<b>COSMESIS REJUVENATING SERUM</b> - 1 oz Buy 2 bottles, price each	\$74.50 65.56	\$55.88 49.17		
80142	<b>COSMESIS RESVERATROL ANTI-OXIDANT SERUM</b> - 1 oz Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80112	<b>COSMESIS SKIN LIGHTENING SERUM</b> - 1/2 oz Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80130	<b>COSMESIS SKIN STEM CELL SERUM</b> - 1 oz Buy 2 bottles, price each	74.00 69.00	55.50 51.75		
80116	<b>COSMESIS ULTRA LIP PLUMPER</b> - 1/3 oz Buy 2 bottles, price each	64.00 56.32	48.00 42.24		
80101	<b>COSMESIS ULTRA WRINKLE RELAXER</b> - 1 oz Buy 2 bottles, price each	89.95 79.76	67.46 59.82		
80113	<b>COSMESIS UNDER EYE REFINING SERUM</b> - 1/2 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80104	<b>COSMESIS UNDER EYE RESCUE CREAM</b> - 1/2 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80129	<b>COSMESIS VITAMIN C SERUM</b> - 1 oz Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80136	<b>COSMESIS VITAMIN D LOTION</b> - 4 oz Buy 2 bottles, price each	36.00 33.66	27.00 25.25		
80102	<b>COSMESIS VITAMIN K HEALING CREAM</b> - 1 oz Buy 2 bottles, price each	79.50 69.96	59.63 52.47		
00862	<b>CRAN-MAX®</b> - 500 mg, 60 veg. caps Buy 4 bottles, price each	17.50 15.00	13.13 11.25		
01424	<b>CRAN-MAX® with UTIROS® (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00609	<b>CREATINE CAPSULES</b> - 120 caps Buy 4 bottles, price each	10.95 9.25	8.21 6.94		
00610	<b>CREATINE POWDER</b> - 500 grams Buy 4 bottles, price each	29.00 26.63	21.75 19.97		
01096	<b>CREATINE WHEY GLUTAMINE POWDER</b> - 1000 grams (vanilla) Buy 4 bottles, price each	50.00 48.00	37.50 36.00		
~01519	<b>CRUCIFEROUS VEGETABLE SOUP</b> - 32 oz. pouch Buy 6 pouches, price each	11.95 11.25	8.96 8.44		
~01520	<b>(ASIAN) CRUCIFEROUS VEGETABLE SOUP</b> - 32 oz. pouch Buy 6 pouches, price each	11.95 11.25	8.96 8.44		
01429	<b>CR MIMETIC LONGEVITY FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
***CRWAY	<b>CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE</b>	195.00	195.00		
00407	<b>CURCUMIN® (SUPER BIO)</b> - 400 mg, 60 veg. caps Buy 4 bottles, price each	38.00 35.00	28.50 26.25		
<b>D</b>					
01376	<b>DAILY GINGER®</b> - 90 veg. caps	\$21.95	\$16.46		
01313	<b>DERMAWHEY-</b> 400 mg, 60 caps Buy 4 bottles, price each	65.00 59.00	48.75 44.25		
00995	<b>DHA 240</b> - 240 mg, 60 softgels Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
00658	<b>7-KETO® DHEA METABOLITE</b> - 25 mg, 100 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01479	<b>7-KETO® DHEA METABOLITE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00607	<b>DHEA</b> - 25 mg, 100 tablets (dissolve in mouth) Buy 4 bottles, price each	14.00 11.75	10.50 8.81		

**SUB-TOTAL OF COLUMN 6**

**OFFER ENDS JANUARY 31, 2012**  
**To order online visit [www.LifeExtension.com/SuperSale](http://www.LifeExtension.com/SuperSale)**

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01478	<b>DHEA COMPLETE</b> - 60 veg. caps Buy 4 bottles, price each	\$48.00 43.20	\$36.00 32.40		
00335	<b>DHEA</b> - 25 mg, 100 caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
00454	<b>DHEA</b> - 15 mg, 100 caps Buy 4 bottles, price each	12.00 10.00	9.00 7.50		
00882	<b>DHEA</b> - 50 mg, 60 caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
00883	<b>DHEA</b> - 100 mg, 60 caps Buy 4 bottles, price each	22.50 19.00	16.88 14.25		
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		
00034	<b>D,L-PHENYLALANINE CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
00257	<b>DMAE BITARTRATE</b> - 150 mg, 200 caps Buy 4 bottles, price each	14.00 10.50	10.50 7.88		
00059	<b>DMG</b> - 125 mg, 60 tablets Buy 4 boxes, price each	18.50 17.00	13.88 12.75		
01547	<b>DNA PROTECTION FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
00544	<b>DOG MIX</b> - 100 grams powder Buy 4 bottles, 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		
00240	<b>DUAL-C</b> - 90 caps Buy 4 bottles, price each	12.00 10.50	9.00 7.88		
<b>E</b>					
00388	<b>ECHINACEA EXTRACT</b> - 250 mg, 60 caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01395	<b>EDTA</b> - 500 mg, 60 caps	9.98	7.49		
01321	<b>ELASTIN &amp; COLLAGEN BODY FIRING LOTION</b> - 8 fl. oz.	10.00	7.50		
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	52.00 46.00	39.00 34.50		
00625	<b>EPA/DHA (MEGA)</b> - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
*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		
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		
20053	<b>FEM DOPHILUS®</b> - 30 caps	25.95	19.46		
20055	<b>FEM DOPHILUS®</b> - 60 caps	39.95	29.96		
01064	<b>FEMMENESENCE MACAPAUSE®</b> - 120 veg. caps	34.99	26.24		
*01311	<b>FERNBLOCK® w/SENDARA™ (ENHANCED)</b> - 30 veg. caps Buy 4 bottles, price each	39.00 35.00	29.25 26.25		

**SUB-TOTAL OF COLUMN 7**

No.		Retail Each	Member Each	Qty	Total
00229	<b>FIBER FOOD CAPS</b> - 200 caps Buy 4 bottles, price each Buy 10 bottles, price each	\$15.00 12.50 11.90	\$11.25 9.38 8.93		
00718	<b>FIBRINOGEN RESIST™</b> - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
00873	<b>FLAXSEED POWDER (HI-LIGNAN® NUTRI-FLAX®)</b> - 16 oz powder	9.95	7.46		
01384	<b>FLORADIX® IRON &amp; HERBS</b> - 17 fl. oz.	43.99	35.19		
01200	<b>FLORASTOR®</b> - 250 mg, 50 caps	55.15	41.36		
01382	<b>FLORAVITAL® IRON &amp; HERBS</b> - 17 fl. oz.	43.99	35.19		
01212	<b>FLUSH + BE FIT</b> - 2- week cleanse for women	29.99	22.49		
01439	<b>FOLATE (OPTIMIZED) (L-METHYL-FOLATE)</b> 1000 mcg - 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00347	<b>FOLIC ACID + B12 CAPSULES</b> - 200 caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
00300	<b>FORSKOLIN</b> - 10 mg, 60 caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
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>					
00127	<b>GABA POWDER</b> - 100 grams Buy 4 bottles, price each	\$23.75 22.50	\$17.81 16.88		
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		
01378	<b>GARLIC FORCE™</b> - 30 softgels	34.95	26.21		
00117	<b>GELATIN CAPSULES</b> - 1000 empty caps size "00" Buy 4 bags, price each	19.00 18.00	14.25 13.50		
01301	<b>GH PITUITARY SUPPORT DAY FORMULA</b> - 120 vegetarian 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	29.95	22.46		
00778	<b>GINKGO BILOBA CERTIFIED EXTRACT™</b> - 120 mg, 365 caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
00504	<b>GINKGO EXTRACT (SUPER)</b> - 120 mg, 100 caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
01032	<b>(PANAX RED) GINSENG</b> - 60 veg. caps	29.99	22.49		
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	19.00 16.88	14.25 12.66		
00522	<b>GLUCOSAMINE/CHONDROITIN CAPSULES</b> - 100 caps Buy 4 bottles, price each	38.00 32.00	28.50 24.00		
00512	<b>GLUCOFIT™</b> - 100 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00113	<b>GLUTATHIONE, CYSTEINE &amp; C</b> - 750 mg, 100 caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00314	<b>L-GLUTATHIONE (MEGA)</b> - 250 mg, 60 caps Buy 4 bottles, price each	39.64 35.68	29.73 26.76		

**SUB-TOTAL OF COLUMN 8**

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

FEBRUARY 2012

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

# Buyers Club Order Form

**SUPER SALE SAVINGS ON ALL PRODUCTS**  
**To order call: 1-954-766-8433 or 1-800-544-4440**

No.		Retail Each	Member Each	Qty	Total
<b>G CONTINUED</b>					
00795	<b>GLYCINE</b> - 1000 mg, 100 caps Buy 4 bottles, price each	\$12.00 10.80	\$9.00 8.10		
00128	<b>GLYCINE POWDER</b> - 300 grams Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01091	<b>GRAPE EXTRACT w/RESVERATROL (WHOLE)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01411	<b>GRAPE SEED EXTRACT w/RESVERATROL &amp; PTEROSTILBENE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01604	<b>GREEN COFFEE EXTRACT COFFEEGENIC™</b> - 200 mg, 90 veg. caps Buy 4 bottles, price each	25.00 22.00	18.75 16.50		
01620	<b>GREEN COFFEE EXTRACT COFFEEGENIC™</b> - 400 mg, 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
01607	<b>GREEN COFFEE EXTRACT COFFEEGENIC™</b> - 90 veg. caps <b>w/GLUCOSE CONTROL COMPLEX</b> Buy 4 bottles, price each	58.00 52.00	43.50 39.00		
00953	<b>GREEN TEA EXTRACT (MEGA)</b> - lightly caffeinated - 100 veg. caps Buy 4 bottles, price each	28.00 26.50	21.00 19.88		
00954	<b>GREEN TEA EXTRACT (MEGA)</b> - decaffeinated - 100 veg. caps Buy 4 bottles, price each	28.00 26.50	21.00 19.88		
01606	<b>GREEN TEA W/COFFEEGENIC™ GREEN COFFEE EXTRACT (MEGA)</b> 120 veg. caps, low caffeine Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01605	<b>GREEN TEA W/COFFEEGENIC™ GREEN COFFEE EXTRACT (MEGA)</b> 120 veg. caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
<b>H</b>					
01074	<b>5 HTP</b> - 100 mg, 60 caps	\$27.95	\$20.96		
00010	<b>HAIR CONDITIONER</b> - 16 oz Buy 4 bottles, price each	6.00 4.50	4.50 3.38		
00230	<b>HCA</b> - 90 caps Buy 4 bottles, price each	18.00 15.50	13.50 11.63		
01393	<b>HEPATOPRO</b> - 900 mg, 60 softgels Buy 4 bottles, price each	50.00 46.00	37.50 34.50		
01433	<b>HOLY BASIL</b> - 60 softgel caps	34.95	26.21		
01434	<b>HOLY BASIL</b> - 120 softgel caps	54.95	41.21		
01435	<b>HOMOCYSTEINE RESIST</b> - 100 caps Buy 4 bottles, price each	24.00 21.60	18.00 16.20		
00627	<b>HUPERZINE A W/NATURAL VITAMIN E</b> - 50 mcg, 60 caps Buy 4 bottles, price each	27.95 24.00	20.96 18.00		
00661	<b>HYDRODERM®</b> - 1 oz Buy 2 bottles, price each	79.95 65.33	59.96 49.00		
<b>I</b>					
^ 01060	<b>i26 HYPERIMMUNE EGG</b> - 140 grams powder	\$49.99	\$42.00		
^ 01319	<b>i26 HYPERIMMUNE EGG</b> - 135 capsules	31.99	25.59		
^ 01318	<b>i26 HYPERIMMUNE EGG CHEWABLES</b> - (vanilla) 45 tablets	31.99	25.59		
01065	<b>IDEAL BOWEL SUPPORT 299V</b> - 30 veg. caps	21.95	16.46		
00955	<b>IMMUNE PROTECT W/PRACTIN®</b> - 30 veg. caps Buy 4 bottles, price each	29.50 26.55	22.13 19.91		
01049	<b>INNERPOWER™</b> - 555 grams powder	42.00	31.50		
00155	<b>INOSINE</b> - 500 mg, 60 caps Buy 4 bottles, price each	22.95 21.00	17.21 15.75		
00410	<b>INOSITOL CAPSULES</b> - 1000 mg, 360 caps Buy 4 bottles, price each	48.00 43.75	36.00 32.81		

**SUB-TOTAL OF COLUMN 9**

No.		Retail Each	Member Each	Qty	Total
00108	<b>INOSITOL POWDER</b> - 100 grams Buy 4 bottles, price each	\$18.00 16.88	\$13.50 12.66		
01021	<b>INTACT DIGEST™</b> - 8 fl oz Buy 4 bottles, price each	35.00 33.00	26.25 24.75		
01292	<b>INTEGRA-LEAN® IRVINGIA</b> - 150 mg, 60 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01002	<b>IODORAL®</b> - 180 tabs	50.00	37.50		
00563	<b>IRON PROTEIN PLUS</b> - 300 mg, 100 caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01492	<b>IRVINGIA W/PHASE 3™</b> - 120 veg. caps <b>CALORIE CONTROL COMPLEX (OPTIMIZED)</b> Buy 4 bottles, price each	56.00 48.00	42.00 36.00		
<b>J, K</b>					
00056	<b>JARRO-DOPHILUS EPS™</b> - 60 veg. caps	\$21.95	\$16.46		
01224	<b>K w/ADVANCED K2 COMPLEX (SUPER)</b> - 90 softgels Buy 4 bottles, price each	26.00 23.00	19.50 17.25		
###01600	<b>KRILL HEALTHY JOINT FORMULA</b> - 30 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01050	<b>(NKO) KRILL OIL</b> - 60 softgels	33.95	25.46		
00316	<b>KYOLIC® GARLIC FORMULA 102</b> - 200 caps Buy 4 bottles, price each	23.95 20.50	17.96 15.38		
00214	<b>KYOLIC® GARLIC FORMULA 105</b> - 200 caps Buy 4 bottles, price each	22.95 18.25	17.21 13.69		
00789	<b>KYOLIC® RESERVE</b> - 600 mg, 120 caps Buy 4 bottles, price each	24.75 21.45	18.56 16.09		
<b>L</b>					
00513	<b>LACTOFERRIN (APOLACTOFERRIN) CAPS</b> - 60 caps Buy 4 bottles, price each	\$40.00 36.00	\$30.00 27.00		
00017	<b>LAVILIN UNDERARM DEODORANT</b> - 12.5 grams cream Buy 4 jars, price each	15.00 13.75	11.25 10.31		
00020	<b>LECITHIN</b> - 16 oz. granules Buy 4 jars, price each	15.00 12.50	11.25 9.38		
01655	<b>LIFE EXTENSION MIX™</b> - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01657	<b>LIFE EXTENSION MIX™ W/EXTRA NIACIN</b> - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01654	<b>LIFE EXTENSION MIX™</b> - 490 caps Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01656	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
01665	<b>LIFE EXTENSION MIX™</b> - 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01667	<b>LIFE EXTENSION MIX™ W/EXTRA NIACIN</b> 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01664	<b>LIFE EXTENSION MIX™</b> - 490 caps w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		

**SUB-TOTAL OF COLUMN 10**

**OFFER ENDS JANUARY 31, 2012**  
**To order online visit [www.LifeExtension.com/SuperSale](http://www.LifeExtension.com/SuperSale)**

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01666	<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		
00263	<b>LIFE FLORA™</b> - 300 mg, 120 caps	20.50	15.38		
	Buy 4 bottles, price each	18.75	14.06		
01377	<b>LIFESHIELD® BREATHE™</b> - 60 veg. caps	34.95	26.21		
01349	<b>LIFESHIELD® CORDYCEPS</b> - 60 veg. caps	34.95	26.21		
01314	<b>LIFESHIELD® IMMUNITY™</b> - 60 veg. caps	39.95	29.96		
01339	<b>LIFESHIELD® REISHI™</b> - 60 veg. caps	34.95	26.21		
01608	<b>LIVER EFFICIENCY FORMULA</b> - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01227	<b>LIVER FORCE</b> - 30 veg. caps	34.95	26.21		
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		
01013	<b>L-LYSINE</b> - 620 mg, 100 caps	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
00129	<b>L-LYSINE POWDER</b> - 300 grams	16.00	12.00		
	Buy 4 bottles, price each	13.75	10.31		
01470	<b>LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE</b> - 120 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
00455	<b>LYCOPENE EXTRACT (MEGA)</b> - 15 mg, 90 softgels	35.00	26.25		
	Buy 4 bottles, price each	30.00	22.50		

## M

01369	<b>MAGNESIUM CAPS</b> - 500 mg, 100 veg. caps	\$10.00	\$7.50		
	Buy 4 bottles, price each	9.00	6.75		
00502	<b>MAGNESIUM CITRATE</b> - 160 mg, 100 caps	9.00	6.75		
	Buy 4 bottles, price each	7.50	5.63		
00704	<b>MAITAKE™ SX-FRACTION</b> - 90 veg. tablets	49.95	37.46		
00547	<b>MELATONIN</b> - 300 mcg, 100 caps	5.75	4.31		
	Buy 4 bottles, price each	5.00	3.75		
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		
01086	<b>MELATONIN</b> - 3 mg, 60 time-release veg. caps	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
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 lozenges	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01087	<b>MELATONIN TIME RELEASE</b> - 300 mcg, 100 veg. caps	6.25	4.69		
	Buy 4 bottles, price each	5.63	4.22		
01088	<b>MELATONIN TIME RELEASE</b> - 750 mcg, 60 veg. caps	5.75	4.31		
	Buy 4 bottles, price each	5.00	3.75		
01009	<b>MEMORY UPGRADE™</b> - 600 grams powder	26.95	20.21		
00536	<b>METHYLCOBALAMIN</b> - 1 mg, 60 lozenges (vanilla)	9.95	7.46		
	Buy 4 bottles, price each	8.00	6.00		

**SUB-TOTAL OF COLUMN 11**

No.		Retail Each	Member Each	Qty	Total
00537	<b>METHYLCOBALAMIN</b> - 5 mg, 60 lozenges (vanilla)	\$32.00	\$24.00		
	Buy 4 bottles, price each	25.00	18.75		
	Buy 10 bottles, price each	23.00	17.25		
00709	<b>MIGRA-EZE™ (BUTTERBUR)</b> - 60 softgels	29.50	22.13		
	Buy 4 bottles, price each	26.33	19.75		
01522	<b>MILK THISTLE (CERTIFIED EUROPEAN)</b> - 750 mg, 60 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
01517	<b>MILK THISTLE (CERTIFIED EUROPEAN)</b> - 120 veg. caps	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
00623	<b>MINERAL FORMULA FOR MEN</b> - 100 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
	Buy 12 bottles, price each	10.83	8.13		
00624	<b>MINERAL FORMULA FOR WOMEN</b> - 100 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
	Buy 12 bottles, price each	10.83	8.13		
01315	<b>MIRAFORTE w/STANDARDIZED LIGNANS (SUPER)</b> - 120 caps	62.00	46.50		
	Buy 4 bottles, price each	56.00	42.00		
01569	<b>MITOCHONDRIAL BASICS w/BIOPQQ™</b> - 30 caps	52.00	39.00		
	Buy 4 bottles, price each	46.00	34.50		
01568	<b>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ™</b> - 120 caps	94.00	70.50		
	Buy 4 bottles, price each	84.00	63.00		
00803	<b>MIST ORAL III w/COQ10</b> - 2 fl oz	28.00	21.00		
	Buy 4 bottles, price each	25.33	19.00		
00065	<b>MK-7</b> - 90 mcg, 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01279	<b>MOUTHWASH W/POMEGRANATE</b> - 16 oz	18.50	13.88		
	Buy 4 bottles, price each	17.00	12.75		
00451	<b>MSM (METHYLSULFONYLMETHANE)</b> - 1000 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	11.95	8.96		

## N

00215	<b>N-ACETYL-L-CYSTEINE</b> - 600 mg, 60 caps	\$14.00	\$10.50		
	Buy 4 bottles, price each	13.50	10.13		
00168	<b>NAPCA W/ALOE VERA</b> - 8 fl oz	10.50	7.88		
	Buy 4 bottles, price each	9.61	7.21		
00066	<b>NATTOKINASE</b> - 60 softgels	24.98	18.74		
00891	<b>NATURAL APPETITE CONTROL</b> - 90 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.20	18.90		
00984	<b>NATURAL BP MANAGEMENT</b> - 60 tablets	42.00	31.50		
	Buy 4 bottles, price each	37.80	28.35		
00913	<b>NATURAL ESOPHAGUARD</b> - 10 softgels	19.95	14.96		
	Buy 2 boxes, price each	19.00	14.25		
00712	<b>NATURAL ESTROGEN w/POMEGRANATE EXTRACT</b> - 60 caplets	38.00	28.50		
	Buy 4 bottles, price each	33.00	24.75		
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		
00698	<b>NATURAL RELIEF 1222™</b> - 2 oz	28.00	21.00		
	Buy 4 tubes, price each	25.00	18.75		
01084	<b>NATURAL SLEEP®</b> - 3 mg, 60 veg. caps	12.99	9.74		
	Buy 4 bottles, price each	10.00	7.50		

**SUB-TOTAL OF COLUMN 12**

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

FEBRUARY 2012

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

# Buyers Club Order Form

**SUPER SALE SAVINGS ON ALL PRODUCTS**  
**To order call: 1-954-766-8433 or 1-800-544-4440**

No.		Retail Each	Member Each	Qty	Total
<b>N CONTINUED</b>					
01507	<b>NATURAL SLEEP® (ENHANCED) W/ MELATONIN</b> - 30 caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01511	<b>NATURAL SLEEP® (ENHANCED) W/O MELATONIN</b> - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01085	<b>NATURAL SLEEP MELATONIN®</b> - 5 mg, 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00987	<b>NATURAL STRESS RELIEF</b> - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01603	<b>NEURO-MAG™ MAGNESIUM L-THREONATE</b> - 90 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01602	<b>NEURO-MAG™ THREONATE W/CALCIUM &amp; VITAMIN D</b> 205 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01076	<b>NEW FACE SOLUTION</b> - 1.7 oz bottle Buy 4 bottles, price each	54.00 49.00	40.50 36.75		
00373	<b>NO-FLUSH NIACIN</b> - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01035	<b>NUTRIM</b> - 170 grams powder	25.95	19.46		
<b>O</b>					
01518	<b>OMEGA-3 CHEWABLES</b> - 60 softchews, 120 mg EPA/DHA Buy 4 pouches, price each	\$24.00 22.00	\$18.00 16.50		
01483	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01482	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 24.90	24.00 21.00 18.68		
01484	<b>OMEGA 3 EPA/DHA W/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	34.00 31.00 28.00	25.50 23.25 21.00		
01619	<b>OMEGA 3 EPA/DHA W/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL)</b> - 240 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 24.90	24.00 21.00 18.68		
01601	<b>ONE-PER-DAY</b> - 60 veg. tablets Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01328	<b>ONLY TRACE MINERALS</b> - 90 caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
00915	<b>OPTIZINC®</b> - 30 mg, 90 veg. caps Buy 4 bottles, price each	5.95 5.00	4.46 3.75		
01070	<b>ORGANIC TOTAL BODY CLEANSE™</b> - 14-day supply	34.99	26.24		
<b>P</b>					
00107	<b>PABA CAPS</b> - 500 mg, 100 caps Buy 4 bottles, price each	\$15.42 13.59	\$11.57 10.19		
00073	<b>PANCREATIN</b> - 500 mg, 50 caps Buy 4 bottles, price each	13.22 12.12	9.92 9.09		
01323	<b>PEAK ATP® WITH GLYCO-CARN®</b> - 60 veg. caps Buy 4 bottles, price each	59.00 56.00	44.25 42.00		
00342	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 454 grams powder Buy 4 jars, price each	99.95 95.70	74.96 71.78		
01080	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 270 veg. caps	69.95	52.46		

**SUB-TOTAL OF COLUMN 13**

No.		Retail Each	Member Each	Qty	Total
00673	<b>PGX™ SOLUBLE FIBER BLEND (WELLBETX®)</b> -180 caps	\$34.95	\$26.21		
00865	<b>PHARMAGABA™</b> - 60 chewable tablets Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
00368	<b>PHOSPHATIDYLSERINE CAPS</b> - 100 mg, 100 caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00561	<b>POLICOSANOL</b> - 10 mg, 60 tablets Buy 6 bottles, price each	24.00 18.00	18.00 13.50		
01423	<b>POMEGRANATE™ (FULL-SPECTRUM)</b> - 30 softgels Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
00956	<b>POMEGRANATE EXTRACT</b> - 30 veg. caps Buy 4 bottles, price each	19.50 17.55	14.63 13.16		
00957	<b>POMEGRANATE JUICE CONCENTRATE</b> - 16 oz. liquid Buy 4 bottles, price each	25.95 24.00	19.46 18.00		
00577	<b>POTASSIUM IODIDE</b> - 1 box, 14 tablets Buy 4 boxes, price each	6.95 5.25	5.21 3.94		
01500	<b>PQQ CAPS W/BIO-PQQ™</b> - 10 mg, 30 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
00302	<b>PREGNENOLONE</b> - 50 mg, 100 caps Buy 4 bottles, price each	24.00 19.00	18.00 14.25		
00700	<b>PREGNENOLONE</b> - 100 mg, 100 caps Buy 4 bottles, price each	26.00 22.50	19.50 16.88		
01373	<b>PRELOX® NATURAL SEX FOR MEN®</b> - 60 tablets Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
00571	<b>PRIMAL DEFENSE™</b> - 90 caplets Buy 4 bottles, price each	49.95 48.50	37.46 36.38		
01019	<b>PRIMAL DEFENSE™</b> - 180 caplets	78.95	59.21		
01329	<b>PROBIOTIC ALL-FLORA®</b> - 60 veg. caps	25.95	19.46		
01326	<b>PROBIOTIC ANTI-AGING™</b> - 90 veg. caps	30.95	23.21		
01324	<b>PROBIOTIC CLEANSE™</b> - 90 veg. caps	29.95	22.46		
01322	<b>PROBIOTIC COLON™</b> - 90 veg. caps	30.95	23.21		
00525	<b>PROBOOST THYMIC PROTEIN A™</b> - 4 mcg, 30 packets Buy 4 boxes, price each	72.00 70.00	54.00 52.50		
00869	<b>PRO FEM CREAM</b> - 2 fl oz (Progesterone Cream) Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01020	<b>PROGREENS®</b> - 15 stick pack	22.50	16.88		
01072	<b>PRO M INTERNAL DEODORIZER</b> - 500 mg, 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
010695	<b>PROSTATE FORMULA W/APRESFLEX™ STAND. LIGNANS (ULTRA NAT)</b> 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
01092	<b>PROTEIN - VANILLA</b> - (Enhanced Life Extension) -1000 grams powder Buy 4 bottles, price each	50.00 48.00	37.50 36.00		
01093	<b>PROTEIN - CHOCOLATE</b> - (Enhanced Life Extension) -1000 grams powder Buy 4 bottles, price each	50.00 48.00	37.50 36.00		
01094	<b>PROTEIN - NATURAL</b> - (Enhanced Life Extension) -1000 grams powder Buy 4 bottles, price each	50.00 48.00	37.50 36.00		
01095	<b>PROTEIN - BERRY</b> - (Enhanced Life Extension) -1000 grams powder Buy 4 bottles, price each	50.00 48.00	37.50 36.00		
00290	<b>PROTEIN - VANILLA</b> - (Designer Whey) 2 lbs powder Buy 4 bottles, price each	42.49 38.50	31.87 28.88		
00282	<b>PROTEIN - CHOCOLATE</b> - (Designer Whey) 2 lbs powder Buy 4 bottles, price each	42.49 38.50	31.87 28.88		
00283	<b>PROTEIN - NATURAL</b> - (Designer Whey) 2 lbs powder Buy 4 bottles, price each	42.49 38.50	31.87 28.88		
01508	<b>PTEROPURE™</b> - 50 mg Pterostilbene 60 veg. caps Buy 4 bottles, price each	32.00 30.00	24.00 22.50		

**SUB-TOTAL OF COLUMN 14**

**OFFER ENDS JANUARY 31, 2012**  
**To order online visit [www.LifeExtension.com/SuperSale](http://www.LifeExtension.com/SuperSale)**

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01075	<b>PURE PLANT PROTEIN</b> - Natural Vanilla 450 grams powder Buy 4 jars, price each	\$36.00 33.00	\$27.00 24.75		
01209	<b>PUMPKIN SEED EXTRACT (WATER-SOLUBLE)</b> - 60 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01210	<b>PUMPKIN SEED EXT w/SOY ISOFLAVONES (WATER-SOLUBLE)</b> - 60 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01031	<b>PHYCNOGENOL®</b> - 60 veg. caps	89.95	67.46		
01217	<b>PYRIDOXAL 5'-PHOSPHATE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 19.80	16.50 14.85		
<b>Q, R</b>					
01309	<b>QUERCETIN (OPTIMIZED)</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$18.00 17.00	\$13.50 12.75		
01030	<b>RED YEAST RICE</b> (Bluebonnet)- 600 mg, 60 veg. caps	17.50	13.13		
00979	<b>RED YEAST RICE</b> (Nature's Plus)- 600 mg, 60 veg. caps	23.95	17.96		
00060	<b>RED YEAST RICE EXTENDED RELEASE</b> - 30 veg. tablets	21.50	16.13		
00605	<b>REGIMINT</b> - 60 enteric-coated caps Buy 4 bottles, price each	19.95 18.67	14.96 14.00		
01448	<b>REJUVENEX® BODY LOTION</b> - 6 oz Buy 4 tubes, price each Buy 8 tubes, price each	24.00 19.80 17.00	18.00 14.85 12.75		
00918	<b>REJUVENEX® FACTOR</b> - 1.7 oz airless pump Buy 2 bottles, price each Buy 4 bottles, price each Buy 8 bottles, price each	65.00 60.00 55.00 49.91	48.75 45.00 41.25 37.43		
01220	<b>REJUVENEX® (ULTRA)</b> - 2 oz Buy 2 jars, price each Buy 4 jars, price each Buy 8 jars, price each	52.00 48.00 44.00 39.93	39.00 36.00 33.00 29.95		
00676	<b>REJUVENIGHT (ULTRA)</b> - 2 oz Buy 4 jars, price each	39.95 36.00	29.96 27.00		
00706	<b>REJUVENIGHT w/PROGESTERONE (ULTRA)</b> - 2 oz Buy 4 jars, price each	42.00 38.00	31.50 28.50		
01413	<b>RESVERATROL W/PTEROSTILBENE</b> - 20 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01410	<b>RESVERATROL W/PTEROSTILBENE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01430	<b>RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED)</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	46.00 41.33	34.50 31.00		
00889	<b>RHODIOLA EXTRACT</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	11.75 10.58	8.81 7.94		
00972	<b>(D) RIBOSE POWDER</b> - 150 grams Buy 4 jars, price each	27.50 24.75	20.63 18.56		
01473	<b>(D) RIBOSE TABLETS</b> - 100 veg. tabs Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01609	<b>RICH REWARDS BREAKFAST GROUND COFFEE</b> - 12 oz. bag	13.00	9.75		
01610	<b>RICH REWARDS DECAFFEINATED ROAST GROUND COFFEE</b> - 12 oz. bag	14.00	10.50		
01208	<b>R-LIPOIC ACID (SUPER)</b> - 300 mg, 60 veg. caps Buy 4 bottles, price each	49.00 45.00	36.75 33.75		
00070	<b>RNA CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	17.95 16.16	13.46 12.12		
00917	<b>ROSMARINIC ACID EXTRACT</b> - 60 veg. caps Buy 4 bottles, price each	59.00 53.00	44.25 39.75		

**SUB-TOTAL OF COLUMN 15**

No.		Retail Each	Member Each	Qty	Total
<b>S</b>					
01067	<b>SACCHAROMYCES BOULARDII+MOS</b> - 90 veg. caps	\$21.95	\$16.46		
01432	<b>SAFFRON w/SATIREAL (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
**00573	<b>SAMBU® GUARD</b> - 175 ml	17.79	14.23		
00358	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 200 mg, 20 enteric coated tablets Buy 8 boxes, price each	16.00 14.00	12.00 10.50		
00453	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 200 mg, 50 enteric coated tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00557	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 400 mg, 20 enteric coated tablets Buy 6 boxes, price each	28.00 24.00	21.00 18.00		
01055	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 400 mg, 50 enteric coated tablets Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01043	<b>SEA-IODINE™</b> - 1000 mcg, 60 veg. caps Buy 4 bottles, price each	8.00 7.20	6.00 5.40		
00046	<b>SELENIUM</b> - 2 oz dropper bottle Buy 4 bottles, price each	9.95 9.45	7.46 7.09		
00567	<b>SE-METHYL L-SELENOCYSTEINE</b> - 200 mcg, 100 caps Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00318	<b>SERRAFLAZYME</b> - 100 tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00011	<b>SHAMPOO</b> - 16 fl oz Buy 4 bottles, price each	6.00 4.75	4.50 3.56		
00284	<b>SHARK LIVER OIL (NORWEGIAN)</b> - 1000 mg, 30 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00184	<b>SILYMARIN</b> - 100 mg, 50 caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01502	<b>SKIN RESTORING CERAMIDES w/LIPOWHEAT™</b> - 30 liquid caps Buy 4 bottles, price each	25.00 23.00	18.75 17.25		
00961	<b>SODZYME® w/GLISODIN® AND WOLFBERRY</b> - 90 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00657	<b>SOLARSHIELD SUNGLASSES</b> - 1 pair smoke color Buy 2 pairs, price each	12.99 11.50	9.74 8.63		
01097	<b>SOY EXTRACT (ULTRA)</b> - 150 veg. caps Buy 4 bottles, price each	87.00 78.00	65.25 58.50		
00286	<b>SOY PROTEIN CONCENTRATE</b> - 16 oz of powder Buy 4 jars, price each	12.00 10.63	9.00 7.97		
01099	<b>STABILIMUM® 200</b> - 30 caps	30.00	22.50		
00432	<b>STEVIA EXTRACT</b> - 100 packets, 1 gram each Buy 4 boxes, price each	9.95 9.00	7.46 6.75		
00351	<b>ST. JOHN'S WORT EXTRACT</b> - 300 mg, 60 caps Buy 4 bottles, price each	10.98 10.00	8.24 7.50		
00327	<b>ST. JOHN'S WORT EXTRACT (PLANETARY)</b> - 600 mg, 60 tablets Buy 4 bottles, price each	16.75 13.85	12.56 10.39		
01476	<b>STRONTIUM</b> - 750 mg, 90 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00971	<b>SUN PROTECTION SPRAY w/BETA GLUCAN</b> - SPF30 - 6 oz Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00747	<b>SUNGLASSES (OVERXCAST POLARIZED)</b> - gray color, large Buy 2 pairs, price each	27.00 21.00	20.25 15.75		
00748	<b>SUNGLASSES (OVERXCAST POLARIZED)</b> - gray color, medium Buy 2 pairs, price each	27.00 21.00	20.25 15.75		

**SUB-TOTAL OF COLUMN 16**

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

FEBRUARY 2012

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

# Buyers Club Order Form

**SUPER SALE SAVINGS ON ALL PRODUCTS**  
**To order call: 1-954-766-8433 or 1-800-544-4440**

No.		Retail Each	Member Each	Qty	Total
<b>S CONTINUED</b>					
00758	<b>SUPER ABSORBABLE SOY ISOFLAVONES</b> - 60 caps	\$28.00	\$21.00		
	Buy 4 bottles, price each	25.00	18.75		
01381	<b>SUPERCritical OMEGA 7™</b>	56.95	42.71		
01348	<b>SUPERCritical OREGANOFORCE™</b> - 30 softgels	31.95	23.96		
01408	<b>SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL</b> 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
	Buy 12 bottles, price each	24.00	18.00		
01407	<b>SUPER SAW PALMETTO W/BETA-SITOSTEROL</b> - 30 softgels	15.00	11.25		
	Buy 12 bottles, price each	12.00	9.00		
00578	<b>SUPER SELENIUM COMPLEX</b> - 200 mcg, 100 caps	12.00	9.00		
	Buy 4 bottles, price each	10.00	7.50		
	Buy 12 bottles, price each	9.00	6.75		
00674	<b>SYTRINOL™</b> - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		

<b>T</b>					
<b>TAL-SHI™ COSMETICS</b> • For information please call 1-800-544-4440 or visit www.LifeExtension.com					
01062	<b>TART CHERRY</b> - 600 mg, 60 caps	\$18.95	\$14.21		
00199	<b>TAURINE</b> - 1000 mg, 50 caps	8.95	6.71		
	Buy 4 bottles, price each	8.00	6.00		
00133	<b>TAURINE POWDER</b> - 300 grams	20.00	15.00		
	Buy 4 bottles, price each	16.88	12.66		
01304	<b>THEAFLAVIN STANDARDIZED EXTRACT</b> - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00555	<b>(L) THEANINE</b> - 100 mg, 60 caps	24.00	18.00		
	Buy 4 bottles, price each	20.50	15.38		
01038	<b>THERALAC PROBIOTICS</b> - 30 caps	44.95	33.71		
00224	<b>THYMIC IMMUNE FACTORS</b> - 100 caps	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
00668	<b>THYROID FORMULA™ (METABOLIC ADVANTAGE)</b> - 100 caps	21.95	16.46		
00349	<b>TMG POWDER</b> - 50 grams	14.00	10.50		
	Buy 4 bottles, price each	11.00	8.25		
00359	<b>TMG</b> - 500 mg, 180 tablets	18.00	13.50		
	Buy 4 bottles, price each	15.50	11.63		
00781	<b>TOCOTRIENOLS WITH SESAME LIGNANS</b> - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	36.00	27.00		
01400	<b>TOCOTRIENOLS (SUPER-ABSORBABLE)</b> - 60 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01278	<b>TOOTH PASTE</b> - 4 oz (Mint)	9.50	7.13		
	Buy 4 tubes, price each	8.67	6.50		
01274	<b>TOTAL SUN PROTECTION CREAM W/BETA GLUCAN</b> - 4 oz	28.00	21.00		
	Buy 4 tubes, price each	25.20	18.90		
01468	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT</b> - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01469	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL</b> - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.60	22.20		
00866	<b>TRYPTOPURE® L-TRYPTOPHAN</b> - 500 mg, 90 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
01202	<b>TRYPTOPURE® PLUS (OPTIMIZED)</b> - 90 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01616	<b>TWO-PER-DAY</b> - 60 veg. tablets	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		

**SUB-TOTAL OF COLUMN 17**

No.		Retail Each	Member Each	Qty	Total
01615	<b>TWO-PER-DAY</b> - 120 veg. tablets	\$20.00	\$15.00		
	Buy 4 bottles, price each	18.00	13.50		
01614	<b>TWO-PER-DAY</b> - 120 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00326	<b>L-TYROSINE</b> - 500 mg, 100 tablets	12.50	9.38		
	Buy 4 bottles, price each	11.42	8.57		
<b>U</b>					
* 00310	<b>UDO'S OIL 3-6-9 BLEND</b> - 17 fl oz	\$27.79	\$22.23		
* 00311	<b>UDO'S 3-6-9 OIL BLEND</b> - 180 caps	34.79	27.83		
* 00322	<b>UDO'S CHOICE® WHOLESOME FAST FOOD</b> - 16 oz bottle	27.99	22.39		
01061	<b>ULTIMATE FLORA ADVANCED IMMUNITY PROBIOTICS</b> - 30 caps	29.99	22.49		
<b>V</b>					
00213	<b>VANADYL SULFATE</b> - 7.5 mg, 100 tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00252	<b>VELVET DEER ANTLER</b> - 250 mg, 30 caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
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		
01033	<b>VISION OPTIMIZER</b> - 90 caps	29.95	22.46		
01219	<b>VITAMIN A NUTRISORB</b> - 0.6 fl oz	27.00	20.25		
00091	<b>VITAMIN B1 CAPS</b> - 500 mg, 100 caps	18.73	14.05		
	Buy 4 bottles, price each	17.00	12.75		
00093	<b>VITAMIN B2 CAPS</b> - 100 mg, 100 caps	14.32	10.74		
	Buy 4 bottles, price each	13.00	9.75		
00096	<b>VITAMIN B3 NIACIN</b> - 1000 mg, 100 caps	12.75	9.56		
	Buy 4 bottles, price each	12.00	9.00		
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		
00556	<b>VITAMIN B6</b> - 250 mg, 100 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		
00927	<b>VITAMIN C WITH DIHYDROQUERCETIN</b> - 1000 mg, 250 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		
00864	<b>VITAMIN D3</b> - 2000 IU, 1 fl oz	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
00251	<b>VITAMIN D3</b> - 1000 IU, 250 caps	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
00713	<b>VITAMIN D3</b> - 5000 IU, 60 caps	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01418	<b>VITAMIN D3</b> - 7000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01372	<b>VITAMIN D3 w/SEA-IODINE™</b> - 5000 IU, 60 veg. caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
01472	<b>VITAMINS D AND K w/SEA-IODINE™</b> - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		

**SUB-TOTAL OF COLUMN 18**

**OFFER ENDS JANUARY 31, 2012**  
**To order online visit [www.LifeExtension.com/SuperSale](http://www.LifeExtension.com/SuperSale)**

No.		Retail Each	Member Each	Qty	Total
00063	<b>VITAMIN E (PURE NATURAL)</b> - 400 IU, 100 caps	\$18.75	\$14.06		
	Buy 4 bottles, price each	17.25	12.94		
	Buy 10 bottles, price each	15.00	11.25		
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>Z</b>					
01585	<b>ZEAXANTHIN W/LUTEIN &amp; MESO-ZEAXANTHIN AND C3G (SUPER)</b> - 60 softgels	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
01586	<b>ZEAXANTHIN W/LUTEIN &amp; MESO-ZEAXANTHIN PLUS ASTAXANTHIN AND C3G (SUPER)</b>	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00061	<b>ZINC LOZENGES</b> - 75 lozenges	9.50	7.13		
	Buy 4 bottles, price each	6.75	5.06		
01051	<b>ZYFLAMEND</b> - 120 softgels	60.95	45.71		
01029	<b>ZYFLAMEND EASYCAPS</b> - 180 softgels	31.95	23.96		

**SUB-TOTAL OF COLUMN 19**

- \* These products are not 25% off retail price.
- \*\*Not for sale to wholesalers or retail stores.
- \*\*\*Not eligible for member discount or member renewal product credit.
- †Due to license restrictions, this product is not for sale to wholesalers outside of the USA or Canada.
- ††Can only be sold in the USA.
- †††Member pricing not valid on this item.
- ††††Due to license restrictions, this product is not for sale in Canada.
- ^ These products are not 25% off retail price. These products are not for sale to wholesalers or retail stores.
- ^^Can only be sold in USA and Canada.
- ^^^ Not available for sale to Food and Drug Stores.
- #Not available for sale to Chain Grocery and Chain Drug Stores.
- ##Not available for sale in Belgium. Not available for sale to Chain Grocery and Chain Drug Stores.
- ###Not available for sale outside the US and Canada. Not available for sale to Chain Grocery and Chain Drug Stores.

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for someone special, call 1-800-544-4440.**



## 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 30-year track record shows that we have been five to ten 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 1,666-page *Disease Prevention and Treatment* protocol book that contains novel therapies to treat 133 common diseases of aging. *Disease Prevention and Treatment* is the only book that combines conventional and alternative therapies in order to implement a treatment regimen for fighting the multiple processes involved in degenerative disease.

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

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

### Four Easy Ways to Join

1. Call toll-free 1-800-544-4440
2. Go to [www.lef.org](http://www.lef.org)
3. Fax back to 1-866-728-1050
4. Mail to: Life Extension Foundation® • PO Box 407198 Ft. Lauderdale, FL 33340-7198 • Local Number: 954-766-8433

## 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 \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ ST \_\_\_\_\_ ZIP \_\_\_\_\_

Email \_\_\_\_\_ Phone \_\_\_\_\_

Check enclosed \*(payable to Life Extension Foundation®)

Charge my cc: \_\_\_\_\_

Card # \_\_\_\_\_ Exp. \_\_\_\_\_

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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	
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SUB-TOTAL COLUMN 17	
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SUB-TOTAL COLUMN 19	

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- CHECK HERE FOR UPS BLUE LABEL (2ND DAY)
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PHONE  FAX

VISA/MASTERCARD/AMEX/DISCOVER #

EXP. DATE

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CITY/STATE/ZIP-POSTAL CODE  COUNTRY

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SIGNATURE

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# Buyers Club Order Form

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33834	<b>THE FUTURE OF AGING</b> • by Gregory M. Fahy	2010	\$279.00	\$209.25		
33833	<b>THE LIFE PLAN</b> • by Jeffrey S. Life, MD, PhD	2011	\$26.00	\$19.50		
33832	<b>YOUR BONES</b> • by Lara Pizzorno, MA, LMT	2011	\$12.00	\$9.00		
33830	<b>SEXY FOREVER: HOW TO FIGHT FAT AFTER FORTY</b> • by Suzanne Somers	2011	\$25.99	\$19.49		
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33803	<b>WHAT YOUR DOCTOR MAY NOT TELL YOU ABOUT DIABETES</b> • by Steven V. Joyal, MD	2008	\$14.99	\$10.49		
33703	<b>JOHN ABDO'S NO EXCUSES WORKOUT DVD</b>	2008	\$13.30	\$9.98		
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# Unleash the Power of the Milk Thistle Seed

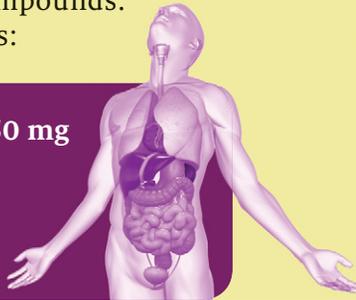


**Milk thistle** extract has long been thought of as one of nature's most potent weapons to support *human health*, but until recently, the technology hasn't been available to fully harness this plant's potential. Among the compounds waiting to be unlocked are a slew of *nourishing antioxidants* and flavonolignans valued for their role in *ensuring healthy liver function*.<sup>1\*</sup>

Life Extension® has uncovered an advanced extraction technology that has enabled scientists to isolate silymarin constituents and to test their efficacy against various cell lines. Among the compounds tested, silymarin constituents **isosilybin A and B** proved to be the most efficient in maintaining healthy cell division.<sup>2</sup>

**Certified European Milk Thistle** is the first milk thistle extract to contain standardized, high potencies of **silymarin, silibinins, and isosilybin A and B**—providing the full spectrum of milk thistle's liver and and prostate protective compounds. Each capsule of this advanced formula provides:

**Milk Thistle (*Silybum marianum*) Extract (seed) 750 mg**  
[std. to 80% Silymarin (600 mg),  
30% Silibinins (225 mg),  
and 8% Isosilybin A and Isosilybin B (60 mg)]

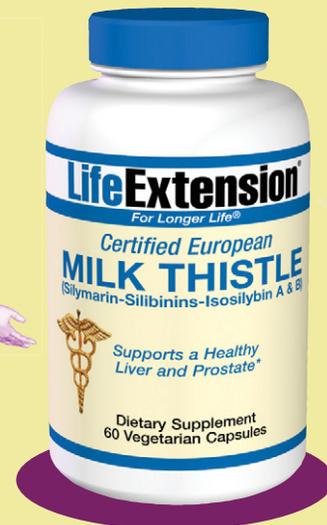


A 60 vegetarian capsule bottle of **Certified European Milk Thistle** retails for \$34. If a member buys four bottles during **Super Sale**, the cost is reduced to only **\$20.25** per bottle—a **savings of nearly one third!** Each bottle will last a healthy person for at least three months.

Compare the price of **Certified European Milk Thistle** to commercial silymarin supplements, and members will see that this new formula is available at one of the lowest costs per milligram—with standardized concentrations of **silibinins** and **isosilybin A and B** not found in other milk thistle extracts! **Contains rice.**

#### Reference

1. *Pak J Pharm Sci.* 2008 Jul;21(3):249-54
2. *Cancer Res.* 2005 May 15;65(10):4448-57.



Item # 01522

**To order  
Certified European Milk Thistle  
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 Ultimate Two-Per-Day Formula



**NOW IN CAPSULES OR TABLETS!**

The following table compares the daily dosage of key nutrients included in both the Life Extension Two-Per-Day Formula and Centrum®'s Daily Tablet:

Sample Ingredient Comparison	LIFE EXTENSION TWO-PER-DAY	Centrum®
Vitamin C	500 mg	60 mg
Vitamin D	2,000 IU	400 IU
Vitamin B1	75 mg	1.5 mg
Vitamin B2	50 mg	1.7 mg
Vitamin B6	75 mg	2 mg
Vitamin B12	300 mcg	6 mcg
Niacin (as niacinamide)	50 mg	20 mg
Pantothenic acid	100 mg	10 mg
Vitamin E	100 IU (natural)	30 IU (synthetic)
Natural Folate	400 mcg	400 mcg
Zinc	30 mg	11 mg
Selenium	200 mcg	55 mcg
Lutein	5 mg	(none)*
Lycopene	2 mg	(none)*
Biotin	300 mcg	30 mcg
Boron	3 mg	75 mcg
Chromium	200 mcg	35 mcg
Molybdenum	100 mcg	45 mcg
Magnesium	100 mg	50 mg
Manganese	2 mg	2.3 mg
Iodine	150 mcg	150 mcg
Potassium	25 mg	80 mg
Vitamin A (preformed)	500 IU	1,015 IU
Vitamin A (as beta-carotene)	4,500 IU	2,485 IU
Choline (as bitartrate)	20 mg	(none)
Inositol	50 mg	(none)
PABA	30 mg	(none)
Calcium	12 mg	200 mg
Alpha Lipoic Acid	125 mg	(none)

Contains soybeans, rice, and corn.

\* Centrum® no longer contains significant amounts of lycopene nor lutein.

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)

For many years, Life Extension® members had to rely on commercial "one-a-day" supplements that provide very low potencies.

In response to requests for a science-based multi-nutrient, a special formula was compounded to provide the greatest potencies that can fit into two tablets. When compared to conventional "one-a-day" products, **Life Extension Two-Per-Day** contains up to **50 times more potency!** This Two-Per-Day formula is now available in tablet or capsule form.

The box on this page reveals how much more potent the **Two-Per-Day** formula is compared to the leading commercial multi-vitamin. Few consumers realize that commercial supplements often contain the cheapest form of nutrients that don't provide optimal benefits. For example, the 30 IU of synthetic vitamin E contained in Centrum® may provide relatively little vitamin E to the bloodstream. The 100 IU of natural vitamin E contained in Two-Per-Day provides over **3 times more** vitamin E activity than does Centrum®.



Item #01615  
Tablets



Item #01614  
Capsules

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

- 5 times more Vitamin D
- 8 times more Vitamin C
- 3 times more Vitamin E
- 10 times more Biotin
- 40 times more Boron
- 4 times more Selenium
- 37 times more Vitamin B6
- 50 times more Vitamin B1
- 50 times more Vitamin B12
- More than twice as much niacin, zinc, and many other nutrients

Life Extension Two-Per-Day Vegetarian Tablets provide much higher potencies of key nutrients and represent a better value than many commercial brands. A bottle of 120 Life Extension 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. (The retail price for 180 tablets of Centrum® is around \$14.) (Item# 01615)

A bottle of 120 Life Extension Two-Per-Day capsules retails for \$22. If a member buys four bottles during **Super Sale**, the price is reduced to \$13.50. (Item# 01614)

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.

## Comprehensive Pomegranate Protection!

# FULL-SPECTRUM POMEGRANATE™ FORMULA

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

The vast majority of research has focused on extracts from the *fruit*. Only recently have scientists identified the synergistic action of compounds specific to other parts of the pomegranate—most notably its **seeds** and **flowers**.

### The Next-Generation Pomegranate Formula

**Life Extension®** offers an advanced, cutting-edge pomegranate formula that brings together novel phytonutrients for the first time in a unique, high-potency blend.

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

These little-known nutrients include: **punicanolic acid**, a member of the **triterpene** family of essential oils that provides cellular support to help with inflammation,<sup>5</sup> and **pomegranatate**, to combat age-related metabolic changes.<sup>6</sup>

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

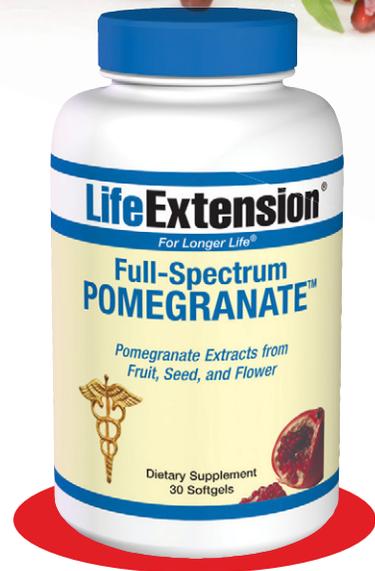
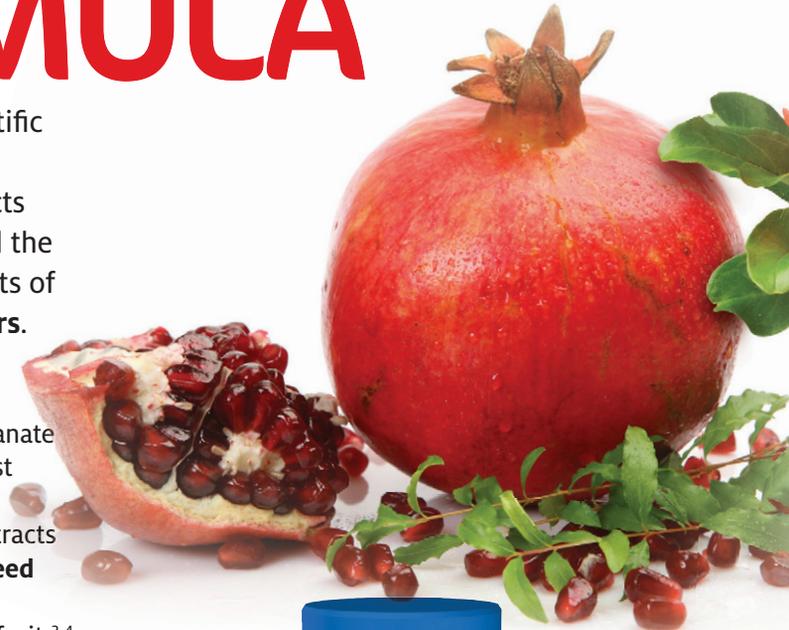
One softgel of **Full-Spectrum Pomegranate™** contains:

<b>POMELLA® Pomegranate</b> .....	400 mg
<i>(Punica granatum)</i> Extract (fruit) [std. to 30% punicalagins (120 mg)]	
<b>PomComplete™ Pomegranate</b> .....	137.5 mg
<i>(Punica granatum)</i> Blend [flower extract and seed oil (standardized to 22% (30 mg) punicic acid)]	

### Full-Spectrum Pomegranate™

A bottle containing 30 softgels of **Full-Spectrum Pomegranate™** retails for \$24. If a member buys four bottles during **Super Sale**, the price is reduced to just **\$14.18** per bottle. **Item # 01423**

Contains soybeans.



Item #01423

To order **Full-Spectrum Pomegranate™**,  
call **1-800-544-4440**  
or visit **www.LifeExtension.com**

#### References:

1. *J Ethnopharmacol.* 2007 Jan 19;109(2):177-206.
2. *Eur J Nutr.* 2003 Jan;42(1):18-28.
3. *J Inflamm (Lond).* 2009;6:1.
4. *Altern Med Rev.* 2008 Jun;13(2):128-44.
5. *Chem Pharm Bull (Tokyo).* 2008 Nov;56(11):1628-31.
6. *Fitoterapia.* 2006 Dec;77(7-8):534-7.

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

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 NEXT GENERATION OF PROSTATE PROTECTION:

## ULTRA NATURAL WITH APRÈSFLEX™ AND STANDARDIZED LIGNANS

**Ultra Natural Prostate with AprèsFlex™ and Standardized Lignans softgels** combines cutting-edge *natural* ingredients that have been scientifically substantiated to protect the prostate gland and maintain its healthy function.\*

The latest addition to this formula is **AprèsFlex™**, an extract of *Boswellia serrata* that has been shown in studies to have **two times the bioavailability** of the leading boswellia extract. AprèsFlex™ inhibits the dangerous enzyme *5-lipoxygenase*. Boron is included because of studies showing it may help slow elevation of prostate-specific antigen (PSA).

The formula provides **saw palmetto extract** and **Graminex Flower Pollen Extract™** to interfere with DHT activity and help regulate inflammatory reactions in the prostate.\* **Lycopene** is a carotenoid that is included in the formula to help maintain healthy DNA gene function in prostate cells.

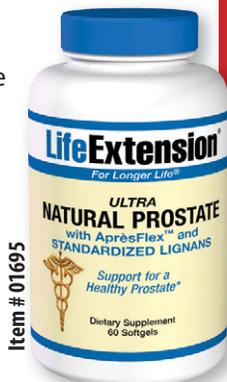
In order to boost its anti-estrogen capabilities, **Ultra Natural Prostate Formula** incorporates **HMRLignan™**, derived from Norway spruce, **flax lignans**, and **nettle root extract**.

Since normal aging can lead to potentially unsafe levels of prostaglandins in the prostate, **Pygeum africanum** extract is included to help suppress prostaglandins and thereby promote prostate comfort.\* **Beta-sitosterol** has been added because it is the most biologically active component of *pygeum* and enhances its protective effects.

The retail price for one bottle of **Ultra Natural Prostate Formula with AprèsFlex™ and Standardized Lignans** is \$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 reduced to **\$21.60** per bottle.

Contains soybeans and corn.

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



The daily dose of two softgels of **Ultra Natural Prostate Formula with AprèsFlex™ and Standardized Lignans Formula** provides:

<b>USPlus® Saw Palmetto (CO<sub>2</sub> DeepExtract™)</b> (std to 85%-95% total fatty acids and sterols)	<b>320 mg</b>
<b>Graminex Flower Pollen Extract™</b>	<b>252 mg</b>
<b>AprèsFlex™ (Boswellia serrata) extract</b>	<b>70 mg</b>
<b>Pumpkin seed oil (Cucurbita pepo) extract</b> (standardized to 85% total fatty acids)	<b>200 mg</b>
<b>Stinging nettle root extract (Urtica dioica)</b>	<b>240 mg</b>
<b>Pygeum extract</b>	<b>100 mg</b>
<b>Lycopene</b>	<b>10 mg</b>
<b>Phytosterol complex</b> (standardized to 26.6% free beta-sitosterol)	<b>678 mg</b>
<b>Proprietary blend of HMRLignan™</b> Norway Spruce and ActiFlax™ Flax Lignan extracts	<b>20.15 mg</b>
<b>Boron</b>	<b>3 mg</b>

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

## WHAT'S INSIDE

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# LifeExtension<sup>®</sup> Magazine



### 30 REVERSAL OF BRAIN AGING

Researchers at the **Massachusetts Institute of Technology** have identified a highly **absorbable** form of magnesium that targets correctable factors involved in Alzheimer's onset. In an experimental model, **magnesium-L-threonate** induced a **100%** improvement in long-term memory!



### 56 A PRESCRIPTION DRUG VIRTUALLY EVERYONE NEEDS

Recent data validate our position that *everyone* consider taking the anti-diabetic drug **metformin**. Numerous studies reveal its efficacy in cancer prevention and treatment. A large cohort study just revealed a **54%** reduction in cancer rates over a 10-year period.



### 80 PROVEN METHODS TO SLASH ELEVATED GLUCOSE LEVELS

As people age, they find it increasingly difficult to maintain fasting glucose levels at optimal levels (below 86 mg/dL). Fortunately, specific nutrients, hormones, drugs, and lifestyle changes can help *suppress* blood glucose levels.



### 42 PROTECT JOINTS FROM IMMUNE ATTACK

Scientists at **Stanford** found **osteoarthritis** is caused by the same autoimmune factors as **rheumatoid arthritis**. A patented **type II collagen** shields joints from this kind of immune attack.



### 66 SUPPRESS DEADLY AFTER-MEAL BLOOD SUGAR SURGES

Surges in blood sugar after *each meal* can reach deadly diabetic levels that last for hours. In human trials, a novel **green coffee bean extract** yielded a **24%** drop in after-meal blood sugar in just **30 minutes** and an average reduction of **32%** after two hours.



### 7 DOCTORS OVERLOOK LEADING CAUSE OF PREMATURE DEATH

Doctors remain *ignorant* of data showing it is not just elevated **fasting glucose** that leads to **diabetic complications** in non-diabetics. Excess **after-meal** glucose surges inflict system-wide damage that is involved in the leading causes of death.