HOW ZINC REDUCES PROSTATE CANCER RISK

AN OVERLOOKED RISK FACTOR FOR ATHEROSCLEROSIS

Essential Longevity
Youth Hormone
Natural Ways to Lower LDL
New Weapon Against Excess Homocysteine

Actress STEFANIE POWERS
Her Approach to Healthy Living
Bone Restore combines critical bone boosting nutrients into one superior formula.

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

The retail price for 120 capsules of Bone Restore is $24. If a member buys four bottles, the price is reduced to $16.50 per bottle. (Item# 01727)

The same Bone Restore formula without vitamin K2 (MK-7) is available as well. The retail price for 120 capsules is $22. If a member buys four bottles, the price is reduced to $14.25 per bottle. (Item# 01726)

Just four capsules of Bone Restore provide:

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

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

FruiteX B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. patent #5,962,049. DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. Patent 6,706,904 and patents pending.
NEWLY IDENTIFIED RISKS OF HOMOCYSTEINE

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.

DEPARTMENTS

23  IN THE NEWS
Coffee lowers melanoma risk; common drugs increase dementia risk; metformin may inhibit lung cancer; glucosamine-chondroitin as effective as Celebrex®; 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® can safely treat this condition. Dr. Fred Pescatore, who oversees a nutrient-based medical practice, has long recommended Pycnogenol®—as well as other supplements—to all his patients to ensure optimal systemic health.

91  WELLNESS PROFILE
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.

97  SUPER FOODS
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.
Despite a healthy diet and exercise, aging individuals often find themselves under assault from rising blood sugar levels due to a multitude of factors such as:

- Excess **gluconeogenesis**, (glucose produced in the liver from protein)\(^1\)
- Rapid conversion of any **starch**—including whole grains—into **glucose**\(^2\)

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

**Tri Sugar Shield™** is designed to support healthy glucose metabolism in aging individuals within the normal range.

**TRI SUGAR SHIELD™ THREE ACTIVE NUTRIENTS**

**Sorghum Extract**

Sorghum helps maintain healthy blood sugar levels among those in normal range by:

- Balancing the rate of sugar manufacture in the liver\(^3\)
- Promoting insulin sensitivity\(^4\)
- Regulating PPAR-gamma, a metabolic thermostat that controls glucose metabolism\(^4,5\)
- Regulating alpha-amylase, which controls the release of sugar from starch\(^6\)

**Mulberry Leaf Extract**

Mulberry leaf extract targets **two** different mechanisms by:

- Supporting glucose transporter GLUT4 that moves glucose out of the bloodstream and into muscle and liver cells\(^8\)
- Promoting insulin sensitivity\(^9\)

**Phloridzin**

Phloridzin helps maintain healthy blood sugar levels among those in the normal range by:

- Regulating carrier protein SGLT1, helping to block absorption of glucose into the bloodstream\(^10\)
- Regulating carrier protein SGLT2, in turn supporting glucose elimination via urine\(^11\)

*By targeting all of these diverse glucose pathways, Tri Sugar Shield™ delivers broad-spectrum support to help naturally stabilize already healthy glucose levels!*

**Tri Sugar Shield™**

Item #01803 • 60 vegetarian capsules

<table>
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<th>Retail Price</th>
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Take one capsule before meals that contain starch, sugar, or simple carbohydrates.

**References**


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

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.\(^1\)\(^2\)

No one disputes that arterial disease is the leading cause of disability and death.\(^3\)\(^4\)

If we are to achieve healthy longevity free from heart failure,\(^5\)\(^6\) stroke,\(^9\)\(^11\) and dementia,\(^12\)\(^13\) 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.\(^14\)

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\(^{th}\) century. The number of deaths caused by physician-induced bloodletting was astronomical, yet it took 2,500 years to figure this out.\(^15\)\(^16\)

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.\(^17\)\(^21\)

A significant proportion of Americans have a genetic defect that predisposes them to high homocysteine.\(^22\)\(^25\) 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.\(^\text{1,2,7,8,26-33}\)

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 demonstrate how meaningless they were to individuals who took steps to properly lower their homocysteine levels.\(^\text{17}\)

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.\(^\text{34}\)

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.\(^\text{35}\)

**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.\(^\text{36}\)

**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.”\(^\text{36}\)

Another 2014 study looked at people with high homocysteine and uric acid and found a startling 10.5-fold greater risk of vascular dementia.\(^\text{12}\) 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.\(^\text{13}\)
When entering the term “homo-cysteine and vascular demen-tia” 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. 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. The result in many cases is clinically diagnosed Alzheimer’s disease. 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. 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.

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. This is diagnosed when fasting blood glucose levels are in the 100 to 125 mg/dL range. 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. 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. 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. 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. Recent clinical studies reveal that high homocysteine exaggerates the prevalence of peripheral neuropathy in diabetics and exacerbates preexisting diabetic neuropathy.
In a community-based study of 483 adults, a high prevalence of peripheral neuropathy was observed among undiagnosed diabetics. 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. The role of high homocysteine as an independent risk factor associated with increased prevalence of diabetic neuropathy has been supported by other clinical studies.

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.

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. The findings corroborate previous research associating high homocysteine with diminished capillary blood flow in the brain.

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. This finding is corroborated by previous research showing elevated homocysteine to be significantly associated with carotid artery disorders.

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 and cerebral capillaries, thus depriving the brain of critical blood flow in two lethal ways.

Our Shrinking Brains

An increased rate of brain atrophy (shrinkage) is often observed in elderly people, especially in those who suffer from cognitive decline. The authors of the study concluded:

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. 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. 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.”

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. 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, organizing, and storing memories. 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.

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.

As it relates to hypertension, endothelial dysfunction impairs vascular expansion and can suppress production of vital endothelial nitric oxide.

As it relates to acute heart attack or stroke, endothelial dysfunction can promote the development of thrombosis (clotting inside blood vessels).

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 vaso-dilating factors in the vascular wall, injuring endothelial cells, and impeding production of structural components in the vascular wall.

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).

Excess homocysteine is both an initiator and promoter of systemic endothelial dysfunction, which is the major mechanism behind the development of vascular diseases.
Conventional medicine does not believe homocysteine poses a health problem until blood levels exceed 15 μmol/L. Yet this randomized double-blind, multicenter trial showed that homocysteine levels over 10.3 μmol/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.”

Life Extension® has long urged members to keep their homocysteine blood levels below 7 to 8 μmol/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.

What Causes High Homocysteine?

Homocysteine forms in the body from the amino acid methionine. Foods such as cereals, legumes, seafood, meat, and dairy products are rich in methionine 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.

Cigarette smoking depletes folic acid in the body, causing smokers to have notoriously high levels of homocysteine.

As we age, our homocysteine detoxification mechanisms become impaired, often resulting in sharply higher homocysteine levels in elderly individuals that can be accompanied by accelerated atherosclerosis.

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, however, suffer a genetic defect that impairs their ability to convert folic acid into its biologically active form called 5-methyltetrahydrofolate (5-MTHF).

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.
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.\textsuperscript{147,148} Another plus to 5-MTHF is that it readily crosses the blood-brain barrier to facilitate cognitive function.\textsuperscript{149}

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).\textsuperscript{144-147}

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.

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**Why Folic Acid Sometimes Fails**

Homocysteine is reduced in the body by 5-methyltetrahydrofolate (5-MTHF).\textsuperscript{150}

When folic acid is taken, it must go through several enzymatic changes to convert to 5-MTHF.\textsuperscript{143}

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.

**Synthetic Folic Acid**

(Used in most commercial supplements)

- Dihydrofolate
- Tetrahydrofolate
- 10-formyl-THF
- 5,10 Methenyl THF
- 5,10 Methylene THF
- **5-MTHF**

(Active Form of Folate)

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.
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.93,151-153

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).150

### 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
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

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**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.
References


AMPK is an enzyme that serves as the body’s “master regulating switch.” It inhibits multiple degenerative factors by revitalizing aging cells.

Found in every cell, AMPK promotes longevity factors that have been shown to extend lifespan in numerous organisms. Increasing AMPK signaling “turns off” many damaging effects of aging, thus enabling cells to return to their youthful vitality.

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. Studies show increased AMPK activity supports reduced fat storage, new mitochondria production, and the promotion of healthy blood glucose and lipids already within normal range.

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! 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.

Trans-Tiliroside
Trans-tiliroside, extracted from plants such as rose hips, also boosts AMPK activation, but triggers different downstream metabolic benefits than G. pentaphyllum. 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.

To order AMPK Activator, call 1-800-544-4440 or visit www.LifeExtension.com

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

| ActivAMP™ Gynostemma pentaphyllum extract | 450 mg |
| Rose hip extract | 1,119 mg |
| Standardized to trans-tiliroside | 56 mg |

Anti-Aging Discovery That Cannot Be Overlooked
Scientists uncovered the cell-energizing effect of AMPK in the 1970s. Since then, an exponential volume of data (over 7,500 published studies) documents the critical role that activated AMPK plays in maintaining life-sustaining cellular functions.

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

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

A bottle of 90 vegetarian capsules of AMPK Activator retails for $48. If a member buys four bottles, the price is reduced to $33 per bottle.

References
Few nutritional sources have gained as much scientific validation as pomegranate.¹

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,²⁻⁴ Full-Spectrum Pomegranate™ augments these polyphenols with newly discovered biologically active compounds from other parts of the pomegranate plant.

These little-known nutrients include: punicalagin that provides cellular support to help with inflammation,⁵ and pomegranate, to combat age-related metabolic changes.⁶

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.

References

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:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
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<tbody>
<tr>
<td>POMELLA® Pomegranate (fruit)</td>
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<tr>
<td>(providing 120 mg punicalagins)</td>
<td></td>
</tr>
<tr>
<td>Proprietary Pomegranate Blend (flower extract and seed oil)</td>
<td>137.5 mg</td>
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<td>(providing 30 mg punicic acid)</td>
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</table>

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
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**.)*

To Support Arterial Health  
And Bone Support

There are **three** forms of vitamin K that are key factors to promoting arterial health and bone support.\(^1\)\(^-\)\(^8\)

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

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

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

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**.)*

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

References


**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.
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.

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.


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.


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.

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®).


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.

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.


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.
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.1-4

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.5,6

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

<table>
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<tr>
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<tr>
<td>Thiamine (vitamin B1) (as thiamine HCl)</td>
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<tr>
<td>Riboflavin (vitamin B2) (as riboflavin and riboflavin S'-phosphate)</td>
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<td>Niacin (as niacinamide and niacin)</td>
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<tr>
<td>Vitamin B6 (as pyridoxine HCl and pyridoxal S'-phosphate)</td>
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<tr>
<td>Folate (from lemon (Citrus limon) extract (peel))</td>
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<tr>
<td>Vitamin B12 (as methylcobalamin)</td>
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<td>Biotin</td>
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<tr>
<td>Pantothenic acid (as D-calcium pantothenate)</td>
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<td>PABA (para-aminobenzoic acid)</td>
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<td>Calcium (as D-calcium pantothenate)</td>
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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

References

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

Not all coffee provides the same powerful protection.1-13 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 Healthy-Roast®. 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

<table>
<thead>
<tr>
<th>Chlorogenic Acid</th>
<th>Chlorogenic Acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Coffee (Caffeinated)</td>
<td>92 mg</td>
</tr>
<tr>
<td>Conventional Coffee (Decaffeinated)</td>
<td>46 mg</td>
</tr>
</tbody>
</table>

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.

References
* US Patent 6,723,368.

To order either of the Rich Rewards® Antioxidant Coffees call 1-800-544-4440 or visit www.LifeExtension.com
PROTECT DNA AGAINST CHEMICAL ASSAULT

On a daily basis, the DNA in each cell of your body is bombarded by an estimated 10,000 destructive oxidative hits. 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. 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. Even “healthy” foods can contain small amounts of undesirable substances.

To meet this challenge, Life Extension® Chlorophyllin provides a water-soluble form of chlorophyll shown to protect DNA. 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.

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

- Chlorophyllin 100 mg (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.

To order Life Extension® Chlorophyllin, 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.

Thirty-four years ago, Life Extension® 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.

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.\(^2,5\) 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.\(^6,7\) 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.\(^5,8\)

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.\(^9\)

**Dangers Of Declining DHEA**

What is DHEA? DHEA (short for dehydroepiandros-terone) is a hormone produced mostly in the adrenal glands. DHEA is the most abundant of all the circulating steroid hormones.\(^8,10,11\)

Supplementation with DHEA rapidly raises levels of DHEA in the blood.\(^12\)

By the time you reach 70, your DHEA levels are likely to be **75 to 80%** lower.\(^2,5\) 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:\(^6,8\)

- **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.\(^6\) 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.\(^13\)

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
significant 155% increase in the risk of dying from cardiovascular disease.14 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.9,15

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.8 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%.16

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.

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.

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.17 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).18,20 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.21
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. 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.

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.

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. 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. (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.

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. 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.

Damage to the endothelial layer occurs as oxidized fats begin to build up; endothelial dysfunction then results in poorly-responsive arterial walls, which often overgrow and thicken, further limiting their
suppleness. Inflammatory changes within the vessel wall then rapidly contribute to further dysfunction, loss of responsiveness, and eventually to plaque formation.

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. Additionally, DHEA treatment also increased the production of artery-relaxing nitric oxide.

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. 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%.

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. 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.

**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. The risks of dying a cardiovascular death are increased by up to 200% in people with metabolic syndrome compared to those without.
As DHEA declines, the rate of metabolic syndrome rises, which is hardly surprising, since DHEA regulates most of the processes that influence metabolic health. 38-41

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. 42

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

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. 52 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. 53

**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. 54,55

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. 12 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. 56 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. 57
DHEA can improve bone mineral density and reduce complications.59,60 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.61 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.62

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.63 These changes may help to reduce fracture risk simply by reducing the risk of a serious fall in the first place.

**Bone Health**

Osteoporosis poses a major threat to both men and women as they age. Weaker bones means higher risk for serious fractures,58 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.59,60

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.

**Summary**

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.)

**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.2-5 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.64,65

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 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.

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**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 100.4

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.
DHEA REDUCES CARDIOVASCULAR RISKS

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, 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.

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.

References


DHEA REDUCES CARDIOVASCULAR RISKS


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

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

**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.

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* National Diagnostics, Inc.

**Blood Test Super Sale • March 30th through June 1, 2015.**
Sweet DREAMS

Choose the Melatonin That’s Right For You

Healthy sleep is one of the best ways to feel revitalized and maintain optimal health. Increasingly, research has shown the health benefits of a good night’s sleep. Melatonin is one of the most popular supplements for supporting sleep.

Now, pick the right melatonin for your needs with doses ranging from **300 mcg** to **10 mg**. For optimal results, melatonin should be taken within 30-60 minutes of going to sleep.

Caution: Consult your healthcare provider before taking this product if you are being treated for a medical condition (especially autoimmune or depressive disorders). Use caution if combining with alcohol. This product is not intended for children, pregnant or lactating women, or women trying to become pregnant. Do not attempt to drive or operate heavy machinery after taking this product.

To order any of these premium-grade Melatonin supplements, call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
DHEA is a critically important hormone, but its production declines sharply as we age. By the time you reach 70, your DHEA levels are likely to be 75-80% lower than when you were at your peak.1-4

Scientists are discovering numerous health benefits when aging people restore their DHEA to youthful ranges. DHEA therapy has been shown to:

• Support healthy arterial structure and function5,6
• Support endothelial health by helping with blood flow7
• Promote insulin sensitivity8,9
• Benefit the normal aging brain10-12
• Improve mood and alleviate melancholy13
• Protect hip bone and spine bone mineral density14
• Enhance the increases in muscle mass and strength in the elderly with resistance exercise15
• Boost a broad array of immune system cells and signaling molecules16

By supplementing with DHEA, you can get your levels back to youthful values. An ideal daily dose of DHEA for many healthy aging people is 25 mg. Life Extension’s® convenient, economical 25 mg capsules are a popular way to consume the precise amount of DHEA your body may need.

DHEA 25 mg
Item #00335 • 100 capsules

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Each bottle lasts a typical user over three months!

To order DHEA call 1-800-544-4440 or visit www.LifeExtension.com

CAUTION: Do not use DHEA if you are at risk for or have been diagnosed as having any type of hormonal cancer, such as prostate or breast cancer.

Non-GMO

References
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.1-3

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

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.8

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.9

Together, these two nutrients offer protection against two causes of vascular disease.
Statins Do Only Half The Job

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. Even more disturbing, statins also raise the risk of developing diabetes by 9 to 13% (a risk that is up to 48% higher in postmenopausal women).6,7

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. Numerous epidemiological, animal, and human studies demonstrate the value of achieving and maintaining high HDL levels.19-30

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.29,30

Statins 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.6,7

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, along with luteolin, cynaroside, and chlorogenic acid. These molecules protect the cholesterol in LDL particles from the dangerous oxidation that leads to atherosclerosis. 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.

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.36

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 RISK9,60

<table>
<thead>
<tr>
<th>LDL Level (mg/dL)</th>
<th>Associated Risk Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 100*</td>
<td>Optimal (minimal risk)</td>
</tr>
<tr>
<td>100-129</td>
<td>Near optimal (low risk)</td>
</tr>
<tr>
<td>130-159</td>
<td>Borderline high</td>
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<tr>
<td>160-189</td>
<td>High</td>
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<tr>
<td>190 and above</td>
<td>Very high</td>
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* 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/dL61,62 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).33-34
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. 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. 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.

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. After eight weeks, mean HDL cholesterol rose

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.
Studies in humans demonstrate that supplementation with artichoke leaf extract raises levels of the protective apoA carrier molecule that supports the HDL particle, which contributes to observed increases in beneficial HDL levels. 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%. 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. Increased PON1 correlates strongly with HDL cholesterol.

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. 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. 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. 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. 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.

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. 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).

A study of similar design in 2014 found better results. 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.

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, leaving them vulnerable to LDL-induced arterial disease.
New And Improved Vitamin B5

Pantethine is a derivative of vitamin B5 (panthothenic acid).\textsuperscript{9,65} 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.\textsuperscript{8} 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.\textsuperscript{66}

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.\textsuperscript{66} 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.\textsuperscript{67}

A new combination of ingredients includes pantethine, shown to safely lower LDL without statin-like side effects, and a novel \textit{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\textsuperscript{®}), whereby fewer patients taking lower doses died from any cause compared to higher doses.\textsuperscript{53}

Statin drugs are demonized by advocates of natural approaches, and the horrific side effects inflicted by high-dose statins cause 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.●
References


40. Rondanelli M, Riva A, Sala P, Giacosa A. Pilot study on the efficacy of 200 mg daily dose of PCRYCINIL on glyco-lipidic parameters in adult subjects with mild hypercholesterolemia: University of Pavia, Department of Public Health, Experimental and Forensic Medicine, Section of Human Nutrition, Azienda di Servizi alla Persona, Pavia, Italy, 2014.


Throughout the body, omega-3 fatty acids support heart health, brain health, eye health, mood, the immune system, and much more.

Taking fish oil alone may not be enough to obtain optimal omega-3 benefits. Research indicates it is ideal to obtain omega-3s from multiple sources—such as fish oil and krill—since they target different cellular signaling pathways.

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.

**KRILL AND FISH OIL**

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.

**OLIVE FRUIT EXTRACT**

Olive polyphenols improve blood lipids and endothelial function that support arterial health along with other cardiovascular benefits.

The daily dose of Super Omega provides the equivalent polyphenol content of 4 to 6 tablespoons of extra virgin olive oil.

**ASTAXANTHIN**

In Super Omega, the natural astaxanthin content of krill is fortified with additional astaxanthin for maximum stability and benefit. Astaxanthin fights free radicals,* boosts mitochondrial function,* supports brain,** cardiovascular,** and DNA*** health, and supports healthy blood sugar levels for those already in the normal range.****

The Super Omega formula contains standardized sesame lignans to enhance the overall benefits of EPA/DHA marine oils.†‡

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

Experts believe that taking both fish oil and krill oil together offers overlapping coverage to powerfully boost your health—with benefits that add to and amplify those of fish oil alone.

**Sesame Lignans**

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

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

Astaxanthin has long been shown to promote eye health. More recent findings indicate that this member of the carotenoid family has benefits for the entire body, including the brain, heart, skin, and immune system.

Since astaxanthin is a fat-soluble compound, it has limited assimilation into the bloodstream, with as little as 50% getting absorbed by the body.\(^1,2\)

To facilitate maximum absorption of this key nutrient, Life Extension has combined 4 mg of natural astaxanthin with a proprietary blend of 80 mg of four different phospholipids. This innovative formulation has been shown to enhance carotenoid absorption by several-fold.\(^3\)

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.

References
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.1-4

CHOL-Support™ is formulated with a triple standardized artichoke leaf extract and pantethine, the biologically active form of pantothenic acid1 to maintain healthy HDL, LDL, and total cholesterol levels already within the normal range.1-4

Artichoke Leaf Extract
Clinical studies now demonstrate that artichoke leaf extract’s polyphenolic compounds2 support optimal HDL/LDL ratios already within normal range.1,2

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

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
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:
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—and more importantly, lowers homocysteine and extends survival in human study subjects.

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.

Conventional doctors rarely test their patients’ homocysteine levels. Yet a low-cost blood test quickly reveals if you are in a danger zone.

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.

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**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, and peripheral vascular disease.

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

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.

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.

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.
Recently, links have been established between homocysteine and vital signaling information used by arteries to control blood pressure.\textsuperscript{19-21} 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.\textsuperscript{18,22-24}

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,\textsuperscript{25-27} 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.\textsuperscript{28-30} 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.\textsuperscript{28,30}

It makes sense, then, that low levels of folate are predictive of elevated homocysteine levels.\textsuperscript{31}

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%,\textsuperscript{32} while nearly 50% of people of European descent have a genetic variation that decreases MTHFR activity by as much as 35%.\textsuperscript{28,29,33-36}

If you fall into these categories, you are likely to be a victim of persistently high homocysteine levels—\textit{even if you are taking high doses of folic acid.}\textsuperscript{37}

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.\textsuperscript{38}

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

\textbf{What You Need To Know}

\textbf{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. 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. 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 bioavailability 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. 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.

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. 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. This group of people is at very high risk for elevated homocysteine levels, as well as high rates of complications...
antidepressant drug. 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. 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.

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, 5-MTHF has also attracted the interest of researchers that investigate major depression, a condition that reflects imbalances in neurotransmitter quantity or effect.

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. 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. 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. 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. 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.
5-MTHF And Diabetic Peripheral Neuropathy

Diabetic peripheral neuropathy is another condition that reflects imbalances in neurotransmitter quantity or effect, 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, which results in both pain and loss of sensitivity to normal touch.

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. 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. One such trial also showed improvements in the density of nerve fibers in the skin, and a different trial also noted a significant decrease in homocysteine levels compared with a small increase in placebo recipients.

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.
References


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

Super Booster saves consumers money and time combining a variety of costly nutrients in one softgel. If you add up the price of the individual ingredients in Super Booster.
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.
Curcumin has turned into a nutrition superstar because of the enormous health-promoting effects it provides for almost every organ system. 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.

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:

- 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.

**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.
- Ginger, which provides complementary health benefits.
- Phospholipids that further enhance absorption.

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.

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

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
Folate helps maintain homocysteine levels within the normal range, thereby promoting cardiovascular health. Folate also supports neurotransmitter synthesis—which in turn helps maintain cognitive abilities.

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

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. This unique compound requires no enzymatic conversion to become metabolically active—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.

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**High Potency Optimized Folate**

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**References**


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These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
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.¹
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 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. Increased levels of SIRT6 has been shown to extend the life span of male mice 10 to 15%. 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. Naked mole rats live about 10 times longer than mice without evidence of aging or age-related diseases. 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 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, 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 hyaluronic acid (hyaluronic acid) in naked mole rats protects them from cancer. 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. But in the naked mole rat, the high molecular weight hyaluronan causes cancer cells to stop growing. A few years earlier, Dr. Seluanov had discovered that naked mole rat tissue causes cancer to stop growing, 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. 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. 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 2013.13

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.14

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.15 *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.16

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.

**References**

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

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

- Enhance heart health3
- Maintain brain function4,5
- Sustain healthy blood sugar levels already within normal range6
- Support smooth firm skin7
- Maintain a healthy weight8 and stable cholesterol levels already within normal range9

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.10 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**

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References

To order Blueberry Extract Capsules, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)
Most Effective Form Of CoQ10

The unique benefits of the ubiquinol form of CoQ10 have been further validated by studies published in 2014.1-12

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

Life Extension® improves this a step further by adding shilajit to its ubiquinol formulas. The result is a doubling of CoQ10 levels in mitochondria.23

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

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

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

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

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)

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)

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

References

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.¹

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.²⁻⁵ Studies reveal that the presence of zinc in the body helps suppress tumor growth, especially in the prostate.⁶,⁷

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.³,⁴ 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.⁸,⁹

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.⁶,⁷

In this article, you will learn the importance of maintaining optimal levels of zinc, an inexpensive supplement that supports a healthy prostate.
NEW STUDIES REVEAL IMPORTANCE OF ZINC IN MAINTAINING PROSTATE HEALTH

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.\textsuperscript{7,10}

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.\textsuperscript{11,12}

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.\textsuperscript{8} 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.\textsuperscript{8}

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

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,\textsuperscript{15} but having developed the mechanism for concentrating zinc, prostate peripheral zone cells can resist that toxicity and derive protective benefit.\textsuperscript{6}

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.\textsuperscript{6}

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.\textsuperscript{6,16} 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.\textsuperscript{6} Furthermore, embedded nodules of cancerous prostate tissue show significantly lower zinc levels than those in adjacent healthy prostate tissue.\textsuperscript{17} Indeed, it has been observed that malignant prostate tissue does not demonstrate the high zinc levels typical of healthy prostate tissue.\textsuperscript{6}

Thus, prostate cancer cells lose their ability to accumulate zinc. Stated differently, high zinc accumulation is therefore improbable with prostate malignancy.\textsuperscript{6} By understanding the relationship of zinc with prostate cancer, we can capitalize on new opportunities for natural prevention of prostate cancer.\textsuperscript{10} 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.\textsuperscript{18,19}
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.20 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.21

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.22

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.7
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. 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. 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.

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.

Most recently, resveratrol was proposed as a means of enhancing zinc accumulation in prostate tissue. 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. 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. At a dose of 80 mg per day, zinc was found to reduce overall deaths by 27% over a median of 6.5 years. 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, as well as increase the risk of advanced prostate disease.

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.

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.
NEW STUDIES REVEAL IMPORTANCE OF ZINC IN MAINTAINING PROSTATE HEALTH

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

References
NEW STUDIES REVEAL IMPORTANCE OF ZINC IN MAINTAINING PROSTATE HEALTH


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.\(^2\)

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.\(^3\)

**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:

**FlorAssist®**

*Lactobacillus reuteri* (NCIMB 30242)

* Colony Forming Units

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.

**References**


To order FlorAssist® Heart Health Probiotic, 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.*
Ultimate Prostate Protection

Ultra Natural Prostate formula provides the latest scientifically-validated botanical extracts shown to promote healthy prostate function. No other prostate protection formula provides such a broad array of nutrients to support the multiple factors involved in the health of the aging prostate gland. Here are the ingredients in the Ultra Natural Prostate formula:

- **Standardized lignans** convert to enterolactone in the intestine, which is then absorbed into the bloodstream to provide support for prostate cells against excess estrogen levels.1-3
- **AprèsFlex®** supports normal inhibition of 5-lipoxygenase or 5-LOX, an enzyme that is associated with undesirable cell division changes.4-5
- **Stinging and Dwarf nettle root extracts** help support prostate cells against excess estrogen levels.6-7
- **Saw Palmetto CO2 extract** helps inhibit dihydrotestosterone (DHT) activity in the prostate, helps support normal urinary flow, and helps regulate inflammatory reactions in the prostate.8-9
- **Pygeum (Pygeum africanum) extract** helps support prostaglandin production in the prostate and supports healthy urinary patterns.10-12
- **Beta-sitosterol** enhances the protective effects of other botanical extracts and helps improve quality of life.13-16
- **Graminex® Flower Pollen Extract™** has been shown to help relax the smooth muscles of the urethra and help regulate inflammatory reactions.17-18
- **Boron** has been shown to slow elevation of prostate-specific antigen (PSA).19-20
- **Lycopene** supports efficient cellular communication, helps maintain healthy DNA, regulates hormonal metabolism, and promotes healthy prostate size and structure.21-22
- **Phospholipids** enhance absorption of active compounds.

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

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

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.

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:1-4

- 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:5-7

- 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.8 A longstanding problem is that zinc absorption can be limited by certain plants and grains, which contain a compound called phytate.9

Life Extension® has developed a formulation combining the superior bioavailability of zinc monomethionine10 along with zinc citrate to provide a potent 50 mg dose of these absorbable forms of zinc in a single capsule.

**References**


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.
Aging skin loses structural collagen and water-binding hyaluronic acid, while environmental factors weaken the skin’s protective outer barrier. The results of these changes are wrinkles, age spots, fine lines, and a dull, dry appearance.

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.

**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.

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.

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.

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.

**References**


To order Cosmesis Collagen Boosting Peptide Serum, call 1-800-544-4440 or visit www.LifeExtension.com
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...
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—dermatologists, allergists, 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:1,2

- 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.2

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

“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.”2

References

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Pycnogenol®—a potent plant extract from French Maritime pine bark—is formulated with proantho-cyanidins, bioflavonoids, and other health-promoting compounds to boost the body’s natural defenses against five major promoters of premature aging.

Backed by 40 years of study and the subject of over 300 publications, Pycnogenol®:

- Maintains healthy circulation by supporting relaxation of arteries and improving endothelial function
- Defends skin against free radicals produced by sun, stress, and environmental damage
- Maintains healthy joint mobility and flexibility, and supports a healthy inflammatory response
- Supports retinal capillaries and helps maintain healthy eyesight
- Supports healthy blood sugar levels and cellular metabolism of sugar

Pycnogenol®
French Maritime Pine Bark Extract
Item #01637 • 60 vegetarian capsules

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References

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

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

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

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

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

**References**

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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.

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.
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 HGH

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

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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].”
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.

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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 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 recommends 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.

For more information on the actress, please visit her official website at 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.
Can a simple protein hold the key to improving your memory? Researchers have discovered a protein that actually supports healthy brain function.*

For many years, researchers have known that the human brain loses cells throughout our lives, part of the natural process of aging. In fact, we lose about 85,000 brain cells per day, that is one per second, over 31 million brain cells every year! This impacts every aspect of your life...how you think and how you feel.

Recently, scientists made a significant breakthrough in brain health with the discovery that apoaequorin can support healthy brain function, help you have a sharper mind and think clearer.*

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Apoequorin is in the same family of proteins as those found in humans, but it was originally discovered in one of nature’s simplest organisms — the jellyfish.

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This type of protein is vital and found naturally in the human brain and nervous system. As we age we can’t make enough of them to keep up with the brain’s demands. Prevagen supplements these proteins during the natural process of aging to keep your brain healthy. Prevagen 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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Just how well does Prevagen work? In a computer assessed, double-blinded, placebo controlled study, Prevagen improved memory for most subjects within 90 days.*

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Retail $60
Member Price $45

**Item #01577**
Prevagen 5 mg
Retail $70
Member Price $60

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

*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.
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, a compound that reduces glucose levels and can be used as a treatment for diabetes. The flavonoid rutin is known for its anti-inflammatory and platelet aggregation-inhibiting effects.

Accumulating evidence demonstrates that buckwheat can be beneficial for managing diabetes, cardiovascular disease, arthritis, allergies, and obesity.
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.

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. And unlike certain grass grains, buckwheat is gluten-free.

Buckwheat’s most potent health effects may come from its rich supply of phytonutrients. Buckwheat contains high concentrations of D-chiro-inositol, a potent chemical variant of the B vitamin inositol that promotes healthy glucose levels. Buckwheat also contains catechins and tannins, and it is especially rich in rutin and quercetin, 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. 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. Manganese supports bone and skin health, as well as critical biochemical processes.

One cup of buckwheat delivers 68% of the recommended daily fiber intake (for a 2,000-calorie-a-day diet), substantially inhibiting the rate of glucose absorption, which is important for maintaining balanced blood sugar levels. In fact, the fiber content provided by buckwheat represents over 300% of the amount of fiber found in an equivalent serving of quinoa—which itself significantly exceeds whole wheat and rice in fiber content.

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).

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.

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, 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 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.\(^1^9\)

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.\(^1^9\)

Rutin has also been shown to help reduce blood pressure. According to one study, people taking rutin had a 36% reduction in blood pressure.\(^2^0\)

Other elements found in buckwheat also contribute to buckwheat’s ability to lower blood pressure, including its abundant supply of magnesium\(^1^2\) and its extremely rich fiber content. The high fiber content additionally promotes cardiovascular health by decreasing inflammation, LDL cholesterol, and total cholesterol.\(^1^7\)

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.\(^6\)

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).\(^6\)

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.\(^1^8\)

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.\(^2^0,2^1\)

**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.\(^5\)

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.\(^2\)

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.
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.7

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.25

Supressing 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.
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.

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.26

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.27

Summary

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

References

10. Rutin is a natural flavonoid found in buckwheat, citrus fruits, and other plants. Its antioxidant properties may help protect against cell damage. Rutin has also been shown to reduce inflammation and improve blood vessel function. Rutin at a dose of 500 to 1000 mg daily is recommended for its benefits. Rutin may interact with some medications, so always consult with a healthcare professional before starting any new supplement.

For the past 35 years, the Life Extension Foundation® has stated that the most important step one can take to prevent disease cannot be found in a bottle of pills. The true cornerstone of any preventive health care program is annual blood screening. Proactive blood screening can help you greatly reduce your risk of disorders such as heart and kidney disease, stroke, liver conditions, anemia, and diabetes. Plus it’s particularly valuable in helping you prevent and treat symptoms associated with hormone imbalance, such as fatigue, memory impairment, bone loss, weight gain, and depression. Blood testing remains one of the most important things you can do for yourself and your loved ones. More than any other measure, annual blood testing holds tremendous potential to protect both yourself and your loved ones.

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

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

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

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**SUGGESTED ADDITIONS TO ANNUAL BLOOD TESTING**

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* For non-member pricing call 1-800-208-3444.
** This test is packaged as a kit, requiring a finger stick performed at home.
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<td>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.</td>
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<tr>
<td>ANEMIA PANEL (LC100006)</td>
<td>$105.33</td>
<td>$59.25</td>
<td>$105.33</td>
<td>$59.25</td>
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<tr>
<td>CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate.</td>
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<td>DIABETES MANAGEMENT PROFILE – COMPREHENSIVE (LC100040)</td>
<td>$172</td>
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<td>DIABETES MANAGEMENT PROFILE – BASIC (LC100039)</td>
<td>$52</td>
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<td>$29.25</td>
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<td>Hemoglobin A1C, Glucose, Insulin.</td>
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<td>AUTOIMMUNE DISEASE SCREEN (LC100041)</td>
<td>$265.33</td>
<td>$149.25</td>
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<td>ANA screen, hs-CRP, TNF-α, Immunoglobulins, IgA, IgG and IgM.</td>
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<td>MALE ELITE PANEL (LC100016)</td>
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<td>FEMALE ELITE PANEL (LC100017)</td>
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*Certain tests need to be shipped to the lab on dry ice for customers using a blood draw kit, and some incur an additional $35 charge. If you are going to LabCorp, this charge does not apply.*

Blood Tests available only in the continental United States. Restrictions apply in NY, NJ, PA, RI, and MA. Not Available in Maryland.

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

AMINO ACIDS
Acetyl-L-Carnitine
Acetyl-L-Carnitine-Argetaine
L-Carnitine Capsules
L-Arginine Capsules
Arginine/L-Ornithine Capsules
L-Taurine Capsules
L-Glutathione, L-Cysteine & C
L-Glutamine Capsules
L-Glutamine Powder
L-Lysine Capsules
L-Tyrosine Tablets
Mega L-Glutathione Capsules
N-Acetyl-L-Cysteine Capsules
Optimized Carnitine with GlycoCarn®
Pharma GABA®
Super Carnoaine Capsules
Taurine Capsules

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

BRAIN HEALTH
Acetyl-L-Carnitine
Acetyl-L-Carnitine-Argetaine
Brain Shield® Gastrodin
Cognitex® with Brain Shield®
Cognitex® with Pregnenolone & Brain Shield®
Cognitex® Basics
Cognitex® CDP Choline Tablets
Cognitex® with Brain Shield®
Cognitex® Gastrodin
Cognitex® Basics
Cognitex® with Brain Shield®
Cognitex® Basics

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
Co-Enzyme Q10™
CHOL-Support™
D-Ribose Tablets
D-Ribose Powder
Enzymatic Defense™ with Full-Spectrum Pomegranate™
Fibrogren
Forskolin
Natural BP Management
Peak ATP™ with GlycoCarn®
Policosanol
PROVITAL® Purified Omega-7
Pycnogenol® French Maritime Pine Bark Red Extract
Red Yeast Rice
Super Absorbable CoQ10™ w/d-Limonene
Super Omega-3 EPA/DHA w/Sesame
Lignans & Olive Fruit Extract
Super Omega w/Flax & Astaxanthin
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 w/Black Pepper
Super Ubiquinol CoQ10 w/Enhanced Mitochondria™ 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
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 Stabilized 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
Enhanced Immune System
FloraGuard® French Oak Wood Extract
Focus Formula with I-Trebion®
Immune Protect with PARACTIN®
Immune Senescence Formula™
Lactoferrin
NK Cell Activator™
Optimized Fuco tidan w/Maritech® 926
Peony Immune
ProBoost™ Thymic Protein A
Reishi Extract Mushroom Complex
Ribogenn® French Oak Wood Extract
Standardized Cistanche
Vitamin C w/DiHydroquercetin
Zinc Lozenges

INFLAMMATORY REACTIONS
Artho-Immune Joint Support
ArthroMax® with Theaflavins
Boswellia
Bromelain (Specially-coated)
Cytokine Supressor® w/EGCG
DHA (Vegetarian Sourced)
Fast Acting Joint Formula
Ginger Force
Ginkgo Biloba Certified Extract™
Ginkgo Biloba Certified Extract™
Ginkgo Biloba Certified Extract™

LIVER HEALTH
Branch Chain Amino Acids
Certified European Milk Thistle
N-Acetyl Cysteine
Liver Efficiency Formula
European Milk Thistle
Hepatopro
SAMe
Silymarin
PRODUCTS

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™
Se-Methyl L-Selenocysteine
Strontium
Vanadyl Sulfate
Zinc High Potency
Zinc Loxenges

MISCELLANEOUS
Blood Pressure Monitor Arm Cuff
CR Way Edition Advanced Dietary Software

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

MOOD RELIEF
Adrenal Energy Formula
Bioactive Milk Peptides
L-Theanine
5 HTP
Enhanced Natural Sleep* w/ Melatonin
Enhanced Natural Sleep* w/o Melatonin
Natural Stress Relief
SAMe
L-Tryptophan
Optimized Tryptophan Plus

MOUTH CARE
Advanced Oral Hygiene
Toothpaste
Xyliwhite™ Mouthwash

MULTIVITAMIN
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™
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 FerriBlock® with Red Orange Complex
Fine Line-Less
Hair Supplement Formula
Healing Formula All-in-One Cream
Healing Mask
Hyaluronic Facial Moisturizer
Hydrating Anti-oxidant Face Mist
Hydroderm®
Lifting & Tightening Complex
Lycopenes Cream
Melatonin Cream
Mild Facial Cleanser
Neck Rejuvenating Antioxidant Cream
Pigment Correcting Creal (Ultral) Rejuvenex®
Rejuvex® Body Lotion
Rejuvex® Factor Firming Serum
Rejuvenating Serum
Renewing Eye Cream
Reverser Anti-Oxidant Serum
Skin Lightening Serum
Skin Restoring Photoceramides w/Lipowheat®
Skin Stem Cell Serum
Stem Cell Cream w/Alpine Rose
Ultra Rejuvenex®
Ultra Rejuvex Night® 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

SOY
Super Absorbable Soy Isoflavones
Ultra Soy Extract

SPECIAL PURPOSE FORMULA
AMFK Activator
Anti-Alcohol Antioxidants w/HepatoProtection Complex
Benfotiamine w/Thiamine
Breast Health Formula
Butterbur Extract w/Standardized Rosmarinic Acid
Chlorellax
Chlorophyllin
Green Coffee Extract CoffeeGenic®
CR Mimetic Longevity Formula
Cisulin® w/InSea 23®
and Crominex® 3+

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 (Nicacin) Capsules
Vitamin B6
Vitamin B12 Loxenges
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 CardReduce 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 3rd Calorie Control Complex
Optimized Saffron with Satireal®
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
European Leg Solution Diosmin 95
Fern Dophilus
Ferrnessence MacaPause®
Migra-eaze™
NAD+ Cell Regenerator™
Nicotinamide Riboside
Natural Female Support
Optimized Resveratrol w/NAD+
Cell Regenerator™
Pecta-Sol®
Potassium Iodide
POQ Caps w/BioPQQ®
PteroPure®
Prelax® 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

Blood Pressure Monitor Arm Cuff
CR Way Edition Advanced Dietary Software

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CR Way Edition Advanced Dietary Software

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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™

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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
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Life Extension Mix™ Powder
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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™
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
<table>
<thead>
<tr>
<th>No.</th>
<th>A</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<tbody>
<tr>
<td>01206</td>
<td>BERRY COMPLETE - 30 veg. caps</td>
<td>$21.00</td>
<td>$15.75</td>
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<tr>
<td>01496</td>
<td>BERRY COMPLETE w/Acai (enhanced) - 60 veg. caps</td>
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<tr>
<td>00664</td>
<td>VITAMIN C - 1000 IU, 100 softgels</td>
<td>11.25</td>
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<td>BIFIDO GI BALANCE - 60 veg. caps</td>
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<td>01073</td>
<td>BILBERRY EXTRACT - 100 mg, 100 veg. caps</td>
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<tr>
<td>01512</td>
<td>BIDETIC MILK PEPTIDES - 30 caps</td>
<td>18.00</td>
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<tr>
<td>01631</td>
<td>BIFIDOBACTERIUM - 40 mg, 60 small caps</td>
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<tr>
<td>01006</td>
<td>BOSWELLA - 5 mg, 30 veg. caps</td>
<td>18.95</td>
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<tr>
<td>01007</td>
<td>BOSWELLA - 1 fl oz</td>
<td>31.99</td>
<td>25.59</td>
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<tr>
<td>00102</td>
<td>BIOTIN - 600 mcg, 100 caps</td>
<td>7.50</td>
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<tr>
<td>01709</td>
<td>BLACK CUMIN SEED OIL - 60 softgels</td>
<td>16.00</td>
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<tr>
<td>01710</td>
<td>BLACK CUMIN SEED OIL w/BID-CURCUMIN® - 60 softgels</td>
<td>32.00</td>
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<tr>
<td>01008</td>
<td>BLAST® - 600 grams of powder</td>
<td>26.95</td>
<td>20.21</td>
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<tr>
<td>70005</td>
<td>BLOOD PRESSURE MONITOR - ARM CUFF (large)</td>
<td>50.00</td>
<td>37.50</td>
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<tr>
<td>70004</td>
<td>BLOOD PRESSURE MONITOR - Wrist Cuff</td>
<td>69.95</td>
<td>52.46</td>
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<tr>
<td>01214</td>
<td>BLUEBERRY EXTRACT - 60 veg. caps</td>
<td>22.50</td>
<td>16.88</td>
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<tr>
<td>01438</td>
<td>BLUEBERRY EXTRACT w/Pomegranate - 60 veg. caps</td>
<td>30.00</td>
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<tr>
<td>01506</td>
<td>BONE FORMULA (ORIJIN'S INTENSIVE) - 300 caps</td>
<td>56.00</td>
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<td>01726</td>
<td>BONE RESTORE - 120 caps</td>
<td>22.00</td>
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<td>01727</td>
<td>BONE RESTORE w/VITAMIN K2 - 120 caps</td>
<td>24.00</td>
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<tr>
<td>01725</td>
<td>BONE STRENGTH FORMULA w/koact® - 120 caps</td>
<td>45.00</td>
<td>33.75</td>
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<tr>
<td>00313</td>
<td>BONE-UP® - 240 caps</td>
<td>28.95</td>
<td>21.71</td>
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<tr>
<td>01960</td>
<td>BOSTER w/MAGUCURATOR® OCULAR SUPPORT (SUPER) - 60 softgels</td>
<td>52.00</td>
<td>39.00</td>
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<tr>
<td>01661</td>
<td>BORON - 3 mg, 100 veg. caps</td>
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<tr>
<td>00202</td>
<td>BOSWELLA - 100 caps</td>
<td>38.00</td>
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<tr>
<td>01802</td>
<td>BRAIN SHIELD® GASTRODIN - 60 veg. caps</td>
<td>33.00</td>
<td>24.75</td>
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<tr>
<td>01253</td>
<td>BRANCHED CHAIN AMINO ACIDS - 90 veg. caps</td>
<td>19.50</td>
<td>14.63</td>
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<tr>
<td>01699</td>
<td>BREAST HEALTH FORMULA - 60 caps</td>
<td>34.00</td>
<td>25.50</td>
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</tr>
<tr>
<td>00989</td>
<td>BRUTAL EYES III - 2 vials, 5 ml each</td>
<td>34.00</td>
<td>25.50</td>
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</tr>
</tbody>
</table>

**SUB-TOTAL OF COLUMN 1**

**SUB-TOTAL OF COLUMN 2**

MAY 2015

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS
<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>01203</td>
<td>BRONEMELAN (SPECIALY-COATED) - 500 mg, 60 enteric coated tablets</td>
<td>$21.00</td>
<td>$15.75</td>
<td>1</td>
<td>$21.00</td>
</tr>
<tr>
<td>00884</td>
<td>BUTTERBUR EXTRACT w/STANDARDIZED ROSMARINIC ACID - 60 softgels</td>
<td>$44.00</td>
<td>$33.00</td>
<td>1</td>
<td>$44.00</td>
</tr>
<tr>
<td>01653</td>
<td>CALCIUM CITRATE w/VITAMIN D - 300 caps</td>
<td>$24.00</td>
<td>$18.00</td>
<td>1</td>
<td>$24.00</td>
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<tr>
<td>01651</td>
<td>CALCIUM D-GLUCARATE - 200 mg, 60 veg. caps</td>
<td>$18.00</td>
<td>$13.50</td>
<td>1</td>
<td>$18.00</td>
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<tr>
<td>01652</td>
<td>CALREDUCE SELECTIVE FAT BINDER - 120 mini chewable tablets</td>
<td>$45.00</td>
<td>$33.75</td>
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<tr>
<td>01700</td>
<td>CARDIO PEAK w/STANDARDIZED HAWTHORN &amp; ARALUNA - 120 veg. caps</td>
<td>$36.00</td>
<td>$27.00</td>
<td>1</td>
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</tr>
<tr>
<td>00916</td>
<td>CARNTINE w/GLYCOCARIN® (OPTIMIZED) - 60 veg. caps</td>
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**SUB-TOTAL OF COLUMN 3**

**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

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<td>COMPLETE B-COMPLEX - 60 veg. caps</td>
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<td>COSMESIS ADVANCED PEPTIDE HAND THERAPY - 4 oz bottle</td>
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<td>COSMESIS ANY-GLYCATON ANTI OXIDANTS - 1 oz w/BLUEBERRY &amp; POMEGERANATE EXTRACTS</td>
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<td>COSMESIS ANTI-OXIDANT FACIAL Mist - 2 oz</td>
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**SUB-TOTAL OF COLUMN 4**
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<td>80118</td>
<td>COSMESIS VITAMIN C SERUM - 1 oz</td>
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<tr>
<td>01424</td>
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<td>CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla)</td>
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**SUB-TOTAL OF COLUMN 5**

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<td>80111</td>
<td>COSMESIS UNDER EYE RESCUE CREAM - 2 oz</td>
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<tr>
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<td>COSMESIS VITAMIN C SERUM - 1 oz</td>
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<tr>
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**SUB-TOTAL OF COLUMN 6**

To order call: 1.954.766.8433 or 1.800.544.4440
**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

To order online visit: www.LifeExtension.com

**Buyers Club Order Form**

<table>
<thead>
<tr>
<th>No.</th>
<th>Qty</th>
<th>Member Each</th>
<th>Retail Each</th>
<th>Total</th>
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**SUB-TOTAL OF COLUMN 10**

To order call: 1.954.766.8433 or 1.800.544.4440
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**SUB-TOTAL OF COLUMN 11**

**SUB-TOTAL OF COLUMN 12**

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

MAY 2015
### Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

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<td>38.52</td>
<td>28.89</td>
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<td>01220</td>
<td>REJUVENEX® (ULTRA) - 2 oz</td>
<td>52.00</td>
<td>39.00</td>
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<tr>
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<td>Buy 2 jars, price each</td>
<td>48.00</td>
<td>36.00</td>
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<td>Buy 4 jars, price each</td>
<td>44.00</td>
<td>33.00</td>
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<td>Buy 8 jars, price each</td>
<td>39.93</td>
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<td>00676</td>
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<td>39.95</td>
<td>29.96</td>
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<td>Buy 4 jars, price each</td>
<td>36.00</td>
<td>27.00</td>
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<td>01410</td>
<td>RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps</td>
<td>36.00</td>
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<td>01930</td>
<td>RESVERATROL W/NAD + CELL REGENERATOR™ (OPTIMIZED) - 30 veg. caps</td>
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<td>01430</td>
<td>RESVERATROL W/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps</td>
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<td>RHODIOLA EXTRACT - 250 mg, 60 veg. caps</td>
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**SUB-TOTAL OF COLUMN 14**

May 2015

Life Extension Members receive 25% OFF the Full Retail Price of All Products.
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<td>(D) Ribose Powder - 150 grams</td>
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<td>(D) Ribose Tablets - 100 veg. tabs</td>
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<td>01609</td>
<td>Rich Rewards® Breakfast Ground Coffee - 12 oz. bag</td>
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<td>$195.00</td>
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<tr>
<td>01730</td>
<td>Rich Rewards® Breakfast Blend Ground Coffee - 12 oz. bag</td>
<td>15</td>
<td>$13.00</td>
<td>$195.00</td>
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<tr>
<td>01729</td>
<td>Rich Rewards® Breakfast Blend Ground Coffee - 12 oz. bag</td>
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<td>$195.00</td>
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<td>01612</td>
<td>Rich Rewards® Breakfast Blend Whole Bean Coffee - 12 oz. bag</td>
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<td>Rich Rewards® Decaffeinated Roast Ground Coffee - 12 oz. bag</td>
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<td>01712</td>
<td>Rich Rewards™ Black Bean Vegetable Soup - 32 oz. bottle</td>
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<td>Rich Rewards™ Cruciferous Vegetable Soup - 32 oz. bottle</td>
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<td>01531</td>
<td>Rich Rewards™ (Spicy) Cruciferous Vegetable Soup - 32 oz. bottle</td>
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<td>Rich Rewards™ Mung Bean Soup w/Turmeric - 32 oz. bottle</td>
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<td>01208</td>
<td>R-Lipoic Acid (Super) - 240 mg, 60 veg. caps</td>
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<td>Saffron w/Satireal® (Optimized) - 60 veg. caps</td>
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<td>00358</td>
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<td>Same (S-Adenosyl-Methionine) - 400 mg, 20 enteric coated tablets</td>
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<td>Sinus Cleanser - 4 oz. bottle</td>
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<td>Skin Restoring PhytoCeramides w/Lipowheat® - 30 veg. liquid caps</td>
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<td>Solarshield Sunglasses - 1 pair smoke color</td>
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<td>01097</td>
<td>Soy Extract (Ultra) - 150 veg. caps</td>
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**SUB-TOTAL OF COLUMN 15**

**SUB-TOTAL OF COLUMN 16**

Life Extension members receive 25% off the Retail Price of all products.
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<td>ZINC ACETATE LOZENGES (ENHANCED) - 18.75 mg, 30 veg. lozenges</td>
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<td>Buy 2 bottles, price each</td>
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*These products are not 25% off retail price.*  
**Not eligible for member discount or member renewal product credit.*  
***Due to license restrictions, this product is not for sale to customers outside of the USA.*  
†Member pricing not valid on this item.  
††Due to license restrictions, this product is not for sale to Canada.  
†††Due to license restrictions, this product is not for sale to customers outside of the USA and Canada.

**SUB-TOTAL OF COLUMN 18**

---

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

To order a Life Extension Gift Card for someone special, call 1-800-544-4440

---

**SUB-TOTAL OF COLUMN 17**
# Buyers Club Order Form

**ORDER SUBTOTALS**

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**ORDER TOTALS**

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<td>Postage And Handling (Any size order, contiguous U.S.)</td>
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<td>Shipping</td>
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<td>Grand Total (Must be in U.S. dollars)</td>
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**BILL TO ADDRESS**

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<td>City/State/Zip-Postal Code</td>
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**SHIP TO ADDRESS**

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<td>Signature</td>
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**NOT A MEMBER? JOIN TODAY!**

- I want to join the Life Extension Foundation®. Enclosed is $75 for annual membership. (Canadians add $70.00, all others outside the U.S. add $35.00). Send me: *Disease Prevention & Treatment Protocol Book*

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

**PRICES SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE NOTIFY THE LIFE EXTENSION FOUNDATION® OF ANY ADDRESS CHANGE**
# LIFE EXTENSION MEDIA

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**References**


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30  DHEA PROMOTES CARDIOVASCULAR HEALTH
Research shows that restoring optimal levels of DHEA can enhance vascular health by reducing the risk of atherosclerosis, endothelial dysfunction, and metabolic syndrome.

68  LIFE EXTENSION® RESEARCH UPDATE
After being denied government funding, Vera Gorbunova, PhD, and Andrei Seluanov, PhD, received grants from the Life Extension Foundation® for research on preventing cancer and slowing the aging process.

85  PSORIASIS SUCCESS
Although treatment options for psoriasis are limited, a new clinical study indicates that Pycnogenol® pine bark extract can safely treat this condition.