

**HOW ZINC REDUCES PROSTATE CANCER RISK**

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May 2015

## **AN OVERLOOKED RISK FACTOR FOR ATHEROSCLEROSIS**

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Youth Hormone**

**Natural Ways  
to Lower LDL**

**New Weapon  
Against Excess  
Homocysteine**



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**Her Approach to Healthy Living**



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Item #01727

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

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Elevated homocysteine levels increase the risk of cardiovascular disease, **depression**, and **neuropathy**. But now a unique form of folate is available to overcome the resistance many face to conventional B vitamins. Studies show remarkable improvement in response to this active form of folic acid.



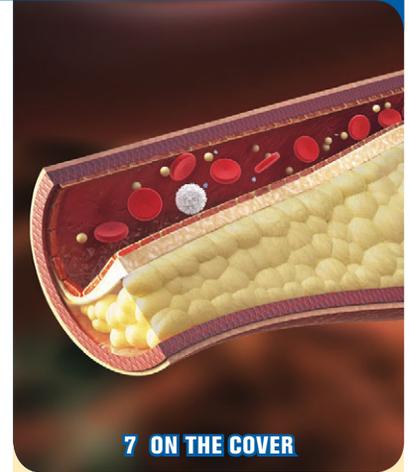
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After being denied government funding, Vera Gorbunova, PhD, and Andrei Seluanov, PhD, received grants from the Life Extension Foundation<sup>®</sup>. Their highly acclaimed research is aimed at finding validated methods to prevent and treat cancer, as well as slow aging.



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Prostate cancer is the second leading cause of cancer death among men. While all cells have a requirement for zinc, the prostate accumulates more zinc than any other part of the body. Studies show that the proper amount of zinc maintains prostate health while suppressing tumor growth.



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Elevated **homocysteine** is a proven risk factor for vascular disease. New studies show it may damage the **brain** even more. A significant proportion of Americans have a genetic defect that predisposes them to high homocysteine. Proper **blood testing** can readily identify these individuals who, for the first time, are able to obtain a high-potency form of activated folate without a prescription.

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**23 IN THE NEWS**

Coffee lowers melanoma risk; common drugs increase dementia risk; metformin may inhibit lung cancer; glucosamine-chondroitin as effective as Celebrex<sup>®</sup>; sulforaphane targets prostate cancer; and B vitamins beneficial against mild cognitive impairment.

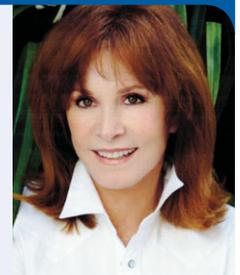


**85 ASK THE DOCTOR**

Although treatment options for psoriasis are limited, a new clinical study indicates that **Pycnogenol<sup>®</sup>** can safely treat this condition. Dr. Fred Pescatore, who oversees a nutrient-based medical practice, has long recommended Pycnogenol<sup>®</sup>—as well as other supplements—to all his patients to ensure optimal systemic health.

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Actress Stefanie Powers, age 72, pursues an active life that includes TV and stage productions and promoting wildlife preservation. Her vibrancy is powered by lifelong adherence to healthy eating, supplements, bioidentical hormones, exercise, and her positive philosophy.



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Buckwheat provides tannins and catechins, as well as an abundance of powerful compounds such D-chiro-inositol and rutin. Their effect on blood sugar, inflammation, and platelet inhibition has been shown to be beneficial against diabetes, cardiovascular disease, arthritis, allergies, and obesity.





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- Promoting insulin sensitivity<sup>4</sup>
- Regulating *PPAR-gamma*, a metabolic thermostat that controls glucose metabolism<sup>4,5</sup>
- Regulating *alpha-amylase*, which controls the release of sugar from starch<sup>6</sup>

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- Supporting glucose transporter *GLUT4* that moves glucose out of the bloodstream and into muscle and liver cells<sup>8</sup>
- Promoting insulin sensitivity<sup>9</sup>

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- Regulating carrier protein *SGLT1*, helping to block absorption of glucose into the bloodstream<sup>10</sup>
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4 bottles	\$32 each	<b>\$24 each</b>

Take **one** capsule **before** meals that contain starch, sugar, or simple carbohydrates.

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Magazine

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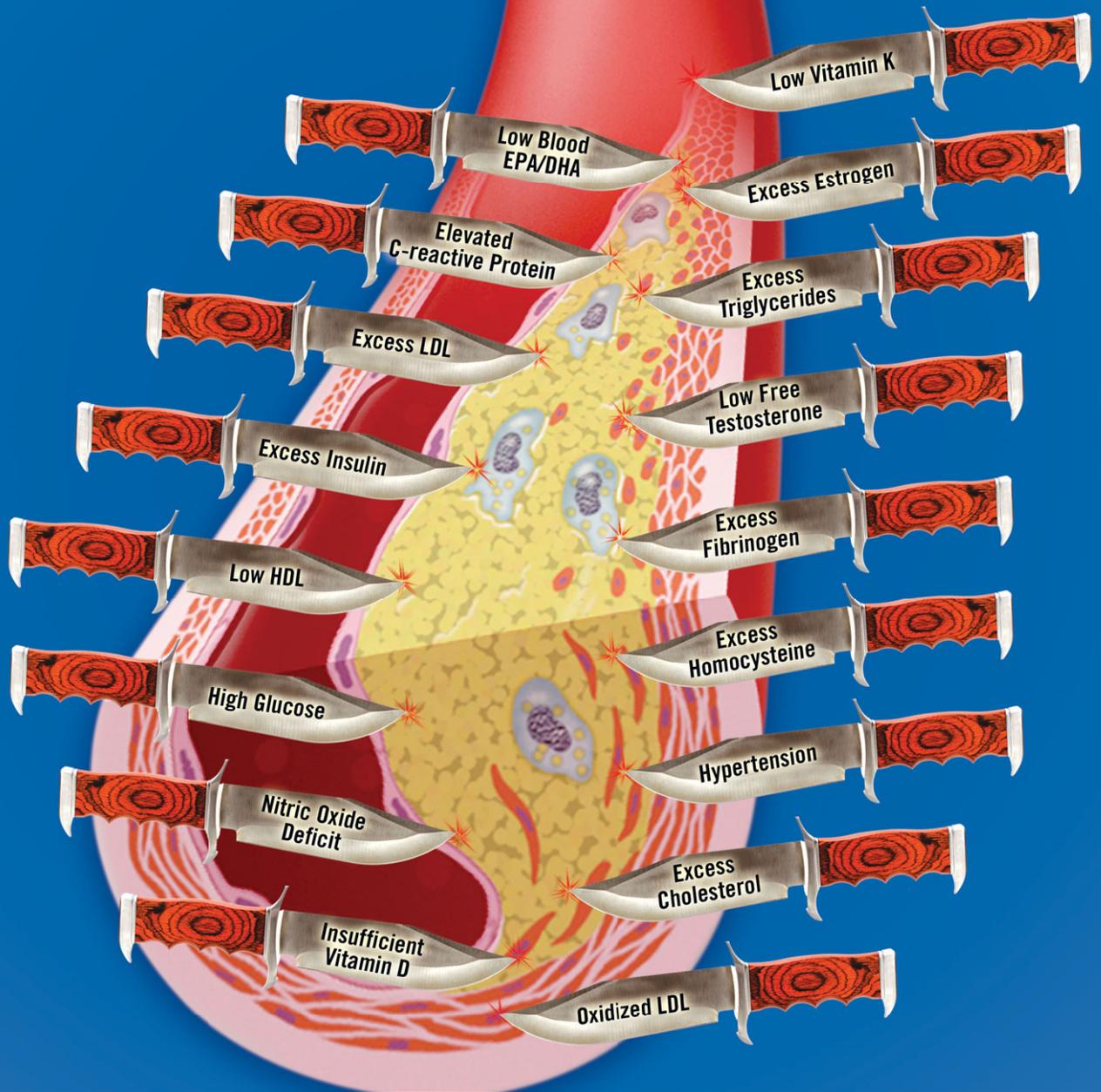


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## 17 DAGGERS OF ARTERIAL DISEASE



The graphic on this page shows **17** daggers aimed at an **artery** occluded with **atherosclerotic plaque**. Atherosclerosis occurs throughout the body and is especially dangerous in the heart, brain, and kidneys.

Any one of these “daggers” can initiate and propagate atherosclerotic vascular disease.

In 1968, a Harvard researcher observed severe atherosclerotic occlusion and vascular disorders in

*children* with a genetic defect that caused them to have sharply elevated homocysteine. This was the first indication that excess homocysteine might be an independent risk factor for heart disease.

Elevated homocysteine is one of 17 independent risk factors for cardiovascular disease.

**Homocysteine** is an amino acid that damages the inner arterial lining and other cells of the body.

# Newly Identified Risks Of *Excess* Homocysteine



BY WILLIAM FALOON

Few debates expose the *inability* of mainstream medicine to recognize disease causation more than the **homocysteine** controversy.

No one disputes that **homocysteine** is toxic to our inner arterial lining.<sup>1,2</sup>

No one disputes that **arterial disease** is the leading cause of **disability** and **death**.<sup>3,4</sup>

If we are to achieve healthy longevity free from **heart failure**,<sup>5-8</sup> **stroke**,<sup>9-11</sup> and **dementia**,<sup>12,13</sup> we cannot allow our bodies to be **poisoned** by excess **homocysteine** blood levels.

The debate about **homocysteine** and **atherosclerosis** dates back to **1968**. Compared to previous medical controversies, this **47-year** time interval may appear trivial.<sup>14</sup>

For instance, **bloodletting** began around **500 B.C.** and became near universal standard of care before the medical establishment rejected it in the early **20<sup>th</sup> century**. The number of deaths caused by physician-induced **bloodletting** was astronomical, yet it took **2,500 years** to figure this out.<sup>15,16</sup>

The problem today is that doctors are overlooking health risks associated with elevated

**homocysteine**, despite new scientific studies documenting dangers that extend **beyond** increased **heart attack** risk.<sup>17-21</sup>

A significant proportion of Americans have a **genetic** defect that predisposes them to high homocysteine.<sup>22-25</sup> The exciting news is that proper **blood testing** can readily identify these individuals so they can take one simple step to slash their homocysteine down to a safe range.



In **1981**, we advised our members to keep their **homocysteine** levels low to protect against heart attack and stroke. At the time, there were only **12** published studies available to make this recommendation, yet we were confident in the strength of the data **34** years ago.<sup>1,2,7,8,26-33</sup>

Move forward to the year **2015** and more than **2,000** published studies are found when searching “*homocysteine and heart disease*” on the **National Library of Medicine** database.

What happened between **1968** and **2015** shows how challenging it can be for the medical establishment to adopt new concepts into standard practice. When studies were conducted on high-risk patients using standard B vitamins to modestly lower homocysteine and anticipated benefits did not occur, doctors declared that homocysteine was not a risk factor for vascular disease.

The problem with these studies is that they were seriously flawed. In **2010**, we meticulously exposed defects in these studies to demon-

strate how meaningless they were to individuals who took steps to *properly* lower their homocysteine levels.<sup>17</sup>

Since our original rebuttals to the flawed homocysteine reports, newly published research further corroborates our long-standing position about the risks posed by excess homocysteine.

For example, a study published in **2014** took a closer look at previous work that proclaimed no benefit to lowering homocysteine. This more detailed analysis revealed a **24% reduced** risk of **stroke, heart attack, and death** in patients older than **67 years** given high-dose B vitamins to lower homocysteine.<sup>34</sup> This finding makes sense based on the fact that modestly elevated homocysteine does not usually create arterial disease early in life; i.e. it takes decades for damage to our endothelial lining to manifest as frank vascular disease.

A more striking risk reduction occurred in a clinical trial of elderly individuals published in **2014** who received a statin drug (pravastatin)

to lower their cholesterol levels versus placebo. Patients in the placebo group with high homocysteine showed a **1.8-fold** higher overall risk of developing fatal and nonfatal coronary heart disease.<sup>35</sup>

### *Role Of Homocysteine In Vascular Dementia*

The scientific community now largely accepts the role of homocysteine in heart disease. What's overlooked is the adverse impact of elevated homocysteine on short-term memory and dementia risk.

A study published in **2014** evaluated a group of people (average age **64**) with vascular cognitive impairment, but who were not demented. After only one year, patients with high **homocysteine** showed a **4.2-fold increased** rate of clinically diagnosed **dementia**.<sup>36</sup>

**High blood pressure** was an even greater determinant of who progressed to vascular dementia, which led the authors of this study to conclude that patients with vascular cognitive impairment “*should receive vigorous controls of hypertension and high homocysteine.*”<sup>36</sup>

Another **2014** study looked at people with high homocysteine and uric acid and found a startling **10.5-fold** greater risk of **vascular dementia**.<sup>12</sup> The authors of this study noted that elevated levels of homocysteine and uric acid are both well-known risk factors for cardiovascular disease, so it is not surprising that they also contribute to vascular dementia (neurovascular disease).

A **2013** study found that patients with vascular dementia “*exhibit particularly elevated levels of plasma total homocysteine*” and suggested that homocysteine may serve as a marker for the disease in addition to it being a contributing factor.<sup>13</sup>



When entering the term “*homocysteine and vascular dementia*” into the **National Library of Medicine** database, more than **240** published studies can be found dating back to the year **1992**.

### **Does Homocysteine Increase Alzheimer’s Risk?**

As we have published in this magazine over the years, **vascular dementia** and **Alzheimer’s disease** are often intertwined.<sup>37-40</sup> What happens is that capillary blood flow is impaired as a result of the endothelial damage caused by excess homocysteine. **Beta-amyloid plaques** then appear in these blood flow-deprived areas of the brain.<sup>41,42</sup> The result in many cases is clinically diagnosed Alzheimer’s disease.<sup>9,18,43,44</sup>

Studies show that homocysteine may be toxic to brain cells, in addition to disrupting cerebral blood flow. A systematic review of published studies starting in **1990** and extending to **2012** found that **high homocysteine** increased Alzheimer’s risk by **1.93-fold**, whereas **physical activity** and **omega-3** fatty acids conferred a protective effect.<sup>45</sup>

A **2013** review looked at the effects of lowering homocysteine for the purposes of protecting against **mild cognitive impairment** and **Alzheimer’s**. Based on findings from several previous studies, these researchers concluded that treating patients with **B** vitamins to lower homocysteine could “*prevent or delay cognitive decline and Alzheimer’s disease.*”<sup>46</sup>

**Homocysteine** alone is not the sole cause of age-associated cognitive decline or Alzheimer’s, but it appears to be a significant contributory factor.

There remains an open controversy as to whether mere treatment



with **B** vitamins will protect against Alzheimer’s. You’re going to learn later in this article why conventional **B** vitamins don’t always provide necessary homocysteine-lowering effects.

### **Homocysteine Worsens Diabetic Complications**

Based on a recent report from the CDC, **86 million** Americans age 20 and older were found to have **prediabetes**.<sup>47</sup> This is diagnosed when fasting blood **glucose** levels are in the **100 to 125 mg/dL** range.<sup>48</sup> Optimal fasting glucose is under **86 mg/dL**.

During the prediabetic period before frank type II diabetes is diagnosed, substantial damage to the arterial lining occurs.<sup>49,50</sup> This is attributed to the widely fluctuating levels of after-meal **glucose** and **insulin** suffered by prediabetics and explains why diabetic complications often manifest before frank type II diabetes is diagnosed.

A **2014** study looked at cardiovascular risk factors beyond glucose

and hemoglobin A1C in prediabetics and found that **homocysteine** and **blood thickness** are significantly higher in prediabetic patients compared to controls.<sup>51</sup> The authors suggested that homocysteine and blood viscosity be used as markers in prediabetics to identify subclinical cardiovascular disease and take preventive measures before a heart attack or stroke manifests.

Another **2014** study cited previous research showing that high **homocysteine** levels are correlated with increased mortality in type II diabetic patients.<sup>52</sup> The researchers then looked at the impact of high homocysteine and type II diabetes in experimental models and found that endothelial damage inflicted by high **glucose** is worsened by high **homocysteine** blood levels.

**Peripheral neuropathy** is a common complication of diabetes that is associated with poor glycemic control.<sup>53</sup> Recent clinical studies reveal that **high homocysteine** exaggerates the prevalence of **peripheral neuropathy** in diabetics and exacerbates preexisting diabetic neuropathy.<sup>54-57</sup>

In a community-based study of 483 adults, a high prevalence of **peripheral neuropathy** was observed among undiagnosed diabetics.<sup>54</sup> After an analysis that controlled for age, it was found that low education, hemoglobin A1C, smoking, and elevated homocysteine were independently associated with peripheral neuropathy.<sup>54</sup> The role of high homocysteine as an **independent risk factor** associated with increased prevalence of diabetic neuropathy has been supported by other clinical studies.<sup>55,56,58,59</sup>

The take-home lesson for anyone with glycemic control issues is that aggressively lowering homocysteine is of the utmost importance. Just as important are comprehensive **blood tests** to evaluate vascular markers (like C-reactive protein) that doctors today don't normally associate with diabetic complications.

### Cerebral Circulatory Deficit

Normal aging results in diminished capillary blood flow to the brain. The medical term for reduced blood flow is "**hypoperfusion**" and it has been implicated in premature brain aging and neurodegenerative disease.<sup>60-64</sup>

A **2014** study identified excess homocysteine as a specific marker for reduced cerebral perfusion in a group of healthy subjects aged 50 to 75 years.<sup>65</sup> The findings corroborate previous research associating high homocysteine with diminished capillary blood flow in the brain.<sup>9</sup>

Another **2014** study looked at the carotid arteries, which are the largest blood vessels feeding the brain. When factoring in other independent variables such as LDL-cholesterol, hemoglobin A1C, and C-reactive protein, **homocysteine** was the **strongest predictor** of **carotid blood flow resistance** in



men older than **65**.<sup>66</sup> This finding is corroborated by previous research showing elevated homocysteine to be significantly associated with carotid artery disorders.<sup>67-69</sup>

Aging robs the brain of vital blood flow through occlusion of the large carotid arteries extending from the base of the neck into the brain. Cerebral circulation is further impaired by blockage of microscopic capillaries that feed individual brain cells. Elevated **homocysteine** damages the carotid arteries<sup>69,70</sup> and cerebral capillaries, thus depriving the brain of critical blood flow in two lethal ways.<sup>71-73</sup>

### Our Shrinking Brains

An increased rate of **brain atrophy** (shrinkage) is often observed in elderly people, especially in those who suffer from cognitive decline.<sup>74,75</sup>

A study published in **2010** evaluated a group of people over age 70 with mild cognitive impairment to ascertain if lowering homocysteine with B vitamins would reduce the rate of brain shrinkage measured by MRI scans. The results showed that compared to the placebo arm of the study, those taking the B vitamins showed almost **30% less** brain shrinkage.<sup>74</sup>

In patients in this study with higher baseline homocysteine levels (**>13 µmol/L**), treatment with B vitamins resulted in a remarkable **53% lower** rate of brain atrophy. What this finding suggests is that those with higher homocysteine levels suffer greater brain atrophy and derive greater benefit when homocysteine levels are brought down. This study showed that greater rate of brain atrophy resulted in lower cognitive test scores.<sup>74</sup> The authors of the study concluded:

*“The accelerated rate of brain atrophy in elderly with mild cognitive impairment can be slowed by treatment with homocysteine-lowering B vitamins... Since accelerated brain atrophy is a characteristic of subjects with mild cognitive impairment who convert to Alzheimer’s disease, trials are needed to see if the same treatment will delay the development of Alzheimer’s disease.”<sup>74</sup>*

Move forward four years to **2014** and a study was published whereby researchers looked at the impact of homocysteine on **hippocampal volume** in a group of elderly patients with varying degrees of cognitive function. After ruling out other known causes of brain atrophy, **homocysteine** was deemed to be **independently** associated and significantly involved with **hippocampal volume shrinkage**.<sup>76</sup> This led the researchers to conclude that high homocysteine has a **“direct adverse effect”** on hippocampal volume.

The **hippocampus** is the part of the brain that is involved in forming,<sup>77</sup> organizing,<sup>78</sup> and storing memories.<sup>79,80</sup> Based on these findings, the adverse impact of elevated **homocysteine** on **hippocampal volume** is depriving aging individuals of the ability to form new memories and connect emotions and senses with past memories, and is placing individuals with high homocysteine at greater risk of dementia.

Yet homocysteine **blood testing** is still not being routinely done in the clinical setting, which is needlessly condemning large segments of the aging population to cognitive impairment, dementia, and loss of independence.

## Homocysteine Damages the Endothelium

The delicate inner lining of our arteries is called the **endothelium**.

Damage to the endothelium initiates changes that predispose us to **atherosclerosis** and its related vascular diseases, including hypertension.<sup>81-83</sup>

As our endothelium becomes increasingly damaged, occlusive arterial disease can manifest in our coronary arteries, cerebral arteries, and arteries throughout the body including in our kidneys and peripheral nerves.<sup>84-92</sup>

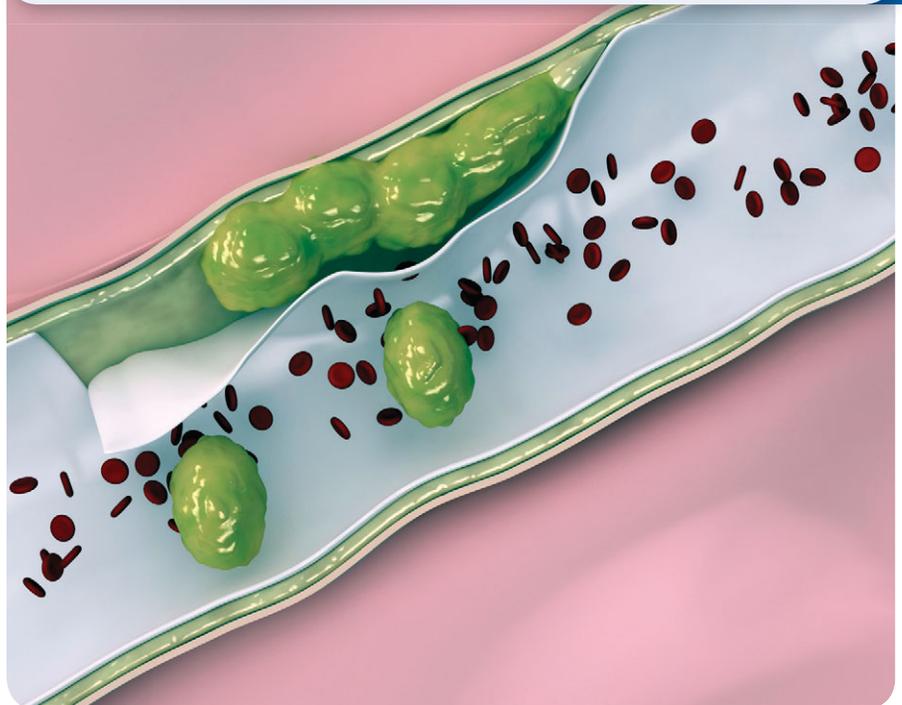
As it relates to hypertension, endothelial dysfunction impairs vascular expansion and can suppress production of vital endothelial **nitric oxide**.<sup>93-95</sup>

As it relates to acute heart attack or stroke, **endothelial dysfunction** can promote the development of thrombosis (clotting inside blood vessels).<sup>96-98</sup>

**Elevated homocysteine** is a factor that causes damage to the endothelium. It does this by promoting the formation of free radicals, impairing the synthesis and function of vasodilating factors in the vascular wall, injuring endothelial cells, and impeding production of structural components in the vascular wall.<sup>99-109</sup>

In addition, high levels of homocysteine contribute to the undesirable modification of LDL and HDL particles, inflammation, and disorders in coagulation and fibrinolysis (dissolving of abnormal arterial blood clots).<sup>93,110,111</sup>

Excess homocysteine is both an initiator<sup>112,113</sup> and promoter<sup>114,115</sup> of systemic **endothelial dysfunction**, which is the major mechanism behind the development of vascular diseases.<sup>116</sup>



## Surviving A Stroke

Homocysteine is a risk factor for suffering a stroke,<sup>117,118</sup> but the impact of high homocysteine on the neurological deterioration that occurs after a stroke was not known until recently.

Recovery from an ischemic stroke is highly dependent on the brain's ability to survive the temporary loss of blood flow. Without recovery, the outcome is paralysis or death.

A 2014 study assessed whether an association existed between elevated **homocysteine** and **neurological deterioration** in patients with acute ischemic stroke. A total of 396 stroke patients were studied. The results showed that **high homocysteine** levels were **independent predictors** for poor outcomes in these acute stroke victims.<sup>10</sup>

Most striking about this study was what the researchers defined as "high" homocysteine blood levels. In patients with homocysteine levels above **10.3  $\mu\text{mol/L}$** , there was a **3.45-fold increase** in independent

predictors of early neurological deterioration.<sup>10</sup>

Conventional medicine does not believe homocysteine poses a health problem until blood levels exceed **15  $\mu\text{mol/L}$** .<sup>119</sup> Yet this randomized double-blind, multicenter trial showed that homocysteine levels over **10.3  $\mu\text{mol/L}$**  markedly worsened outcomes for stroke victims. The conclusion by the authors of this study was simple and to the point:

***"Patients with acute stroke with elevated serum homocysteine levels are at an increased risk for early neurological deterioration."***<sup>10</sup>

**Life Extension**<sup>®</sup> has long urged members to keep their homocysteine blood levels below 7 to 8  $\mu\text{mol/L}$  whenever possible. This study on acute stroke patients and other recent studies show that homocysteine levels considered "safe" by the medical establishment are quite injurious to the brain, heart, kidneys, and other tissues.<sup>120-127</sup>

## What Causes High Homocysteine?

Homocysteine forms in the body from the amino acid **methionine**.<sup>115</sup> Foods such as cereals, legumes, seafood, meat, and dairy products are rich in methionine<sup>128</sup> so it is difficult for most people to consistently consume a methionine-deficient diet.

Fortunately, your body has detoxification enzymes that keep homocysteine levels in safe ranges. These homocysteine detoxification enzymes are dependent on the B vitamins, primarily folate, B12, and B6.<sup>128-136</sup>

Cigarette smoking depletes folic acid in the body, causing smokers to have notoriously high levels of homocysteine.<sup>137-139</sup>

As we age, our homocysteine detoxification mechanisms become impaired, often resulting in sharply higher homocysteine levels<sup>140</sup> in elderly individuals<sup>141</sup> that can be accompanied by accelerated atherosclerosis.<sup>142</sup>

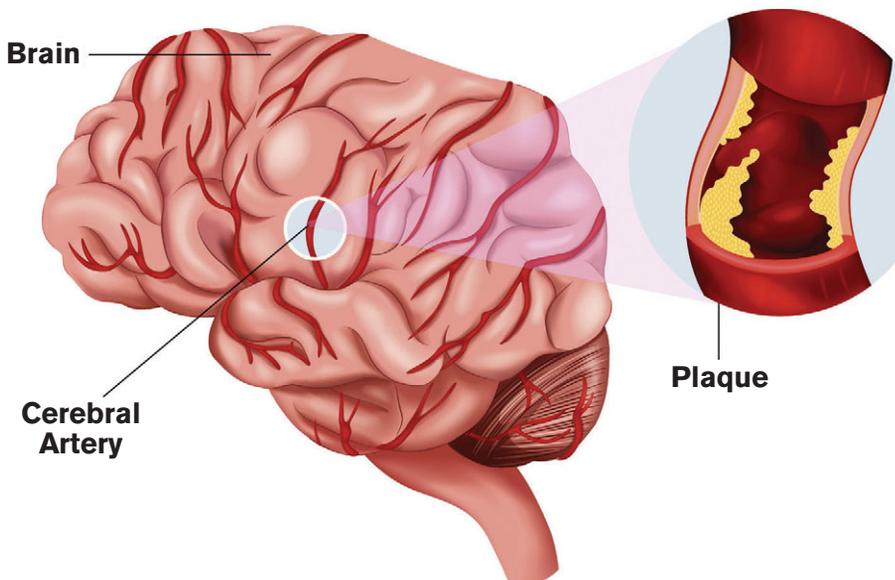
## Genetic Defect Causes High Homocysteine

For the majority of people, the proper intake of folic acid, vitamins B12, and B6 and other nutrients will keep their homocysteine levels in safe ranges.

A surprisingly high proportion of Americans,<sup>25,143</sup> however, suffer a **genetic defect** that impairs their ability to convert **folic acid** into its biologically active form called **5-methyltetrahydrofolate (5-MTHF)**.<sup>144-147</sup>

Folic acid itself will not adequately rid the body of excess homocysteine. It needs to be converted to **5-MTHF**. The chart on the following page shows the advantage of 5-MTHF over synthetic folic acid.

## Cerebrovascular Stroke



Fortunately, there is now a **high-dose** dietary supplement that contains the enzymatically active **5-MTHF** form of folate. The advantage of 5-MTHF is that it does not require conversion in the body to slash homocysteine blood levels.<sup>147,148</sup> Another plus to 5-MTHF is that it readily crosses the blood-brain barrier to facilitate cognitive function.<sup>149</sup>

Aging individuals with rising homocysteine levels now have a potent new weapon to reduce their

homocysteine level even if they don't have a defect in their folate-converting genes.

### *Efficient Way To Determine Who Needs 5-MTHF*

There are several variations of genotypes that could hinder one's ability to convert folic acid into biologically-active **5-methyltetrahydrofolate (5-MTHF)**.<sup>144-147</sup>

Rather than pay for these expensive genetic tests, it is far more efficient to have one's homocysteine **blood level** tested once a year.

Anyone with a homocysteine reading substantially over **8 µmol/L** should take at least **one 5,000 micrograms** tablet of **5-MTHF** daily. Those with homocysteine readings above **12 µmol/L** might need to take a **5-MTHF 5,000 micrograms** tablet **twice** daily.

The objective in taking 5-MTHF is to **reduce homocysteine** levels to optimal safe ranges. If your homocysteine blood test results come back in the **low** range, then you **don't** need to take 5-MTHF.

For optimal homocysteine reduction, adequate amounts of other B vitamins are also required, especially vitamins B2 (**50 mg**), B6 (**75 mg**), and B12 (**300 micrograms**). Sufficient doses of these B vitamins can be found in high-potent multivitamins. In rare cases of B12 absorption problems, vitamin B12 shots (**1,000 micrograms**) several times a week are needed.

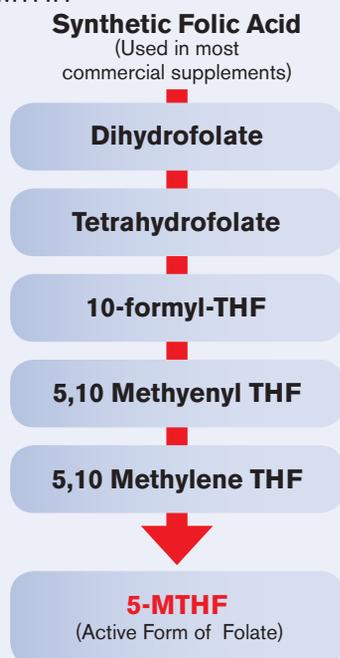
### Why Folic Acid Sometimes Fails

**Homocysteine** is reduced in the body by **5-methyltetrahydrofolate (5-MTHF)**.<sup>150</sup>

When folic acid is taken, it must go through several enzymatic changes to convert to **5-MTHF**.<sup>143</sup>

A surprising number of people, especially as they age, lack the enzymes needed to convert **folic acid** into metabolically active **5-MTHF**. These individuals need to take a 5-MTHF supplement to directly supply their body with the form of folate that reduces homocysteine.

The chart below shows the many steps required by the body to convert folic acid to 5-MTHF.



If one is supplementing with **folic acid** yet still suffers higher-than-optimal homocysteine, they should add **5 mg (5,000 micrograms)** to **10 mg (10,000 micrograms)** of **5-MTHF** to their daily supplement regimen. This higher potency 5-MTHF supplement is now available without a prescription.





## Critical Importance Of Comprehensive Annual Blood Tests

As you can see on page 6, there are **17 independent** risk factors for vascular disease. What this means is that if just one of these markers is out of balance, it can lead to a **heart attack** or **stroke**.

The reality for individuals as they age is that they might develop multiple imbalances in their blood such as elevated glucose, LDL, triglycerides, and homocysteine that conspire to sharply increase vascular risks.<sup>93,151-153</sup>

This is why comprehensive annual **blood testing** is so critical to protecting against today's leading killers. Standard blood tests omit the majority of independent vascular risk factors, which explains why arterial disease continues at epidemic levels despite widespread testing for glucose and lipids.

What we have observed in reviewing our members' **blood test results** for the past four decades is how quickly a lethal blood marker can elevate over a year's period of time. For example, it is not unusual for homocysteine levels to spike over a 12-month period

as aging wears down detoxification processes.

The good news is that when elevated homocysteine is detected, it can easily be brought down with low-cost **5-methyltetrahydrofolate (5-MTHF)**.<sup>150</sup>

## Discount Blood Testing

Since the early **1980s**, Life Extension® has advised its members to have annual **blood tests** to identify disease risk factors that can be reversed before serious illness develops.

A barrier some members face is that their conventional doctor still doesn't recognize the dangers of elevated homocysteine and refuses to test for it. Another problem is that even when doctors order all the blood tests requested, the phlebotomist often fails to check off the appropriate codes on the laboratory requisition form or does not properly draw the blood. When the results come back incomplete, another blood draw becomes necessary, thus inconveniencing the patient.

Even today, most doctors fail to routinely test a patient's blood

for important cardiovascular risk factors such as **homocysteine** and **C-reactive protein**. Life Extension® resolved this problem **19 years** ago by offering comprehensive blood test panels directly to its members.

Once a year we discount the prices of all our blood tests to a fraction of the price charged by commercial labs. For example, the many tests included in our comprehensive **Male** or **Female Panels** can cost around \$1,000 at commercial laboratories. Yet members obtain these identical tests during the annual **Blood Test Super Sale** for only **\$199**.

In addition to the cost savings, members benefit by the convenience of walking into a blood drawing station in their neighborhood, usually without an appointment required. Results come back within a few days and are mailed and/or emailed directly to you. If you have questions about your blood test results, our health advisors are available seven days a week to assist.

Based on what I have discovered as a result of having my blood tested regularly, I am convinced that I have corrected the risk conferred by a number of genetic risk factors that would otherwise have predisposed me to a premature illness or death.

I hope no serious health enthusiast will neglect their annual pilgrimage to a local blood draw station to ensure their homocysteine and other disease risk markers are maintained in optimal safe ranges.

To order a **Male** or **Female Panel** at the discounted price of **\$199**, call **1-800-208-3444**.

For longer life,

William Faloon

# MALE AND FEMALE BLOOD TEST PANELS

Unlike commercial blood tests that evaluate only a few disease risk factors, Life Extension's **Male** and **Female Blood Test Panels** measure a wide range of blood

markers that predispose people to age-related diseases. Just look at the **huge** number of parameters included in the **Male** and **Female Blood Test Panels**:

## ■ MALE PANEL

### LIPID PROFILE

**Total Cholesterol**

**LDL** (low-density lipoprotein)

**HDL** (high-density lipoprotein)

**Triglycerides**

### CARDIAC MARKERS

**C-Reactive Protein** (high sensitivity)

**Homocysteine**

### HORMONES

**Free and Total Testosterone**

**DHEA-S**

**Estradiol** (an estrogen)

**TSH** (thyroid function)

**Vitamin D (25-hydroxyvitamin D)**

### METABOLIC PROFILE

**Glucose**

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

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

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

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

**Hemoglobin A1c**

### COMPLETE BLOOD COUNT (CBC)

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

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

**Platelet count**

### CANCER MARKER

**PSA (Prostate Specific Antigen)**

## ■ FEMALE PANEL

### LIPID PROFILE

**Total Cholesterol**

**LDL** (low-density lipoprotein)

**HDL** (high-density lipoprotein)

**Triglycerides**

### CARDIAC MARKERS

**C-Reactive Protein** (high sensitivity)

**Homocysteine**

### HORMONES

**Progesterone**

**Estradiol** (an estrogen)

**Free and Total Testosterone**

**DHEA-S**

**TSH** (thyroid function)

**Vitamin D (25-hydroxyvitamin D)**

### METABOLIC PROFILE

**Glucose**

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

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

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

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

**Hemoglobin A1c**

### COMPLETE BLOOD COUNT (CBC)

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

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

**Platelet count**

## ■ Blood Test Super Sale • March 30<sup>th</sup> through June 1, 2015. ■

**Non-member retail price: \$400**

**Member Price: \$199**

**To obtain these comprehensive Male or Female Panels at these low prices, call 1-800-208-3444 to order your requisition forms.**

Then—at your convenience—you can visit one of the blood-drawing facilities provided by LabCorp in your area.

Blood testing services are available only in the continental United States and Anchorage, AK. Not available in Maryland. Restrictions apply for residents of MA, NY, NJ, RI, and PA.

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

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# AMPK Activator

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

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

## Importance Of AMPK

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

## Gynostemma Pentaphyllum

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

## Trans-Tiliroside

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

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Few nutritional sources have gained as much scientific validation as **pomegranate**.<sup>1</sup>

## The Next-Generation Pomegranate Formula

**Full-Spectrum Pomegranate™** combines standardized extracts from the **whole fruit and flower**, along with pomegranate **seed oil**, to support system-wide health. In addition to the highly absorbable power-houses found in pomegranate fruit,<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** that provides cellular support to help with inflammation,<sup>5</sup> and **pomegranate**, 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**.

POMELLA® extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Science, Inc.

### One softgel of Full-Spectrum Pomegranate™ contains:

<b>POMELLA® Pomegranate Extract (fruit)</b> [providing 120 mg punicalagins]	<b>400 mg</b>
<b>Proprietary Pomegranate Blend</b> [flower extract and seed oil (providing 30 mg punicic acid)]	<b>137.5 mg</b>

### Full-Spectrum Pomegranate™

A bottle containing 30 softgels of **Full-Spectrum Pomegranate™** retails for \$24. If a member buys four bottles, the price is reduced to **\$15.75** per bottle.

**Contains soybeans.**  
**Non-GMO**

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

#### References

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6. *Fitoterapia*. 2006 Dec;77(7-8):534-7.

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.

# COMPREHENSIVE VITAMIN K FORMULA



Item # 01724

## To Support Arterial Health And Bone Support

There are **three** forms of **vitamin K** that are key factors to promoting arterial health and bone support.<sup>1-8</sup>

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

**Vitamin K1** is the form of vitamin K found in green vegetables, but only a fraction is absorbed into the bloodstream. Supplementation ensures ample K1 blood levels.

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

To order **Super K with Advanced K2 Complex** or **Super Booster**, call **1-800-544-4440** or visit **www.LifeExtension.com**

Just one daily softgel of Super K formula provides:

Vitamin K2 (MK-7)	200 mcg
Vitamin K2 (MK-4)	1,000 mcg
Vitamin K1	1,000 mcg

The retail price for a bottle containing **90 softgels** is \$30. If a member buys four bottles, the price is reduced to **\$20.25 per bottle**. Each bottle lasts for three months.

(The same Super K formula consisting of vitamin K1, vitamin K2 (MK-4), and vitamin K2 (MK-7) can be found in the **Life Extension® Super Booster**. If you take the Super Booster, you do not need additional **Super K with Advanced K2 Complex**.)

#### References

1. *Vitam Horm.* 2008;78:393-416.
2. *Nutrition.* 2006 Jul-Aug;22(7-8):845-52.
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5. *Atherosclerosis.* 2008 Jul 19.
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7. *Am J Clin Nutr.* 2008 Apr;87(4):985-92.
8. *J Biol Regul Homeost Agents.* 2008 Jan-Mar;22(1):35-44.
9. *Blood.* 2007 Apr 15;109(8):3279-83.

**Warning to Coumadin® (warfarin) Drug Users:** Patients prescribed vitamin K-antagonist anticoagulant prescription drugs like warfarin should consult their physician before taking vitamin K supplements like Super K and Super Booster. There is evidence, however, that users of drugs like warfarin could benefit from a consistent low dose of supplemental K. Ask your doctor if you can take a low dose (**45 mcg** a day) of vitamin K2 in the long-acting MK-7 form for the purpose of stabilizing your INR levels and also protecting your body against long-term vitamin K deficit. Do not initiate any form of vitamin K supplementation without full cooperation of your treating doctor, as your doctor may need to increase your dose of warfarin to compensate for your vitamin K supplement. Life Extension® provides several forms of low-dose vitamin K for physician consideration.



## IN THE NEWS

### Billionaire Inventor Answers Question: “What Is Life?”

In the **November 2014** issue of *Life Extension*®, we profiled billionaire scientist **J. Craig Venter**, whose company is building the largest human genome-sequencing database in the world. By sequencing the genomes of people who are healthy, sick, young, and old, the database is expected to eventually offer insights into the aging process.

The **February 10, 2015** edition of the *Wall Street Journal*\* featured an interview with Craig Venter in which he provided an incredibly simple answer to the question, “What is life?” His reply was:

*“The short answer is life is a DNA software-driven system, at least on this planet, as far as we know. Every species is driven by their DNA software, totally and completely.”*

*“The much more complicated answer deals with energy balance in a cellular system and transporting molecules in and out. But it all gets down to reading your DNA software from second to second in every one of your cells, making new proteins, making new versions of your cells. Without the software, you can’t make new hardware.”*

His response reveals how we may soon be able to program our DNA to achieve longer healthy life spans.

Many of the nutrients used by Life Extension® members facilitate **DNA repair**, which is a crucial element to sustaining our lives until DNA software programming becomes medically feasible.

\* *Wall Street Journal*. 2015 Feb 10.

### Researchers Hope Sequencing Whale Genome Will Increase Human Life Span

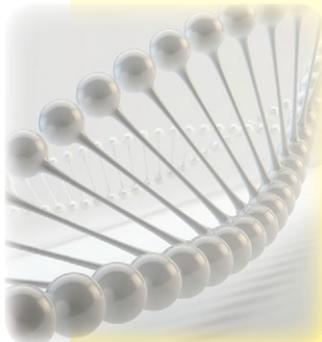
Researchers, with the support of Life Extension Foundation® and the Methuselah Foundation, recently charted the genome of the bowhead whale—which is most likely the longest-living mammal on the planet. Results of this groundbreaking study were published in the January issue of the journal *Cell Reports*.\*

According to scientists, the whales, which can live as long as 200 years, have a genome that is full of clues to the animals’ exceptional longevity and amazing disease resistance. Compared to the genomes of other creatures, the researchers found that bowhead whales have unique alterations in a gene called *ERCC1*, which

is involved in **repairing damaged DNA**. The alterations in this gene could provide protection against cancer. The team, led by João Pedro de Magalhaes, a biologist and expert in aging science at the University of Liverpool, England, also discovered that a gene called *PCNA* has been duplicated. The gene is associated with cell growth and DNA repair, and the duplication could increase longevity.

**Editor’s Note:** Magalhaes hopes to increase human life span by studying the genetic code of long-lived mammals other than humans. “My own view is that different long-lived species use different tricks to evolve long life spans, and there aren’t many genes in common,” he said. “But you do find some common pathways, so there may be common patterns.”

\* *Cell Rep*. 2015 Jan 6;10(1):112-22.



## Pycnogenol® Boosts Cognitive Function

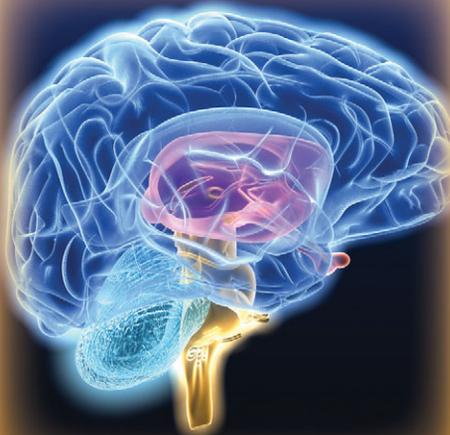
A report published in the December 2014 issue of the *Journal of Neurosurgical Sciences* revealed that Pycnogenol®, derived from French maritime pine bark, improved memory, focus, and the decision-making ability of healthy professionals between the ages of 35 to 55.\*

In the study of 59 professional men and women, 30 were supplemented with **150 mg Pycnogenol®** per day for 12 weeks while 29 acted as controls. Tests of attention, memory, and executive function were conducted before and after the study period and blood samples were analyzed for free radicals and other factors.

By the end of the study, plasma-free radicals were lower among those who received Pycnogenol®, while varying non-significantly among the control group. Although aspects of cognitive function improved in both groups, the increase was more significant in the Pycnogenol® group.

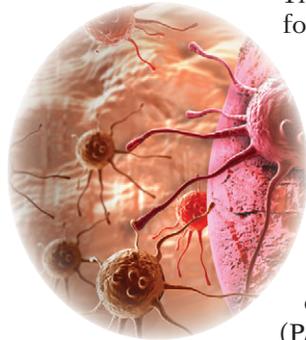
**Editor's Note:** Subjects given the Pycnogenol® showed improvements in mood, mental performance, sustained attention, and subjective memory, as well as in daily tasks such as simple decision making and dealing with people.

\* *J Neurosurg Sci.* 2014 Dec;58(4):239-48.



## Marinating Meat In Beer Before Barbequing Cuts Cancer Risk

Cooking meat at high temperatures has been linked to cancer-causing chemicals called **heterocyclic amines** (HCAs). But new research published in *Food Additives & Contaminants: Part A* found marinating pork in beer before grilling reduced the amount of carcinogens caused by the cooking process.\*



The researchers marinated samples of pork for four hours in Pilsner beer, non-alcoholic Pilsner beer, or a black beer ale, then cooked them to a well-done temperature on a charcoal grill. While all three beers reduced total HCA formation in the pork, the black beer was the most efficient, with **90% inhibition**.

Previous research by the same study authors confirmed that the same beers also reduced the formation of harmful chemicals called **polycyclic aromatic hydrocarbons** (PAHs), which have been directly linked to DNA damage and the development of tumors in cells of the colon, breast, prostate and lymph system.

**Editor's Note:** When it comes to taste, the marinade does impart a subtle beer flavor to the meat. Although most of the liquid is discarded, the pork may retain some alcohol even after cooking. To avoid alcohol consumption, use a non-alcoholic beer.

\* *Food Addit Contam Part A: Chem Anal Control Expo Risk Assess.* 2015 Jan 21.

## Coffee Drinkers Have Lower Melanoma Risk

An article published in the *Journal of the National Cancer Institute* reveals a link between increased coffee consumption and a reduced risk of malignant melanoma.\*

The analysis, conducted by Erikka Loftfield, MPH, and colleagues, included 447,357 participants in the National Institutes of Health-AARP prospective study initiated in 1995-1996. Dietary questionnaires completed upon enrollment were evaluated for the intake of regular and decaffeinated coffee. The subjects were followed for a median of 10.5 years, during which 2,904 cases of malignant melanoma were diagnosed.

A trend was observed between increasing coffee intake and a decreasing risk of malignant melanoma over follow-up. Among men and women who drank four or more cups of coffee per day, there was an adjusted **20%** lower risk of developing malignant melanoma in comparison with the risk experienced by those who didn't drink coffee.

**Editor's Note:** The decrease in the risk of melanoma by coffee drinking was observed only in association with caffeinated coffee and was restricted to those with malignant melanoma as opposed to melanoma *in situ*.

\* *J Natl Cancer Inst.* 2015.





### Higher Folate Levels Associated With Improved Survival In Breast Cancer Patients

In *Nutrition and Cancer*, researchers from California State University report better survival among postmenopausal breast cancer patients with higher plasma levels of the B vitamin folate.\*

The study included 471 postmenopausal women diagnosed with breast cancer between 1994 and 1995. Stored plasma samples collected after diagnosis were analyzed for total folate (the sum of all folate vitamers), and the vitamers folic acid, tetrahydrofolic acid (THF), 5-methyl tetrahydrofolic acid, and 5-formylTHF/MeFox. Dietary questionnaires provided information on food intake and supplement use. The women were followed for almost seven years, during which 85 deaths occurred.

Among women whose total folate levels were among the top 25% of all subjects, there was a 59% lower risk of mortality over follow-up in comparison with those whose levels were among the lowest 25%. Supplemental folic acid and total folate intakes were strongly, positively associated with circulating total folate and all vitamer levels.

**Editor's Note:** "Folic acid supplementation compared to dietary folate alone, was not only significantly associated, but also much more highly correlated with circulating total folate concentrations, suggesting that in the absence of folic acid fortification and/or consuming a low-folate diet, folic acid supplementation may improve survival after breast cancer diagnosis," Archana Jaiswal McEligot, of Cal State Fullerton, and colleagues conclude.

\* *Nutr Cancer*. 2015 Feb 3.



### Common Drugs Increase Risk Of Dementia And Alzheimer's

Prolonged use of certain medications can increase a person's risk of Alzheimer's disease and dementia, according to a recent study published in *JAMA Internal Medicine*.\*

In the study, researchers at the University of Seattle in Washington looked at common drugs that have an anticholinergic effect, indicating they block a neurotransmitter called acetylcholine, affecting the nervous system and causing side effects such as drowsiness, blurred vision, and poor memory. People with Alzheimer's often lack adequate level of acetylcholine.

Some medications that fall into this class include older tricyclic antidepressants such as doxepin, antihistamines like Benadryl® (diphenhydramine), and medications such as Detrol® (tolterodine), which treats overactive bladder.

The study analyzed data from 3,434 participants over the age of 64 with no diagnosis of dementia to determine the level of anticholinergic medications they consumed. The data also determines how many participants later developed dementia or Alzheimer's.

After seven years of follow-up, researchers found that 797 participants who had taken the anticholinergic drugs developed dementia. Of those, 637 participants (18.5%) eventually developed Alzheimer's disease.

**Editor's Note:** Many newer drugs to treat these conditions do not have anticholinergic effects, such as the antidepressant Prozac® and antihistamines such as loratadine (Claritin®).

\* *JAMA Intern Med*. 2015 Jan 26.



### Metformin May Lower Lung Cancer Risk

Each year, around 20,000 American nonsmokers die of lung cancer. This startling number makes lung cancer a leading killer even in individuals who never smoked.

According to a study published in *Cancer Prevention Research*, diabetic nonsmokers who took metformin had a lower lung cancer risk.\*

Lori Sakoda, PhD, MPH, of the Kaiser Permanente Division of Research in Oakland, California, and colleagues conducted a retrospective cohort study of 47,351 diabetic patients 40 years or older who completed a health-related survey between 1994 and 1996. Information on their diabetes medications was collected from pharmacy records. Approximately 46% of them filled two or more metformin prescriptions within a six-month period.

During 15 years of follow-up, 747 patients were diagnosed with lung cancer. Of them, 80 were nonsmokers, and 203 currently smoked. While metformin use was not associated with lower lung cancer risk overall, the risk was 43% lower among diabetic patients who had never smoked, and the risk appeared to decrease with longer use. Nonsmokers who used metformin for five years or longer reduced their lung cancer risk by 52%.

**Editor's Note:** "Additional large, well-conducted studies are needed to clarify whether metformin may be used to prevent lung or other cancers, particularly in specific subpopulations, such as nonsmokers," said Sakoda.

\* *Cancer Prev Res*. 2015 Feb 2.

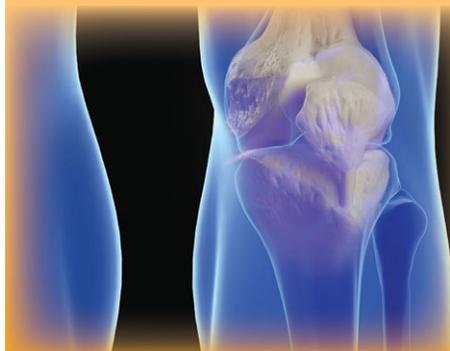
## Glucosamine And Chondroitin As Effective As Celebrex® In Some Osteoarthritis Patients

An article published in the *Annals of the Rheumatic Diseases* reported that a combination of glucosamine and chondroitin sulfate might provide clinically significant pain relief for patients with moderate to severe knee osteoarthritis (OA) pain, despite being ineffective against milder OA pain.\*

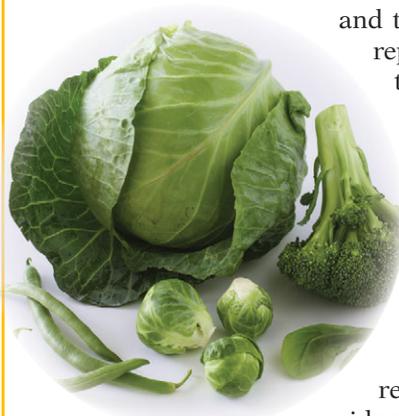
The randomized controlled clinical trial conducted by Marc C. Hochberg, MD, from the University of Maryland School of Medicine, Baltimore, and colleagues found that a glucosamine/chondroitin sulfate product produced a **50.1%** decrease in Western Ontario and McMaster OA index (WOMAC) pain, which is comparable to the **50.2%** decrease in COX-2 inhibitor celecoxib (Celebrex®) patients. Further results showed a **45.5%** reduction in functional disability; a **46.9%** reduction in stiffness; a **53%** reduction in swelling; and a **56%** reduction in joint effusion.

**Editor's Note:** "This study confirms the efficacy of the combination of pharmaceutical grade-chondroitin sulfate and glucosamine in the long term and suggests that, considering its excellent safety profile, it may be a good alternative for patients with cardiovascular or gastrointestinal problems, for whom chronic treatment with NSAIDs cannot be recommended," said Prof. Hochberg.

\* *Ann Rheum Dis.* 2015 Jan 14.



## Sulforaphane From Cruciferous Vegetables May Target Prostate Cancer



Researchers from Oregon State University and the Texas A&M Health Science Center report in the journal *Oncogenesis* a potential benefit for sulforaphane in treating metastatic prostate cancer.\* While a number of previous investigations have suggested a protective role for the compound, the current study adds additional evidence to the possible effectiveness of sulforaphane in cancer therapy.\*

While researching the anticancer benefits of sulforaphane in previous research, Emily Ho and her colleagues identified an enzyme in prostate cancer cells that is affected by exposure to the compound. The enzyme, SUV39H1, could be a new therapeutic target in advanced prostate cancer.

An ongoing trial involving the use of sulforaphane in men at high risk of prostate cancer will determine the safety of high-dose supplements.

**Editor's Note:** Sulforaphane is obtained from cruciferous vegetables. However, the amounts provided by foods are insufficient for cancer treatment, which would require supplemental doses.

\* *Oncogenesis.* 2014 Dec 8;3:e131.

## Higher B Vitamin Intake Associated With Better Cognitive Function

In an article published in *Nutrition Journal*, researchers report a beneficial effect for increased B vitamin intake on cognitive function in individuals with mild cognitive impairment and Alzheimer's disease.\*

The study included 100 participants with mild cognitive impairment, 100 Alzheimer's disease patients, and 121 normal individuals. Subjects completed eight tests of cognitive function and answered questions regarding dietary intake from food and supplements on the day prior to blood analysis of B vitamin and homocysteine levels.

Higher intake of vitamins B2, B6, B12, and folate was associated with lower plasma homocysteine. Improvement in several test scores among all subjects was associated with increased intake of vitamins B2, B6, and folate. When Alzheimer's patients were examined, greater intake of vitamins B2, B6, B12, and folic acid was associated with improved scores.

**Editor's Note:** Those with mild cognitive impairment also experienced better test scores in association with vitamins B2, B6, and folate, although the number of tests that showed improvements was fewer than that of the Alzheimer's disease group.

\* *Nutr J.* 2014 Dec 17.



GET THE B-VITAMINS YOU NEED WITH

# B-COMPLEX

Daily replenishment of the B-vitamins is essential. B-vitamins are water soluble and easily washed from the body. Plus, stress, certain medications, and alcoholic beverages can quickly deplete the body's B-vitamin reserves.<sup>1-4</sup>

Many B-vitamins function as **coenzymes** to help release energy from carbohydrates, fat, and protein. A deficiency of one B-vitamin can affect optimal functioning of organ systems throughout the body.

What distinguishes **Complete B-Complex** is that it provides **enzymatically** active forms of critical nutrients like the **pyridoxal-5-phosphate** form of **vitamin B6**, a **natural** form of **folate** from **lemon peel**, and meaningful potencies of each B-vitamin.<sup>5,6</sup>

A bottle containing 60 vegetarian capsules of **Complete B-Complex** retails for \$10. If a member buys four bottles, the price is reduced to **\$6.75** per bottle.

Non-GMO

## A daily dose of two vegetarian capsules of Complete B-Complex provides:

<b>Thiamine</b> (vitamin B1) (as thiamine HCl)	100 mg
<b>Riboflavin</b> (vitamin B2) (as riboflavin and riboflavin 5'-phosphate)	75 mg
<b>Niacin</b> (as niacinamide and niacin)	100 mg
<b>Vitamin B6</b> (as pyridoxine HCl and pyridoxal 5'-phosphate)	100 mg
<b>Folate</b> [from lemon (Citrus limon) extract (peel)]	400 mcg
<b>Vitamin B12</b> (as methylcobalamin)	300 mcg
<b>Biotin</b>	1000 mcg
<b>Pantothenic acid</b> (as D-calcium pantothenate)	500 mg
<b>Inositol</b>	100 mg
<b>PABA</b> (para-aminobenzoic acid)	50 mg
<b>Calcium</b> (as D-calcium pantothenate)	40 mg

Item # 01835



## References

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3. *Ann Neurol.* 2011;69(2):352-9.
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5. *Ann N Y Acad Sci.* 1980;355:80-97.
6. *J Nutr.* 1999 Apr;129(4):779-82.

To order Complete B-Complex, 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.

# 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.

Among the most beneficial of these polyphenols is **chlorogenic acid**, a potent inhibitor of the **glucose-6-phosphatase** enzyme that stimulates excess **gluconeogenesis**.

### A Patented Organic Roast

Life Extension's 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% USDA certified organic arabica** coffee beans, gently roasted in small batches and ground for easy brewing.

### 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.

Concerned about caffeine but don't like the weak taste of decaffeinated coffee? With **Rich Rewards® Decaffeinated Roast**, you can limit your caffeine intake without compromising on flavor. The caffeine is removed through a completely chemical-free **Water Process**, which relies solely on water and carbon filters. It delivers the full flavor, aroma, and body of the *arabica* bean.

Life Extension's **Rich Rewards®** coffees give you a uniquely beneficial brew with superior flavor. The **Rich Rewards® Breakfast Blend** contains up to **87% more chlorogenic acid** than conventional caffeinated coffees. **Rich Rewards® Decaffeinated Roast** contains up to **187% more chlorogenic acid** than conventional decaffeinated coffees.

### 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)	46 mg	Rich Rewards® Coffee Blend (Decaffeinated)	132 mg

This chart shows Life Extension's **Rich Rewards® Breakfast Blend** contains up to **87% more chlorogenic acid** than conventional caffeinated coffees and the **Rich Rewards® Decaffeinated Roast** contains up to **187% more chlorogenic acid** than conventional decaffeinated coffees. This enables one to obtain the benefits of heavy coffee drinking in about half the number of cups.

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  - J Alzheimers Dis*. 2010;20 Suppl 1:S117-26.
- \* US Patent 6,723,368.



A 12 oz bag of **Life Extension® Rich Rewards® Breakfast Blend** retails for \$13. Members pay **\$9.75** per bag. Item # 01609



A 12 oz bag of **Life Extension® Rich Rewards® Decaffeinated Roast** retails for \$14. Members pay **\$10.50** per bag. Item # 01610

To order either of the **Rich Rewards® Antioxidant Coffees** call **1-800-544-4440** or visit **www.LifeExtension.com**

# PROTECT **DNA** AGAINST CHEMICAL ASSAULT



Item # 01571

On a daily basis, the **DNA** in each cell of your body is bombarded by an estimated 10,000 destructive oxidative hits.<sup>1</sup> Environmental toxins, such as pesticides, cigarette smoke, coal dust, and diesel emission particles, challenge the integrity of your DNA and can profoundly modify outcomes of aging.<sup>2,3</sup>

Foods cooked at high temperatures also threaten cellular integrity. Deep-fried foods along with well-done beefsteak, hamburgers, and bacon trigger the formation of gene-threatening heterocyclic amines.<sup>4,5</sup> Even "healthy" foods can contain small amounts of undesirable substances.<sup>6</sup>

To meet this challenge, **Life Extension® Chlorophyllin** provides a water-soluble form of **chlorophyll** shown to protect DNA.<sup>7,8</sup> It binds to certain toxic chemicals, allowing the body to safely eliminate them before they can enter the bloodstream.

**Chlorophyllin** also helps the body neutralize all major oxygen species and acts to protect mitochondria.<sup>9,10</sup>

To order **Life Extension® Chlorophyllin**,  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

The suggested dose is to take one **Chlorophyllin** capsule with each meal that contains mutagenic by-products. Each capsule provides:

<b>Chlorophyllin</b>	<b>100 mg</b>
(from sodium magnesium chlorophyllin)	

A bottle of 100 vegetarian capsules of **Life Extension® Chlorophyllin** retails for \$24. If a member buys four bottles, the price is reduced to **\$15** per bottle.

1. *Proc Natl Acad Sci USA*. 1993 Sep 1;90(17):7915-22.
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# DHEA

## Reduces Cardiovascular Risks And Promotes Healthy Longevity

Thirty-four years ago, **Life Extension**<sup>®</sup> began informing members about a broad-spectrum anti-aging hormone that was largely unknown in the medical community. Since then, hundreds of studies have helped validate what we knew all along—that this might be an essential life-extending supplement for aging individuals.

We're talking about the hormone **DHEA**.

DHEA administration has been shown to alleviate many age-related conditions—and **may slow the aging process itself**.<sup>1</sup>

One of the significant ways that DHEA facilitates healthy aging is through its impact on improving cardiovascular health.

New studies have shown that DHEA mounts a triple attack against three of the most prominent risk factors for cardiovascular disease: **atherosclerosis**, **endothelial dysfunction**, and **metabolic syndrome**.

By the time you reach the age of 70, your DHEA levels are likely to be **75 to 80%** lower than when you were at your peak.<sup>2-5</sup> The effects can be devastating.

Many scientific observations suggest that falling levels of DHEA play a role in creating many “symptoms” of aging that we see as people grow older.<sup>6,7</sup> Large-scale studies show a correlation between low DHEA levels and increased risk of death in older men. One study found that men with the lowest DHEA levels were **67%** more likely to die from a heart attack and **54%** more likely to die from any cause.<sup>6,8</sup>

The good news is that just two weeks of low-cost DHEA supplementation can restore age-depleted DHEA levels to those of younger adults, with effects that reverberate throughout the body.<sup>9</sup>

### Dangers Of Declining DHEA

What is DHEA? DHEA (short for *dehydroepiandrosterone*) is a hormone produced mostly in the adrenal glands. DHEA is the most abundant of all the circulating steroid hormones.<sup>8,10,11</sup>

Supplementation with DHEA rapidly raises levels of DHEA in the blood.<sup>12</sup>

By the time you reach 70, your DHEA levels are likely to be **75 to 80%** lower.<sup>2-5</sup> This is not something to take lightly, as large-scale studies show a correlation between low DHEA levels and increased risk of death in older men.

One study of more than 2,600 men aged 69 to 81 demonstrated that men in the lowest **25%** of DHEA levels were:<sup>6,8</sup>

- **54%** more likely to die from any cause,
- **61%** more likely to die from cardiovascular disease, and
- **67%** more likely to die from ischemic heart disease (heart attacks) specifically.

Surprisingly, the increased risk of dying was most pronounced in the younger members of this older male group (those less than 75.4 years old), whose risk of dying from cardiovascular disease was **164%** greater in the low DHEA group compared to those with higher levels.<sup>6</sup> This is a stark reminder of the importance of having DHEA blood levels checked and initiating supplements early.

Further supporting the notion that DHEA supplementation should begin early in the course of aging is a study showing that, especially among the “oldest old,” the faster DHEA levels fall, the greater the risk of having cardiovascular disease of any kind.<sup>13</sup>

A carefully designed **2010** study demonstrated that women are also vulnerable to the effects of lower DHEA levels. In that study, among women who were already at high risk for cardiovascular disease, those in the lowest one-third of DHEA levels had a



## What You Need To Know

### DHEA Fights Cardiovascular Disease

- Declining DHEA naturally occurs with age, but studies show that lower levels are associated with significantly increased risks of cardiovascular disease and death.
- Restoring DHEA to more youthful levels through supplementation can reduce the impact of major cardiovascular risk factors, including atherosclerosis, endothelial dysfunction, and metabolic syndrome.
- People who supplement with DHEA lose weight, improve their blood lipid profiles, and increase their insulin sensitivity, thereby reducing their cardiovascular risk across multiple parameters.
- DHEA has also been shown to boost the immune system and protect against bone loss.
- It is important to undergo regular blood testing to determine your DHEA-S levels and to get started on supplements to bring your levels back up to those you had in youth.
- A daily supplement of 15 to 50 mg of DHEA can substantially decrease your risk of cardiovascular disease.



significant **155%** increase in the risk of dying from cardiovascular disease.<sup>14</sup> Another study showed that women with the lowest **25%** of levels of DHEA have a **41%** increase in stroke risk. In addition, low DHEA-S levels in women have been found to correlate with significant increases in arterial wall thickness and reductions in blood flow.<sup>9,15</sup>

### Benefits Of DHEA Supplementation

A growing body of evidence indicates that maintaining youthful DHEA levels in your blood is a good way to fend off some of the most immediate threats to your longevity, namely the cardiovascular diseases that remain leading causes of death in the United States.

According to one study, each standard deviation (about **34%**) **increase** in DHEA levels in the blood produced an **18% decrease** in the risk of having a cardiovascular event.<sup>8</sup> This finding confirmed earlier work suggesting that higher DHEA-S levels are protective against cardiovascular disease in men, reducing the risk of dying from coronary heart disease by **37** to **55%**.<sup>16</sup>

By supplementing with DHEA, you can easily get your levels back to youthful values; most people can achieve excellent levels with a daily **15** to **50 mg** dose.

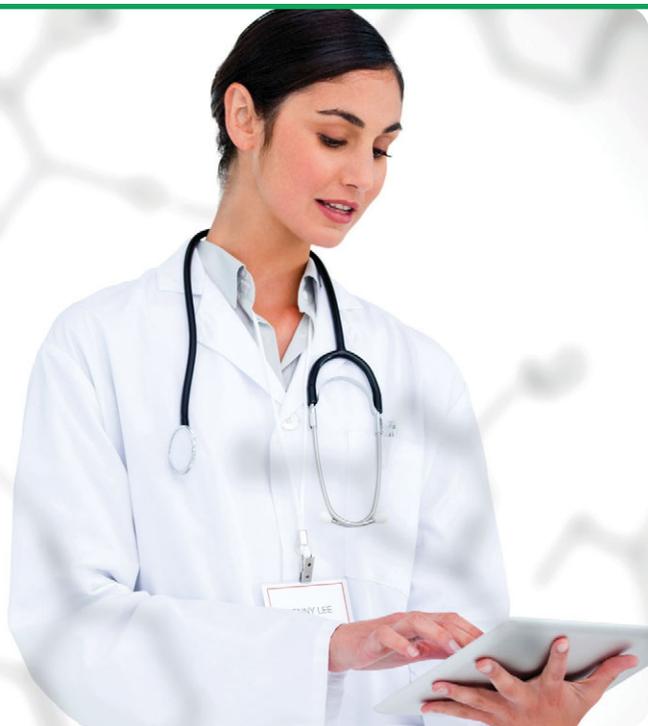
Let's now examine how falling DHEA levels affect a number of the leading cardiovascular risk factors.

### DHEA And Your Cardiovascular Disease Risk Factors

Three of the main risk factors that promote cardiovascular disease are *atherosclerosis* (“hardening of the arteries”), *poor function of the lining layer of blood vessels* (endothelial dysfunction), and *metabolic syndrome* (the combination of central obesity, poor blood sugar control, disturbed lipids, and high blood pressure). DHEA is increasingly being found to play important roles in tempering these risk factors. Let's investigate each of them individually.

#### **Atherosclerosis**

**Atherosclerosis** is a complex process, beginning with elevated levels of blood lipids, which oxidize and lead to inflammatory changes in artery walls. This progresses to the formation of fat-laden, inflammatory plaques that narrow the artery's interior, ultimately slowing or stopping blood flow.<sup>17</sup> Depending on where the narrowing is, and on how critical the flow reduction, the end result can affect the heart, brain, and other body parts. In the heart, it can lead to angina (chest pain), ischemia (loss of tissue viability from lack of oxygen), or eventually, myocardial infarction (heart attack).<sup>18-20</sup> In the brain, it can cause either a transient ischemic attack (“mini-stroke” or “pre-stroke”) or a full-blown ischemic stroke, in which whole regions of brain tissue die.<sup>21</sup>



Numerous studies have established a clear connection between low DHEA-S levels and arterial narrowing and other characteristics of arterial walls. For example, in one study on middle-aged patients undergoing a coronary angiography (a test that shows blood flow through the coronary arteries of the heart), researchers found that those who had at least one vessel with **50%** or more blockage had lower DHEA-S levels than those who had less severe narrowing.<sup>22</sup> Another study showed that low DHEA-S levels correlated with the thickness of the carotid artery (main brain artery) in men, and with decreased mean blood flow in the carotid artery in women.<sup>23</sup>

Unfortunately, having low DHEA-S levels can cancel out the benefits of certain procedures meant to reduce heart attack risk, such as arterial bypass grafting. This is a type of surgery that improves blood flow to the heart by connecting a healthy blood vessel to the blocked coronary artery and going around the blocked portion. Researchers studied patients with arterial bypass grafting and discovered that those with lowest DHEA-S levels had the fastest rate of re-narrowing (restenosis) of the grafted vessels, placing them at renewed risk of heart attacks.<sup>22</sup>

Low DHEA-S levels are also associated with the risk of atrial fibrillation, the disordered, fluttering contractions of the heart's upper chambers that can result from atherosclerosis. The higher the levels of DHEA-S, the lower the chances of developing atrial fibrillation. A study published in the *European Journal of Preventive Cardiology* showed that with each standard deviation (about **34%**) increase in DHEA-S, the

risk of developing atrial fibrillation falls by **26%**, and is nearly **three times** lower in people with the highest DHEA-S levels.<sup>24</sup>

The connection between low DHEA-S levels and increased risk of atherosclerosis and its dangers to longevity are clear. The question is, can supplementing with DHEA reduce the risk of atherosclerosis? Studies in both animals and humans indicate that the answer is yes.

A study in female rabbits whose ovaries had been removed (simulating menopause) showed that DHEA efficiently reduced early signs of atherosclerosis and increased beneficial **nitric oxide** levels.<sup>25</sup> (Endothelial nitric oxide is a chemical signal that tells blood vessels to relax, which widens arteries to allow increased blood flow.)

In arterial lining cells in culture, DHEA administration *inhibited* some of the first steps in the development of atherosclerosis, such as suppressing markers of oxidation, reducing inflammatory signals, and inhibiting the adhesion molecules that make platelets and other cells stick to artery walls to form obstructive plaques.<sup>25</sup>

A compelling study of healthy older men (averaging 65.4 years old) demonstrated the value of blood testing and supplementation with DHEA for reducing cardiovascular risk.<sup>26</sup> For two months, the men took either **50 mg** of DHEA daily at bedtime or a placebo; they had their blood markers of cardiovascular risk measured before and after treatment. While the placebo-treated men had no significant changes in their risk factors, the DHEA group had numerous benefits. They experienced increased levels of testosterone and increased markers of nitric oxide production. In addition, their LDL (or "bad") cholesterol fell significantly, as did a marker of blood clotting tendency. Together, that's a **three-way reduction** in cardiovascular risk: less dangerous cholesterol to oxidize; suppler, more responsive arterial walls; and less "sticky" blood that is prone to causing clots.

### **Endothelial Dysfunction**

Another major risk factor for cardiovascular disease is **endothelial dysfunction**, which is damage to the ultrathin, single layer of cells that lines blood vessels. The endothelium plays an important role in heart health because it responds to changes in blood flow and pressure. The endothelium uses *nitric oxide* and other molecules to signal smooth muscle in artery walls to constrict or relax in response to need.<sup>27</sup>

Damage to the endothelial layer occurs as oxidized fats begin to build up;<sup>28</sup> endothelial dysfunction then results in poorly-responsive arterial walls, which often overgrow and thicken, further limiting their

suppleness.<sup>29</sup> Inflammatory changes within the vessel wall then rapidly contribute to further dysfunction, loss of responsiveness, and eventually to plaque formation.<sup>30</sup>

Studies are showing that DHEA can inhibit many of the threats to endothelial function that can lead to cardiovascular disease. For example, treating endothelial cells in culture with DHEA reduces the very earliest inflammatory changes by decreasing the expression of proteins that trigger inflammation.<sup>31</sup> Additionally, DHEA treatment also increased the production of artery-relaxing nitric oxide.<sup>11,32</sup>

The impact of falling DHEA-S levels on endothelial function is especially apparent in women after menopause, when their risk for cardiovascular disease rises rapidly, eventually becoming similar to that of men.<sup>33</sup> A study of postmenopausal women with known coronary risk factors showed that those in the highest **25%** of DHEA-S levels had **80%** better endothelial function (as measured by arterial dilation) than those in the lowest **25%**.<sup>34</sup>

DHEA supplementation in humans can improve deteriorating endothelial function. This was clearly shown in a group of middle-aged men with elevated cholesterol who took **25 mg** of DHEA per day. After eight weeks, the DHEA supplement produced a **77%** increase in arterial relaxation, and by 12 weeks, the DHEA supplement produced a significant **115%** improvement!<sup>35</sup> Supplementation also resulted in significant reductions in a protein that promotes blood

clotting and a **26%** reduction in blood glucose levels, which are also associated with poor endothelial function.

A study of healthy postmenopausal women had very similar effects. After using **100 mg** of DHEA per day for three months, they experienced improved arterial relaxation and enhanced blood flow, while reducing total cholesterol.<sup>32</sup>

### Metabolic Syndrome

**Metabolic syndrome** is a major threat to cardiovascular health, an accelerator of aging, and a cause of premature death. The syndrome consists of central obesity (excess belly fat), poor blood sugar control, abnormal lipid levels, and high blood pressure.<sup>36</sup> The risks of dying a cardiovascular death are increased by up to **200%** in people with metabolic syndrome compared to those without.<sup>37</sup>

### How DHEA Is Measured In The Blood

**DHEA** and its “sulfated” form called **DHEA-S** are the most abundant of all the circulating steroid hormones.<sup>8,10,11</sup> Both DHEA and DHEA-S can be measured in the blood; however, since DHEA-S is a more stable form and found in significantly higher levels than DHEA, the DHEA-S form is what is usually tested in the blood (serum) to evaluate the body’s overall DHEA status.<sup>9</sup> Supplementation with DHEA raises serum DHEA-S levels.<sup>12</sup>



As DHEA declines, the rate of metabolic syndrome rises, which is hardly surprising, since DHEA regulates most of the processes that influence metabolic health.<sup>38-41</sup>

Fortunately, as with atherosclerosis and endothelial dysfunction, supplementing with DHEA has numerous positive benefits on metabolic syndrome.

Laboratory studies have shown that DHEA administration reduces abdominal fat and insulin resistance, two of the major features of metabolic syndrome.<sup>42</sup> Human studies are even more impressive, with a large number of studies consistently showing that in both men and postmenopausal women, taking **15 to 50 mg** per day of DHEA leads to significant beneficial changes in almost all metabolic syndrome parameters, including:

- Decreases in visceral (belly) fat,<sup>42</sup>
- Decreases in subcutaneous (under the skin) fat,<sup>42</sup>
- Increases in insulin sensitivity of up to **30%**,<sup>43</sup>
- Decreases in overall insulin exposure<sup>42</sup> (elevated insulin is associated with an increased risk of developing heart disease, diabetes, cancer, and excessive inflammation),<sup>44-48</sup>
- Increases in protective HDL levels of nearly **12%**,<sup>43</sup>
- Decreases in dangerous LDL cholesterol of up to **11%**,<sup>43</sup>
- Decrease of almost **20%** in plasma triglycerides,<sup>43</sup>
- Increases in levels of insulin-like growth factor-1 (IGF-1), a molecule that is vital to controlling blood sugar and other metabolic parameters,<sup>49</sup>
- Dramatic improvement in physical and psychological well-being by **67%** in men and **84%** in women,<sup>50</sup>
- Beneficial increases in estrogen levels, even without specific hormone replacement therapy for menopause;<sup>49</sup> those changes may further help to protect postmenopausal women from the elevated cardiovascular disease risks of menopause, and
- No significant side effects.<sup>51</sup>

Additionally, specifically in obese women (both pre- and postmenopausal), **100 mg** per day of DHEA supplementation decreased plasma-saturated fatty acids and increased levels of protective fatty acids such as



omega-3 and omega-6.<sup>52</sup> Another study by the same group showed that **100 mg** per day of DHEA also led to significant weight loss, improved waist circumference, improved blood pressure, a marked decrease in blood glucose levels, and a significant reduction in the total metabolic syndrome score in postmenopausal women.<sup>53</sup>

## DHEA Supports Immunity And Improves Bone Health

In addition to its ability to promote cardiovascular health and prevent premature death, DHEA supplements are also showing promise in other areas that contribute to decreased longevity and diminished quality of life in older adults. Two of the main areas are immunity and bone health.

### Immune Support

The immune system wanes with age, resulting in increased vulnerability to infections and cancer. This is called **immune senescence**. DHEA is increasingly recognized as a means of improving the immune response in older adults.<sup>54,55</sup>

One study found that supplementing with **50 mg** per day of DHEA for 20 weeks boosted the number and function of a broad array of immune system cells and signaling molecules that are generally diminished with aging.<sup>12</sup> This translates to improved immunity against bacteria, viruses, and fungal infections, as well as better surveillance to catch and destroy incipient cancer cells before they erupt into full-blown malignancies.

DHEA has been shown to help boost the body's response to the flu vaccine. A study published in the *Journal of the American Geriatrics Society* demonstrated that a one-time subcutaneous injection of **7.5 mg** of DHEA markedly boosted antibody responses to the flu vaccine.<sup>56</sup> This is especially critical in older adults since they have been found to respond more poorly to vaccines than younger people, which increases the risks for preventable infections.<sup>57</sup>

## Bone Health

Osteoporosis poses a major threat to both men and women as they age. Weaker bones means higher risk for serious fractures,<sup>58</sup> including the dreaded hip fractures that put so many older adults into hospitals, where they are at risk for all kinds of life-shortening complications.<sup>59,60</sup>

DHEA appears to contribute to stronger bones in both men and women, though studies indicate that men need to take twice the amount as women in order to achieve benefits. One study found that **50 mg** of DHEA can improve bone mineral density and reduce bone resorption in women, but not in men.<sup>61</sup> However, another study found that elderly men experienced significantly improved bone mineral density in lumbar vertebrae and hip bones with a **100 mg** dose of DHEA-S daily.<sup>62</sup>

In older women with significant frailty, a daily **50 mg** dose of DHEA also improved muscle strength and physical function, when accompanied by mild physical exercise.<sup>63</sup> These changes may help to reduce fracture risk simply by reducing the risk of a serious fall in the first place.

## Summary

DHEA is a potent regulator of many of the processes that, uncorrected, raise your risk of a heart attack, stroke, or other degenerative catastrophes.

Studies now show that people with cardiovascular diseases have significantly lower levels of circulating DHEA and people with low DHEA levels die younger than those with more youthful levels. The good news is that regular supplementation with modest doses (**15 to 50 mg** per day) of DHEA can significantly reduce the risk of three of the main risk factors for cardiovascular disease: atherosclerosis, endothelial dysfunction, and metabolic syndrome.

In addition, emerging science suggests supplementing with DHEA can help prevent declining immune system function with age and can improve bone health.

It's important to have one's **blood tested** after initiating DHEA supplementation to ensure the proper dose is used. Some people need only **15 mg** a day while others may require **50 mg** a day and higher. The reason older people should start DHEA before having their blood drawn for testing is that almost everyone over age 40 has less-than-optimal DHEA levels.

## Why You Need Regular DHEA Blood Testing

DHEA levels in your blood begin falling in early middle age; by the time you reach 70, your levels are likely to be **75 to 80%** lower than when you were at your peak.<sup>2-5</sup> Fortunately, you can get your levels back to youthful values by supplementing with DHEA; most people can achieve excellent levels with a daily **15 to 50 mg** dose.<sup>64,65</sup>

But because of the natural biological variability in DHEA levels, it is important that you check your blood levels periodically for two reasons. First, if your level is low, you'll need to increase your supplement dose to bring the level closer to ideal. Second, you may find, after a few weeks of supplementation, that you are at or near your optimum level. This could save you money by allowing you to slightly lower your dose.

Standard testing for DHEA involves measuring the circulating levels of DHEA-S, the sulfated form of the hormone that predominates in the blood. These levels accurately reflect circulating levels of DHEA itself and are more stable as an indication of true DHEA values.

DHEA is included in the popular **Male** and **Female Blood Test Panels** that can be ordered by calling **1-800-208-3444** (24 hours a day). These tests are heavily discounted through June 1, 2015.)

## What Levels Should You Aim For?

Remember, there's a difference between "normal" levels and those that are considered ideal for optimum health. "Normal" levels for men range from **20.8 to 530.5 micrograms/dL**, and for women, **13.9 to 433.2 micrograms/dL**. But "normal" levels are simply averages for populations not known to have any specific disease, hence the very wide range.

You should aim for levels established as "ideal" for restoring your DHEA function to youthful values. For women, an ideal DHEA-S level is **275 to 400 micrograms/dL**, and in men, **350 to 500 micrograms/dL**. People who don't supplement with DHEA typically have levels below **200 micrograms/dL**, and in older adults that level can drop to less than **100**.<sup>4</sup>

Because of DHEA's excellent safety record and the likelihood that your levels are low, you may choose to start supplementing at **25 mg** per day, then get your blood tested in four weeks' time, adjusting your dose as needed. Or, you may choose to test first, then add the supplement once you've seen your levels.

Either way, be sure to keep a close eye on your levels so that you can regularly adjust your dose to stay in the range that is ideal for promoting your cardiovascular (and general) health.

For those not already supplementing, we suggest they start at a dose of **25 mg** a day and then have their blood drawn two to three weeks later. The results from this blood test can help determine the optimal individual dose.

A test for DHEA is included in the comprehensive **Male** and **Female Blood Test Panels** that most

Foundation members order now because they are available at the year's **lowest prices**.

**DHEA supplements** are remarkably inexpensive, making it affordable to include DHEA in one's healthy longevity program. ●

## DHEA Usage And Safety Precautions

DHEA is a very safe supplement,<sup>66</sup> but certain precautions for both men and women should be observed.

### For Men

A review of the published literature provides persuasive arguments that DHEA does not have an effect on prostate cancer risk or indolent prostate cancer cells. Studies in fact show lower DHEA levels in newly diagnosed prostate cancer patients compared to age-matched controls. Men on aggressive hormone ablation therapy may want to discontinue DHEA during the time they are on this therapy.<sup>67-70</sup>

You should know your prostate specific antigen (PSA) level before embarking on a DHEA supplementation regimen. If you suspect or have been diagnosed with prostate cancer, consult your physician before using DHEA. Please note the following:

- A rising PSA and/or a positive digital rectal exam may suggest early prostate cancer.
- Have a PSA level and a digital rectal exam done before starting DHEA to rule out existing prostate disease.
- Then have a physician check your PSA and DHEA-S serum levels every six to 12 months thereafter.
- Men should also periodically check their blood levels for free testosterone and estrogen.

While taking DHEA, men should also consider taking the following nutrients, which may enhance DHEA's effectiveness when taken daily:

- **5,000-10,000 IU** of vitamin D3
- **200 mg** of gamma E tocopherol
- **10-40 mg** of lycopene extract
- **3-10 mg** of boron
- **400 mg** of supplement containing a standardized broccoli extract

### For Women

Because DHEA supplementation can influence estrogen and testosterone levels in women, women should consider getting blood tests for those hormones at the same time that they obtain a DHEA test.

If you have been diagnosed with an estrogen-dependent cancer, you should consult with your physician before beginning DHEA restoration therapy.

When taking DHEA, women should also consider taking the following nutrients, which may enhance DHEA's effectiveness when taken daily:

- **400 IU** of vitamin E (D-alpha tocopheryl succinate)
- **400 mg** of supplement containing a standardized broccoli extract
- **80-160 mg** of indole-3-carbinol
- **5,000-10,000 IU** of vitamin D3
- **200 mg** of gamma E tocopherol



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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**Homocysteine**

### HORMONES

**Free and Total Testosterone**  
**DHEA-S**  
**Estradiol** (an estrogen)  
**TSH** (thyroid function)  
**Vitamin D (25-hydroxyvitamin D)**

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**Liver function tests:** AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase  
**Blood minerals:** calcium, potassium, phosphorus, sodium, chloride, iron  
**Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio  
**Hemoglobin A1c**

### COMPLETE BLOOD COUNT (CBC)

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**HDL** (high-density lipoprotein)  
**Triglycerides**

### CARDIAC MARKERS

**C-Reactive Protein** (high sensitivity)  
**Homocysteine**

### HORMONES

**Progesterone**  
**Estradiol** (an estrogen)  
**Free and Total Testosterone**  
**DHEA-S**  
**TSH** (thyroid function)  
**Vitamin D (25-hydroxyvitamin D)**

### METABOLIC PROFILE

**Glucose**  
**Kidney function tests:** creatinine, BUN, uric acid, BUN/creatinine ratio  
**Liver function tests:** AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase  
**Blood minerals:** calcium, potassium, phosphorus, sodium, chloride, iron  
**Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio  
**Hemoglobin A1c**

### COMPLETE BLOOD COUNT (CBC)

**Red Blood Cell count including:** hemoglobin, hematocrit, MCV, MCH, MCHC, RDW  
**White Blood Cell count including:** lymphocytes, monocytes, eosinophils, neutrophils, basophils  
**Platelet count**

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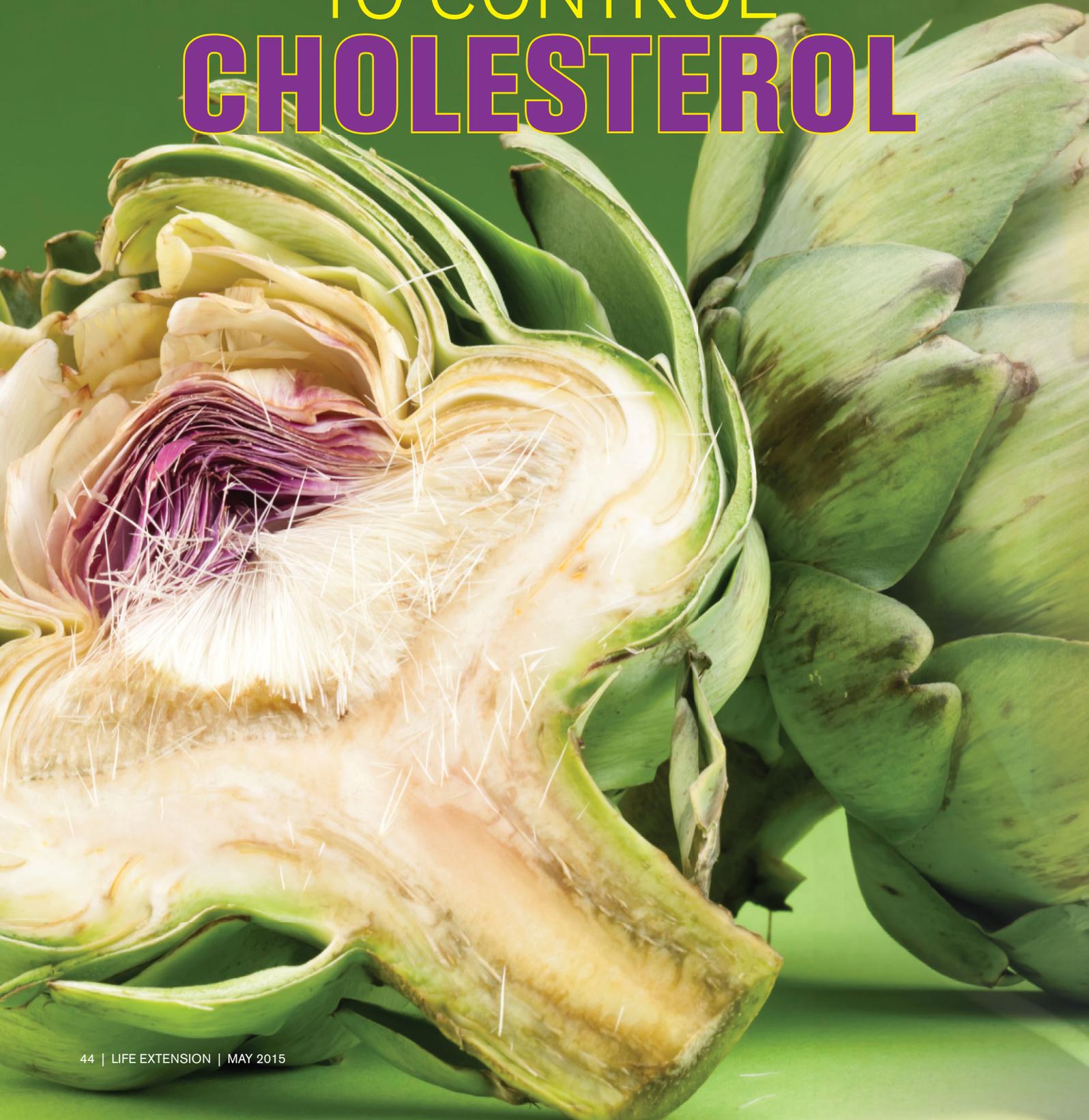
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# NATURAL METHODS TO CONTROL **CHOLESTEROL**





Approximately **25 million** people take **statin drugs** to reduce their cholesterol, yet heart disease remains the number one killer of Americans.<sup>1-3</sup>

While statins lower LDL cholesterol and C-reactive protein, and modestly elevate protective HDL cholesterol,<sup>4,5</sup> they may increase the risk of heart failure in certain people.<sup>6,7</sup>

Researchers have now discovered two compounds that work together to *safely* lower dangerous LDL cholesterol—while simultaneously boosting protective HDL.

An extract from the leaves of **artichoke** has been shown to raise protective **HDL** levels without the side effects of statins.<sup>8</sup>

In addition, a derivative of **vitamin B5**, called **pantethine**, safely lowers **LDL** while maintaining CoQ10 at protective levels—resulting in an **11%** reduction in major coronary heart disease events.<sup>9</sup>

Together, these two nutrients offer protection against two causes of vascular disease.

### Statins Do Only Half The Job

Statin drugs potently lower cholesterol when used properly, but produce a number of side effects that too often cause people to discontinue using them.

Statins have been associated with muscle weakness and pain (myalgia), muscle breakdown (rhabdomyolysis), kidney disease, and negative effects on the digestive and central nervous systems.<sup>10,11</sup> Even more disturbing, statins also *raise* the risk of developing diabetes by **9 to 13%**<sup>12-15</sup> (a risk that is up to **48%** higher in postmenopausal women).<sup>16</sup>

Clearly, statins are not the panacea that pharmaceutical companies have led physicians and the public to believe. One drawback is that they don't elevate HDL enough to confer meaningful removal of excess cholesterol buildup on the arterial wall via reverse cholesterol transport.

### How Cholesterol Balance Dictates Your Health Risks

Lowering **LDL** is one piece of the puzzle for preventing heart disease. Another component is to **raise HDL levels**, which removes cholesterol from blood vessel walls and protects it from oxidation.<sup>17,18</sup> Numerous epidemiological, animal, and human studies demonstrate the value of achieving and maintaining high HDL levels.<sup>19-30</sup>

In one impressive human study, each **5 mg/dL** increase in **HDL** led to a reduction of up to **29%** in the risk of cardiovascular disease; other studies show that the risk of having a heart attack or dying goes down **3%** for each **1%** increase in **HDL**.<sup>29,30</sup>

Statin drugs have a major problem: They reduce the production of **coenzyme Q10**, which is necessary for releasing energy from foods that heart cells need to

function. This negative effect may paradoxically *raise* heart failure risk in certain populations.<sup>6,7</sup>

What aging humans need is a **balanced approach** to reducing cardiovascular disease—one that safely lowers LDL while simultaneously raising HDL levels. Researchers have found two nutrients that can do just that.

**Pantethine**, a derivative of vitamin B5, safely lowers LDL without negatively impacting CoQ10 levels, while **artichoke leaf extract** can raise HDL levels without harmful side effects.

Let's look at artichoke leaf extract first.

### Artichoke Leaf Extract

Artichokes are members of the thistle family. The edible portion of the plant is actually a giant flower bud, but the leaves that cover it are rich in flavonoid molecules that have been shown to help lower LDL cholesterol levels and raise protective HDL levels.

Chief among these is *cynaropicrin*,<sup>31</sup> along with *luteolin*, *cynaroside*, and *chlorogenic acid*.<sup>32,33</sup> These molecules protect the cholesterol in LDL particles from the dangerous oxidation that leads to atherosclerosis.<sup>32,34</sup> Artichoke extracts are also able to inhibit the synthesis of new cholesterol molecules by nearly **60%**, which might help to lower total blood cholesterol levels.<sup>35</sup>

In addition, artichoke leaf extract promotes the fecal excretion of bile acids, which are detergent-like molecules that carry cholesterol out of the body. This action has been shown to lower total and non-HDL cholesterol levels in a preclinical study by **15** and **30%**, respectively.<sup>36</sup>

These complementary mechanisms likely all contribute to the observed reduction in cardiovascular risk factors seen in human studies of supplementation with artichoke leaf extract.

#### Ranges Of LDL Levels And Impact On Risk<sup>9,60</sup>

LDL Level (mg/dL)	Associated Risk Category
Less than 100*	Optimal (minimal risk)
100-129	Near optimal (low risk)
130-159	Borderline high
160-189	High
190 and above	Very high

\* While less than **100 mg/dL** is the published upper limit of optimal, **Life Extension®** feels that the ideal limit should be less than **80 mg/dL**. Those with pre-existing/high-risk cardiovascular disease should strive for less than **70 mg/dL**,<sup>61,62</sup> but should have hormone levels checked to make sure they are not being suppressed (many vital hormones are built on a "scaffold" of cholesterol molecules).<sup>63,64</sup>



## Modest Reductions In Total Cholesterol And LDL

Human studies of supplementation with artichoke leaf extract show a reduction in cardiovascular risk factors, including reduced LDL and total cholesterol levels and improved endothelial function.

When researchers gave patients with high cholesterol (more than **280 mg/dL**) **1,800 mg** per day of dry artichoke leaf extract for six weeks, they saw tremendous results. Patients using the artichoke leaf extract experienced an **18.5%** reduction in total cholesterol, while the placebo patients only saw an **8.6%** reduction.<sup>37</sup> Importantly, LDL fell **23%** in supplemented patients but by only **6%** in controls, while the ratio of LDL to HDL decreased **20%** in supplemented patients and only **7%** in controls.

Another study demonstrated the ability of artichoke supplementation to improve the function of the endothelium, the thin layer of cells lining arteries. Since **endothelial dysfunction** is a first step in atherosclerosis, improving endothelial function is especially important in helping prevent heart disease.<sup>38</sup> The study showed that patients with moderate hyperlipidemia who supplemented with artichoke experienced a **36.4%** improvement in **endothelial function** compared with controls and also had favorable decreases in blood markers of endothelial dysfunction, demonstrating the ability of artichoke to directly improve vascular health.

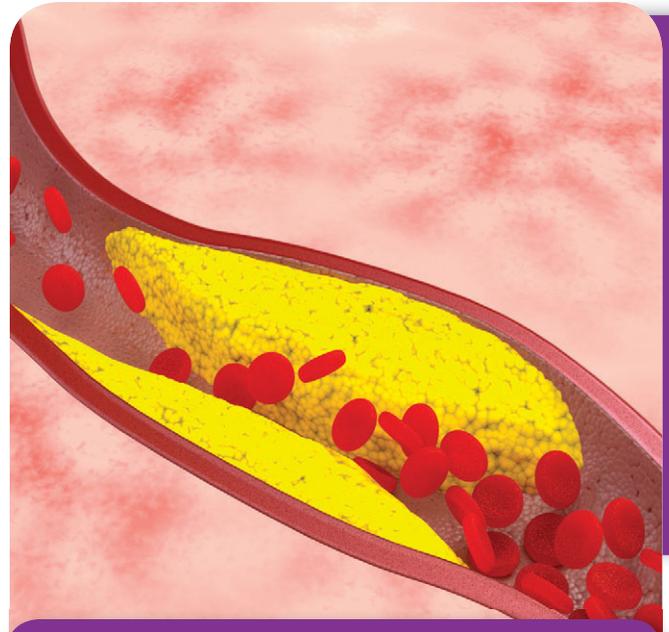
And in a study published in *Phytomedicine*, adults with mild to moderate cholesterol elevations who took **1,280 mg** per day of a standardized artichoke leaf extract for 12 weeks reduced total cholesterol by an average of **4.2%** from baseline, while in control subjects that figure *increased* by an average of **1.9%** during the study.<sup>39</sup>

## Artichoke Leaf Extract Increases HDL Cholesterol

The unique benefit from artichoke leaf extract comes from its ability to raise protective HDL cholesterol levels without adverse side effects.

Compelling evidence that artichoke leaf extract can raise protective HDL cholesterol levels has now arrived in a human study demonstrating a never-before-seen improvement in this vital risk-reducing factor.

The study examined **92** overweight subjects with an average body mass index of **25.4** who had mild elevations of total cholesterol. The subjects received either **250 mg** twice daily (total **500 mg** per day) of a triple standardized artichoke leaf extract or a placebo.<sup>8</sup> After eight weeks, mean HDL cholesterol rose



What You Need To Know

## Safely Control Cholesterol

- Americans continue to die at unacceptable rates from cardiovascular disease, partially driven by persistent elevations in LDL (“bad”) cholesterol and insufficient protection by HDL (“good”) cholesterol.
- Statins lower LDL cholesterol and some raise HDL cholesterol, but they produce side effects that may cause many people to stop taking the drugs, leaving them unprotected.
- Two natural ingredients are now available that can lower LDL cholesterol without reducing CoQ10 levels and increase beneficial HDL cholesterol.
- Pantethine, a derivative of vitamin B5, reliably lowers LDL cholesterol and the LDL carrier protein apoB, without statin-like side effects, and without lowering protective CoQ10 levels.
- Artichoke leaf extract raises protective HDL levels and levels of the HDL carrier protein, apoA.
- Dual-acting protection against America’s leading killer, cardiovascular disease, is now within reach of all Americans, without a prescription and through a natural product.

## Understanding Good Versus Bad Cholesterol

Cholesterol itself is neither good nor bad. It is simply an essential form of fat that contributes to our cell membranes and is an absolute requirement for the formation of many vital hormones and other signaling molecules.

The differences between “good” cholesterol and “bad” cholesterol are mainly related to protein molecules that carry the cholesterol and their ability to shield the fat molecule from oxidation as oxidized fats are powerful triggers of atherosclerosis.

These carriers, when loaded up with cholesterol, are called **lipoproteins**. Before being loaded with cholesterol, the carrier proteins are called **apolipoproteins**, with suffixes such as “A” and “B.”

**Apolipoprotein A** (or apoA), when loaded with cholesterol, is called **high density lipoprotein**, or HDL. HDL particles also contain auxiliary enzymes,

including one called paraoxonase1 (or PON1), which have potent and specific effects. Because apoA helps draw cholesterol out of fat-laden cells,<sup>54,55</sup> and because the presence of PON1 protects cholesterol from oxidation, HDL cholesterol particles have favorable health effects, earning them the title of “good cholesterol.”<sup>56</sup>

**Apolipoprotein B** (apoB), when loaded with cholesterol, is known as **low density lipoprotein**, or LDL. LDL particles are vulnerable to chemical changes induced by oxygen free radicals, however they are protected from oxidation via the activity of PON1.<sup>57,58</sup> Because apoB transports oxidized cholesterol from the bloodstream and into cells, LDL cholesterol has the opposite effect from that of HDL cholesterol, exerting negative health effects and earning LDL the title of “bad cholesterol.”<sup>59</sup>

by **8 mg/dL** in supplemented patients, but only by **0.2 mg/dL** in controls. In those who received artichoke leaf extract, this represents a **10%** increase in mean HDL cholesterol from baseline measurements.

In addition to a beneficial rise in good cholesterol, mean total cholesterol levels fell in supplemented patients by **15 mg/dL**, but by only **5 mg/dL** in controls. Significant differences were also shown in the total cholesterol/HDL ratio and in the LDL/HDL ratio in supplemented patients, compared with controls.<sup>8</sup>

Importantly, there were no adverse effects noted in this study.<sup>8</sup>

In a follow-up study, the same researchers found that when patients with mild cholesterol elevations took a daily **200 mg** dose of artichoke leaf extract, their **total cholesterol** fell by nearly **10%** after only 30 days.<sup>40</sup> Excitingly, this study also demonstrated a **19%** increase in levels of protective **apoA** (the HDL cholesterol-carrying protein) and a similar **19%** rise in the ratio of apoA to apoB (the LDL-associated protein).

### The “Magic Bullet” Behind Increased HDL Cholesterol

It’s clear that artichoke leaf extract can favorably impact HDL cholesterol levels, but how? Scientists are still uncovering those answers, but so far we know that artichoke extract has a number of potential mechanisms that could have a positive impact on HDL cholesterol.

Studies in humans demonstrate that supplementation with artichoke leaf extract raises levels of the protective **apoA** carrier molecule that supports the HDL particle,<sup>41</sup> which contributes to observed increases in beneficial HDL levels.<sup>40</sup> A pilot study has shown a significant **19%** increase in apoA after 30 days of supplementation in a human population; in addition, the ratio of apoA to apoB rose by **19%**.<sup>40</sup>

Another leading hypothesis behind artichoke leaf extract’s ability to raise HDL levels has to do with its high content of **chlorogenic acid**, known to raise HDL-cholesterol by enhancing **PON1**, the powerful enzyme that forms part of the HDL particle.<sup>8,42</sup> Increased PON1 correlates strongly with HDL cholesterol.<sup>43</sup>

### Pantethine Safely Lowers LDL Cholesterol

A long-standing concern with statins is that they reduce the production of essential **coenzyme Q10**, which may ultimately *raise* some cardiovascular risks in certain populations.<sup>6,7</sup>

**Pantethine**, a derivative of vitamin B5, reliably lowers LDL cholesterol without reducing CoQ10 levels.

Studies indicate that pantethine helps reduce cholesterol levels by dual mechanisms—reducing the rate of new cholesterol production and speeding the breakdown of existing cholesterol.<sup>9</sup> Both lab and clinical studies show that these mechanisms lead to real-world reductions in dangerous cholesterol levels.

Laboratory studies have shown that adding pantethine to liver cells in culture significantly reduces the production of fatty acids while increasing fat-burning activity.<sup>44</sup> As far back as 1984, a study on live rabbits fed a high-cholesterol diet found that pantethine supplementation reduced plasma total cholesterol levels by **64.7%** compared with control animals.<sup>45</sup> Supplemented animals also demonstrated an increase in the beneficial HDL/total cholesterol ratio, a more than **18%** reduction in the area of aortic plaque formation, and a reduction in the severity of lesions in the aorta and in the coronary arteries.

After that study was published, a variety of small studies during the late 1980s and early 1990s began exploring pantethine for human use—and all demonstrated pantethine's ability to reduce total and LDL cholesterol, as well as its ability to reduce the ratio of total cholesterol to HDL.<sup>46-50</sup>

But it is the dramatic findings of two recent studies that have experts re-energized about pantethine in reducing risk factors for cardiovascular disease.

The first study involved people in basically good health, but whose lipid profiles placed them in a low-to-moderate risk of cardiovascular disease.<sup>51</sup> Because of their low risk, these patients were not candidates for statin therapy, making them ideal for a prevention study of this kind.



For four weeks, all subjects were started on a therapeutic lifestyle-change diet, with the main focus being a reduction in saturated fat. After that, they were randomly assigned to receive **600 mg** per day of pantethine or a placebo for the next eight weeks, and then **900 mg** per day for an additional eight weeks. At the end of the study, **placebo** recipients had no significant changes in total or LDL cholesterol or levels of apoB (the LDL-associated protein). Pantethine-supplemented subjects, however, had modest reductions in total cholesterol of **6 mg/dL (3% from baseline)**, in LDL of **4 mg/dL (4% from baseline)**, and in apoB of **4 mg/dL (5% from baseline)**.<sup>51</sup>

A study of similar design in **2014** found better results.<sup>9</sup> After just four weeks, the researchers noted significant differences between the supplemented and placebo groups. And after 16 weeks, the patients supplementing with pantethine experienced reductions from baseline in total cholesterol of **6%**, in LDL of **11%**, and non-HDL cholesterol of **8%**. Interestingly, an increase in the dose of pantethine from **600 to 900 mg** per day during weeks 8 through 16 did not produce additional changes in LDL. An additional critical finding in this study was an **8%** reduction in apoB from baseline in the supplemented group—a significant reduction since apoB is the core protein in the deadly LDL cholesterol particle.

Given that for each **1%** reduction in LDL cholesterol levels there is a correlating **1%** reduction in the risk of coronary artery events, these pantethine-induced changes bode extremely well for those at risk for cardiovascular diseases. In this study, the **11%** reduction in LDL cholesterol translates into a highly meaningful **11%** decrease in the risk of a heart attack or other coronary artery disorder.<sup>9</sup>

An additional important factor in the context of safety here is that levels of CoQ10 did not fall (indeed, they rose slightly) with supplementation. This is in direct contradistinction to statins, which produce dangerous lowering of CoQ10, potentially impairing energy metabolism in heart and skeletal muscles.

## Summary

Virtually every American is at significant risk for cardiovascular diseases as they age. Factors behind this risk include elevations in LDL and insufficient protective HDL.

Mainstream medicine and Big Pharma have succeeded in getting more than **25 million** Americans to use statin drugs that lower LDL cholesterol at the expense of side effects so pronounced that over **20%** stop using statins,<sup>52</sup> leaving them vulnerable to LDL-induced arterial disease.

## New And Improved Vitamin B5

Pantethine is a derivative of vitamin B5 (pantothenic acid).<sup>9,65</sup> It lowers cholesterol—particularly the risk-producing LDL form—by enhancing cellular utilization of fats and sugars and by reducing the production of new cholesterol molecules.<sup>9</sup> Pantethine essentially functions as a more metabolically active form of vitamin B5. Its benefits are especially seen in how it relates to an essential enzyme cofactor called Coenzyme A (CoA).

Vitamin B5 is the precursor molecule to CoA. Unlike vitamin B5, however, pantethine participates directly in reactions requiring CoA, without the need to undergo additional enzymatic conversion that is required of B5 itself.<sup>66</sup>

Once pantethine has been efficiently converted into CoA, CoA participates in more than **70** crucial enzymatic reactions in the body—particularly those involving the breakdown of food molecules and release of the energy in their chemical bonds to do useful work in the cell.<sup>66</sup> This is important because every single fat and sugar molecule you eat must eventually combine with a CoA molecule to enter the cycle of reactions that will release its chemical energy.

Research shows that supplementation with pantethine significantly raises the content and activity of CoA in the liver, much more efficiently than does vitamin B5 itself.<sup>67</sup>

A new combination of ingredients includes **pantethine**, shown to safely lower LDL without statin-like side effects, and a novel **artichoke leaf extract**, capable of raising HDL levels. This combination is likely to provide dual-acting benefits.

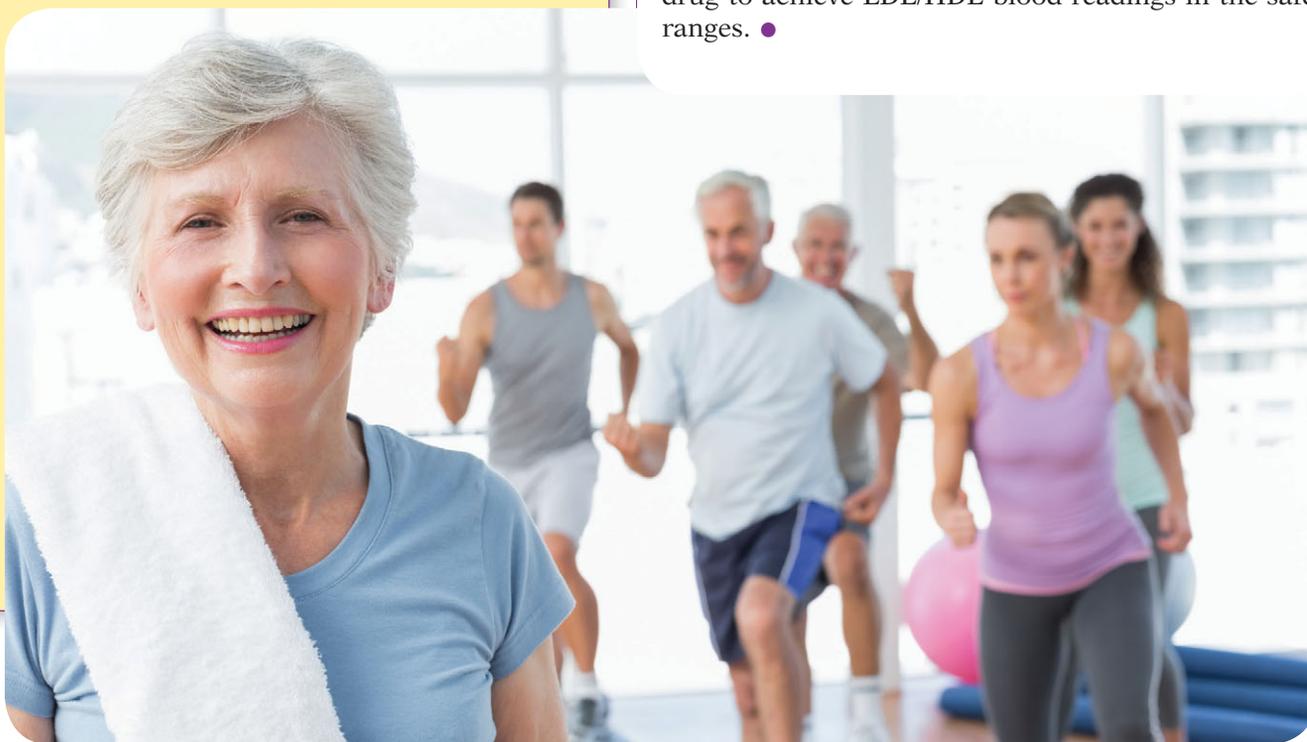
Those with moderately elevated LDL and/or insufficient HDL may be able to eliminate statin drugs through use of the natural compounds described in this article.

For people with stubbornly high LDL that may require statin drug therapy, the advantage of adding these natural compounds is that it may enable the dose of the statin drug to be reduced to a level where side effects are minimized or eliminated.

A fact that physicians have yet to grasp is that lower-dose statins in most patients can provide equivalent protective benefits as high doses promoted by profit-hungry pharmaceutical companies. This was shown in a study with the popular statin drug atorvastatin (Lipitor<sup>®</sup>), whereby fewer patients taking lower doses died from any cause compared to higher doses.<sup>53</sup>

Statin drugs are demonized by advocates of natural approaches, and the horrific side effects inflicted by **high-dose** statins justify these concerns, especially for those who do not adequately supplement with **CoQ10**.

An objective strategy when taking into account the high rates of disability and death caused by arterial disease is to try lifestyle and natural approaches to reduce LDL below **100 mg/dL** and increase HDL as high above **50 mg/dL** as possible. If these safe methods fail, then use the absolute lowest dose of a statin drug to achieve LDL/HDL blood readings in the safe ranges. ●



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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Life Extension®'s **Super Omega with Krill, Astaxanthin, & Olive Fruit Extract** is a unique formulation containing a potent concentration of **5 key ingredients** that work together to **maximize** the protective benefits of omega-3s.

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Scientists suggest that combining **fish oil** and **krill oil** may provide **enhanced benefits** for the cardiovascular and nervous system more than either form by itself due to the different ways that fish oil and krill oil are taken up by our cells.<sup>1,2</sup>

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Astaxanthin fights free radicals,<sup>4</sup> boosts mitochondrial function,<sup>4</sup> supports brain,<sup>5,6</sup> cardiovascular,<sup>7,8</sup> and DNA<sup>9,10</sup> health, and supports healthy blood sugar levels for those already in the normal range.<sup>11,12</sup>

## SESAME LIGNANS

The **Super Omega** formula contains standardized **sesame lignans** to enhance the overall benefits of EPA/DHA marine oils.<sup>13,14</sup>

Sesame lignans help support a healthy inflammatory response and guard against lipid peroxidation, thereby extending the stability of DHA in the body.

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To order **Super Omega with Krill, Astaxanthin, & Olive Fruit Extract**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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A bottle containing 30 softgels of **Astaxanthin 4 mg with Phospholipids** retails for \$16. If a member buys four bottles, the price is reduced to **\$10.50** per bottle.

**Contains soybeans.**

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Item # 01720

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# Dual-Action Formula Supports Healthy Cholesterol Levels



As you age, it becomes critically important to maintain an optimum balance between “good” and “bad” cholesterol, otherwise known as **HDL** and **LDL**, in order to maintain a healthy cholesterol profile.

For those who seek a safe and natural way to support healthy cholesterol levels, researchers have discovered *two compounds* that help promote healthy levels of both LDL and HDL already within normal range.<sup>1-4</sup>

**CHOL-Support™** is formulated with a triple standardized **artichoke leaf extract** and **pantethine**, the biologically active form of pantothenic acid<sup>3</sup> to maintain healthy HDL, LDL, and total cholesterol levels already within the normal range.<sup>1-4</sup>

## Artichoke Leaf Extract

Clinical studies now demonstrate that artichoke leaf extract’s polyphenolic compounds<sup>2</sup> support optimal HDL/LDL ratios already within normal range.<sup>12</sup>

## Pantethine

Clinical trials show pantethine safely maintains LDL and total cholesterol already within the normal range, without reducing protective CoQ10 levels.<sup>3</sup>

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

Pantesin® is a registered trademark of Daiichi Fine Chemical Co., Ltd.  
Pycrinil® is a registered trademark of Indena S.p.A., Italy.

## References

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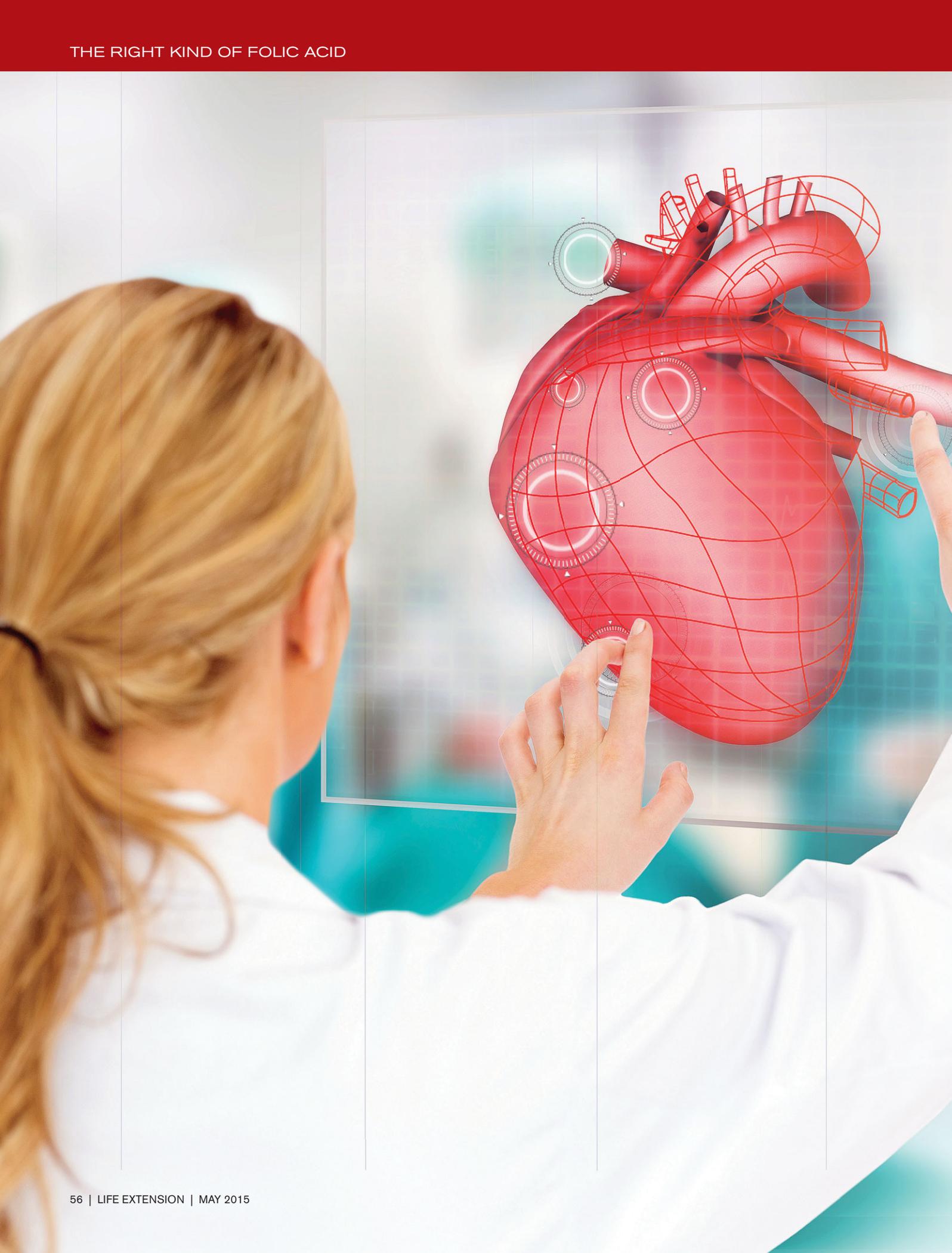
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Why So Many People Require  
The Metabolically Active Form of

# Folic Acid

Elevated homocysteine is a proven risk factor for vascular disease.

Homocysteine can be lowered by supplementing with **vitamins B12, B6, and folic acid**.

In order for folic acid to remove homocysteine, it first must be converted to its active form called ***L-methylfolate*** (5-MTHF). The diagram to the right shows the steps required in the body to convert **folic acid** to metabolically active ***L-methylfolate***:

## Synthetic Folic Acid



The conversion steps needed to form **5-MTHF** outlined on the previous page require specific *enzymes* that in some people are impaired since birth. In other individuals, the *activity* of these enzymes slows with aging, which helps explain why **homocysteine** levels so often surge in the elderly.

Fortunately, we don't have to rely on a perfect sequence of enzymes in our body to lower homocysteine. By taking **L-methylfolate** (also known as *5-methyltetrahydrofolate* or **5-MTHF**) directly, we can confidently lower homocysteine.

Published studies show that 5-MTHF achieves higher blood levels of active folate<sup>1,2</sup>—and more importantly, lowers homocysteine<sup>3</sup> and extends survival in **human** study subjects.<sup>4</sup>

When was the last time you or your doctor checked your homocysteine levels? Can't remember? Never? Either of these answers puts you at risk of a silent killer.<sup>5-7</sup>

Conventional doctors rarely test their patients' homocysteine levels. Yet a low-cost blood test quickly reveals if you are in a danger zone.<sup>8,9</sup>

Most doctors don't test for it and certainly don't know how easy it is to treat high homocysteine with a unique form of folate known as **5-MTHF**.

## Devastating Impact Of High Homocysteine

Elevated homocysteine levels (hyperhomocysteinemia) are an important, *independent* risk factor for cardiovascular diseases including atherosclerosis and its consequences, heart attack, stroke,<sup>10,11</sup> and peripheral vascular disease.<sup>5,12,13</sup>

Homocysteine is an amino acid that's very similar to the amino acids used by the body to make proteins.<sup>14</sup> But, unlike these beneficial amino acids, homocysteine has toxic properties that contribute to poor health.<sup>15,16</sup> High levels of homocysteine have been associated with numerous degenerative diseases.<sup>14</sup>

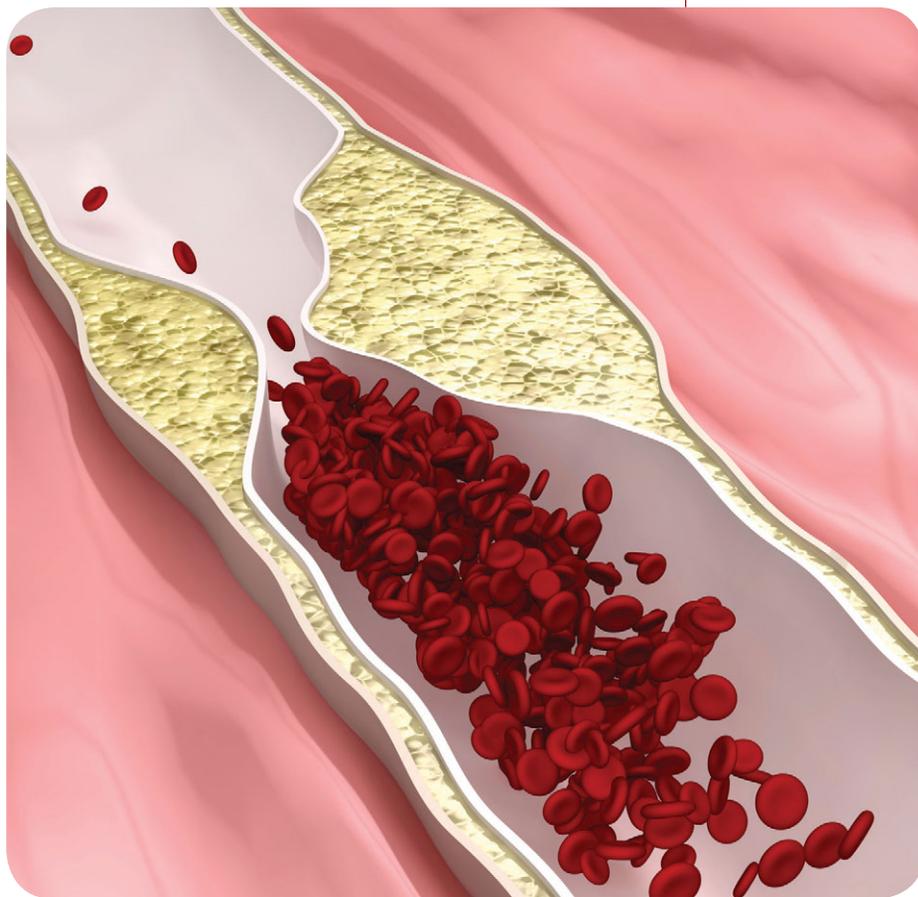
According to one study, **42%** of patients with cerebrovascular disease (stroke or near stroke) had hyperhomocysteinemia, **28%** of those with peripheral vascular disease (obstruction of blood vessels, especially in the legs) had elevated levels, and **30%** of those with coronary artery disease (obstruction of the heart's own blood supply, the coronary arteries) had elevated homocysteine levels.<sup>17</sup>

In a recent study of patients who had survived a heart attack, researchers divided over 800 subjects into two groups—those with high plasma homocysteine (defined as greater than **15 micromol/L** in the study) and those with lower levels.<sup>5</sup>

After just 30 days, researchers found the rates of complications such as heart failure, heart rupture, death, and total adverse cardiovascular events were significantly higher in the elevated homocysteine group compared with those in the group with lower levels. Again, the higher the homocysteine level, the greater the incidence of adverse cardiovascular events.

## Why Homocysteine Is So Dangerous

Scientists are still investigating the exact mechanism as to why homocysteine contributes to these grave health risks, but several convincing mechanisms are emerging. The most prominent ones involve homocysteine's ability to elevate oxidant stress, alter lipid (fat) metabolism, and promote excessive blood clotting.<sup>18</sup>



Recently, links have been established between homocysteine and vital signaling information used by arteries to control blood pressure.<sup>19-21</sup> There's also evidence that homocysteine has damaging effects on the HDL-associated enzyme paraoxonase1, or PON1, which is required to protect LDL from oxidation.<sup>18,22-24</sup>

It is now clear that rising homocysteine levels are significantly associated with threats to the cardiovascular system, particularly to the aging adult. Mainstream medicine often ignores this information,<sup>25-27</sup> and frequently offers little or no help to lower deadly homocysteine levels in patients.

### 5-MTHF: The Best Form Of Folate Supplementation

In the body, the **folate** molecule goes through several enzymatic steps to become the active molecule **5-MTHF**.<sup>28-30</sup> It is the active 5-MTHF form of folate that participates in the homocysteine-lowering step that results in the production of the safe amino acid, methionine.<sup>28,30</sup>

It makes sense, then, that low levels of folate are predictive of elevated homocysteine levels.<sup>31</sup>

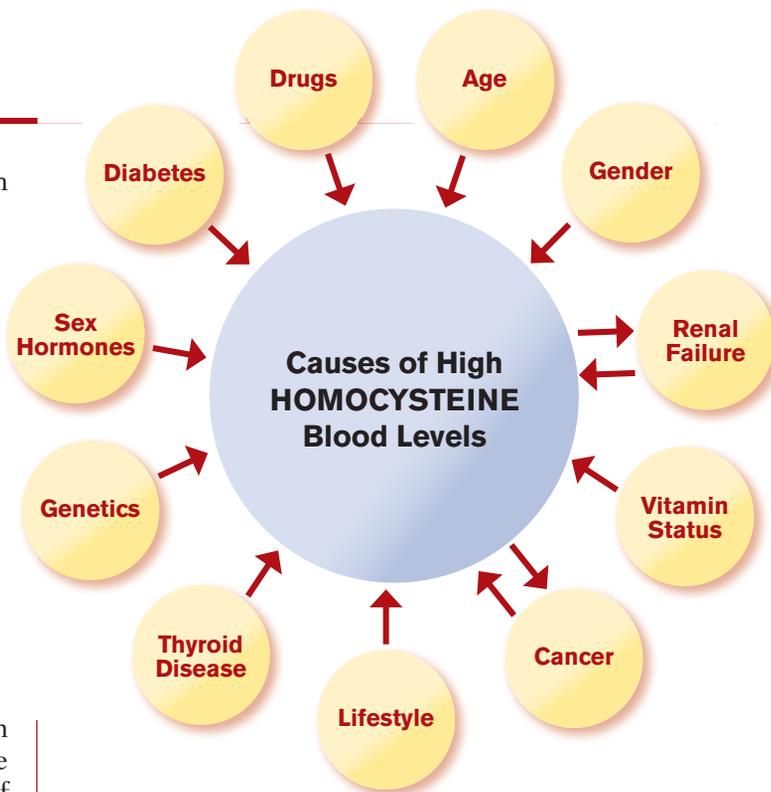
In theory, supplementing with folic acid—the most common form of folate in supplement form—should provide the body with the folate it needs to convert dangerous homocysteine into safe methionine. Unfortunately, this readily available homocysteine-lowering regimen doesn't work for everyone.

That's because in order to make the conversion from folate to the active 5-MTHF, an enzyme called **methylenetetrahydrofolate reductase** or **MTHFR** is necessary—and not everyone carries the same version of this important enzyme. It is estimated that between **5** and **10%** of the population has a gene variant that reduces MTHFR activity by **70%**,<sup>32</sup> while nearly **50%** of people of European descent have a genetic variation that decreases MTHFR activity by as much as **35%**.<sup>28,29,33-36</sup>

If you fall into these categories, you are likely to be a victim of persistently high homocysteine levels—even if you are taking high doses of folic acid.<sup>37</sup>

The solution is simple: Instead of relying only on the folic acid in your multinutrient formula, supplement with 5-MTHF. By doing this, you'll bypass the enzyme defect and provide your body with exactly the right molecule it needs to begin lowering those dangerous homocysteine levels.<sup>38</sup>

A wealth of laboratory and human studies demonstrate that 5-MTHF is the **best form** of folate required for lowering dangerous homocysteine levels.



### What You Need To Know

#### Lower Homocysteine With High-Potency Folate

- A high level of the amino acid homocysteine is a strong predictor of cardiovascular diseases such as heart attack and stroke, the leading killers of Americans.
- Folic acid supplementation is recommended as part of a B-vitamin package aimed at reducing homocysteine levels.
- But many people find their homocysteine levels stubbornly resist even high doses of folic acid.
- Such people may carry a gene variant that weakens their ability to generate the active form of folate, called 5-MTHF, resulting in elevated homocysteine levels.
- Supplementing directly with 5-MTHF evades the decrease in enzyme activity because it requires no further metabolism to achieve homocysteine-lowering effects.
- Get your homocysteine levels checked at least annually; if your levels resist therapy with standard folic acid, you should switch to the active, 5-MTHF form.

## 5-MTHF: More Effective Than Folic Acid

Numerous animal and human studies have proven that 5-MTHF is more effective than folic acid at increasing serum active folate levels.

In a compelling animal study, mice were bred to have two copies of the defective gene for **MTHFR**, the enzyme involved in making 5-MTHF, which in turn, converts homocysteine into methionine.<sup>39</sup> The animals had markedly elevated homocysteine levels as a result, and almost all died in infancy from homocysteine toxicity.

However, when their mothers (who survived because they carried one normal and one abnormal gene) were fed 5-MTHF during pregnancy, **64%** of the offspring survived, compared with the **95%** mortality rate seen in pups of mothers supplemented with folic acid. Encouragingly, the pups from mothers supplemented with 5-MTHF also showed improved appearance of structures in their brains that were previously affected by folate deficiency.

Human studies validate the superiority of 5-MTHF over folic acid.

One crossover study evaluated cardiovascular patients known to have two copies of the gene for the weakened MTHFR enzyme.<sup>38</sup> Subjects received a single **5 mg** oral dose of either folic acid or 5-MTHF, and then after a washout period, each patient received the opposite supplement from what they originally received. Researchers found that the subjects' peak serum folate levels were nearly **7 times** higher when taking the active 5-MTHF as they were when they took the folic acid supplement, demonstrating superior bio-availability of the 5-MTHF form.

Another crossover study involved a group of healthy women, one-third of whom had the typical gene variant for MTHFR, and two-thirds of whom had the weaker gene variant.<sup>35</sup> Each woman received either **400 mcg** of folic acid or **416 mcg** of 5-MTHF. (The slightly higher dose in micrograms reflects chemical differences between folic acid and 5-MTHF; it represents the same dose of folate at the cellular level.) After the first phase of the study, the dosing regimen was reversed, and each woman received the opposite supplement from the first.

Regardless of the women's genetic makeup, the total amount of folate in blood, as well as the maximum concentration reached, were significantly higher when the women were taking 5-MTHF compared to when they were taking folic acid.<sup>35</sup>

## 5-MTHF Lowers Homocysteine Levels

The superiority of 5-MTHF for increasing blood levels of folate directly translates to lower homocysteine levels.

This was first shown in a study of healthy people.<sup>40</sup> For the study, a low dose of 5-MTHF (**113 mcg** per day) was compared with a low dose of folic acid (**100 mcg** per day). After six months, the mean total homocysteine was reduced by **14.6%** in the 5-MTHF group, compared with only **9.3%** in the folic acid group.

Further support for the superiority of 5-MTHF as a homocysteine-lowering supplement comes from a study of patients with kidney disease on dialysis.<sup>4</sup> This group of people is at very high risk for elevated homocysteine levels,<sup>41,42</sup> as well as high rates of complications



and cardiovascular disease that occur as a result. In fact, **93%** of this group of people had homocysteine levels above the upper limit of normal, which is considered in this study to be **12 micromol/L**.

Subjects were divided into two treatment groups: The first one received **50 mg** of intravenous 5-MTHF at the end of each dialysis session and the second received **5 mg** per day of folic acid, orally. Both groups received the same intravenous dose of vitamins B6 and B12. After six months, homocysteine levels were reduced to an average of **20.7 micromol/L** in the 5-MTHF group, compared with stubbornly high levels of **35.0 micromol/L** in the folic acid group.<sup>4</sup> Along with the greater homocysteine reduction, after 24 months, those in the 5-MTHF group also had significantly lower levels of the inflammatory marker C-reactive protein, or CRP.

Most importantly, however, was the impact 5-MTHF had on survival. Subjects in the 5-MTHF group survived on average **36.2** months after beginning treatment, while those in the folic acid group survived an average of only **26.1** months—*that's a 39% increase in survival in the 5-MTHF group!*<sup>4</sup> Interestingly, the doctors who conducted this study attributed the improved survival on the reduction in **CRP** observed in the **5-MTHF** group.

### 5-MTHF And Depression

5-MTHF is clearly a superior way to achieve optimal blood levels of active folate, as well as the best means known for lowering dangerous homocysteine levels. But it has other benefits as well. Because folate is required in processes that produce the brain's neurotransmitters,<sup>43</sup> 5-MTHF has also attracted the interest of researchers that investigate major depression, a condition that reflects imbalances in neurotransmitter quantity or effect.<sup>44</sup>

Major depression is a debilitating illness that is very difficult to treat: Only about **30%** of patients treated with a single antidepressant drug achieve remission of their symptoms, a figure that only rises to **50** to **55%** when a second drug is added.<sup>45,46</sup> As a result, there has been a major push to find non-pharmacological therapies that could improve response rates. Once researchers discovered that people with low serum and red blood cell levels of folate have poorer responses to antidepressant therapy, they decided to see if adding 5-MTHF to antidepressant drugs could improve response rates.<sup>45</sup> The results have been dramatic.

In one study, **19%** of patients taking 5-MTHF plus a regular antidepressant drug experienced major improvement on a standard depression score, compared with just **7%** of those who only took an



antidepressant drug.<sup>47</sup> That response rate was even higher among patients with the worst degree of impairment from depression, with **40%** of those taking 5-MTHF in addition to their regular antidepressants experiencing major improvement versus just **16%** of those taking antidepressants only.

In addition, the 5-MTHF group experienced these improvements significantly faster than the control group—in 177 days versus 231 days. Once again, those with the most severe depression experienced the most dramatic results, with the median time to improvement in the 5-MTHF group being 85 days, compared with 150 days in control subjects. Impressively, nearly twice as many people in the antidepressant-only group stopped therapy because of adverse events (**34%**) versus the 5-MTHF group (**17.9%**), a testament to the supplement's safety.

Numerous other studies have achieved similar results when 5-MTHF is added to a standard antidepressant drug; doses used are typically **15 mg** day.<sup>48-50</sup> An abnormal gene variant for 5-MTHF synthesis and metabolism may predict resistance to antidepressant therapy and help identify patients who may be responsive to adjunctive therapy with 5-MTHF.<sup>51</sup>

## 5-MTHF And Diabetic Peripheral Neuropathy

Diabetic peripheral neuropathy is another condition that reflects imbalances in neurotransmitter quantity or effect,<sup>52</sup> leading researchers to investigate 5-MTHF as a potential treatment. Diabetic peripheral neuropathy is a painful condition that causes slowing and abnormal transmission of nerve impulses,<sup>53</sup> which results in both pain and loss of sensitivity to normal touch.<sup>54</sup>

The combination of 5-MTHF with vitamin B12 (methylcobalamin) and an active form of vitamin B6 (pyridoxal-5'-phosphate) has been used to treat endothelial dysfunction, and is now under active exploration for use in diabetic neuropathy.

An animal study showed that this combination, at a human equivalent dose, increased the density of nerve fibers in the skin and improved nerve sensory conduction and responses to temperature and mechanical touch.<sup>55</sup> These improvements occurred in the absence of changes in blood sugar.

Studies have shown that when humans with diabetic peripheral neuropathy are treated with this supplement combination, they experience improvements of skin sensitivity to touch and reduction in painful symptoms.<sup>56,57</sup> One such trial also showed improvements in the density of nerve fibers in the skin,<sup>57</sup> and a different trial also noted a significant decrease in homocysteine levels compared with a small increase in placebo recipients.<sup>56</sup>

### Summary

High levels of the amino acid homocysteine are a major threat to an aging person's health, raising the risk for cardiovascular disorders such as heart attack and stroke. Folate is known to be effective in lowering homocysteine levels, but a large proportion of people find that their homocysteine levels remain stubbornly high, even on folic acid supplements.

This could be caused by the fact that **5 to 10%** of the population and nearly half of people of European descent carry a gene variant that reduces the activity of the enzyme required to efficiently convert folic acid into the active, homocysteine-lowering form of the vitamin, 5-MTHF.

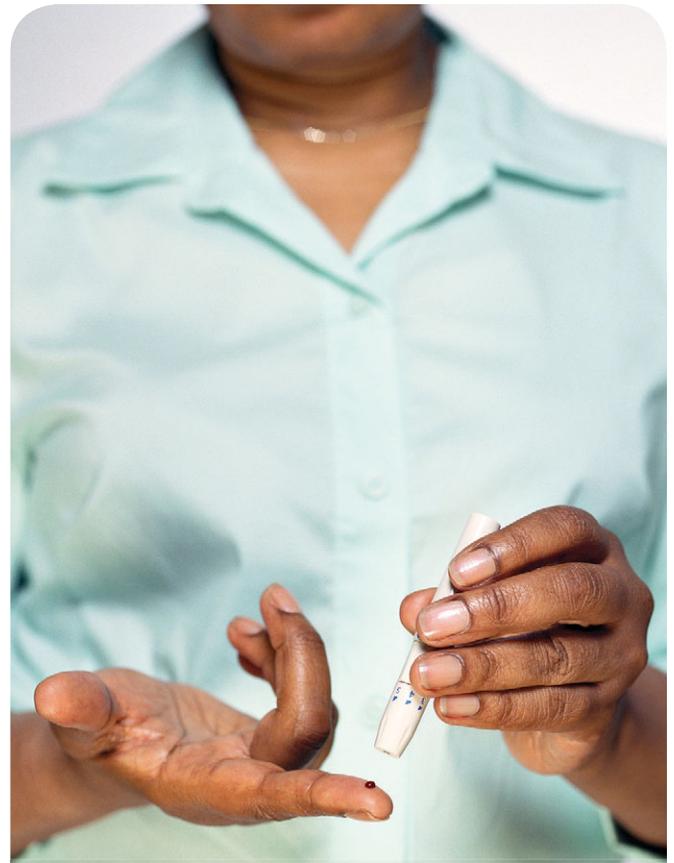
For people with persistently high homocysteine levels, high-dose 5-MTHF is now available as a supplement.

Published studies show that 5-MTHF not only lowers homocysteine and CRP, but also improves human survival.

If your homocysteine-lowering regimen seems stalled, don't simply raise your dose of folic acid.

Instead, switch to 5-MTHF, the active form of the supplement. Then test your homocysteine levels again in 30 days to ensure you are taking the proper dose of 5-MTHF. Some people with high homocysteine may only need **5 mg (5,000 mcg)** of 5-MTHF once daily while others will need to take **5 mg** of 5-MTHF twice a day. ●

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



### Testing For Homocysteine

Your homocysteine levels can be determined by a simple blood test. Knowing your homocysteine status will allow you take therapeutic action if your levels are too high. Remember to fast for eight to 12 hours before the blood test. Do not eat any food or drink liquids other than water before the test and take any medications as prescribed. Do not take your supplements the morning of the test.

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<b>Gamma E Tocopherol</b>	<b>245 mg</b>	<b>Vitamin B12</b>	<b>300 mcg</b>
<b>Chlorophyllin</b>	<b>100 mg</b>	<b>Vitamin C</b>	<b>95 mg</b>
<b>MacuGuard™ Carotenoid Phospholipid Blend Phospholipids, marigold extract</b> (flower) [providing 10 mg free lutein, 4 mg meso-zeaxanthin & trans-zeaxanthin]	<b>145 mg</b>		

**Super Booster** saves consumers money and time combining a variety of costly nutrients in one softgel. If you add up the price of the individual ingredients in **Super Booster**.

A bottle of 60 **Super Booster** softgels—a two-month supply—retails for **\$52**. If a member buys four bottles, the price is reduced to **\$36** per bottle.

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

Contains soybeans.

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

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

# Superior-Absorbing CURCUMIN



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

However, most curcumin extracts are neither well **absorbed** nor well retained in the body.

**Life Extension**®'s curcumin supplements utilize a patented preparation of curcumin that can reach up to **7 times higher** concentration in the blood than standard curcumin<sup>3</sup>

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

In recent studies comparing the effects of standard curcumin against Life Extension's turmeric extracts, researchers observed:<sup>4,5</sup>

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

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8. Bioavailability study of BCM-95® in rats. Orcas International Inc.

## TWO CURCUMIN FORMULAS TO CHOOSE FROM

Those who want a curcumin stand-alone can order a bottle of 60 vegetarian capsules of **Super Bio-Curcumin**® (Item # 00407) for \$38. If a member buys four bottles, the price is reduced to **\$26.25** per bottle. Each bottle lasts a typical user two months.

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

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

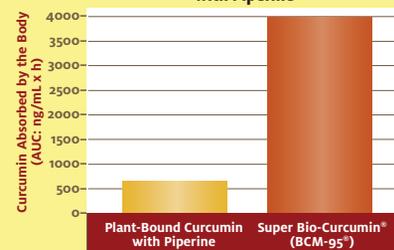
- **Turmerones** to increase the amount of curcumin inside cells.<sup>6</sup>
- **Ginger**, which provides complementary health benefits.
- **Phospholipids** that further enhance absorption.<sup>7</sup>

A bottle of 30 softgels of **Advanced Bio-Curcumin**® With Ginger & Turmerones (Item # 01808) retails for \$30. If a member buys four bottles, the price is reduced to **\$20.25** per bottle. The suggested dose for either of these highly **absorbable** curcumin supplements is one softgel daily.

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

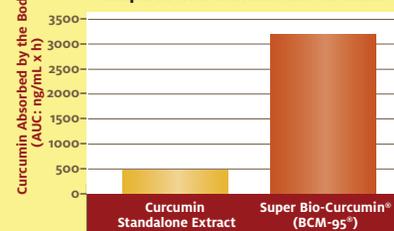
Bio-Curcumin® and BCM-95® are registered trademarks of Dolcas-Biotech, LLC. U.S. Patent Nos. 7,883,728, 7,736,679 and 7,879,373.

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



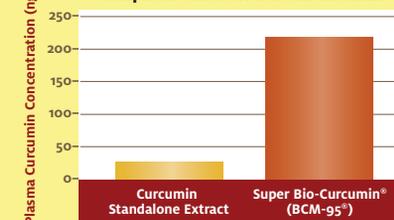
**Chart 1.** Super Bio-Curcumin® showed 6.3 times greater bioavailability (absorption and sustainability over eight hours) in humans compared with plantbound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin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

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



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

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



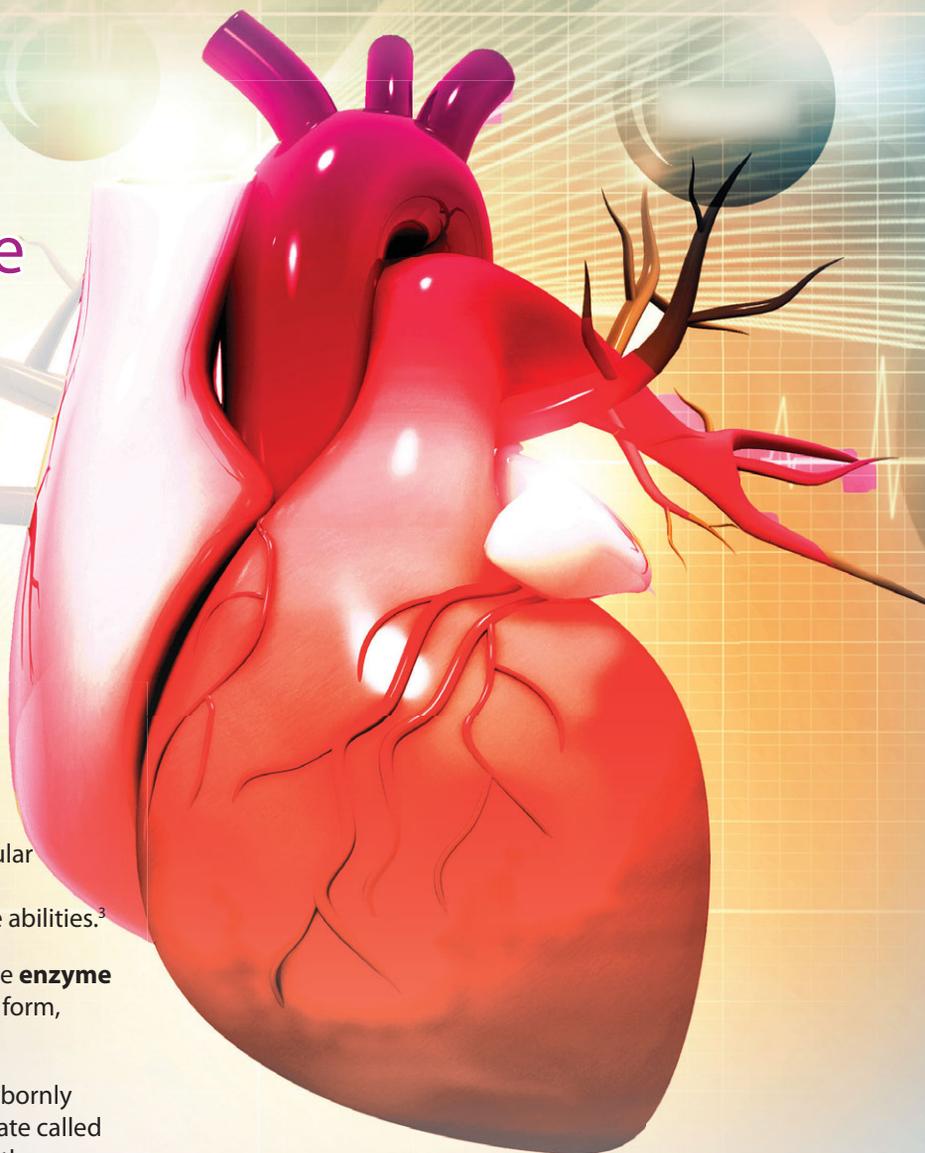
**Chart 3.** Bioavailability in rats fed with 7.8 times higher than conventional curcumin.

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

Metabolically Active

# FOLATE

Supports  
Cardiovascular  
Health



Folate helps maintain homocysteine levels within the normal range,<sup>1</sup> thereby promoting cardiovascular health.<sup>2</sup> Folate also supports neurotransmitter synthesis—which in turn helps maintain cognitive abilities.<sup>3</sup>

However, not everyone has sufficient activity of the **enzyme** required to convert folate to its biologically active form, **5-methyltetrahydrofolate**, or **5-MTHF**.<sup>4,5</sup>

For those whose homocysteine levels remain stubbornly high, the answer lies with the *bioactive* form of folate called **5-MTHF**, which is up to **7 times** more bioavailable than ordinary folic acid.<sup>6</sup> This unique compound requires no enzymatic conversion to become metabolically active<sup>6</sup>—providing maximum support for both cardiovascular and cognitive health.

Each tiny vegetarian tablet of **High Potency Optimized Folate** provides **5,000 mcg** of the metabolically active **5-MTHF** form of folate.

The demand for **5-MTHF** has surged as more consumers have discovered its potent **homocysteine-lowering** effects. We project prices will come down as pharmaceutical patents expire and more suppliers of this superior bioactive form of folic acid enter the marketplace.

## Non-GMO

Quatrefolic® is a registered trademark of Gnosis, S.p.A.

## High Potency Optimized Folate

Item #01913 • 30 vegetarian tablets

	Retail Price	Member Price
1 bottle	\$25	<b>\$18.75</b>
4 bottles	\$22 each	<b>\$16.50 each</b>



## References

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To order **High Potency Optimized Folate**, call **1-800-544-4440** or visit **www.LifeExtension.com**

A

AB



ABA

AAB

A woman in a white lab coat, hood, goggles, and mask is working in a laboratory. She is holding a glass vial and looking down at it. The background is a blurred laboratory setting with windows.

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# A Pioneering Program Funded By Life Extension® To Protect Against Cancers And Slow Aging

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The Life Extension Foundation® supports dozens of scientists seeking to meaningfully extend the healthy human life span through their unique research initiatives.

I believe that Vera Gorbunova, PhD, and Andrei Seluanov, PhD, are two of the most productive anti-aging researchers receiving grants from the Life Extension Foundation®.

Drs. Gorbunova and Seluanov are a husband-and-wife team at the **University of Rochester** in Rochester, New York. The couple have two children and often co-author papers published in peer-reviewed journals. Both scientists are devoted to finding means to reduce aging and cancer so as to extend human life span.<sup>1</sup>

### Dr. Vera Gorbunova

Dr. Gorbunova teaches a popular course on the biological causes of aging at the University of Rochester. She was one of the organizers of the **2014 Genetics of**



Dr. Gorbunova

**Aging Conference** held at Cold Spring Harbor Laboratory. As described in the November 2013 issue of *Life Extension*® magazine, Dr. Gorbunova discovered that the sirtuin SIRT6 could more than triple the **repair of DNA damage**.<sup>2</sup> Increased levels of SIRT6 has been shown to extend the life span of male mice **10 to 15%**.<sup>3</sup> Because DNA damage can lead to

both aging and cancer, Dr. Gorbunova has been looking for molecules that will stimulate SIRT6 activity. As described in the January 2014 issue of *Life Extension*® magazine, Dr. Gorbunova was denied government funding on the grounds that there are other mechanisms of DNA repair besides what SIRT6 stimulates. Grants from the Life Extension Foundation® have enabled Dr. Gorbunova to continue her work on SIRT6 activation of DNA repair.

### Dr. Andrei Seluanov

As described in the May 2014 issue of *Life Extension*® magazine, Dr. Seluanov has the second-largest naked mole rat colony in the world. Although mice frequently die of cancer, cancer has never been reported in a naked mole rat.<sup>4,5</sup> Naked mole rats live about **10 times** longer than mice without evidence of aging or age-related diseases.<sup>6</sup> As described in the January 2014 issue of *Life Extension*® magazine, Dr. Seluanov was denied funding from the government on the grounds that the genome of the naked mole



Dr. Seluanov

rat had already been sequenced to discover the basis of naked mole rat cancer-resistance and longevity. Without funding from the Life Extension Foundation®, Dr. Seluanov would have been in danger of losing his naked mole rat colony. Although Gorbunova and Seluanov contributed to analysis of the naked mole rat genome,<sup>7</sup> this information was insufficient to explain the cancer-resistance and longevity of the naked mole rat. (The lead researcher for the naked mole rat genome analysis was João Pedro de Magalhães, PhD, of the University of Liverpool, who the Life Extension Foundation® funded to sequence the genome of the longest-lived mammal, the bowhead whale, which lives over 200 years.)

### Cancer Resistance And Longevity

On July 18, 2013, Drs. Seluanov and Gorbunova made the cover of the prestigious journal *Nature* with their discovery that high molecular weight hyaluronan (hyaluronic acid) in naked mole rats protects them from cancer.<sup>8</sup> Naked mole rat hyaluronan is **5 times** larger than the hyaluronan in humans or mice. Hyaluronan is found in skin products. In other mammals, hyaluronan contributes to wound healing.<sup>9</sup> But in the naked mole rat, the high molecular weight hyaluronan causes cancer cells to stop growing.<sup>8</sup> A few years earlier, Dr. Seluanov had discovered that naked mole rat tissue causes cancer to stop growing,<sup>10</sup> but he had not understood the reason.

With funding from the Life Extension Foundation®, the couple discovered that protein synthesis is **4 times** more accurate in naked mole rats than in mice.<sup>11</sup> Many neurodegenerative diseases such as Alzheimer's disease and Parkinson's disease are associated with protein misfolding, which is likely in part due to errors in protein synthesis.<sup>12</sup> Precision synthesis of proteins by naked mole rats contributes to their cancer-resistance and longevity.





Both the hyaluronan discovery and the protein synthesis fidelity discovery caused the prestigious journal *Science* to name the naked mole rat “**Vertebrate of the Year**” for 2013.<sup>13</sup>

Early in 2014, with funding from the Life Extension Foundation®, the couple were able to report novel husbanding innovations that facilitated the survival of naked mole rat pups.<sup>14</sup>

Drs. Gorbunova and Seluanov have been studying rodents to understand differences in cancer resistance and longevity between species. The August 2014 issue of *Nature Reviews: Genetics* featured a review as a cover story on that subject that was primarily authored by the two scientists.<sup>15</sup> *Nature Reviews: Genetics* is the foremost scientific journal (highest impact factor) on the subject of heredity and genetics. The Life Extension Foundation® was acknowledged as a funding source for the review.

### Mole Rat Study

There are more rodents in the world than any other mammal. Roughly **40%** of all mammals are rodents. The largest rodent (capybara) is over **1,000 times** larger than the smallest rodent (mouse). In general, the largest animals like elephants and whales are the most long-lived. This fact is somewhat paradoxical because the many cells in large animals—and the growth required to achieve such a large body—should increase the likelihood of developing cancer. Large animals must have a special anticancer mechanism, but the nature of that mechanism is as yet not fully determined. In contrast to other animals, however, the longest-lived rodent is the naked mole rat, which is about the size of a mouse. The blind mole rat, which is the second most long-lived rodent, is also about the size of a mouse. Like the naked mole rat, the blind mole rat has never been observed to develop cancer.<sup>16</sup> Gorbunova and Seluanov have shown that the blind mole rat eradicates cancer by a different method than the naked mole rat—by a hair-trigger inflammatory response that causes massive cell death in any area

where cancer begins to appear. Although large mammals (like whales and elephants) and large rodents (like beavers and porcupines) have better **DNA repair** than small animals, this mechanism alone is not sufficient to explain the suppression of cancer.

The Life Extension Foundation® is grateful to be able to fund such talented and productive researchers as Dr. Vera Gorbunova and Dr. Andrei Seluanov. We look forward to future discoveries from this couple that can lead to life extension and cancer prevention for humans. ●

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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# Blueberry Extract

## Boosts DNA Repair

Studies show that blueberries delay the aging process through a variety of mechanisms, including **repairing DNA damage** and favorably modulating **genes** associated with aging.<sup>1,2</sup>

Chockfull of **anthocyanins**, the **blueberry** provides health-boosting benefits shown to:

- Enhance heart health<sup>3</sup>
- Maintain brain function<sup>4,5</sup>
- Sustain healthy blood sugar levels already within normal range<sup>6</sup>
- Support smooth firm skin<sup>7</sup>
- Maintain a healthy weight<sup>8</sup> and stable cholesterol levels already within normal range<sup>9</sup>

**Blueberry extract** is even more potent than the whole berry or juice, providing greater metabolic support throughout the entire body and without the excess sugar of raw fruit.<sup>10</sup> Life Extension®'s **Blueberry Extract Capsules** consists of only concentrated **extracts** from **wild blueberries**, which possess up to **10 times** the nutritional capacity of cultivated berries.

**AuroraBlue®** is a registered trademark of Denali **BioTechnologies, Inc.**

### Blueberry Extract Capsules

Item #01214 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$22.50	<b>\$16.88</b>
4 bottles	\$20 each	<b>\$15 each</b>



### References

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

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

# Most Effective Form Of CoQ10

The unique benefits of the **ubiquinol** form of **CoQ10** have been further validated by studies published in **2014**.<sup>1-12</sup>

**CoQ10** supports **mitochondrial** energy production. A new study published in **2014** confirms previous research showing that **ubiquinol** activates mitochondrial functions to **slow aging** in the laboratory mouse model.<sup>12</sup>

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

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

Restoring youthful energy levels is why so many maturing people turn to **coenzyme Q10**. The most **absorbable** form of CoQ10 is **ubiquinol**.

The name of this advanced **ubiquinol/shilajit** formula is **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™**.

**Life Extension** combines these two energizing ingredients into an exclusive **ubiquinol-shilajit** formula available in the following potencies...all at discounted prices:



Item # 01425

The retail price for 100 **50 mg** softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is \$58. If a member buys four bottles, the price is reduced to **\$34.50** per bottle. If a member buys 10 bottles, the price is **\$31.50** per bottle. (Item # 01425)



Item # 01426

The retail price for 60 **100 mg** softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is \$62. If a member buys four bottles, the price is reduced to **\$39** per bottle. If a member buys 10 bottles, the price is **\$36** per bottle. (Item # 01426)

**Non-GMO**



Item # 01431

The retail price for 30 **200 mg** softgels of **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** is \$62. If a member buys four bottles, the price is reduced to **\$39** per bottle. If a member buys 10 bottles, the price is **\$36** per bottle. (Item # 01431)

**Non-GMO**

To order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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



# New Studies Reveal Importance Of Zinc In Maintaining **Prostate Health**



Prostate cancer is the second leading cause of cancer death among men.<sup>1</sup>

Researchers have uncovered data revealing that the trace mineral **zinc** plays an active role in maintaining prostate health. In fact, prostate cells accumulate more zinc than do cells in any other human tissue.<sup>2-5</sup> Studies reveal that the presence of zinc in the body helps suppress tumor growth, especially in the prostate.<sup>6,7</sup>

Zinc is a trace metal that is proving vital for a number of human biological processes. All cells have a requirement for zinc at some level.<sup>3,4</sup> An ongoing debate has raged for years over whether populations who consume more zinc are protected against prostate cancer, in part, due to the fact that blood levels of zinc may not accurately reflect the levels of zinc in prostate tissue.<sup>8,9</sup>

However, a number of studies demonstrate specific mechanisms by which zinc acts as a **tumor suppressor**, altering the biology of prostate cells to make them less likely to undergo malignant transformation, and less able to multiply and survive as cancer cells.<sup>6,7</sup>

In this article, you will learn the importance of maintaining optimal levels of zinc, an inexpensive supplement that supports a healthy prostate.

## Low Zinc Levels In Prostate Cancer Cells

Zinc is a powerful tumor suppressor. Researchers have discovered a specialized *transporter protein* that enables peak levels of zinc to be maintained in prostate tissue.<sup>7,10</sup>

To fully understand how zinc functions to prevent prostate cancer, we need to review the function of the prostate gland itself. Remember that the prostate gland is important in male reproductive function; specifically, the prostate secretes a fluid which, at the time of ejaculation, is mixed with sperm from the testes and secretions from the seminal vesicles. Prostatic fluid makes up about **30%** of the volume of semen; its role is to slightly alkalinize seminal fluid in order to counteract the acidic pH of the vaginal tract, allowing sperm to survive long enough to enter the uterus.<sup>11,12</sup>

The bulk of prostatic fluid is created in and secreted from the outermost region of the prostate gland, the so-called “peripheral zone,” which is also the source of most prostate cancer development and progression.<sup>8</sup> Cells in the peripheral zone are highly specialized to accumulate zinc, with the result that prostate tissue contains zinc at levels **10 to 15 times** that of other tissues.<sup>8</sup>

To accumulate such high levels of zinc, prostate peripheral zone cells are endowed with a specialized zinc transporter protein called ZIP1.<sup>13</sup> ZIP1 pulls in high levels of zinc from the blood, which is then used in prostate cells to block oxidation of citrate.<sup>6,7,10,14</sup>

High levels of zinc in the prostate gland have been shown to be an essential factor in preventing the initiation of cancer in prostate cells. At high levels, zinc is toxic for most human cells,<sup>15</sup> but having developed the mechanism for concentrating zinc, prostate peripheral zone cells can resist that toxicity and derive protective benefit.<sup>6</sup>

Zinc has been found to exert powerful tumor suppressor effects. First, zinc switches “on” the programmed cell death mechanism called *apoptosis*; apoptosis is one of the body’s main self-protection mechanisms, causing cells to die when they are not needed or could cause damage. Zinc also inhibits cell migration and invasion into other tissues, a characteristic that is common in malignant cells.<sup>6</sup>

Prostate cancer cells have sharply reduced concentrations of zinc, a consequence of their inability



to accumulate the metal ions in the way that healthy prostate tissue does.<sup>6,16</sup> A recent summary of studies of zinc content in healthy and cancerous prostate tissue showed a significant decrease of **68%** in zinc levels in cancerous versus noncancerous prostate glands.<sup>6</sup> Furthermore, embedded nodules of cancerous prostate tissue show significantly lower zinc levels than those in adjacent healthy prostate tissue.<sup>17</sup> Indeed, it has been observed that malignant prostate tissue does not demonstrate the high zinc levels typical of healthy prostate tissue.<sup>6</sup>

Thus, prostate cancer cells lose their ability to accumulate zinc. Stated differently, high zinc accumulation is therefore improbable with prostate malignancy.<sup>6</sup> By understanding the relationship of zinc with prostate cancer, we can capitalize on new opportunities for natural prevention of prostate cancer.<sup>10</sup> Let’s now examine the research data in support of this idea.

## Studies Reveal Zinc Protection Against Prostate Cancer

While early studies failed to show convincing relationships between zinc and prostate cancer, more recent carefully designed studies demonstrate some fairly substantial protection.

First, it has been shown that zinc levels in blood are decreased in many kinds of malignancies, including lung, head and neck, breast, stomach, esophageal, and prostate cancers, while elevation in zinc levels is not seen in any tumor type.<sup>18,19</sup>

## The Importance Of Zinc In Prostate Health

- Prostate cancer remains the second most common malignancy in men, after skin cancer, and the second leading cause of cancer death, after lung cancer.
- The trace metal zinc plays a unique role in prostate health; the prostate gland accumulates zinc at **10 to 15 times** higher concentration than other body tissues.
- Zinc helps prostate cells resist malignant transformation by creating an intracellular environment toxic to cancerous cells; normal prostate cells have evolved powerful mechanisms to protect themselves against zinc toxicity.
- Basic laboratory studies reveal potent effects of prostate cell zinc content on fundamental cancer-promoting properties of cells.
- Men over 40 should consider zinc supplementation for a variety of reasons including maintaining healthy prostate tissue zinc levels.



Secondly, some research on zinc intake, from diet or supplements, suggests considerable protection, especially from more advanced prostate cancers, which are the kinds that cause the highest death rates.

In one study, while the average intake of supplemental zinc was not associated with a reduction in overall prostate cancer risk, men who supplemented daily with over **15 mg** of zinc had a **66%** reduction in the risk of having advanced prostate cancer.<sup>20</sup> Another study showed that higher dietary zinc intake was associated with a **36%** reduction in the risk of dying from prostate cancer; the degree of protection was even stronger, a **76%** risk reduction in men with localized (earlier) tumors.<sup>21</sup>

Thirdly, studies of variations in zinc from groundwater and other environmental sources show that low-zinc geographic areas of the country often have higher-than-average rates of prostate cancer.<sup>22</sup>

### Zinc's Protective Effects On Prostate Cancer

Evidence from large-scale studies points to significantly lower risks of prostate cancer when zinc levels are highest. Only quite recently have new laboratory studies provided information on precisely how zinc supplementation might help your body suppress an incipient prostate cancer.

One study was able to show that, in mice genetically programmed to develop prostate cancer, the size of the tumors was dependent on zinc intake. Animals with the lowest and the very highest zinc levels had the largest tumors, indicating that there is an **optimal** level of zinc intake for prevention of prostate cancer.<sup>7</sup>

Another study, in which rats were exposed to a known prostate chemical carcinogen found that animals with high tumor incidence had low zinc levels, consistent with human epidemiological studies.<sup>23</sup> In addition, carcinogen-treated rats demonstrated high levels of markers of oxidative stress and pro-tumor signaling molecules, but supplementation of those animals with zinc reversed those negative effects, and in fact, reversed the microscopic findings of cancer-like cells in the animals' prostate glands.

In a study of human prostate cancer cells in culture, treatment with zinc significantly reduced expression of pro-inflammatory cytokines (signaling molecules) known to promote cancer.<sup>24</sup> Furthermore, zinc treatment also significantly lowered levels of other molecules that tumor cells use to promote new blood vessel formation to feed growing tumors, as well as proteins that promote invasion and metastatic spread.<sup>24</sup>

Zinc promotes tumor cell death by apoptosis, as we noted above. In a 2013 study, it was shown that zinc could sensitize prostate cancer cells to the effects of *sorafenib*, a cancer chemotherapy agent that works by triggering tumor cell apoptosis, demonstrating its potentially additive effects to chemotherapy.<sup>25</sup>



Most recently, *resveratrol* was proposed as a means of enhancing zinc accumulation in prostate tissue.<sup>26</sup> If verified in further studies, this approach might lead to a unique nutrient combination capable of restoring falling zinc levels to normal, even in early malignant cells that have begun to lose their zinc-concentrating abilities.

Zinc supplementation appears to offer important benefits to aging men for general health, the immune system, and the prostate gland. For example, a 2009 study showed that the risk of advanced prostate cancer (regionally invasive or distant metastatic disease) decreased significantly with intake of supplemental zinc greater than **15 mg** per day over a 10-year period.<sup>20</sup> A 2007 study showed that a daily **45 mg** dose of zinc reduced the incidence of all infections, including those of the respiratory tract, in elderly adults.<sup>27</sup> At a dose of **80 mg** per day, zinc was found to reduce overall deaths by **27%** over a median of 6.5 years.<sup>28</sup> However, very high levels of zinc intake greater than **100 mg** per day for long periods of time (chronic ingestion) do not appear to be beneficial, and may have negative effects upon the immune system,<sup>29,30</sup> as well as increase the risk of advanced prostate disease.<sup>31</sup>

Be aware that if more than **50 mg** of supplemental zinc is taken daily on a chronic basis, **2 mg** of supplemental copper should also be taken to prevent copper deficiency.<sup>29</sup>

## Summary

Prostate cancer remains a serious threat to the lives of men past middle age. Fortunately, prostate cancers grow slowly, making early interventions possible.

Healthy prostate tissue contains the body's highest concentrations of zinc, while prostate cancer cells lose the ability to selectively take up and store zinc as they age. It is now evident that dietary zinc provides tumor suppressor activity that protect cells against prostate carcinogenesis in preclinical research.

Recent epidemiological studies demonstrate that men with higher levels of zinc, from diet or supplements, are protected against advanced prostate cancer. Studies show that measurements of prostate tissue zinc correlate closely with protection from aggressive prostate malignancies. And basic laboratory studies are providing insight into precisely how zinc might interfere with the long chain of events that leads to the development of prostate cancer.

Optimal zinc supplementation falls between **30-85 mg** a day. ●



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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# FlorAssist® Heart Health Probiotic

## Enhances Healthy Cardiovascular Factors

Researchers are discovering how important **probiotics** are to overall health. Beyond improving digestive health, probiotics provide a broad spectrum of benefits throughout the body.

**FlorAssist® Heart Health Probiotic** contains a novel probiotic—*Lactobacillus reuteri* 30242—that has been shown in clinical trials to safely support healthy cholesterol in adults already within the normal range.<sup>1,2</sup>

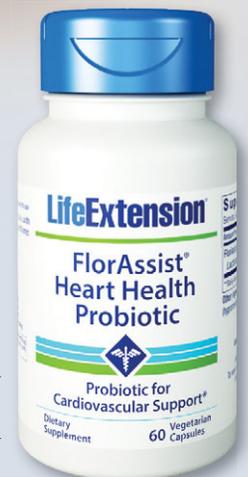
Additionally, *L. reuteri* 30242 has been shown to support healthy CRP (a marker for inflammation), fibrinogen (involved in clot formation), apoB-100 (a marker for LDL particle size, a known cardiovascular risk factor), and vitamin D levels (important for cardiovascular health) for those within normal range.<sup>3</sup>

**FlorAssist® Heart Health Probiotic** has been carefully formulated for convenient use as a safe, easy-to-swallow capsule with no unpleasant aftertaste. One capsule with food twice daily is the perfect addition to a heart-healthy lifestyle.

The suggested daily dose of **two** vegetarian capsules of FlorAssist® Heart Health Probiotic provides:

<b>FlorAssist®</b> <i>Lactobacillus reuteri</i> (NCIMB 30242)	<b>5 Billion CFU*</b>
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\* Colony Forming Units



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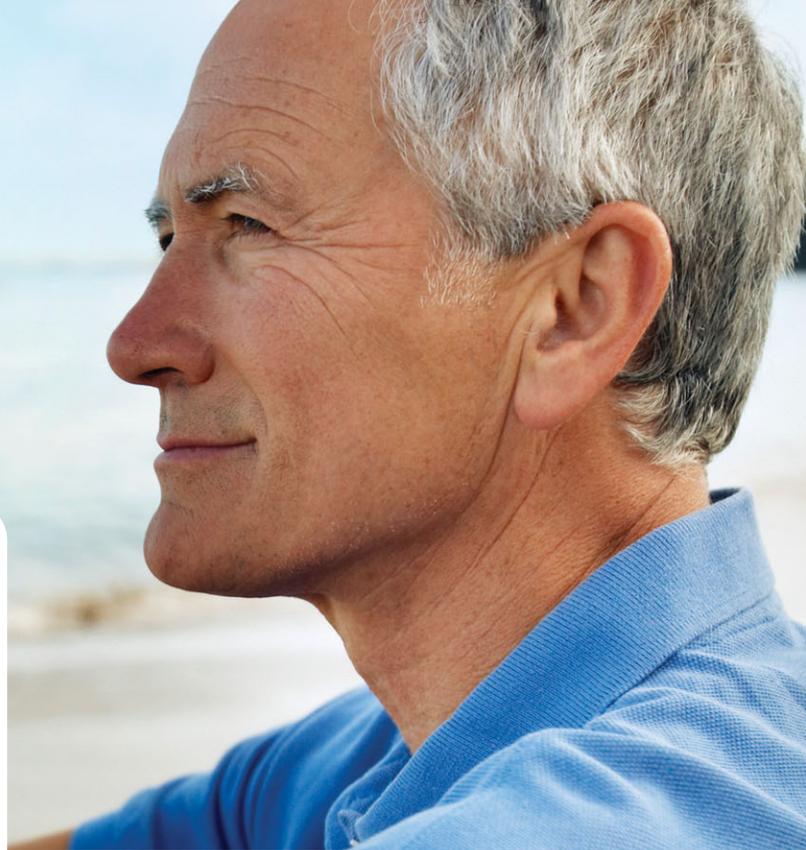
A bottle of 60 vegetarian capsules of **FlorAssist® Heart Health Probiotic** retails for \$32. If a member buys four bottles, the price is reduced to **\$21** per bottle.

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To order FlorAssist® Heart Health Probiotic, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

# ULTIMATE PROSTATE PROTECTION



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

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

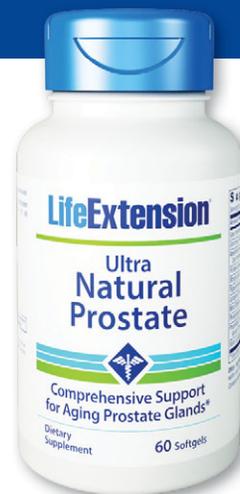
- **Standardized lignans** convert to *enterolactone* in the intestine, which is then absorbed into the bloodstream to provide support for prostate cells against excess estrogen levels.<sup>1-3</sup>
- **AprèsFlex®** supports normal inhibition of *5-lipoxygenase* or *5-LOX*, an enzyme that is associated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

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

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

<sup>1</sup> 3-O-acetyl-11-keto-β-boswellic acid

A bottle of 60 softgels of **Ultra Natural Prostate** retails for **\$38**. If a member buys four bottles, the price is reduced to **\$26.25** per bottle. If a member buys 12 bottles, the price is **\$24**.



Item # 01898

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## Contains soybeans.

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

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

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

# Zinc

By the time men turn **40**, one of the most important health factors they must monitor is the condition of their **prostate**. Researchers have uncovered data revealing that **zinc** plays an active role in maintaining prostate health and that optimal zinc intake is an essential factor in preventing the unhealthy cell division in prostate cells.

Numerous carefully designed studies show zinc provides aging men considerable protection of the prostate. For example, zinc:<sup>1-4</sup>

- Repairs DNA damage
- Supports normal cell division in the prostate
- Reduces expression of pro-inflammatory cytokines
- Promotes normal cell life cycle

In addition to prostate health, zinc also supports and maintains.<sup>5-7</sup>

- A healthy inflammation response
- Insulin production
- Thyroid and bone production

Between **35-45%** of people over age 60 don't get the daily recommended requirement.<sup>8</sup> A longstanding problem is that zinc absorption can be limited by certain plants and grains, which contain a compound called phytate.<sup>9</sup>

Life Extension® has developed a formulation combining the superior bioavailability of **zinc monomethionine**<sup>10</sup> along with **zinc citrate** to provide a potent **50 mg** dose of these absorbable forms of zinc in a single capsule.

#### References

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## Supports And Maintains A Healthy Prostate



### Zinc Caps

Item #01813 • 90 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$7.95	\$5.96
4 bottles	\$7 each	\$5.25 each

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

OptiZinc® is a registered trademark of InterHealth Nutritional, Inc.

## Restore Structural Support To Aging Skin

**Aging** skin loses structural **collagen** and water-binding **hyaluronic acid**,<sup>1,2</sup> while **environmental** factors weaken the skin's protective outer barrier.<sup>3</sup>

The results of these changes are wrinkles, age spots, fine lines, and a dull, dry appearance.<sup>4-6</sup>

The **new Collagen Boosting Peptide Serum** helps inhibit these unsightly processes—supporting the skin's collagen structural support and maintaining its youthful hydration, which in turn firms, lifts, and contours dermal appearance.

### REGENERATIVE EFFECTS OF SNOW ALGAE

The key to **Collagen Boosting Peptide Serum's** restorative power is its high concentration of **snow algae**, which comprises of resilient organisms that have been lab-cultivated and formulated into a serum format (instead of a cream) for maximum absorption. Snow algae help activate cellular **AMPK** and a key **longevity gene**.

In skin cells, the result is **increased collagen** production. Researchers recently observed that **snow algae** boosted skin **hydration** in **100%** of studied individuals—after just **14 days** of application.<sup>7</sup>

### SUPPORTING PEPTIDES AND HYALURONIC ACID

Supporting these regenerative effects are **peptides** that stimulate the synthesis of **collagen** at the point where the dermis meets the epidermis above it. A clinical trial found that these **peptides** increased skin smoothness by **12.2%**, and firmness by **10.8%**, after **two months** of application.<sup>8</sup>

One peptide, **palmitoyl tripeptide-5**, further supports collagen production by activating “latent tissue growth factor beta.” A study showed that it reduced the appearance of deep wrinkles by **28%**—**within minutes** of application!<sup>9</sup>

**Collagen Boosting Peptide Serum** also contains **hyaluronic acid** to directly replenish falling hyaluronic acid levels—shown to restore the skin's ability to hold moisture and retain its softness and youthfulness.<sup>10</sup>

Due to its high-absorption serum format, applying just 2-3 drops of **Collagen Boosting Peptide Serum**, morning and night, to targeted areas of the face produces noticeable rejuvenation effects within weeks of first use.

A 1-ounce bottle of **Cosmesis Collagen Boosting Peptide Serum** retails for \$59. If a member buys two bottles, the price is reduced to **\$39** per bottle.



Item # 80156

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To order **Cosmesis Collagen Boosting Peptide Serum**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

## New Study Finds Pycnogenol® Effectively Treats PSORIASIS... And More

Dr. Fred Pescatore



BY MICHAEL DOWNEY

Adding to accumulating evidence of the beneficial effects of Pycnogenol®, a recent clinical study found that this extract from the bark of French maritime pine trees can significantly and safely improve the symptoms of psoriasis.

This may come as a shock to the majority of American physicians who are frustrated with the current treatment options for psoriasis. But it didn't surprise Dr. Fred Pescatore. He recommends Pycnogenol® to all patients attending his New York City-based medical practice, which combines a nutritional approach with a complementary medical program. We sat down with Dr. Pescatore, author of *The Hamptons Diet* and head of the Centers for Integrative and Complementary Medicine in New York, to ask about his use of Pycnogenol® and other supplements in his innovative medical clinic.

**LE:** What are some of the nutritional supplements you find yourself recommending to your patients, and where do prescription drugs fit into the mix?

**FP:** My practice is entirely nutritional supplement-based, and therefore I prescribe [a multi-blend formula] consisting of a probiotic, CoQ10, fish oils, vitamin D3, turmeric, polyphenols...the list is very long, but I use all herbals and botanicals in an attempt to cure most patients. I take a holistic approach to meet the needs of patients and provide them with a better understanding of the natural and nutritional steps necessary in maintaining a healthy life. While prescription drugs may have a place in treatment regimen—and I do prescribe them—I believe that some of the most common illnesses or discomforts can be treated without the use of costly medications. All prescription drugs have contraindications and should be thought of as a last resort.

**LE:** For what type of patient concerns might you recommend Pycnogenol®?

**FP:** I recommend Pycnogenol® to all of my patients because of its versatility and reach. It's been proven

## ASK THE DOCTOR

to help benefit a variety of conditions that range from skin health to heart health and even fitness—all without side effects. Some of the most common applications include improving circulation, maintaining skin health, helping manage blood pressure, menstrual discomfort, and most recently, Pycnogenol® has been shown to help ease inner-ear conditions—the list goes on! Pycnogenol® can be taken without the risk of side effects that I see with prescription drugs.

**LE:** A recently published study found that Pycnogenol® may help treat psoriasis. Can you briefly summarize the study and findings for our readers?

**FP:** This clinical trial was conducted over a 12-week period where researchers monitored 73 patients between the ages of 30 and 45 who suffered from moderate to severe psoriasis. All of the patients used standard management practices, and 38 of them supplemented daily with **150 mg** of Pycnogenol®. This research showed that supplementation with Pycnogenol® helped reduce inflammation, redness, and the area of skin affected by psoriasis...the extract also helped increase skin hydration. Taking Pycnogenol®

reduced the need for costly standard management drugs and the time dedicated to treatment.

**LE:** Psoriasis is the most prevalent autoimmune disease in the US, affecting almost 8 million people. Can you explain why it has proven so difficult to treat?

**FP:** Yes, psoriasis affects much more than the appearance and irritation of skin, and unfortunately, standard treatments are often expensive, time-consuming, and may have significant side effects. It can be affected by stress levels and may lead to cardiovascular health risks. Psoriasis causes the immune system to overreact to a perceived threat, which triggers inflammation throughout the body. During this process, blood vessels can become inflamed, which can lead to a buildup of plaque inside the artery walls. Plaque can slow or interrupt the flow of blood to the heart, which heightens the risk of heart disease and heart attack. Because Pycnogenol® is separately recognized for its benefits to heart health and circulation, it is a great, safe, and natural option for those suffering from psoriasis.

**LE:** Have you successfully treated psoriasis patients with Pycnogenol® therapy?

**FP:** I have treated many psoriasis patients with Pycnogenol® and I have written about it in my book, *The Allergy and Asthma Cure*. I had one particularly troublesome patient who had been to every doctor she could think of—allergists, dermatologists, and so on. I placed her on an anti-inflammatory diet, along with **200 mg** of Pycnogenol® per day. She was already on a number of my other favorite supplements, so I simply added that. Within two weeks, her skin was clearer and by the end of six months, she couldn't find one psoriasis patch. Needless to say, she was ecstatic.

**LE:** Do you take Pycnogenol® and do you believe that everyone should?

**FP:** Yes, in fact, I call Pycnogenol® one of my “desert island” supplements, meaning that I would not want to be stuck on a desert island without this one. Pycnogenol® can benefit men and women of all ages, and I believe in this supplement so strongly that I recommend it to all of my patients, because it addresses such a variety of common health issues.

**LE:** Can you give us an example of some drugs that supplements have been able to replace and for what conditions?

**FP:** Yes, most patients can stop or significantly lower their blood pressure, diabetes, arthritis, asthma, and allergy medications, to name a few. SAME is great for depression. St. John's Wort is as good as SSRI's [anti-depressants]. Glucosamine and curcumin [can be taken] in lieu of pain meds. MSM and a formulation of the plant-based enzymes, bromelain and papain, are both good for pain management.

**LE:** Do you sometimes recommend therapies beyond drugs and supplements—a special diet for instance?



## Clinical Study Reports Remarkable Effectiveness Of Pycnogenol® In Psoriasis Patients

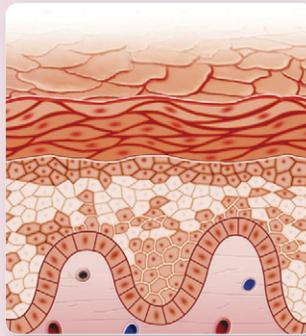
Scientists recently published the results of a clinical trial in which the adjunctive effectiveness of Pycnogenol® was tested on psoriasis patients. All 73 patients received standard medical treatment for psoriasis. Only 38 of these participants also received Pycnogenol®.

The standard treatment regime was determined for each patient by his or her dermatologist and included a personalized plan that included some or all of the following: moisturizers, a vitamin D supplement, corticosteroids, light therapy sessions, salicylic acid, and immunosuppressants, among others.

The Pycnogenol® group also received **50 mg** of Pycnogenol® supplementation, three times daily.

After 12 weeks, scientists documented impressive improvements in the Pycnogenol® group, which included:<sup>1,2</sup>

- **20%** decrease in the area of skin affected by psoriasis in all body regions, compared to an **8%** decrease with standard treatment,
- **44%** reduction in redness, compared to a **28%** reduction with standard treatment,
- **45%** decrease in skin hardening, compared to a **21%** decrease with standard treatment,
- **45%** less flaking on the body area affected by psoriasis, compared to **16%** less flaking with standard treatment,
- **32%** improvement in treatment time and a **34.6%** reduction in treatment costs, compared to standard treatment,
- Significant increase in content of water and oil/lipids in all areas of the skin, compared to standard treatment,
- Significant reduction in the need of standard psoriasis management drugs,
- Significant decrease in oxidative stress (which plays a role in psoriasis as a possible marker of active inflammation), compared to standard treatment.



After the 12-week trial, **80%** of the Pycnogenol® group decided to continue using the extract, a good indicator of their emotional reward.<sup>2</sup>

Lead study researcher, Dr. Gianni Belcaro, said that, “As a natural nuclear factor-kappa beta (NF-κβ) inhibitor, Pycnogenol® reduces inflammation at the onset and can act as a natural, vegetal ingredient to control inflammation, swelling, and oxidative stress.”<sup>2</sup>

“In this study and in several others on chronic inflammatory conditions,” said Belcaro, “Pycnogenol® has shown significant clinical results and without any side effects, making it a safe, natural, alternative for those seeking relief from the symptoms of psoriasis.”<sup>2</sup>

**FP:** Every patient gets an exercise prescription formulated for their specific condition. I actually employ trainers in my office who are specialized in medical exercise. Each patient is put on a specific diet according to their food sensitivities. And of course, meditation, acupuncture, cleanses, and detoxes are all utilized, depending on the situation. My practice embraces all healing modalities.

**LE:** Do you offer general dietary advice for your patients that you could share with our readers?

**FP:** The fewer the carbs, the better. Carbs should basically come from vegetables and legumes—not grain. Cholesterol [as a taboo] is a myth—eat healthy fats. Monounsaturated from olives, macadamia nuts, and avocado. Eat polyunsaturated fats from fish only. Lean protein from organic animals is best. No farm-raised fish. And drink half your body weight in ounces of water per day.

**LE:** Thank you, Dr. Pescatore.

For more information on Dr. Fred Pescatore and his medical practice, or how to purchase his published books, visit <http://www.drpscator.com/>.

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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#### References

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5. *Phytother Res.* 2013 Oct; 27(10):1572–8.



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

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

For those weighing less than 160 pounds, just one capsule a day provides optimal potencies. Those weighing over 160 pounds should consider taking two capsules a day. A bottle containing 60 vegetarian capsules of **Triple Action Cruciferous Vegetable Extract** retails for **\$24**. If a member buys four bottles, the price is reduced to **\$16.50** per bottle. (Item# 01468)

Those who want the added benefits of **trans-resveratrol** can order **Triple Action Cruciferous Vegetable Extract with Resveratrol**. Each capsule provides **20 mg** of *trans-resveratrol* in addition to the vegetable extracts and retails for **\$32** per 60-capsule bottle. If a member buys four bottles, the price is reduced to **\$22.20** per bottle. (Item# 01469)

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To order Triple Action Cruciferous Vegetable Extract, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

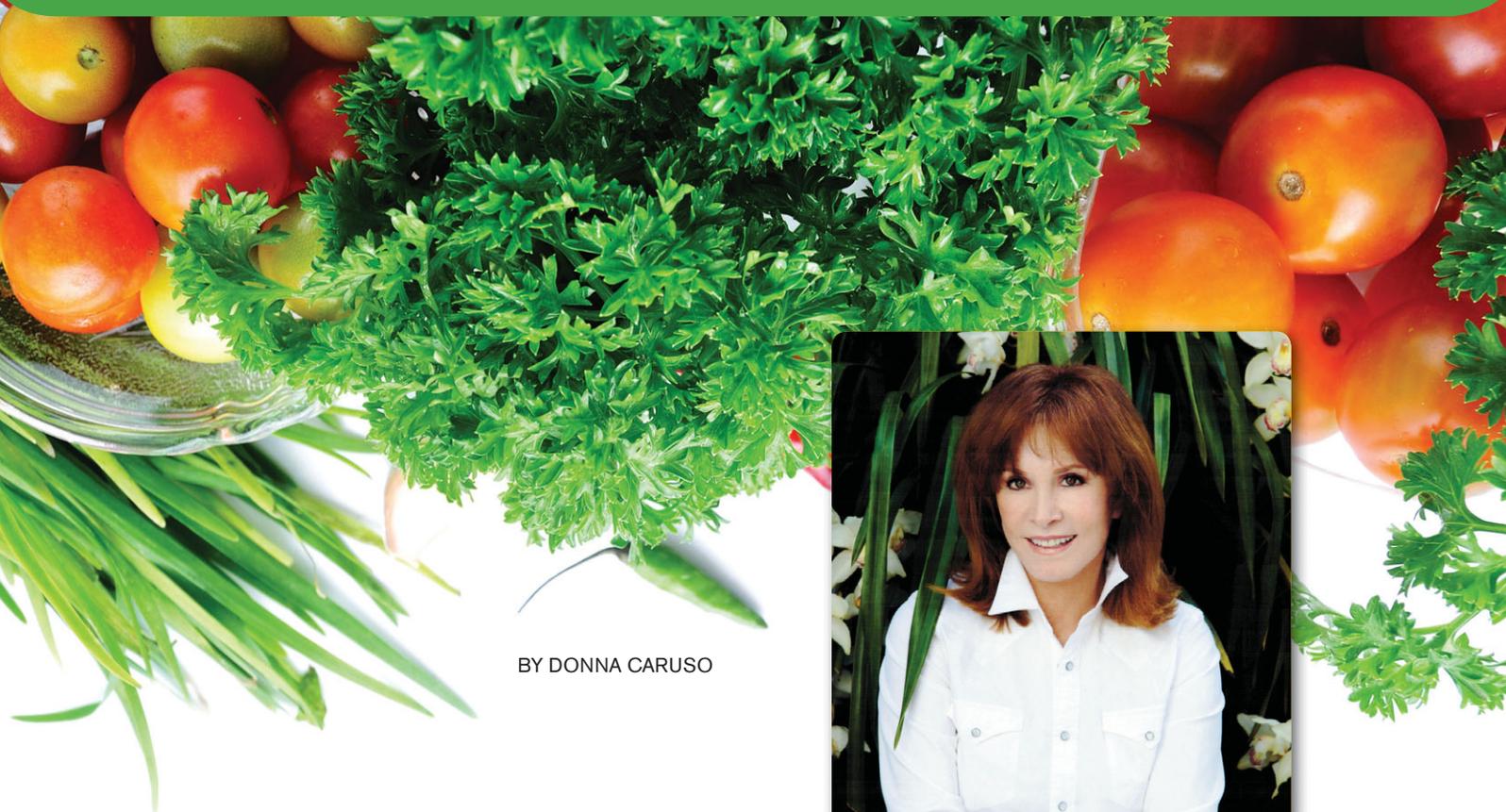


Item # 01468

Item # 01469

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<b>Watercress 4:1 extract</b>	<b>50 mg</b>
<b>Indole-3-Carbinol (I3C)</b>	<b>80 mg</b>
<b>Rosemary Extract</b>	<b>50 mg</b>
<b>Cat's Claw Extract</b>	<b>50 mg</b>
<b>Cabbage Extract</b>	<b>25 mg</b>
<b>DIM (Di-indolyl-methane)</b>	<b>14 mg</b>
<b>Apigenin</b>	<b>25 mg</b>



BY DONNA CARUSO

## Stefanie Powers

### A BALANCED LIFE

Acclaimed television and film actress **Stefanie Powers** began her devotion to a healthy lifestyle at a very young age. Today, at 72, Powers remains vibrant and energetic, and she continues to travel the world on behalf of wildlife preservation, appear on stage and television, create projects for her production company, and speak up for the many causes that are of vital importance to her. A **Life Extension**® member, Powers talked to us about her healthy lifestyle in a recent exclusive interview.



### The Early Years: Supplements And Vegetables

Growing up in California, Powers' idyllic childhood on a ranch with horses and other animals instilled a lifelong love for nature. "Before it became chic," she recalls, "my mother believed in healthy foods. We were semi-vegetarians growing up and took those funny things called vitamin pills." Her mother Julie patronized a health food store in Toluca Lake whose owner was the former assistant to well-known actor Robert Cummings, an early advocate of supplements and healthy eating. The store owner gave Julie all the latest information about natural healing.

"We got all our vitamins from [my mother's business partner]," explains Powers, "various potions and bee pollen. We never ate sugar; we didn't drink soda pop; we did everything healthy without actually recognizing it or being eccentric about it." Powers adds that her mother died at age 96 with a history of very few health problems.

## Early Career And Successes

From an early age, Powers studied ballet with other young hopefuls, including Natalie Wood and Jill St. John. Auditioning for movies at 15, she was later signed to a seven-year studio contract, and appeared in films like *McLintock!* with John Wayne. She found consistent work and was soon friends with Lana Turner and Ava Gardner, traveling the world (she speaks seven languages) and working regularly in film. But it was her co-starring role in the television series “Hart To Hart” (1979-1984 with eight subsequent specials from 1993-1996) with Robert Wagner that finally made Powers a huge star.

An early marriage to actor Gary Lockwood lasted eight years, and a second marriage in the 1990s also ended in divorce, but in between the two was a nine-year life-changing relationship with actor William Holden (1918-1981), which led to Powers founding the William Holden Wildlife Foundation in Kenya following his death.

## A Careful Diet

“At this moment, which is probably going to continue for the foreseeable future, I eat no bread—well, maybe I have one piece a week—but certainly no pasta, no rice, no potatoes. I eat sweet potatoes or have a glass of wine, but only once a week. Other than that, it’s mainly proteins and vegetables, green vegetables, and very few tubers. I do have tomatoes.”

In Kenya, where Powers lives part of the year, she grows her own vegetables and is currently building a greenhouse to grow tomatoes. “I do have to buy fruit,” she says, “because of the high altitude, but I raise my own chickens and do my own composting.” Powers’ crops are grown organically with seeds she brings from outside. Using nontoxic herbal sprays, she tries to grow as much as possible under netting or in a greenhouse to avoid the pollen of GM modified plants from nearby farms. “I feel a little bit healthier in Kenya,” she adds, “because I’m more in control of the food I eat. I get my dairy

products from my neighbor’s cow. I trade some of my vegetables and eggs for her fresh milk, and then we make butter and yogurt. I’m back to the old frontier!”

Powers is particular wary of all forms of sugar. “Anything that transports sugar into the system transports too many opportunities for all the modern maladies people suffer from. We consume a lot of sugar in manufactured foods, so I try to eat as few of those as possible.”

She explains that she “wants to lead a balanced life” and believes the elimination of unhealthy food from our diet, especially sugar and anything that turns to sugar, is crucial in reaching that goal.

## Supplements, HRT, And GHG

As a lifetime consumer of nutritional supplements, Powers is aware that the body’s needs change over time and she is careful to consult specialists and have all necessary tests done to maintain optimal health. Currently working with two

### STEFANIE POWERS’ SUPPLEMENTS

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**Multivitamin** • three capsules twice daily

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**Flax Seed Oil** • one to nine softgels daily

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**Ginkgo biloba 25 mg** • one capsule twice daily

**Dimethylglycine 125 mg** • two tablets daily

**Vitamin C 1,000 mg** • one tablet twice daily



cellular biologists, one of whom is also a nutritional counselor, Powers tries to ensure she is getting everything she requires to maintain her health and youthfulness.

Powers was on hormone replacement therapy (HRT) for 15 years using bioidentical hormones. “They served me tremendously,” she says. “Science has discovered that there are nine elements that are either hormones or hormone enablers. It is crucial before taking HRT that all these are tested in order to show the levels that might need to be raised, and then to keep track of the effects of any use of HRT with frequent blood tests.”

Powers has also taken human growth hormone (HGH) in very small amounts and credits it with providing “an incredible sense of well-being and energy.” But once again, she mentions the importance of monitoring the body through regular blood tests. “It’s constant vigilance,” she explains, “because our bodies change. Sometimes emotional issues in our lives can cause physical and chemical changes in our bodies, so we have to be mindful.”

### The Exercise Enthusiast

“I am really an exercise fiend,” Powers admits. “Because I was a dancer from a very early age, Pilates came into my life when I was just a teenager.” The fitness method devised by Joseph Pilates was quickly recognized as particularly effective with dancers by such noted choreographers as George Balanchine, Agnes de Mille, and Martha Graham, and his exercises changed the lives of dancers.

“Every Broadway doctor, every doctor in New York, every dancer knew of Pilates, because you



couldn’t stop dancing,” Powers recalls. “If you pulled a muscle and couldn’t dance, they would hire somebody else, so you had to rehab on the job.” The Pilates system permitted dancers to work while they were healing, using techniques that Powers calls “absolutely extraordinary.” In 2005, Powers published the book *Powers Pilates: Stefanie Powers’ Guide to Longevity and Well-Being Through Pilates* (Gaia Books Ltd.). “I was made aware of him in the very early days and I have done body control and Pilates throughout my life,” she adds.

Powers has never stopped taking dance classes and is now actively involved with a group called Dancers Over 40, as well as another group that holds classes a few days a week for older people who had made their living dancing. “We’re all slightly over the

hill,” she says, “but we look pretty good and we can still get our legs up! Dancing has always remained a part of my life.”

A former competitive polo player, Powers still plays friendly games in England and Kenya and has also begun competing in a new sport, Extreme Cowboy Racing, with her quarter horse. She also regularly works out with weights in a gym.

“Cross training is about the best thing you can do,” she comments, “and there’s another exercise method called CrossFit, which is the most interesting, demanding, and unusual pursuit. It’s like none of the disciplines I’ve ever used before and it was rather challenging when I did it.” According to the actress, “the most beneficial addiction that anybody can have in their life is endorphins [from exercise].”

### Keeping Your Brain And Emotions Healthy

Powers' efforts to remain youthful and vibrant go way beyond keeping her body fit. "It's very important to be cheerful, to look at each day as a new challenge," she advises. "I think learning new things, the pursuit of knowledge, information, and increasing one's understanding of things are very essential."

Extremely articulate, Powers is largely self-educated. Many years ago, she felt embarrassed by her lack of a college education and asked the UCLA English Department what books students were required to read in order to earn a degree. Armed with a list of over 200 titles, Powers says,

"I read many more than [those] and wound up reading the bulk of many authors who were on that list. I think in doing that, I accomplished something for myself that was a challenge. Challenging yourself is crucial in life and that was my personal education."

Powers continues to study, to learn new words and new facts and pursue in depth any subject that interests her. She is a very lively conversationalist.

"I have the *Oxford English Dictionary* in my library and on my devices," she says. "Wherever I go, I'm always pursuing the enlargement of my vocabulary with the use of better forms of expression." Powers says she doesn't read nonfiction often, but describes herself as "a devotee of history," always eager to learn more about almost everything.

### Cultivating Longevity

Living a long, healthy, active life is of primary concern to Powers, who looks and sounds far younger than her chronological age.

"I think of the wonderful interview Alice Roosevelt Longworth gave to a young cub reporter on the occasion of her 90<sup>th</sup> birthday," Powers says. "When he asked her what she owed her longevity to, she replied 'Arrested development.'" Powers laughs and says that at the very least, cheerfulness and a hopeful attitude about living a long life are very helpful.

Strong relationships are also key, she says, adding that her mother was her best friend. "We had to recognize each other as individuals," she explains, "and that was the beginning of a very supportive friendship between us."

And, of course, it is Powers' belief that her lifetime of healthy eating, supplements, exercise, challenging herself, and following her curiosity to learn new things will all contribute to an extended life span.

### William Holden Wildlife Foundation

It was movie star William Holden who introduced Powers to Africa and the critical need to take strong action to preserve wild animals and their habitat before they became extinct. Many would say this is a losing battle, but Powers and her associates are doing a remarkable job in educating both the local population and students and visitors from other countries about animal conservation.

Their education program teaches over 10,000 students a year about the benefits of biodiversity and the importance of



preserving the local flora and fauna. They work in conjunction with the William Holden Wildlife Foundation, which was founded to conserve rare and endangered species.

The Foundation is asking readers to visit their website [www.whwf.org](http://www.whwf.org) and sign a petition promising not to buy products from China until the Chinese government agrees to take strong action to stop the importation of elephant ivory, which has led to the mass slaughter of elephants by poachers.

### Current Projects

In addition to her wildlife conservation work, Powers remains very active in the entertainment field. She has toured with the show "Hart of My Heart," a cabaret tribute to renowned Broadway lyricist Lorenz Hart, which Powers has performed in New York, San Diego, Los Angeles, and London and may revive.

Powers also has her own production company and is currently trying to put together a historical miniseries that she isn't ready to discuss publicly. "It's along the lines of the Borgias or the Tudors," she hints.

She has strong hopes that the Jaguar Conservation Trust, with which she was formerly associated, will be revived. The activities of the Trust have been in abeyance since 2008, when Jaguar was purchased by Tata Motors, the Indian conglomerate. It is Powers' hope that the Trust's work to help preserve the lives and habitat of wild jaguars in Belize, Guatemala, and Costa Rica, will soon be resumed.

Finally, Powers is seriously concerned about recycling and the fate of the planet. She highly rec-

ommends the 2002 book *Cradle To Cradle: Remaking The Way We Make Things*, by William McDonough and Michael Braungat, which advocates making products out of materials that can be recycled to nourish the earth and environment.

### Stefanie's Ideas About Living Well And Long

To summarize Powers' convictions, the following may be seen as her keys to lifelong health and longevity:

- Eat a wholesome, sensible diet with lots of vegetables and protein. Avoid sugar, foods that contain sugars, and all processed foods.
- Make a lifelong study of supplements and, with the help of professionals and regular testing, take what is recommended to stay healthy. The sooner you begin, the better. Make changes as needed as you grow older or have specific health issues.
- Challenge your mind and keep learning new things. Work to attain greater knowledge of the world. Never lose your curiosity about life.
- Participate in the world through activism connected to issues that mean something to you. Be passionate in your pursuit to make the world a better place for everyone. Find what resonates with you.
- Never give up your fight, even when the odds aren't in your favor.
- Cherish the people you love and keep close bonds with all who hold special meaning for you throughout your life. ●



For more information on the William Holden Wildlife Foundation, please visit [www.whwf.org](http://www.whwf.org). For more information on the actress, please visit her official website at [www.stefaniepowersonline.com](http://www.stefaniepowersonline.com).

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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can't make enough of them to keep up with the brain's demands. Prevacen supplements these proteins during the natural process of aging to keep your brain healthy. Prevacen comes in an easy to swallow capsule. It has no known side effects and will not interact with your current medication.

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## *SUPER* FOODS

BY MICHAEL DOWNEY



# Buckwheat

## A Complete Protein

Buckwheat is a gluten-free grain substitute, which is a source of complete protein. It delivers an abundance of tannins, catechins, the essential fatty acid alpha-linolenic acid, vitamins, minerals, and both soluble and insoluble fiber.

Two of its most important nutrients include *D-chiro-inositol* and rutin. Buckwheat is the greatest natural source of *D-chiro-inositol*,<sup>1</sup> a compound that reduces glucose levels and can be used as a treatment for diabetes.<sup>2,3</sup> The flavonoid rutin is known for its anti-inflammatory and platelet aggregation-inhibiting effects.<sup>4</sup>

Accumulating evidence demonstrates that buckwheat can be beneficial for managing diabetes,<sup>2,3,5</sup> cardiovascular disease,<sup>5,6</sup> arthritis,<sup>7</sup> allergies,<sup>8</sup> and obesity.<sup>5</sup>

### A Unique Nutrient Profile

Despite its name, buckwheat is not a type of wheat nor even a type of grain. Instead, it is a seed related to rhubarb and sorrel that is often used as a grain substitute. But buckwheat's unique nutrient profile makes it a step above grains. Grains such as wheat, maize, and rice do not provide the human body with the proportionate balance of amino acids required to produce complete protein because of an insufficient supply of the amino acid lysine.<sup>4</sup>

Buckwheat, on the other hand, contains *all eight essential amino acids* in excellent proportions—including a good supply of lysine. Because of that, buckwheat is a surprisingly rich source of protein. In fact, just one cup of buckwheat delivers **23 grams** of high-quality protein.<sup>9</sup> And unlike certain grass grains, buckwheat is **gluten-free**.<sup>10</sup>

Buckwheat's most potent health effects may come from its rich supply of phytonutrients. Buckwheat contains high concentrations of **D-chiro-inositol**, a potent chemi-

cal variant of the B vitamin inositol that promotes healthy glucose levels.<sup>11</sup> Buckwheat also contains catechins and tannins, and it is especially rich in rutin and quercetin,<sup>12</sup> two nutrients known to fight free radicals and inflammation.

The abundant supply of vitamins and minerals in buckwheat includes riboflavin (vitamin B2), niacin (vitamin B3), phosphorus, zinc, iron, calcium, potassium, and selenium. Buckwheat also contains copious amounts of copper, magnesium, and manganese.<sup>9</sup> Each of these minerals plays an important role in the body. Copper is required for red blood cell production. Magnesium relaxes blood vessels, lowers blood pressure, and serves as a cofactor for more than 300 enzymes, including those involved in the body's use of glucose and insulin secretion.<sup>12</sup> Manganese supports bone and skin health, as well as critical biochemical processes.<sup>13</sup>

One cup of buckwheat delivers **68%** of the recommended daily fiber intake (for a 2,000-calorie-a-day diet),<sup>9</sup> substantially inhibiting the rate of glucose absorption,

which is important for maintaining balanced blood sugar levels.<sup>14</sup> In fact, the fiber content provided by buckwheat represents over **300%** of the amount of fiber found in an equivalent serving of quinoa<sup>9,15</sup>—which itself significantly exceeds whole wheat and rice in fiber content.<sup>16</sup>

Fiber delivers many additional health benefits beyond glucose control. It promotes healthy weight, normalizes bowel movements, lowers the risk of hemorrhoids and diverticular disease, decreases serum LDL cholesterol levels, and helps reduce blood pressure and inflammation. Limited evidence suggests that fiber may help prevent colorectal cancer (likely by binding and promoting the excretion of toxins from the gut).<sup>17</sup>

Buckwheat also provides a type of starch called *resistant starch* that is not digested in the small intestine. This is often classified as a third type of dietary fiber because it possesses some of the benefits of both soluble and insoluble fiber. Although only a small percentage of buckwheat starch is resistant to digestion, its activity may promote overall colon health.<sup>14</sup>

### Superior Cardiovascular Benefits

Buckwheat contains a number of nutrients that deliver powerful cardiovascular benefits, including protection against blood clots, reducing blood pressure, and lowering cholesterol levels.

One important reason for these benefits is that buckwheat is one of the richest food sources of the flavonoid **rutin**,<sup>18</sup> a nutrient that is well known for its ties to heart health.



## How To Prepare And Serve Buckwheat

You can find pre-packed buckwheat on store shelves in various forms: whole hulled buckwheat, toasted, parboiled, or dried. Buckwheat should be stored in an airtight container and kept refrigerated, where it will stay fresh for a couple of months. Don't store it for longer periods because its oil content can eventually turn buckwheat rancid.

To prepare buckwheat, rinse it thoroughly under running cold water and cook it the way you'd cook rice, oats, or barley. Add buckwheat to either boiling water or boiling broth. After the liquid has returned to a boil, turn down the heat, cover and simmer for about 30 minutes. Roughly one cup of dry buckwheat cooks up to provide two cups of fluffy yet chewy buckwheat.

Once the buckwheat is cooked, it can be used in a variety of ways/dishes. It can be served as a hot breakfast cereal, added to soups and stews, or mixed with other foods—such as chicken, garden peas, pumpkin seeds, and scallions—for a dinner salad or lunch dish. You can also buy buckwheat in flour form and blend it with whole-wheat flour to make much healthier breads, muffins, or pancakes.

A roasted form of buckwheat, known as kasha, is commonly used in traditional European dishes. It is also one of the chief ingredients in the preparation of Japanese soba noodles.

Scientists have found that rutin prevents blood clots from forming, making it a promising therapy for patients at risk for strokes and heart attacks.<sup>19</sup>

In fact, when Harvard researchers tested 4,900 compounds, they discovered that rutin was, by far, the most potent anticlotting compound of the group. It works by blocking a potentially dangerous enzyme called *protein disulfide isomerase* (PDI) that is rapidly excreted from both endothelial cells and platelets when a clot forms in an artery or vein. The researchers are hopeful that future research on rutin will lead to an effective but simple therapy for those at risk of a clotting-related event.<sup>19</sup>

Rutin has also been shown to help reduce blood pressure. According to one study, people taking rutin had a **36%** reduction in blood pressure.<sup>20</sup>

Other elements found in buckwheat also contribute to buckwheat's ability to lower blood pressure, including its abundant supply of magnesium<sup>12</sup> and its extremely rich fiber content. The high fiber content additionally promotes cardiovascular health by decreasing inflammation, LDL cholesterol, and total cholesterol.<sup>17</sup>

Remarkably, scientists have found that the protein in buckwheat has a unique amino acid composition that allows it to act similarly to fiber. This amino acid profile provides special biological activities that include cholesterol-lowering and antihypertensive effects.<sup>6</sup>

Researchers in China confirmed these effects when they investigated the relationship between buckwheat (and oat) consumption and cardiovascular disease risk factors in an ethnic minority in China. Their research, which was

published in the *American Journal of Clinical Nutrition*, found that a greater regular intake of buckwheat correlated with lower LDL cholesterol levels, reduced total cholesterol, and a higher ratio of HDL-to-total cholesterol. The study concluded that buckwheat has the potential to prevent and treat both hypertension and high blood cholesterol (together referred to as *hypercholesterolemia*).<sup>6</sup>

The flavonoid rutin has often been recommended to people with varicose veins as a means of promoting vascular health. In fact, one hypothesis is that varicose veins and spider veins may be caused by a deficiency of rutin in the diet.<sup>18</sup>

Rutin strengthens weak capillary walls. It has been shown in placebo-controlled studies to improve signs and symptoms of venous insufficiency, including hemorrhoids and retinal hemorrhage, a condition that can lead to partial or even complete blindness.<sup>20,21</sup>

## Protection Against Diabetes

Both animal and human studies reveal that buckwheat flour can improve diabetes, as well as obesity, which is a risk factor for diabetes.<sup>5</sup>

One of the ways buckwheat can have a beneficial effect on diabetes is by blocking the digestion of sucrose (table sugar). It does this by inhibiting the activity of sucrase, the name given to a number of enzymes that convert sucrose to fructose and glucose.<sup>2</sup>

Canadian scientists conducted a placebo-controlled study to investigate buckwheat's ability to manage diabetes. They administered buckwheat seed extract to rats that had chemically induced diabetes.

## SUPER FOODS



When blood glucose levels were assessed at 90 minutes and 120 minutes after administration, the placebo group showed no change. By contrast, the buckwheat group was found to have blood glucose levels that were **12-19%** reduced.<sup>3</sup> The researchers attribute this effect to the buckwheat compound D-chiro-inositol, which is believed to play a significant role in glucose metabolism and cell signaling.

In fact, other studies have shown that D-chiro-inositol may make cells more sensitive to insulin. It appears to mimic the activity of insulin and may, therefore, lower blood levels of glucose.<sup>2,3</sup>

### Blocking The Effects of Polycystic Ovary Syndrome

The D-chiro-inositol in buckwheat may offer a powerful benefit for women with polycystic ovary syndrome (PCOS), a condition of hormonal imbalance that is common in women of reproductive age. This syndrome is generally associated with increased insulin resistance, which scientists believe results from an inability to properly utilize D-chiro-inositol.<sup>22</sup>

In double-blind studies, when women with PCOS received D-chiro-inositol, they experienced an increase in insulin sensitivity, a reduction in testosterone, and an increase in ovulation frequency.<sup>23,24</sup>

One study showed that it could also help normalize glucose levels in women with this condition.<sup>1</sup>

## Buckwheat Nutrition Facts

Consuming buckwheat as a substitute for grains in your diet provides abundant quantities of novel phytochemicals, fiber, complete protein, and an array of vitamins and minerals, especially magnesium, manganese, and copper. It is low in sodium, saturated fat, and cholesterol. One cup of buckwheat, or **170 grams**, contains:<sup>9</sup>

Calories	583
Calories from fat	48
Protein	22.5 grams
Total fat	5.8 grams
Saturated fat	1.3 grams
Dietary Fiber	17 grams
Cholesterol	0 grams
Thiamin	0.2 milligrams
Riboflavin	0.7 milligrams
Niacin	11.9 milligrams
Vitamin B6	0.4 milligrams
Folate	51 micrograms
Pantothenic Acid	2.1 milligrams
Copper	1.9 milligrams
Iron	3.7 milligrams
Magnesium	393 milligrams
Manganese	2.2 milligrams
Phosphorus	590 milligrams
Potassium	782 milligrams
Selenium	14.1 micrograms
Zinc	4.1 milligrams

### Inhibiting Arthritis And Other Inflammatory Conditions

The rich supply of rutin in buckwheat could improve arthritis and other inflammation-related conditions by inhibiting the inflammatory response.

Cells known as macrophages are the major source of inflammatory mediators during an immune response. Remarkably, a study published in the journal *Arthritis Research & Therapy* demonstrated that rutin has the potential to modify the expression of proinflammatory genes in human macrophages. The researchers found that, *in vitro*, rutin can reduce human macrophage-derived inflammatory mediators. They also found that, in rats, rutin can inhibit the clinical signs of chronic arthritis.<sup>7</sup>

Another study found that oral administration of rutin can attenuate inflammatory bowel conditions such as colitis. This effect

was related to rutin's capacity to boost glutathione levels in the colon. This in turn reduces tissue damage from intestinal oxidative stress, characteristic of inflammatory colitis.<sup>25</sup>

### Suppressing Allergic Responses

Certain grains found in the grass family contain the protein gluten, which can trigger digestive tract upset and diarrhea in susceptible individuals. This includes those with the relatively rare condition known as celiac disease, as well as gluten-intolerant people. Symptoms can include headaches, abdominal pain and distension, flatulence, irritable bowel syndrome (IBS), depression, and skin rashes.

Buckwheat, however, is completely gluten-free, making it a great grain substitute for gluten-sensitive persons.

Those with allergies not related to gluten may be interested in buckwheat for a different reason. Research published in the journal *International Immunopharmacology* suggests that buckwheat extract has a strong antiallergic activity, which may be the result of buckwheat's capacity to inhibit histamine release and block cytokine gene expression in mast cells.<sup>8</sup>

### Possible Anticancer Activity

Early evidence suggests that buckwheat may exert novel mechanisms that help inhibit the origins of cancer.

One study in the *Journal of Nutrition* found that buckwheat protein extract provides protection against colon carcinogenesis in rats by reducing cell proliferation.<sup>26</sup>

A later study examined the effects of buckwheat protein polysaccharides on leukemia cells. The researchers found that these compounds reduced leukemia proliferation by an important process known as cell differentiation. Inducing differentiation of leukemic cells has become one of the most important therapeutic approaches for curing this form of cancer.<sup>27</sup>

### Summary

Buckwheat is a highly nutritious, gluten-free grain substitute that contains a rich supply of soluble and insoluble fiber, complete protein, and novel phytochemicals. Two compounds in particular—rutin and D-chiro-inositol—have shown remarkable activity against cardiovascular disease, diabetes, arthritis, and allergies, and may inhibit carcinogenesis.

Due to its modestly high calorie content, buckwheat should be used as a healthy food choice and not intentionally ingested as a supplement to one's diet. ●

**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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<b>MEN'S ANNUAL BLOOD TESTING</b>			<b>WOMEN'S ANNUAL BLOOD TESTING</b>		
<input type="radio"/> <b>MALE LIFE EXTENSION PANEL (LC322582)</b> CBC/Chemistry Profile (description on next page) DHEA-S PSA (prostate-specific antigen) Homocysteine C-Reactive Protein (high-sensitivity) Free Testosterone Total Testosterone Estradiol TSH for thyroid function Vitamin D (25-hydroxyvitamin D) Hemoglobin A1c	\$400	\$199	<input type="radio"/> <b>FEMALE LIFE EXTENSION PANEL (LC322535)</b> CBC/Chemistry Profile (description on next page) DHEA-S Estradiol Homocysteine C-Reactive Protein (high-sensitivity) Progesterone Free Testosterone Total Testosterone TSH for thyroid function Vitamin D (25-hydroxyvitamin D) Hemoglobin A1c	\$400	\$199
<input type="radio"/> <b>MALE HORMONE ADD-ON PANEL* (LCADDM)</b> <b>Pregnenolone and Dihydrotestosterone (DHT)</b> To provide an even more in-depth analysis of a man's hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides information about a testosterone metabolite that can affect the prostate; and the hormone pregnenolone that acts as a precursor to all other steroid hormones.	\$206.75	\$116.25	<input type="radio"/> <b>FEMALE HORMONE ADD-ON PANEL* (LCADDF)</b> <b>Pregnenolone and Total Estrogen</b> To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides information about total estrogen status; and the hormone pregnenolone that acts as a precursor to all other steroid hormones.	\$166.75	\$93.75
<input type="radio"/> <b>THYROID ADD-ON PANEL (LCTHYROID)</b> <b>Free T3 &amp; Free T4.</b>	\$73.33	\$36	<input type="radio"/> <b>THYROID ADD-ON PANEL (LCTHYROID)</b> <b>Free T3 &amp; Free T4.</b>	\$73.33	\$36
<input type="radio"/> <b>OMEGA CHECK™™™ (LCOMEGA)</b> Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Check™™™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.	\$175	\$99	<input type="radio"/> <b>OMEGA CHECK™™™ (LCOMEGA)</b> Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Check™™™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.	\$175	\$99
<input type="radio"/> <b>INSULIN (LC004333)</b> Helpful to assess insulin resistance.	\$39.87	\$24.42	<input type="radio"/> <b>INSULIN (LC004333)</b> Helpful to assess insulin resistance.	\$39.87	\$24.42
<input type="radio"/> <b>ADVANCED OXIDIZED LDL PANEL (LC100035)</b> This panel looks at vascular inflammatory biomarkers, beginning with lifestyle choices to the development of metabolic and cardiovascular disease as well as the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanes, Myeloperoxidase and Oxidized LDL.	\$380	<b>NEW</b> \$213.75	<input type="radio"/> <b>ADVANCED OXIDIZED LDL PANEL (LC100035)</b> This panel looks at vascular inflammatory biomarkers, beginning with lifestyle choices to the development of metabolic and cardiovascular disease as well as the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanes, Myeloperoxidase and Oxidized LDL.	\$380	<b>NEW</b> \$213.75

## SUGGESTED ADDITIONS TO ANNUAL BLOOD TESTING

<input type="radio"/> <b>LP-PLA2 (PLAC® TEST) (LC123240)</b> This test is used to aid in predicting risk for coronary heart disease and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.	\$175	\$93.75	<input type="radio"/> <b>VAP™ TEST (LC804500) (UPDATED)</b> The VAP™ cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. This test includes measurements of LDL particle size and lipoprotein subclasses.	\$120	\$67.50
<input type="radio"/> <b>RBC MAGNESIUM (LC080283)</b> This test can provide an early indication of magnesium deficiency.	\$117.33	\$66	<input type="radio"/> <b>FOOD SAFE ALLERGY TEST** (LCM73001)</b> This test measures delayed (IgG) food allergies for 95 common foods.	\$264	\$148.50
			<input type="radio"/> <b>FERRITIN (LC004598)</b> Used to evaluate iron stores in the body and to determine iron deficiency anemia.	\$37	\$21

\* For non-member pricing call **1-800-208-3444**.

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



### OTHER POPULAR PANELS

	(NON-MEMBER) RETAIL PRICE	MEMBER SUPER SALE PRICE
<b>CBC/CHEMISTRY PROFILE (LC381822)</b> <b>Note: This CBC/Chemistry Profile is included in many Life Extension Panels. Please note panel descriptions.</b> <b>CARDIOVASCULAR RISK PROFILE</b> Total Cholesterol      Cholesterol/HDL Ratio HDL Cholesterol      Estimated CHD Risk LDL Cholesterol      Glucose Triglycerides	\$47	\$26
<b>LIVER FUNCTION PANEL</b> AST (SGOT)      Total Bilirubin ALT (SGPT)      Alkaline phosphatase LDH		
<b>KIDNEY FUNCTION PANEL</b> BUN      BUN/Creatinine Ratio Creatinine      Uric Acid		
<b>BLOOD PROTEIN LEVELS</b> Total Protein      Globulin Albumin      Albumin/Globulin Ratio		
<b>BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE</b> Red Blood Cell Count      Monocytes White Blood Cell Count      Lymphocytes Eosinophils      Platelet Count Basophils      Hemoglobin Neutrophils (Absolute)      Hematocrit Lymphs (Absolute)      MCV Monocytes (Absolute)      MCH Eos (Absolute)      MCHC Baso (Absolute)      Neutrophils RDW		
<b>BLOOD MINERAL PANEL</b> Calcium      Sodium Potassium      Chloride Phosphorus      Iron		
<b>WEIGHT LOSS PANEL-BASIC (LC100027)</b> CBC/Chemistry profile (see description above), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Insulin and Hemoglobin A1c.	\$173.33	\$97.50
<b>WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028)</b> CBC/Chemistry profile (see description above), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin A1c, Vitamin D 25-hydroxy, C-reactive protein (high sensitivity), and Ferritin.	\$366.66	\$206.25
<b>HEALTHY AGING PANEL-BASIC* (LC100025)</b> CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Ferritin, and Insulin.	\$198.66	\$111.75
<b>HEALTHY AGING PANEL-COMPREHENSIVE* (LC100026)</b> CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Homocysteine, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Free T3, Free T4, Ferritin, Urinalysis, Fibrinogen, and Insulin.	\$332	\$186.75
<b>STRESS MANAGEMENT PROFILE (LC100043)</b> Cortisol AM/PM, DHEA-S, Glucose, Insulin, Progesterone, Free T3.	\$166.66	\$93.75
<b>COMPREHENSIVE THYROID PANEL (LC100018)</b> TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA.	\$265.33	\$149.25
<b>LIFE EXTENSION THYROID PANEL (LC304131)</b> TSH, T4, Free T3, Free T4.	\$100	\$56.25

	(NON-MEMBER) RETAIL PRICE	MEMBER SUPER SALE PRICE
<b>FEMALE COMPREHENSIVE HORMONE PANEL* (LC100011)</b> CBC/Chemistry Profile (see description at left), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3. This panel now includes Free T4 and Cortisol with no increase in price!	\$398.66	\$224.25
<b>MALE COMPREHENSIVE HORMONE PANEL* (LC100010)</b> CBC/Chemistry Profile (see description at left), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3. This panel now includes Free T4 and Cortisol with no increase in price!	\$398.66	\$224.25
<b>MALE BASIC HORMONE PANEL (LC100012)</b> DHEA-S, Estradiol, Total and Free Testosterone, PSA.	\$100	\$56.25
<b>FEMALE BASIC HORMONE PANEL (LC100013)</b> DHEA-S, Estradiol, Total and Free Testosterone, Progesterone.	\$100	\$56.25
<b>CHRONIC FATIGUE PROFILE (LC100005)</b> CBC/Chemistry Profile (see description), Epstein-Barr Virus antibodies (IgG and IgM), Cytomegalovirus Antibodies (IgG and IgM), Ferritin, Total and Free Testosterone, DHEA-S, Free T3, Free T4, Cortisol, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Insulin.	\$500	\$281.25
<b>ANEMIA PANEL (LC100006)</b> CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate.	\$105.33	\$59.25
<b>DIABETES MANAGEMENT PROFILE - COMPREHENSIVE (LC100040)</b> Hemoglobin A1C, Glucose, Insulin, Lipid Panel, Glycomark.	\$172	\$96.75
<b>DIABETES MANAGEMENT PROFILE - BASIC (LC100039)</b> Hemoglobin A1C, Glucose, Insulin.	\$52	\$29.25
<b>AUTOIMMUNE DISEASE SCREEN (LC100041)*</b> ANA screen, hs-CRP, TNFα, Immunoglobulins, IgA, IgG and IgM.	\$265.33	\$149.25
<b>MALE ELITE PANEL (LC100016)</b> Chem/CBC profile, Free and total Testosterone, Total Estrogens, Estradiol, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, Free and Total PSA, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, ferritin, homocysteine.	\$766.66	\$431.25
<b>FEMALE ELITE PANEL (LC100017)</b> Chem/CBC profile, Free and total Testosterone, Total Estrogens, Estradiol, Estrone, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, ferritin, homocysteine.	\$766.66	\$431.25

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

## DIGESTIVE

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

## DURK AND SANDY PRODUCTS

Blast™  
Inner Power™

## EYE CARE

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

## FIBER

AppleWise Polyphenol  
Fiber Food  
TruFiber®  
WellBetX PGX® plus Mulberry

## FOOD

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

## HAIR CARE

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

## HEART HEALTH

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

## HERBAL/PHYTO PRODUCTS

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

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

## HORMONES

Advanced Natural Sex for Women® 50+  
7-KETO® DHEA  
DHEA  
DHEA Complete  
Liquid Melatonin  
Melatonin  
Melatonin Timed Release  
Natural Estrogen  
Natural Estrogen w/o Isoflavones  
Pregnenolone  
ProgestaCare for Women  
Super Miraforte with Standardized Lignans

## IMMUNE ENHANCEMENT

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

## INFLAMMATORY REACTIONS

Arthro-Immune Joint Support  
ArthroMax® with Theaflavins  
Boswellia  
Bromelain (Specially-coated)  
Cytokine Suppress™ with EGCG  
DHA (Vegetarian Sourced)  
Fast Acting Joint Formula  
Ginger Force®  
Krill Healthy Joint Formula  
5-LOX Inhibitor w/AprèsFlex®  
Mega EPA/DHA  
Mega GLA with Sesame Lignans  
MSM  
Nervia®  
Organic Golden Flax Seed  
Serraflazyme  
SODzyme™ with GliSODin® and Wolfberry  
Super Omega-3 EPA/DHA with Sesame  
Lignans & Olive Fruit Extract  
Tart Cherry w/Standardized CherryPURE®  
Zyflamend® Whole Body

## LIVER HEALTH

Branch Chain Amino Acids  
Certified European Milk Thistle  
N-Acetyl Cysteine  
Liver Efficiency Formula  
European Milk Thistle  
Hepatopro  
SAME  
Silymarin

## MINERALS

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

## MISCELLANEOUS

Blood Pressure Monitor Arm Cuff  
CR Way Edition Advanced Dietary Software

## MITOCHONDRIAL SUPPORT

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

## MOOD RELIEF

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

## MOUTH CARE

Advanced Oral Hygiene  
Toothpaste  
Xyliwhite™ Mouthwash

## MULTIVITAMIN

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

## PET CARE

Cat Mix  
Dog Mix

## PROSTATE & URINARY HEALTH

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

Ultra Natural Prostate Formula  
Water-Soluble Pumpkin Seed Extract

## SKIN CARE

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

## SOY

Super Absorbable Soy Isoflavones  
Ultra Soy Extract

## SPECIAL PURPOSE FORMULA

AMPK Activator  
Anti-Alcohol Antioxidants w/HepatoProtection Complex  
Benfotiamine w/Thiamine  
Breast Health Formula  
Butterbur Extract w/Standardized Rosmarinic Acid  
Chlorella  
Chlorophyllin  
Green Coffee Extract CoffeeGenic®  
CR Mimetic Longevity Formula  
Cinsulin® w/InSea2® and Crominex® 3+

European Leg Solution Diosmin 95  
Fem Dophilus  
Femmenessence MacaPause®  
Migra-eeze™  
NAD+ Cell Regenerator™  
Nicotinamide Riboside  
Natural Female Support  
Optimized Resveratrol w/NAD+ Cell Regenerator™  
Pecta-Sol®  
Potassium Iodide  
PQQ Caps with BioPQQ®  
PteroPure®  
Prelox® Natural Sex for Men®  
Pyridoxal 5' - Phosphate  
Sinus Cleanser  
Tri Sugar Shield™

## SPORTS PERFORMANCE

Creatine Capsules  
DMG (N, N-dimethylglycine)  
L-Glutamine Capsules  
L-Glutamine Powder  
Whey Protein Isolate  
Whey Protein Concentrate

## VITAMINS

Ascorbyl Palmitate Capsules  
B12  
Beta-Carotene  
Biotin Capsules  
Buffered Vitamin C Powder  
Complete B Complex  
Effervescent Vitamin C  
Fast-C®  
Folate & Vitamin B12  
Gamma E Tocopherol w/Sesame Lignans  
Gamma E Tocopherol/Tocotrienols  
Inositol Capsules  
Mega Lycopene Extract  
Methylcobalamin  
MK-7  
No-Flush Niacin  
Optimized Folate  
Super Ascorbate C Capsules  
Super Ascorbate C Powder  
Super K w/Advanced K2 Complex  
Tocotrienols w/Sesame Lignans  
Vitamin B3 (Niacin) Capsules  
Vitamin B6  
Vitamin B12 Lozenges  
Vitamin C  
Vitamin D3  
Vitamin D3 w/Sea-Iodine™  
Vitamins D and K w/Sea-Iodine™  
Vitamin E  
Vitamin K2

## WEIGHT MANAGEMENT

Advanced Anti-Adipocyte Formula w/Meratrim® & Integra Lean®  
Advanced Natural Appetite Suppress  
CalReduce Selective Fat Binder  
CoffeeGenic® Green Coffee Extract  
7-KETO DHEA  
DHEA® Complete  
Fucoxanthin Slim™  
Garcinia HCA  
HCAActive  
Integra-Lean® African Mango Irvingia  
Optimized Irvingia w/Phase 3™ Calorie Control Complex  
Optimized Saffron with Satiereal®  
Natural Glucose Absorption Control  
Super Citrimax®  
Super CLA Blend w/Guarana and Sesame Lignans  
Super CLA Blend w/Sesame Lignans  
Waist-Line Control™  
Weight Management Formula  
WellBetX PGX® plus Mulberry

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

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

**SUB-TOTAL OF COLUMN 1**

No.		Retail Each	Member Each	Qty	Total
01206	<b>BERRY COMPLETE</b> - 30 veg. caps	\$21.00	\$15.75		
	Buy 4 bottles, price each	18.67	14.00		
01496	<b>BERRY COMPLETE w/ACAI (ENHANCED)</b> - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	<b>BETA-CAROTENE</b> - 25,000 IU, 100 softgels	11.25	8.44		
01622	<b>BIFIDO GI BALANCE</b> - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	<b>BILBERRY EXTRACT</b> - 100 mg, 100 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01512	<b>BIOACTIVE MILK PEPTIDES</b> - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	<b>BIO-COLLAGEN w/PATENTED UC-II®</b> - 40 mg, 60 small caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	<b>BIOSIL™</b> - 5 mg, 30 veg. caps	18.95	15.16		
*01007	<b>BIOSIL™</b> - 1 fl oz	31.99	25.59		
00102	<b>BIOTIN</b> - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
01709	<b>BLACK CUMIN SEED OIL</b> - 60 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01710	<b>BLACK CUMIN SEED OIL w/BIO-CURCUMIN®</b> - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01008	<b>BLAST™</b> - 600 grams of powder	26.95	20.21		
70005	<b>BLOOD PRESSURE MONITOR</b> - ARM CUFF (large)	50.00	37.50		
70004	<b>BLOOD PRESSURE MONITOR</b> - WRIST (cuff)	69.95	52.46		
01214	<b>BLUEBERRY EXTRACT</b> - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	<b>BLUEBERRY EXTRACT w/ POMEGRANATE</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01506	<b>BONE FORMULA (DR. STRUM'S INTENSIVE)</b> - 300 caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01726	<b>BONE RESTORE</b> - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01727	<b>BONE RESTORE w/VITAMIN K2</b> - 120 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01725	<b>BONE STRENGTH FORMULA w/KOACT®</b> - 120 caps	45.00	33.75		
	Buy 4 bottles, price each	40.00	30.00		
00313	<b>BONE-UP®</b> - 240 caps	28.95	21.71		
	Buy 4 bottles, price each	27.21	20.41		
01980	<b>BOOSTER w/MACUGUARD® OCULAR SUPPORT (SUPER)</b> - 60 softgels	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
01661	<b>BORON</b> - 3 mg, 100 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		
00202	<b>BOSWELLA</b> - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	30.00	22.50		
01802	<b>BRAIN SHIELD® GASTRODIN</b> - 60 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01253	<b>BRANCHED CHAIN AMINO ACIDS</b> - 90 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.00	12.75		
01699	<b>BREAST HEALTH FORMULA</b> - 60 caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	<b>BRITE EYES III</b> - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		

**SUB-TOTAL OF COLUMN 2**

No.		Retail Each	Member Each	Qty	Total
01203	<b>BROMELAIN (SPECIALLY-COATED)</b> - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	\$21.00 19.00	\$15.75 14.25		
00884	<b>BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID</b> - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
<b>C</b>					
01653	<b>CALCIUM CITRATE w/VITAMIN D</b> - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
01651	<b>CALCIUM D-GLUCARATE</b> - 200 mg, 60 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
***01823	<b>CALREDUCE SELECTIVE FAT BINDER</b> - 120 mint chewable tablets Buy 4 bottles, price each	45.00 38.00	33.75 28.50		
01700	<b>CARDIO PEAK™ w/STANDARDIZED HAWTHORN &amp; ARJUNA</b> - 120 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00916	<b>CARNITINE w/GLYCOCARN® (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01532	<b>L-CARNITINE</b> - 500 mg, 30 veg. caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01258	<b>CARNOSOOTHE w/PICROPROTECT™</b> - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01687	<b>CARNOSINE (SUPER)</b> - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	<b>CAT MIX</b> - 100 grams powder Buy 4 jars, price each	15.00 12.00	11.25 9.00		
01891	<b>CHILDREN'S FORMULA LIFE EXTENSION MIX™</b> - 100 chewable tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00550	<b>CHLORELLA</b> - 500 mg, 200 tablets	23.50	17.63		
01571	<b>CHLOROPHYLLIN</b> - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	<b>CHO-LESS™</b> - 90 capsules	35.00	26.25		
01910	<b>CHOL-SUPPORT™</b> - 60 liquid veg. caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
01477	<b>CHROMIUM ULTRA</b> - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	<b>CHROMIUM W/CROMINEX® 3+ (OPTIMIZED)</b> - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
01503	<b>CINSULIN® W/INSEA® AND CROMINEX® 3+</b> - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
01906	<b>CISTANCHE (STANDARDIZED)</b> - 30 veg. caps Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01818	<b>CITRIMAX® (SUPER)</b> - 180 veg. caps Buy 4 bottles, price each	40.00 38.00	30.00 28.50		
00818	<b>CLA BLEND w/SESAME LIGNANS (SUPER)</b> - 1,000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	<b>CLA BLEND w/GUARANA &amp; SESAME (SUPER)</b> -1,000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01896	<b>COGNITEX® w/BRAIN SHIELD®</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	60.00 52.00 48.00	45.00 39.00 36.00		
01897	<b>COGNITEX® w/PREGNENOLONE &amp; BRAIN SHIELD®</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	62.00 53.00 50.00	46.50 39.75 37.50		

**SUB-TOTAL OF COLUMN 3**

No.		Retail Each	Member Each	Qty	Total
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		
01659	<b>COGNIZIN® CDP CHOLINE CAPS</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01835	<b>COMPLETE B-COMPLEX</b> - 60 veg. caps Buy 4 bottles, price each	10.00 9.00	7.50 6.75		
01998	<b>COMPREHENSIVE NUTRIENT PACKS ADVANCED</b> - 30 packs Buy 4 boxes, price each	90.00 82.00	67.50 61.50		
00119	<b>COPPER CAPSULES</b> - 2 mg, 100 caps	9.91	7.43		
00949	<b>COQ10 w/ α-LIMONENE (SUPER-ABSORBABLE)</b> - 50 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	25.00 22.00 20.00	18.75 16.50 15.00		
00950	<b>COQ10 w/ α-LIMONENE (SUPER-ABSORBABLE)</b> - 100 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	66.00 60.00 56.00	49.50 45.00 42.00		
01226	<b>COQ10 (SUPER-UBIQUINOL)</b> - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	56.00 48.00 44.00	42.00 36.00 33.00		
01733	<b>COQ10 w/BIOPOQ® (SUPER UBIQUINOL)</b> - 100 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	54.00 44.00 40.00	40.50 33.00 30.00		
01426	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 52.00 48.00	46.50 39.00 36.00		
01425	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 46.00 42.00	43.50 34.50 31.50		
01427	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -50 mg, 30 softgels Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01431	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> -200 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 52.00 48.00	46.50 39.00 36.00		
80154	<b>COSMESIS ADVANCED LIGHTENING CREAM</b> - 1 oz jar Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80155	<b>COSMESIS ADVANCED PEPTIDE HAND THERAPY</b> - 4 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80152	<b>COSMESIS ADVANCED TRIPLE PEPTIDE SERUM</b> - 1 oz bottle Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80140	<b>COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS</b> - .33 oz Buy 2 bottles, price each	49.00 42.00	36.75 31.50		
80139	<b>COSMESIS AMBER SELF MICRODERMABRASION</b> - 2 oz Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80118	<b>COSMESIS ANTI-AGING MASK</b> - 2 oz Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80151	<b>COSMESIS ANTI-AGING REJUVENATING FACE CREAM</b> - 2 oz jar Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80153	<b>COSMESIS ANTI-AGING REJUVENATING SCALP SERUM</b> - 2 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80134	<b>COSMESIS ANTI-GLYCATION SERUM</b> - 1 oz <b>W/BLUEBERRY &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		

**SUB-TOTAL OF COLUMN 4**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>C CONTINUED</b>					
80127	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz</b> Buy 2 jars, price each	\$45.00 42.80	\$33.75 32.10		
80128	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz</b> Buy 2 jars, price each	59.00 51.92	44.25 38.94		
80117	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz</b> Buy 2 jars, price each	64.00 57.49	48.00 43.12		
80121	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz</b> Buy 2 jars, price each	58.00 51.04	43.50 38.28		
80105	<b>COSMESIS ANTI-REDNESS &amp; ADULT BLEMISH LOTION - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80147	<b>COSMESIS BIOFLAVONOID CREAM - 1 oz jar</b> Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80144	<b>COSMESIS BROCCOLI SPROUT CREAM - 1 oz</b> Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80156	<b>COSMESIS COLLAGEN BOOSTING PEPTIDE SERUM - 1 oz</b> Buy 2 jars, price each	59.00 52.00	44.25 39.00		
80120	<b>COSMESIS CORRECTIVE CLEARING MASK - 2 oz</b> Buy 2 jars, price each	64.50 56.76	48.38 42.57		
80141	<b>COSMESIS DNA REPAIR CREAM - 1 oz jar</b> Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80108	<b>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz</b> Buy 2 bottles, price each	74.95 65.95	56.21 49.46		
80123	<b>COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz</b> Buy 2 jars, price each	69.50 61.16	52.13 45.87		
80107	<b>COSMESIS FINE LINE-LESS - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80131	<b>COSMESIS HAIR SUPPRESS FORMULA - 4 oz</b> Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80137	<b>COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz</b> Buy 2 jars, price each	53.00 45.43	39.75 34.07		
80115	<b>COSMESIS HEALING MASK - 2 oz</b> Buy 2 bottles, price each	64.50 56.76	48.38 42.57		
80102	<b>COSMESIS HEALING VITAMIN K CREAM - 1 oz</b> Buy 2 bottles, price each	79.50 69.96	59.63 52.47		
80109	<b>COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz</b> Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80110	<b>COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz</b> Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80138	<b>COSMESIS HYDRATING ANTIOXIDANT FACE MIST - 4 oz</b> Buy 2 bottles, price each	39.95 38.00	29.96 28.50		
80103	<b>COSMESIS LIFTING &amp; TIGHTENING COMPLEX - 1 oz</b> Buy 2 tubes, price each	74.50 65.56	55.88 49.17		
80146	<b>COSMESIS LYCOPENE CREAM - 1 oz jar</b> Buy 2 jars, price each	28.00 25.40	21.00 19.05		
80135	<b>COSMESIS MELATONIN CREAM - 1 oz</b> Buy 2 jars, price each	33.00 27.10	24.75 20.33		
80114	<b>COSMESIS MILD FACIAL CLEANSER - 8 oz</b> Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80122	<b>COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz</b> Buy 2 jars, price each	64.00 56.32	48.00 42.24		
80111	<b>COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz</b> 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 - 1 oz</b> Buy 2 bottles, price each	\$74.50 65.56	\$55.88 49.17		
80150	<b>COSMESIS RENEWING EYE CREAM - 1/2 oz</b> Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80142	<b>COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz</b> Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80112	<b>COSMESIS SKIN LIGHTENING SERUM - 1/2 oz</b> Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80130	<b>COSMESIS SKIN STEM CELL SERUM - 1 oz</b> Buy 2 bottles, price each	74.00 69.00	55.50 51.75		
80143	<b>COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar</b> Buy 2 jars, price each	66.00 58.00	49.50 43.50		
80148	<b>COSMESIS TIGHTENING &amp; FIRMING NECK CREAM - 2 oz jar</b> Buy 2 jars, price each	39.00 35.00	29.25 26.25		
80116	<b>COSMESIS ULTRA LIP PLUMPER - 1/3 oz</b> Buy 2 bottles, price each	64.00 56.32	48.00 42.24		
80101	<b>COSMESIS ULTRA WRINKLE RELAXER - 1 oz</b> Buy 2 bottles, price each	89.95 79.76	67.46 59.82		
80113	<b>COSMESIS UNDER EYE REFINING SERUM - 1/2 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80104	<b>COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80129	<b>COSMESIS VITAMIN C SERUM - 1 oz</b> Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80136	<b>COSMESIS VITAMIN D LOTION - 4 oz</b> Buy 2 bottles, price each	36.00 33.66	27.00 25.25		
80145	<b>COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz</b> Buy 2 jars, price each	28.00 26.00	21.00 19.50		
80149	<b>COSMESIS YOUTH SERUM - 1 oz</b> Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
00862	<b>CRAN-MAX® - 500 mg, 60 veg. caps</b> Buy 4 bottles, price each	17.50 15.00	13.13 11.25		
01424	<b>CRAN-MAX® with UTIROSE™ (OPTIMIZED) - 60 veg. caps</b> Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01529	<b>CREATINE CAPSULES - 120 veg. caps</b> Buy 4 bottles, price each	10.95 9.25	8.21 6.94		
01746	<b>CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla)</b> Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01429	<b>CR MIMETIC LONGEVITY FORMULA - 60 veg. caps</b> Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
*33840	<b>CRWAY GREAT GLUCOSE CONTROL CD</b>	98.00	82.00		
**CRWAY	<b>CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE</b>	195.00	195.00		
00407	<b>CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps</b> Buy 4 bottles, price each	38.00 35.00	28.50 26.25		
01808	<b>CURCUMIN® w/GINGER &amp; TURMERONES (ADVANCED BIO)-30 softgels</b> Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01804	<b>CYTOKINE SUPPRESS™ w/EGCG - 30 veg. caps</b> Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
<b>D</b>					
00658	<b>7-KETO® DHEA METABOLITE - 25 mg, 100 caps</b> Buy 4 bottles, price each	\$28.00 24.00	\$21.00 18.00		
01479	<b>7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps</b> Buy 4 bottles, price each	40.00 36.00	30.00 27.00		

**SUB-TOTAL OF COLUMN 6**

No.		Retail Each	Member Each	Qty	Total
01640	<b>DHA (VEGETARIAN SOURCED)</b> - 30 veg. softgels Buy 4 bottles, price each	\$20.00 18.00	\$15.00 13.50		
00607	<b>DHEA</b> - 25 mg, 100 tablets (dissolve in mouth) Buy 4 bottles, price each	14.00 11.75	10.50 8.81		
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	18.00 15.00	13.50 11.25		
00454	<b>DHEA</b> - 15 mg, 100 caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
00882	<b>DHEA</b> - 50 mg, 60 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01689	<b>DHEA</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01358	<b>DIGEST RC</b> - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	<b>DIGESTIVE ENZYMES (ENHANCED SUPER)</b> - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
01671	<b>D,L-PHENYLALANINE CAPSULES</b> - 500 mg, 100 veg. caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
01540	<b>DMAE BITARTRATE</b> - 150 mg, 200 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00059	<b>DMG</b> - 125 mg, 60 tablets Buy 4 boxes, price each	24.80 22.69	18.60 17.02		
01570	<b>DNA PROTECTION FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
00544	<b>DOG MIX</b> - 100 grams powder Buy 4 jars, price each	19.50 16.00	14.63 12.00		
00321	<b>DR. PROCTOR'S ADVANCED HAIR FORMULA</b> - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	<b>DR. PROCTOR'S HAIR FORMULA SHAMPOO</b> - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	<b>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE</b> - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
<b>E</b>					
01528	<b>ECHINACEA EXTRACT</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01498	<b>ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™</b> - 60 softgels Buy 4 bottles, price each	56.00 52.00	42.00 39.00		
00997	<b>ENDOTHELIAL DEFENSE™ w/GLISODIN®</b> - 60 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00625	<b>EPA/DHA (MEGA)</b> - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01737	<b>ESOPHAGEAL GUARDIAN</b> (Berry flavor) - 60 chewable tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01042	<b>EUROPEAN LEG SOLUTION DIOSMIN 95</b> - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01706	<b>EXTRAORDINARY ENZYMES</b> - 60 caps Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
01514	<b>EYE PRESSURE SUPPORT w/MIRTOGENOL®</b> - 30 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		

**SUB-TOTAL OF COLUMN 7**

No.		Retail Each	Member Each	Qty	Total
<b>F</b>					
01054	<b>FACE MASTER® PLATINUM</b>	\$199.00	\$199.00		
00965	<b>FAST-ACTING JOINT FORMULA</b> - 30 caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01717	<b>FAST-C® w/DIHYDROQUERCETIN</b> - 120 veg. tabs Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
20053	<b>FEM DOPHILUS®</b> - 30 caps	25.95	19.46		
20055	<b>FEM DOPHILUS®</b> - 60 caps	39.95	29.96		
01064	<b>FEMMENESSENCE MACAPAUSE®</b> - 120 veg. caps	34.99	26.24		
01728	<b>FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED)</b> - 30 veg. caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
01670	<b>FIBER FOOD CAPS</b> - 200 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	16.00 14.00 13.00	12.00 10.50 9.75		
00718	<b>FIBRINOGEN RESIST™</b> - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
01749	<b>FLAX SEED (ORGANIC GOLDEN GROUND)</b> - 14 oz.	11.67	8.75		
01821	<b>FLORASSIST® HEART HEALTH PROBIOTIC</b> - 60 caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01825	<b>FLORASSIST® PROBIOTIC</b> - 30 liquid caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01913	<b>FOLATE (OPTIMIZED HIGH-POTENCY)</b> 5,000 mcg, 30 veg. tablets Buy 4 bottles, price each	25.00 22.00	18.75 16.50		
01939	<b>FOLATE (OPTIMIZED) (L-METHYLFOLATE)</b> 1,000 mcg, 100 veg. tablets Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01841	<b>FOLATE + B12 CAPS</b> - 200 veg. caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01544	<b>FORSKOLIN</b> - 10 mg, 60 veg.caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
01513	<b>FUCOIDAN w/MARITECH® 926 (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
00993	<b>FUCOXANTHIN-SLIM™</b> - 90 softgels Buy 4 bottles, price each	44.00 39.00	33.00 29.25		
<b>G</b>					
00559	<b>GAMMA E TOCOPHEROL/TOCOTRIENOLS</b> - 60 softgels Buy 4 bottles, price each	\$42.00 37.00	\$31.50 27.75		
00759	<b>GAMMA E TOCOPHEROL w/SESAME LIGNANS</b> - 60 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01394	<b>(OPTIMIZED) GARLIC</b> - 200 veg. caps Buy 4 bottles, price each	24.95 21.00	18.71 15.75		
***01228	<b>GINGER FORCE®</b> - 60 softgels	31.95	23.96		
01658	<b>GINKGO BILOBA CERTIFIED EXTRACT™</b> - 120 mg, 365 veg. caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
01648	<b>GINKGO EXTRACT 28/7 (SUPER)</b> - 120 mg, 100 veg. caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
00756	<b>GLA WITH SESAME LIGNANS (MEGA)</b> - 60 softgels Buy 4 bottles, price each	19.50 18.00	14.63 13.50		
00345	<b>(L) GLUTAMINE CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00141	<b>(L)-GLUTAMINE POWDER</b> - 100 grams Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00522	<b>GLUCOSAMINE/CHONDROITIN CAPSULES</b> - 100 caps Buy 4 bottles, price each	38.00 32.00	28.50 24.00		

**SUB-TOTAL OF COLUMN 8**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>G CONTINUED</b>					
01541	<b>GLUTATHIONE, CYSTEINE &amp; C</b> - 100 veg. caps Buy 4 bottles, price each	\$20.00 18.00	\$15.00 13.50		
00314	<b>L-GLUTATHIONE (MEGA)</b> - 250 mg, 60 caps	39.64	29.73		
01669	<b>GLYCINE</b> - 1,000 mg, 100 veg. caps Buy 4 bottles, price each	12.00 10.80	9.00 8.10		
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	22.00 20.00	16.50 15.00		
01620	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 400 mg, 90 veg. caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
00953	<b>GREEN TEA EXTRACT (MEGA)</b> - lightly caffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 24.00	22.50 18.00		
00954	<b>GREEN TEA EXTRACT (MEGA)</b> - decaffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 24.00	22.50 18.00		
01545	<b>GUTSY CHEWY DIGESTIVE (CITRUS FLAVOR)</b> - 8 tablets	11.50	8.63		
01546	<b>GUTSY CHEWY DIGESTIVE (WILD BERRY FLAVOR)</b> - 8 tablets	11.50	8.63		
<b>H</b>					
01074	<b>5 HTP</b> - 100 mg, 60 caps	\$27.95	\$20.96		
01738	<b>HCA (GARCINIA)</b> - 90 veg. caps Buy 4 bottles, price each	17.00 15.00	12.75 11.25		
29754	<b>HCACTIVE</b> - 90 caps (Jarrow)	30.00	22.50		
01393	<b>HEPATOPRO</b> - 900 mg, 60 softgels Buy 4 bottles, price each	50.00 46.00	37.50 34.50		
01527	<b>HUPERZINE A</b> - 200 mcg, 60 veg caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
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	\$54.99	\$46.75		
01704	<b>IMMUNE MODULATOR W/TINOFEND®</b> - 60 veg. caps Buy 4 bottles, price each	17.00 15.00	12.75 11.25		
00955	<b>IMMUNE PROTECT W/PARACTIN®</b> - 30 veg. caps Buy 4 bottles, price each	29.50 26.55	22.13 19.91		
01905	<b>IMMUNE SENEESCENCE PROTECTION FORMULA™</b> - 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01049	<b>INNERPOWER™</b> - 530 grams powder	42.00	31.50		
01674	<b>INOSITOL CAPSULES</b> - 1,000 mg, 360 veg. caps Buy 4 bottles, price each	62.00 58.00	46.50 43.50		
01292	<b>INTEGRA-LEAN® AFRICAN MANGO IRVINGIA</b> - 150 mg, 60 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01248	<b>IODINE COMPLETE (ADVANCED)</b> - 180 tablets	46.00	36.50		
01677	<b>IRON PROTEIN PLUS</b> - 300 mg, 100 caps Buy 4 bottles, price each	28.00 26.00	21.00 19.50		
01492	<b>IRVINGIA W/PHASE 3™</b> - 120 veg. caps <b>CALORIE CONTROL COMPLEX (OPTIMIZED AFRICAN MANGO)</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	\$22.95	\$17.21		
01759	<b>JARRO-DOPHILUS EPS™</b> - 30 caps	39.95	29.96		
01724	<b>K w/ADVANCED K2 COMPLEX (SUPER)</b> - 90 softgels Buy 4 bottles, price each	30.00 27.00	22.50 20.25		

**SUB-TOTAL OF COLUMN 9**

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

**SUB-TOTAL OF COLUMN 10**

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

**SUB-TOTAL OF COLUMN 11**

No.		Retail Each	Member Each	Qty	Total
01892	<b>NATURAL ESTROGEN</b> - 60 veg. tabs Buy 4 bottles, price each	\$38.00 34.00	\$28.50 25.50		
01893	<b>NATURAL ESTROGEN w/o SOY ISOFLAVONES</b> - 30 veg. caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01221	<b>NATURAL FEMALE SUPPORT</b> - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	<b>NATURAL GLUCOSE ABSORPTION CONTROL</b> - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01626	<b>NATURAL SEX FOR WOMEN® 50+ (ADVANCED)</b> - 90 veg. caps Buy 4 bottles, price each	59.00 45.33	44.25 34.00		
01444	<b>NATURAL SLEEP®</b> - 60 veg. caps Buy 4 bottles, price each	13.00 10.00	9.75 7.50		
01551	<b>NATURAL SLEEP® w/ MELATONIN (ENHANCED)</b> - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	<b>NATURAL SLEEP® w/o MELATONIN (ENHANCED)</b> - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01445	<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		
01121	<b>NERVIA®</b> - 60 softgels	49.95	37.46		
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™ L-THREONATE W/CALCIUM &amp; VITAMIN D</b> 225 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01903	<b>NK CELL ACTIVATOR™</b> - 30 veg. tablets Buy 4 bottles, price each	45.00 42.00	33.75 31.50		
00373	<b>NO-FLUSH NIACIN</b> - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
<b>O</b>					
01824	<b>OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRAT(ADVANCED)</b> 500 mg, 60 veg. caps • Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
01819	<b>OMEGA WITH KRILL &amp; ASTAXANTHIN (SUPER)</b> - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	45.00 42.00 33.00	33.75 31.50 24.75		
01483	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	18.00 16.00 12.50	13.50 12.00 9.38		
01482	<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 22.73	24.00 21.00 17.05		
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 24.00	25.50 23.25 18.00		
01485	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	20.00 18.00 14.00	15.00 13.50 10.50		
01619	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> (SMALL SOFTGEL) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 23.00	24.00 21.00 17.25		

**SUB-TOTAL OF COLUMN 12**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>CONTINUED</b>					
01901	<b>ONE-PER-DAY</b> - 60 tablets Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01328	<b>ONLY TRACE MINERALS</b> - 90 veg. caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
<b>P</b>					
01789	<b>PALMETTOGUARD® SAW PALMETTO w/BETA SITOSTEROL</b> - 30 softgels Buy 12 bottles, price each	\$15.00 12.00	\$11.25 9.00		
01790	<b>PALMETTOGUARD® SUPER SAW PALMETTO/- NETTLE ROOT W/BETA-SITOSTEROL</b> - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	28.00 26.00 24.00	21.00 19.50 18.00		
00073	<b>PANCREATIN</b> - 500 mg, 50 caps	13.22	9.92		
01323	<b>PEAK ATP® WITH GLYCOCARN®</b> - 60 veg. caps Buy 4 bottles, price each	54.00 50.00	40.50 37.50		
00342	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 454 grams powder	109.95	82.46		
01080	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 270 veg. caps	79.95	59.96		
01811	<b>PEONY IMMUNE</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00673	<b>PGX™ PLUS MULBERRY (WELLBETX®)</b> - 180 veg. caps	34.95	26.21		
00865	<b>PHARMA GABA®</b> - 60 chewable tablets Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01676	<b>PHOSPHATIDYLSERINE CAPS</b> - 100 mg, 100 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
01436	<b>POLICOSANOL</b> - 10 mg, 60 veg. caps Buy 4 bottles, price each	20.00 15.00	15.00 11.25		
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		
01797	<b>POMI-T®</b> - 60 veg. caps Buy 4 bottles, price each	33.33 30.00	25.00 22.50		
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/BIOPQQ®</b> - 10 mg, 30 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	24.00 18.00 16.00	18.00 13.50 12.00		
01647	<b>PQQ CAPS W/BIOPQQ®</b> - 20 mg, 30 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	40.00 32.00 28.00	30.00 24.00 21.00		
00302	<b>PREGNENOLONE</b> - 50 mg, 100 caps Buy 4 bottles, price each	26.00 22.00	19.50 16.50		
00700	<b>PREGNENOLONE</b> - 100 mg, 100 caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
***01373	<b>PRELOX® NATURAL SEX FOR MEN®</b> - 60 tablets Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
01576	<b>PREVAGEN®</b> - 10 mg, 30 caps	60.00	45.00		
01577	<b>PREVAGEN® ES</b> - 20 mg, 30 caps	70.00	60.00		
00525	<b>PROBOOST THYMIC PROTEIN A™</b> - 4 mcg, 30 packets	59.95	44.96		
01441	<b>PROGESTACARE FOR WOMEN</b> - 4 oz cream Buy 4 bottles, price each	35.00 32.00	26.25 24.00		
01898	<b>PROSTATE FORMULA (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		

**SUB-TOTAL OF COLUMN 13**

No.		Retail Each	Member Each	Qty	Total
01909	<b>PROSTAPOLLEN™ (TRIPLE ACTION)</b> - 30 softgels Buy 4 bottles, price each	\$28.00 25.00	\$21.00 18.75		
01742	<b>PROTEIN-ISOLATE (WHEY) VANILLA</b> - 1 lb. powder Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01743	<b>PROTEIN-ISOLATE (WHEY) CHOCOLATE</b> - 1 lb. powder Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01770	<b>PROTEIN CONCENTRATE</b> (New Zealand Whey) <b>Vanilla</b> - 520 gr Buy 4 bottles, price each	30.00 26.60	22.50 19.95		
01771	<b>PROTEIN CONCENTRATE</b> (New Zealand Whey) <b>Chocolate</b> - 660 gr Buy 4 bottles, price each	30.00 26.60	22.50 19.95		
01812	<b>PROVINAL® PURIFIED OMEGA-7</b> - 30 softgels Buy 4 bottles, price each	27.00 24.00	20.25 18.00		
01508	<b>PTEROPURE®</b> - 50 mg Pterostilbene 60 veg. caps Buy 4 bottles, price each	32.00 30.00	24.00 22.50		
01209	<b>PUMPKIN SEED EXTRACT (WATER-SOLUBLE)</b> - 60 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01587	<b>PURE PLANT PROTEIN</b> - Veg. Vanilla 540 grams powder Buy 4 jars, price each	38.00 35.00	28.50 26.25		
01637	<b>PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT</b> -100 mg, 60 veg. caps Buy 4 bottles, price each	64.00 60.00	48.00 45.00		
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	\$22.00 20.00	\$16.50 15.00		
01030	<b>RED YEAST RICE</b> (Bluebonnet)- 600 mg, 60 veg. caps	16.95	13.56		
00605	<b>REGIMINT</b> - 60 enteric-coated caps Buy 4 bottles, price each	19.95 18.67	14.96 14.00		
01708	<b>REISHI EXTRACT MUSHROOM COMPLEX</b> - 60 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
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		
01621	<b>REJUVENEX® FACTOR FIRING SERUM</b> - 1.7 oz Buy 2 bottles, price each Buy 6 bottles, price each	65.00 50.66 38.52	48.75 38.00 28.89		
01220	<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		
01410	<b>RESVERATROL W/PTEROSTILBENE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01930	<b>RESVERATROL W/NAD+ CELL REGENERATOR™ (OPTIMIZED)</b> - 30 veg. caps Buy 4 bottles, price each	42.00 36.00	31.50 27.00		
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		

**SUB-TOTAL OF COLUMN 14**

No.		Retail Each	Member Each	Qty	Total
01900	<b>RIBOGEN™ FRENCH OAK WOOD EXTRACT</b> - 200 mg, 30 veg. caps Buy 4 bottles, price each	\$36.00 33.00	\$27.00 24.75		
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		
01730	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag Natural Mocha	15.00	11.25		
01729	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag Natural Vanilla	15.00	11.25		
01612	<b>RICH REWARDS® BREAKFAST BLEND WHOLE BEAN 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		
01712	<b>RICH REWARDS™ BLACK BEAN VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01530	<b>RICH REWARDS™ CRUCIFEROUS VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01531	<b>RICH REWARDS™ (SPICY) CRUCIFEROUS VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01705	<b>RICH REWARDS™ LENTIL VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01810	<b>RICH REWARDS™ MUNG BEAN SOUP W/TURMERIC</b> - 32 oz. bottle Buy 6 bottles, price each	13.00 12.25	9.75 9.19		
01208	<b>R-LIPOIC ACID (SUPER)</b> - 240 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		
<b>S</b>					
01432	<b>SAFFRON w/SATIREAL® (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
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		
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		
01740	<b>SEA-IODINE™</b> - 1,000 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	11.95	8.96		
01679	<b>SE-METHYL L-SELENOCYSTEINE</b> - 200 mcg, 100 veg. 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		
01684	<b>SILYMARIN</b> - 100 mg, 50 veg. caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01249	<b>SINUS CLEANSER</b> - 4 oz. bottle	25.00	18.75		
01596	<b>SKIN RESTORING PHYTCERAMIDES w/LIPOHEAT®</b> - 30 veg. 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		

**SUB-TOTAL OF COLUMN 15**

No.		Retail Each	Member Each	Qty	Total
00432	<b>STEVIA™ EXTRACT (BETTER)</b> - 100 packets, 1 gram each	\$9.95	\$7.46		
00438	<b>STEVIA™ ORGANIC LIQUID EXTRACT (BETTER)</b> - 2 oz liquid	11.00	8.25		
01476	<b>STRONTIUM</b> - 750 mg, 90 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01649	<b>SUPER ABSORBABLE SOY ISOFLAVONES</b> - 60 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01778	<b>SUPER SELENIUM COMPLEX</b> - 200 mcg, 100 veg. caps Buy 4 bottles, price each Buy 12 bottles, price each	14.00 12.00 11.00	10.50 9.00 8.25		
<b>T</b>					
01723	<b>TART CHERRY EXTRACT w/STANDARDIZED CHERRYPURE®</b> - 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
00199	<b>TAURINE</b> - 1,000 mg, 50 caps Buy 4 bottles, price each	8.95 8.00	6.71 6.00		
00133	<b>TAURINE POWDER</b> - 300 grams Buy 4 bottles, price each	20.00 16.88	15.00 12.66		
01304	<b>THEAFLAVIN STANDARDIZED EXTRACT</b> - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01683	<b>(L) THEANINE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 20.50	18.00 15.38		
**01038	<b>THERALAC PROBIOTICS</b> - 30 caps	47.95	35.96		
00668	<b>THYROID FORMULA™ (METABOLIC ADVANTAGE)</b> - 100 caps	21.95	16.46		
00349	<b>TMG POWDER</b> - 50 grams Buy 4 bottles, price each	14.00 11.00	10.50 8.25		
01859	<b>TMG</b> - 500 mg, 60 veg. liquid caps Buy 4 bottles, price each	13.00 12.00	9.75 9.00		
00781	<b>TOCOTRIENOLS WITH SESAME LIGNANS</b> - 60 softgels Buy 4 bottles, price each	38.00 36.00	28.50 27.00		
01400	<b>TOCOTRIENOLS (SUPER-ABSORBABLE)</b> - 60 softgels Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
01278	<b>TOOTH PASTE</b> - 4 oz (Mint) Buy 4 tubes, price each	9.50 8.67	7.13 6.50		
01468	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT</b> - 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01469	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL</b> -60 veg. caps Buy 4 bottles, price each	32.00 29.60	24.00 22.20		
01803	<b>TRI SUGAR SHIELD™</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01386	<b>TRUFIBER®</b> - 180 grams	32.95	24.71		
01389	<b>TRUFLORA PROBIOTICS</b> - 32 veg. caps	42.95	32.21		
01722	<b>L-TRYPTOPHAN</b> - 500 mg, 90 veg. caps Buy 4 bottles, price each	33.00 30.00	24.75 22.50		
01721	<b>TRYPTOPHAN PLUS (OPTIMIZED)</b> - 90 veg. caps Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01916	<b>TWO-PER-DAY</b> - 60 tablets Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01915	<b>TWO-PER-DAY</b> - 120 tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01914	<b>TWO-PER-DAY</b> - 120 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00326	<b>L-TYROSINE</b> - 500 mg, 100 tablets	12.98	9.74		

**SUB-TOTAL OF COLUMN 16**

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No.		Retail Each	Member Each	Qty	Total
<b>V</b>					
00213	<b>VANADYL SULFATE</b> - 7.5 mg, 100 veg. tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00408	<b>VENOTONE</b> - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	<b>VINPOCETINE</b> - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
00372	<b>VITAMIN B3 NIACIN</b> - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	<b>VITAMIN B5</b> - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
01535	<b>VITAMIN B6</b> - 250 mg, 100 veg. caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	<b>VITAMIN B12</b> - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 60 veg. tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 250 veg. tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	<b>VITAMIN C (BUFFERED) POWDER</b> - 454 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
01736	<b>(EFFERVESCENT) VITAMIN C-MAGNESIUM CRYSTALS</b> - 180 grams	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01732	<b>VITAMIN D3</b> - 2,000 IU, 1 fl oz, Mint flavor	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	<b>VITAMIN D3</b> - 1,000 IU, 90 softgels	7.00	5.25		
	Buy 4 bottles, price each	6.00	4.50		
01751	<b>VITAMIN D3</b> - 1,000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	<b>VITAMIN D3</b> - 5,000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	<b>VITAMIN D3</b> - 7,000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01758	<b>VITAMIN D3 w/SEA-IODINE™</b> - 5,000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
00864	<b>VITAMIN D3</b> Liquid Emulsion - 2,000 IU, 1 oz.	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01741	<b>VITAMINS D AND K w/SEA-IODINE™</b> - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01763	<b>VITAMIN E (NATURAL)</b> - 400 IU, 100 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	26.00	19.50		
01225	<b>VITAMIN K2 (LOW-DOSE)</b> - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
<b>X</b>					
00409	<b>XYLIWHITE™ MOUTHWASH</b> - 16 oz	\$10.00	\$7.50		
<b>W</b>					
01902	<b>WAIST-LINE CONTROL™</b> - 120 veg. caps	\$42.00	\$31.50		
	Buy 4 bottles, price each	38.00	28.50		
01826	<b>WEIGHT MANAGEMENT FORMULA</b> - 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		

**SUB-TOTAL OF COLUMN 17**

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

**SUB-TOTAL OF COLUMN 18**

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SUB-TOTAL COLUMN	17	
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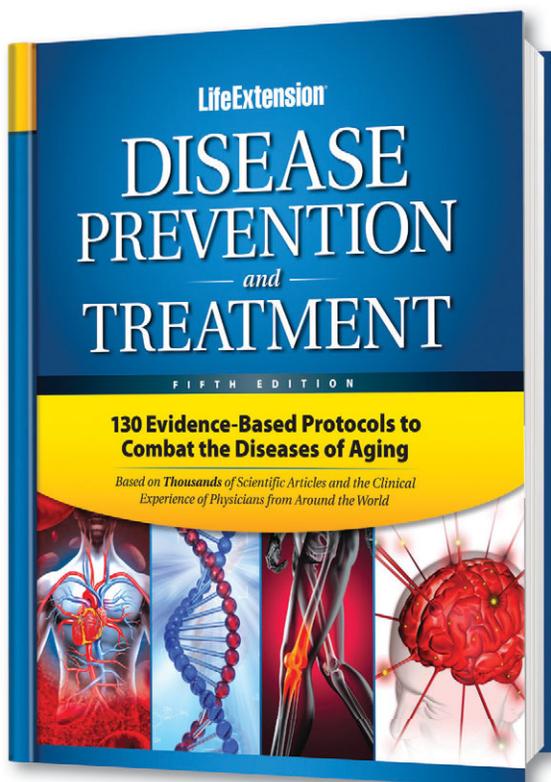
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Cool down aging with PectaSol-C<sup>®</sup>, the only clinically proven Modified Citrus Pectin delivering versatile anti-aging benefits.<sup>7,8\*</sup>

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To order PectaSol-C<sup>®</sup> Modified Citrus Pectin, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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To feel your best,  
take the best.



At Master Supplements, we believe that you deserve the best; and that you need to follow your gut to get it.



We have been **raising the standard of digestive health for over 10 years** and are dedicated to getting our powerful products into the hands of everyone who needs them.

<b>Theralac®</b> 30 capsules Item# 01038 Retail: \$47.95	<b>TruFiber®</b> 6.2 OZ Item# 01386 Retail: \$32.95	<b>TruFlora®</b> 32 Capsules Item# 01389 Retail: \$42.95
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**WHAT SETS US APART?**

- ✓ Maximum Economic Value! Two capsules a week on maintenance dose.
- ✓ Full transparency with lab tests published online by lot number.
- ✓ Patented Prebiotic Stimulation to power up probiotic strains.
- ✓ Deep delivery and natural acid proof protection.

Call **Life Extension®** now to order any of these fine Master Supplement products to feel the benefits for yourself.

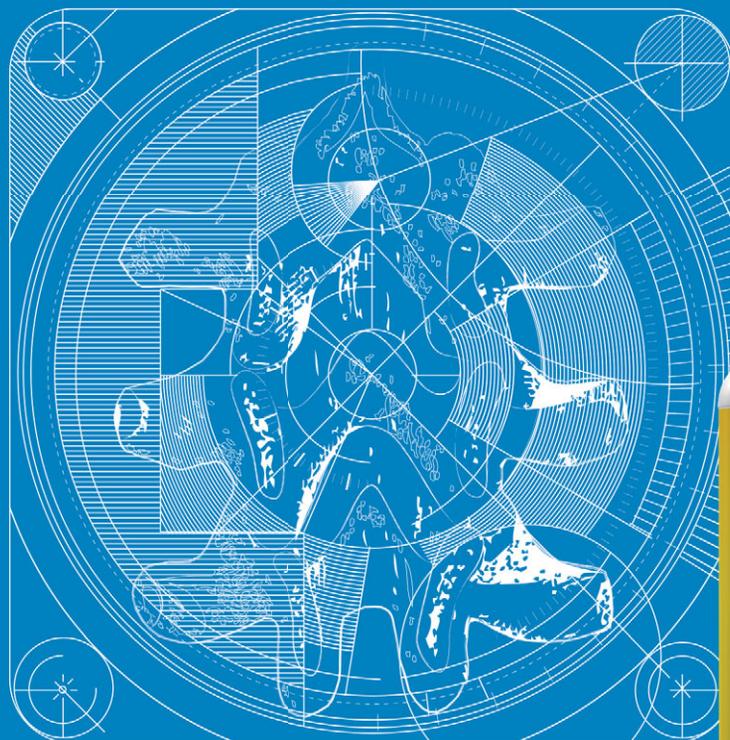
**800-544-4440**



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

# Better Bones by Design

2%-4% of your skeleton is "rebuilt" every year as calcium and minerals leave the bone and must be replaced.



## Jarrow Formulas® Presents . . . A Complete Multi-Nutrient Bone Health System!

**Bone-Up®** provides your body with much needed calcium as well as essential nutrients for building strong bones.\* It utilizes the finest source of calcium available: New Zealand bovine bone hydroxyapatite from chemical-free, range grazed calves less than two years old.

**Bone-Up®** is an effective addition to any bone health regimen.\* It features added vitamins and minerals that synergistically support healthy bone density and overall bone health\*:

- **Stimucal™ Ossein Microcrystalline Hydroxyapatite (MCHA):** Promotes calcium balance.\*
- **Vitamin D<sub>3</sub>:** Converts to calcitriol to enhance calcium absorption.
- **MK-7:** The more bioavailable form of Vitamin K<sub>2</sub>, which is needed for building bone matrix and proper calcium distribution.\*
- **Boron:** A trace mineral important in calcium retention.\*
- **Manganese, Copper and Zinc:** Essential trace minerals involved in the formation of bone.\*

Jarrow Formulas® Bone-Up®, 240 capsules Item # 00313: \$28.95  
If a member buys four bottles, the price will be reduced to \$20.41 per bottle.  
To order, call (800)544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

[www.Jarrow.com](http://www.Jarrow.com)

**Jarrow**  
FORMULAS®

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# Magnesium and Brain Health

Profound loss of connections between nerve cells in the brain is one of the major hallmarks associated with magnesium deficiency. Previous research has shown that **magnesium** is a critical factor in controlling **synaptic density**.<sup>1</sup>

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

## New Cognitive Benefits Revealed!

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

## Capsules or Powder...Value Priced

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

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

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

### References

1. *J Neurosci*. 2013 May 8;33(19):8423-41.
2. *Neuron*. 2010 Jan 28;65(2):165-77.
3. *Yale J Biol Med*. 1933 Jul;5(6):545-53.

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

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Item # 01602



Item # 01603



## WHAT'S INSIDE

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Magazine



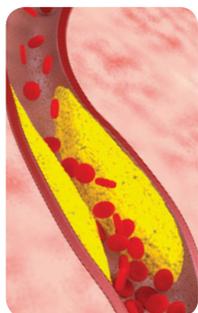
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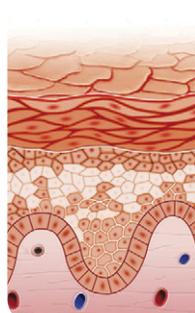
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