Three Million Needless Cancer Deaths...
Courtesy of FDA

Why Japanese Have Such Long Life Spans

Heart Disease-Related Costs Expected to Triple By 2030

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Greater Than 90% of Adults Risk Hypertension
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Since Life Extension® introduced CoQ10 in 1983, our scientists have continued to develop increased potency and absorbability.

Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ contains PrimaVie® shilajit that doubles levels of CoQ10 in the mitochondria.1

Combining CoQ10 and shilajit produced a 56% increase in cellular energy production in the brain, and in muscle there was a 144% increase in cellular energy production.2

Shilajit boosts CoQ10’s beneficial effects by stabilizing CoQ10 in the superior ubiquinol form, which prolongs its action at the cellular level.3,4

Additionally, shilajit facilitates the more efficient delivery of CoQ10 into the mitochondria, which results in enhanced cellular energy.5-9

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

Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

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

References:

PrimaVie® is a registered trademark of Natreon, Inc. Kaneka QH® is a registered trademark of Kaneka Corporation.

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 $42 per bottle. Item # 01426

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30  OPTIMIZE YOUR SEX HORMONE STATUS
Hundreds of published studies link imbalances of testosterone and estrogen (in men and women) with the onset of age-related pathologies. A little-known blood marker of hormonal balance is sex hormone-binding globulin or SHBG. Newly published studies reveal how SHBG interacts with testosterone and estrogen—and how maturing individuals can use this blood test to optimize their sex hormone status.

40  THE LONGEVITY FACTOR IN THE JAPANESE DIET
The Japanese are amongst the longest-lived people in the world, with those residing in Okinawa achieving incredible healthy life spans. Scientists are zeroing in on native seaweeds in traditional Japanese diets whose constituents induce anti-aging benefits that go beyond anything used in Western societies.

62  NATURAL WAYS TO PREVENT A STEALTH KILLER
The lifetime risk of developing high blood pressure is greater than 90% in adults 55 years and older. Left undetected and untreated, this stealth killer can culminate in stroke, kidney damage, and heart attack. A Cambridge research team recently made a discovery validating the power of certain nutrients to combat chronic hypertension.

74  BRANCHED CHAIN AMINO ACIDS GROW NEW MITOCHONDRIA
Fitness enthusiasts have long prized branched chain amino acids (BCAAs) for their power to boost strength and performance. A newly published study may now give longevity enthusiasts a reason to as well: in an animal model, BCAAs increased life span in part through mitochondrial biogenesis—the spontaneous growth of new mitochondria.

7  AS WE SEE IT
EGREGIOUS HOSPITAL INEPTITUDE
William Faloon was recently hospitalized and witnessed egregious inefficiency and ineptitude...so much so that he made some major lifestyle changes. This article also discusses simple ways to protect against hospital-acquired infections.
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According to the Proceedings of the National Academy of Sciences, alpha tocopherol (regular vitamin E) displaces critically important gamma tocopherol in the cells. While alpha tocopherol inhibits free-radical production, gamma tocopherol is required to trap and neutralize existing free radicals.

Four prestigious scientific journals have highlighted gamma tocopherol as one of the most critically important forms of vitamin E for those seeking optimal health benefits. Most commercial vitamin E supplements contain little, if any, gamma tocopherol. They instead rely on alpha tocopherol as the primary ingredient. However, it is gamma tocopherol (not the alpha form) that quenches peroxynitrite, the free radical that plays a major role in the development of age-related decline.

SESAME LIGNANS: The Natural Vitamin E Booster

Life Extension® has uncovered research suggesting that adding sesame lignans to gamma tocopherol may significantly enhance its beneficial effects. Sesame and its lignans have been shown to boost antioxidant levels and help maintain already-normal blood pressure.

In a human study that combined gamma tocopherol with sesame lignans, gamma tocopherol/sesame was 25% more effective than gamma tocopherol/tocotrienols in suppressing tissue measurements for free-radical and inflammatory damage. Since tocotrienols are considered nature’s most potent antioxidants, the fact that low-cost gamma tocopherol with sesame is more effective is a remarkable finding.

Life Extension fortified the popular Gamma E Tocopherol supplement with standardized sesame lignans. Consumers obtain superior benefits at a much lower cost.

WORLD’S MOST COMPREHENSIVE VITAMIN E FORMULA!

The Gamma E Tocopherol formula provides potent doses of critically important gamma vitamin E along with sesame lignans to augment its antioxidant effects.

The retail price for 60 softgels of Gamma E Tocopherol with Sesame Lignans is $32. If a member buys four bottles, the price is reduced to only $21.75 per bottle.

Each softgel of Gamma E Tocopherol with Sesame Lignans provides:

- Gamma tocopherol 215.4-244.12 mg
- Delta tocopherol 89.75-125.65 mg
- Alpha tocopherol 17.95-35.9 mg
- Beta tocopherol 0-7.18 mg
- Sesame seed (Sesamum indicum) lignan extract 20 mg

Contains soybeans and sesame.

Antioxidant Vitamins & Cancer. Some scientific evidence suggests that consumption of antioxidant vitamins may reduce the risk of certain forms of cancer. However, the FDA does not endorse this claim because this evidence is limited and not conclusive.

Note: Those taking Super Booster do not usually require additional gamma tocopherol.

References
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That Can Save Your Life

Natural Strategies for Anti-Aging Center. She is triple board-certified in Integrative Medicine in Rancho Cucamonga, CA. Dr. Harris participated in ground-breaking research at Critical Care Research, a company that was involved with the cataract-removal technique called phacoemulsification and developed intraocular lenses to replace the crystalline lens. He is currently involved in projects relating to glaucoma, cataract extraction, and facilitating eyesight for the totally blind.

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### The daily serving of 2 softgels of Endothelial Defense™ contains:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
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<tr>
<td>Superoxide Dismutase/Gliadin Complex (GliSODin®) [SOD (Superoxide Dismutase) Enzyme Activity = 500 IU]</td>
<td>500 mg</td>
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<tr>
<td>POMELLA® Pomegranate (Punica granatum) Extract (fruit) [std. to 30% punicalagins (120 mg)]</td>
<td>400 mg</td>
</tr>
<tr>
<td>Pomegranate (Punica granatum) 5:1 Extract (fruit)</td>
<td>100 mg</td>
</tr>
<tr>
<td>PomComplete™ Pomegranate (Punica granatum) Blend [flower extract and seed oil (standardized to 22% (30 mg) punicic acid)]</td>
<td>137.5 mg</td>
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The unique blend of pomegranate flower extract and seed oil in Endothelial Defense contains potent polyphenols that provide support for youthful lipid and glucose metabolism, natural immunity, and help with inflammatory factors.

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**References**

My Recent Life-Altering Event

BY WILLIAM FALOON

I suspect everyone reading this column has experienced harsh real-world events that resulted in their making personal lifestyle changes.

You may have seen a loved one suffer and die from a horrific disease and responded by initiating programs to reduce your risk of encountering the same fate.

In other cases, you are the victim of a preventable illness—and turn your life around afterward to minimize the odds of it recurring.

I had a personal scare recently that put me in the hospital for a brief time. It terrorized me enough, however, to make some major lifestyle changes. I did this not only out of fear of the disease, but also the miseries of being confined to a hospital setting.
My Ordeal Begins…

For the first time in my life, I developed rather severe chest pains. I did not at first take this seriously, but shortly thereafter visited my local physician for an EKG (electrocardiogram).

To my surprise, the EKG results indicated I might be suffering coronary artery blockage and having a heart attack. The doctor suggested that I go to the local emergency room to get a blood test that measures markers such as troponin, which is a type of protein released by the heart when damaged. Troponin and enzymes like creatine kinase are elevated in the blood if there is damage to the heart muscle.

A hospital can perform these blood tests and have the results back in an hour, which is why I had to go to the ER to get them. The hospital did another EKG and the computerized reading indicated probable acute myocardial infarction, which means they thought I may be suffering a heart attack.

So here I was suffering rather intense chest pain with an EKG reading suggesting I was having a heart attack. During that hour waiting for the troponin/creatine kinase blood test results to come back, a lot went through my mind. I thought about the atherogenic diet I consumed in my early years because I did not have affordable access to healthy foods. The enormous amount of thoracic radiation I was needlessly exposed to at an early age also weighed on my mind as a factor that could cause coronary atherosclerosis, even though I have taken good care of my arterial system in later years.

There was a sense of relief when the troponin blood test came back negative, indicating that I had not sustained heart muscle damage. The ER doctor, however, made it clear that troponin levels don’t always elevate right away and that I needed follow-up troponin blood tests eight and sixteen hours later.

The only way of having these tests done on an immediate (STAT) basis was to be “admitted” to the hospital.

I recalled some brilliant medical specialist friends of mine in the past who hated hospitals so much that they died rather than capitulate to hospital confinement—despite their intense chest pains. As bad as hospital confinement is, it was better than suffering fatal heart attacks like my friends did.

Like Going Back to the Days of the Soviet Union

If there is a word to describe why the old Soviet Union collapsed, it might be “inefficiency.” Back in the Soviet days, the central Russian government controlled every aspect of the economy and the result was inefficiencies of unparalleled magnitudes.

I knew about the inherent inefficiencies of modern-day hospitals
and was gratified that one of our Life Extension doctors brought me my laptop computer so that I could productively occupy my time while the hospital staff bumbled through the “admissions” process.

It took an outrageous number of hours to be transferred from the ER to a hospital room, but I kept myself busily occupied writing and editing articles for what was the next edition of this magazine, so the wait was not an annoyance.

The ER doctor promised me that the hospital would assign a cardiologist who would monitor me throughout the night in case my condition worsened. I began to question the competence of the so-called cardiologist when certain medications I expected to be prescribed were not. I became even more apprehensive when the so-called cardiologist did not seem to understand why I insisted on particular medications. I found out the next day that the hospital had erroneously called a general practitioner instead of the cardiologist to oversee me.

Delayed Medications

I told the ER doctor around 6:00 PM the first day that I needed certain heart medications, and he said they had been ordered from the hospital pharmacy. At 11:00 PM that night the drugs I requested still had not arrived.

When a nurse finally brought them, some were the wrong ones. Each and every time the drugs were mixed up, the supposed cardiologist did not seem to understand why I insisted on particular medications. I found out the next day that the hospital had erroneously called a general practitioner instead of the cardiologist to oversee me.

At midnight, they did another EKG and the result came back the same, i.e., possible acute myocardial infarction. My chest pains were still severe, but I recalled that the pain had subsided earlier in the day in response to ibuprofen or aspirin. I knew that if I was really suffering coronary artery blockage, that ibuprofen would not alleviate the pain. I again called the so-called cardiologist and asked for a high dose (800 mg) of ibuprofen. It finally arrived and within an hour I was chest pain-free.

A Sleepless Night

Sleeping is so important to maintaining immune function, yet many people find it impossible to sleep in a hospital setting. I am one of those who cannot sleep in a hospital bed.

I spent a long night reflecting on what I could have done to prevent a coronary blockage, if indeed this is what I had.

I knew from my previous blood test readings and preventive interventions that I was at low risk for coronary artery disease. Yet I dwelled on the fact that my last LDL reading was 101 mg/dL and I knew it should ideally be kept below 80. I also suffer genetically elevated homocysteine levels, typically over 11 μmol/L, even though it should be below 8 μmol/L.

I take a lot of nutrients, drugs, and hormones to keep my cardiac markers at optimal ranges, but I recalled days when only a half dose was taken because of too many distractions. I made a vow that sleepless night to curtail other activities in order to have time to take every single nutrient, drug, and hormone I needed every single day. I told myself, If I am ever diagnosed with vascular disease, I want to know it is because the comprehensive program I follow failed, rather than because I failed to follow the comprehensive program.

I promised myself that even if every other cardiac risk marker was perfect, if there were a slight elevation of even one other marker (such as LDL), that I would double my efforts to suppress it.

The Next Morning

I was greeted early in the morning by the general practitioner, who apologized for the hospital confusing her as a cardiologist. I thanked her for prescribing the medications I requested even though she was not familiar with my rationale for wanting them. She told me the cardiologist I was supposed to have been assigned to would visit me shortly.
Within a half hour, the cardiologist arrived and impressed me with his capability. When I explained my hypothesis that I did not have coronary artery blockage because high-dose ibuprofen completely suppressed the chest pain, he concurred that I was probably suffering from *pericarditis*, which is an inflammation of the sack surrounding the heart muscle. It sounds serious, but is treatable with anti-inflammatory drugs. It is often caused by a virus or some unknown factor.

The cardiologist explained that my particular EKG readings meant one of two things. Either I was suffering such a severe heart attack that I would not be sitting up talking, or I had pericarditis. Since I suffered no other symptoms, the cardiologist told me that he would order more tests in the hospital and that I should stay another night. I agreed to more tests but made it clear that I would bolt as soon as the tests were completed. He defined my leaving the hospital that day as “against medical advice” and strongly warned against it. I responded that another night of no sleep was more dangerous than the slight risk of *arrhythmia* (a heart rhythm disturbance that can be caused by pericarditis in some circumstances).

The MRI should have been done mid-afternoon, but another communication error caused it to be delayed till the late evening. The MRI staff wanted my acknowledgment that while the MRI could diagnose *pericarditis*, it would not rule out *pulmonary embolism*. I told my nurse that I was not concerned with pulmonary embolism and to proceed immediately with the MRI. The nurse forgot to tell the MRI staff this.

The MRI staff spent most of the day doing nothing but wait around for the nurse to call them back. I spent most of the day asking the nurse when the MRI staff would be ready to perform the diagnostic as I was anxious to escape hospital confinement. I jokingly told people that the hospital was intentionally delaying the MRI test just to force me to stay another night.

It was not until after 8:00 PM that the MRI staff called the nurse to find out if I wanted the MRI. The failure of the afternoon nurse to make one phone call resulted
Some examples of wrong-site errors included removing the wrong ovary or irradiating the wrong organ. Specifically, mix-up of tissue specimen samples in the pathology laboratory occurred on 6 occasions, which led to the unnecessary prostatectomy (prostate gland removal) in a healthy patient in 3 distinct cases. Doctors mixed up the samples and the patients

### Protecting Against Hospital-Acquired Infections

Hospital confinement exposes one to increased risk of contracting bacterial infections that are sometimes antibiotic-resistant. What few people understand is that the infectious bacterium does not always emanate from the hospital. It is often a bacterium that is in you already, but is kept in check by your healthy immune system.

In many cases, a Staphylococcus (staph) bacterium called *S. aureus* inhabits your nasal passages, and if the hospital swabs this area with an anti-microbial product called *mupirocin* upon admitting you, your risks of developing infection arising from nasal colonization with *S. aureus* are markedly reduced.

After I was admitted to the hospital, I recalled a 2010 report published in the *New England Journal of Medicine* that referenced three studies (published in 1959, 2001, and 2004) that showed 80% of staph infections acquired in the hospital are endogenous, which means that these infections were caused by the patient’s own bacterial contamination. This study showed that if a patient’s nasal passages were decolonized with *mupirocin* applied twice daily for 5 days, combined with a chlorhexidine body wash, the risk of staph infection was reduced by nearly 60%.

I asked my nurse about the antiseptic nasal swabs and the response was “we do that,” but he never came back to do it to me. This was how many of my requests were handled—i.e., Soviet Union-style.

We at *Life Extension* now strongly believe that the lethal combination of **insufficient vitamin D** (due to no sunlight exposure and no supplements given), **lack of sleep** (due to chronic hospital staff disturbance), and **nutrition deficit** (due to micronutrient-depleted food and stress-induced commotion) conspires to rob hospitalized patients of immune function required to suppress bacteria carried in their own bodies.

It does not matter how many sanitary procedures an institution performs if the patient’s **immune function** is being compromised by standard hospital practices. Anyone hospitalized for an extended period should take assertive measures to maintain immune function as most hospitals fail to pay attention to it. At a minimum, every hospitalized patient should immediately be given enough **vitamin D** to achieve optimal blood levels of over 50 ng/mL of 25-hydroxyvitamin D.

A number of studies confirm the potent **anti-microbial** effects of **vitamin D**, making it essential for hospital-confined patients.

### New Study Uncovers More Hospital Errors Than Previously Thought

An encyclopedia could be written about the errors that routinely occur in the hospital setting.

A recent study published in the peer-reviewed journal *Archives of Surgery* uncovered unthinkable mistakes by doctors and surgeons—such as amputating the wrong leg or removing organs from the wrong patient.

This study revealed how doctors in Colorado over a period of 6.5 years operated on the wrong patient at least 25 times and on the wrong part of the body in another 107 patients. Although these serious errors are rare overall, the numbers seen in the study were “considerably higher” than previous estimates.

According to the lead researcher of this study, the surgical blunders uncovered are probably “the tip of the iceberg” and the actual number of patient and surgical site mix-ups is likely much higher.

This particular study analyzed over 27,000 records from a database of medical errors maintained by a company that provides malpractice insurance to about 6,000 physicians in Colorado. This database relied on the physicians themselves reporting the incidents. The errors were caused by a range of slip-ups, including mixing up patient medical records, X-rays, and biopsy samples. All of the mistakes could be traced back to some form of **miscommunication**.

in the MRI staff and me waiting around an **extra six hours**—typical hospital inefficiency. I finally escaped the miseries of hospital confinement around 10:00 PM that night—which equated to about 31 total hours of jail time from my perspective.

Having written dozens of articles exposing why healthcare costs are needlessly bankrupting the United States, I realized that I had not done enough to uncover hospital **inefficiency** that results in prohibitive costs combined with mediocre-to-disastrous results.

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without cancer had unnecessary radical prostatectomies (painful surgeries often with lifetime complications).

The study showed that one-third of the mistakes led to long-term negative consequences (including death) for patients.

Striking a Balance

At the same time we report on these horrific surgical errors, it is important to acknowledge that hospitals save millions of lives each year, despite their inherent inefficiency and incompetence.

The hospital I went to is in a mid-size town and provided far better service than what I have observed in big-city behemoths. I would go back to this same hospital if need be as I perceive they made fewer errors than other institutions may have.

In the Archives of Surgery study that uncovered so many hospital errors,\textsuperscript{7} practical approaches to preventing these kinds of mix-ups were proposed that could slash these risks, so there is hope that these types of catastrophes can be prevented in the future.

I Have Finally Started Exercising

I know many of you enjoy physical activity and even get a nice endorphin release in response to heavy workouts or aerobic exercise. I am one of those who fall into the opposite category. I absolutely detest regular exercise of any kind and get no pleasure from it whatsoever.

The frustrating experiences I underwent in the hospital setting succeeded in doing what reading thousands of positive studies about

Our Early Attempt to Establish a Life Extension Hospital

In the May 1998 issue of Life Extension Magazine\textsuperscript{8}, we proposed to radically improve the efficacy of medical treatment by establishing a hospital that would treat diseases based upon science rather than politics.

We noted that information is expanding at a faster pace than mainstream medicine can keep up with, and there is a need to apply scientific findings faster in the practice of medicine. We discussed the resistance most doctors have about accepting new ideas and how this intransigence slows the pace at which innovative treatments are used to benefit patients. We also discussed the role of pharmaceutical companies and regulatory agencies such as the Food and Drug Administration in blocking the availability of innovative medical therapies.

The solution we proposed was the creation of a Life Extension Medical Center that would make the latest scientific breakthroughs available directly to patients, without the interference of the government, private industry, and overly conservative physicians. In keeping with the Life Extension Foundation’s long-standing policy, a Life Extension Medical Center would offer treatments based only upon solid research published in established peer-reviewed medical journals.

The initial capital for establishing (and defending) such an innovative medical center was estimated to be $5 million. We asked Life Extension Foundation\textsuperscript{8} members if they would consider investing or contributing to such a Life Extension Medical Center, upon presentation of an acceptable business plan. We had firm pledges of over $2.3 million plus a commitment to raise another $4.5 million from private investors.

After further evaluation of this ambitious proposal, we felt that the power of state licensing boards to revoke physicians’ licenses would result in us not being able to retain the competent staff we needed. We knew if we were successful that conventional hospitals losing patients to us would seek to use licensing boards to take away professional licenses, thus crippling our ability to deliver the high-caliber treatments that were the basis for initiating this monumental project.

We notified members who had made financial pledges that it was not feasible to initiate a Life Extension hospital facility at that time.
the benefits of physical activity failed to do. All I have to do when I don’t want to exercise is recall the gross incompetence and inefficiencies exhibited during my brief hospital visit.

One fear is that if I had something seriously wrong that required a coronary bypass or stent procedure, I would be at the mercy of a hospital staff that did not even have the common sense to initially find the right doctor.

The thought of my existence being contingent on the medical establishment was frightening enough to adjust my social schedule to make room for 30 minutes of aerobic bicycling (sitting at an angle to minimize damage to my hips and prostate) several times a week and lots more regular activity.

As you can see by my latest blood test result reprinted on page 18 of this issue, I have achieved optimized status on most of my cardiac risk factors.

After my scare in the hospital, I am determined to move every cardiac marker into optimal ranges. This is challenging because of certain genetic factors that predispose me to having higher than desirable levels of glucose and homocysteine.

This means I have to take extra time and make some social sacrifices to accomplish this. For me, however, the priority is following through with correcting every vascular risk factor.

As we see it

All My Blood Markers Now Have To Be Optimal

I have my blood tested throughout the year. As I have written in the past, this has already saved my life several times by identifying serious problems early when they were reversible (such as kidney damage inflicted by overuse of the drug ibuprofen).

Critical Importance of Annual Blood Testing

No one has been a stronger proponent of regular blood testing than the Life Extension Foundation®.

In the early 1980s, we recommended that all members have their blood tested for a wide range of cardiovascular risk markers. The problem back then was that conventional doctors did not always order the needed tests, the costs were prohibitively high, and people had to schedule another appointment with the doctor's office for the blood draw.
In 1996, we rectified these failings by offering comprehensive blood testing to Life Extension members nationwide that was affordable and convenient.

While some conventional physicians today recommend blood tests to check glucose, cholesterol, and triglycerides, they rarely check their patients’ levels of C-reactive protein, homocysteine, DHEA, and other cardiac markers.

As a member of the Life Extension Foundation, you don’t have to be victimized by medical ignorance, high prices, or insurance company indifference.

**Take Control Over Your Future Health**

When looking at the number of diseases that can be detected early through the proper utilization of blood testing, it becomes strikingly apparent that a significant number of heart attacks, strokes, bone fractures, end-stage kidney/liver failure and other degenerative diseases are preventable.

During my recent hospital ordeal, I would have hated to think that I neglected to have annual blood tests done, and as a result, my heart might be slowly dying from oxygen starvation because I failed to take preventive measures.

At least I knew that I did almost everything I should have to prevent it. In other words, if I needed bypass surgery, I had the peace of mind of knowing it was probably not through the fault of my own negligence.

**Low-Cost Convenient Blood Testing**

Commercial labs charge high prices for comprehensive blood testing. This precludes most people from having critical tests done that can identify correctable cardiac risks before angina or full-blown heart attack emerges.

Life Extension long ago broke down high cost barriers by offering comprehensive Male and Female Blood Test Panels at the lowest prices anywhere. Once a year, we discount these popular panels down to only $199—about 80% less than what commercial labs charge.

Instead of having to make a doctor’s appointment, we send you a prepared requisition form and list of drawing stations in your area where you can go at your convenience.

The Blood Test Super Sale lasts only two months, so please order your requisition kit soon to take advantage of these extra-discounted prices. You can have your blood drawn anytime after receiving your requisition kit. The results of your blood tests are mailed directly to you. If you have any questions when your results come back, you are welcome to call our Health Advisor helpline.

The description on the next page details what’s included in the Male and Female Blood Test Panels and how easy it is to order them.

This year we have added a new test called sex hormone-binding globulin (SHBG) at no extra charge to the Male and Female Panels. By measuring SHBG levels in the blood, we are better able to ascertain how much testosterone and other hormones are biologically available to tissues in the body.

**Annual blood testing** is the single most effective method of detecting abnormalities that can be corrected before they lead to serious illness or death. A call to 1-800-208-3444 is all you have to do to order these comprehensive tests at extra-discounted prices.

For longer life,

William Faloon

**References:**

Unlike commercial blood tests that evaluate only a narrow range of risk factors, Life Extension’s Male and Female Blood Test Panels measure a wide range of blood markers that predispose people to common age-related diseases. Just look at the huge numbers of parameters included in the Male and Female Blood Test Panels:

**MALE PANEL**

**LIPID PROFILE**
- Total Cholesterol
- LDL (low-density lipoprotein) calculated
- HDL (high-density lipoprotein)
- Triglycerides

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

**HORMONES**
- DHEA-S
- Free Testosterone
- Total Testosterone
- Estradiol (an estrogen)
- TSH (thyroid function)
- Sex Hormone-Binding Globulin (SHBG)

**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

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

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

**HORMONES**
- Progesterone
- DHEA-S
- Free and Total Testosterone
- Estradiol (an estrogen)
- TSH (thyroid function)
- Sex Hormone-Binding Globulin (SHBG)

**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

**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

Non-member retail price: $400 • Everyday member price: $269

Blood Test Super Sale member price: $199 • Enjoy these savings until June 6, 2011

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

Then—at your convenience—you can visit one of the blood-drawing facilities provided by LabCorp in your area. (Restrictions apply in NY, NJ, RI, MA)

If you plan to use the result of these blood tests to assist in a medically supervised weight loss program, consider ordering the Male or Female Weight Loss Panel for the blood test super sale member price of $224.25 through June 6, 2011. These panels were designed to offer additional hormones for those desiring assistance with weight loss.
As we age, it becomes increasingly difficult to achieve optimal blood test readings.

For example, aging can cause glucose-insulin levels to spike, along with C-reactive protein (CRP), homocysteine, and lipids (LDL, triglycerides, and total cholesterol).

To protect against deadly atherosclerosis, aggressive individualized interventions are often required.

I am genetically predisposed to develop atherosclerosis at a relatively early age. When I was 35 years old, my LDL was 160 (mg/dL). I took steps at age 35 to reduce it. As you can see on the next page, I got my LDL down to 62 on my last blood draw. I plan to keep it in this low range for the next few years with the objective of reversing atherosclerotic plaque that might have built up in my younger years. I am 56 years old now, by the way.

Despite taking many homocysteine-lowering agents, my homocysteine reading on the last test was 10 (μmol/L). Ideally it should be below 8, but I have never gotten mine below 9. When conventional doctors tell me not to worry about homocysteine, I quickly respond by stating that if I did not aggressively try to lower my homocysteine it would be over 22 right now. I know this based on my father’s high homocysteine levels. (He suffered his first heart attack at age 52.)

I have been keeping my glucose under 90 (mg/dL) recently, but this particular test showed it at 92—a higher than desired level. We know that for optimal protection against vascular disease, glucose should be kept between 70-85. Considering that I take 850 mg of the anti-diabetic drug metformin 2 to 3 times a day, 50 mg of the drug acarbose before carbohydrate-containing meals, and the Calorie Control Weight Management Formula before the two heaviest meals of the day, you would think that I could push glucose down to perfect ranges. A lot of people who follow this program do achieve these low glucose levels, but my body does not respond the same way. I remind conventional critics that if I was not taking these aggressive steps to keep glucose levels in check, I might be diabetic by now.

My HDL of 52 mg/dL is not as high as it usually is, but considering how low my total cholesterol and LDL are, it is satisfactory for now.

One genetic factor favoring me is a virtually nonexistent level of C-reactive protein. It has always been low and seems to be going down as I age (instead of the reverse that happens to most people.).

My estradiol level dropped too low on a previous test, so I stopped taking Arimidex®. As you can see, my estradiol shot up to 43.8 (pg/mL), which I will suppress by taking about 1 mg of Arimidex® each week. DHEA is too high and reflects the 25 mg capsule I took right before my blood was drawn. (Ideally, one should take any hormones approximately 2 hours before the blood test. My DHEA likely did not have time to be converted into its other metabolites and was thus too high.)

My creatinine level moved just over 1.00 mg/dL, which indicates some kidney dysfunction in response to taking a few doses of ibuprofen a few days before my blood was drawn. My creatinine has historically dropped upon cessation of ibuprofen. There should be a warning about kidney toxicity on ibuprofen bottles, but the FDA does not require it.

My PSA of 0.6 ng/mL is desirably low for my age and reflects aggressive measures I have taken for almost a decade to suppress it. (It had been higher in the past.) We know from previous studies that PSA itself can facilitate prostate cancer by breaking down anatomical barriers in the prostate gland that block isolated prostate cancer cells from expanding.

You may notice my iron level is high on the basic test, but I was able to have the lab use the retained blood sample to test for ferritin, which is a much more reliable indicator of one’s body iron stores. Due to the uniqueness in my biochemistry it appears I have higher blood iron, but lower body stores of iron.

My free testosterone level is in the ideal range of 20-25 pg/mL because I use a topical testosterone gel several days a week. At age 43 it was below 8 pg/mL, and I suffered the outward symptoms...
of testosterone deficiency (such as low energy, abdominal weight gain, and brain fog). I have been on testosterone replacement for the past 12 years and enjoy no longer having symptoms of testosterone deficiency!

My 25-hydroxyvitamin D of 55.8 ng/mL is in the optimal range of 50-80 ng/mL that we suggest at Life Extension. It reflects the 7,000 IU of vitamin D I take each day.

Based on my 30-year medical history of blood testing, I would be very ill or dead now if I had not taken aggressive steps to reverse my individual markers of impending diseases. Blood testing in the past has uncovered elevated PSA and serum calcium; high LDL, triglycerides, glucose, and cholesterol; kidney damage; high homocysteine and estradiol; along with low free testosterone. I took corrective actions, and as you can see by the results on the next page, I have achieved optimal levels of virtually every marker of degenerative disease.

For longer life,

William Faloon

*Why Some Doctors Are Confused About Hormones*

It should be noted that the hormone reference ranges provided by most labs are age-adjusted ranges, meaning that as we get older, the labs keep lowering the reference range. That is why people who take hormones to restore their levels to what they were when they were young may get back blood results marked high. This can be disconcerting for doctors who are not familiar with the idea of restoring youthful hormone levels. They often end up telling patients to stop taking the hormones without understanding the concept that higher values on blood tests are possible when restoring youthful hormone levels. If you are working with a doctor knowledgeable in hormone restoration, he/she will likely expect to see some higher values above the lab’s age-adjusted reference ranges, depending on the age of the person and the treatment given.
### Chemistry

<table>
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<th>Reference Interval</th>
<th>Lab</th>
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### Serology

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<td>4.9</td>
<td>mg/dL</td>
<td>2.4-8.2</td>
<td>01</td>
</tr>
</tbody>
</table>

**Please note reference interval change**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Units</th>
<th>Reference Interval</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUN</td>
<td>20</td>
<td>mg/dL</td>
<td>6-24</td>
<td>01</td>
</tr>
<tr>
<td>eGFR</td>
<td>&gt;59</td>
<td>mL/min/1.73</td>
<td>&gt;59</td>
<td>01</td>
</tr>
<tr>
<td>eGFR African American</td>
<td>&gt;59</td>
<td>mL/min/1.73</td>
<td>&gt;59</td>
<td>01</td>
</tr>
</tbody>
</table>

### Note:

 persistent reduction for 3 months or more in an eGFR

**<60 mL/min/1.73 m2 defines CKD. Patients with eGFR values >/>=60 mL/min/1.73 m2 may also have CKD if evidence of persistent proteinuria is present. Additional information may be found at www.kdoqi.org.

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Units</th>
<th>Reference Interval</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUN/Creatinine Ratio</td>
<td>20</td>
<td></td>
<td>9-20</td>
<td></td>
</tr>
<tr>
<td>Sodium, Serum</td>
<td>139</td>
<td>mmol/L</td>
<td>135-145</td>
<td>01</td>
</tr>
<tr>
<td>Potassium, Serum</td>
<td>4.2</td>
<td>mmol/L</td>
<td>3.5-5.2</td>
<td>01</td>
</tr>
<tr>
<td>Chloride, Serum</td>
<td>103</td>
<td>mmol/L</td>
<td>97-108</td>
<td>01</td>
</tr>
<tr>
<td>Carbon Dioxide, Total</td>
<td>26</td>
<td>mmol/L</td>
<td>20-32</td>
<td>01</td>
</tr>
<tr>
<td>Calcium, Serum</td>
<td>9.4</td>
<td>mg/dL</td>
<td>8.7-10.2</td>
<td>01</td>
</tr>
<tr>
<td>Phosphorus, Serum</td>
<td>3.1</td>
<td>mg/dL</td>
<td>2.5-4.5</td>
<td>01</td>
</tr>
<tr>
<td>Protein, Total, Serum</td>
<td>7.2</td>
<td>g/dL</td>
<td>6.0-8.5</td>
<td>01</td>
</tr>
<tr>
<td>Albumin, Serum</td>
<td>4.6</td>
<td>g/dL</td>
<td>3.5-5.5</td>
<td>01</td>
</tr>
<tr>
<td>Globulin, Total</td>
<td>2.6</td>
<td>g/dL</td>
<td>1.5-4.5</td>
<td>01</td>
</tr>
<tr>
<td>A/G Ratio</td>
<td>1.8</td>
<td></td>
<td>1.1-2.5</td>
<td></td>
</tr>
<tr>
<td>Bilirubin, Total</td>
<td>0.6</td>
<td>mg/dL</td>
<td>0.0-1.2</td>
<td>01</td>
</tr>
<tr>
<td>Alkaline Phosphatase, S</td>
<td>44</td>
<td>IU/L</td>
<td>25-150</td>
<td>01</td>
</tr>
<tr>
<td>LDH</td>
<td>127</td>
<td>IU/L</td>
<td>100-250</td>
<td>01</td>
</tr>
<tr>
<td>AST (SGOT)</td>
<td>29</td>
<td>IU/L</td>
<td>0-40</td>
<td>01</td>
</tr>
<tr>
<td>ALT (SGPT)</td>
<td>28</td>
<td>IU/L</td>
<td>0-55</td>
<td>01</td>
</tr>
<tr>
<td>Iron, Serum</td>
<td>225</td>
<td>H ug/dL</td>
<td>40-155</td>
<td>01</td>
</tr>
</tbody>
</table>

### Lipids

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Units</th>
<th>Reference Interval</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol, Total</td>
<td>128</td>
<td>mg/dL</td>
<td>100-199</td>
<td>01</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>69</td>
<td>mg/dL</td>
<td>0-149</td>
<td>01</td>
</tr>
<tr>
<td>HDL Cholesterol</td>
<td>52</td>
<td>mg/dL</td>
<td>&gt;39</td>
<td>01</td>
</tr>
<tr>
<td>Comment</td>
<td></td>
<td></td>
<td></td>
<td>01</td>
</tr>
</tbody>
</table>

According to ATP-III Guidelines, HDL-C >59 mg/dL is considered a negative risk factor for CHD.

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Units</th>
<th>Reference Interval</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLDL Cholesterol Cal</td>
<td>14</td>
<td>mg/dL</td>
<td>5-40</td>
<td></td>
</tr>
<tr>
<td>LDL Cholesterol Calc</td>
<td>62</td>
<td>mg/dL</td>
<td>0-99</td>
<td></td>
</tr>
<tr>
<td>T. Chol/HDL Ratio</td>
<td>2.5</td>
<td>ratio units</td>
<td>0.0-5.0</td>
<td></td>
</tr>
<tr>
<td>Estimated CHD Risk</td>
<td>&lt; 0.5</td>
<td>times avg.</td>
<td>0.0-1.0</td>
<td></td>
</tr>
</tbody>
</table>

### T. Chol/HDL Ratio

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Units</th>
<th>Reference Interval</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>T. Chol/HDL Ratio</td>
<td></td>
<td>Men</td>
<td>Women</td>
<td></td>
</tr>
<tr>
<td>1/2 Avg.Risk</td>
<td>3.4</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg.Risk</td>
<td>5.0</td>
<td>4.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2X Avg.Risk</td>
<td>9.6</td>
<td>7.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3X Avg.Risk</td>
<td>23.4</td>
<td>11.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The CHD Risk is based on the T. Chol/HDL ratio. Other factors affect CHD Risk such as hypertension, smoking, diabetes, severe obesity, and family history of premature CHD.
<table>
<thead>
<tr>
<th>Tests</th>
<th>Results</th>
<th>Units</th>
<th>Reference Interval</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBC, Platelet Ct, and Diff</td>
<td></td>
<td></td>
<td></td>
<td>01</td>
</tr>
<tr>
<td>WBC</td>
<td>4.1</td>
<td>x10E3/uL</td>
<td>4.0–10.5</td>
<td>01</td>
</tr>
<tr>
<td>RBC</td>
<td>4.63</td>
<td>x10E6/uL</td>
<td>4.10–5.60</td>
<td>01</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>14.4</td>
<td>g/dL</td>
<td>12.5–17.0</td>
<td>01</td>
</tr>
<tr>
<td>Hematocrit</td>
<td>43.0</td>
<td>%</td>
<td>36.0–50.0</td>
<td>01</td>
</tr>
<tr>
<td>MCV</td>
<td>93</td>
<td>fL</td>
<td>80–98</td>
<td>01</td>
</tr>
<tr>
<td>MCH</td>
<td>31.1</td>
<td>pg</td>
<td>27.0–34.0</td>
<td>01</td>
</tr>
<tr>
<td>MCHC</td>
<td>33.5</td>
<td>g/dL</td>
<td>32.0–36.0</td>
<td>01</td>
</tr>
<tr>
<td>RDW</td>
<td>13.3</td>
<td>%</td>
<td>11.7–15.0</td>
<td>01</td>
</tr>
<tr>
<td>Platelets</td>
<td>166</td>
<td>x10E3/uL</td>
<td>140–415</td>
<td>01</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>54</td>
<td>%</td>
<td>40–74</td>
<td>01</td>
</tr>
<tr>
<td>Lymphs</td>
<td>23</td>
<td>%</td>
<td>14–46</td>
<td>01</td>
</tr>
<tr>
<td>Monocytes</td>
<td>19</td>
<td>%</td>
<td>4–13</td>
<td>01</td>
</tr>
<tr>
<td>Basos</td>
<td>2</td>
<td>%</td>
<td>0–3</td>
<td>01</td>
</tr>
<tr>
<td>Neutrophils (Absolute)</td>
<td>2.3</td>
<td>x10E3/uL</td>
<td>1.8–7.8</td>
<td>01</td>
</tr>
<tr>
<td>Lymphs (Absolute)</td>
<td>0.9</td>
<td>x10E3/uL</td>
<td>0.7–4.5</td>
<td>01</td>
</tr>
<tr>
<td>Monocytes(Absolute)</td>
<td>0.8</td>
<td>x10E3/uL</td>
<td>0.1–1.0</td>
<td>01</td>
</tr>
<tr>
<td>Eos (Absolute)</td>
<td>0.1</td>
<td>x10E3/uL</td>
<td>0.0–0.4</td>
<td>01</td>
</tr>
<tr>
<td>Baso (Absolute)</td>
<td>0.1</td>
<td>x10E3/uL</td>
<td>0.0–0.2</td>
<td>01</td>
</tr>
<tr>
<td>Immature Granulocytes</td>
<td>0</td>
<td>%</td>
<td>0–1</td>
<td>01</td>
</tr>
<tr>
<td>Immature Grans (Abs)</td>
<td>0.0</td>
<td>x10E3/uL</td>
<td>0.0–0.1</td>
<td>01</td>
</tr>
</tbody>
</table>

**PSA Total+% Free (Serial)**
- Prostate Specific Ag, Serum: 0.6 ng/mL, 0.0–4.0, 01
- Roche ECLIA methodology.

**Testosterone, Free and Total**
- Testosterone, Serum: 561 ng/dL, 193–740, 01
- Free Testosterone (Direct): 20.0 pg/mL, 7.2–24.0, 02

**Estradiol**
- Estradiol: 43.8 H pg/mL, 7.6–42.6, 01
- Roche ECLIA methodology

**Dehydroepiandrosterone Sulfate**
- DHEA–Sulfate: 698.9 H ug/dL, 51.7–295.0, 01

**Vitamin D, 25–Hydroxy**
- Vitamin D, 25–Hydroxy: 55.8 ng/mL, 32.0–100.0, 01

Recent studies consider the lower limit of 32.0 ng/mL to be a threshold for optimal health.


**C-Reactive Protein, Cardiac**
- C-Reactive Protein, Cardiac: 0.22 mg/L, 0.00–3.00, 01

**Relative Risk for Future Cardiovascular Event**
- Low: <1.00
- Average: 1.00 – 3.00
- High: >3.00

**Homocyst(e)ine, Plasma**
- Homocyst(e)ine, Plasma: 10.0 umol/L, 0.0–15.0, 01

**Insulin**
- Insulin: 6.2 uIU/mL, 0.0–24.9, 01

**Sex Horm Binding Glob, Serum**
- Sex Horm Binding Glob, Serum: 35.8 nmol/L, 14.5–48.4, 01

**Ferritin, Serum**
- Ferritin, Serum: 26 L ng/mL, 30–400, 01

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- Sex Horm Binding Glob, Serum: 35.8 nmol/L, 14.5–48.4, 01

**Ferritin, Serum**
- Ferritin, Serum: 26 L ng/mL, 30–400, 01
Three Proven Ways to Restore Relaxation and Restful Sleep

To combat the profound impact of chronic sleep debt on health and youthful appearance, Life Extension® now offers Enhanced Natural Sleep® with Dual-Action Melatonin. This new formula brings together three clinically validated, natural compounds that have been shown to support healthy, restful sleep, promote healthy response to stress, while targeting sleep debt-related factors associated with skin aging. The three ingredients are:

1. Bioactive Milk Peptides (Lactium®), a cutting-edge nutrient complex consisting of patented bioactive peptides found naturally in milk. Used widely in Europe to promote sustained and restful sleep patterns, published studies reveal that these bioactive milk peptides also promote relaxation, help with stress, and support daytime cognition.

A group of 60 women reporting a variety of sleep-related difficulties experienced as much as 65.6% improvement in their symptoms with 150 mg per day of these bioactive milk peptides. In another study, the same 150 mg dose induced substantial improvements across 27 markers of sleep quality and stress response in 165 healthy adults. And in a third study, a group of healthy men and women taking 150 mg per day of these bioactive milk peptides for one month experienced a 50% improvement in sleep quality after two weeks and needed 30% less time to fall asleep after 4 weeks.

The consequences of sleep deprivation go far beyond the miseries of fatigue and diminished performance. Decades of clinical research document that a good night’s rest supports nearly all systems of the body, including:

- Skin health and youthful appearance
- Healthy collagen formation
- Insulin levels already within normal range
- Healthy body weight
- Glucose levels already within normal range
- Blood pressure already within normal range
- Healthy cell division
- Cardiovascular health
- Good mood

Scientists attribute sleep-related difficulties to the unprecedented levels of stress most of us endure in today’s fast-paced world. To add insult to injury, sleep quality and duration decline as we grow older—at a time when we need the health benefits of a good night’s rest more than ever.
2. Melatonin (very low dose). Melatonin levels naturally decline with age and adversely affect sleep patterns in many people. Both immediate and time-release melatonin has been shown to support restful sleep. So much so that time-release melatonin has been licensed since June 2007 in Europe and other countries for the short-term treatment of sleep disorders.31

3. Sendara™. A proprietary nutrient complex consisting of ashwagandha and Indian gooseberry extracts. Prized in traditional cultures for their ability to promote healthy skin function and appearance, these plant-based compounds have since gained substantial clinical validation. Indian gooseberry provides broad-spectrum antioxidant support and has been used to preserve youthful skin health and appearance in many skin care products.32,33 Ashwagandha promotes a healthy response to stress, yielding 62% reductions in anxiety compared to placebo with just 125 mg per day in one clinical study.36

Customized Formulas for Optimal Sleep and Stress Support

Enhanced Natural Sleep® with Dual-Action Melatonin should be taken 30-60 minutes before bedtime to help with sleep. The suggested daily serving size of just one capsule supplies:

<table>
<thead>
<tr>
<th>Product</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioactive milk peptides (Lactium™)</td>
<td>150 mg</td>
<td></td>
</tr>
<tr>
<td>Melatonin (immediate release)</td>
<td>750 mcg</td>
<td></td>
</tr>
<tr>
<td>Melatonin (time-release)</td>
<td>750 mcg</td>
<td></td>
</tr>
<tr>
<td>Sendara™</td>
<td>200 mg</td>
<td></td>
</tr>
</tbody>
</table>

A bottle containing 30 capsules of Enhanced Natural Sleep® with Dual-Action Melatonin retails for $22. If a member buys four bottles, the price is reduced to just $15 per bottle.

To help you deal with the stress of everyday life, you may also choose Bioactive Milk Peptides in standalone form, for daytime use to help with stress or before bedtime to support relaxation. Each capsule contains 150 mg of the same patented formula Europeans have used for years to help with sleep and stress-related issues.

A bottle containing 30 capsules of Bioactive Milk Peptides retails for $18. If a member buys four bottles, the price is only $12 per bottle.

References

28. To help you deal with the stress of everyday life, you may also choose Bioactive Milk Peptides in standalone form, for daytime use to help with stress or before bedtime to support relaxation. Each capsule contains 150 mg of the same patented formula Europeans have used for years to help with sleep and stress-related issues.
29. To order any of these ADVANCED SLEEP AND STRESS RELIEF FORMULAS, call 1-800-544-4440 or visit www.LifeExtension.com

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.
Overlooked in the effort to support sexual function in aging men is the health of the vascular system. Blood flow through the delicate lining of the arteries (the endothelium) is essential to sexual arousal, so it should come as no surprise that endothelial function is closely associated with male sexual capacity.

Life Extension® has discovered supportive clinical research for a scientifically validated, natural dietary supplement formula to promote endothelial function and blood flow to the place men need it most—for maximum performance.

The ingredients found in Prelox® Natural Sex for Men® have yielded compelling and highly satisfactory results in five independent clinical studies.1,2,4,5,6

Our analysis also confirms that unlike some performance enhancement supplements marketed as “natural,” Prelox® Natural Sex for Men® is not adulterated with trace amounts of prescription drugs.

A Powerful Synergy to Support Sexual Health

The patented blend of the following natural ingredients positively affects the male physiology in three ways, to provide optimal support:

1. **Pycnogenol®** (standardized French maritime pine bark extract) activates endothelial nitric oxide synthase (eNO-S),7 the enzyme required to make nitric oxide. Nitric oxide (NO) relaxes the vessels that enable efficient blood flow—the key to healthy male sexual activity and overall vascular health. Pycnogenol® further amplifies this relaxing effect by extending the amount of time nitric oxide remains in the bloodstream.

2. **L-Arginine** is the biological precursor to nitric oxide synthesis in the endothelium.7 It interacts synergistically with Pycnogenol® to sustain nitric oxide levels sufficient for healthy sexual function.

3. **Icarin**—a natural plant extract used in traditional Chinese medicine—has been shown to deactivate the enzyme normally responsible for winding down male sexual response, further promoting sustained activity.8 Prelox® Natural Sex for Men® contains a standardized extract providing a proprietary form of pure, high-quality icaritin.

The suggested dose of two Prelox® Natural Sex for Men® tablets each day provides:

- **Prelox® Proprietary Blend** 1440 mg
  - L-Arginine HCl, Aspartic Acid, Pycnogenol® Dried French Maritime Pine (Pinus pinaster) Extract (bark)
  - **Natural Sex®** Epimedium sagittatum Extract (aerial parts) providing 30 mg icaritin 60 mg

A 60-tablet bottle of Life Extension® Prelox® Natural Sex for Men® retails for $50. If a member buys four bottles, the price is reduced to just $33.75 per bottle.

Contains corn.

*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.*
Heart Disease Costs Expected to Triple by 2030

A statement by the American Heart Association claims that the costs of treating heart disease are expected to increase three-fold in the next twenty years, sparking an “enormous financial burden” for millions of Americans.*

“The burden of heart disease and stroke on the US health care system will be substantial and will limit our ability to care for the US population unless we can take steps now to prevent cardiovascular disease,” said Dr. Paul Heidenreich, an associate professor of medicine at Stanford Medical School and chair of the American Heart Association panel issuing the policy statement.

In addition, American Heart Association CEO Nancy Brown said in a news release that “unhealthy behaviors and unhealthy environments have contributed to a tidal wave of risk factors among many Americans. Early intervention and evidence-based public policies are absolute musts to significantly reduce alarming rates of obesity, hypertension, tobacco use and cholesterol levels.”

Fortunately, there are a number of low-cost, high-value cardiovascular protective therapies that are available to potentially ward off this oncoming epidemic. Many of these are familiar to Life Extension readers, including keeping blood pressure and cholesterol under control, not smoking, and maintaining a healthy lifestyle, which means eating a healthy diet, getting exercise and keeping your weight down. These strategies have been proven to substantially reduce the risk of heart disease.

—J. Finkel

*Basis for Broccoli’s Cancer-Fighting Ability Revealed

A recent report in the American Cancer Society’s Journal of Medicinal Chemistry brings to light the discovery of a potential biochemical basis for broccoli’s perceived ability to fight cancer.* For the first time, scientists uncovered that certain substances in the vegetable target and block one of the defective genes associated with cancer.

Substances called isothiocyanates (ITCs), found in broccoli, cauliflower, watercress, and other cruciferous vegetables, appear to stop the growth of cancer. For many years, scientists weren’t sure how this substance worked, but Fung-Lung Chung and colleagues showed in experiments that the tumor suppressor gene p53 appears to play a key role in keeping cells healthy and preventing them from mutating into cancer cells.

The study involved observing the effects of certain naturally occurring ITCs on several cancer cells, including colon cancer, breast cancer, and lung cancer. The scientists believe that drugs based on natural or custom-engineered ITCs could improve the effectiveness of existing cancer treatments or lead to new strategies for fighting and preventing the insidious disease.

Editor’s Note: To get these anti-cancer compounds in broccoli, it should be lightly steamed. Raw broccoli can bind these compounds and heavily cooked broccoli destroys most of them.

—J. Finkel


IN THE NEWS

**More Fiber Intake Associated with Lower Risk of Death Over Nine-Year Period**

An article published in the *Archives of Internal Medicine* reveals the outcome of a study that found a lower risk of dying over a nine year average follow-up period among men and women who consumed a high fiber diet.*

Yikyung Park, ScD, and associates evaluated data from 219,123 men and 168,999 women enrolled in the National Institutes of Health-AARP Diet and Health Study. Over a nine-year average, there were 20,126 deaths among the men and 11,330 among the women participating in the study. Subjects whose intake of fiber was among the top 20% of participants at 29.4 grams per day for men and 25.8 grams for women had a 22% lower risk of dying than those who consumed the least amount.

The authors concluded that “A diet rich in dietary fiber from whole plant foods may provide significant health benefits.”

**Editor’s note:** When fiber intake was analyzed according to its source, fiber from grain was associated with a reduction of death from all causes as well as cancer, cardiovascular disease, and respiratory disease.

—D. Dye

* *Arch Intern Med.* 2011 Feb 14.

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**Review Concludes Effectiveness of Zinc Against Common Cold**

The results of a meta-analysis published in the *Cochrane Database of Systematic Reviews* reveal that supplementing with zinc reduces the severity of common cold symptoms as well as the length of colds.*

Dr. Meenu Singh and colleagues reviewed 13 trials that evaluated five or more days of zinc supplementation as a treatment for cold in a total of 966 participants, and two trials that tested zinc supplements as a cold preventive among 394 participants. They concluded that zinc preparations including syrup or lozenges initiated within one day of symptom onset decreased the severity and length of the common cold. As a preventive, five months of treatment with zinc syrup or lozenges in children resulted in 36% fewer colds and less time lost from school compared to those who did not use zinc. The study included several kinds of zinc, including zinc gluconate or zinc acetate lozenges and zinc sulfate syrup.

**Editor’s note:** Dr. Singh remarked that, “It would be interesting to find out whether zinc supplementation could help asthmatics, whose asthma symptoms tend to get worse when they catch a cold.”

For zinc to be effective when cold symptoms manifest, it should be in a form (lozenges or syrup) that has direct contact with the throat. While zinc in capsule or tablet form can help boost immune function, it seems to kill viruses in the back of the throat by direct contact.

—D. Dye

* *Cochrane Database Syst Rev.* 2011 Feb 16;2:CD001364.

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**Consuming More Flavonoid-Rich Foods Could Offer Protection Against Parkinson’s**

The results of a study reported at the American Academy of Neurology’s 63rd Annual Meeting suggest that eating more foods that contain high amounts of flavonoids could help protect against the development of Parkinson’s disease.*

Xiang Gao, MD, PhD, and colleagues evaluated data from 49,281 men enrolled in the Health Professional Follow-up Study and 80,336 women who participated in the Nurses’ Health Study.

Men whose intake of flavonoids was among the top 20% of participants had a 40% lower risk of developing Parkinson’s disease compared to men whose intake was among the lowest 20%. While no significant association with total flavonoid intake was observed for women, a lower risk of developing Parkinson’s disease was observed in association with greater intake of anthocyanins and anthocyanin-rich foods among both women and men.

“Our findings suggest that flavonoids, specifically a group called anthocyanins, may have neuroprotective effects,” Dr. Gao concluded.

**Editor’s note:** Flavonoids are a class of compounds that include flavanones, anthocyanins, flavan-3-ols, flavonols, flavones, and polymers, and are abundant in berries, tea, and other plant foods.

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**Review Concludes Effectiveness of Zinc Against Common Cold**

The results of a meta-analysis published in the *Cochrane Database of Systematic Reviews* reveal that supplementing with zinc reduces the severity of common cold symptoms as well as the length of colds.*

Dr. Meenu Singh and colleagues reviewed 13 trials that evaluated five or more days of zinc supplementation as a treatment for cold in a total of 966 participants, and two trials that tested zinc supplements as a cold preventive among 394 participants. They concluded that zinc preparations including syrup or lozenges initiated within one day of symptom onset decreased the severity and length of the common cold. As a preventive, five months of treatment with zinc syrup or lozenges in children resulted in 36% fewer colds and less time lost from school compared to those who did not use zinc. The study included several kinds of zinc, including zinc gluconate or zinc acetate lozenges and zinc sulfate syrup.

**Editor’s note:** Dr. Singh remarked that, “It would be interesting to find out whether zinc supplementation could help asthmatics, whose asthma symptoms tend to get worse when they catch a cold.”

For zinc to be effective when cold symptoms manifest, it should be in a form (lozenges or syrup) that has direct contact with the throat. While zinc in capsule or tablet form can help boost immune function, it seems to kill viruses in the back of the throat by direct contact.

—D. Dye

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**More Fiber Intake Associated with Lower Risk of Death Over Nine-Year Period**

An article published in the *Archives of Internal Medicine* reveals the outcome of a study that found a lower risk of dying over a nine year average follow-up period among men and women who consumed a high fiber diet.*

Yikyung Park, ScD, and associates evaluated data from 219,123 men and 168,999 women enrolled in the National Institutes of Health-AARP Diet and Health Study. Over a nine-year average, there were 20,126 deaths among the men and 11,330 among the women participating in the study. Subjects whose intake of fiber was among the top 20% of participants at 29.4 grams per day for men and 25.8 grams for women had a 22% lower risk of dying than those who consumed the least amount.

The authors concluded that “A diet rich in dietary fiber from whole plant foods may provide significant health benefits.”

**Editor’s note:** When fiber intake was analyzed according to its source, fiber from grain was associated with a reduction of death from all causes as well as cancer, cardiovascular disease, and respiratory disease.

—D. Dye

* *Arch Intern Med.* 2011 Feb 14.
More Americans Are Using Supplements

A report published in the Journal of Nutrition reveals widespread use of dietary supplements among Americans, particularly among older individuals.*

Researchers from the National Institutes of Health, Office of Dietary Supplements and the National Center for Health Statistics, Centers for Disease Control and Prevention utilized data obtained from 18,758 participants in the National Health and Nutrition Examination Survey (NHANES) 2003-2006. Infants under the age of one were excluded.

Forty-four percent of males and 53% of females reported using supplements, which is an increase from the percentages reported in earlier NHANES surveys beginning in 1971. For those aged 71 and older, supplement use was reported by 70%.

Multivitamin/mineral formulas were the most common form of supplementation. While 56% of those of normal weight were supplement users, this number declined to 48% among those who were obese, a finding that is consistent with that of other analyses.

Editor’s note: The authors conclude that, “Given the widespread use of supplements, data should be included with nutrient intakes from foods to correctly determine total nutrient exposure.” —D. Dye


Researchers Recommend Greater Intake of Vitamin D to Lower the Risk of Serious Diseases

Cedric Garland, DrPH, of the University of California, San Diego School of Medicine and his colleagues recently revealed that significantly higher amounts of vitamin D than what are currently recommended are needed to raise levels to those that help prevent breast cancer and other diseases. The findings appear in the journal Anticancer Research.*

Dr. Garland and his associates analyzed data from a survey of 3,667 men and women whose average age was 51. The researchers compared supplemental vitamin D intake reported at the beginning of the study with baseline serum vitamin D levels. “We found that daily intakes of vitamin D by adults in the range of 4,000-8,000 IU are needed to maintain blood levels of vitamin D metabolites in the range needed to reduce by about half the risk of several diseases—breast cancer, colon cancer, multiple sclerosis, and type 1 diabetes,” Dr. Garland stated.

Editor’s note: Dr. Garland remarked that 4,000 IU vitamin D per day, “is comfortably under the 10,000 IU/day that the IOM Committee Report considers as the lower limit of risk.” —D. Dye


Vitamin D Deficiency Impairs Lung Development

A report published in the American Journal of Respiratory and Critical Care Medicine describes an association between vitamin D deficiency in mice and reduced lung structure and function.*

Graeme Zosky, PhD, and colleagues compared lung responses of two-week-old mice born to mothers that were deficient or replete in vitamin D. They found a reduction in lung volume in the absence of a significant decrease in body length and weight, accompanied by functional deficits not entirely explained by the observed reduction in the volume of the lungs of animals in the vitamin deficient group.

“For the first time, we have demonstrated a direct role for vitamin D in causing decreased lung function in the absence of known confounders such as physical inactivity, confirming the assertion by epidemiological studies that there is a relationship between vitamin D deficiency and lung function,” Dr. Zosky announced.

Editor’s note: “The differences we observed in lung volume and lung mechanics, which were substantial and physiologically relevant, raise serious concerns regarding the increased prevalence of vitamin D deficiency in communities around the world,” Dr. Zosky commented.

—D. Dye

Free Radicals Implicated in Common Eye Disease

The American Journal of Pathology reported the outcome of research conducted by Ula V. Jurkunas, MD, and colleagues that implicates free radical damage in the development of Fuchs endothelial corneal dystrophy (FECD), a potentially blinding disease characterized by the programmed cell death of epithelial cells in the eye’s cornea.*

Dr. Jurkunas and her associates compared corneal epithelial tissue samples from FECD patients who received corneal transplants to samples derived from subjects who did not have the disease. They discovered a reduction in the level of antioxidants in the majority of FECD specimens and increased DNA damage.

“Our discovery is significant, because it gives us the first hope for slowing the progression of the disease,” stated Dr. Jurkunas. “If we can identify how free radicals are involved in this and what antioxidants can fight them, we can create a regimen that can help protect the cornea.”

Editor’s note: In addition to supplementing with a multivitamin, Dr. Jurkunas suggests that patients at risk for the disease consume more leafy green vegetables and wear ultraviolet protection.

—D. Dye


Higher Vitamin D Levels Equal Lower Risk of Multiple Sclerosis

The journal Neurology reports a protective effect for high vitamin D levels and sun exposure against the risk of developing multiple sclerosis (MS).*

Robyn Lucas, PhD, of Australian National University and colleagues compared 216 men and women who had experienced their first event to 395 individuals who had no symptoms of the disease. The subjects were matched for age, gender, and region of residence. Dr. Lucas’ team discovered that the risk of having a first demyelinating event, which was estimated to be between two to nine cases per 100,000 people per year, was reduced by 30% for every 1,000 kilojoule increase in ultraviolet light exposure. Additionally, those with the most sun damage to their skin were 60% less likely to have a first event compared to participants with the least damage. Having a high level of serum vitamin D also proved to be protective.

Editor’s note: Despite the study’s finding concerning the protective benefit of sun exposure, Dr. Lucas cautioned that sunbathing and tanning beds have risks that outweigh their benefits, and sun exposure has not been shown to help people who already have multiple sclerosis. “Further research should evaluate both sun exposure and vitamin D for the prevention of MS,” she said.

—D. Dye


Lifestyle Beats Genes in Longevity Race

An article published in the Journal of Internal Medicine reveals that our own actions may be more important in dictating how long we live than inherited factors.*

For the current investigation, Lars Wilhelmsen and colleagues at the University of Gothenburg evaluated data from the 1913 Men Epidemiological Study, which enrolled 855 fifty-year-old men in 1963. Subjects provided anthropomorphic, parental, and lifestyle data, and were examined for cardiovascular health and other functions.

Thirteen percent of the participants were still living at 90 years of age. These survivors were likelier at age 50 to be nonsmokers, drink moderate amounts of coffee, have higher socio-economic status and have lower serum cholesterol levels compared with men who failed to reach this age, yet the number of years attained by the men’s parents did not appear to influence their own longevity.

Editor’s note: “The study clearly shows that we can influence several of the factors that decide how old we get,” Dr. Wilhelmsen commented. “This is positive not only for the individual, but also for society as it doesn’t entail any major drug costs.”

—D. Dye

Turns out, the advice you got as a child to “eat your greens” could pay major dividends as an adult. Scientists have recently identified extracts from green vegetables like broccoli, cabbage, and Brussels sprouts that help maintain healthy hormone levels. Having optimal hormone levels is essential to any anti-aging strategy. In addition, many of these extracts contain glucosinolates, isothiocyanates, carnosic acid, and carnosol – bioactive compounds that have a wide variety of favorable effects on estrogen metabolism and cell division.1-4

**Triple Action Cruciferous Vegetable Extract with Apigenin** combines a broccoli Super Concentrate with watercress, indole-3-carbinol (I3C), rosemary extract, cat’s claw extract, cabbage extract, DIM, and apigenin, a powerful plant flavonoid found in plants such as parsley and celery, to form the most comprehensive cruciferous vegetable supplement available.5

For those who don’t have the time to consume each of the above vegetables each and every day, **Triple Action Cruciferous Vegetable Extract with Apigenin** is the perfect solution to making sure your body gets the important extracts it needs from these crucial food sources. For those weighing less than 160 pounds, just one vegetarian capsule a day provides optimal potencies. Those weighing over 160 pounds should consider taking two capsules a day. A 60-vegetarian capsule bottle of **Triple Action Cruciferous Vegetable Extract** retails for $24. If a member buys four bottles, the price is reduced to only $16.50 per bottle.

Those who want to obtain the benefits of resveratrol can order **Triple Action Cruciferous Vegetable Extract with Resveratrol**. Each capsule provides 20 mg of resveratrol in addition to the vegetable extracts and retails for $32 per 60-capsule bottle. When a member buys four bottles, the price is reduced to only $22.20 per bottle.

**REFERENCES:**

To order **Triple Action Cruciferous Vegetable Extract**, 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.
Vitamin D3 1,000 IU
250 capsules
Retail: $12.50
Four-bottle Member Price: $8.44 ea.
Commercial companies offered only 400 IU vitamin D products when Life Extension long ago introduced this 1,000 IU version. For most people, this 1,000 IU potency is insufficient to attain optimal vitamin D blood levels. For smaller individuals who obtain 2,000-3,000 IU in their multi-nutrient formulas (and children), this potency of vitamin D may be suitable.
Item # 00251
Please refer to website for allergen information.

Vitamin D3 5,000 IU
60 capsules
Retail: $11
Four-bottle Member Price: $7.43 ea.
For those obtaining 1,000-3,000 IU of vitamin D in their multi-nutrient formulas, this 5,000 IU potency is what most need to achieve optimal vitamin D blood levels.
Item # 00713
Please refer to website for allergen information.

Vitamin D3 7,000 IU
60 capsules
Retail: $14
Four-bottle Member Price: $9.45 ea.
Some individuals (such as those weighing more than 180 pounds) may require higher potencies of vitamin D. When combined with 1,000-3,000 IU obtained from multi-nutrient formulas, this 7,000 IU vitamin D3 capsule should enable these individuals to attain 25-hydroxyvitamin D blood levels above the desired range of 50 ng/mL.
Item # 01418
Please refer to website for allergen information.

Vitamin D3 Liquid Emulsion 2,000 IU
1 ounce
Retail: $28
Four-bottle Member Price: $18.75 ea.
For those rare individuals who have difficulty absorbing enough vitamin D3 from powdered capsules, this liquid emulsion of vitamin D can be used.
Item # 00864
Please refer to website for allergen information.

Study after study confirms the vital importance of maintaining optimal levels of vitamin D for broad-spectrum health benefits. Research often indicates that a blood level of 50 ng/mL of 25-hydroxyvitamin D is ideal.
Because people have individual requirements, Life Extension® has created the largest selection of vitamin D supplements available to ensure that you achieve your vitamin D3 goals.
Keep in mind that you may already be getting 1,000-3,000 IU of vitamin D in your multi-nutrient formula.

To order any of these high-potency vitamin D3 supplements, call 1-800-544-4440 or visit www.LifeExtension.com

CAUTION: Individuals consuming more than 2,000 IU/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxyvitamin D measurement. Do not exceed 10,000 IU per day unless recommended by your doctor. Vitamin D supplementation is not recommended for individuals with hypercalcemia (high blood calcium levels). People with kidney disease, certain medical conditions (such as hyperparathyroidism or sarcoidosis), and those who use cardiac glycosides (digoxin) or thiazide diuretics should consult a physician before using supplemental vitamin D.
* If you have a thyroid condition or are taking antithyroid medications, do not use without consulting your healthcare practitioner.
Assert **Control** over the Calories You Eat!

Would you spend hours at the beach *without* wearing sunglasses and sun protection lotion? The answer should be a resounding no!

Yet most aging individuals do little to protect their bodies against the *excess* calories they ingest each day.

Few of us realize the deadly impact that large meals inflict. For instance, chronic overeating results in our bloodstreams being bloated with *glucose*, *insulin*, and *triglycerides* long after a meal is finished. This occurs not only because we absorbed too many calories, but also from the age-associated impairment to our internal regulators of carbohydrate and fat metabolism. This helps explain why, with advancing age, we tend to accumulate unwanted body weight even as we try to cut down on food intake and exercise more.

The good news is that scientists have identified documented methods to *reduce* the toxic damage from excess calorie intake by taking the proper nutrients *before* heavy meals.

**Comprehensive Calorie Management**

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

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

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2. A white kidney bean extract called *Phaseolus vulgaris* that inhibits the *amylase* enzyme in the digestive tract. *Amylase* breaks down carbohydrates that are then absorbed into the bloodstream as *glucose*. *Phaseolus vulgaris* has produced weight loss and abdominal fat reductions, along with significant reductions of triglycerides, in placebo-controlled trials.

3. An African plant extract called *Irvingia gabonensis* that favorably regulates *leptin* to decrease appetite and facilitate triglyceride removal from adipocytes; inhibits *glycerol-3-phosphate dehydrogenase* to reduce fatty acid storage in adipocytes; and up-regulates *adiponectin* to facilitate insulin sensitivity. Irvingia has demonstrated favorable weight loss results in placebo-controlled trials.

4. A proprietary *green tea phytosome* that absorbs much better into the bloodstream to boost *resting metabolic rate*. In a controlled clinical study, this green tea phytosome induced *30.1 pounds* of weight loss on average in 90 days when combined with a reduced calorie diet.

**Life-Saving Importance of Taking Calorie Control Weight Management Formula Before Heavy Meals**

Once we accept the danger that each surplus calorie poses to our aging body, it becomes easy to understand the critical need to impede the absorption and effects of ingested foods by taking the *Calorie Control Weight Management Formula* before the two heaviest meals of the day.

The retail price for a one month (60-serving) supply of *Calorie Control Weight Management Formula* is $56. If a member buys four jars, the price is reduced to $36. If eight jars are purchased the member price is slashed to only $33 per jar.

Contains soybeans, tree nuts, and corn. *LuraLean®* is a registered trademark of AHD International LLC. This supplement should be taken in conjunction with a healthy diet and regular exercise. Results may vary.

CAUTION: Take at least two hours apart from medications. Because this product may lower blood glucose, consult with your healthcare provider before taking this product if you are taking blood glucose lowering medication. Consult your healthcare provider before taking this product if you have difficulty swallowing or have esophageal narrowing.

To order the Calorie Control Weight Management Formula today, call 1-800-544-4440 or visit www.LifeExtension.com/calorie-control

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.
DO YOU KNOW YOUR SEX HORMONE STATUS?
Life Extension® has long emphasized the importance of maintaining a balanced and robust sex hormone profile as a core anti-aging strategy.

Hundreds of published studies link improper testosterone and estrogen balance (in men and women) with the onset of age-related pathologies such as coronary artery disease, stroke, osteoporosis, and bone fracture.¹⁻⁶

But in order for you to optimize your sex hormone status, precise and accurate measurement is of paramount importance.

In this article you will learn of a critical blood marker of hormonal balance called sex hormone-binding globulin or SHBG. Newly published studies reveal that the interaction of SHBG with testosterone and estrogen affects overall hormonal balance—yet very few doctors test for it.

As you will read, sex hormone imbalances precipitated by SHBG abnormalities are associated with multiple diseases of aging in both sexes. These include cardiovascular disease (especially in women), cancer, type 2 diabetes, metabolic syndrome, and sleep apnea.⁶⁻¹⁰ > >
SHBG: The Master Regulator for Testosterone and Estrogen

SHBG is a protein produced primarily in the liver, although the testes, uterus, brain, and placenta also synthesize it. It serves as a transport carrier, shuttling estrogen and testosterone to sex hormone receptors throughout your body. SHBG also safeguards these vital hormones from degrading too rapidly and prevents their clearance from the body.

It thus acts as the master regulator of your sex hormone levels, maintaining the delicate balance between estrogen and testosterone critical to overall health in aging humans.

New evidence further indicates that the SHBG molecule itself plays another key role in the body: conveying essential signals to the heart, the brain, and adipose (fat) tissue that ensure their optimal function. There’s even a special SHBG receptor molecule on cell surfaces that functions much like the ubiquitous vitamin D receptor protein, helping cells communicate with one another. In other words, SHBG itself functions much like a hormone.

Knowing your SHBG levels, along with testosterone and estrogen, thus gives you and your doctor a more precise picture of your overall health—and enables you to take preventive measures against life-threatening conditions for which you may be at greater risk.

Aging Humans and Increasing SHBG: An Overlooked Threat

As you age, SHBG levels may steadily rise, even though your production of sex hormones continues to decline. The result? SHGB binds to what few sex hormones you have remaining and reduces their bioavailability to cells in your body.

With elevated SHBG in the blood, too much testosterone may be sequestered and thus functionally unavailable to healthy tissues. Because testing for SHBG is largely overlooked, many older men (and their doctors) may be led to believe through standard testing that they have “normal” total testosterone levels—but since most of it may be bound to elevated levels of SHBG, in actuality they may be testosterone deficient.

Why? Testosterone, like all steroid hormones, is derived from cholesterol, a fat molecule. Fats don’t dissolve in water, so the amount of testosterone floating freely in your bloodstream is small (about 0.5-2% of the total amount). Most of the circulating testosterone in your blood is either bound to the protein albumin or to SHBG.
In late postmenopausal women, low SHBG and high estrogen levels correlate with the inflammatory state associated with metabolic syndrome. SHBG abnormalities have also been linked to an increased risk of acne, infertility, polycystic ovary syndrome, and uterine cancer in overweight women.

The high insulin levels found in people stricken with metabolic syndrome have also been shown to suppress SHBG, creating a vicious cycle of abnormal SHBG activity.

The good news is that testosterone supplementation for men, and bioidentical hormone replacement for women, may safely and effectively reverse many of these adverse, age-related metabolic changes. Obtaining accurate measurement of sex hormone levels through SHBG blood testing thus enables you and your doctor to prevent or combat common medical disorders.

**Low SHBG Is a Key Marker of Cardiovascular Disease**

SHBG levels have an important relationship with nearly every biomarker of cardiovascular disease, from C-reactive protein (CRP) to arterial calcification. Low SHBG is also associated with elevated triglycerides and low-density lipoprotein (LDL).

Calcification of blood vessels, an early finding in cardiovascular disease, is also associated with lower SHBG levels, especially in women. Low SHBG in women is associated with higher levels of C-reactive protein (CRP), an important marker of inflammation and cardiovascular risk. In men, low SHBG indicated an increased risk of death from cardiovascular disease. In both men and women, low SHBG levels are strongly correlated with obesity.

SHBG, alone and in the context of specific sex hormone levels, thus constitutes an integral predictor of a major chronic age-related condition. Some experts are now recommending SHBG measurements as another means of evaluating cardiovascular and metabolic risk.

**Protection from Cancer**

Many kinds of cancers of the breast and prostate are stimulated by the sex hormones estrogen and testosterone. However, SHBG interpretations differ for men and women, which is why the SHBG test requires professional interpretation for accurate application.

For example, in human breast cancer cells, higher levels of SHBG inhibit cell proliferation and promote...
programmed cancer cell death (*apoptosis*), by blocking the estrogen-related survival mechanisms that most breast cancer cells exploit.43-46

For men, it is the opposite. Higher SHBG levels predict more severe and invasive tumor growth in men with prostate cancer.47 The association is so strong that some urologists have suggested using SHBG levels as a standard pre-operative measurement to identify patients at high risk of invasive cancers who should undergo a more aggressive surgical procedure.48

**Optimizing Bone Health**

It has long been known that declining estrogen levels in both sexes are significant contributors to **bone mineral loss** with aging. Experts now recognize that the steady rise in SHBG with aging is directly correlated with bone loss and osteoporosis in both men and women.49-56 As a general rule the higher the SHBG level, the less estrogen is available to contribute favorably to bone health.

New studies, however, are finding a direct role for SHBG and its cell surface receptor in bone loss.57 That suggests an effect that may be independent of estrogen levels. The association is so strong that some experts are now suggesting routine measurement of SHBG as a useful new marker for predicting severity of osteoporosis.57

**Understanding Sex Hormone Levels**

The terminology for the different measurements of sex hormones in your blood can be confusing, but it needn’t be. Here’s a simple way to think about the levels, using testosterone as an example:16

**Total Testosterone** (T) is just that—a measurement of all of the testosterone in a given blood sample. It includes free T, T bound to SHBG, and T bound to albumin.

**Free Testosterone** is equally simple in concept, though harder to measure. Free T is that small proportion (0.5-3%) of testosterone not bound to SHBG or to albumin.17

**Bioavailable Testosterone** (bioT) is simply the combination of the small amount of free T, plus the much larger amount of T that is loosely bound to albumin. You can also think about bioT as the amount of T that is **not** bound to SHBG, and some scientists refer to it that way.22,24,61 In general, higher SHBG will mean there’s less T that is bioavailable, while lower SHBG means there’s more bioavailable T, though that is a bit of an oversimplification.

The test for SHBG is useful for understanding and optimizing your sex hormone levels in combination with your other test results. When you receive your blood test results back, if you have any questions about your sex hormone status (including SHBG levels), please reach out to a Life Extension Health Advisor at 1-866-864-3027.

**Detecting Obstructive Sleep Apnea**

Sex hormone-binding globulin may provide an important clue that an individual is affected by obstructive sleep apnea,7,58 a relatively common condition that increases the risk of heart disease and stroke.59

Obstructive sleep apnea occurs when breathing repeatedly stops and starts during sleep due to blockage of the upper air passages. Frighteningly, many people are unaware that they suffer from this disorder. Sleep apnea often manifests with loud snoring, waking up feeling unrested, morning headaches, daytime sleepiness, fatigue, and unexplained high blood pressure. An overnight sleep study (polysomnography) is essential in order to definitively diagnose the condition.60
Scientists have found that obstructive sleep apnea is associated with disruptions in the endocrine system in men, including decreased levels of SHBG as well as free and total testosterone.  

Low SHBG combined with low testosterone may represent a novel marker for sleep apnea in men and may provide helpful information regarding which individuals should consider having a sleep study to diagnose the condition.

**Summary**

Maintaining optimal sex hormone status, including a healthy balance of testosterone and estrogen, is a core component of any anti-aging strategy. New scientific evidence has revealed the crucial importance to hormone balance of a widely overlooked active protein called sex hormone-binding globulin or SHBG. It is an important regulator of your testosterone and estrogen levels, responsible for distributing sex hormones throughout your body—yet few doctors test for it.

SHBG abnormalities are associated with multiple killer diseases of aging in both sexes, including cardiovascular disease (especially in women), cancer, type 2 diabetes, metabolic syndrome, sleep apnea, and osteoporosis.

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

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

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

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

A bottle containing 250 tablets of Vitamin C with Dihydroquercetin retails for $25.50. If a member buys four bottles, the price is reduced to just $17.44 per bottle. Contains corn.

References:

To order VITAMIN C with Dihydroquercetin, call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Most Life Extension members take a supplement containing zeaxanthin, lutein, meso-zeaxanthin, and astaxanthin to protect their vision.

With new findings that C3G (cyanidin-3-glucoside) can enhance night vision, it makes sense to add this unique berry extract to the Super Zeaxanthin formula. This enables members to obtain the optimal amount of C3G without having to swallow another capsule.

**Maintain Macular Density**

The macular pigment is composed of lutein, zeaxanthin, and meso-zeaxanthin. The density of the macula is essential to proper vision. Macular density declines naturally over time.

Eating lots of lutein- and zeaxanthin-containing vegetables can help maintain the structural integrity of the macula. However, since meso-zeaxanthin is not part of the typical diet, it cannot be easily replaced. Young people convert lutein into meso-zeaxanthin inside their macula. Some aging people, however, lose their ability to convert lutein into meso-zeaxanthin.

The Super Zeaxanthin formula provides zeaxanthin, lutein and meso-zeaxanthin to help maintain macular density.

**Combat “Eye Fatigue”**

Staring at a fixed-distance object such as a computer screen for a long period of time can cause the muscles that focus your eyes (called the ciliary body) to tire or go into spasm. This can result in physical symptoms such as head discomfort, sensitivity to light, tiredness, soreness, dryness, and blurry vision.

Super Zeaxanthin contains a potent dose of astaxanthin, a carotenoid found in red algae. Studies show that taking astaxanthin with other carotenoids protects against free radical induced DNA damage, repairs UVA-irradiated cells, and inhibits inflammatory cell infiltration. Astaxanthin also helps support vascular health within the eye and improves visual acuity. Its fat-soluble nature offers protection to sensitive cells inside the eye.

**Enhanced Night Vision!**

Falling down is responsible for 70% of accidental deaths in older people. Poor lighting conditions are often the culprit.

Fortunately, C3G derived from black currant supports eyesight in dark conditions by promoting the healthy function of delicate structures within the retina that support night vision.

Super Zeaxanthin now contains a potent dose of C3G to nourish cells throughout the body.

**Comprehensive Ocular Protection in One Daily Capsule**

The new Super Zeaxanthin formula provides natural plant extracts that have been shown to promote healthy eyesight. Just one softgel of Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G provides:

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<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
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<tr>
<td>OptiLut®, Lutein Plus® and MZ®</td>
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</tr>
<tr>
<td>Marigold (Tagetes erecta) Extract</td>
<td>[free lutein equivalent 10 mg]</td>
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<tr>
<td>Zeaxanthin &amp; Meso-zeaxanthin blend</td>
<td>3.75 mg</td>
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<tr>
<td>(micronized zeaxanthin, OptiLut®, Lutein Plus® and MZ® Marigold Extract)</td>
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<tr>
<td>Natural Astaxanthin</td>
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<tr>
<td>(AstaREAL® and Zanthin® CO2 extracts of Haematococcus pluvialis algae)</td>
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<tr>
<td>C3G (Cyanidin-3-glucoside)</td>
<td>2.2 mg</td>
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<tr>
<td>[from European black currant (Ribes nigrum) extract (fruit)]</td>
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The retail price for a bottle containing 60 softgels of Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G is $42. If a member buys four bottles, the price is reduced to just $28.50 per bottle.

To order Super Zeaxanthin with Lutein, Meso-zeaxanthin Plus Astaxanthin and C3G, call 1-800-544-4440 or visit www.LifeExtension.com

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AstaREAL® is a registered trademark of Fuji Chemical Industry Co., Ltd. Zanthin® is a registered trademark of Valensa International, Inc., used under license. U.S. Patent 5,527,533.

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.
If exfoliation isn’t a regular part of your skin care regimen, it should be. Your skin’s dead, hardened outer layer not only worsens the appearance of wrinkles, age spots, scars, and blemishes—it also gradually destroys skin health, clogging pores and preventing the release of natural oils that normally preserve natural softness and luster as you age.

That’s why microdermabrasion is one of today’s most popular non-surgical exfoliation procedures. Under the supervision of a certified dermatologist, a spray of micro-fine crystals continuously removed by vacuum scours away dead skin cells and restores your skin’s youthful glow.

Unfortunately, the outlandish cost for medically safe results causes microdermabrasion to be impractical for budget-conscious individuals. And if you’re pregnant or breastfeeding, or suffer from a variety of health conditions including acne, rosacea, eczema, psoriasis, or diabetes, microdermabrasion poses significant risks. Even healthy individuals may suffer infections from improperly sanitized equipment.

The solution is a low-cost, at-home alternative called Amber Self MicroDermAbrasion. This cutting-edge exfoliant formula features ultra-fine amber crystals. A precious organic substance, amber derives from fossilized resins that trees release to heal themselves after physical injury and environmental stress. Amber is rich in compounds that form a basic building block for nearly all living organisms.

Amber Self MicroDermAbrasion puts these unique properties to work for you, gently removing dead skin cells and smoothing away unsightly wrinkles, lines, and other cosmetic imperfections. In dermatologist test cases, it has been shown to improve the appearance of aging skin by as much as 75%. It’s also safe for daily use.

Now you can enjoy these beautifying, age-defying effects at home, at a fraction of the cost of microdermabrasion or other costly exfoliation procedures.

A 2 oz jar of Amber Self MicroDermAbrasion retails for $49. If a member buys two jars, the price is just $31.50 per jar.

To order Amber Self MicroDermAbrasion call 1-800-544-4440 or visit www.LifeExtension.com
The Little-Known Longevity Factor in the Japanese Diet
Over the past decade, a quiet revolution in aging research has unfolded, its focus centered on little-known molecules known as *fucoidans*. These molecules play a crucial role across a broad range of physiological mechanisms.

Fucoidans are found almost exclusively in certain kinds of *seaweed*. Their anti-aging potential emerged in several analyses of the *Japanese diet*, particularly among inhabitants of the island of *Okinawa*, long known for its high concentration of people at least a *century* old (centenarians).1-5

Virtually no one in the West obtains enough of these critical molecules, which have been shown to facilitate *tissue regeneration*, *immune function*, and *cell-to-cell communication*.6-8

In this article, you will discover how *fucoidans* work to combat *cancer*, *metabolic syndrome*, and other degenerative disorders.9,10 > >
shorter life and health spans observed in Western populations result in part from the near-total absence of dietary fucoidans.\textsuperscript{1,2}

**Filling the Nutritional Gap**

The Japanese enjoy a long life expectancy that is among the highest in the world.\textsuperscript{3,11} For many years, life expectancy at birth on the islands that comprise the Okinawa prefecture was even higher than on the mainland.\textsuperscript{1,5} At the same time, the Japanese enjoy far lower incidence of most chronic, age-related diseases than Western populations.\textsuperscript{5,12,13} Multiple factors contribute to their successful aging and healthy life span, including a diet low in calories and rich in fruits, vegetables, and fish.\textsuperscript{7,5} In addition, in Japan, there is a widely held cultural belief that “food is medicine.”\textsuperscript{1} However, one dietary factor stands out that is virtually unique to the Japanese diet: regular consumption of seaweed, as much as \textit{4-6 grams per day.}\textsuperscript{10}

There are many varieties of edible seaweed, which in Japan go by the common names of wakame, mekabu, and kombu, among others. Strictly speaking, “seaweed” is not a plant but rather an amalgam of algae, or single- and multi-cellular marine organisms that group into clumps or mats.\textsuperscript{14} These particular species contain high concentrations of long chain molecules collectively known as fucoidans.\textsuperscript{15}

Scientists have discovered that fucoidans are a source of necessary components of cell-surface molecules that facilitate cell-to-cell signaling, the core regulatory process responsible for everything from immunity and cardiovascular function to healthy cellular proliferation.\textsuperscript{6,16-19} Researchers believe that the

**How Fucoidans Work**

Much of the world’s literature on fucoidans originates in Japan, given their abundance in the Japanese diet. Even some drug companies are investigating their therapeutic potential.\textsuperscript{15}

The strongest scientific evidence on fucoidans is derived from studies of the species Undaria pinnatifida.\textsuperscript{20} It has been shown that fucoidan-rich Undaria, once ingested, can bind to toxins such as dioxin within the mammalian body and facilitate its excretion. The effect is noteworthy enough that some clinicians believe it could hold promise as a therapeutic intervention in humans exposed to dioxin.\textsuperscript{21}

Laboratory and animal studies further reveal that fucoidans prevent certain infectious diseases, and block cancer cells from spreading and trigger their early death.\textsuperscript{9,10}

Fucoidans also modulate growth factors required for healing and tissue regeneration, while blocking those associated with visible aging.\textsuperscript{22,23} This is largely the result of their immune-modulating capabilities: they simultaneously downregulate inflammation while boosting appropriate recognition and destruction of invaders.\textsuperscript{7,24}
**Immune Modulator, Cancer Fighter**

Through their beneficial interaction with cell surface proteins, fucoidans exert beneficial effects on cells within the immune system, where *glycoproteins* serve as vital receptors and detectors of changes in the internal environment. *Undaria* extracts stimulate beneficial immune responses while *suppressing* those that could lead to tissue damage.

Immune stimulation by fucoidans enhances activity of both the cellular and the antibody-based components of the immune system, boosting protection not only against bacteria and viruses, but also against many nascent cancers.14,25-29 In one animal model, *Undaria* fucoidans enhanced survival and inhibited tumor growth in experimentally induced cancer, the result of enhanced activity of cancer-destroying natural killer cells.14,30

In early stage, experimental cell studies, fucoidans demonstrated potential for preventing infection with numerous malevolent microorganisms, including the *malaria* parasite and *herpes viruses*. In laboratory studies, they block cell surface receptors those invaders need in order to attach themselves and enter human cells, preventing infection from taking hold.31,32 Viruses in particular can attach to a cell membrane receptor and then enter the cell interior, where their genetic material replicates and produces destructive effects on host cells. *Undaria* fucoidan extract has been shown to inhibit replication of herpes by stimulating ingestion of the virus by macrophage cells and boosting numbers of antibody-producing B cells.33,34 All of these experiments show great promise for future applications of fucoidans in protecting against various pathogens.

In an early phase, open-label trial, oral *Undaria* fucoidan was administered to 15 individuals of various ages (from under age 10 to age 72) suffering from herpetic infections including herpes type 1 (cold sores), herpes type 2 (genital herpes), herpes zoster (chicken pox; shingles), and Epstein-Barr virus (mononucleosis). The *Undaria* dosage approximated typical daily seaweed intake in Japan. *Undaria* increased the healing rates of active herpes virus infections in all 15 subjects. Individuals with chicken pox and shingles noted reduced pain and more rapid resolution of skin lesions. In the laboratory, scientists found that the *Undaria* extract increased the growth of infection-fighting T-cells in cell culture. The scientists postulated that *Undaria*’s ability to increase T-cell growth in the laboratory may be related to its ability to enhance immunity in human subjects.20

**Fucoidans**

- Over the past decade, a quiet revolution in the science of anti-aging has unfolded, centered on the discovery of beneficial molecules that facilitate core physiological mechanisms and ward off degenerative disease.
- The study of their effects has given rise to the field of *glycobiology*.
- *Fucoidans* are long-chain molecules found primarily in seaweed.
- Researchers believe that fucoidans are partly responsible for the extraordinary longevity observed in Japanese populations, where organic, unpolluted seaweeds form a significant dietary component.
- Fucoidans enhance immune function, combating infectious diseases and cancer.
- Fucoidans show great promise in thwarting viral infection by preventing binding to host cells and blocking viral replication in laboratory research.
- Fucoidans also combat metabolic syndrome and cardiovascular disease by modulating glucose and insulin levels, disrupting formation of advanced glycation end products (AGEs), and lowering triglycerides.
Laboratory studies of the same fucoidan preparation revealed potent antiviral activities against human herpes virus types 1 and 2, and against \textit{cytomegalovirus}, a common infection in individuals with compromised immune systems.\textsuperscript{31,35} Animal studies reveal that \textit{Undaria} fucoidans prevent virus binding with host cells and inhibit viral replication, while simultaneously stimulating host-defensive immune responses.\textsuperscript{36,37}

\textit{Undaria} extracts have also been shown to enhance the natural cancer cell-destroying activity of immune cells in experimental animals, while increasing survival rates.\textsuperscript{14,19,30} In one animal model, it suppresses proliferation of tumors of the breast—a telling finding given that breast cancer rates in humans are substantially lower in Japan than in US populations.\textsuperscript{38,39} Importantly, while the extracts induce apoptosis in cancer cells in the lab, they have no such cell-destructive effects on healthy human mammary tissue.\textsuperscript{39}

\section*{Combating Cardiovascular Disease and Metabolic Syndrome}

Incidence of metabolic syndrome is on the rise around the world, though its prevalence lags behind in some Asian countries that consume a traditional diet rich in seaweed. This phenomenon has recently been attributed in part to the high dietary intake of \textit{Undaria} and other brown seaweeds.\textsuperscript{10} Metabolic syndrome, triggered by—and also a cause of—accumulated \textit{advanced glycation end products} (AGEs), is associated with type 2 diabetes and high cardiovascular disease risk.\textsuperscript{40-43} Fucoidans hold tremendous promise in disrupting the processes that lead to metabolic syndrome and its cardiovascular consequences.\textsuperscript{10}

\textit{Undaria} exerts anti-diabetic effects by stabilizing and slowing the digestion of starch from processed carbohydrates, which may reduce the likelihood of dangerous postprandial glucose and insulin spikes.\textsuperscript{44}

Diabetic patients also suffer from diminished peripheral blood flow, leading to skin ulceration and poor wound healing. In one compelling study, researchers discovered that fucoidan supplementation could restore normal control of capillary blood flow in diabetic animals.\textsuperscript{45} Some of this benefit may arise from the fact that fucoidans can inhibit binding of AGEs to the cellular receptors that trigger many of their damaging effects.\textsuperscript{46}

\textit{Undaria} also defuses cardiac risk factors by stimulating enzymes that break down fats in the liver and lower triglyceride levels.\textsuperscript{47} \textit{Undaria} operates synergistically with fish oils to protect cardiovascular health.\textsuperscript{48}
Cardiovascular disease risk is directly related to blood pressure. In a landmark 2009 study, consumption of dried *Undaria* at 4-6 grams per day (typical for the Japanese diet) significantly reduced systolic blood pressure in all patients. Individuals who consumed 4 grams of *Undaria* daily for 1 month, followed by 6 grams of *Undaria* for an additional month, saw their systolic blood pressure decrease by 10.5 mmHg. This effect occurred primarily in those who had high-normal baseline blood pressure levels.10

**Relieving Arthritis Pain**

Fucoidans may also prove a potent intervention to combat arthritis. There are many different kinds of arthritis, with a variety of causes. Their unifying characteristic is painful joint swelling with inflammation and increased production of pro-inflammatory cytokines (cell-signaling molecules).

Fucoidan treatment reduces cytokine production and infiltration of white blood cells in experimental arthritis, thereby reducing overall severity.29-51 Fucoidans also reduce pain perception.32 Selectin inhibition by fucoidans also reduces the severity of early bacterially induced arthritis.35 Together these properties make fucoidans tremendously promising in the management of painful arthritis.51

**Summary**

Researchers believe fucoidans are partly responsible for the extraordinary longevity observed in Japanese populations, where organic, unpolluted seaweeds form a significant dietary component.

Fucoidans enhance immune function, combat infectious diseases, and support defense against cancer. Fucoidans also combat metabolic syndrome and cardiovascular disease by modulating glucose and insulin, disrupting formation of advanced glycation end products, and lowering triglyceride levels. In human studies, fucoidans (extract from seaweed) demonstrate beneficial effects at doses of 75-300 mg daily.20,54

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**

Large volumes of published scientific findings validate the multiple health benefits of green tea. The active constituents in green tea are polyphenols, with epigallocatechin-3-gallate (EGCG) being the most powerful. The antioxidant activity of EGCG is about 25-100 times more potent than vitamins C and E.

When Life Extension® introduced the first standardized green tea extract in 1993, the supplement was very expensive. As more research was published about green tea’s multifaceted benefits, more companies competed to make higher-potency extracts at lower prices.

The good news for consumers is that they can obtain high-potency standardized green tea extract capsules at a fraction of the prices charged just five years ago.

The Life Extension Foundation Buyers Club offers 98% green tea extracts in either a lightly cafffeinated or decaffeinated form. These 98% extracts are standardized to provide high potencies of critical EGCG, the most important polyphenol found in green tea. Each capsule of Mega Green Tea Extract provides more polyphenols than are found in three cups of green tea.

These highly concentrated Mega Green Tea Extract Caps contain 725 mg of either lightly cafffeinated or decaffeinated 98% standardized green tea extracts. The retail price for a 100-capsule bottle of Mega Green Tea Extract is $28.

If a member buys four bottles of 725-mg Mega Green Tea Extract capsules, the price is reduced to $19.88 per bottle.

Contains rice.

To order Mega Green Tea Extract, 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.
A bottle containing 120 softgels of Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract retails for $32. If a member buys four bottles, the price is reduced to just $21 per bottle. If 10 bottles are purchased, the cost is just $18.68 per bottle. Item #01482

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

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<td>EPA Pure+™ Extract (eicosapentaenoic acid)</td>
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<tr>
<td>DHA Pure+™ Extract (docosahexaenoic acid)</td>
<td>1000 mg</td>
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<tr>
<td>Olive Fruit Extract [std. to 6.5% polyphenols (39 mg), 1.73% hydroxytyrosol/tyrosol (10.4 mg), 0.5% verbascoside/oleuropein (3 mg)]</td>
<td>600 mg</td>
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<tr>
<td>Sesame Seed Lignan Extract</td>
<td>20 mg</td>
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For those with sensitive stomachs, Super Omega-3 is also available with enteric coating and retails for $34. If a member buys four bottles, the price is reduced to $23.25 per bottle. If 10 bottles are purchased, the cost is just $21 per bottle. Item #01484

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

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

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.
Optimized FUCOIDAN

The Japanese Dietary Longevity Factor!
In recent years, scientific interest has intensified around fucoidan, a little-known molecule found primarily in edible seaweeds native to the Japanese diet. Nearly 900 published studies indicate its power to promote healthy immune function, cell-to-cell communication, and tissue repair.¹⁻³

The “Okinawan Secret”
Many experts now believe that fucoidan is one of the key nutrients responsible for the exceptionally long, healthy lives enjoyed in Okinawa, which for decades boasted the world’s highest concentration of centenarians (individuals at least a century old).⁴⁻⁸

Maritech® 926 fucoidan is sourced from hand-harvested, wild seaweed exclusively from pristine ocean waters. A cutting-edge water extraction process ensures fucoidan’s delicate molecular structure is delivered intact, to provide the critical nutritional benefit of Undaria pinnatifida, which is the species of seaweed used in a majority of scientific studies on fucoidan.

A Full Day’s Supply . . . In Just One Capsule
A single vegetarian capsule of Optimized Fucoidan with Maritech® 926 provides 88.5 mg of standardized Undaria pinnatifida extract, equaling the amount of fucoidan typically consumed daily in the traditional Japanese diet. Most people require only one capsule daily, though aging individuals seeking to enhance the benefit may choose to take two per day.

A bottle containing 60 vegetarian capsules of Optimized Fucoidan with Maritech® 926 retails for $36. If a member buys four bottles, the price is reduced to just $24.75 per bottle.

References

Maritech® 926 is a registered trademark of Marinova Pty Ltd.

To order Optimized Fucoidan with Maritech® 926 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.
The Everyday Drug That Prevents CANCER DEATH

Imagine you could readily obtain a safe, low-cost drug that could reduce your overall risk of cancer death by 20%. Or slash your risk of colorectal cancer—the third most common cause of cancer mortality in the US for both men and women1—by up to 40%.

No pharmaceutical giant could hold a patent on it, and you wouldn’t need a prescription to get it. All you’d have to do to benefit from its anti-cancer power is reach into your own medicine cabinet.

In an important scientific development, this unlikely scenario is now a medical reality.

After analyzing data drawn from over 25,000 human subjects, a team of researchers at Oxford University has conclusively demonstrated that long-term, low-dose aspirin therapy (75 mg per day) effectively combats multiple forms of cancer—and prevents cancer death.2

In this article, the results of their work are detailed. You will discover the precise mechanisms of action by which aspirin impedes cancer cell development. You will find out how pharmaceutical giants are acting on these findings to reap extraordinary profits at the expense of the public health. You will also learn what you can do to optimize aspirin’s chemopreventive capabilities, naturally minimize its potential side effects—and possibly save your life. > >
Cardiovascular and Anti-Cancer Research: A Lifesaving Link

At the forefront of the growing field of research into aspirin’s role as a cancer fighter is Professor Peter Rothwell of Oxford University. Having specialized primarily in cardiovascular medical research, he and his colleagues had at their disposal a trove of information compiled from eight massive studies examining the effect of aspirin therapy on cardiovascular health.

Rothwell and his team had previously observed that aspirin treatment for longer than five years appeared to significantly reduce risk for colorectal cancer, one of the most common malignancies in older adults. On the basis of this insight, they decided to re-examine these eight studies to find out if daily aspirin intake afforded an even greater overall anti-cancer benefit. Their results were published online in December 2010.

Cumulatively, these studies provided solid and detailed medical data on nearly 26,000 patients who either took aspirin daily, or took no aspirin, for 5 years or longer. Thanks to meticulous recordkeeping, they were able to determine both the timing and the cause of death for each and every subject under study—including those who had died of cancer. Three of these studies also included follow-up information on subjects over the course of 20 years.

Among the most compelling of their findings:

- Aspirin reduced the overall risk of death from cancer by approximately 20%.
- Most of that benefit was due to a 30-40% reduction in deaths occurring after 5 years of daily aspirin intake.

ASPIRIN: WORDS OF CAUTION

Some people should consult a physician before taking daily low-dose aspirin. Individuals with certain heart, kidney, and other medical conditions may not be suitable candidates for low-dose aspirin therapy. Children or teenagers who have a fever should not take aspirin. Aspirin has been linked with acute kidney injury. Long-term use of more than one type of analgesic such as aspirin may cause analgesic nephropathy. Individuals with chronic kidney disease may experience an increased risk of end stage renal disease with aspirin usage.
The reduction in deaths due to solid cancers was maintained for 20 years in studies in which data was available for that period of time.

These effects were consistent across all populations studied—despite their diversity in health histories.

A dose of just 75 mg daily was all that was required for the protective effect—higher doses did not increase the benefit.

The reduction in cancer deaths increased with age: peak effects were observed in people aged 55-64 and remained high in those 65 years or older.

The effect of aspirin on reducing risk of fatal cancers was powerful enough to contribute to a significant reduction in mortality rates from all causes.

The data correlating aspirin therapy with colon cancer prevention proved particularly compelling. Rothwell’s team saw a 24% reduction in the risk of developing colon cancer over a 20-year period in patients who took aspirin daily and a 35% reduction in the risk of dying from colon cancer. The most potent preventive benefit was observed in cancers of the upper colon (the ascending and transverse colon).

Rothwell’s team made two more important discoveries.

First, while a minimum 5 years of low-dose aspirin intake is required to enjoy its chemopreventive effect, it may take 10 years or longer after the start of therapy to realize aspirin’s full beneficial potential. In other words, the sooner you start on a daily low-dose aspirin regimen, the better your chances of maximizing aspirin’s cancer-fighting effect.

Second, their findings indicate that you need to take aspirin every day in order to get the cancer-preventive benefit. In one particularly noteworthy controlled trial, a large cohort of more than 19,000 women taking low-dose aspirin (100 mg) only every other day exhibited no protective effect.

The results of Rothwell’s analysis corroborated existing evidence indicating that regular aspirin intake might protect against a constellation of common cancers. Large epidemiological analyses have shown that people who take daily doses of aspirin enjoy a preventive effect against most types of colorectal cancer, as much as 40% by consensus estimates. In people with known adenomatous polyps—small, fleshy, protuberant precursors to malignancy—short-term aspirin therapy reduces the risk of recurrence.

Researchers at Oxford found that daily low-dose aspirin therapy slashes overall risk of cancer death by 20% and colorectal cancer death risk by nearly 40%.

This cancer-preventive benefit increased with age, proving especially effective in populations 55 and older.

Its cancer-fighting power increases over time, requiring a minimum of 5 years for the benefit to manifest, and reaching peak power at 10 years.

Aspirin combats cancer by beneficially modulating or suppressing the activity of the pro-inflammatory enzyme cyclooxygenase-2 (COX-2) and the “master switch” protein complex nuclear factor-kappaB (NF-κB).

Although its side effect profile is relatively limited, natural interventions to minimize aspirin’s potential side effects are also indicated, including zinc carnosine as polaprezinc and extracts of cranberry and licorice.

Drug companies are already developing pharmacologically similar drugs no more effective than aspirin and far more costly and dangerous, including COX-2 inhibitors (coxibs) and nitric oxide-donating aspirins.
Separate observational studies have suggested a preventive effect for cancers of the esophagus, stomach, lung, breast, and ovaries. A 2010 study revealed that men taking regular aspirin supplements attained a 10% reduction in prostate cancer risk compared to men who took no aspirin. Another study showed a risk reduction of 24% in long-term users (greater than 5 years), and 29% in daily aspirin users.

Although those studies were encouraging, they were small, and some of their results were conflicting. Furthermore, observational studies can sometimes be inconclusive at determining risks and benefits of medications, because they do not (by definition) include any controls such as a placebo group. So Rothwell and his group made certain that their study design was robust enough to deliver definitive answers to these lingering questions.

Salicylic acid, which is closely related to aspirin (chemical name: acetylsalicylic acid), occurs naturally in the bark of the white willow tree and other plants. It dates back to the origins of medicine itself. Hippocrates, widely regarded as the godfather of modern medical science, documented its efficacy in combating pains, aches, and fever in the fourth century BCE.

In recent years, aspirin’s emerging centrality in cancer prevention has led some experts to theorize that cancer victims may suffer from a “salicylate deficiency.” Aspirin’s anti-cancer power stems in part from its capacity to inhibit the action of cyclooxygenase-2 (COX-2), an enzyme first discovered in 1991 that has since been shown to play a central role in onset of most cancers.

Released in response to infection, cellular stress, and other pathological states, COX-2 and its enzymatic byproducts accelerate cancer development via five key pathways:

- They trigger the formation of new blood vessels (angiogenesis) that tumors rely on to nourish themselves and grow.
- They halt apoptosis, the normal process of “programmed cell death” that keeps early malignancies from developing.
- They inflict DNA damage, increasing the risk of cancer-causing cellular mutation.
- They stimulate metastasis (cancer cell proliferation).
- They suppress healthy immune surveillance that would otherwise destroy cancer cells before they take hold and proliferate.

How Aspirin Beats Cancer:
Suppressing COX-2 and the “Master Switch”

Aspirin powerfully suppresses these carcinogenic processes.

Aspirin also beneficially modulates activity of the protein complex nuclear factor-kappa B (NF-kB), the so-called “master switch” that stimulates pro-inflammatory cytokine production. In addition to cancer, NF-kB has been linked to inflammatory and autoimmune diseases.

NF-kB is a core regulatory complex that enters the cell nucleus to control expression for a host of genes regulating your immune system’s response to infection. As with COX-2, pathologic NF-kB activity launches a storm of cellular coactivators, signaling molecules, and transcription factors that drive tumor growth, angiogenesis, and lethal metastasis.

NF-kB also maintains the balance between cell death and survival. Cancer cells with high levels of active NF-kB are generally resistant to cell death and thus enjoy a significant survival advantage over normal cells (and killer immune cells). Aspirin counteracts and suppresses NF-kB activity, effectively thwarting cancer cell function and development at the molecular level.
In response to the release of Professor Rothwell’s recent landmark findings, the highly regarded British newspaper The Guardian reported, “If Big Pharma had unveiled a brand new drug that would stop 20% of cancer deaths, the hype would be enormous and the pressure to buy it, at an inevitably high cost, huge.”

A prescient observation: it turns out efforts are already underway to exploit Rothwell’s findings in order to reap profits while downplaying aspirin’s anti-cancer efficacy.

Studies of pharmacologically similar compounds, like selective COX-2 inhibitors (the coxibs), are now appearing that demonstrate anti-cancer effects almost identical to those of aspirin itself. The problem? Coxibs are not only much more expensive than aspirin; they’re relatively dangerous. In fact, the coxibs have been linked with an increased risk of adverse cardiovascular events such as heart failure, myocardial infarction (heart attack), and stroke.

Why investigate their anti-cancer efficacy if they’re no better, cheaper, or safer than aspirin? In all likelihood because many coxibs remain under patent protection, and thus represent a potential windfall for the pharmaceutical industry.

Aspirin does come with a few side effects, primarily of the stomach, where it can cause local irritation and, in a small number of cases, gastric bleeding or ulcers. For those who decide to use aspirin, the best protection is to stick with 75 to 81 mg per day—the lowest possible therapeutic dose, far less likely to induce any unwanted effects.

Some evidence suggests that using enteric-coated aspirin may reduce the risk of ulcers and gastric bleeding. Antacid proton pump inhibitors (PPIs) may also help prevent gastric ulcers or promote their healing if they do occur. A study of the proton pump inhibitor esomeprazole (Nexium) with aspirin is underway to determine its ability to offset its side effects. Concerns about long-term use of proton pump inhibitor drugs has been raised in the alternative community, so they should not be used unless necessary (normally to treat esophageal reflux). Lower-cost generic proton pump inhibitors (like omeprazole) are available over the counter and work the same way as does prescription Nexium.

You may also choose to obtain natural protection using the following nutrients, all of which are clinically proven to support stomach health:

- **Zinc carnosine.** Zinc has gastroprotective effects. The essential nutrient carnosine has been shown to amplify zinc’s beneficial effects. Sold as polaprezinc, this zinc-carnosine compound is a prescription anti-ulcer drug in Japan, but is readily available as a supplement in the US.

- **Cranberries.** Rich in antioxidant polyphenols and other protective nutrients that promote stomach health, there is some evidence that cranberries may prevent esophageal cancer. Cranberry extracts can also thwart infection by Helicobacter pylori—the bacterium conclusively linked to cancers of the gastrointestinal tract (and also the culprit behind the vast majority of gastric ulcers).

- **Licorice extracts.** Like cranberry, licorice is rich in compounds that combat inflammation and block H. pylori infection.
Newer drugs “based” on aspirin, called nitric oxide-donating aspirins, are also in development, even though they have yet to prove themselves in any way superior to aspirin.\(^3\) This is yet another instance of a widespread drug company practice: synthetically alter a safe, inexpensive and readily available compound by attaching a molecule to it, thereby creating an entirely “new” patentable drug, one that holds enormous profit-making potential at the expense of the public health.

So if you find yourself reading headlines in the near future announcing coxibs’ newfound power to fight cancer, or celebrating a “new kind of cancer-fighting aspirin,” you may safely ignore them. Stick with regular aspirin instead.

**Summary**

In a meta-analysis involving over 25,000 human subjects, a team of Oxford researchers has conclusively demonstrated that daily low-dose aspirin therapy slashes overall risk of cancer death by 20% and colorectal cancer death risk by nearly 40%. This cancer-preventive benefit increases with age, proving especially effective in populations 55 and older. It also increases over time, requiring a minimum of 5 years for the chemopreventive benefit to fully manifest, and reaching peak power at 10 years. This means the earlier you start on a low-dose aspirin regimen, the greater your cancer risk reduction. Aspirin combats cancer at the molecular level by beneficially modulating or suppressing the activity of the pro-inflammatory enzyme cyclooxygenase-2 (COX-2) and the “master switch” protein complex nuclear factor-kappaB (NF-kB). Natural interventions to minimize aspirin’s potential side effects are also indicated, including zinc carnosine as polaprezinc and extracts of cranberry and licorice. Meanwhile, drug companies are already attempting to capitalize on these findings by developing pharmacologically similar drugs no more effective than aspirin and far more costly and dangerous, including COX-2 inhibitors (coxibs) and nitric oxide-donating aspirins.

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

**FDA Versus LEF: Succinct Review of Aspirin Wars**

Back in 1983, the Life Extension Foundation* analyzed findings from published studies indicating that low-dose aspirin can reduce the risk of a heart attack by about 40%.\(^6\) Life Extension members were urged to take low-dose aspirin every day to protect against heart attacks.

The FDA and medical establishment were harshly critical of Life Extension’s recommendation, even though peer-reviewed scientific studies substantiated it. The FDA issued an edict that any company that promoted the sale of aspirin to prevent heart attacks would be subject to civil and criminal penalties. According to the FDA, making a health claim for aspirin turned it into an “unapproved drug.”

In response to the FDA’s censorship of health claims about aspirin, Life Extension developed a product called “First Amendment Aspirin.” On the label of this product was a quote from a published study indicating that aspirin reduces heart attack risk.

The FDA demanded that the sale of this product cease, but Life Extension refused, citing the First Amendment guarantee of free speech, i.e., the right to communicate that a published scientific study found that aspirin reduces heart attack risk. Realizing that they could not get around the US Constitution, the FDA went to the manufacturer of the product and demanded that they stop making “First Amendment Aspirin” or face intrusive daily inspections. The manufacturer capitulated and stopped making the product.

As new studies continued to verify aspirin’s cardioprotective effect, FDA rulings starting in 1998 allowed companies to advertise the cardiovascular benefits of aspirin on a very limited basis. The FDA added so much bureaucratic red tape about who the agency thinks should take aspirin that most people don’t find out they need it until it is too late.

It took the FDA 15 years to acknowledge what was clearly established in 1983 about aspirin’s ability to reduce heart attack risk. To this day, the FDA continues to censor what aspirin manufacturers are permitted to say about its effects in reducing cardiac and ischemic stroke events.

In preparing this article, we found studies indicating anti-cancer mechanisms of aspirin dating back to the year 1972,\(^5\)\(^7\) with significant human data published in 1991.\(^2\)\(^3\) The failure of the FDA to allow widespread promotion of low-dose aspirin for prevention has clearly resulted in millions of premature deaths.
References


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

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

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

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

The retail price for a bottle containing 90 softgels (three-month supply) is $26. If a member buys four bottles, the price is reduced to just $17.25 per bottle.

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

Contains tree nuts (coconut).

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

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

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

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.
DHEA (dehydroepiandrosterone) has demonstrated many benefits, including positive effects on body composition. Regrettably, our natural production of this hormone diminishes by about 80% between the ages of 25 and 75 years. This has been associated with a decrease in muscle mass and strength and an increase in abdominal girth.

In the first of the two studies sponsored in part by the National Institutes of Health, researchers sought to determine the effect of DHEA replacement in DHEA-deficient elderly individuals. They randomized 56 men and women to receive either 50 mg/day of Life Extension’s DHEA before bedtime or a placebo. Both groups then underwent a program of resistance training for four months. At the end of the study, DHEA replacement produced a significantly greater effect in enhancing the benefits of weight training on muscle mass and strength in both men and women compared with the placebo group.

The second study cited was conducted by the same research team. The effects of DHEA-replacement therapy or a placebo on abdominal fat were investigated for the first time in 56 DHEA-deficient elderly men and women who did not exercise regularly. Using the same DHEA-dosing regimen as in the previous study, the researchers found that DHEA levels rose to youthful ranges in both men and women. This increase was accompanied by changes in body composition. Compared with miniscule changes in weight loss in the placebo group, women taking DHEA lost an average of 10.2% of their visceral (intra-abdominal) fat, while men shed an average of 7.4%. Subcutaneous fat (under the skin) losses averaged 6% in both men and women taking DHEA.

DHEA is widely available as a dietary supplement. These two studies utilized Life Extension’s DHEA formulation to safely restore DHEA levels to youthful ranges in these elderly individuals, which helped maximize lean tissue mass, maintain healthy abdominal weight, and support insulin sensitivity.

References:
CHOOSE THE DOSE THAT’S RIGHT FOR YOU:

DHEA 15-mg, 100 Capsules, Item #00454
While published studies show the greatest benefit occurs when 50–75 mg of DHEA is consumed each day, some women only need a low dose of DHEA. Just one of these 15-mg capsules a day is all some women need to bring DHEA levels back to youthful levels. A bottle containing 100 15-mg capsules of DHEA retails for $12; if a member orders four bottles, the price is reduced to just $7.50 per bottle. Contains rice.

DHEA 25-mg, 100 Capsules, Item #00335
The minimum dose of DHEA for most healthy aging people is 25 mg a day, though optimal doses are 50–100 mg daily. These 25-mg capsules are a popular way to consume the precise amount of DHEA your body may need. A bottle containing 100 25-mg capsules of DHEA retails for $15; if a member orders four bottles, the price is reduced to just $9.38 per bottle. Contains rice.

DHEA 25-mg, 100 Dissolve-in-Mouth Tablets, Item #00607
A bottle containing 100 25-mg dissolve-in-mouth tablets of DHEA retails for $14; if a member orders four bottles, the price is reduced to just $8.81 per bottle. Contains corn.

DHEA 50-mg, 60 Capsules, Item #00882
The optimal daily dose of DHEA for most people is 50 mg. These economical 50-mg capsules enable most people to conveniently consume the optimal dose of DHEA in just one capsule. A bottle containing 60 50-mg capsules of DHEA retails for $16; if a member orders four, the price is reduced to just $10.50 per bottle. Contains rice.

7-Keto® DHEA 100-mg, 60 vegetarian Capsules, Item #01271
7-Keto® DHEA is a metabolite of DHEA that safely increases fat-burning enzymes in the liver. Human subjects who consumed 200 mg of 7-Keto® DHEA a day in conjunction with a diet and exercise program lost more total weight and body fat than those who took a placebo.1 Since 7-Keto® DHEA does not convert to estrogen or testosterone in the body, it can be used by those with hormone-sensitive cancers such as breast and prostate cancer. This 7-Keto® DHEA supplement contains a potent antioxidant blend to protect against free radicals that might be formed in response to increased fat-burning. A bottle containing 60 100-mg vegetarian capsules of 7-Keto® DHEA, along with a special antioxidant blend, retails for $40; if a member orders four bottles, the price is reduced to only $27 per bottle. Contains rice.


DHEA Complete (25 mg DHEA+100 mg 7-Keto® DHEA), 60 vegetarian Capsules, Item #01250
To obtain optimal potencies of both forms of DHEA, the DHEA Complete formula provides 25 mg of DHEA, 100 mg of 7-Keto® DHEA, and a potent antioxidant blend in each capsule. For those seeking to combine the multiple benefits of DHEA and 7-Keto® DHEA, this is the ideal single-formula supplement. A bottle containing 60 vegetarian capsules of DHEA Complete retails for $48; if a member orders four bottles, the price is reduced to only $32.40 per bottle. Contains rice.

DHEA 100-mg, 60 Capsules, Item #00883
Some people produce so little DHEA that they need to take high doses. These 100-mg capsules provide high-potency DHEA at a very low cost. A bottle containing 60 100-mg capsules of DHEA retails for $22.50; if a member orders four bottles, the price is reduced to just $14.25 per bottle. Contains rice.

7-Keto® is a registered trademark of Humanetics Corporation. These supplements should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
Natural Ways to Thwart a Stealth Killer
The lifetime risk of developing high blood pressure is greater than 90% in adults 55 years and older.¹ You may be one of them. Experts estimate that this silent killer accounts for 40.5 million doctor visits each year.¹

Sadly, those visits often come too late.

Poorly controlled blood pressure slowly damages kidneys and the vasculature, often culminating in heart attack, stroke, or kidney failure.²,³

Tens of thousands of deaths attributable to hypertension occur each year,¹ yet most could have been prevented had corrective action been taken earlier in life. Published studies show that aging individuals who achieve a mere 5-point decrease in diastolic blood pressure can reduce their risk for lethal hypertension-related conditions by as much as 16%.⁴

In this article, you will learn of a discovery by a team of Cambridge researchers showing how to better manage hypertension using low-cost and readily available nutrient compounds. > >
A Fascinating Discovery

A recent study by researchers at the Cambridge Institute for Medical Research reveals the dangerous relationship between oxidative stress and angiotensin, a hormone that boosts blood pressure often to dangerous levels. Aiwu Zhou and colleagues decided to focus on angiotensin's parent molecule, angiotensinogen. Using ultra-high resolution X-ray crystallography, Zhou's team examined the underlying mechanisms driving high blood pressure.

When oxidative stress is present, the angiotensinogen molecule shifts its shape and floods the system with angiotensin! This led to the discovery of an “oxidative switch” that impacts blood pressure status in the body. What Zhou’s team has done is to identify an entirely new mechanism between oxidative stress and hypertension.

But nutritional scientists have long known that antioxidants confer some protection against hypertension. So Zhou’s work is fueling renewed interest in nutrients that fight oxidation and tip the balance away from angiotensin release. Recent discoveries show that a small handful of antioxidant compounds can inhibit the angiotensin-converting enzyme (ACE) itself, contributing to their antihypertensive effects. Let’s examine some of nature’s own antihypertensive interventions and how they can work to keep you healthy.

Whey Protein

Whey proteins derived from milk are antioxidants that may contribute to their antihypertensive properties. They also contribute to blood vessel relaxation and reduced “stiffness.” Professor Zhou’s discovery that antioxidant status directly affects angiotensin availability further explains how whey proteins may fight elevated blood pressure. Human studies of whey-rich or whey-enriched milk products demonstrate convincing reductions in blood pressure compared with placebo- or casein-supplemented patients.

In recent years, scientists have found that whey proteins exert substantial direct angiotensin-converting enzyme (ACE)-inhibiting effects. In the human stomach and intestine, whey proteins break down into very specific short amino acid chains (peptides) that makes them efficient ACE-inhibitors. Laboratory studies consistently show that blood pressure is reduced in hypertensive animals given whey protein derivatives. That effect is attributed at least in part to ACE inhibition. The ACE-inhibitory effect is substantially less powerful than those of prescription drugs, but some people encounter side effects with those drugs. Whey protein derivatives, by contrast, can be used for long periods of time without significant problems. Recent work suggests that these active milk components also inhibit the release of other vessel-constricting molecules such as endothelin-1, offering a second pathway for blood pressure control.

Together, all of these findings suggest that whey proteins can reduce the risk of hypertension-related disease. Let’s now look at other natural antihypertensive nutrients that can work together with whey to promote your cardiovascular health.

Grape Seed Extract and Resveratrol

Grapes contain many biologically active compounds, most notably multitracked polyphenols such as resveratrol and proanthocyanidins, which are associated with improvements in cardiovascular risk factors.

Extracts of grape seed are rich in beneficial compounds. Their constituents include antioxidants that
reduce markers of oxidative stress, such as oxidized low-density lipoprotein (LDL), that are associated with atherosclerosis. Those antioxidant effects can directly prevent or treat elevations in blood pressure in laboratory animals.

Grape seed extracts operate at multiple additional targets to achieve their beneficial effects on blood pressure. They fight advanced glycation end product (AGE) formation, an early step in producing inflammation associated with cardiovascular disease and cancer. This means that grape seed extracts hold promise not only in preventing hypertension, but also in fighting some of its deleterious effects, such as kidney damage.

The effects of grape seed extract may also protect the heart. In an experimental model of heart attack, cardiac tissue from animals that had received grape seed extract was better able to recover from lack of blood flow (ischemia), compared with the heart tissue of animals that did not receive grape seed extract.

Grape seed polyphenols can also reduce salt sensitive-hypertension in an animal model, which may further help push blood pressure into the normal range. Finally, grape seed extracts have been shown to induce cognitive improvements in impaired hypertensive rats.

All of these mechanisms contribute to improved blood pressure control and result in the clinically relevant drops seen in blood pressure in human studies. Recent discoveries about resveratrol, a main component of the extracts, shed additional light on their mechanism and their potential.

Hypertension

- High blood pressure threatens millions of Americans each year, despite medications and recommendations about diet and exercise.
- Antioxidants have long been known to provide protection against hypertension by a variety of mechanisms.
- In late 2010, landmark research revealed that oxidative stress directly increases production of the potent blood pressure-increasing hormone angiotensin. This discovery lends new urgency to the quest for therapies that can restore normal antioxidant function.
- Nutrients such as whey protein and peptides, grape seed extract, and pomegranate extracts all have superior antihypertensive effects in human and animal studies.
- All three nutrients restore antioxidant function, and each also fights angiotensin’s deadly effects both by reducing its production and by blocking its deleterious impact on vulnerable tissues.
Oxidant Stress, Hypertension, and Angiotensin

Over the past decade, scientists have come to recognize the extreme importance of oxidative stress in the causation of hypertension. In animal studies, oxidative stress increases blood pressure; if that stress is corrected, blood pressure normalizes. The root cause is an imbalance between production and elimination of reactive oxygen species (ROS), which triggers damage to the tissues most directly involved in maintenance of blood pressure. The kidney and the blood vessels are two primary target tissues of ROS damage. Both are intimately involved in regulation of blood flow and pressure, and are themselves rich sources of ROS, which makes them especially vulnerable. ROS damage reduces blood vessels’ ability to relax in the face of increased flow, which raises blood pressure. ROS also trigger inflammatory responses within and around vessels that threaten flow and elevate pressure. And ROS change the signaling characteristics of the vital endothelial cells that both line blood vessels and relay information about pressure to other structures in the vessel. Finally, ROS in the brain disrupt central nervous system signaling, further elevating blood pressure. It is in the kidney that the worst mischief is done. The kidney is the primary blood pressure control organ, largely through a molecular signaling network called the renin-angiotensin system.

Resveratrol is one of the more fascinating biologically active molecules known to science. It has a plethora of beneficial effects, acting at several key metabolic switches to promote longevity and fight chronic disease. A powerful antioxidant in its own right, resveratrol also enhances activity of the SIRT-1 regulatory complex, which is associated with prolonged life span in a host of experimental models. Resveratrol also inhibits signaling molecules expressed by blood vessel cells that are implicated in hypertension. The polyphenol improves the way vascular endothelial lining cells react and respond to factors that control blood pressure.

Preliminary research suggests that resveratrol may have ACE-inhibitory capabilities, adding to its potential for maintaining healthy blood pressure. Additionally, resveratrol may suppress some of the adverse effects of angiotensin II, such as vascular smooth muscle cell overgrowth (hypertrophy).
In an animal model, resveratrol has also been found to help prevent cardiac hypertrophy induced by high blood pressure. Chronic cardiac hypertrophy can lead to cardiac dysfunction and heart failure. Angiotensin’s effects have been implicated in that process, and resveratrol can block those effects by its action on multiple pathways.

In animal studies, resveratrol reduces pulmonary hypertension, the elevated pressure in arteries of the lungs that dramatically impairs quality of life in people with chronic heart disease.

**Pomegranate**

The pomegranate has demonstrated benefits for cardiovascular health and blood pressure control. Pomegranate juice and extracts are rich in some of nature’s most powerful polyphenols. Those molecules contribute to a reduction in cellular oxidative stress and help restore natural antioxidants to effective values. As we’ve seen, ameliorating oxidative stress in cells, particularly those of the vascular system, shows promise as an effective means of combating hypertension, because it limits production of angiotensin.

Like whey proteins and grape seed extracts, however, pomegranate extracts also directly inhibit activity of the angiotensin-converting enzyme (ACE), helping to lower blood pressure. And like resveratrol, pomegranate extracts are effective at blocking some of the downstream damage induced by angiotensin in tissues vulnerable to hypertensive changes.

In still a third line of defense, pomegranate supplements can increase levels of the antioxidant protective complexes called paraoxonases (PON). PONs are major components of high-density lipoprotein (HDL) and are widely recognized as providing much of the benefit we see from HDL.

A fourth avenue of benefit from pomegranate extracts is their effect on vessel wall function. Oxidative damage leaves vessels vulnerable to damage at points where blood pressure is markedly increased by so-called shear stress. Pomegranate juice mitigates that damage by improving activity of endothelial nitric oxide synthase (eNOS), thus making more vessel-dilating nitric oxide available.

The clinical benefits of pomegranate consumption on cardiovascular disease and blood pressure are undeniable. A landmark 2004 study from Israel demonstrated that pomegranate juice consumption for 3 years reduced carotid artery wall thickness in patients with narrowing of those arteries. The carotids are the major blood supplier to the brain, and thickening of those walls is a precursor to devastating strokes. That thickening is itself a direct result of chronic exposure to elevated blood pressure as well as abnormal lipid profiles. The patients in the Israeli study experienced an average of 12% reduction in systolic blood pressure by the end of the first year.

Subsequent human studies have demonstrated improvements in blood flow to the heart and the brain in patients with cardiovascular disease, following pomegranate supplementation. And flow-mediated dilation, a measure of vessels’ ability to respond to pressure changes, is improved after consumption of pomegranate juice.

**Summary**

Blood pressure elevations continue to threaten our longevity and our quality of life. We’ve known for years that people with a high intake of antioxidants tend to have lower blood pressures and to suffer less from cardiovascular disease in general. It’s only in the past decade, however, that we have begun to understand the biochemical underpinnings of that
cardioprotective effect. We now understand that oxidative stress induces inflammation in blood vessels that impairs their ability to safely regulate blood pressure.

Only in late 2010 did we learn that a state of high oxidative stress causes the blood pressure-boosting hormone angiotensin to become more readily available in the body. That discovery has set off a storm of interest in researchers aiming to control blood pressure by modifying oxidative stress in the body. Fortunately, solid scientific evidence abounds for the protective effects of three nutrients. Whey protein, grape seed extracts, and pomegranate extracts all work by restoring healthy antioxidant levels. We’ve learned that they each also prevent both activation of angiotensin and its destructive effects by a series of related but complementary mechanisms. Using all three together simply makes sense as a way to optimize your cardiovascular health.

Do What It Takes to Maintain Optimal Blood Pressure 24-Hours a Day

*Life Extension* has long advocated that *optimal blood pressure* readings over a 24-hour period should be at or below 115/75 mmHg for most people.

When blood pressure is chronically above this level, or when upward spikes in blood pressure occur during certain periods of the day, risk of vascular disease and kidney injury increases.

As humans age, blood pressure tends to rise above optimal ranges, often necessitating a multimodal approach.

Having one’s blood pressure periodically monitored in a doctor’s office can fail to detect periods of the day when blood pressure may be sharply increased, such as when the effects of a blood pressure drug wear off. The best defense is a home blood pressure monitoring device that is sold over-the-counter in pharmacies or can be ordered directly from Life Extension.

Some people require blood pressure lowering drugs to achieve optimal control. A generic drug called losartan is often prescribed at a starting dose of 50 mg once a day. This drug does not always provide 24-hour blood pressure control, sometimes necessitating twice-a-day dosage (up to 50 mg two times a day).

A more expensive drug called Benicar® consistently shows better 24-hour blood pressure control, and is usually prescribed at a starting dose of 20 mg once a day.

An advantage to using nutrients that help support healthy blood pressure levels is that the dose of prescriptive drugs may be reduced. Nutrients and lifestyle changes (reduced calorie/sodium intake and increased physical activity) can also reduce the dosage or need for prescriptive anti-hypertensive drugs.

Whatever intervention you select, the ultimate objective is not to exceed a blood pressure level of 115/75 at rest throughout the day. With a home blood pressure monitoring device, you can check your blood pressure at intervals throughout the day to ensure that whatever program you select is achieving *optimal results.*

References


Weak, brittle bones increase the risk of injury for many aging humans. Bone injuries, such as fractures, splinters, and bruises, can be extraordinarily painful and may result in months of uncomfortable rehab or long-term disability. In order to protect yourself from potentially life-altering problems, Life Extension® has formulated an exciting product made with chelated calcium and collagen called KoAct™ to maintain bone strength and mineral density.

KoAct™ allows for greater flexibility...so your bones can absorb energy, reducing the risk of age-related injuries. Additional plant extracts are included for their bone-protective minerals and polyphenols.

A bottle of Bone Strength Formula with KoAct™ retails for $42. If a member buys four bottles, the price is reduced to $28.50 per bottle.

Contains corn.

To order Bone Strength Formula with KoAct™, call 1-800-544-4440 or visit www.LifeExtension.com

Four capsules of Bone Strength Formula with KoAct™ provide:

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Collagen (from 3,000 mg KoAct™ Calcium Collagen Chelate)</td>
<td>2,700 mg</td>
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<tr>
<td>Calcium (from 3,000 mg KoAct™ Calcium Collagen Chelate and calcium fructoborate)</td>
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<tr>
<td>Vitamin D3 (as cholecalciferol)</td>
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<tr>
<td>Magnesium (as magnesium citrate)</td>
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<tr>
<td>Silica [from standardized Bamboo (Bambusa vulgaris) extract (stem)]</td>
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<tr>
<td>Dried Plum (Prunus domestica) extract (fruit) [standardized to 50% polyphenols (50 mg)]</td>
<td>100 mg</td>
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<tr>
<td>Boron (calcium fructoborate as patented FruiteX B® OsteoBoron®)</td>
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</table>

If you need extra bone support, ask your healthcare professional how Bone Strength Formula with KoAct™ can be part of a comprehensive nutritional program in conjunction with proper resistance exercise. Life Extension offers many mineral formulas that may complement Bone Strength Formula with KoAct™ to ensure optimal mineral intake.

KoAct™ is a trademark of AIDP, Inc. FruiteX B® and OsteoBoron® are registered trademarks of VDF FutureCeuticals, Inc., U.S. Patent #5,962,049.

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 a large percentage of men over the age of 50, having a healthy prostate is the key to living a normal life. Dietary supplementation for urinary and prostate health helps men maintain a normal hormonal balance, which promotes normal urinary flow and prostate health. Choosing to support a healthy prostate through supplementation is one of the smartest choices an aging man can make.

**Ultra Natural Prostate Formula** combines eleven cutting-edge natural ingredients that have been scientifically substantiated to protect the prostate gland and maintain its healthy function.* One of the newest additions to the formula is European pumpkin seed oil extract, which is rich in delta-7 sterols and fatty acids.

The formula provides saw palmetto extract and Graminex Flower Pollen Extract™ to interfere with DHT activity and help regulate inflammatory reactions in the prostate.* Lycopene is a carotenoid that has been added to the formula to help maintain healthy DNA gene function in prostate cells.

In order to boost its anti-estrogen capabilities, **Ultra Natural Prostate Formula** incorporates HRMLignan™, derived from Norway spruce, flax lignans, and nettle root extract.

Since normal aging can lead to potentially unsafe levels of prostaglandins in the prostate, *Pygeum africanum* extract is included to help suppress prostaglandins, and thereby promote prostate comfort.* Beta-sitosterol has been added because it is the most biologically active component of *pygeum* and enhances its protective effects.

**Ultra Natural Prostate Formula** also contains 5-LOXIN® boswellia extract to protect against the dangerous enzyme 5-lipoxygenase and the mineral boron to help slow elevation of prostate-specific antigen (PSA).

The retail price for one bottle of **Ultra Natural Prostate Formula** is $38. If a member buys four bottle, the price is reduced to $26.25 per bottle. If a member buys 12 bottles, the price is reduced to $24 per bottle.

Contains soybeans.

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**Ultra Natural Prostate Formula** provides ultra protection

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

<table>
<thead>
<tr>
<th>Ingredient</th>
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<tr>
<td>USPlus® Saw Palmetto (C02 DeepExtract™)</td>
<td>320 mg (std to 85%-95% total fatty acids and sterols)</td>
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<tr>
<td>Graminex Flower Pollen Extract™</td>
<td>252 mg</td>
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<tr>
<td>5-LOXIN®</td>
<td>70 mg</td>
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<tr>
<td>Pumpkin seed oil (Cucurbita pepo) extract</td>
<td>200 mg (standardized to 85% total fatty acids)</td>
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<tr>
<td>Phytosterol complex</td>
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<td>Proprietary blend of HMRlignan™</td>
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<td>Norway Spruce and ActiFlax™ Flax Lignan extracts</td>
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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.*
Tens of millions of Americans are in critical need of proper **blood pressure management** and don’t even know it. The shocking truth is that the majority of people treated for blood pressure-related issues still have **inadequately controlled blood pressure**!

Fortunately, groundbreaking nutritional research has identified natural agents that help maintain normal blood pressure. Combining these nutrients with lifestyle modifications and regular self-monitoring provides a powerful strategy for supporting blood pressure levels already within normal range.*

**Natural BP Management** is the first broad-spectrum nutritional supplement to combine potent, standardized concentrations of these novel nutritional agents in one convenient, easy-to-use formula:

- **CVH15™** derived from the milk protein whey naturally inhibits the angiotensin converting enzyme.* Since this enzyme can act to increase activity of the dangerous blood vessel constrictor angiotensin, CVH15™’s inhibiting effect on this enzyme can help to maintain healthy blood flow and support already normal blood pressure.*

- **Grape seed extract** naturally increases blood vessel dilation, thereby promoting already normal blood flow and blood pressure. Available for the first time is a patented **grape seed extract** that contains a novel ratio of uniquely structured polyphenols.*

- **Pomegranate extract** is an abundant source of highly concentrated compounds called punicalagins that function as natural antioxidants and also inhibit the angiotensin converting enzyme, thus supporting blood vessel dilation and countering vessel constriction.* This patent-pending extract not only supports already normal blood pressure management, but also may provide added cardiovascular protection by promoting healthy endothelial function and healthy low-density lipoprotein (LDL) oxidation.*

With its unique combination of novel ingredients, **Natural BP Management** represents a true breakthrough in blood pressure management. Two tablets provide:

**Two tablets of Natural BP Management provides:**

- CVH15™ Whey Protein Hydrolysate 1700 mg
- MegaNatural®-BP Grape Seed Non-GMO Extract (epicatechin gallate-free standardized grape seed extract) 150 mg
- POMELLA® Pomegranate Fruit Extract (standardized natural-spectrum punicalagins) 50 mg

A bottle containing 60 tablets of **Natural BP Management** retails for $42. If a Life Extension member orders four bottles, the price is reduced to just $28.35 per bottle.

**CAUTION:** If you have hypertension (high blood pressure) and/or are currently taking medication to lower your blood pressure, seek medical advice. Consult with a health care professional prior to taking or using any product that may affect blood pressure. CVH15™ is naturally derived from the milk protein whey; therefore, individuals with dairy allergies should avoid using this product.

**DIRECTIONS:** Take two (2) tablets in the morning preferably before a meal, or as recommended by a healthcare practitioner. If needed, take two (2) additional tablets in the evening. If used concurrently with anti-hypertensive medication, start with one (1) tablet daily and adjust dosing as needed based on the advice of a healthcare practitioner.
CAN A POWER BOOSTER ALSO BE A LONGEVITY BOOSTER?
For years, fitness enthusiasts have used branched chain amino acids to boost muscle strength and performance.¹⁻³

New research shows why longevity enthusiasts may also incorporate them into their nutritional regimen.

A study recently published in the respected clinical journal *Cell Metabolism*⁴ reveals that branched chain amino acids (BCAAs) have the power to increase life span in part by inducing mitochondrial biogenesis—the spontaneous generation of new mitochondria.

In this article, the results of this study are detailed. BCAAs may complement the life span effects of both pyrroloquinoline quinone (PQQ) and resveratrol.⁵⁻⁷

Specifically, BCAAs may trigger cellular mechanisms that enhance mitochondrial number and function while also upregulating expression of the pro-longevity gene that resveratrol targets: *sirtuin-1*¹⁻¹,⁷ > >
The Building Blocks of Life and Longevity

As the foundation of life and the engines that drive cellular metabolism, amino acids are the building blocks for all proteins.

The three essential branched chain amino acids are leucine, isoleucine, and valine. In concert with other simple amino acids, BCAAs comprise the functional proteins that form the structural basis of human physiology, from skeletal and cardiac musculature to the vast universe of life-sustaining enzymes. In humans, whose total muscle mass accounts for about 40% of body weight, BCAAs make up nearly a fifth of all muscle proteins.¹

In the landmark Cell Metabolism study, a team of scientists went beyond BCAAs’ metabolic effects to explore their potential to boost life span.⁴ This effort was based on prior studies indicating that the BCAAs leucine, isoleucine, and valine prolonged life in the yeast species Saccharomyces cerevisiae.⁵

Lead researcher Giuseppe D’Antona and his team fed male mice a diet that included BCAA-enriched drinking water.⁴ Mice ingesting BCAAs experienced a 12% increase in median life span from 774 days for untreated controls to 869 days in the treatment group. Because there was no significant difference in food intake, body weight, and body fat content between the treated and untreated animals, the authors concluded that the increased life span seen in the BCAA-enriched cohort was not a function of decreased body fat but rather the BCAAs themselves.

It was further discovered that mice enjoying increased longevity had high levels of SIRT1,⁴ a mammalian form of sirtuins, a subset of genes conclusively linked to increased longevity across a range of species.⁶,⁷,⁹

BCAA-treated mice also exhibited upregulation of genetic defense systems that blunt the detrimental effects of specific reactive oxygen species (ROS)⁴ associated with cellular and somatic (body) aging in many organisms, including mammals.

BCAA-fed groups further experienced a dose-dependent response of new mitochondrial formation⁴ or mitochondrial biogenesis, as measured through specific markers of cellular energetic output in heart muscle cells.

Exercise was shown to further enhance the mitochondrial function induced by BCAAs.⁴ Trained, BCAA-fed mice exhibited greater amounts of mitochondria in heart and skeletal muscle when those tissues were examined by electron microscopy. The BCAAs treatment groups also showed greater endurance scores on treadmill tests and better performance in tests of...
motor coordination, seen to an even greater degree in exercise-trained animals.¹
Dr. D’Antona’s study included a second group of mice that carry a specific mutation. These mutant mice lack a key enzyme involved in blood vessel relaxation and regulation called **endothelial nitric oxide synthase** or **eNOS**.⁴ Without eNOS, mice die earlier and develop cardiovascular disease and other age-related pathologies similar to humans suffering from **metabolic syndrome**.¹⁰ Mice lacking the eNOS enzyme did **not** experience the same benefits of longer life span, improved ability to form new mitochondria, increased expression of **SIRT1**, or enhanced defense against ROS in response to BCAAs treatment.⁴
This led the researchers to conclude that healthy eNOS activity also plays a key role in BCAAs’ pro-longevity action, mitochondrial biogenesis, and reduced oxidative stress.⁴

**Unique, Systemic Benefits**

Once ingested, dietary BCAAs are transported and metabolized by a group of specific enzymes. What makes BCAAs unique among amino acids is that they are **not** broken down in the liver. Instead, they enter the bloodstream and are **directly** absorbed into the

**Branched Chain Amino Acids and Calorie Restriction**

- The three branched chain amino acids leucine, isoleucine, and valine are essential nutrients that cannot be made by the body and must be consumed in the diet.
- BCAAs are not metabolized by the liver, but instead enter the bloodstream, where they are directly taken up by muscle and used for muscle energy, repair, or building.
- Studies in mice and lower life forms show that BCAAs can extend longevity and may share pathways with mTOR. A recent mouse study also showed that BCAAs may provide fuel or signaling ability to enhance the proliferation of new mitochondria, a finding that holds promise for healthier aging.
- Administration of BCAAs also appears to bolster cellular defense mechanisms against harmful oxidizing molecules.
- BCAAs also show promise in supporting insulin sensitivity, maintaining muscle mass with aging, and supporting healthy nervous system function.
skeletal muscle.\textsuperscript{11} There they enter the cellular powerhouses known as \textit{mitochondria}, the source of over 90\% of all energetic output in the human body.\textsuperscript{1}

BCAAs exert a profound influence over metabolic processes central to protein synthesis. Leucine also appears to play a particularly key role in protein formation and the regulation of protein metabolism.\textsuperscript{12} Human studies that have examined these exceptional actions in the bloodstream and skeletal muscle point to a role for BCAAs in muscle recovery from fatigue or intensive physical activity such as strength training.\textsuperscript{1,2} A 2010 review published in the \textit{Journal of the International Society of Sports Nutrition} cited the power of BCAAs to bolster muscle protein building and delay the onset of fatigue as key benefits for exercising individuals.\textsuperscript{3} The paper also noted the possible effectiveness of BCAAs as performance enhancers.

In addition to their newly confirmed pro-longevity and mitochondria-generating effects, BCAAs show promise in fighting multiple killer diseases of aging. Human trials reveal favorable effects of essential amino acid ingestion, including BCAAs, on insulin sensitivity and blood glucose control, as demonstrated in a study of 34 elderly diabetic subjects over a test period of more than a year. A BCAA-rich amino acid mixture improved numerous parameters of blood sugar metabolism, including hemoglobin A1c, in this group of older adults with poorly controlled diabetes.\textsuperscript{13}

BCAA-enriched amino acid mixtures have also shown promise for improving the muscle-wasting condition known as sarcopenia in elderly human subjects, who gained muscle mass during treatment.\textsuperscript{14} This finding holds important implications for BCAAs’ use in other conditions characterized by debilitation and muscle loss.

Since BCAAs are involved in the formation and maintenance of glutamate and the neurotransmitter \textit{gamma-aminobutyric acid} (GABA) in brain tissue, researchers believe they may play a role in supporting healthy nervous system function. Studies in animal models have shown promise that oral BCAA administration can improve the devastating consequences of traumatic brain injury by improving cognitive performance.\textsuperscript{15}

The regulatory protein \textit{mTOR} influences not only cell growth and protein synthesis but also cell survival. mTOR acts as an energy and nutrient sensor that receives input from the body regarding cellular nutritional status and levels of energy and hormones, including insulin. By sensing energy availability, including caloric intake, mTOR activity helps to govern caloric consumption by inducing the sensations of hunger (satiety) and fullness, in part through mTOR interaction with the hormone \textit{leptin}, which is sometimes called the \textit{anorectic} hormone for its hunger-curbing activity.\textsuperscript{16}

Studies in rats that were administered the BCAA leucine to their central nervous systems showed increases of mTOR signaling in a region of the brain known as the \textit{hypothalamus}, which was in turn associated with decreased food intake.\textsuperscript{17,18} The hypothalamus acts to match energy or food intake with energy output, regulates thirst and hunger, and balances vital functions, including body temperature, sleep-wake cycles, and the sensation of fatigue. Disorders of mTOR signaling have been hypothesized as a contributor to overeating syndromes associated with obesity.\textsuperscript{18,19}

The finding that about half of human cancers involve aberrant mTOR signaling has prompted cancer researchers to target this specific pathway in the development of new \textit{cancer treatments}. Interest in this area has led to a second generation of anti-mTOR therapies now under study in over 200 human clinical trials.\textsuperscript{20,21}
The branched chain amino acids leucine, isoleucine, and valine are essential to human nutrition. While BCAAs have been successfully studied and applied in optimizing muscle development and athletic performance, a new study reveals they can extend life and combat age-promoting cellular injury, perhaps through BCAAs’ abilities to foster mitochondrial proliferation.

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


Other Benefits of Branched Chain Amino Acids

Branched chain amino acids demonstrate potential benefits for a wide range of applications.

- **Obesity.** Greater dietary intake of BCAAs is associated with a decreased prevalence of being overweight or obese. Supplementing with the branched chain amino acid leucine shows potential for preserving lean tissue mass in individuals who are consuming a low-calorie diet in order to lose weight. Scientists believe leucine triggers an after-meal response that protects metabolically active muscle while increasing the loss of body fat.

- **Metabolic Syndrome.** A diet rich in protein and moderate in carbohydrates is effective in managing metabolic syndrome and type 2 diabetes and in promoting weight loss. Leucine may play a key role in the efficacy of a high-protein diet by modulating insulin signaling and glucose use by skeletal muscle.

- **Liver Disease.** BCAAs have been reported to improve event-free survival (free from hepatic failure, rupture of esophageal or gastric varices, development of liver cancer, and death) and quality of life in people with liver cirrhosis. Research shows that BCAAs improved the insulin resistance accompanying chronic viral liver disease in a group of male patients.

- **Cancer Cachexia.** Loss of lean body mass (cachexia) decreases physical performance and quality of life in cancer patients. In an animal model of cancer cachexia, the combination of a high protein diet enriched in leucine plus fish oil reduced tissue loss, improved muscle performance, and normalized daily activity. Scientists believe BCAAs may prove helpful in numerous conditions associated with tissue breakdown, including postoperative stress, trauma, and burns.

- **Muscle Soreness.** Consuming BCAAs before exercise reduced muscle soreness 2 and 3 days after a workout, compared with individuals who did not consume BCAAs. BCAAs have also been reported to reduce the feeling of fatigue during an intense workout. Ingesting BCAAs during training reduced the rise in blood markers of muscle damage and inflammation that otherwise occur with strenuous exercise.
Preserve Youthful Cellular ENERGY with Next-Generation LIPOIC ACID

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

Unlike other forms of lipoic acid, SUPER R-Lipoic Acid is more bioavailable, stable, and potent, achieving 10-30 times higher peak blood levels than pure R-lipoic acid. This unique sodium-R-lipoate can help you reach peak plasma concentrations within just 10-20 minutes of supplementation. Super R-Lipoic Acid provides more of the active “R” form of lipoic acid than any other supplement.

A bottle of Super R-Lipoic Acid containing 60 vegetarian capsules retails for $49. If a member buys four bottles, the cost is only $33.75 per bottle. Each capsule contains 300 mg of stabilized, Bio-Enhanced Super R-lipoic acid supplying 240 mg of R-lipoic acid. Suggested dose is one capsule each day.

Contains rice.

References:

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Plant Foods
In a Convenient Powder Blend

We try to eat healthfully, but getting enough plant foods each day can be a challenge for many people.

Vital Greens Mix is a blend of organic whole plant foods that provide diverse benefits ranging from protecting DNA integrity and maintaining immune function to suppressing vascular risk factors and restoring healthy intestinal flora.

Some of the ingredients in Vital Greens Mix superfood include:

- **Chia**, a rich source of protein, fiber, vitamins, minerals, and alpha-linolenic acid (an omega-3 precursor). Recent research at the University of Toronto has shown that regular chia intake may help maintain healthy blood pressure and C-reactive protein levels, both of which are well-known markers of cardiovascular disease.¹

- **Green Grasses and Sprouts** to provide a full array of chlorophyll-rich, nutrient-dense natural “green” foods that help detoxify and maintain youthful DNA integrity. In addition, clinical trials with chlorella supplements demonstrate that daily use of this green food may support healthy immunity and wound healing.²,³

- **Probiotics** to sustain healthy bacterial balance in the gut, which may support overall immune and digestive health.

- **A mushroom blend** combining maitake, shiitake and cordyceps extracts to support immune health and provide adaptogenic benefits for balance and resistance.

Life Extension’s Vital Greens Mix is a great way to start off a meal. It induces some immediate satiety while providing beneficial plant foods that help neutralize mutagenic components of modern diets.

Each scoop of Life Extension’s Vital Greens Mix provides a daily dose of nutrient-dense foods and herbal extracts. The retail price of a 30-serving jar of this organic superfood is $48. When a member buys four jars, the price is reduced to only $33 per jar.

To order Vital Greens Mix, call 1-800-544-4440 or visit www.LifeExtension.com

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Each serving provides:

Contains milk, wheat, gluten, rice, corn, and barley.

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 ABCs of BCAAs

Muscle Maintenance.
Muscle Growth.
Muscle Recovery.
It’s just that simple.

One of the strongest names in the supplement industry proudly introduces a product designed to keep you strong:

Life Extension’s Branched Chain Amino Acids

After age 50, it’s estimated that you’ll begin losing about 1% of strength per year due to muscle deterioration. Without proper exercise and supplements, that rate may increase exponentially, causing a rapid decrease in quality of life.

Life Extension’s Branched Chain Amino Acids provides all three BCAAs to support healthy muscle maintenance:

- 1,200 mg of L-Leucine
- 600 mg of L-Isoleucine
- 600 mg of L-Valine

A bottle containing 90 vegetarian capsules of Branched Chain Amino Acids retails for $19.50. If a member buys four bottles, the price is reduced to $12.75 per bottle.

To order Branched Chain Amino Acids, call 1-800-544-4440 or visit www.LifeExtension.com

Contains rice.

Caution: Individuals with ALS or disorders impairing the metabolism of branched chain amino acids should not use this product.

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.
Behind every process your body needs to survive and thrive are the cellular energy generators known as **mitochondria**. Their function is so crucial that a growing number of scientists now believe mitochondrial longevity may determine overall longevity in aging humans.\(^1\)\(^-\)\(^1\) That’s why **Life Extension** has remained at the forefront in identifying innovative compounds that specifically support mitochondrial health.

In addition to the more comprehensive **Mitochondrial Energy Optimizer with BioPQQ™** and standalone POQ products, we now offer a **one capsule per day formula** for individuals seeking a simplified, low-cost option called **Mitochondrial Basics with BioPQQ™**.

The reason? We want all members to have access to targeted nutrients required to support mitochondrial function and the generation of healthy new mitochondria.

### Three Premium Compounds in One Low-Cost Formula

The new **Mitochondrial Basics** brings together cutting-edge mitochondrial energizers, including the most exciting nutrient to emerge in recent years called **pyrroloquinoline quinone** or **POQ**. The three ingredients in value-priced **Mitochondrial Basics** are:

1. **POQ.** This breakthrough micronutrient has recently been shown to trigger **mitochondrial biogenesis**—the growth of new mitochondria in aging cells!\(^1\)-\(^3\) POQ also activates genes involved in protecting the delicate structures within the mitochondria.\(^1\)-\(^1\)

2. **R-lipoic acid.** The detrimental effects of free radicals comprise one of the chief obstacles to optimal mitochondrial energy production. Published studies confirm R-lipoic acid’s power to promote mitochondrial bioenergetics while simultaneously **blunting** free radical activity.\(^9\)-\(^10\) **Mitochondrial Basics** contains the superior **Bio-Enhanced** R-lipoic acid and is in a proprietary microencapsulated form for better absorption.

3. **Acetyl-L-carnitine arginate.** Fats are shuttled into the mitochondria for metabolic combustion by the amino acid **carnitine**. The acetylated form of carnitine helps to facilitate more efficient utilization of fats than carnitine alone.

**Life Extension** members continue to enjoy access to a full range of targeted supplements clinically shown to optimize energy production in the mitochondria. Just one capsule a day of **Mitochondrial Basics** supplies:

- **BioPQQ™** ........... 10 mg
- **R-lipoic acid** ........... 100 mg
- **Acetyl-L-carnitine arginate** ........... 250 mg

A bottle containing 30 capsules of **Mitochondrial Basics with BioPQQ™** retails for $52. If a member buys four bottles, the price is reduced to just $34.50 per bottle. PQQ can also be obtained as a low-cost standalone or in the **Mitochondrial Energy Optimizer** formula.

To order new **Mitochondrial Basics with BioPQQ™**
call 1-800-544-4440 or visit www.LifeExtension.com

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**BioPQQ™** is a trademark of MGC (Japan). Bio-Enhanced® is a registered trademark of Geronova Research, Inc. ArginoCarn® is a registered trademark of Sigma-tau Health Sciences, Inc. and is protected by US patents 6,365,622, US 6,703,042, and EP 1202956.

**References**

8. Entrez Gene: PARGC1A peroxisome proliferator-activated receptor gamma, coactivator 1 alpha [Homo sapiens | GenID: 10891].

*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.*
I’m a 55-year-old male whose testosterone is in the low range. My doctor does not want to prescribe me testosterone replacement therapy. What can I do to help boost my testosterone levels?

It is unfortunate that many doctors are either reluctant to replace testosterone in men, or are totally inexperienced in this area. Aging men need our hormones, just like women do. We may not get the hot flashes that women do, but we can experience low self-esteem, depression, erection problems, weight gain, etc. Many of these symptoms are frequently dismissed by doctors as part of getting older or misdiagnosed as depression, when, in fact, our testosterone is declining. Replacing testosterone to youthful levels has many benefits and can even help prevent heart disease.
Many things lower testosterone, including: smoking, drugs, weight gain, and illnesses like diabetes and hypertension. Living a healthy lifestyle and following the right diet can boost your levels. If you are doing everything correctly and still not getting great results, I suggest checking 25-hydroxyvitamin D levels. Levels should be around 55 ng/mL. Most of us are deficient, especially if we live in a cold climate with little to no sun exposure. Correcting vitamin D by taking vitamin D3 at a dose of 4,000 to 5,000 IU a day can naturally boost your testosterone levels because D3 plays a part in its production. You can also take zinc at a dose of 80 mg a day, as well as a formula from Life Extension® that I personally take, called Super MiraForte. You should see improvement. However, if levels are still low, you may need to find the right doctor to prescribe testosterone cream or injections.

Dr. Aziz is an attending physician at Lenox Hill Hospital in New York City. He is a member of the American College of Physicians/American Society of Internal Medicine, and he is also a fellow of The Royal Society of Medicine in the United Kingdom. He is a national and an international speaker for many distinguished organizations, including the American Academy of Anti-Aging Medicine. Dr. Aziz has been featured on several national TV and radio shows, including The View, The Doctors, 700 Club, and Good Morning America Health. He is a regular contributor to Mel Robbins, a nationally syndicated radio show. He is also the medical director for IBN Sports, a website that reaches millions of students and athletes in California.

For more information on The Perfect 10 Diet visit www.Perfect10Diet.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.
Dolphin Swim Package

Book a stay of 4 nights or more at The Royal Cancun and receive two free passes to swim with dolphins!

$135 per night

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Rocking at Sunset... Rethink Aging.

Partner with an anti-aging physician and take charge of your health destiny today. Find one near you via the Physician Directory at www.worldhealth.net
Top Off Your TESTOSTERONE Naturally

Low Testosterone Levels May Lead to: Reduced Sex Drive • Depression Less Energy • Cloudy Thinking Weight Gain • Cardiovascular Issues

Maintaining healthy testosterone levels is one of the most important steps you can take to regain your health and improve your performance. With research showing that by the time a man is 60 years old, he may produce 60% less testosterone than he did in his 20s, the time is now to add Life Extension®’s Super MiraForte with Standardized Lignans to your supplement regimen.

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

- 1500 mg Chrysin
- 15 mg Bioperine®
- 850 mg Muira puama
- 282 mg Nettle root
- 50 mg Ginger root
- 15 mg Chelated elemental zinc
- 320 mg Maca
- 33.4 mg HMRlignan™ Norway Spruce lignan extract

The retail price for a bottle of 120 capsules of Super MiraForte with Standardized Lignans is $62. If a member buys four bottles, the price is reduced to $42 per bottle.

To order Super MiraForte 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.

Contains corn. Bioperine® is a registered trademark of Sabinsa Corp. HMRlignan™ is a registered trademark used under sublicense from Linnea S.A.
If it helps for a doctor to have walked in his patients’ shoes, then Harlan Bieley, MD, has both the resume and the diplomas to make a well-rounded physician. That’s because Bieley was derailed by illness while he was on his way to becoming a dermatologist.

“I got sick during my dermatology residency,” Bieley says. “And the strategy that got me better is why I wanted to open an anti-aging and functional medicine practice.”

Bieley explains that he knew he needed help because he couldn’t focus, didn’t have any energy, and just plain didn’t feel good. He went to several doctors who told him that he needed to balance his hormones and get rid of the toxins that were slowing his body down. After modifying his lifestyle and choosing the right nutrients and supplements to include in his diet, he soon regained his mental acuity and former robust health.
“The success I had personally led me to go back to school to study this amazing field of regenerative medicine even further,” Bieley says. “I had an interest in it when it first came out, but the more I dove into it, the more fascinated I became. I was soon studying anti-aging and functional medicine as well.”

This fascination eventually led Bieley to become Board Certified and an Advanced Fellow in Anti-Aging and Regenerative Medicine through the American Academy of Anti-Aging Medicine.

“The fact is that for some diseases like diabetes, for every class of medicine out there, we have a nutritional supplement with less side effects and less costs,” he says. “People can take medication all day, but if they’re going to have lasting improvement in their health, they need to alter their lifestyle and diet accordingly.”

This triple philosophy of combining nutrigenomics, diet, and supplements into one powerful weapon against disease and poor health is at the heart of what Dr. Bieley preaches at his Healthy Living and Longevity Medical Center.

**OPENING A PRACTICE, OPENING PATIENTS’ EYES**

Dr. Bieley’s office, which has been open for four years, is nestled just off of Federal Highway in North Palm Beach, Florida. The office has an inviting waiting area, replete with copies of the most cutting edge anti-aging reading materials available for patients to peruse. Of course, the current copy of *Life Extension Magazine*® is prominently displayed.

“The writing in *Life Extension*® is really informative and is on the cusp of the latest medical findings and technology. I always leave issues around for patients to look at,” Bieley says. “Plus, the features in *Life Extension* delve into many of the issues I see my patients battle every day.”

The conditions facing these patients vary by age and sex, but Bieley says that for men, low levels of energy, reduced sexual desire and/or function, and lack of mental focus are some of the most common complaints his patients have when they first step into his office. For women, he says that the most common issues often dealt with are sleeplessness, depression, chronic stress, and menopause anxiety.

“Quite often, my patients come in with a symptom that will really be the result of a cascade of symptoms,” Bieley says. “A man will come in and say that he’s feeling depressed, but when I ask why he’s depressed, he’ll explain that he just doesn’t have the energy. So here we are with a man suffering from a whole slew of problems, but they all come back to a general lack of energy, which may lead to the simple problem of low testosterone levels. This is a very fixable problem, but many patients have no idea that having low testosterone is even something that can happen.”

### Dr. Harlan Bieley’s Supplement Regimen

- Super MiraForte
- Alpha Lipoic Acid
- Biotin
- Endothelial Defense
- Vitamin D
- Omega-3 Fish Oil
Despite the overwhelming number of diseases and conditions Dr. Bieley tests for in order to pinpoint exactly what may be bothering someone, he begins all patient interviews with one simple question: “Are you ready to make changes in your life?”

“I ask this question because while we can diagnose a patient’s problem and come up with a solution to solve it, ultimately, making beneficial changes in your life will be the key to long-term success,” Bieley says.

On a personal level, Bieley had to reevaluate his life habits in order to, as he puts it, “nurture health rather than fight disease.”

The difference between the two, while seemingly small, is actually vast.
“The difference has to do with methodology and approach,” he says. “Nurturing health involves the dynamic approach of functional medicine that deals with evaluating the underlying triggers, pathophysiology, antecedents, and mediators for preemption, preventing, and treating chronic disease.”

A large part of this “nurturing” health process is maintaining a strong exercise program, which keeps the heart, mind, and body strong.

“The key to cardiovascular conditioning and increasing lean muscle and building muscle, in general, is to create a lactic acid burn that depletes glycogen ten to fifteen minutes into the workout program,” he says. “After this initial warm-up, the rest of the exercise program should focus on ATP production in skeletal muscle and increasing growth hormone and testosterone levels.”

Bieley recommends one hour of exercise at least three times a week, comprised of 40 minutes of resistance training and 20 minutes of interval training. He also tells his patients to work out in the morning prior to eating because if you have glycogen stores in muscle or in the liver when you start your exercise program you will not create the same lactic acid burn.

As is the case with the rest of Bieley’s advice to patients, there is an important nutritional component to the workout. The post-workout shake that he tells his patients they should have is made of 16 ounces of a healthy beverage, 10 grams of D-ribose powder, 2 grams of L-carnitine tartrate powder, 1 gram L-glutamine powder, 30 grams whey protein powder, and 3 grams of buffered vitamin C.

**BRAIN TRAINING**

While many of the issues facing Dr. Bieley’s patients involve their bodies, quite a few also involve their minds. As such, he has created a Brain Fitness Program to help enhance the memory of his older clients.

“Different exercises stimulate different regions and neurological functions in the brain,” he explains. “Mental exercises can sharpen intelligence.”

Simple things like using your non-habitual hand for everyday tasks or picking a year from your past and trying to remember everything that happened in a specific month will activate certain parts of your brain and strengthen your mind. Even things like putting your watch on a different hand or practicing reading upside down can kickstart your brain into learning a new skill. An odd, but interesting suggestion to spark certain parts of your brain involves watching the television with the sound off and trying to figure out the personalities of the characters by watching their actions. This will help the brain improve its interpretation of visual stimuli, since the audio stimulus normally relied upon will not be there.

“Taking up a new language, a new instrument, or even beginning to listen to a new kind of music, all can have incredible effects on an aging brain,” Bieley says. “Your mind has the amazing ability to always be able to learn new things.”

In addition to mental exercises, Dr. Bieley offers something called The Brain Spa®, which he describes as an ultra-modern neurofeedback training system (EEG biofeedback with photostimulation) that has been used to improve anxiety, insomnia, ADD/ADHD, and your level of focused attention.

**PUTTING IT ALL TOGETHER**

The slogan for Bieley’s Healthy Living and Longevity Medical Center is “Function Higher—Physically, Mentally, Sexually,” and the multi-modal, comprehensive care reflects an incredible attention to detail about how to care for a patient. His step-by-step diagnostic process and explanation of solutions no doubt comes from Bieley’s own experiences sitting on the other side of a doctor’s desk.

In his own words, he focuses on making sure patients don’t feel like they’re being “rushed through the mill” because as a patient, that’s not how he wanted to be treated.

“Being a doctor who overcame an illness offers different insight into the doctor-patient relationship,” he says. “I have empathy for anyone who is ill or just not functioning normally, and I am passionate about finding a customized, sustainable care plan designed just for them. My goal is to get every one of my patients back to robust health.”

For more information, please visit: www.hllmc.com

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.
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The 11th Annual Prostate Cancer Conference will feature important information on quality of life issues for all prostate cancer patients, caregivers, medical professionals and advocates.

Hosted by The Prostate Cancer Research Institute

CONFERENCE HIGHLIGHTS

- Presentations on:
  - Newly Diagnosed - Prostate Cancer 101
  - Latest Treatment Options
  - Rising PSA after local therapy
  - Rising PSA - Castrate Resistant
  - Failed Taxotere – now what?
  - Erectile Dysfunction
  - Incontinence
  - What supplements work

- Round-Table Discussions: watch and hear speakers’ multi-disciplinary approach to actual clinical cases

- Opportunities to interact with speakers after their presentations

- Ask the Experts: question-and-answer sessions with participating faculty and other experts and conference attendees

- Exhibits from participating supporters and other members of the prostate cancer community

- Support group meetings will be held to allow attendees to interact with others who are in similar situations

- Saturday Night Gala: Dinner with Live Entertainment, and The Harry Pinchot Award and the Catalyst Award

FACULTY*

Jeffrey Demanes, MD; Reginald Dusing, MD; Laurence Klotz, MD; Eugene Kwon, MD; Tom Lue, MD; Mark Moyad, MD; Charles “Snuffy” Myers, MD; Mark Scholz, MD; Timothy Wilson, MD; among others

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*as of press time. Visit www.PCRI.org for up-to-date conference info.
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3. Have your blood drawn.
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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.

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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 1100 West Commercial Blvd, Ft. Lauderdale, FL, 33309. We’re located at Commercial Blvd and Powerline Road, just west of I-95. For more information or directions call 954-766-8144.

**SUGGESTED ADDITIONS TO ANNUAL BLOOD TESTING**

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<thead>
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<th>Description</th>
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<td>LC01610</td>
<td>FIBRINOGEN (LC01610) High levels of this blood-clotting factor increase the risk of heart attack and stroke.</td>
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<td>LC004051</td>
<td>CORTISOL (LC004051) This test is used to help assess adrenal function.</td>
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<td>LC141275</td>
<td>LP-PLA2 (PLAC TEST) This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis.</td>
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<td>LC334971</td>
<td>CELIAC DISEASE ANTIBODY SCREEN (LC334971) This test measures deamidated gliadin IgA, tissue transglutaminase IgA, and serum IgA quantification.</td>
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<td>LC00458</td>
<td>FERRITIN (LC00458) Used to evaluate iron stores in the body and to determine iron deficiency anemia.</td>
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<tr>
<td>LC001453</td>
<td>HEMOGLOBIN A1C (LC001453) Used to assess long-term glucose control.</td>
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<tr>
<td>LC000810</td>
<td>VITAMIN B12/FOurate (LC000810) This test measures the amount of vitamin B12 and folic acid in the blood.</td>
<td>$24.75</td>
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</table>

* For non-member pricing call 1-800-208-3444.
** This test is packaged as a kit, requiring a finger stick performed at home.
seeking to maintain optimal blood level values.

**TSH, T4, Free T3, Free T4**

**Total Protein Globulin**

Thyroid peroxidase antibodies, Red cell magnesium, TSH, T4, Free T3, Reverse T3, Thyroid antibodies, Testosterone, Progesterone, and TSH. Continual monitoring of hormone levels is necessary for men seeking to maintain low thyroid function (hypothyroidism).

**OTHER POPULAR PANELS**

**CBC/CHEMISTRY PROFILE (LC381822)**

Note: This CBC/Chemistry profile is included in the Male and Female Life Extension panels. Retest profiles and Weight Loss Panels

**CARDIOVASCULAR RISK PROFILE**

Total Cholesterol Cholesterol/HDL Ratio

HDL Cholesterol Estimated CHD Risk

LDL Cholesterol Glucose

Triglycerides

**LIVER FUNCTION PANEL**

AST (SGOT) Total Bilirubin

ALT (SGPT) Alkaline phosphatase

LDH

**KIDNEY FUNCTION PANEL**

BUN BUN/Creatinine Ratio

Creatinine Uric Acid

**BLOOD PROTEIN LEVELS**

Total Protein Globulin

Albumin Albumin/Globulin Ratio

**BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE**

Red Blood Cell Count Monocytes

White Blood Cell Count Lymphocytes

Eosinophils Platelet Count

Basophils Hemoglobin

Polys (Absolute) Hematocrit

Lymphs (Absolute) MCV

Monocytes (Absolute) MCH

Eos (Absolute) MOH

Base (Absolute) Polynucleated Cells

**BLOOD MINERAL PANEL**

Calcium Sodium

Potassium Chloride

Iron

**FEMALE WEIGHT LOSS PANEL (LOWLF)**

CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, C-Reactive Protein (high-sensitivity), Progesterone, free and total Testosterone, TSH, SHBG, Free T3, Free T4, Insulin.

**MALE WEIGHT LOSS PANEL (LOWLM)**

CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, C-Reactive Protein (high-sensitivity), PSA, free and total Testosterone, TSH, SHBG, Free T3, Free T4, Insulin.

**LIFE EXTENSION THYROID PANEL (LC304131)**

TSH, T4, Free T3, Free T4

**FEMALE HORMONE RE-TEST PROFILE† (LCRTF)**

CBC/Chemistry Profile (see description above), DHEA-S, Total Estrogen, Pregnenolone, Total and Free Testosterone, Pregesterone, and TSH. Continual monitoring of hormone levels is necessary for women seeking to maintain optimal blood level values.

**MALE HORMONE RE-TEST PROFILE† (LCRTM)**

CBC/Chemistry Profile (see description above), DHEA-S, DHT, Estradiol, PSA, Pregnenolone, Total and Free Testosterone, and TSH. Continual monitoring of hormone levels is necessary for men seeking to maintain optimal blood level values.

**DR. LICHTEN COMPREHENSIVE THYROID PANEL (LICHTEN2)**

TSH, T4, Free T3, Reverse T3, Thyroid antibodies, Thyroid peroxidase antibodies, Red cell magnesium, vitamin D(25-OH).

**DR. LICHTEN CARDIAC RISK FACTORS† (LICHTEN05)**

Homocysteine, C-Reactive Protein, Ferritin, Fibrinogen, ABO, and Rh blood typing.

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Signature of Life Extension Member

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N-Acetyl Cysteine
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<th>Member Each</th>
<th>Qty</th>
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<td>ACETYL-L-CARNITINE - 500 mg, 100 caps</td>
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<td>ARGinine CAPS - 800 mg, 200 caps</td>
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<td>ARGinine/ORNithine - 500/250, 100 caps</td>
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<td>ASPRIN® - 81 mg, 300 enteric coated tablets</td>
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**SUB-TOTAL OF COLUMN 1**

### To order call: 1.954.766.8433 or 1.800.544.4440

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<th>B</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<td>BRANCHED CHAIN AMINO ACIDS - 90 vegetarian caps</td>
<td>19.50</td>
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**SUB-TOTAL OF COLUMN 2**

_LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS_
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<th>No.</th>
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<th>Member Each</th>
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<td>CILANTRO HERBAL EXTRACT - 1 oz</td>
<td>$12.00</td>
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**SUB-TOTAL OF COLUMN 3**

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

**SUB-TOTAL OF COLUMN 4**

MAY 2011
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<th>No.</th>
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<th>Member Each</th>
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<td>COSMESIS AMBER SELF MICRODERMABRASION - 2 oz</td>
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<td>COSMESIS ANTI-AGING MASK - 2 oz</td>
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<td>COSMESIS ANTI-OXIDANT FACIAL MIST - 2 oz</td>
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<td>COSMESIS ANTI-OXIDANT REJUVENATING FOOT SCRUB - 2 oz</td>
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<td>COSMESIS ANTI-OXIDANT REJUVENATING HAND CREAM - 2 oz</td>
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<td>COSMESIS ANTI-OXIDANT REJUVENATING HAND SCRUB - 2 oz</td>
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<td>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz</td>
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<td>$48.38</td>
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**SUB-TOTAL OF COLUMN 5**

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**SUB-TOTAL OF COLUMN 6**
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**SUB-TOTAL OF COLUMN 10**

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS
### Buyers Club Order Form

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<th>No.</th>
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<td>01009</td>
<td>MEMORY UPGRADE™ - 600 grams powder</td>
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<td>01047</td>
<td>MENOPAUSE SOLUTIONS - 120 tablets</td>
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<td>METHYLBALAN®IN - 1 mg, 60 lozenges (vanilla)</td>
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<td>Buy 4 bottles, price each</td>
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<td>METHYLBALAN®IN - 5 mg, 60 lozenges (vanilla)</td>
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<td>Buy 4 bottles, price each</td>
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<td>18.75</td>
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<td>Buy 10 bottles, price each</td>
<td>23.00</td>
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<td>MIGRA-EZEE® (BUTTERBURN) - 60 softgels</td>
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<td>Buy 4 bottles, price each</td>
<td>26.33</td>
<td>19.75</td>
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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 2011
## Buyers Club Order Form

### To order call: 1.954.766.8433 or 1.800.544.4440

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<th>N CONTINUED</th>
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<td>01085</td>
<td>NATURAL SLEEP MELATONIN* - 5 mg, 60 veg. caps</td>
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<td>00987</td>
<td>NATURAL STRESS RELIEF - 30 veg. caps</td>
<td>28.00</td>
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<td>01076</td>
<td>NEW FACE SOLUTION - 1.7 oz bottle</td>
<td>54.00</td>
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<td>NO-FLOW NICIN - 800 mg, 100 caps</td>
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<td>NUTRIM - 170 grams powder</td>
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<td>N-ZIMES™ - 270 caps</td>
<td>23.90</td>
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<td>OCTOCOSANOL - 8000 mcg, 60 caps</td>
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<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 60 softgels</td>
<td>18.00</td>
<td>13.50</td>
<td>Buy 4 bottles, price each</td>
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<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 120 softgels</td>
<td>32.00</td>
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<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 120 enteric coated softgels</td>
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<td>ONE-PER-DAY - 60 vegetarian tablets</td>
<td>19.95</td>
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<td>ONLY TRACE MINERALS - 90 caps</td>
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<td>00915</td>
<td>OPTIZINC® - 30 mg, 90 veg. caps</td>
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<td>ORGANIC TOTAL BODY CLEANSE™ - 14-day supply</td>
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<td>L-ORNITHINE - 500 mg, 100 caps</td>
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<td>PANCREATIN - 500 mg, 50 caps</td>
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<td>PEAK ATP® WITH GLYCOCARN® - 60 tablets</td>
<td>59.00</td>
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<td>PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder</td>
<td>99.95</td>
<td>74.96</td>
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<td>PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps</td>
<td>69.95</td>
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<td>PDF® SOLUBLE FIBER BLEND (WELLBUT®) -180 caps</td>
<td>34.95</td>
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<td>PHARMAGABA™ - 60 chewable tablets</td>
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<td>PHOSCHOL® - 900 mg, 100 softgels</td>
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<td>PHOSPHATINGLYSERINE CAPS - 100 mg, 100 caps</td>
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<td>PILL CUTTER/GRAINDER</td>
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<td>POLYCOANOL - 10 mg, 60 tablets</td>
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**SUB-TOTAL OF COLUMN 13**

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

MAY 2011

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<td>POMERGRANATE EXTRACT - 30 veg. caps</td>
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<td>POMERGRANATE JUICE CONCENTRATE - 16 oz. liquid</td>
<td>25.95</td>
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<td>POTASSIUM IODIDE - 1 box, 14 tablets</td>
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<td>PQG CAPS w/BIOPODI™ - 10 mg, 30 veg. caps</td>
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<td>PREGNENOLONE - 50 mg, 100 caps</td>
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<td>PREGNENOLONE - 100 mg, 100 caps</td>
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<td>PRELOY® NATURAL SEX FOR MEN® - 60 tablets</td>
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<td>PRIMAL DEFENSE** - 90 caplets</td>
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<td>PRIMAL DEFENSE** - 180 caplets</td>
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<td>PROBOOST THYMIC PROTEIN A™ - 4 mg, 30 packets</td>
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<td>PRO FEM CREAM - 2 fl oz (Progesterone Cream)</td>
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<td>PROGREENS® - 15 stick-pack</td>
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<td>PRO M INTERNAL DEODERIZER - 500 mg, 100 veg. caps</td>
<td>28.00</td>
<td>21.00</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>01095</td>
<td>PROSTATE FORMULA W/ 5-LOXIN® STAND. LIGNANS (ULTRA NAT) - 60 softgels</td>
<td>38.00</td>
<td>28.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01092</td>
<td>PROTEIN - VANILLA - (Enhanced Life Extension) -1000 grams powder</td>
<td>38.00</td>
<td>28.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01093</td>
<td>PROTEIN - CHOCOLATE - (Enhanced Life Extension) -1000 grams powder</td>
<td>38.00</td>
<td>28.50</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>01094</td>
<td>PROTEIN - NATURAL - (Enhanced Life Extension) -1000 grams powder</td>
<td>38.00</td>
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<td>Buy 4 bottles, price each</td>
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<tr>
<td>01095</td>
<td>PROTEIN - BERRY - (Enhanced Life Extension) -1000 grams powder</td>
<td>38.00</td>
<td>28.50</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>00290</td>
<td>PROTEIN - VANILLA - (Designer Whey) 2 lbs powder</td>
<td>42.49</td>
<td>31.87</td>
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<td>00282</td>
<td>PROTEIN - CHOCOLATE - (Designer Whey) 2 lbs powder</td>
<td>42.49</td>
<td>31.87</td>
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<td>00283</td>
<td>PROTEIN - NATURAL - (Designer Whey) 2 lbs powder</td>
<td>42.49</td>
<td>31.87</td>
<td>Buy 4 bottles, price each</td>
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<td>01508</td>
<td>PTEROPURE™ - 50 mg Pterostilbene 60 veg. caps</td>
<td>32.00</td>
<td>24.00</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>01056</td>
<td>PURE-GAR® - 200 caps</td>
<td>24.95</td>
<td>18.71</td>
<td>Buy 4 bottles, price each</td>
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<td>01075</td>
<td>PURE PLANT PROTEIN - Natural Vanilla 450 grams powder</td>
<td>36.00</td>
<td>27.00</td>
<td>Buy 4 jars, price each</td>
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<tr>
<td>01209</td>
<td>PUMPKIN SEED EXTRACT (WATER-SOLUBLE) - 60 veg. caps</td>
<td>20.00</td>
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<td>Buy 4 bottles, price each</td>
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<td>01210</td>
<td>PUMPKIN SEED EXTRACT w/BUISOLAVONES (WATER-SOLUBLE) - 60 veg. caps</td>
<td>22.00</td>
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<tr>
<td>01031</td>
<td>PYCNOGENOL® - 60 veg. caps</td>
<td>86.95</td>
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**SUB-TOTAL OF COLUMN 14**
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<td>00453</td>
<td>SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets</td>
<td>$40.00</td>
<td>$30.00</td>
<td>60 softgels</td>
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<td>00557</td>
<td>SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets</td>
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<td>$24.00</td>
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<td>1920.00</td>
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<td>01055</td>
<td>SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets</td>
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<td>$54.00</td>
<td>120 softgels</td>
<td>3600.00</td>
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<tr>
<td>01043</td>
<td>SEA-IODINE™ - 1000 mcg, 60 veg. caps</td>
<td>$8.00</td>
<td>$6.00</td>
<td>100 softgels</td>
<td>600.00</td>
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<tr>
<td>00046</td>
<td>SELENIUM - 2 oz dropper bottle</td>
<td>$9.95</td>
<td>$7.46</td>
<td>1 control bottle</td>
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<td>00567</td>
<td>SE-METHYL L-SELENIODYSTHEINE - 200 mcg, 100 caps</td>
<td>$12.00</td>
<td>$9.00</td>
<td>1200 caps</td>
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<td>00318</td>
<td>SERRAFLAZYME - 100 tablets</td>
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<td>00011</td>
<td>SHAMPOO - 16 oz</td>
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<td>00284</td>
<td>SHARK LIVER OIL (NORWEGIAN) - 1000 mg, 30 softgels</td>
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<td>00184</td>
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<td>SKIN RESTORING CERAMIDES w/ LIPOWHEAT™ - 30 liquid caps</td>
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<td>00961</td>
<td>SODZYMEX w/GLOSODI® AND WOLFBERY - 90 veg. caps</td>
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<td>00657</td>
<td>SOLARSHIELD SUNGLASSES - 1 pair smoke color</td>
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<td>00432</td>
<td>STEVIA EXTRACT - 100 packets, 1 gram each</td>
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<td>00351</td>
<td>ST. JOHN’S WORT EXTRACT - 300 mg, 60 caps</td>
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<td>ST. JOHN’S WORT EXTRACT (PLANETARY) - 600 mg, 60 tablets</td>
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<td>01476</td>
<td>STRONTIUM - 750 mg, 90 veg. caps</td>
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<td>00971</td>
<td>SUN PROTECTION SPRAY w/BETA GLUCAN - SPF30 - 6 oz</td>
<td>$14.95</td>
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<td>00747</td>
<td>SUNGLASSES (OVERCAST POLARIZED) - gray color, large</td>
<td>$27.00</td>
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<td>00748</td>
<td>SUNGLASSES (OVERCAST POLARIZED) - gray color, medium</td>
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<td>00758</td>
<td>SUPER ABSORBABLE SOY ISOFLAVONES - 60 caps</td>
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<td>01408</td>
<td>SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL 60 softgels</td>
<td>$28.00</td>
<td>$21.00</td>
<td>1200 caps</td>
<td>27600.00</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**

**RAIWS**
## Buyers Club Order Form

**To order call: 1.954.766.8433 or 1.800.544.4440**

<table>
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<td>SUPER SAW PALMETTO W/BETA-SITOSTEROL - 30 softgels</td>
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<td>SUPER SELENIUM COMPLEX - 200 mcg, 100 caps</td>
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<td>SYTRINOL™ - 60 softgels</td>
<td>32.00</td>
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<td>00555</td>
<td>(L) THEANINE - 100 mg, 60 caps</td>
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<td>00349</td>
<td>TMG POWDER - 50 grams</td>
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<td>TMG - 500 mg, 180 tablets</td>
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<td>00366</td>
<td>TOCOTRIENOLS - l (Rice) 50 mg, 60 softgel caps</td>
<td>39.95</td>
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<td>00781</td>
<td>TOCOTRIENOLS WITH SESAME LIGNANS - 60 softgels</td>
<td>38.00</td>
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<td>01278</td>
<td>TOOTHPASTE - 4 oz (Mint)</td>
<td>9.50</td>
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<td>01274</td>
<td>TOTAL SUN PROTECTION CREAM W/BETA GLUCAN - 4 oz</td>
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<td>01468</td>
<td>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT - 60 veg. caps</td>
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<td>01469</td>
<td>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL - 60 veg. caps</td>
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<td>00866</td>
<td>TRYPOTPURE® L-TRYPTOPHAN - 500 mg, 90 veg. caps</td>
<td>38.00</td>
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<td>01202</td>
<td>TRYPOTPURE® PLUS (OPTIMIZED) - 90 veg. caps</td>
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<td>01516</td>
<td>TWO-PER-DAY - 60 veg. tablets</td>
<td>9.95</td>
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<td>01515</td>
<td>TWO-PER-DAY - 120 veg. tablets</td>
<td>18.95</td>
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<td>00326</td>
<td>L-LYSINE - 500 mg, 100 tablets</td>
<td>12.50</td>
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<td><strong>Sub-Total of Column 17</strong></td>
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**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

<table>
<thead>
<tr>
<th>No.</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<td>VANADYL SULFATE - 7.5 mg, 100 tablets</td>
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<td>VELVET DEER ANTLER - 250 mg, 30 caps</td>
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<tr>
<td>00408</td>
<td>VENOTONE - 60 caps</td>
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<td>00427</td>
<td>VPNCOTINE - 5 mg, 100 tablets</td>
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<td>01033</td>
<td>VISION OPTIMIZER - 90 caps</td>
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<td>VITAL GREENS MIX - 319.5 grams powder</td>
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<td>VITAMIN B3 Niacin - 500 mg, 100 caps</td>
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<td>VITAMIN B12 - 500 mcg, 100 lozenges</td>
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<td>VITAMIN C (BUFFERED) POWDER - 454.6 grams</td>
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<td>VITAMIN D3 - 2000 IU, 1 fl oz</td>
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<td>VITAMIN D3 - 1000 IU, 250 caps</td>
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<td>VITAMIN D3 w/SEA-iodine™ - 5000 IU, 60 veg. caps</td>
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<td>VITAMINS D AND K w/SEA-iodine™ - 60 caps</td>
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<td>VITAMIN E (PURE NATURAL) - 400 IU, 100 caps</td>
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</table>

*MAY 2011*
To order online visit: www.lifeextension.com

**How to Join The Life Extension Foundation®**

As a member of the Life Extension Foundation®, you have the opportunity to participate in a great scientific endeavor. We are the world’s premier organization dedicated to stopping and reversing aging.

Our 30-year track record shows that we have been five to ten years ahead of conventional and alternative medicine in making new life-saving therapies available to our members.

When you join the Life Extension Foundation®, we update you on the latest published medical research by sending you FREE books. Our most impressive publication is the 1,666-page *Disease Prevention and Treatment* protocol book that contains novel therapies to treat 133 common diseases of aging. *Disease Prevention and Treatment* is the only book that combines conventional and alternative therapies in order to implement a treatment regimen for fighting the multiple processes involved in degenerative disease.

Each month, Life Extension Foundation® members receive a magazine packed with the latest medical findings from around the world. Members also can call a toll-free phone number to talk to our knowledgeable health advisors about their health issues.

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

**Four Easy Ways to Join**

1. Call toll-free 1-800-544-4440  
2. Go to www.lef.org  
3. Fax back to 1-866-728-1050  
4. Mail to: Life Extension Foundation® • PO Box 407198 • Ft. Lauderdale, FL 33340-7198 • Local Number: 954-766-8433

**Membership Application**

I want to contribute to your research efforts to extend the healthy human life span. Enclosed is my first year’s membership donation of $75 to join the most elite group of longevity enthusiasts in the world. (Canadians add $7, all others outside the U.S. add $35) Item code: MEMB1. Call for multiple year membership rates.

Name  
Address  
City  
State  
ZIP  
Email  
Phone  
☐ Check enclosed *(payable to Life Extension Foundation®)*  
☐ Charge my cc:  
Card #  
Exp.

*These products are not 25% off retail price.  
**Not for sale to wholesalers or retail stores.  
***Not eligible for member discount or member renewal product credit.  
†Due to license restrictions, this product is not for sale to wholesalers outside of the USA or Canada.  
*Can only be sold in the USA.  
††Member pricing not valid on this item.  
†††Due to license restrictions, this product is not for sale in Canada.  
*These products are not 25% off retail price. These products are not for sale to wholesalers or retail stores.  
**Can only be sold in USA and Canada.

GIVE THE GIFT of HEALTH, with a LIFE EXTENSION GIFT CARD!

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.
### ORDER TOTALS

Sub-Total A (Sub-total of Columns 1 through 19) $5.50

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**Shipping**

UPS OVERNIGHT add $17.75. UPS 2ND DAY AIR add $7. For Puerto Rico, US Virgin Islands, Alaska & Hawaii, add $7. CANADA UPS EXPRESS Flat rate $17.50, UK Flat rate $25 USD. All other international air will be added.

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<td>Phone</td>
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**Signatures**

**Shipped To Address**

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Liver Force

A Whole Life-Cycle Mushroom Formula for Healthy Liver Function & Detoxification*

The Mushroom Life Cycle
The mushroom life cycle includes three distinct phases: mycelium, fruiting body, and spore. Mushrooms spend most of their life as mycelium, extracting nutrients from their environment and protecting themselves from invaders. Many beneficial compounds known as extracellular compounds are secreted by the mushroom during this critical life process. As the mushroom readies to reproduce, most species form a fruiting body—a structure most people would refer to as the actual "mushroom" since it's the part of fungi most readily visible. Many species' fully formed fruiting bodies end their life cycle with the rebirth of the mushroom—when spores are formed and released to begin the life cycle anew. Before being released, spores are equipped with their own arsenal of protective compounds and nutrients which will allow them to survive harsh conditions and thrive in new environments.

The Benefits of Whole
New Chapter® believes in the wisdom of nature and the promise of whole food. We believe the combination and preservation of the whole mushroom — and its complete life cycle — is essential. Many modern products isolate the wisdom of the whole — and focus on one life stage of the mushroom cycle or heavily refine and extract specific compounds from the mushroom. Focusing on just mycelium, for example, ignores the many beneficial and unique compounds that exist only in the fruiting body or spore phase. If mushrooms are selectively refined through extraction, their ability to function as nourishing superfoods can be lost.

Mushrooms are Marvels of Mother Nature
The number of distinct species is a matter of debate, with estimates ranging from 30,000 to 1.5 million. What is not disputed, however, is the close relationship between mushrooms and humans, and the many benefits mushrooms can provide for overall health and wellness.

Liver Force combines species both revered traditionally and researched extensively for liver support.*

Human culture has evolved with mushrooms and many societies have relied on mushrooms to provide a wholesome food source. Over thousands of years of trial and error, many cultures have also discovered health benefits associated with consuming mushrooms. These health benefits are almost as broad as those found in the plant kingdom — and range from immune and respiratory support to promoting healthy liver and brain function.* Societies soon discovered mushrooms can boost vitality, wellness, endurance, and even sexual function.* Today, more than fifty years of research has confirmed that mushrooms are indeed a unique class of natural therapeutics capable of addressing a wide range of health concerns.

New Chapter LifeShield Mushroom formulas deliver tonic mushrooms’ whole protective shield through the combination of mycelium, their extracellular compounds, fruiting bodies, and spores. Each stage of a mushroom’s life cycle adds critical nutrients and protection for the mushroom. The combination of these stages creates the activated LifeShield to promote your health and wellness.*

LifeShield® Liver Force
LifeShield Liver Force is formulated with select species of tonic mushrooms, including Cordyceps (Turkey Tail), to promote healthy liver function and detoxification.* It combines species both revered traditionally and researched extensively for liver support.*

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Cleanse SMART
The internal cleansing formula that lives up to its name.

Every day, we are exposed to an unprecedented amount of harmful toxins in the air, water, and even the foods we eat. As we age, these toxins can build up in our bodies and may cause fatigue, constipation, weight gain, skin problems and even brain fog. In fact, certain pollutants may actually accelerate aging, as occurs with free radical damage\(^1\), and the leading causes of death—heart disease, cancer and lung disease—can all be worsened by environmental contaminants.\(^2,3,4\) For powerful protection in this dirty world, turn to CleanseSMART, America’s #1 internal cleanse.

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- **Helps eliminate toxins with deep acting herbal extracts**\(^8\)
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- **Contains no added ingredients or fillers**

Make the intelligent choice. Try CleanseSMART today!

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\(^1\) Vitamin Retailer magazine VITY Awards 2004-2010


\(^3\) N. Kuntz, et al., “Ambient Air Pollution and Atherosclerosis in Los Angeles.” Environ Health Perspect. 2005 February; 113(2): 201-206

\(^4\) [http://cepa.hsc.umn.edu/pubs/docs/CEPA%20Annual%20Report%202006%20CEPA%20Annual%20Report_3-12-07.pdf](http://cepa.hsc.umn.edu/pubs/docs/CEPA%20Annual%20Report%202006%20CEPA%20Annual%20Report_3-12-07.pdf)


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Many people taking antibiotics suffer disruption of their intestinal flora and, consequently, their digestive regularity suffers. Antibiotics reduce the numbers of beneficial probiotic bacteria and may cause undesirable bacteria to flourish.

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