HOSPITAL DELAYS THAT KILL PATIENTS

National Institutes of Health Discovers Benefits of Coffee

Seven Ways Melatonin Counters Aging

Fish Oil Suppresses Chronic Inflammation via Novel Mechanism

Olive Oil Slashes Risk of Heart Attack

Metformin Improves Treatment of Hepatitis C

PLUS—
CT Scans Increase Cancer Risk in Children
Topical Lycopene Protects Against Skin Aging
Calorie Restriction Improves Heart Function
Ultra Natural Prostate with AprèsFlex™ and Standardized Lignans softgels combines cutting-edge ingredients that have been scientifically substantiated to protect the prostate gland and maintain its healthy function.*

The latest addition to this formula is AprèsFlex™, an extract of *Boswellia serrata* that has been shown in studies to have **two times the bioavailability** of the leading boswellia extract. AprèsFlex™ inhibits the dangerous enzyme 5-lipoxygenase. Boron is included because of studies showing it may help slow elevation of prostate-specific antigen (PSA).

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

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

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

The retail price for one bottle of **Ultra Natural Prostate Formula with AprèsFlex™ and Standardized Lignans** is $38. If a member buys four bottles, 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 and corn.

To order Ultra Natural Prostate Formula with AprèsFlex™, call 1-800-544-4440 or visit www.LifeExtension.com

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**The daily dose of two softgels of Ultra Natural Prostate Formula with AprèsFlex™ and Standardized Lignans Formula provides:**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
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<tbody>
<tr>
<td>USPlus® Saw Palmetto (C02 DeepExtract™)</td>
<td>320 mg</td>
</tr>
<tr>
<td>(std to 85%-95% total fatty acids and sterols)</td>
<td></td>
</tr>
<tr>
<td>Graminex® Flower Pollen Extract™</td>
<td>252 mg</td>
</tr>
<tr>
<td>(standardized to 85% total fatty acids)</td>
<td></td>
</tr>
<tr>
<td>AprèsFlex™ (Boswellia serrata) extract</td>
<td>70 mg</td>
</tr>
<tr>
<td>Pumpkin seed oil (Cucurbita pepo) extract</td>
<td>200 mg</td>
</tr>
<tr>
<td>(standardized to 85% total fatty acids)</td>
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</tr>
<tr>
<td>Stinging nettle root extract (Urtica dioica)</td>
<td>240 mg</td>
</tr>
<tr>
<td>Pygeum extract</td>
<td>100 mg</td>
</tr>
<tr>
<td>Lycopene</td>
<td>10 mg</td>
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<tr>
<td>Phytosterol complex</td>
<td>678 mg</td>
</tr>
<tr>
<td>(standardized to 26.6% free beta-sitosterol)</td>
<td></td>
</tr>
<tr>
<td>Proprietary blend of HMRlignan™</td>
<td>20.15 mg</td>
</tr>
<tr>
<td>Norway Spruce and ActiFlax™ Flax Lignan extracts</td>
<td></td>
</tr>
<tr>
<td>Boron</td>
<td>3 mg</td>
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* AprèsFlex™ is a trademark of Laila Nutraceuticals exclusively licensed to PL Thomas—Laila Nutra LLC. International patents pending.

* 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.
REPORTS

26 GROUNDBREAKING STUDY REVEALS NEW MECHANISM BEHIND FISH OIL’S BENEFITS:
A new discovery reveals how omega-3 fatty acids protect against the causes and effects of chronic inflammation. The ramifications of this finding are sharp reductions in aging-related diseases in those who ingest sufficient amounts of omega-3s.

40 QUERCETIN: BROAD-SPECTRUM PROTECTION
Many of our most powerful medicines, including those for diabetes, chemotherapy, and cardiovascular health, are derived from plant extracts. The plant flavonoid quercetin has attracted scientific interest for its ability to extend life span in laboratory models and protect against a wide range of health problems.

68 BEYOND SLEEP: 7 WAYS MELATONIN ATTACKS AGING FACTORS
Melatonin is involved in regulating our internal body clock, but scientists are discovering that this hormone has beneficial effects on everything from heart disease and diabetes to bone health and obesity. Emerging science now suggests that it may protect our genetic material and guard against age-related decline.

80 TOPICAL LYCOPENE IMPROVES SKIN CELLULAR FUNCTION
Studies indicate that topically applied lycopene defends against skin aging by helping to stabilize DNA structure in the nucleus of skin cells, enhancing skin-cell signaling and function, and inhibiting enzymatic activity involved in collagen breakdown.

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7 AS WE SEE IT
An article in the New England Journal of Medicine describes the tragic experience of one doctor’s mother after admission to a hospital emergency room. Compelling motivation is provided for Life Extension® members to avoid being victimized like this.

19 IN THE NEWS
Calorie restriction found to help preserve heart function; metformin as potential treatment for hepatitis C; olive oil lowers mortality risk; CT scan increases cancer risk in children; CoQ10 studied for Huntington’s disease treatment; and more.

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Advanced RESVERATROL Formula

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

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

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

High-Potency Resveratrol with Synergistic Activators

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

A bottle containing 60 vegetarian capsules of Optimized Resveratrol with Synergistic Grape-Berry Actives retails for $46. If a member buys four bottles, the price is reduced to just $31 per bottle. The suggested dose of one capsule a day provides:

- **Trans-Resveratrol**: 250 mg
- **Grape-Berry Actives**: 85 mg
- **Quercetin**: 60 mg
- **Trans-Pterostilbene**: 0.5 mg
- **Fisetin**: 10 mg

To order Optimized Resveratrol with Synergistic Grape-Berry Actives, 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.

References
10. Xenobiotica. 2000 Sep;30(9):857-66

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
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The older eyes get, the more susceptible they become to an array of debilitating issues that can hamper eyesight and cripple quality of life. With just a few drops of the proper eye lubricant, eye irritation stemming from dryness may be alleviated. Brite Eyes by Life Extension® provides a powerful dose of two well-established lubricants in every drop, soothing eye discomfort without irritation. Hydroxymethylcellulose and glycerin are FDA-approved for ophthalmic use and are uniquely preserved with potent antioxidants and anti-glycating agents. The Brite Eyes formula is buffered in a way to make it soothing to the eye. The suggested use of Brite Eyes III is to apply 1 to 2 drops in each eye every day.

Eye support is essential to preventing age-related vision problems.

The older eyes get, the more susceptible they become to an array of debilitating issues that can hamper eyesight and cripple quality of life. With just a few drops of the proper eye lubricant, eye irritation stemming from dryness may be alleviated. Brite Eyes by Life Extension® provides a powerful dose of two well-established lubricants in every drop, soothing eye discomfort without irritation. Hydroxymethylcellulose and glycerin are FDA-approved for ophthalmic use and are uniquely preserved with potent antioxidants and anti-glycating agents. The Brite Eyes formula is buffered in a way to make it soothing to the eye. The suggested use of Brite Eyes III is to apply 1 to 2 drops in each eye every day.

Each box of Brite Eyes III contains two individual vials that provide 5 mL each. The reason for putting Brite Eyes into individual vials is to reduce the risk of bacterial contamination. Having small vials also makes it convenient for consumers to keep Brite Eyes readily accessible at home, the office, in one’s purse or pocket, and other places where access to a soothing eye drop is needed.

To order Brite Eyes III, call 1-800-544-4440 or visit www.LifeExtension.com

The retail price for a box containing two 5 mL vials of Brite Eyes III is $34. If a member buys four boxes, the price is reduced to $24 per box.
A Deadly Waiting Game

BY WILLIAM FALOON

Last year, I described the inefficiencies and incompetence I encountered during a 31-hour hospital stay.

My hospitalization was done as a precaution and nothing serious developed. My outrage was based on the egregious hospital waste I observed, along with what may have happened if I had a critical medical condition.

A few months later, an article was published in the New England Journal of Medicine that made my 31-hour ordeal look like a walk in the park. We asked permission to reprint this article, but were refused. We conjecture that the New England Journal of Medicine did not want us to use this article to further discredit this nation’s broken sick-care system.

To enlighten Life Extension® members about this particular hospital-inflicted atrocity, I will report here on the article the New England Journal of Medicine denied us permission to reprint.
The Patient Did Everything Right

This tragic New England Journal of Medicine article describes a 69-year-old woman who suffered an acute attack of rapid atrial fibrillation.

This is not about someone without insurance who was delayed medical attention. This 69-year-old woman was not scientifically ignorant as her son was a medical doctor, and she was able to use an at-home device to quickly discern that a serious problem was developing. She immediately was taken to one of the most highly regarded academic medical centers on the west coast of the United States. Unlike so many people who fail to recognize serious symptoms, this woman did everything right!

This woman had mild heart disease, but was otherwise considered in excellent health according to her physician son. Early one day she noticed an irregular heart beat and felt a bit short of breath. She used her at-home blood pressure cuff to ascertain her blood pressure was stable, but that her pulse was racing high at 130 (normal pulse rate is between 60-80). Most at-home blood pressure monitoring devices also measure pulse rate.

She was driven to the emergency room by her husband and seen within about an hour by a doctor, which is relatively quick by today’s sluggish hospital standards. She was diagnosed with rapid atrial fibrillation that Thursday evening and admitted to the hospital.

The strategy was to perform a trans-esophageal echocardiogram the next day to see if there was a blood clot (thrombus) in the upper (atrial) chamber of her heart. Atrial blood clots are a frequent consequence of this kind of rapid atrial fibrillation. In the absence of a thrombus, the doctors planned to perform electric cardioversion, a procedure in which an electric current is used to reset the heart’s rhythm back to its regular pattern. The low-voltage electric current enters the body through metal paddles or patches applied to the chest wall.

Electric cardioversion.

Atrial Fibrillation—An Increasingly Common Problem

As the population ages, an increasing percentage develops an irregular rhythm in the upper chambers of the heart called atrial fibrillation. It is the most common type of heart arrhythmia and approximately 5% of persons over 65 years of age are expected to be diagnosed with it. The primary danger of persistent atrial fibrillation is that it can create an abnormal blood clot to form in the left atrial chamber that breaks away and travels up the carotid artery causing a stroke.

Atrial fibrillation patients are typically prescribed anti-arrhythmic and anti-coagulant drugs that reduce stroke risk, but are far from 100% effective and can induce serious side effects.

Although some episodes of atrial fibrillation are short-lived and spontaneously resolve within 7 days while requiring no treatment, persistent atrial fibrillation that lasts longer than several days often requires either pharmacologic or electrical cardioversion to terminate the abnormal rhythm.

With cardioversion treatment of persistent atrial fibrillation, an external electric shock returns the heartbeat to normal. If this is not effective, a catheter is inserted into the heart to eliminate (ablate) tissue segments along the electrical conduction tract of the heart that are producing abnormal electric impulses.

In cases involving symptoms such as shortness of breath and high pulse rate in people over age 65, immediate medical attention is needed to prevent atrial blood clotting, and correct the rapid/irregular heartbeat.
The patient was given intravenous heparin to prevent thrombus formation to get her through the night, which is standard therapy in these cases. So far, everything was done according to hospital protocol.

No Room At The Inn…

Despite the life-threatening condition this 69-year-old woman suffered, the hospital had no inpatient bed available. This 69-year-old woman, diagnosed with rapid atrial fibrillation, was kept on a stretcher in the emergency department hallway overnight. The stretcher was uncomfortably narrow. Combined with the all-night noise and bright lights in the emergency department hallway, it was hard for her to get much sleep. She was not wheeled to a real bed until shortly before noon the next day (Friday), which was 24-hours after her symptoms initiated the day before (Thursday).

I have used this analogy for decades, but I am going to repeat it to put this woman’s needless agony into context. Just imagine you try to check into a hotel. You wait for an hour (or more) for a desk clerk to see you. You are checked in (admitted) after completing a LOT of paperwork. After you are checked in, you are told there are no rooms available so the hotel staff forces you on to a stretcher that stays in the hotel lobby where the commotion and lights keep you from sleeping all night.

Unlike even low-cost hotels that would never treat their guests like this, once you are “admitted” to a hospital, you give up your liberty. You become submissive to the doctors and hospital staff. If you try to leave, they threaten to tell your insurance company and say that you will personally be stuck with the entire bill. This is a blatant lie, but hospitals don’t like their prisoners (they call patients) to escape without permission.

The difference between a hospital and hotel is that those who check into hotels are usually healthy. Yet even healthy individuals would find it miserable to be victimized by standard hospital practices (like being denied restful sleep, edible food, and timely service). The issue here is that when one is hospitalized, it is often the absolute worst period in their life, with vital organs sometimes shutting down. Ironically, at this precarious phase when a human being may be barely clinging to life, they encounter hospital services so substandard that death is often hastened.

What you’re going to read next is beyond appalling.

Unconscionable Delay

Early Friday afternoon, the 69-year-old woman’s cardiologist told her that since her admission had been delayed the day before, the hospital staff would not complete her procedures before their Friday “workday” ended. Recall this woman had arrived at the hospital early the day before (Thursday).

Due to the hospital’s delay, this woman was to remain in the hospital throughout the weekend. As a precaution against atrial thrombosis, they continued intravenous heparin and initiated oral warfarin. The objective was to blindly rely on these anticoagulant drugs until Monday, when the transesophageal echocardiogram and electric cardioversion would be done at the convenience of the hospital staff.

Tragic Outcome!

The next day in the hospital, this woman suffered a massive embolic stroke caused by a blood clot that formed in her atrium due to the untreated rapid atrial fibrillation. The clot blocked her right...
her care. As her son noted, “Many Americans cling to the notion that the shortcomings that afflict our health care system affect only the poor. They are mistaken.”

The hospital cardiologist who postponed this woman’s care never returned to face her family. One of the only doctors who acknowledged this needless loss was an intensive care unit intern, who offered his condolences in the hallway the following day.

An Exposé Of A Broken System

This woman’s physician son was determined to not let this tragedy be covered up.

His article published by the New England Journal of Medicine revealed that these kinds of needless deaths happen every day in US hospitals. He noted that the factors contributing to emergency room over-crowding and its consequences have been documented by the Institute of Medicine, the Government Accountability Office, the Robert Wood Johnson Foundation, and the Center for Studying Health System Change.10-12

Her son went on to state that "boarding" admitted patients in emergency exam rooms and corridors for extended periods has become commonplace and is being accepted as the norm. Her son noted that a crowded emergency department is a threat to individual patients and to public health. One reason this occurs is that financial profits trump patient safety. The General Accounting Office has stated that hospital administrators tolerate emergency room boarding rather than postpone or cancel profitable elective admissions.12

Her son elaborated further in stating that crowded emergency rooms are only part of the problem: “Inefficient hospital operations are another.” While disease and injury occur around the clock, many hospitals operate the majority of critical services five days a week. Many specialists are opting out of on-call duties and not making themselves available after-hours.13 Her son revealed studies showing increases in in-hospital mortality from serious conditions that occur because of gaps in after-hours and weekend coverage at hospitals.14

As far as solutions, her son stated that in other countries, hospitals first take care of emergency room patients and inpatients with
serious problems, and only then allow elective procedures if beds are available. Her son stated that a solution to emergency room boarding (which is what his mother suffered through her first night) would be to provide financial reimbursement that reprioritizes health care resources for patients with urgent conditions. Her son also expressed concern that health care law changes may make tragedies like his mother’s more common, as millions more Americans use overwhelmed emergency rooms for primary care.

The name of the editorial written by this woman’s physician son is “The Waits That Matter.” The following quote by this physician says a lot about the inadequacies of today’s sick-care system:

“Those of us who have dedicated our careers to health care must confront the fact that our inability (or, more likely, unwillingness) to reduce the waits and delays that bedevil emergency care is harming and even killing our patients.”

We at Life Extension® commend the physician son of this unfortunate woman who spoke out against conventional medicine’s deadly waiting game.

With hospital care costing thousands of dollars a day it is absurd that any patient would be mistreated this way. Medicare’s hospital trust fund is facing insolvency as inefficient hospital policies drive up costs, while patient care deteriorates.

Medicare and Medicaid will pay for nearly any hospital procedure regardless of value, but then attempt to restrain costs through price controls. This and other forms of bureaucratic mismanagement result in horrific delays and needless patient suffering and death. Reminiscent of the old Soviet Union, senseless regulations are bankrupting this nation’s medical system while quality devolves despite high costs.

Staying OUT of Hospital Emergency Rooms

There’s a lot we can do to reduce our odds of being victimized in an emergency room hospital setting. Other than accidents, two major reasons people are rushed to

Selecting the proper anticoagulant therapy in cases of atrial fibrillation is a delicate matter dependent on a multitude of individual factors. Traditionally, drugs like warfarin or Coumadin® are used to manage clot risk. However, there are new oral anticoagulant treatments available as alternatives to warfarin, with safety and efficacy benefits versus warfarin.

For example, in a major hard endpoint study of Pradaxa® (dabigatran) versus warfarin (the RE-LY trial), Pradaxa® was superior for anti-coagulant efficacy at 150 mg two times a day with similar major bleeding risk as warfarin treatment (when patients maintained their INR 2.0 to 3.0). The INR (international normalization ratio) is a test that evaluates the clotting tendency of blood. A normal INR reading is 0.8-1.2, but in patients predisposed to abnormal vascular blood clotting (such as those with mechanical heart valves or atrial fibrillation), physicians seek to boost INR to 2.0-3.0, which reduces clotting propensity. Increasing INR to this higher level (2.0-3.0) also increases bleeding risk. When Pradaxa® was used at a lower dose of 110 mg two times daily, it showed similar efficacy to warfarin, but with reduced major bleeding risk.

Advantages of Pradaxa® (dabigatran) vs. warfarin:
1. Rapid onset of action;
2. Consistent, predictable anticoagulant effect;
3. Reduced potential for drug-food (i.e. foods that contain vitamin K) interactions;
4. No requirement for anticoagulant blood testing;
5. Results from a major trial (RE-LY study) showed better protection against stroke, with similar risk for bleeding.

Disadvantages of Pradaxa® (dabigatran) vs. warfarin:
1. No antidote for severe bleeding (in contrast, overdose with warfarin can be reversed with administration of vitamin K1);
2. Increased risk of stomach upset;
3. Need for dose adjustment in patients with kidney disease;
4. Preliminary, pooled safety data from several trials (published in 2012) suggests a possible increase in heart attack risk.
emergency rooms are heart disorders and stroke. Yet these conditions are the most preventable diseases in America.

The problem is that for many Americans, the majority of symptoms manifest before seeking proper medical care. That means they face long delays in an emergency room setting and less-than-optimal treatment when their underlying condition acutely manifests.

The first step everyone must take is to ensure they maintain ideal blood pressure control. Refer to the box below to learn where your blood pressure needs to be to optimally reduce disease risk.

Critical Importance of Annual Blood Tests

The probability of you winding up in an emergency room has a lot to do with what's circulating in your blood right now. By having your blood tested before symptomatic disease strikes, corrective actions can be taken before one requires hospital care.

Problems that impede Americans from having their blood properly tested are inconvenience, long waits at doctor's offices, physician ignorance about what tests to prescribe, and high costs. Life Extension eradicated these issues by enabling members to order comprehensive blood tests directly, go to a drawing station in their area usually with no appointment required, and obtain the critical blood tests they need at a fraction of the price charged by commercial laboratories.

For longer life,

William Faloon

(References can be found on page 14.)

Doctors Ignore Dangerously High Blood Pressure

High blood pressure is a silent epidemic that was the primary or contributing killer of over 347,000 Americans in 2008. Since increased blood pressure is a major risk factor for heart disease, stroke, congestive heart failure, and kidney disease, it acts as an accomplice in millions of additional deaths each year.

Mainstream medicine has fallen fatally short of relieving high blood pressure. Of those taking blood pressure medications, control rates are abysmally low. A major problem is that mainstream medicine accepts blood pressure levels that are too high. This means that the majority of those diagnosed with hypertension spend most of their day with blood pressure levels dangerously elevated.

The medical establishment defines high blood pressure (hypertension) as over 139/89 mmHg. However, in 2006, researchers found that blood pressure levels ranging from 120 to 129 mmHg systolic and 80 to 84 mmHg diastolic were associated with an 81% higher risk of cardiovascular disease compared to levels of less than 120/80 mmHg. Moreover, blood pressure levels of 130-139/85-89 mmHg were associated with a frightening 133% greater risk of cardiovascular disease compared to levels below 120/80. Worse yet, studies suggest that conventional physicians are unlikely to treat hypertension until levels exceed 160/90 mmHg, a level that dramatically increases the risk of disease and death.

Controlling blood pressure means radically reducing disease risk. Studies have estimated that reducing blood pressure by 10/5 mmHg, to 115/75, can reduce the risk of stroke death by 40% and the risk of death due to heart disease or other vascular causes by 30%. In individuals 40 to 70 years old, each 20/10 mmHg increment over 115/75 doubles the risk of heart attack, heart failure, stroke, or kidney disease. Based on this and other data, Life Extension recognizes that for many individuals, a target blood pressure of 115/75 mmHg yields the best preventative benefits.

To review Life Extension’s updated Blood Pressure Management protocol, log on to www.lef.org/hypertension.
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 number 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 and Total Testosterone
- Estradiol (an estrogen)
- TSH (thyroid function)
- Vitamin D 25 hydroxy

**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)
- Vitamin D 25 hydroxy

**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

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 member price of $299. These panels were designed to offer additional hormone testing for those desiring assistance with weight loss.
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

Each bottle of Super K lasts 90 days, so members pay as little as $5.75 a month for this high-potency blend of all three active forms of vitamin K. The retail price for a bottle containing 90 softgels 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 with Advanced K2 Complex softgels. Contains tree nuts (coconut).

Warning to Coumadin® (warfarin) Drug Users
Patients prescribed vitamin K-antagonist anti-coagulant drugs like warfarin should consult their physician before taking vitamin K supplements like Super K and Super Booster. There is evidence, however, that users of drugs like warfarin could benefit from a consistent low dose of supplemental vitamin K. Ask your doctor if you can take a low dose (65 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.

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.

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

References
Life Extension® Pycnogenol® French Maritime Pine Bark Extract is a natural plant extract containing procyanidins, bioflavonoids, and other health-giving molecules that synergistically support the body’s natural defenses against 5 major processes that characterize premature aging. Its effectiveness is backed by 30 years of study.

Life Extension® Pycnogenol® French Maritime Pine Bark Extract is designed to counteract premature-aging-related changes by providing support for the following mechanisms:

**MEMBRANE FUNCTION:** Pycnogenol® promotes the integrity and normal characteristics of cell membranes. 1-4

**DNA FUNCTION:** Pycnogenol® helps support normal DNA function through antioxidant activity and possibly other mechanisms. 5-13

**EASE INFLAMMATION:** Pycnogenol® helps ease inflammation by normal modulation of inflammatory cytokine molecules. 9-13

**OXIDATIVE STRESS:** Pycnogenol® supports the normal functioning of healthy antioxidant systems to help suppress free radicals and protect DNA. 14-19

**GLYCATION:** Pycnogenol® supports cellular metabolism of sugar, healthy fasting, and post-meal blood sugar levels already within normal range, and normal sugar absorption in the intestine. 20-25

Unlike other forms of pine bark extract, Pycnogenol® is a superior patented and standardized ingredient that has undergone extensive human clinical research to substantiate its numerous anti-aging properties. A bottle of Life Extension® Pycnogenol® French Maritime Pine Bark Extract containing 60 vegetarian capsules retails for $64. If a member buys four bottles, the price is reduced to $48 per bottle. The dose for most people is one capsule daily, so each bottle lasts two months.

Each capsule of Life Extension® Pycnogenol® French Maritime Pine Bark Extract provides:

- Pycnogenol® dried French Maritime pine (Pinus pinaster) extract 100 mg (bark)(std. to 65% procyanidins (65 mg))
- Vitamin C (as ascorbyl palmitate) 4 mg

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.
High Potency FAT-SOLUBLE NUTRIENTS in ONE Softgel

Most people don’t get enough oil-based nutrients like vitamin K, lycopene, and gamma tocopherol. This problem is solved with a one-per-day softgel called Life Extension® Super Booster. It provides high potencies of fat-soluble compounds lacking in dry powder formulas, along with other nutrients.

Just one SUPER BOOSTER provides:

- **VITAMIN K2** Scientific studies show vitamin K2 provides superior benefits for the bones, arteries, and other tissues. The MK-4 form of vitamin K2 is the most rapidly absorbed and is now routinely used in Japan to maintain healthy bone density. MK-4, however, only remains active in the blood for a few hours. The MK-7 form of K2, on the other hand, remains bioavailable to the human body over a sustained 24-hour period. Super Booster provides a potent dose of MK-7 and MK-4 to keep calcium in the bone and out of the arteries.

- **GAMMA TOCOPHEROL** If one consumes only alpha tocopherol, the critically important gamma tocopherol is displaced from cells within the body. While alpha tocopherol vitamin E inhibits lipid peroxidation, the gamma tocopherol form quenches the dangerous peroxynitrite free radical. It is especially important for those who take vitamin E supplements to make sure they consume at least 200 mg a day of gamma tocopherol.

- **LUTEIN** The carotenoid lutein helps maintain healthy cell division, supports the macula of the eye, and protects the endothelial lining of the arteries.

- **LYCOPENE** Evidence suggests that people who ingest the carotenoid lycopene enjoy healthier prostate function. Lycopene also helps guard against LDL oxidation.

- **GINKGO** Hundreds of studies substantiate the multifaceted effects of Ginkgo biloba in promoting healthy circulatory and neurological function.

- **CHLOROPHYLLIN** Scientific studies indicate that chlorophyllin may protect against environmentally induced damage to DNA.

A bottle of 60 Super Booster softgels retails for $42. If a member buys four bottles, the price is reduced to just $28.50 per bottle.

The Super Booster saves consumers huge dollars by combining a wide variety of costly nutrients into one daily softgel. If you add up the price of the individual ingredients contained in the Super Booster, you would spend two to three times more for this potency if taken separately.

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

Contains soybeans, corn and sesame.

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

Tomat-O-Red® is a registered trademark of LycoRed, Ltd.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Scientists have identified specific extracts from *cruciferous vegetables*—such as broccoli, cauliflower, cabbage and Brussels sprouts—that help maintain healthy hormone metabolite balance. **Triple Action Cruciferous Vegetable Extract** combines some of these plant extracts into a comprehensive formula for optimal DNA protection.

**I3C (indole-3-carbinol)** and **DIM (di-indolyl-methane)** favorably modulate estrogen metabolism and induce liver detoxification enzymes to help neutralize potentially harmful estrogen metabolites and xenoestrogens (potentially toxic, estrogen-like environmental chemicals).1-4

Extracts of **broccoli**, **watercress**, and **rosemary** provide glucosinolates, isothiocyanates, carnosic acid, and carnosol—bioactive compounds that have a multitude of favorable effects on estrogen metabolism and cell division.5-8 **Apigenin**, a powerful plant flavonoid found in plants such as parsley and celery, is also added to the formula to boost cell protection,9 while 25 mg of a natural source of benzyl isothiocyanate (BITC), are included to maintain cell health.10

Consumers should be aware that while consumption of cruciferous vegetables is highly recommended, the cooking process depletes many of the beneficial compounds such as I3C.

For those weighing less than 160 pounds, just one capsule a day provides optimal potencies. Those weighing over 160 pounds should consider taking two capsules a day. A 60 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.

**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.
Metformin for Hepatitis C

Life Extension® has been reporting on the benefits of metformin for years. New research indicates metformin, normally used to treat diabetes, may be a useful therapy for those with hepatitis C infection as well. In vitro data suggests metformin may have a suppressive effect on replication of the hepatitis C virus.1 In women with hepatitis C virus genotype 1 infection who were found to exhibit insulin resistance, taking metformin in addition to standard hepatitis C therapy resulted in a doubled sustained virologic response and greater decrease in viral load compared to placebo in the first 12 weeks of treatment.2 A number of other clinical studies have also shown improved sustained virologic response rates among insulin-resistant patients with hepatitis C receiving metformin in addition to standard therapy.3,4 Metformin use was also correlated with a significantly better prognosis among 99 diabetic patients who were also diagnosed with hepatitis C and cirrhosis. Compared to non-use, metformin treatment was associated with an 81% reduction in risk of hepatocellular carcinoma and a 78% reduction in liver-related death or need for liver transplant.5

—A. Pryce

5. J Clin Endocrinol Metab. 2011 Aug;96(8):2601-8

Study Links Greater Olive Oil Consumption with Decreased Risk of Dying Over 13 Year Period

A study described in the American Journal of Clinical Nutrition has uncovered an association between greater olive oil intake and a lower risk of dying over an average of 13.4 years of follow-up.* Researchers analyzed data from 40,622 men and women who were aged 29 to 69 years upon recruitment to the European Prospective Investigation into Cancer and Nutrition. Interview responses concerning foods and drinks consumed were analyzed for olive oil and caloric intake.

Over a follow-up period beginning in 1992-1996 and ending 2006-2009, there were 416 deaths from cardiovascular disease, 956 cancer deaths and 417 deaths from other causes. Participants whose olive oil intake was among the top one-fourth of participants had a 26% lower risk of dying of any cause and a 44% lower risk of dying from heart disease compared to those who did not consume olive oil.

Editor’s Note: Olive oil contains monounsaturated fatty acids, vitamin E, and phenolic compounds, all of which may play a role in the protection against chronic diseases including cardiovascular disease. Author Genevieve Buckland and colleagues note that olive oil has been shown to improve systemic inflammation and glycemic control in randomized clinical trials.

—D. Dye

Poor Survival Among African-American Cancer Patients Could be Explained by Low Vitamin D Levels

The authors of a review published in *Dermato-Endocrinology* suggest that decreased production of vitamin D by African-Americans may be a reason for their higher rates of cancer mortality in comparison with Caucasians.*

Because African-Americans have a 40% lower average serum vitamin D concentration than Caucasians due to darker skin pigmentation that impairs production of the vitamin from sunlight, the authors suggest a causative role for insufficient vitamin D levels in the decreased survival observed in this group. The review evaluates scientific literature concerning cancer disparities between African-Americans and Caucasians, as well as studies examining vitamin D status and cancer in order to evaluate the evidence supporting this hypothesis.

“All cancers for which a disparity in cancer-specific survival was reported also have evidence for a beneficial role of vitamin D,” the authors report.

Editor’s Note: Because cancer takes years to reach a stage in which it can be detected, high serum vitamin D concentrations over the course of a lifetime are needed to reduce risk, the authors note. Once the disease has been diagnosed, vitamin D improves survival via antiangiogenic and antimetastatic mechanisms, as well as by other factors.

* Dermato-Endocrinol. 2012 Apr/May/Jun;4(2).

Calorie Restriction Practitioners Stay Young at Heart

An article published online on May 21, 2012, in the journal *Aging Cell* reports the outcome of a study of humans who voluntarily practice calorie restriction that suggests the practice helps preserve heart function, in addition to many other benefits.*

The study evaluated heart rate variability as a marker for cardiac autonomic functioning in 22 subjects whose calorie intake was approximately 30% lower than normal, and 20 men and women of the same age (which ranged from 35 to 82 years) who consumed a standard Western diet. Heart rate variability as measured by 24-hour heart monitoring in the calorie restricted group was found to be comparable with normal values for healthy individuals 20 years younger. The difference between the calorie restricted and normal group was similar to that induced by the drug atenolol, which is used in cardiovascular disease and hypertension.

Editor’s Note: “Higher heart rate variability means the heart can adjust to changing needs more readily,” explained lead author Phyllis K. Stein, PhD. “Heart rate variability declines with age as our cardiovascular systems become less flexible, and poor heart rate variability is associated with a higher risk of cardiovascular death.”


Supplementing with Calcium and Vitamin D Associated with Lower Risk of Dying Over Three-Year Period

An article published in the *Journal of Clinical Endocrinology and Metabolism* reveals the outcome of a pooled analysis of eight randomized controlled trials which suggests that the use of calcium and vitamin D supplements reduced mortality over an average three-year period.*

Lars Rejnmark, PhD, of Aarhus University Hospital in Denmark and his colleagues evaluated mortality among clinical trial participants assigned to calcium with vitamin D or vitamin D alone. Each trial included over 1,000 women and men who had a median age of 70 years. Dr. Rejnmark’s team found a 9% lower risk of dying over an average of three years in subjects who consumed calcium with vitamin D in comparison with those who did not receive the combination.

Editor’s Note: Most studies evaluate human populations taking lower doses of vitamin D supplements. Higher dose vitamin D (around 5,000 IU/day) might confer greater longevity benefits.

* J Clin Endocrinol Metab. 2012 May 17.
IN THE NEWS

CoQ10 Shows Promise for Huntington's Disease

The Journal of Huntington's Disease published the finding of Kevin M. Biglan, MD, and his colleagues of a possibility for coenzyme Q10 (CoQ10) to retard the progression of Huntington's disease.*

CoQ10, due to its support of the cells' mitochondria and its antioxidant effect, has been investigated as a possible agent to treat Huntington's disease. The current research evaluated 20 Huntington's disease patients and 8 controls that had been given CoQ10 in a clinical trial. Blood samples obtained at the beginning and end of treatment were analyzed for serum 8OHdG, which has been correlated with oxidative stress in the brain's cells and has been found to be elevated in those with Huntington's disease.

While the trial had found a reduction in Huntington's disease symptoms after treatment with CoQ10, the current research uncovered a 17% reduction in 8OHdG levels in Huntington's disease patients as well as a nonsignificant reduction in subjects who did not have the disease.

Editor's Note: Huntington's disease is a neurodegenerative disorder caused by a genetic error that produces abnormal proteins in the brain's cells. Scientists believe that these protein deposits result in oxidative stress that ultimately kills the cells that contain them. "This study supports the hypothesis that CoQ10 exerts antioxidant effects in patients with Huntington's disease and therefore is a treatment that warrants further study," Dr. Biglan concluded.

—D. Dye

* J Huntington's Dis. 2012;1(71-75).

Trial Will Evaluate Resveratrol in Alzheimer's Dementia

Researchers at Georgetown University and 25 other US academic institutions affiliated with the Alzheimer’s Disease Cooperative Study will be conducting a phase II double-blinded, placebo-controlled trial that will test the effects of resveratrol in Alzheimer's disease patients.*

The twelve-month trial will enroll men and women age 50 and over with mild to moderate dementia diagnosed as probable Alzheimer's disease and will require one caregiver or friend for each patient. Participants will be initially assigned to 500 mg resveratrol or a placebo daily, with dosage to be increased at 13 week intervals to a maximum of 1,000 mg twice per day. Lumbar punctures, brain magnetic resonance imaging (MRI) scans, and blood and urine tests will monitor the subjects’ progress over the course of ten visits. The researchers hope to determine whether supplementation with resveratrol is helpful in delaying or altering the deterioration of memory and daily function that occurs in Alzheimer’s disease.

Editor's Note: The study will also test whether resveratrol improves glucose and insulin metabolism, although diabetics will not be included in the trial.

—D. Dye

* Presented ahead of a trial.

CT Scans Linked to Rise in Cancer Risk for Children

For years, Life Extension has warned of the potential risk of cancer due to the radiation caused by CT scans. Now, a recent report in The Lancet shows that the most vulnerable among us, children, may be suffering from not heeding our warning.*

The study included patients without previous cancer diagnoses who were first examined with CT scans in National Health Service (NHS) centers in England, Wales, or Scotland (Great Britain) between 1985 and 2002, when they were younger than 22 years of age. The scientists conducting the study received data for cancer incidence, mortality, and loss to follow-up from the NHS Central Registry from Jan. 1, 1985, to Dec. 31, 2008.

These documents showed a positive association between radiation dose from CT scans and leukemia and brain tumors, leading the researchers to write that the “use of CT scans in children to deliver cumulative doses of about 50 mGy might almost triple the risk of leukemia and doses of about 60 mGy might triple the risk of brain cancer.”

—J. Finkel

**Whey Protein May Heal Diabetic Wounds and Restore Immune Response in Mice**

It is well known that diabetes-associated complications are a major source of immune system fatigue and this may lead to higher risk for infection. Diabetes can cause poor circulation in the feet, increasing the likelihood of ulcers forming when the skin is damaged and slowing the healing of the ulcers. Whey proteins enhance immunity during childhood and have a protective effect on some immune disorders.

A recent article in *BMC Immunology* reveals a study done by scientists who investigated the effects of camel whey protein on the healing and closure of diabetic wounds in a type I diabetic-induced mouse model.*

Over the course of treatment, compared with untreated diabetic mice, those mice supplemented with whey protein significantly accelerated the closure of diabetic wounds by limiting inflammatory stimuli. The researchers concluded that their, “data demonstrates the benefits of whey protein supplementation for improving the healing and closure of diabetic wounds and restoring the immune response in diabetic mice.” This discovery may be of critical importance in humans suffering from diabetes. —J. Finkel


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**Pomegranate Juice May Improve Heart Health**

Researchers at Sheffield Hallam University in South Yorkshire, UK have recently concluded that pomegranate juice may improve cardiovascular risk because of the presence of antioxidant polyphenols.*

In a randomized, placebo-controlled parallel study, participants consumed **330 ml/day** of pomegranate juice or a control drink for four weeks. Measurements for pulse wave velocity, blood pressure, and plasma antioxidant status were made at baseline and at four weeks. While there was no effect on pulse wave velocity, the subjects taking the pomegranate juice showed a significant fall in systolic blood pressure, diastolic blood pressure, and mean arterial pressure. This led the scientists to state that pomegranate juice supplementation has benefits for blood pressure in the short term. —J. Finkel

* *Plant Foods Hum Nutr.* 2012 May 31.

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**Glucose Regulation Key to Lowering Diabetes Risk**

Researchers involved with the Diabetes Prevention Program Research Group attempted to quantify and predict diabetes risk reduction during the Diabetes Prevention Program Outcomes Study (DPPOS) in participants who returned to normal glucose regulation at least once during the Diabetes Prevention Program (DPP) compared with those who consistently met criteria for prediabetes.*

The researchers found that diabetes risk during DPPOS was **56%** lower for participants who had returned to normal glucose regulation versus those who consistently had prediabetes. This led researchers to conclude that, “prediabetes is a high-risk state for diabetes, especially in patients who remain with prediabetes despite intensive lifestyle intervention. Reversion to normal glucose regulation, even if transient, is associated with a significantly reduced risk of future diabetes independent of previous treatment group.” —J. Finkel

Bone Restore combines critical bone boosting nutrients into one superior formula.

Bone Restore includes highly absorbable forms of calcium, a bioavailable form of boron, along with vitamin D3, magnesium, zinc, manganese, and silicon.

Bone Restore contains magnesium citrate, which is one of the most absorbable forms of magnesium.

The retail price for 150 capsules of Bone Restore is $22.50. If a member buys four bottles, the price is reduced to just $14.63 per bottle.

Just five capsules of Bone Restore provide:

<table>
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<th>Amount</th>
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<tr>
<td>Vitamin D3</td>
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<td>Magnesium (as magnesium citrate)</td>
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<td>Manganese</td>
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<tr>
<td>Silicon</td>
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Contains corn and rice.

Fruitex B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. patent #5,962,049.

DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. Patent 6,706,904 and patents pending.

To order Bone Restore, 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.
YOU MAY BE ONE OF THEM.
Optimal uptake of magnesium may now be obtained in a novel, highly absorbable form called Neuro-Mag™ Magnesium L-Threonate, available in capsules or tasty natural lemon-flavored powder.

A Critical Brain Booster...
Magnesium is needed for more than 300 biochemical reactions in the body. Long known for its role in cardiovascular and bone health, energy metabolism and mood, researchers are now focusing intensely on magnesium's benefits for cognitive function.

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

Scientifically Advanced, Lab Tested
Most commercially available magnesium supplements are not readily absorbed into the central nervous system. To overcome this obstacle, an innovative form of magnesium is being introduced called Neuro-Mag™, shown to specifically target the aging brain and nervous system.

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

Even more compelling, animal models revealed improvements of 18% for short-term memory and 100% for long-term memory using the Neuro-Mag™ form of magnesium.

Capsules or Powder…Value Priced
The suggested daily dose of three Neuro-Mag™ Magnesium L-Threonate Capsules provides 2,000 mg of Magnesium-L-Threonate. While this supplies a modest 144 mg of elemental magnesium, its superior absorption into the bloodstream and nervous system make it a preferred choice for aging humans to supplement with.

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

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

A bottle containing 90 vegetarian capsules of Neuro-Mag™ Magnesium L-Threonate or 30 scoops of Neuro-Mag™ Magnesium L-Threonate with Calcium and Vitamin D3 Powder retails for $40. If a member buys four bottles, the price is reduced to $27 per bottle. Contains corn.

References
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 energy production in the brain, and in muscle there was a 144% increase in energy production.2

The primary reason people take CoQ10 supplements is to help restore youthful energy levels.

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

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

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**Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™**

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

The retail price for 100 50 mg softgels of Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ is $58. If a member buys four bottles, the price is reduced to $39.75 per bottle. Item # 01425

The retail price for 30 200 mg softgels of Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ is $62. If a member buys four bottles, the price is reduced to $42 per bottle. Item # 01431

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

To order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ call 1-800-544-4440 or visit www.LifeExtension.com

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**References**


These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
Groundbreaking Study Reveals New Mechanism Behind FISH OIL’S HEALTH BENEFITS
By now most people know that omega-3 fatty acids from fish oil have remarkable health-protecting benefits. In fact, the science behind it is so strong that Big Pharma has jumped on board with expensive fish oil prescription drugs.¹

But if you’ve ever been tempted to pay top dollar for Big Pharma’s knockoffs,²⁻⁴ a 2012 study shows once and for all that a quality fish oil supplement provides everything you need for powerful protection against some of the most dreaded diseases of aging.

This landmark study found that the components in fish oil not only stop inflammation in its tracks—they actively treat inflammation that is already present. But better than that, the researchers discovered the secret behind fish oil’s super-nutrient status.⁵

After nearly a decade of intense research and discovery, scientists uncovered a newly characterized class of inflammation-regulating molecules that add an entirely unique dimension to the benefits of fish oil.⁶

In this article, we’ll explore how these molecules contribute to—and expand—the already impressive array of health benefits obtainable from omega-3 fatty acids.⁶⁻⁷ Then we’ll look at compelling studies that demonstrate how fish oil can help you avoid or reduce the chronic inflammation that contributes to all of the diseases of aging. > >
**How to Activate Your Body’s Inflammation “Stop Signs”**

It is well known that a diet rich in omega-3s reduces the body's overall burden of inflammation, a fact that gained relevance as scientists discovered the growing role of chronic inflammation in causing the diseases (or symptoms) of aging.

Although many studies have demonstrated the vast array of health benefits of omega-3s, scientists have only begun to uncover exactly how they function in the body in order to produce these results.

Researchers at the University of California-San Diego have published a groundbreaking study to show how fish oil works inside a cell to produce its anti-inflammatory effects. This discovery is so profound that it’s likely to change the way we think about inflammation for years to come.

While studying acute inflammation in animals, scientists noticed the production of small molecules released in response to inflammation, especially in the presence of high levels of omega-3 fats. These molecules had a dual set of actions. First, they sent out a “stop signal,” quickly putting a stop to runaway inflammation. Next, they triggered the active resolution of inflammation.

In other words, having enough omega-3s in your system provides your body with the tools necessary to combat and resolve acute inflammation almost as soon as it is triggered.

It is important to note that acute inflammation is beneficial to the body. Without it, wounds and infections would never heal. The pro-inflammatory mediators that produce inflammation are essentially cellular “battle troops” that attack and destroy invaders (such as microorganisms or cancer cells). After the temporary inflammation takes care of the problem, your body releases a set of molecules that shuts off the inflammation before it can get out of control. It’s yet another one of your body’s systems of checks and balances. These post-inflammatory molecules eradicate dead and dying tissue, mop up excessive inflammatory waste products, and promote healing.

These specialized molecules are called pro-resolution molecules. The first of these pro-resolution molecules to be studied were called lipoxins. Later, other members of the family, called resolvins and protectins (think “resolve and protect”) were discovered. Each of these molecules provides different but overlapping functions in actively resolving acute inflammation.

The whole system works beautifully under normal conditions of acute inflammation. But with chronic inflammation, something goes wrong. Instead of controlled resolution, inflammation continues to jog along at a reduced, but still active level. This chronic, out-of-control inflammation occurs as a result of reduced levels of pro-resolution molecules.

Studies have shown that people with diseases that involve chronic inflammation have reduced levels of pro-resolution molecules. Other studies have revealed that these molecules are sharply reduced with age. In fact, it is this deficiency that is now recognized as one of the chief reasons that we increasingly suffer from chronic inflammation as we grow older.

Fortunately, by restoring levels of pro-resolution molecules to normal levels, many inflammatory processes can be rapidly resolved and healing can begin.

### Sources and Effects of Newly-Discovered Inflammation-Ending Molecules

<table>
<thead>
<tr>
<th>Family</th>
<th>Derived From</th>
<th>Main Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lipoxins</td>
<td>Arachidonic Acid (AA), especially in presence of omega-3 EPA and DHA from fish oil</td>
<td>Potent triggers that end acute inflammation</td>
</tr>
<tr>
<td>Resolvins</td>
<td>Omega-3 EPA and DHA from fish oil</td>
<td>Trigger the resolution phase of acute inflammation</td>
</tr>
<tr>
<td>Protectins</td>
<td>Omega-3 DHA from fish oil</td>
<td>Especially active in protecting brain tissue by promptly ending acute inflammation; synthesis of Protectins begins immediately after acute injury</td>
</tr>
</tbody>
</table>
The best way to restore those levels is by taking fish oil to boost your body's omega-3 content, since pro-resolution molecules are produced in response to a high omega-3 concentration. The resolvins and protectins are directly formed from the omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Interestingly, beneficial lipoxins are formed from arachidonic acid, but require high omega-3 concentrations for their production.

Big Pharma wants to modify these molecules, patent them, and sell them for huge markups. But by simply supplementing with their precursors, the EPA and DHA in fish oil, you’ll be giving your body what it needs to create these molecules directly in the cells where they’re needed the most. And as you’ll see, by doing so, you can directly impact some of the most common diseases of aging by battling age-induced inflammation.

### Metabolic Syndrome

The skyrocketing obesity epidemic is evident everywhere you look. Chronic, low-grade inflammation is now recognized to be one of the devastating consequences of excessive body fat. Fat tissues are not inactive storage depots; rather, they are biologically active factories pumping out a steady stream of inflammatory mediators.

Those mediators ultimately trigger many of the signs of metabolic syndrome, including insulin resistance, elevated lipids, hypertension, and fatty liver infiltration.

In addition to that, it is becoming clear that high-fat diets and obesity result in decreased levels of at least one of the pro-resolution molecules: protectins. This “resolution deficiency” contributes to the persistence of the fat-induced inflammatory state.

Fortunately, supplementation with fish oil rich in omega-3s can reverse these processes, boosting levels of all the pro-resolution molecules.

Studies show that these novel substances are at the root of omega-3s’ ability to improve insulin sensitivity. They switch on genes for cellular energy sensors, glucose transport molecules, and the protective cytokine adiponectin, all of which contribute to lower blood sugar and decreased liver fat stores.

In one remarkable study, high levels of omega-3s completely protected mice against experimentally induced diabetes, retaining normal insulin production and producing no inflammatory cytokines in their fat tissues. Not surprisingly, elevated levels of lipoxins and resolvins were found in their bodies.

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**Omega-3s: The Keystone in the Battle to Resolve Inflammation**

- Fish oil’s multiple benefits have long been attributed to its effects on reduced inflammatory signaling by cytokines.
- New discoveries reveal that the omega-3 fats in fish oil directly trigger resolution of inflammation and promote early healing.
- Molecules called lipoxins, resolvins, and protectins are all derived from, or produced in response to, omega-3 fats.
- Deficiencies in pro-resolution molecules have been identified in most of the chronic, inflammation-related diseases of aging.
- Aging itself produces a total-body loss of these health-promoting molecules.
- Multiple studies reveal that supplementing with omega-3-rich fish oil boosts production of pro-resolution molecules and quickly brings your body back to a non-inflamed state.
- Human clinical trials demonstrate anti-inflammatory effects of fish oil supplementation in metabolic syndrome, cardiovascular disease, lung diseases, neurodegenerative conditions, and cancer, with additional evidence flowing in daily.
- Fish oil can no longer be considered an optional supplement; rather, it is a must-have for the prevention of the inflammatory conditions of aging.
Human studies abound on the benefits of fish oil in preventing or minimizing the effects of metabolic syndrome. Here are a few highlights from recent literature:

- Omega-3 supplementation (1.24 grams/day), along with a low-fat, high-carbohydrate diet that contained additional EPA/DHA resulting in total EPA/DHA intake of 1,400 mg/day, can reduce the prevalence of metabolic syndrome by more than 20%.24

- Daily supplementation providing a minimum of 930 mg EPA and 230 mg DHA improves blood vessel function, contributing to lower blood pressure in obese patients.25,26

- The after-meal decrease in vascular function common in type 2 diabetes is reduced with daily supplementation of 920 mg EPA and 760 mg DHA.27

- Low-doses of EPA (180 mg) and DHA (120 mg) prevented increased triglycerides in a group of elderly patients.28 When higher doses (1,240 mg/day) of EPA and DHA were used, this effect was augmented, particularly during the critical after meal period.29

- Consuming 223 mg EPA and 149 mg DHA along with 1.9 grams ALA (alpha-linolenic acid, a plant based omega-3) reduced the risk of deadly heart arrhythmias by 84% in diabetics who had experienced heart attacks.30

- At-risk obese patients improved their insulin sensitivity and decreased their fasting insulin levels with just 540 mg EPA and 360 mg DHA from fish oil.31

- Omega-3 supplementation can slow or prevent the development of non-alcoholic fatty liver disease, a common finding in metabolic syndrome.32

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**Cardiovascular Disease**

New evidence reveals that people with atherosclerosis have reduced levels and function of pro-resolution molecules, which helps explain their vulnerability to the inflammation that causes the disease.33

Boosting levels of these pro-resolution molecules would be especially important to people with cardiovascular disease because they have been found to reduce cholesterol, lower blood pressure, block clot-promoting platelet activation, prevent heart arrhythmias, prevent vascular inflammation and improve vascular function, and protect the heart muscle following a heart attack.34-39 That immense spectrum of action has led some researchers to describe omega-3s as a “polypill,” capable of attacking multiple targets of cardiovascular health at once.34,40

Human studies of the long chain omega-3 fatty acids found in fish oil in individuals with cardiovascular disease reveal the following important effects:

- People with the highest blood levels of the EPA have about a 50% lower risk of congestive heart failure compared to those with the lowest levels, and survival in heart failure patients is enhanced by 35% in those with the highest levels of omega-3s.41,42

- Supplementing with 300 mg EPA and 1,500 mg DHA from fish oil significantly improves electrical parameters in the hearts of people with paroxysmal atrial fibrillation, a potentially dangerous heart arrhythmia.43

- Two grams/day of omega-3s yielding 850 to 882 mg of EPA and DHA nearly doubles the likelihood of successfully treated paroxysmal atrial fibrillation one year after electrical cardioversion treatment.44

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**Paroxysmal atrial fibrillation** is a type of atrial fibrillation in which the irregular heartbeat occurs every so often. The heart eventually returns to its normal rhythm. It is hard to predict when episodes of paroxysmal atrial fibrillation will occur, and the causes are generally unknown. About 1 in 4 people with this condition will eventually develop permanent atrial fibrillation. Recent studies showing that EPA/DHA supplements double electrical cardioversion treatment efficacy make omega-3 supplements an exciting adjuvant approach in the control of atrial fibrillation.
**Groundbreaking Study Reveals New Mechanism Behind Fish Oil’s Health Benefits**

- **2,000 mg/day** of omega-3s decreases triglyceride levels by **21%** and improves endothelial function in a fashion similar to that of the lipid-lowering drug fenofibrate.\(^5\)

- Supplementing with approximately **1,860 mg** EPA and **1,500 mg** DHA, significantly increases heart muscle pumping ability and gives a survival advantage to people with chronic heart failure, improving endothelial function and lowering the inflammatory mediator IL-6.\(^6\)

- Adding **1,800 mg/day** of EPA to statin treatment prevents the progression of arterial stiffness more effectively than statins alone.\(^7\)

- Blood pressure spikes from mental stress can be reduced by supplementing with **1,000 mg** EPA and **400 mg** DHA.\(^8\)

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**Lung Disease:**

**Asthma and COPD**

Lung diseases such as asthma and chronic obstructive pulmonary disease (COPD) are well known to involve out-of-control inflammation.\(^9\)-\(^11\) Recent discoveries reveal that asthmatics have reduced production of pro-resolution molecules.\(^12\)-\(^14\) Other studies have found that experimental animals treated with these omega-3 derivatives have less severe asthma attacks.\(^15\)-\(^17\)

Those observations have led to experiments showing that supplementation with fish oils containing omega-3s boosts tissue levels of pro-resolution molecules, with marked improvement of asthmatic symptoms.\(^18\)-\(^20\)

It is becoming clear that the abnormal inflammation in asthma begins in utero, before a child is born\(^21\)—possibly because of inadequate amounts of the pro-resolution molecules derived from omega-3s. This has led to intense interest in supplementing pregnant women with fish oil to prevent asthma and allergies in their offspring.\(^22\)-\(^24\)

Over the past decade, higher-dose omega-3-rich fish oil supplements have been used with remarkable success in reducing inflammation and the severity of asthma and COPD in humans:

- Supplementing with **1,000 mg/day** EPA and **2,000 mg/day** DHA from fish oil reduced levels of inflammatory cytokines in newborns; infants of supplemented mothers had a **3-fold** lower risk of positive skin testing for egg allergy, and less severe eczema in later life.\(^25\)

- A long-term follow-up of pregnant women supplemented with **320 mg** EPA and **230 mg** DHA from fish oil revealed a **63%** reduction in the rate of asthma in their children, and an **87%** reduction in the rate of allergic asthma.\(^26\)

- Supplementing with fish oil containing **3,200 mg** of EPA and **2,200 mg** of DHA per day in athletes with exercise-induced asthma improved their pulmonary function nearly 5-fold, while lowering levels of inflammatory cytokines.\(^27\)

- In non-athletes, **3,200 mg/day** of EPA and **2,000 mg/day** of DHA improved lung function to the point that exercise-induced asthma was no longer diagnosable, and led to a significant reduction in the use of asthma medications.\(^28\)

- Children with a high risk of asthma had a **10%** reduction in coughing over a 3-year study of omega-3 supplementation.\(^29\)

- Children with moderate asthma who took omega-3 supplements experienced marked improvements in asthma symptoms and lung function.\(^30\)

- Following omega-3 supplementation, COPD patients experienced significant improvements in difficulty breathing, oxygen saturation in their blood, and in the distance they could walk in **six minutes.**\(^31\)
Cancer

One of the deadliest results of unresolved chronic inflammation is cancer.\textsuperscript{77} Years of study have shown that cancer development is associated with increased amounts of inflammatory cytokines.\textsuperscript{78}

Newer research is revealing that fish oil has exciting possibilities for slowing—or even preventing—cancer.\textsuperscript{79,80} Here’s what recent studies are showing:

- Women with a history of breast cancer who have the highest EPA and DHA intakes have about a 25\% lower risk of additional breast cancer events compared with those having the lowest intake.\textsuperscript{81}
- 4,000 mg/day of EPA supplements produced a 36\% increase in skin sunburn threshold and reduced DNA damage from ultraviolet light; together these effects reduce the risk of skin cancer.\textsuperscript{82}
- 2,000 mg/day of EPA significantly reduced findings of abnormal precancerous “crypt cells” on colonoscopy, indicating a reduction in colon cancer risk.\textsuperscript{83}
- Animal studies show that fish oil supplementation delays the progression of lymphoma in mice through the modulation of immune responses and inflammation.\textsuperscript{84}
- Men taking 1,000 mg EPA and 1,835 mg DHA fish oil daily prior to radical prostate surgery showed significant reductions in cancer cell proliferation.\textsuperscript{85}

Cognition

Inflammation is widely recognized as a major contributor to chronic neurodegenerative diseases such as Alzheimer’s and Parkinson’s; it is an active component of damage from strokes and other vascular diseases of the brain.\textsuperscript{65}

Studies now show that fish oil-derived pro-resolution molecules play an important role in stopping neuro-inflammation.\textsuperscript{65,66} That’s leading to widespread hope that these mediators might help prevent and resolve some of the most heartbreaking conditions of aging.\textsuperscript{67-69}

Extensive data exist on the role of omega-3 (especially DHA) supplementation in the cognitive decline of aging. Here are some of the most compelling findings:

- Reduced intake of DHA produces faster rates of cognitive decline and more rapid development of dementia.\textsuperscript{70}
- DHA supplementation improves moderately severe dementia that arises from certain kinds of strokes.\textsuperscript{71}
- Daily supplementation of 1,700 mg of DHA and 600 mg of EPA in patients with Alzheimer’s disease produced a reduction in the rate of decline on the mini-mental status exam, but only in patients with early, mild disease.\textsuperscript{68} This study shows the importance of routine supplementation before developing symptoms.
- Daily supplementation of 1,700 mg of DHA and 600 mg of EPA was shown to produce significant increases in appetite and body weight in patients with Alzheimer’s.\textsuperscript{72}
- Patients with mild cognitive impairment or age-related cognitive decline showed significant improvements in immediate memory, learning, and attention after up to 900 mg of DHA supplementation.\textsuperscript{73,74}
- Patients with Parkinson’s disease and depression showed a significant reduction in depression scores following 12 weeks of fish oil supplements.\textsuperscript{75}
- Older women, even those without diagnosed cognitive impairment, showed improved verbal fluency and memory scores, with improved rates of learning, following four months of DHA supplementation.\textsuperscript{76}
Lung cancer patients on chemotherapy taking 2.2 grams of EPA/day prevented treatment-associated weight loss with 69% of patients gaining weight after supplementation.16

Another lung cancer study showed increased chemotherapy response and a trend toward greater one-year survival in patients supplemented with fish oil.87

Summary

The growing importance of fish oil in the diet is highlighted by the remarkable discovery of the pro-resolution molecules lipoxins, resolvins, and protectins.

These molecules initiate an active healing process, triggering the resolution of inflammation within minutes of its beginning. The problem has been in the chronic inflammatory diseases of aging—and in aging itself—there’s a shortage of these healing substances.

A breakthrough 2012 study revealed that these molecules can be directly produced in tissues from the omega-3 fatty acids found in fish oil. That eliminates the need for synthetic drugs aimed at mimicking the effects of pro-resolution healing molecules and opens the door to self-management by supplementation with a high-quality fish oil supplement.

Doses of 2 to 6 grams/day of omega-3 rich fish oil have been shown to reduce the occurrence and consequences of metabolic syndrome, cardiovascular disease, lung disease, the major neurodegenerative diseases, and cancer. Additional benefits are being reported in arthritis, age-related eye diseases, and oral health.8,88-101

Fish oil, rich in omega-3 fats, is no longer optional; it is a must-have for those interested in oral health.8,88-101

References


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


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

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superoxide Dismutase/Gliadin Complex (GliSODin®)</td>
<td>500 mg</td>
</tr>
<tr>
<td>Enzyme Activity = 500 IU</td>
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</tr>
<tr>
<td>POMELLA® Pomegranate (Punica granatum) Extract</td>
<td>400 mg</td>
</tr>
<tr>
<td>(fruit) [std. to 30% punicalagins (120 mg)]</td>
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<tr>
<td>Pomegranate (Punica granatum)</td>
<td>100 mg</td>
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<tr>
<td>5:1 Extract (fruit)</td>
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<tr>
<td>Proprietary Pomegranate Blend (Punica granatum)</td>
<td>137.5 mg</td>
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<tr>
<td>[flower extract and seed oil (standardized to 22% (30 mg) puninic acid)]</td>
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POMELLA® Extract is covered under U.S. Patent 7,638,640. POMELLA® Extract is a registered trademark of Verseau Sciences, Inc., Isecell SA, France. The owner of US Patents Nos. 6,045,809 and 6,426,068B1 and the registered trademark of GliSODin®.

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 decades, companies have sent samples of liquid fish oil supplements to Life Extension® that claimed to taste good. These were all rejected because they either tasted bad or had an unpleasant aftertaste.

Finally a method has been developed to make a sugar-free liquid fish oil that tastes great, and has no unpleasant aftertaste.

An abundance of scientific research suggests wide-ranging health dividends from the omega-3 fatty acids found in fish oil. Unfortunately, the typical, modern Western diet is still disproportionately high in the omega-6 family of fatty acids and low in healthy omega-3 fatty acids.¹,²

For Life Extension® members who want another way to obtain the rich benefits of fish oils, there is now pleasantly natural flavored, easy to use, liquid omega-3 fish oil!

Beyond Cardiovascular Health

Decades of research and over 15,000 studies confirm the vital importance of the omega-3 fatty acids known as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Life Extension® members already know that the EPA and DHA found in fish oil provide substantial support for normal heart and brain health.³⁻⁴

But research has increasingly shown that the health-promoting effects of EPA and DHA may extend to an even larger range of benefits!

Ultra-Pure Fish Oil Blend

Life Extension® Omega-3 Highly Refined Fish Oil is a premium fish oil derived from sustainable small-species fish sources (anchovy, sardine and/or mackerel) harvested from the deep cold waters of Chile. Through careful molecular distillation and gentle processing, this fish oil is tested and found extremely low levels of environmental pollutants and safe for everyone in the family. These sensationally-flavored liquid fish oils are available in natural lemon or piña colada flavors.

Two tablespoons a day (1 ounce) of Life Extension® Omega-3 Highly Refined Fish Oil provide:

<table>
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<tr>
<th>EPA (eicosapentaenoic acid)</th>
<th>1,316 mg</th>
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<tr>
<td>DHA (docosahexaenoic acid)</td>
<td>844 mg</td>
</tr>
<tr>
<td>Other omega-3 fatty acids</td>
<td>540 mg</td>
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<tr>
<td>Total omega-3 fatty acids</td>
<td>2,700 mg</td>
</tr>
</tbody>
</table>

A bottle containing 16 ounces of Life Extension® Omega-3 Lemon Whirl or Life Extension® Omega-3 Tropical Whirl retails for $24. If a member buys four bottles, the price is reduced to $16.50 per bottle. If a member buys four bottles of any combination of flavors, the price is reduced to $16.50 per bottle.

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

References
Emerging research indicates that topically applied vitamin E has the ability to deeply penetrate vital skin layers. There, it accumulates and “locks-in” to support the skin’s natural barrier against the visible effects of—sun damage, moisture loss, and lipid peroxidation!

Prevent Premature Skin Aging

External stressors such as weather, sun, and dehydration weaken the skin’s natural ability to replenish itself and maintain its youthful appearance. Because it is a lipid-soluble nutrient, topical vitamin E has been used for skin protection for years. But there are 8 distinctly different forms of vitamin E—and some forms, known as tocoptrienols have been shown to be 40-60 times more effective at supporting antioxidant activities than other forms.

Scientists have found that applying vitamin E to the skin greatly enhances dermal penetration and retention of moisture and natural skin lipids!

Properly supported at a deep level, the skin’s dermal barrier helps minimize the appearance of dry, dehydrated skin and inhibits premature skin aging!

Support your skin’s natural ability to fight environmental stress and free radicals. Turn to the potent capacity of full spectrum vitamin E to help replenish the appearance of youthful skin!

The retail price of a 1 oz. jar of Cosmesis Vitamin E-ssential Cream is $28. If a member buys two jars, the price is reduced to just $19.50 a jar.

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

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

Sesame Lignans and Standardized Olive Fruit Extract for Enhanced Benefits

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

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

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

Super Omega-3 (4 softgels) supplies the equivalent content of 6 tablespoons of extra virgin olive oil. Take two softgels twice daily with meals.

A bottle containing 120 softgels of Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract retails for $32. If a member buys four bottles, 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:

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

A SMALLER SOFTGEL for easier swallowing!

Some members have requested we make Super Omega-3 available in a smaller capsule for easier swallowing. We have accomplished this by making half-size softgels available. A bottle containing 240 half-size softgels of Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract retails for $34. If a member buys four bottles, the price is reduced to just $23.25 per bottle. If 10 bottles are purchased, the cost is just $21 per bottle. (Item # 01484)

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 just $23.25 per bottle. If 10 bottles are purchased, the cost is just $21 per bottle. (Item # 01619)

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.


References

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.
QUERCETIN: Broad-Spectrum PROTECTION
Many of our most powerful medicines, including those for diabetes, chemotherapy, and cardiovascular health, are derived from plant extracts. One reason that plants hold so much potential for human health is that they are able to withstand a variety of destructive forces such as environmental radiation, oxidative damage, and chemical toxins due to their unique ability to manufacture complex molecules called flavonoids.1-4 For humans, these same conditions can be lethal. Yet when we consume plants as food and beverages, the protective benefits of these same flavonoids are readily transferred to our bodies!5

One flavonoid in particular, quercetin, is found in a broad range of foods, from grape skins and red onions to green tea and tomatoes. Quercetin is attracting intense scientific interest for its unique anti-aging and immune-boosting activities.6 Several recent studies show that organisms exposed to high levels of quercetin live longer, healthier lives.6-12 Laboratory models of aging, ranging from simple yeasts and primitive worms to cultured human cells, demonstrate that quercetin alone produces up to a 60% increase in life span10,8-12. In addition, quercetin has been found to be cancer chemopreventive as well as reduce allergic reactions, boost immunity, and protect the cardiovascular system.

Due to its synergies with resveratrol, health-conscious people often obtain some quercetin in science-based resveratrol formulas they already use. >>
Quercetin is naturally abundant in plant foods and as a result is highly bioavailable. Nonetheless, most people do not obtain sufficient quercetin levels through their daily diets. This is unfortunate because large-scale epidemiological studies show that sustained high intake of quercetin and related flavonoids provides substantial protection against cardiovascular disease.

In a study of 805 men aged 65-84 years, those with the highest quercetin and other flavonoid intake were 68% less likely to die from coronary heart disease than those with the lowest intake. A similar study found a reduction in death rates from all causes of 31% for women and 24% for men, with a 46% reduction in coronary death rates for women and a 22% reduction for men in those with the highest intakes.

This dramatic cardiovascular protection is the result of a concerted synergy between several basic quercetin mechanisms, including its ability to lower cholesterol and reduce dangerous accumulations of abdominal and liver fat.

In one study on quercetin’s impact on cholesterol levels, a group of otherwise healthy male smokers took 100 mg/day of quercetin or a placebo for 10 weeks, with blood tests done at baseline and at the end of the study. The supplemented group, but not the placebo group, had significant reductions in total and LDL cholesterol, and an increase in HDL cholesterol. They also had a significant reduction in blood sugar, another cardiovascular risk factor.

A larger study of non-smokers showed similar results, with an 18% reduction in total cholesterol, a 27% reduction in LDL, and an important 33% increase in beneficial HDL cholesterol.

Animal and human studies also suggest that quercetin supplementation can reduce dangerous accumulations of abdominal and liver fat, the result of decreased oxidative stress and inflammation.

Lowering cholesterol and reducing body fat are important first steps, but quercetin’s cardiovascular benefits go farther, lowering blood pressure and increasing plasma levels of nitric oxide, thus providing more of the synergy mentioned earlier.

By blocking oxidation of LDL cholesterol, quercetin counteracts a major source of the blood vessel inflammation that precedes atherosclerosis. One human study found a 28% reduction in the rate of LDL oxidation following two weeks of supplementation with quercetin at just 30 mg/day.

Higher doses of quercetin have shown the ability to modestly lower blood pressure. Quercetin supplements of 730 mg/day reduced hypertensive people’s systolic (top number) blood pressure by 7 units (mmHg), and diastolic (bottom number) pressure by 5 units (mmHg). Those with normal blood pressure retained their healthy levels and did not experience a dangerous drop in blood pressure as is often the case with the use of anti-hypertensive medications. These results have been confirmed in other studies, with lower doses in the range of 100 - 200 mg/day.

Quercetin also appears to exert its blood pressure-lowering effects by improving the health of your endothelium, the lining layer of the arteries that controls...
blood flow and pressure. Supplemental quercetin in hypertensive rats allowed “tight” blood vessels to relax, reducing their blood pressure.27

Quercetin supplements of 200 mg/day in healthy men increased blood levels of nitric oxide, a substance produced in endothelial cells that’s required for vessels to dilate and lower blood pressure.28 Heart muscle that is overloaded by excess blood pressure loses its responsiveness to nitric oxide.29,30 It becomes overgrown, or hypertrophied and eventually loses its ability to pump blood effectively. This can lead to early death or disability.30 Quercetin completely blocks pressure overload-induced cardiac hypertrophy in animal models of hypertension which is the result of beneficial changes in gene expression in heart muscle tissue.30

Another of quercetin’s cardiovascular benefits is its ability to inhibit platelet aggregation or “stickiness” in platelets. Oxidant stress and inflammation trigger this excessive “stickiness” in platelets and blood vessel walls. Untreated, the result can lead to a stroke or a heart attack following blood clot formation.

Human volunteers taking a highly bioavailable form of quercetin at both 150 and 300 mg/day rapidly (within 30 minutes) inhibited platelet aggregation.31 This effect proved to be the result of multiple changes in biochemical signaling pathways and gene expression, resulting in a healthier, “non-sticky” condition of the platelets.

**Quercetin Shuts Down Cancer Cells Early**

Cancers of all kinds are the second leading cause of death in the US, behind cardiovascular disease.32 Faced with the overwhelming challenge of achieving a cure, oncologists are increasingly turning to “chemoprevention” with nutrients as the most effective way to battle malignancies.33

Quercetin’s multitargeted disease-fighting capabilities make it a natural choice as a chemopreventive compound. Strong evidence from epidemiological studies have shown that people with the highest quercetin intake enjoy substantially reduced risks for many of the leading causes of cancer death:

- For lung cancer, the top cause of cancer deaths,34 a 51% overall risk reduction, and a 65% reduction among smokers35
- For colon cancer, the second cause of cancer deaths,36 a 32% reduction in risk37
- For gastric (stomach) cancer, a 43% overall risk reduction and an impressive 80% reduction in risk among female smokers38
- And there’s compelling laboratory evidence for quercetin’s role in reducing risk of breast, prostate, and liver cancers as well.39-41

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**Quercetin Combats Major Causes of Aging**

- Nature provides plants with powerful environmental protection in the form of phyto-molecules such as quercetin.
- That protection, against age-inducing factors such as oxidant stress, radiation, DNA damage, and toxins, is surprisingly transferrable when we consume plant matter.
- Quercetin extends life span in laboratory studies of simple animals and even human cells.
- Detailed studies confirm that quercetin’s life-extending effects arise from combating many of the major causes of aging and chronic disease.
- Quercetin supplementation shows promise in lowering cardiovascular risk by normalizing cholesterol levels and in reducing cancer risk by blocking fundamental cancer-inducing processes.
- Quercetin also favorably modifies immune function, reducing the impact of allergies and related lung diseases, while boosting our responses to dangerous viruses and bacteria.
- Quercetin is readily absorbed and has no reported side effects; it belongs in your supplement plan as a natural way to prolong life’s quality and quantity.
At the cellular level, quercetin interferes with the processes that turn healthy cells into malignant cancer cells. Quercetin’s antioxidant and anti-inflammatory properties protect cellular DNA from dangerous cancer-inducing mutations. Quercetin “freezes” rapidly reproducing cancer cells into an early, non-productive phase of the cell replication cycle. This not only stops tumor growth but also triggers cell death by apoptosis—the innate programming healthy cells use to stop excessive reproduction. And quercetin favorably modulates chemical signaling pathways that are abnormal in cancer cells.

All of these separate actions can dramatically reduce the chances that any given cancer cell will successfully form a real tumor. And that is precisely how chemoprevention is meant to work.

Here are details about quercetin’s impact on some of the most common and dangerous human cancer types, from laboratory studies:

- **Quercetin decreases the number and size of pre-cancerous lesions in the colon.** These lesions are called “aberrant crypt foci,” which are one of the danger signs your gastroenterologist looks for during a colonoscopy.

- **Quercetin interferes with early lung cancer lesions.** Laboratory studies demonstrate that quercetin traps developing cancer cells in the early phases of their replication cycle, effectively preventing further malignant development and promoting cancer cell death.

In one dramatic study, laboratory rats were treated with quercetin before exposure to the powerful environmental carcinogen, benzo(a)pyrene. This compound is found in cigarette smoke, charbroiled foods, and automobile (particularly diesel) exhaust, making it among the most common pollutants in our environment. Untreated rats developed lung cancers but rats supplemented first with quercetin showed no such findings.

- **Quercetin prevents development of liver cancer cells.** Your liver is your body’s “toxic waste dump,” receiving and detoxifying the bulk of the poisons it is exposed to every day. As a result, liver cells are at the epicenter of toxin-induced cancer development. Studies show that quercetin ramps up human liver cells’ production of protective proteins and enzyme systems, blocks the cancer replicative cell cycle, and reduces toxin-induced DNA mutations.

Many of the gravest cancer-related threats to liver tissue come from increased oxidant damage. Quercetin mitigates that damage by sharply increasing liver cells’ production of natural protective antioxidant enzyme systems. The result, again, is a marked reduction in formation and replication of cancerous liver cells.

- **Quercetin interferes with sex hormone receptors on reproductive system cancers.** It blocks the androgen receptors used to sustain growth by prostate cancer cells, potentially preventing such cells from forming tumors. In breast cancer cells, on the other hand, quercetin stimulates estrogen receptors, but only the so-called “beta,” or cancer-suppressing receptors, not the “alpha,” or cancer-promoting ones.

These cumulative effects put quercetin at the top of the list of potential cancer chemopreventive supplements.
Quercetin Blunts Allergies, Asthma Attacks, and Protects Lungs

Allergic responses can range from the merely irritating to the life-threatening. Triggers can involve sources from food (such as peanuts) or the environment (such as pollen). What many people don’t realize is that allergy-like responses are responsible for most of the symptoms of asthma and even chronic obstructive pulmonary disease (COPD).

Quercetin powerfully and favorably modifies the allergic response in potentially life-saving ways.

Let’s start with allergies, which are produced by “pre-sensitizing” a person to a particular substance (an allergen). Quercetin blocks the allergic response at several points. It suppresses the actions of immune system cells, reducing the amount of the substance called histamine, that accounts for itchy skin, watery eyes, and (more dangerously) loss of blood pressure during serious allergic reactions. Quercetin also impairs the function of certain cell types that lie at the heart of the allergic and autoimmune processes.54 Studies show that for skin allergies (contact dermatitis), quercetin is more effective than the standard drug cromolyn at inhibiting inflammatory cytokine release.55

Food allergies may be particularly responsive to quercetin prevention. Studies show that quercetin blocks intestinal inflammation stimulated by the allergy-related antibodies.56 That can reduce both local discomfort and dangerous systemic symptoms of food allergies.

Quercetin’s Mechanism of Action

Quercetin accomplishes its life-extending, anti-aging benefits through a multitude of mechanisms of action:

Much, but by no means all, of that impact comes from quercetin’s multi-targeted antioxidant activity — it is among the foremost antioxidants in the natural world.74,75

Scientists are now finding, however, that quercetin has a host of remarkable characteristics that go well beyond the antioxidant and anti-inflammatory that we’ve come to recognize as typical of phyto-molecules in general. Here’s a partial list of known life-extending, anti-aging mechanisms of action attributed to quercetin:

- Antioxidant, free radical scavenger6,8,9
- Anti-inflammatory, especially in fat tissue39,76-79
- Prevents DNA damage8
- Regulates gene expression in favor of youthful characteristics10,12
- Supports natural stress responses80
- Increases proteasome activation, hastening disposal of damaged and aging proteins11
In one important animal study, quercetin completely blocked the deadly “anaphylactic” response to peanuts in peanut-allergic rats. The animals had much lower histamine levels than did control animals, and none of the airway tightening, blood pressure lowering, or blood vessel leakiness seen in controls exposed to peanuts. This study has powerful implications for future study in humans, since peanut allergy is the leading cause of fatal or life-threatening food allergies.

In asthma, smooth muscles in the airway tubes (trachea and bronchi) constrict excessively in response to an allergic stimulus. Most of the cellular mechanisms involved are similar to those seen in allergies. When those smooth muscles constrict, airways narrow, and breathing becomes difficult. The result is the familiar wheezing sound and need to push air out of the lungs that we see in people suffering from asthma.

Quercetin blunts the allergy-like components of the asthma response. It reduces the number and activation of inflammatory immune system cells, cuts histamine levels, and relaxes airway smooth muscle. In one study, quercetin was at least as effective as standard asthma maintenance medications such as cromolyn and inhaled steroids at reducing the resistance to airflow.

As we get older, many people with asthma develop a related condition called chronic obstructive pulmonary disease, or COPD. In COPD, chronic inflammation, oxidant stress, and physical damage to the lungs conspire to obstruct airflow. In severe cases, the walls between alveoli (tiny air sacs) break down in the condition known as emphysema, that results in wheezing, labored breathing, and eventually heart disease.

Quercetin in laboratory studies opens up COPD-inflicted airways. It restores normal elasticity of lung tissue and reduces inflammation. Just as important, it reduces production of the protein-melting enzymes that dissolve alveolar walls, helping to retain the lungs’ normal architecture and function.

One important additional benefit of quercetin is its ability to interfere with the facial “flush” that many people experience when taking niacin supplements to control cholesterol. Niacin is one of the most effective agents for normalizing cholesterol levels, but because of the “flush” (redness and burning), regular dosing is often skipped due to physical discomfort. In one recent study a daily dose of 150 mg of quercetin reduced symptoms by more than 47%, and the duration of the flush by 56%.

Quercetin Boosts Immunity, Fights Infection

Quercetin also acts at the other end of the immune system spectrum by boosting the immune response to many common viruses and bacteria. That makes it especially important for older adults whose immunity declines, making them increasingly susceptible to dangerous infections.

Quercetin kills viruses in laboratory dishes, though the mechanisms are not entirely clear. In one study, quercetin inhibited influenza A virus replication in the laboratory more effectively than the anti-flu drug...
Tamiflu®. In another study, quercetin inhibited hepatitis C virus replication. Hepatitis C is a major cause of liver failure and liver cancers. Finally, quercetin blocked replication of the rhinovirus, the virus responsible for the common cold.

Not surprisingly, then, quercetin-supplemented animals display fewer symptoms and greater survival in the face of several different types of virus. Mice infected with influenza A virus, but supplemented with quercetin just before and for six days following infection, had significantly fewer serious symptoms of flu. They also survived longer.

In-depth study showed that the animals had an astonishing 2,000-fold lower number of viruses in their lungs; in fact, they had just half of the virus load as did animals treated with Tamiflu®.

Adults who supplement with quercetin are significantly less likely to develop colds and upper respiratory tract infections following intensive exercise: in one study just 5% of supplemented subjects got sick, while 45% of control patients experienced colds. And in a population of middle-aged and older adults who were physically fit, 1,000 mg quercetin/day reduced the number of sick days taken for colds by 31%, and the severity of symptoms by 36%.

Quercetin is also effective against bacterial infections. It decreased the infection rate and inflammatory response to Helicobacter pylori, the cause of many ulcers and eventually cancers of the stomach. Quercetin also reduced inflammatory responses and strengthened host defenses in experimental Salmonella infections, a major cause of death and disability, especially in older adults.

Summary

Mother Nature protects plant life from the most extreme and harsh environments on our planet. She does it by protecting them with powerful phytochemicals, the most common of which is quercetin. Fortunately, that protective effect is readily transferred when we consume quercetin ourselves. Quercetin extends animal life spans, in large part by protecting us against the same general threats that plants face: oxidant stress, DNA damage, and environmental toxins. A rapidly expanding body of scientific evidence now links high quercetin consumption to improved cardiovascular health, reduced cancer risk, milder allergic responses, and improved resistance to infection. Getting enough plant-based nutrients is a major problem for most people; fortunately, it is easy to boost your quercetin intake with highly bioavailable supplements.

References


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


Energy to burn. It’s more than just a phrase. It’s the key to a healthy life span.

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. 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 PQP 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

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

1. PQP. This breakthrough micronutrient has recently been shown to trigger mitochondrial biogenesis—the growth of new mitochondria in aging cells. PQP also activates genes involved in protecting the delicate structures within the mitochondria.

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.

Mitochondrial Basics with BioPQQ™ 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 with BioPQQ™ supplies:

<table>
<thead>
<tr>
<th>BioPQQ™</th>
<th>R-lipoic acid</th>
<th>Acetyl-L-carnitine arginate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mg</td>
<td>100 mg</td>
<td>250 mg arginate dihydrochloride</td>
<td>360 mg</td>
</tr>
</tbody>
</table>

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.

PQP can also be obtained as a low-cost standalone or in the Mitochondrial Energy Optimizer with BioPQQ™ formula.

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

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

Contains soybeans.

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.
For those seeking a high-quality quercetin formula, Life Extension® introduces Optimized Quercetin—a “gold-standard” formula derived from a proprietary food-source blend.

Quercetin is a bioflavonoid with unique qualities that supports cellular health and function. In human cell culture studies, quercetin has been shown to block the manufacture and release of inflammation-causing substances,¹ ² which can help support a healthy immune response to the seasonally changing environment.

Quercetin also helps promote a healthy cardiovascular system by preserving endothelial integrity³ and supporting healthy blood glucose levels for those already within normal range.⁴

**Optimized Quercetin** contains 250 mg of quercetin plus 250 mg of super food extracts that provide an array of added health benefits. A bottle of 60 vegetarian capsules of Optimized Quercetin retails for $18. If a member buys four bottles, the cost is only **$12.75 per bottle. ITEM # 01309**

References

To order Optimized Quercetin, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)
Back in 1983, Life Extension® was the first to introduce CoQ10 as a proven method to enhance mitochondrial energy production. CoQ10 has since gained universal recognition for its role in supporting cellular performance throughout the body.¹⁶

In an unprecedented breakthrough, a compound called PQQ (pyrroloquinoline quinone) has been shown to support mitochondrial biogenesis—the spontaneous generation of new mitochondria in aging cells.⁷ PQQ is available as a low-cost dietary supplement.

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

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

PQQ offers a viable alternative.
**The Ultimate Cell Rejuvenator**

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

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

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

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**Vital Protection for the Aging Heart and Brain**

PQQ is an **essential nutrient**, meaning your body cannot make it on its own. A growing body of research indicates that PQQ’s unique nutritional profile supports heart health and cognitive function—at least in combination with CoQ10. This comes as no surprise, given how much energy these vital organs need.

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

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

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**A Breakthrough Weapon in the Battle Against Aging**

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

A bottle containing **30 10 mg** vegetarian capsules of **PQQ Caps with BioPQQ™** retails for **$24**. If a member buys four bottles, the price is reduced to just **$16.50** per bottle.

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

Contains rice.

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To order **PQQ Caps with BioPQQ™** standalone or any other PQQ-containing formula call 1-800-544-4440 or visit www.LifeExtension.com

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BioPQQ™ is a trademark of MGC (Japan).

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References


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These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
National Institutes of Health Discovers
Protective Effects of COFFEE
An exciting new study published in the *New England Journal of Medicine* suggests that *coffee drinking may add years to your life span.*¹

Evidence is rapidly accumulating about the ability of coffee to reduce vascular disease, slash cancer risk, preserve cognition, and mitigate diabetes/obesity.²

Rich in polyphenols, coffee contains *over 1,000 different natural compounds*³ that favorably interact within cells.⁴ Coffee has the proven ability to turn on *genes* that promote youthful cellular functions.⁴,⁵

One coffee compound in particular, *chlorogenic acid* provides a multitude of these benefits, including impeding *after-meal glucose surges* that can contribute to obesity and diabetes.⁶-¹¹

Researchers have found a way to naturally “super charge” coffee and dramatically increase its healthy polyphenol content.¹² This means people can obtain more of coffee’s unique beneficial compounds while drinking less coffee. For those who can’t drink coffee, standardized *chlorogenic acid* capsules are becoming enormously popular. >>
Coffee Consumption Associated with Lower Risk of Death

Researchers at the National Institutes of Health, in collaboration with AARP (American Association of Retired People), explored coffee drinking habits and their impact on mortality. They enrolled 229,119 men and 173,141 women, beginning in 1995 and 1996, when the subjects were 50-71 years old. The subjects completed a thorough questionnaire probing their diet and lifestyle. Anyone with cancer, heart disease, or stroke at the time of enrollment was excluded, leaving basically healthy adults in late middle age.

The researchers noted each participant’s coffee consumption at the beginning of the study. Then they followed them for a total of 13 years, gathering data on a total of 5,148,760 person-years. This comprehensive study had massive statistical power.

During the study period, 33,731 men, and 18,784 women died of various causes. According to the raw data, the risk of death seemed elevated among coffee drinkers. But coffee drinkers were more likely to smoke cigarettes, markedly affecting the data.

After the researchers adjusted for smoking and other factors, they found a remarkably strong association between coffee drinking and survival. In other words, the more coffee the subjects drank, the less likely they were to die. You can see just how powerful this association was by looking at table 1.

Before describing the longevity finding published in the New England Journal of Medicine, we first want to conjecture why coffee drinking still has negative health connotations.

One factor may be early memories of people drinking coffee who simultaneously smoked cigarettes. Smokers are often ravenous coffee drinkers.

Other unhealthy images are those suffering hangovers who use coffee to restore functionality, those suffering sleep deprivation who drink coffee to stay awake, and the hefty “cream and sugar” so many people add to their coffee. These images are hard to delete from our memory banks.

A more current negative health picture is the high-calorie coffee “milkshakes” that contribute to today’s obesity epidemic. Certain religions admonish against tobacco, alcohol, and coffee, which implies that coffee drinkers are in the same poor-health category as nicotine addicts and alcoholics. Those who are able to abstain from alcohol addiction often switch to coffee. Finally, some people are sensitive to caffeine and are unable to drink coffee, or suffer heartburn in response to coffee consumption.

If one can dispel these negative images, then coffee drinking may rise to the conscious level of a healthy choice, analogous to green tea drinking.

### Table 1: Coffee’s Powerful Reduction in the Risk of Dying

<table>
<thead>
<tr>
<th>Cups of Coffee/Day</th>
<th>Percent Lower Risk of Dying for Women</th>
<th>Percent Lower Risk of Dying for Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1</td>
<td>No Reduction</td>
<td>No Reduction</td>
</tr>
<tr>
<td>1</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>2 or 3</td>
<td>13%</td>
<td>10%</td>
</tr>
<tr>
<td>4 or 5</td>
<td>16%</td>
<td>12%</td>
</tr>
<tr>
<td>6 or more</td>
<td>15%</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Table 1:** A study in the New England Journal of Medicine found that drinking more than 2 or 3 cups of coffee reduced women’s risk of dying, and that drinking more than one cup reduced men’s risk. In both cases, the more coffee consumed, the lower the risk, in general.
That risk reduction applied to what epidemiologists call “all-cause mortality,” that is, coffee drinking was associated with a markedly lower risk of dying for any reason at all. A closer look at the data revealed another fascinating fact, one that previous studies had already hinted at.\textsuperscript{13-15} The survival association with coffee drinking and death applied to the risk of dying from specific diseases, including heart and lung disease, stroke, diabetes, and infections. It even applied to the risk of dying from injuries and accidents.\textsuperscript{1}

The protective effect of coffee drinking was evident whether subjects drank caffeinated or decaffeinated coffee.\textsuperscript{14}

Caffeine, then, was not the protective component of coffee. Let’s look at what else coffee contains that might explain its life-saving effects.

**Coffee Polyphenols**

**Have Multi-targeted Impact**

In addition to caffeine, natural coffee beans contain more than 1,000 different compounds that could affect health and the risk of dying.\textsuperscript{3} Of those, the polyphenols are the best candidates, for several reasons.

Polyphenols are powerful antioxidants, with all the health benefits that implies. But polyphenols have other, more complex actions, including the surprising ability to modulate gene expression, regulating how much and how often a particular gene is “switched on.”\textsuperscript{16-18} That means that polyphenols regulate many of a cell’s most fundamental processes, including signaling that tells cells when to die, when to replicate, when to release or respond to other chemical signals, and so on.\textsuperscript{17,19}

The net effects of this impact on cellular signaling include improvements in tissue repair, immunity, and the body’s ability to maintain itself in a steady state, called homeostasis.\textsuperscript{17,19} Impaired cellular signaling has been implicated in causing cancer, type 2 diabetes, and the risks for heart disease and stroke.\textsuperscript{20}

One polyphenol in particular, chlorogenic acid, is especially abundant in coffee, and is credited with providing many of its beneficial effects. Green coffee beans may possess up to 10\% of dry weight chlorogenic acids making coffee the major source of chlorogenic acid in the diet.\textsuperscript{21} Along with other polyphenols, chlorogenic acid helps drive down the chronic inflammation that’s associated with common diseases of aging, such as diabetes and atherosclerosis.\textsuperscript{6} Chlorogenic acid derivatives in roasted coffee protect cells with high fat content, like brain cells, helping to explain observations that coffee sustains cognition.\textsuperscript{7}

Studies show that other coffee polyphenols beneficially influence the function of liver and fat cells,
helping to reduce the impact of obesity and diabetes. A reduction in damage to DNA is the likely mechanism by which coffee consumption may lower your risk for cancer. Coffee is the single largest source of those beneficial polyphenols and other antioxidants in our diets. On average, Americans who drink coffee consume 3.1 cups of coffee per day.

But studies of benefits from coffee drinking consistently show that larger amounts, ranging from 4 to as many as 12 cups a day, provide the most protective benefits, reducing the risk of cardiovascular disease, cancer, diabetes, liver disease, and Alzheimer’s disease. It's obviously hard to drink that much coffee, and many people develop unpleasant, though not dangerous, side effects, such as heart palpitations and upset stomachs, if they try to consume that much. You will read about a new technique for retaining polyphenol content in both decaffeinated and regular coffee.

Let's now look at the many ways in which high coffee consumption is being linked to reduced risk of specific diseases.

**Coffee Benefits Your Brain**

“Coffee consumption has been associated with benefits involving cognitive function in aging. For example, in one study of 676 individuals with an average age of about 75 years, coffee consumption was associated with significantly less cognitive decline over a 10-year time period. Furthermore, the least cognitive decline was observed with 3 cups of coffee per day, which was associated with a remarkable 4.3-times smaller level of decline in cognitive function compared with non-consumers of coffee (P<0.001).”

Enriching coffee with polyphenols, especially chlorogenic acid, produces still greater benefits. Such innovative coffees are more neuroprotective even than green coffee, according to laboratory studies. A new, patented technique has recently been developed that preserves much of the green coffee bean's original polyphenol content. Under controlled conditions, the manufacturer first soaks green coffee beans in water, then drains them before roasting. Soaking the beans before roasting allows the manufacturer to “capture” the polyphenols at room temperature before the beans are exposed to high-temperature roasting. When the beans are “quenched” after roasting by being dropped back into the polyphenol-rich water, much of their original polyphenol content is “rescued.”

The result of this simple process is a roasted coffee bean with all the flavor and richness of regular coffee, but with a substantial increase in its content of polyphenols, especially chlorogenic acid. In fact, the final brewed beverage has been found to contain as much as an 80% increase in polyphenols overall, with an astonishing 200% increase in chlorogenic acid content.

What’s the advantage of this extra step? Studies show that, for maximum health benefit, you need to drink 4 to 12 cups of conventional coffee daily. That’s a lot of coffee for many people, and consumption at that level may induce undesirable effects. These newer “polyphenol-retaining” coffees, with twice the chlorogenic acid content, could deliver similar benefits in only half the number of cups.
oxidant stress, but a roasted coffee rich in chlorogenic acid derivatives produced a 203% increase in survival.7

A chlorogenic acid-enriched decaffeinated coffee improved mood and attention in a pilot study of 39 healthy older people, compared with standard decaf coffee. A non-decaffeinated roast of similar formulation showed even more powerful effects.37

These benefits are likely to be of special importance in the face of the growing epidemic of Alzheimer’s disease and other neurodegenerative conditions. More than 40% of people over 84 will be stricken by Alzheimer’s disease, according to recent estimates.38 Moderate levels of daily coffee consumption, 3-5 cups per day, are tied to reduced rates of Alzheimer’s disease and other forms of dementia in older adults.35, 39, 40

Of special interest, animal studies now provide evidence that caffeinated coffee consumption (greater than about 5 cups per day in a human), not only protect against brain damage in Alzheimer’s disease, but can even reverse some of that damage—in as little as 5 weeks.34

Some insight into how coffee attains its protection against Alzheimer’s comes from studies of the “Alzheimer’s protein” called Abeta. Caffeine, at levels comparable to 5 cups of coffee daily, reduces levels of the proteins that go into manufacture of Abeta, and lowers levels of Abeta itself in blood and brain tissue.34,41

There is a well-established relationship between high coffee intake and protection from Parkinson’s disease as well. People who drink one to four cups of coffee daily experience 47% lower risk of the disease than those who drink none, and those who drink five or more cups have a 60% risk reduction.42

**Coffee May Cut Cancer Risk**

Coffee, especially brews enriched with chlorogenic acid, protect cells against the DNA damage that leads to aging and cancer development.9,11 That explains in part the findings from large epidemiological studies linking coffee consumption to lower risk for several cancer types.27,43-47

Women with the highest coffee intake are about 30% less likely to develop endometrial cancer than those who consume none.44 Some studies show an enhanced effect among obese women.43,46

**Three Coffees a Day May Ward Off Dementia**

A study in the *Journal of Alzheimer's Disease* reports that drinking coffee may help at-risk adults over age 65 fend off Alzheimer’s disease due to the elevated blood caffeine levels.73

The study involved 124 patients between the ages of 65 and 88 who displayed mild cognitive impairment, which can be interpreted as an early sign of Alzheimer’s. No patients with blood caffeine levels above 1,200 ng/mL developed the disease over a 2-4 year period, even though the scientists expected many of the participants to develop the disease within a few years. The major or only source of caffeine for the participants was coffee.

The lead author of the study, Chuanhai Cao, stated, “The results from this study, along with our earlier studies on Alzheimer’s in mice, are very consistent in indicating that moderate daily caffeine/coffee intake throughout adulthood should appreciably protect against Alzheimer’s disease later in life.”

The scientists are careful to point out that coffee consumption will not completely protect people from Alzheimer’s, but they firmly believe moderate coffee consumption can reduce a person’s risk of Alzheimer’s or delay its onset.
Breast cancer, the second leading cause of cancer death among American women, appears to be responsive to coffee consumption. A **57%** reduction in the risk of estrogen-receptor negative (ER-negative, high risk) breast cancers was shown among women who drank 5 or more cups of coffee daily. Chlorogenic acid and other polyphenols, according to lab studies, are the likely beneficial agents in such cancers.

Men also receive important cancer protection from coffee. While prostate cancer is the second leading cause of cancer death in men, consumption of more than 6 cups of coffee per day is associated with an **18%** reduction in risk for the disease, and a **60%** reduction in risk of aggressive or fatal cancers.

“Heavy” coffee drinking has been associated in multiple studies with as much as a **57%** reduced incidence of colon cancers. Coffee and its constituents target specific cancer cell signaling systems to suppress colon cancer formation and metastasis.

Cancers elsewhere in the digestive system are reduced by coffee consumption. A mere one cup daily was associated with at least a **42%** reduction in risk of developing liver cancer- even for those with confounding risk factors such as hepatitis C infection. Additionally, consuming at least one cup per day of coffee reduced the risk of death due to liver cancer by **50%** compared to non drinkers. And more than 3 cups produced a **40%** reduction in the risk of cancers of the mouth, throat, and esophagus.

**Coffee Consumption Slashes Diabetes Risk**

Large reductions in the occurrence of type 2 diabetes are associated with higher coffee consumption. If you aren’t already diabetic, you may be able to cut your risk by an impressive **67%** by drinking larger amounts of coffee.

How much more coffee? A large, combined study of data on more than 450,000 people showed that each additional daily cup reduced diabetes risk by **7%**. Other studies support this finding with reductions of **13%** for one cup/day, **47%** for 4 cups/day, and **67%** for 12 cups/day.

Even if you do have diabetes, coffee is likely to be beneficial. Chlorogenic acid, coffee’s primary polyphenol, inhibits uptake of sugar from the intestine, reducing blood sugar levels. By inhibiting several enzymes in the sugar-regulating system, chlorogenic acid reduces production and release of new glucose into the bloodstream.

Of special importance, coffee’s chlorogenic acid can cut the after-meal glucose surge that’s known to increase diabetics’ (and others’) cardiovascular risks. Other components in coffee enhance this effect by reducing carbohydrate storage and improving insulin sensitivity.

**Coffee Consumption Protects Against Cardiovascular Disease**

Coffee was long thought to increase the risks for high blood pressure and cardiovascular disease, but like everything else related to coffee, this has changed abruptly in recent years.

The “secret ingredient,” not surprisingly, turns out to be chlorogenic acid. This compound, which can be increased in enriched coffees improves endothelial function and increases availability of artery-relaxing nitric oxide, which reduces any blood pressure increase triggered by caffeine. In 2011, a large combination study concluded that there’s no correlation between long-term coffee consumption and increased blood pressure or cardiovascular disease.

The beneficial effects of chlorogenic acid (and other coffee components) are evident from large observational studies. Deaths from cardiovascular disease overall, and from coronary heart disease and stroke, are all significantly reduced by coffee consumption. Table 2 shows results from one such study of diabetics, who are at especially high risk.

**Table 2: Cardiovascular Risk Reduction From Coffee Drinking**

<table>
<thead>
<tr>
<th>Cups of Coffee/Day</th>
<th>Total</th>
<th>Cardiovascular</th>
<th>Coronary Heart Disease</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>No Reduction</td>
<td>No Reduction</td>
<td>No Reduction</td>
<td>No Reduction</td>
</tr>
<tr>
<td>3-4</td>
<td>23%</td>
<td>21%</td>
<td>22%</td>
<td>23%</td>
</tr>
<tr>
<td>5-6</td>
<td>32%</td>
<td>30%</td>
<td>30%</td>
<td>36%</td>
</tr>
<tr>
<td>7 or more</td>
<td>30%</td>
<td>29%</td>
<td>37%</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Table 2:** A study of diabetic adults, at high risk for cardiovascular deaths, found substantial reduction in risk of dying from any cause, as well as from three major forms of cardiovascular disease. Note the slight decrease in protection seen at the very highest levels; this indicates a role for polyphenol-enhanced coffees with double the chlorogenic acid content.
Again, the risk reduction seems to be “dose-dependent,” meaning that up to a point, the more coffee you drink, the lower your risk.

But there’s an important caveat.

If you look at both tables 1 and 2, you’ll see that the optimum risk reduction occurs mainly in people who drink somewhere around 4 to 6 cups daily. That makes the newer “polyphenol-retaining” coffees all the more attractive, because they can deliver a much more substantial polyphenol “punch” per cup, potentially avoiding any downside risk associated with very high total consumption.

Studies show a 33% reduction in the risk of dangerous blood clots that can travel from veins to the lungs or brain with devastating consequences. And just one cup of coffee can reduce the risk of clots in general, by inhibiting platelet aggregation (stickiness) within an hour.

The mechanisms by which coffee consumption reduces cardiovascular disease are many and diverse. Polyphenols found in coffee enhance cholesterol outflow from arterial wall cells, reducing the risk of plaque formation and subsequent heart attack or stroke.

Coffee extracts rich in polyphenols combat the dangerous structural changes in heart and liver associated with the metabolic syndrome, as they improve glucose tolerance, reduce blood pressure, and impede development of fatty liver disease.

Summary

After years of suspecting coffee of having negative impacts on health, scientists have now concluded that it has remarkable health benefits. Most strikingly, a recent study demonstrated sharp reductions in the risks of dying from any cause, in direct proportion to the amount of coffee consumed. This study comes on the heels of numerous others that demonstrate reduced risk of dying from specific diseases such as heart disease, stroke, cancer, diabetes, and neurodegenerative disorders.

Detailed analysis of coffee’s many components reveals that polyphenols, especially chlorogenic acid, are the main contributors to coffee’s beneficial effects. Since conventional roasting processes readily destroy these compounds, it’s important to seek out coffees that retain the maximum amount of polyphenol content. That way, you can enhance your health without the over consumption of coffee. Those who cannot tolerate coffee should consider taking 200 to 400 mg of standardized chlorogenic acid supplement before most meals.

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


Scientists are realizing that skin needs to be protected against external factors such as sunlight, and also against internal damage caused by emotional stress. This is because our emotions, particularly stressful ones, release a wave of stress hormones such as cortisol that prematurely age the skin.

Fortunately, emerging research suggests that a natural herb called ashwagandha can protect and enhance psychological health as seen in a recent human trial. In this study, just 125 mg of a patented ashwagandha extract once a day led to a 14.5% reduction in cortisol levels in 98 chronically stressed individuals. This dose also resulted in a 13.2% increase in levels of the anti-aging hormone DHEA, which helps maintain the youthfulness of skin cells. Overall, the ashwagandha-treated subjects experienced up to 62% relaxation support compared with virtually no change in the placebo group.

The impressive results from this trial have led to the incorporation of ashwagandha into a new skin-protection formula called Enhanced FernBlock® with Sendara®. As the name suggests, this formula also contains FernBlock®, the revolutionary oral supplement introduced by Life Extension® in July 2008 that helps protect the skin against damaging solar radiation. FernBlock® is a natural extract derived from the fern plant Polypodium leucotomos. Extensive clinical studies document its ability to provide remarkable skin protection by inhibiting the absorption of harmful ultraviolet (UV) rays and quenching DNA-corrupting free radicals. FernBlock® also diminishes the consequences of excessive UV radiation by favorably altering a number of changes in skin cells that cause premature skin aging.

Enhanced FernBlock® with Sendara® is complemented with a powerful antioxidant called Phyllanthus emblica. This natural extract blocks a chemical reaction that generates several types of skin-damaging free radicals, thus shielding the skin against the destruction of collagen and other dermal matrix proteins. An in vitro study using a patented extract of both ashwagandha and Phyllanthus emblica demonstrated an impressive 54% inhibition of collagen-degrading enzymes and an 86% inhibition of those that break down hyaluronic acid—the skin’s natural moisturizer.

The unique combination of natural ingredients in Enhanced FernBlock® with Sendara® has been scientifically proven to help skin look and feel good from the inside out. This formula is designed to complement topical sunscreens for complete skin protection.

A bottle containing 30 vegetarian capsules of Enhanced FernBlock® with Sendara® retails for $39. If a member buys four bottles, the cost is only $26.25 per bottle.

Contains corn and rice.

References

Note: Use topical sunscreens whenever exposed to sunlight. This product is not a sunscreen.

Patent Pending Sendara® is a registered trademark of NutraGenesis LLC. FernBlock® is a registered trademark of Industrial Farmaceutica Cantabria, S.A.
NATURAL APPROACHES FOR OPTIMAL GLUCOSE CONTROL

Standardized chlorogenic acid supplements taken before meals can help many people achieve optimal glucose control.

Life Extension® offers a variety of nutrient blends rich in green coffee bean extract that provide potent doses of chlorogenic acid.

CoffeeGenic™ Green Coffee Extract with Glucose Control Complex

CoffeeGenic™ Green Coffee Extract with Glucose Control Complex contains 200 mg of CoffeeGenic™ Green Coffee Extract along with 4 ingredients formulated to help support healthy blood glucose levels already within normal range. Take one capsule 20-30 minutes before each meal to obtain the following nutrients in addition to Green Coffee Bean extract:

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

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>CoffeeGenic™ Green Coffee (Coffea arabica) (bean)</td>
<td>200 mg</td>
</tr>
<tr>
<td>Iodine (typical value naturally occurring from Ascophyllum nodosum and Fucus vesiculosus)</td>
<td>25 mcg</td>
</tr>
<tr>
<td>Chromium (as Crominex® 3+ chromium stabilized with Capros® (Phyllanthus emblica) Extract (fruit) and PrimaVie® Shilajit)</td>
<td>150 mcg</td>
</tr>
<tr>
<td>InSea2® (proprietary composition of demineralized polyphenols from brown seaweeds Kelp (Ascophyllum nodosum) and Bladderwrack (Fucus vesiculosus))</td>
<td>125 mg</td>
</tr>
<tr>
<td>Integra-Lean® African Mango (Irvingia gabonensis) proprietary Extract (seed)</td>
<td>100 mg</td>
</tr>
</tbody>
</table>
| Green Tea (Camellia sinensis) Decaffeinated Extract (leaf) | 100 mg   

[std. to 98% polyphenols by UV (98 mg), 45% EGCG by HPLC (45 mg)]

Why CoffeeGenic™ Green Coffee Extract

CoffeeGenic™ Green Coffee Extract is produced through a patented extraction process to deliver an extraordinarily high proportion of chlorogenic acid for maximum potency. The coffee beans sourced for CoffeeGenic™ Green Coffee Extract are organically grown.

For those who want to take CoffeeGenic as a standalone, it is available in 200 mg and 400 mg potencies.

One vegetarian capsule of CoffeeGenic™ Green Coffee Extract should be taken before heavy meals. This Green Coffee Extract is standardized to 50% chlorogenic acid.

CoffeeGenic™ Green Coffee Extract (200 mg) • Item #01604
(Each serving contains approximately 6 mg caffeine)

A bottle containing 90 200 mg vegetarian capsules of CoffeeGenic™ Green Coffee Extract retails for $25. If a member buys four bottles, the price is reduced to just $16.50 per bottle.

CoffeeGenic™ Green Coffee Extract (400 mg) • Item #01620
(Each serving contains approximately 12 mg caffeine)

A bottle containing 90 400 mg vegetarian capsules of CoffeeGenic™ Green Coffee Extract retails for $38. If a member buys four bottles, the price is reduced to just $25.50 per bottle. Those seeking to emulate the dose used in the 2012 study that induced an average 17.6 pounds of weight loss should take one 400 mg capsule of standardized green coffee bean extract three times a day.

2. InSea2® is a registered trademark of innoVactiv™
3. Crominex® 3+, Capros® and PrimaVie® are registered trademarks of Natreon, Inc.
4. Caution: Because this product may lower blood glucose, consult your healthcare provider before taking this product if you are taking blood glucose lowering medication.

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

*This supplement 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.
Rich Rewards

Polyphenol-Retained Coffee

The Healthy Gourmet Choice
Not all coffee provides the same powerful protection. When it comes to obtaining coffee’s full range of health benefits, most people aren’t getting their money’s worth!

The reason? Most of the coffee bean’s polyphenol content is destroyed during the roasting process required to create a dark, rich blend.

Among the most beneficial of these polyphenols is chlorogenic acid, a potent antioxidant that promotes optimal health.

A Patented Organic Roast
Life Extension’s Rich Rewards Breakfast Blend and Decaffeinated Roast are made using a patented, 100% natural process called HealthyRoast™. It delivers a more complete nutritional profile of the coffee bean, yielding chlorogenic acid levels far greater than other premium brands.

Handpicked deep in the rainforests of Central America, Rich Rewards consists exclusively of 100% certified USDA organic arabica coffee beans, gently roasted in small batches and ground for easy brewing.

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

<table>
<thead>
<tr>
<th></th>
<th>Chlorogenic Acid</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Coffee</td>
<td>92 mg (Caffeinated)</td>
<td>172 mg (Caffeinated)</td>
<td></td>
</tr>
<tr>
<td>(Caffeinated)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional Coffee</td>
<td>46 mg (Decaffeinated)</td>
<td>132 mg (Decaffeinated)</td>
<td></td>
</tr>
<tr>
<td>(Decaffeinated)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This chart shows Life Extension’s Rich Rewards Breakfast Blend contains up to 87% more chlorogenic acid than conventional caffeinated coffees and the Rich Rewards Decaffeinated Roast contains up to 187% more chlorogenic acid than conventional decaffeinated coffees. This enables one to obtain the benefits of heavy coffee drinking in about half the number of cups.
Savory Taste Without Stomach Upset

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

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

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

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

References
* US Patent 6,723,368.
Beyond Sleep: 7 WAYS MELATONIN ATTACKS Aging Factors
Melatonin is known for helping some people achieve a better night’s sleep, which is how it earned its nickname as “the sleep hormone.”

While melatonin is involved in regulating our internal body clock, that’s just the beginning of its health-promoting benefits. Based on extensive research, scientists have discovered that this hormone has beneficial effects on everything from heart disease and diabetes, to bone health and obesity. And best of all, emerging science now suggests that it may protect our genetic material and guard against age related disease and decline.1

Preclinical studies found that melatonin increased the life span of animals by up to 20%—prolonging their youthful character in the process.2-4 Scientific evidence now suggests that melatonin plays a crucial role in a variety of metabolic functions,5 including antioxidant and neuroprotection,6,7 anti-inflammatory defense,8 and immune system support.9

Because melatonin production reduces with age,10-14 experts believe that its decline contributes to both the aging process and a generalized deterioration of health.5,15-17 Years ago, scientists could only speculate at the underlying mechanisms behind melatonin’s anti-aging properties. A growing body of evidence reveals how melatonin is able to play such a major role in the combating aging process.18-20

By Claudia Kelley, PhD, RD, CDE
#1: Antioxidant Defense—Combat Free Radical Damage While You Sleep

Since its discovery over 50 years ago, melatonin has demonstrated itself as a functionally diverse molecule, with its antioxidant properties being amongst its most well-studied attributes.\(^\text{26,27}\) Since then, a vast amount of experimental research has revealed its vital role in the body’s defense against numerous cell-damaging free radicals—and for good reason.\(^\text{27-30}\) Melatonin has been found to possess 200% more antioxidant power than vitamin E.\(^\text{31}\) Melatonin has been found to be superior to glutathione as well as vitamins C and E in reducing oxidative damage.\(^\text{6}\)

As such a potent antioxidant, melatonin plays a powerful role in fighting free-radical-related diseases—from cardiovascular disease to cancer and practically everything in between.

In post-menopausal women, for example, melatonin has been found to inhibit lipid peroxidation (damage to your fat cells caused by free radicals), thus leading to decreased levels of low-density lipoprotein (LDL) cholesterol,\(^\text{31}\) one of the primary ingredients for the formation of atherosclerosis. A newer study on men confirmed these findings, suggesting that melatonin leads to overall lower levels of oxidative stress in humans.\(^\text{32}\) In individuals undergoing cardiopulmonary bypass surgery, melatonin exhibited a higher reduction in lipid peroxidation and improvements in red blood cell membrane stiffness.\(^\text{33}\)

Other widely feared free radical diseases, such as age-related macular degeneration (AMD),\(^\text{34}\) acute respiratory distress syndrome (ARDS),\(^\text{35}\) glaucoma,\(^\text{36}\) and sepsis\(^\text{37}\) have also been responsive to increased melatonin levels.

#2: Melatonin Fights Back Against America’s Major Killer

Since cardiovascular disease is the leading cause of death in the United States, melatonin’s ability to protect against heart damage is especially noteworthy.\(^\text{38}\) In the past decade, melatonin has received considerable attention investigating its potential as a cardioprotective nutrient. Animal studies have provided ample evidence supporting melatonin’s antioxidant protection against heart muscle injury,\(^\text{39,40}\) reducing the damage done by a heart attack,\(^\text{41,42}\) and improving the strength of the heart’s pumping action following a heart attack.\(^\text{43-46}\)

Other investigators reported that it decreases total cholesterol and LDL levels and increases HDL cholesterol levels.\(^\text{33,34}\) Scientists have discovered that individuals with metabolic syndrome have a lower melatonin production rate compared to healthier counterparts without metabolic syndrome and that individuals with metabolic disturbances in blood pressure, cholesterol, and blood sugar management (all classic features of metabolic syndrome) possess lower melatonin levels than those with normal metabolic function.\(^\text{47}\) Additional in-vivo studies have confirmed that melatonin can lower blood pressure levels.\(^\text{44-48}\)

#3: Cancer Therapy Adjuvant and Immune Regulator

Emerging research suggests that melatonin has anticarcinogenic properties—that is, it has the ability to prevent cancer from occurring, or to induce the cancer cell death if it does occur. This has been attributed to melatonin’s antioxidant, anti-inflammatory, anti-proliferative, and hormone-modulating properties.\(^\text{49,50}\)

Melatonin’s ability to interfere with cancer cell multiplication and growth (“proliferation”), as well as inducing cancer cell death (“apoptosis”), has been documented in cancer patients.\(^\text{51,52}\)

It has been successfully used in individuals with advanced stage cancers undergoing conventional anticancer therapy, by either slowing disease progression and/or decreasing treatment side effects.\(^\text{53-60}\) In a review of 8 randomized, controlled clinical trials evaluating the benefits of melatonin as an adjuvant therapy for cancer patients with solid tumors undergoing chemotherapy or radiation therapy,
researchers found that concurrent use of 20 mg of melatonin once daily versus conventional treatment alone, improved the rate of complete or partial remission by nearly 50%, increased the one-year survival rate by 45%, and decreased the devastating side effects of conventional therapy such as low platelet count, neuropathy, and fatigue by 89%, 83%, and 65% respectively.59 What's more, these effects were consistent across different types of cancer and there were no adverse events reported.59

Melatonin’s anticarcinogenic properties can also be attributed to its effect on your immune system. Laboratory studies revealed that melatonin can activate T-helper cells, which triggers other immune cells in order to help kill off foreign invaders or pathogens.61,62 Additionally, melatonin stimulates natural killer cell, monocyte, and macrophage synthesis, and has been found to facilitate healthy cell-to-cell communication, which enhances the body’s appropriate immune system response to foreign invaders.63,64 Based on available evidence, leading experts suggest that patients with cancers and particularly metastatic solid tumors, might benefit from melatonin use, potentially leading to improved therapeutic outcomes.62-70 Certainly, more research is warranted.

### #4: Protect Against Diabetic Complications

Diabetes—as with cardiovascular disease and cancer—belongs to the family of “free radical diseases.”71 Research has found that people with type 2 diabetes and retinopathy experience alterations of their melatonin secretion.72 Considering the large body of
Evidence identifying melatonin as a major free-radical scavenger, it is not surprising that preclinical research repeatedly and consistently documents its beneficial antioxidative effects in diabetics and those with high blood sugar (*hyperglycemia*). Melatonin has also been shown to protect pancreatic beta-cells and several diabetes-affected organs (including kidney, retina, brain, and vasculature) from free radical damage. In studies, melatonin treatment has produced reductions in blood glucose, hemoglobin A1c, and cholesterol.

Scientists see great promise for melatonin’s potential to improve quality of life by alleviating many of the complications associated with diabetes, such as retinopathy, nephropathy, and cardiovascular disease.

**#5: Help Delay Alzheimer’s Disease**

Another unique and powerful property of melatonin is its ability to cross the blood-brain barrier. Oral intake of melatonin has been shown to increase levels of melatonin in the brain. Melatonin also protects the blood brain barrier particularly in cases of hypoxic injury that may cause increased permeability of the blood brain barrier and lead to more damage to the delicate brain tissue as compounds that normally would be kept out by a functioning blood brain barrier gain entrance to the brain. Intensive research over the past decade has indicated melatonin’s beneficial effects in experimental models of neurodegenerative disorders, specifically those linked to oxidative damage. In fact, melatonin’s broad spectrum antioxidant activity in many central nervous system neurodegenerative diseases has been well-documented and reviewed.

Specifically, melatonin can help delay the onset of Alzheimer’s disease (AD) and help protect vital cellular structures, such as mitochondria, from oxidative damage and decay. Declines in mitochondrial function are a hallmark feature of many neurodegenerative diseases including Alzheimer’s disease, Parkinson’s disease, and Huntington’s disease. Melatonin may also promote improved sleep patterns and prevent cognitive impairment and improve the confusion and restlessness that often occurs in the evening (called sundowning) in AD patients. Preclinical studies revealed that melatonin exerts pronounced neuroprotective effects against beta amyloid plaque, one of the specific underlying causes of Alzheimer’s disease.

More recent investigations show that melatonin may prevent brain cell death while maintaining energy and oxygen metabolism in highly stressed neuronal mitochondria. Interestingly, decreased night time melatonin levels have been associated with the severity of mental impairment in dementia patients, and disturbed circadian rhythms seem to be correlated with cognitive performance in elderly and Alzheimer’s patients.

It is important to note that while melatonin may prove beneficial in earlier stages of Alzheimer’s disease, it is much less effective in late stage Alzheimer’s and may fail to improve sleep or agitation.

**#6: Combat Obesity with Melatonin**

In recent years, dietitians and medical experts have recognized that obesity is often associated with stress, emotional eating, sleep-deprivation, and hormonal changes later in life. A recent study in women with *night eating syndrome* (an eating disorder characterized by late-night binge eating) added further
confirmation to this. It found that women suffering from this disorder had pronounced circadian melatonin rhythm disturbances, which also affected levels of cortisol (a stress hormone that can be a factor in weight problems) and ghrelin (a hormone that stimulates hunger). It also affected a variety of other behavioral and physiological circadian markers involved in appetite and neuroendocrine regulation.94

While no human weight-management trials using melatonin have been published thus far,95 preclinical trials are encouraging. In middle-aged rodents, daily melatonin administration was found to suppress abdominal fat, plasma leptin levels, and insulin levels, while also reducing body weight and food intake.96,97 Other researchers reported that melatonin was associated with decreased intra-abdominal fat, decreased plasma insulin and leptin levels, and the absence of age-related weight gain.95,98

Furthermore, laboratory investigations discovered melatonin’s ability to activate brown adipose tissue, which encourages your body to burn fat instead of storing it.99-101 In recent years, brown fat has increasingly become a target for halting the global obesity epidemic.102 In a rat model of pre-diabetic, diet-induced obesity, supplementing obese rats with 4mg/kg/day of melatonin resulted in reductions in body weight, belly fat, serum leptin levels, and triglycerides.103 In humans, the equivalent dose is 48 mg for a 165 lb adult, which is a very high dose that could produce next day drowsiness. Typical human doses for melatonin range from 300 micrograms to 10 milligrams at bedtime.

#7: Help Prevent Osteoporosis

Data derived from animal research suggests that melatonin has beneficial effects on bone repair and remodeling, and bone mineral density,104 which would make it an ideal candidate for the prevention of osteoporosis or as adjuvant after bone fractures.

A very small, yet compelling recently published double-blind, placebo-controlled pilot study investigated the effects of melatonin on bone health and quality of life in 18 perimenopausal women (ages 45-54) for 6 months. It found that melatonin improved physical symptom scores (e.g., feeling and sleeping better), increased osteocalcin (a marker for bone formation), and decreased levels of Type-I collagen cross-linked N-telopeptide (a marker for bone resorption), indicating that melatonin may restore imbalances in bone remodeling and prevent bone loss.105 However, while the results from this small study appear clinically relevant, further investigation is warranted.

Summary

Aging is a multi-factorial process, involving a heavy load of free radicals, metabolic, hormonal, and changes in immunity. Although there is currently no direct clinical evidence demonstrating that melatonin may prolong the human life span, there are several reasons to postulate its role in the aging cascade:

- Melatonin participates in many vital life processes, and its secretion falls gradually over time.
- Diminished melatonin levels appear to correlate with the deterioration of many metabolic functions and decreasing hormone levels, thus possibly contributing to the acceleration of aging processes.
- Melatonin exhibits immunomodulatory properties; suppressed immunity has been implicated in the acceleration of aging processes.
- Melatonin has remarkable low toxicity and is without significant side effects if used at ≤10 mg/day (provided as ‘regular’ or ‘fast-release’);106

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

References


SEVEN WAYS MELATONIN ATTACKS AGING FACTORS


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Ultimate Protection for Systemic Cellular Inflammation

Excess levels of the enzyme 5-lipoxygenase or 5-LOX set in motion inflammatory responses that have been linked to common degenerative effects in aging individuals. 1,5 Normal aging results in higher-than-desired levels of 5-LOX.

The typical American diet adds to the danger. Foods rich in omega-6 fatty acids like red meat, poultry, and eggs, along with high-glycemic carbohydrates, trigger overproduction of arachidonic acid. In response to high levels of arachidonic acid, the body produces the 5-LOX enzyme. 5-LOX breaks down arachidonic acid to pro-inflammatory compounds like leukotriene B4, a molecule that attacks joints, arterial walls, and other tissues. 5-LOX itself facilitates undesirable cell division changes.

The good news is that extract of the Indian plant Boswellia serrata has been shown to neutralize 5-LOX.

Higher Absorbable Boswellia

Used for centuries to help with inflammatory issues, boswellia acts as a natural 5-LOX inhibitor, intervening at the cellular level to block its unwanted effects.

Confirmatory data reveal that a compound contained in boswellia called AKBA (3-O-acetyl-11-keto-ß-boswellic acid) is the key to its beneficial action.

The problem is that boswellia is not readily absorbed into the blood.9

For this reason, a patent-pending, standardized form of boswellia called AprèsFlex™ has been introduced that absorbs into the blood 52% more than previously available boswellia extracts.9

Each 100 mg vegetarian capsule of 5-LOX Inhibitor with AprèsFlex™ is standardized to provide 20% of active AKBA from boswellia. Most people need only one capsule a day.

A bottle containing 60 100 mg vegetarian capsules of 5-LOX Inhibitor with AprèsFlex™ retails for $22. If a member buys four bottles, the price is reduced to just $15 per bottle.

References

"It should be noted that although Life Extension®’s previous 5-LOXIN™ formulation contained at least a 30% concentration of AKBA, the new AprèsFlex™ formulation delivers more AKBA into the bloodstream, offering greater efficacy at a 20% concentration. AprèsFlex™ has been added to the new ArthroMax™ and Ultra Natural Prostate Formulas. AprèsFlex™ is a trademark of Laila Nutraceuticals exclusively licensed to PLThomas–Laila Nutra LLC. International patents pending.

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Sweet DREAMS

Choose the Melatonin That’s Right For You

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

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

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

ChromeMate®, a patented, biologically active oxygen-coordinated niacin-bound chromium complex, is a registered trademark of Interhealth Nutritional Inc.
Topical **LYCOPENE**
Improves Skin Cellular Function

**BY GARY GOLDFADEN, MD AND ROBERT GOLDFADEN**

New research on *lycopene*, a unique carotenoid, has shown it has an ability to defend against some of the factors of skin aging. Topical application of lycopene combats age-causing free radicals and assists in metabolic functions related to growth and repair. > >
Lycopene: A Protective Antioxidant Compound

Lycopene belongs to a general group of more than 600 fat-soluble plant compounds known as carotenes. Lycopene is also classified as a carotene, which gives many fruits and vegetables their bright yellow, red, and orange color. Aside from performing vital functions during photosynthesis, carotenes are also important free radical scavengers that protect the organism from overexposure to damaging UV-light. Lycopene’s antioxidant and UV-blocking capabilities naturally make it a valuable weapon in the battle against aging skin.

Lycopene Sources

Some of the fruits and vegetables rich in lycopene include pink grapefruit, papaya, wolfberry, goji, and tomatoes. For the vast majority of people, the most common dietary sources of lycopene remains tomatoes, tomato-based sauces, juices, and ketchup.

It should be noted that eating raw tomatoes provides only a small amount of bioavailable lycopene. This is because the lycopene in raw tomatoes is tightly bound to indigestible fiber that prevents much of the nutrients from being absorbed by your body. On the other hand, cooked tomato products such as tomato paste or tomato sauce, are a much better source of dietary lycopene. As far as the health of your skin is concerned, even eating cooked tomatoes may not deliver sufficient lycopene to your skin. After ingestion, lycopene is eventually released into your lymphatic system and distributed throughout your whole body. Unfortunately, it is mostly deposited in fat-rich organs like your adrenal glands, colon, and liver. In the end, only a small fraction of the lycopene you eat ever reaches your skin.

However, the fat soluble nature and relatively small molecule size of this powerful plant nutrient make it easily absorbed when applied topically in a cream or lotion. Moreover, because lycopene is especially effective in tissues with high fat content, the lipid-rich environment of the skin provides a very receptive target for its potent anti-aging benefits.

The Many Anti-Aging Benefits of Lycopene

Lycopene’s powerful antioxidant action and ability to defend your skin against UV radiation are due in large part to its unique molecular design, which is responsible for lycopene’s red appearance and its ability to block UV light. Though lycopene’s sun protection is only equivalent to approximately SPF-3 and isn’t adequate sun protection by itself, it is still a valuable added benefit for your skin.
In fact, a study conducted by the Department of Dermatology at the Mount Sinai School of Medicine, examined topically-applied lycopene’s ability to defend against the harmful effects of UVB radiation. It was found that topical application of lycopene suppressed the typical UVB-induced activity of an enzyme called **ornithine decarboxylase**, an important initiating and rate-controlling factor involved in stabilizing DNA structure in the nucleus of the skin cells as well as maintaining the DNA double strand-break repair pathway.\(^9\) What this means is that lycopene was able to offer significant protection to the cellular DNA and thus negated the need for the body to activate its internal DNA repair pathways.

The same study also revealed that UVB radiation depleted an important substance in your skin known as **PCNA** (proliferating cell nuclear antigen), which is vital for DNA synthesis and cell repair. The topical application of lycopene was found to reverse the reduction of PCNA caused by UVB exposure to a significant degree. In addition, it was shown that lycopene may also protect your skin through its ability to reduce inflammation, encourage cell renewal, and inhibit normal DNA damage following UVB injury.\(^9\)

**A Free Radical Scavenger**

When compared to other antioxidants, such as **vitamin E**, lycopene is a more potent scavenger of the free radicals that contribute to aging and chronic disease.\(^10\) Due to the fact that lycopene is concentrated in your cell membranes, its free-radical scavenging ability plays a vital role in preventing oxidative damage to the membrane lipids, thereby influencing the thickness, strength, and fluidity of your membranes.\(^10\) Because these cell membranes are the gatekeepers of your cells, allowing nutrients to be absorbed, preventing toxins from entering, and facilitating the removal of waste products, maintaining the health and integrity of your cell membranes is a key factor in the prevention of aging.

**Cell Communication Enhancer**

Besides protecting your skin cells from free radical damage and enhancing certain aspects of cell metabolism, lycopene also appears to produce its beneficial effects by improving the operation of **cell-to-cell junctions**.\(^11\) Also known as **gap junctions**, they coordinate cellular behavior by directly connecting the cytoplasm of two cells so that molecules and ions can pass freely between them.\(^12\)\(^13\) Gap junction communication can be found in all the different tissues of your body, with skeletal muscle and mobile cell types like sperm or red
blood cells being the only exceptions.\textsuperscript{13} Gap junctions are particularly important to your skin because it is highly dependent upon intercellular communication for vital metabolic processes related to growth and reproduction. Lycopene’s ability to enhance connectivity between cells may noticeably improve your skin’s texture by aiding cellular functions that are essential to keeping your skin looking young.

**Collagen Protector**

Lycopene may also strengthen your skin by inhibiting the activity of enzymes involved in the destruction of collagen.\textsuperscript{14} This reaction breaks down the peptide bonds in the collagen fibers of your skin, resulting in gradual loss of integrity and the appearance of sags and wrinkles. Lycopene down-regulates collagenase and helps maintain natural firmness.

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**

**Probiotics** literally means “for life.” Traditional diets comprising of foods containing probiotics (such as the Mediterranean Diet) have been shown to promote health and longevity.¹

People take probiotics to facilitate a healthy GI tract, but probiotics perform many more important functions. For example, researchers have discovered that probiotics inhibit **nuclear factor kappa B** (NFκB), which helps suppress inflammation as well as positively modulate cellular signaling pathways.²

Furthermore, studies have shown that probiotics can influence youthful gene expression.³ Properly formulated probiotics provide biologically active materials that can positively influence many aspects of human health.⁴

**The Importance of the GI Tract on Immune Function**

A little known fact is that 70-80% of our immunoglobulin-producing cells reside in our gut, which is populated by nearly 100 trillion microorganisms, many of which are beneficial bacteria.³ These bacteria are considered a living part of the human organism.⁵

With age, we can experience a decline in vital beneficial bacteria and the strength of our immune system. Restoring the gut’s friendly bacteria can stimulate and regulate healthy immune function.⁵

**A Potent, Immune Enhancing Strain of Bifidobacteria**

Researchers have shown that a unique well-studied strain of the bifidobacteria probiotic called **BB536®** increases the number of healthy bacteria in the colon.⁶

An *in vivo* study demonstrated a significant increase in longevity in mice supplemented with bifidobacteria.⁷ Long studied by Japanese scientists, BB536® was found to reduce production of inflammatory cytokines that often accompany seasonal symptom development.⁸

BB536® is a highly researched active probiotic. Each capsule provides 2,000,000,000 (two billion) colony forming units of viable healthy bacteria.

A bottle containing 60 capsules of **Bifido GI Balance** retails for $20. If a member buys four bottles, the price is reduced to just $13.50 per bottle.

Contains milk.

**References**


To order **Bifido GI Balance**

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

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Tender, sensitive joints can limit everyday activities. As you age and continue to put stress on your joints, you can compromise joint cartilage—which exposes small collagen fibers. Your body’s immune system mistakenly identifies these collagen fibers as “foreign cells.” This triggers an inflammatory response against the collagen-containing cartilage in your own joints. Inflammation and joint discomfort can soon follow.

Data shows that a patented collagen provides targeted support for the immune issues related to joint discomfort. To meet this urgent need, Life Extension® now offers Bio-Collagen with Patented UC-II®—a novel form of undenatured type II collagen from chicken cartilage.

ADVANCED MOLECULAR STRUCTURE

Not just any form of collagen will do. Normally, when chicken collagen is processed, its molecular shape is changed. It loses bioactivity and becomes denatured—which researchers found has no beneficial effect on the immune system.

Fortunately, a unique processing technique preserves the correct molecular shape of the collagen and preserves its bioactivity—producing a form known as undenatured collagen.

The result of this innovative process is an undenatured chicken collagen called Bio-Collagen with Patented UC-II®.

SCIENTIFICALLY VALIDATED

Scientific studies have found that UC-II® reduced sensitive joint discomfort and eased joint function. One double-blind, placebo-controlled study on patients found that UC-II® provided relief by 33%, and decreased joint discomfort scores by a remarkable 40%—in just 90 days!

CONVENIENT ONE-PER-DAY DOSE

The suggested daily serving of one capsule of Bio-Collagen with Patented UC-II® supplies 40 mg of this proprietary blend.

The retail price of a bottle of 60 capsules of Bio-Collagen with Patented UC-II® is $36. If a member buys four bottles, the price is reduced to $24 per bottle or just $12 a month.

To order Life Extension® Bio-Collagen with Patented UC-II®, 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.
REINFORCE YOUR SKIN WITH TOPICAL LYCOPENE

Applied directly to the delicate tissue of the face, Cosmesis Lycopene Cream—with its unique combination of lycopene and extracts of green, red, and white tea—provides targeted support against the visible effects of UV radiation and oxidative stress.

ENHANCED PENETRATION—DEEP INTO SKIN CELLS

Only a small fraction of the lycopene you eat ever reaches your skin.

Because the lycopene in raw tomatoes is tightly bound to indigestible fiber, little of it is absorbed by your body. And most of the lycopene that is ingested gets deposited in fat-rich organs such as your eyes, adrenal glands, colon, and liver—instead of your skin.[1]

The good news is the fat soluble nature and small molecule size of this plant nutrient make it more easily absorbed when applied topically to the lipid-rich environment of the skin.[2]

Cosmesis has created a topical lycopene formulation in an antioxidant cream format.

ANTIOXIDANT SYNERGY—A DIFFERENCE YOU CAN SEE

Research suggests that antioxidants work synergistically,[4] so Cosmesis has incorporated a concentrated tea blend extract, containing polyphenol-rich components of red, green, and white tea!

Because of this, the protective effects of both lycopene and the tea extract bioactives can combine to support the ability of healthy human skin to maintain its normal growth and repair, while providing natural protection against free radicals, and optimal defense against the visible effects of UV radiation.[5-7]

Lycopene—a potent antioxidant carotene—supports your body’s natural defenses against the visible signs of UV damage, oxidative stress, and premature aging by:

- Coordinating skin cell behavior: Lycopene can improve the operation of “gap junctions,”[6] unique channels that connect one cell to the next to facilitate communication and the passing of molecules and ions between cells.[9,10]
- Promoting normal antioxidant activity: Lycopene is a potent scavenger of the free radicals that contribute to aging.[4]
- Strengthening your skin’s collagen: Lycopene can help inhibit the activity of enzymes involved in the destruction of collagen.[11]
- Supporting your body’s normal protection of skin-cell DNA: Lycopene can help support the skin’s natural ability to ease inflammation, promote cell renewal, and aid in the protection of DNA from the destructive ravages of UVB exposure.[7]

The retail price of a 1 oz. jar of Cosmesis Lycopene Cream is $28. If a member buys two jars, the price is reduced to just $19.05 a jar.

To order Cosmesis Lycopene Cream, call 1-800-544-4440 or visit www.LifeExtension.com.

References
DHEA is a critically important hormone, but its production declines sharply as we age. Scientists are discovering numerous health benefits when aging people restore their DHEA to youthful ranges. Life Extension offers a wide range of DHEA supplements to satisfy individual needs.

**DHEA 25 mg, 100 Dissolve-in-Mouth Tablets**
The minimum dose of DHEA for most healthy aging people is 25 mg a day, though optimal doses are often higher in men. 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 $14; if a member orders four, the price is reduced to just $9.38 per bottle.
Contains corn.

**DHEA 25 mg, 100 Capsules**
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 bottles, the price is reduced to just $10.50 per bottle.
Contains rice.

**DHEA 15 mg, 100 Capsules**
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.

**DHEA 50 mg, 60 Capsules**
A bottle containing 60 50 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.
Some people want to take DHEA in sublingual tablet form to avoid first pass through the liver, though published studies show that swallowing DHEA capsules consistently boosts blood DHEA levels already within normal range. Contains corn.

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

To order the DHEA supplement that’s right for you, 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.
The only competitive diver to win two gold medals in back-to-back Olympic Games, Greg Louganis, is again making history, only this time by conquering a life-threatening disease. In 1988, Louganis received an HIV-positive diagnosis, which was then widely viewed by the medical profession as a death sentence. For the past 23 years, however, Louganis has been enhancing his health through an ever-evolving combination of Western medicine, with a strict pharmaceutical regimen, acupuncture and Chinese herbs, nutritional supplements, a low-fat nutrient dense diet, and daily exercise. Today, he reports, “The HIV virus may remain in my body, but it’s now undetectable. My T cells have never been higher.” (T cells are one type of “fighter” white blood cells that help the immune system battle infectious diseases such as AIDS.)
Before the advent of the carefully calibrated “cocktail” of antiviral drugs, such success in fending off the disease and achieving a healthy life were almost unheard of. These pharmaceutical regimens are known as highly active antiretroviral therapy or HAART and usually include drugs classes that target retroviral replication. These “cocktails” generally include:

- Nucleoside or nucleotide reverse transcriptase inhibitors (NRTIs) and non-nucleoside reverse transcriptase inhibitors (NNRTIs);
- Protease inhibitors (PIs);
- Integrase inhibitors that for many people have been remarkably effective in taming this devastating disease.

At 5’9” and 175-lbs, fifty-one-year-old Louganis looks fitter than most people half his age. Greg uses a potent cocktail of anti-HIV medications but also follows an aggressive program to maintain overall health.

Naturally, it follows that many of Louganis’s healthy lifestyle choices and habits center on immune enhancement. He receives weekly acupuncture treatments for this and for musculoskeletal pain relief. “I love the way it makes me feel,” he says. “It’s very relaxing, kind of like a mind/body tune-up.”

As it happens, prescribing acupuncture treatments for immune enhancement is standard among integrative medical practitioners’ offices. A study published in AIDS Care found that HIV-affected individuals showed improvement in their T cell counts after acupuncture treatment when compared with the non-treatment group.2 Like Louganis, study subjects rated their experiences of the acupuncture as very positive. It’s also worth noting that since 1979, the World Health Organization (WHO) has endorsed acupuncture treatment for more than 40 health conditions ranging from gingivitis to knee pain.3

When Louganis receives acupuncture from Santa Monica, CA, acupuncturist Michael Vercos, he also takes a Chinese herbal formula. This uniquely crafted, customized blend contains a varied and changing combination of herbs that are documented antioxidants, immune enhancers, and tumor growth fighters. “The formula changes according to what my body needs at a given time and season,” he says. Research on popular Chinese herbal immune-enhancers such as curcumin and other derivatives of the turmeric plant documents powerfully positive effects on those with HIV. While curcumin inhibited enzymes such as purified HIV type 1 integrase, HIV-1 and HIV-2 protease, it additionally restrained gene expression of acutely or chronically infected HIV-1 cells and inhibited release of chemical messengers involved in stimulating HIV-1 replication.4

Numerous other Chinese herbs have been found to exert powerful antioxidant effects, anti-inflammatory activity, and inhibit tumor growth.5,6

As befits an Olympic champion, daily exercise is central to Louganis’s health regimen. “My favorite physical activities are yoga and spinning,” he says. While Louganis has a daily yoga practice that he does at home and while traveling, he also takes classes when he can. “I like yoga because it’s mindfulness-based meditation that’s also stretching, toning, and relaxing exercise,” he says. “Your own body weight serves as resistance and the focused breathing helps the body relax and heal.” Research bears out Louganis’s belief in yoga’s health-enhancing effects: In one study, HIV-affected individuals who practiced an eight-week course of mindfulness-based stress reduction were found to significantly increase natural killer cell activity and number as compared to those HIV-positive individuals who did no such practice.7
Along with swimming in his pool overlooking the Pacific Ocean in Malibu, California, Louganis also works out at the gym by lifting weights and taking spinning classes. Spinning is a form of indoor exercise which involves riding a special stationary exercise bicycle with a weighted flywheel. The low-impact exercise classes focus on endurance, strength, intervals, higher intensity exertions, and then recovery. “Spinning is very good for cardio strengthening and overall conditioning,” he says. “It’s a satisfying workout and a lot safer than riding a bike on the street.”

Louganis sees his physician, Tony Mills, MD, of Los Angeles for regular blood tests to check his immune system. A critical component of his impressive and effective wellness program includes 10 prescription pills every day that Dr. Mills prescribes. Louganis says his diet consists of “…very little red meat, lots of lean, nutrient-dense protein such as fish and grilled chicken, organic vegetables and fruits plus dairy products in moderation.” While he acknowledges that, “The supplements that I take may not be appropriate for someone else’s condition, there is some evidence that supplements can provide immune support.” Indeed, a research study presented at the 18th International AIDS conference in Vienna, Austria, tracked HIV-positive individuals in Botswana who were not on anti-retroviral therapy who were given a supplement combination consisting of B complex, vitamin C, vitamin E, and selenium. This study demonstrated that long-term micronutrient supplementation was safe and significantly delayed the onset of AIDS as compared to those who took no supplements.8 As Louganis puts it, “If you’re immune-compromised, you need to work with your doctor on what supplements to take so that you can make a positive difference.”

Given his Olympic diving achievements and the fact that he’s rewritten his destiny by living with HIV for over 20 years, Louganis has made a positive difference that can inspire us all.

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

RejuveneX® Factor provides 10 new compounds to improve the health and appearance of your skin.

The new RejuveneX® Factor delivers a total of 28 proven active ingredients in a nutrient-dense, deep-penetrating serum. Contrast this with commercial creams that merely sit on top of the skin.

Comprehensive Nutrition for the Skin

The full name of this new formula is:

RejuveneX® Factor Firming Serum

To get this entire network of 28 synergistic bioactives anywhere else, you’d need to layer on a dozen skin creams—each providing only 2 or 3 of these active ingredients—with some creams costing as much as $600!

The good news is that—for a fraction of the cost—RejuveneX® Factor Firming Serum delivers optimal dosages of the full range of clinically proven technologies… to promote the appearance of youthful, firmer, healthier, and more vibrant skin.

Serum vs. Cream

RejuveneX® Factor is a serum—a more advanced and concentrated format that is thinner than a cream and ensures superior absorption of its 28 skin-enhancing compounds.

RejuveneX® Factor Firming Serum comes in an airless pump to protect the integrity of the bioactives, and also utilizes QuSome®, the patented deep-layer cellular delivery system that provides sustained release for 6 to 8 hours!

And RejuveneX® Factor Firming Serum is uniquely free of paraben, irritants, estrogenic chemicals, mineral oil, and synthetic fragrances.
A 1.7 oz bottle of RejuveneX® Factor Firming Serum retails for $56. If a member buys four bottles, the price is reduced to $41.25 a bottle. If eight bottles are purchased, the price is only $37.43 a bottle. Each bottle will last two months with once daily application to the face (or one month if used twice daily.)

References
4. Product monograph: Poly P. Support of collagen. 5,6
5. Botanimoist® AMS. Botanigenics.

QuSome® and Advanced Efficacy are registered trademarks of BioZone Laboratories, Inc. US Patent No. 6,610,322, 6,958,160, 7,150,883, 6,998,421.

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Foundation members can now choose between SolarShield® sunglasses or OveRxCast polarized lenses that provide the same eye protection, plus improved vision under difficult weather conditions.

Life Extension’s SolarShield® sunglasses are recognized as the number-one doctor-recommended sunglass in the world, with more than 50 million pairs sold to date. Patented SolarShield® sunglasses with durable polycarbonate lenses and 100% UV protection fit comfortably over prescription eyewear, providing convenient protection from the harmful effects of ultraviolet radiation.

For those who desire the added benefit of lenses that reduce distracting glare, Life Extension’s OveRxCast sunglasses come with polarized gray lenses that provide natural color definition with 100% UV protection. Like the SolarShield® sunglasses, OveRxCast polarized sunglasses are designed to be worn over your prescription eyeglasses.

The SolarShield® sunglasses retail for $12.99 for one pair, and the member price is $9.74. If a member buys two pairs, the price is reduced to only $8.63 a pair.

One pair of OveRxCast sunglasses retails for $27, and the member price is $20.25. If a member orders two pairs, the price is reduced to just $15.75 per pair.

To order SolarShield® or OveRxCast sunglasses, call 1-800-544-4440 or visit www.LifeExtension.com

Consumers often spend hundreds of dollars on just one pair of so-called “designer” sunglasses. Life Extension® members can obtain superior protection against damaging solar radiation at a fraction of the price of commercially sold sunglasses.

SolarShield® is a registered trademark Dioptics, Inc.
“Your genes are like a loaded gun, and your lifestyle is the trigger.”

The above quote leads off the introduction to *Your Best INVESTMENT*, setting the stage for a book that may turn some Americans’ long-held beliefs about nutrition upside down, beginning with the classic Food Pyramid, released by the US Department of Food and Health. The pyramid was originally conceived in 1992 as a way to teach Americans how to eat better, however, like most government projects, special interests and lobbyists ended up influencing the final result to a point that Dr. Lee, and many others, believe the pyramid actually did more harm than good for the American people.

“Unfortunately it [the pyramid] had no science behind it and was instead ‘written’ by the big food industry,” Dr. Lee writes. “The food pyramid heavily emphasized the consumption of grains, such as rice, pasta, bread, and cereals.”
For twenty years, the pyramid slowly evolved, but its government authors consistently ignored hard science about what foods harm humans in favor of whatever Big Agriculture wanted them to write.

“Since 1992, the food pyramids have appeared in countless books, magazines, hospitals, and textbooks; in schools, universities, and health clinics; and on websites. I am sure that before each food pyramid was released, there were many food industry lobbyists wanting their products on the pyramid. The resulting tragedy of this flawed process led to the recommendation of eating an astounding six to eleven servings a day of grains—bread, pasta, rice, white potatoes and so on—all of which increase insulin levels, increase obesity, and increase the risk of heart disease and cancer.”

Over several pages, any reader of this book will likely draw a distinct parallel between the current obesity epidemic and the generation of children who have been raised with eating habits predicated on a government-written, lobbyist-led pictogram that put profits ahead of science.

Chapter 2 of Dr. Lee’s book deals with the fallout of such a grain-heavy, sugar-heavy diet on the American public. For Life Extension® readers, this takes us to a common culprit when it comes to diabetes, obesity, and the metabolic syndrome: insulin resistance. In this chapter, there is no sugarcoating it. Dr. Lee clearly states that, “Insulin resistance can cause belly fat, dementia, loss of memory, depression, autoimmune disease, strokes, infertility, neurodegenerative brain disease, and—it is directly related to the one thing that will most likely kill you—heart disease.”

There are some fascinating tips and thoughts about “fighting an epidemic battle of the bulge” when it comes to weight loss, including a chapter about food intolerance testing. In this chapter, Dr. Lee talks about how identifying certain food intolerances can be extremely beneficial to people battling obesity. He finds these tests valuable because they measure people’s tolerance to foods that they commonly eat and can control eating. Dr. Lee even cites a study that demonstrated that dieters who failed other low-calorie eating plans found success when they followed meal plans based on their food sensitivity test results.

Another interesting chapter in the book is chapter 7, titled:
“Nutraceuticals, Minerals, and Botanicals.”

While we are all familiar at this point with the positive effects of fish oil, resveratrol, alpha lipoic acid, CoQ10, curcumin, green tea, vitamin D and a host of other well-researched supplements, this chapter provides insight into some fascinating studies that reinforce their benefits. For instance, when it comes to magnesium’s effect on diabetes, the book cites a Nurses Health Study involving 85,000 women and a Health Professional Follow-Up Study involving 42,000 men that demonstrate that diets rich in magnesium may drastically reduce the risk of developing diabetes.

There are strong examples listed for nearly every supplement in the book, but some of the most compelling stories are those told on an individual level, about how a specific supplement helped one of Dr. Lee’s patient’s overcome a medical issue. From a man who overcame a variety of healthy problems by modifying his diet and taking vitamin D, vitamin B12, and magnesium, to a 50-year-old Ironman triathlete who overcame lethargy and a lack of energy by discovering that she was vitamin D deficient, the personal case histories of many of Dr. Lee’s patients at his Institute for Hormonal Balance provide for an interesting, helpful read that shows how some simple, easy steps can have a huge impact on your health and longevity.

To order Your Best Investment, call 1-800-544-4440 or visit www.LifeExtension.com.
Retail price: $24.95
Member price: $18.71
Item# 33848

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.
Brain degeneration affects all aging adults. Enhancing communication between neurons may hold the key to maintaining youthful cognition and memory.

**Cognitex® with NeuroProtection Complex** provides nine cutting-edge brain boosting ingredients in one exciting formula!

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

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

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

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

With a healthy brain in place, the proper levels of **acetylcholine** are needed to enable brain neurons to communicate. To maintain these levels, Cognitex® includes **alpha-glyceryl phosphoryl choline** to boost acetylcholine and **Sensoril® ashwagandha extract** to inhibit an enzyme that degrades acetylcholine in the aging brain.

The retail price for 90 softgels of **Cognitex® with NeuroProtection Complex** (with or without pregnenolone) is $74 (item # 00922) and $72 (item # 00921), respectively. If a member orders four bottles of either version, the price per bottle is reduced to just $49.95 and $48, respectively.

To order Cognitex® with NeuroProtection Complex, 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.

Perluxan® is used with permission. Sensoril® is protected under US Patents Nos. 6,153,198 and 6,713,092, and is a registered trademark of Nutrex, Inc. Sharp-PS® GOLD is a registered trademark of Enzymotec Ltd. US Patent No. 7,935,365

Contains fish (wild herring, blue whiting), soybeans.

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.
<table>
<thead>
<tr>
<th>PLEASE ANSWER YES OR NO</th>
<th>YES</th>
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<tbody>
<tr>
<td>1. DO YOU HAVE A DECREASE IN LIBIDO (SEX DRIVE)?</td>
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<tr>
<td>2. DO YOU HAVE A LACK OF ENERGY?</td>
<td></td>
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<tr>
<td>3. DO YOU HAVE A DECREASE IN STRENGTH AND/OR ENDURANCE?</td>
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<tr>
<td>4. HAVE YOU LOST HEIGHT?</td>
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<tr>
<td>5. HAVE YOU NOTICED A DECREASED “ENJOYMENT OF LIFE”?</td>
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<td>6. ARE YOU SAD AND/OR GRUMPY?</td>
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<td>7. ARE YOUR ERECTIONS LESS STRONG?</td>
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<td>8. HAVE YOU NOTICED A RECENT DETERIORATION IN YOUR ABILITY TO PLAY SPORTS?</td>
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<tr>
<td>9. ARE YOU FALLING ASLEEP AFTER DINNER?</td>
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<td>10. HAS THERE BEEN A RECENT DETERIORATION IN YOUR WORK PERFORMANCE?</td>
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The above ADAM questionnaire was developed by John L. Morley, M.B. B.Ch. It is to be used solely as a screening tool to assist a physician in diagnosing androgen (testosterone) deficiency. *Androgen Deficiency in the Aging Male.

IF YOU HAVE ANSWERED YES TO #1, #7, OR ANY THREE OTHERS, YOU MAY HAVE SYMPTOMS ASSOCIATED WITH LOW TESTOSTERONE.

CALL AAG HEALTH
1.888.387.0999
TO DISCUSS TREATMENT OPTIONS

THE LEADING HORMONE REPLACEMENT SPECIALISTS IN THE NATION!

NOW OFFERING STEM CELL AND PLATELET RICH PLASMA INJECTION THERAPY

OVER 20 LOCATIONS NATIONWIDE
Magtein™ is a breakthrough compound for cognitive health and memory. Published animal research by experts in this field from MIT have shown positive results for short- and long-term memory.** Magtein has the potential to assist anyone who is experiencing forgetfulness, difficulty in focusing, or needs assistance in decision making and spatial or visual recognition.* Magtein is self-affirmed GRAS. Quantitative and qualitative human research is in process. Young and old can benefit from a daily regimen of Magtein.*

Available in Neuro-Mag™

Distributed exclusively by AIDP, Inc. Magtein is a trademark owned by Magceutics, 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.

Opportunities

If you had your life to relive, what would you do differently?

Imagine actually having the opportunity.

Cryopreservation is the science of using ultra-cold temperature to preserve human life with the intent of restoring good health when technology becomes available to do so. Call Alcor or visit our website today for your free information package.

(877) 462-5267 ext.101
www.alcor.org
Blood testing provides the ultimate information regarding correctable risk factors that may predispose you to disorders such as cancer, diabetes, cardiovascular disease, and more. Information about general health and nutritional status can also be gained through standard blood analysis. Standing behind the belief that blood testing is an essential component of any program designed to attain optimal health and longevity, Life Extension® offers this innovative and convenient service at a very affordable price. Not only is comprehensive blood testing an important step in safeguarding your health, it is a simple process from virtually anywhere in the United States.

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

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

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

Life Extension Member Pricing

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

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

## MOST POPULAR PANELS

### COMPREHENSIVE PANELS

**MALE LIFE EXTENSION PANEL (LC32258Z)**

- CBC/Chemistry Profile
- Homocysteine
- Free Testosterone
- Estradiol
- PSA (prostate-specific antigen)
- C-Reactive Protein (high-sensitivity)

**FEMALE LIFE EXTENSION PANEL (LC322533)**

- CBC/Chemistry Profile
- Estradiol
- Progesterone
- Free Testosterone
- C-Reactive Protein (high-sensitivity)

**MALE WEIGHT LOSS PANEL (LCWLM)**

- CBC/Chemistry Profile
- Insulin
- Free Testosterone
- Estradiol
- Free T3
- C-Reactive Protein (high-sensitivity)

**FEMALE WEIGHT LOSS PANEL (LCWLF)**

- CBC/Chemistry Profile
- Progesterone
- Free Testosterone
- Estradiol
- Free T3
- C-Reactive Protein (high-sensitivity)

**MALE HORMONE ADD-ON PANEL (LCADDM)**

- Pregnenolone and Dihydrotestosterone (DHT)

To provide an even more in-depth analysis of a man’s hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.

**FEMALE HORMONE ADD-ON PANEL (LCADDF)**

- Pregnenolone and Total Estrogens

To provide an even more in-depth analysis of a woman’s hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.

**LIFE EXTENSION THYROID PANEL (LC304131)**

- TSH, T4, Free T3, Free T4

**MALE COMPREHENSIVE HORMONE PANEL**

- (LC100011) CBC/Chemistry Profile

- see description above

**FEMALE COMPREHENSIVE HORMONE PANEL**

- (LC100010) CBC/Chemistry Profile

- see description above

### THE CBC/CHEMISTRY PROFILE (LC301822)

**OVER 40 PARAMETERS TESTED**

- Total Cholesterol
- HDL Cholesterol
- LDL Cholesterol
- Triglycerides

- AST (SGOT)
- ALT (SGPT)
- Gamma-glutamyltransferase

- Creatinine
- Uric Acid

- Total Protein
- Albumin
- Globulin

- BUN
- Creatinine Ratio

- Calcium
- Sodium
- Chloride
- Potassium
- Phosphorus

- CoQ10* (COENZYME Q10)

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

### GENERAL HEALTH

- HEMOGLOBIN A1C (HBA1C) (LC001453)

- COQ10* (COENZYME Q10) (LC120251)

**VITAMIN D (250H)** (LC081950)

- This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.

**FOOD SAFE ALLERGY TEST (LCM73001)**

- This test measures delayed (IgG) food allergies for 95 common foods.

**ASPIRINWORKS™** (LC501620)

- Taking aspirin to prevent heart attack? Is it working? This is a random urine test used to measure your resistance to aspirin.

**OMEGA SCORE™** (LCOMEGA)

- Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.

**COQ10™ (COENZYME Q10)** (LC120251)

- This test is used to check the blood level of CoQ10 and will enable more precise dosing for anyone seeking to achieve and maintain high levels of this critical antioxidant.

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**Note:** The Life Extension Member Pricing listed above includes the cost of the test itself plus any additional fees for shipping, handling, or mailing. The full price may vary depending on the specific panel selected and the method of delivery. Contact Life Extension for more information.

---

**Life Extension® offers Blood Testing: The Ultimate Information.**
This test shows if you are taking the proper This test is to measure adrenal function. This test is used to monitor SHBG levels which are under the positive control of estrogens and as well as all-cause mortality.

**Popular Single Tests**

**HORMONES**

**CORTISOL** (LC004051)  
This test is to measure adrenal function.  

**DHEA-SULFATE** (LC004020)  
This test shows if you are taking the proper amount of DHEA. This test normally costs $100 or more at commercial laboratories.

**DIHYDROTESTOSTERONE (DHT)*** (LC500142)  
Measures serum concentrations of DHT.

**estradiol** (LC004515)  
For men and women. Determines the proper amount in the body.

**insulin fasting*** (LC004333)  
Can predict those at risk of diabetes, obesity, and heart and other diseases.

**PREGNENOLONE*** (LC140707)  
Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing’s syndrome.

**progesterone** (LC004317)  
Primarily for women. Determines the proper amount in the body.

**sex hormone binding globulin (SHBG)** (LC082016)  
This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.

**somatomedin C (IGF-1)** (LC010363)  
Indicates growth hormone secretion levels. Low levels have been associated with atherosclerosis as well as all-cause mortality.

**CARDIAC RISK**

**Lp-PLA2 (PLAC TEST)*** (LC123240)  
This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.

**C-REACTIVE PROTEIN (HIGH-SENSITIVITY)** (LC120766)  
Measures inflammation factors in arteries. Recent studies indicate that C-reactive protein may be the most accurate risk factor for predicting heart attack and stroke.

**CARDIAC PLUS** (LC100008)  
CBC/Chemistry profile (see description), Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Homocysteine.

**VAP PLUS** (LC100009)  
VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy.

**FIBRINOGEN*** (LC001610)  
High levels of this blood-clotting factor increase the risk of heart attack and stroke.

**HOMOCYSTEINE** (LC069994)  
Can indicate if you are likely to have a heart attack or stroke. Even if you take folic acid, you still may have dangerously high levels of this artery-clotting metabolic debris that can be lowered with high doses of TMG, vitamin B6, and vitamin B12.

**VAP™ TEST** (LC054500)  
The VAP cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.

**MALE HEALTH**

**PSA (PROSTATE-SPECIFIC ANTIGEN)** (LC010322)  
Can provide an early warning sign for prostate disorders and possible cancer.

**FREE-PSA (INCLUDES TOTAL PSA)*** (LC480780)  
Recommended to determine if an elevated PSA is indicative of prostate cancer.

**BONE HEALTH**

**OSTEOCALCIN*** (LC010249)  
Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis.

**DPD CROSS LINK URINE TEST** (LC511105)  
The deoxypyridinoline (DPD) urine test can be used to measure bone turn-over rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis.
**Products**

**AMINO ACIDS**
- Acetyl-L-Carnitine
- Acetyl-L-Carnitine Arginate
- Branch Chain Amino Acids
- D, L-Phenylalanine Capsules
- GABA Powder
- Glycine Capsules
- Glycine Powder
- L-Arginine Capsules
- L-Arginine Free Base Powder
- Arginine/L-Ornithine Capsules
- L-Carnitine Capsules
- L-Glutathione, L-Cysteine & C
- L-Glutamine Capsules
- L-Glutamine Powder
- L-Lysine Capsules
- L-Lysine Powder
- L-Tyrosine Tablets
- Mega L-Glutathione Capsules
- N-Acetyl-L-Cysteine Capsules
- Optimized Carnitine with GlycoCarn®
- PharmaGABA
- Super Carnosine Capsules
- Taurine Capsules

**BONE & JOINT HEALTH**
- ArthroMax™ with Theaflavins and AprèsFlex™
- ArthroMax™ Advanced with UC-II® and AprèsFlex™
- Bone-Up™
- Bone Restore™
- Bone Strength Formula w/KoAct™
- Chondroitin Sulfate
- Chondrix
- Fast Acting Joint Formula
- Glucosamine Chondroitin Capsules

**BRAIN HEALTH**
- Acetyl-L-Carnitine
- Acetyl-L-Carnitine Arginate
- CDP Choline Capsules
- Cognitex® with NeuroProtection Complex
- Cognitex® with Pregnenolone & NeuroProtection Complex
- CDP Choline Capsules
- Chondrox
- Carnosoothe w/PicroProtect
- Full-Spectrum Pomegranate™
- ProBoost™ Thymic Protein A
- Pure Gar™
- Sambu® Guard
- SuperBio-Curcumin®
- Super Gingko Extract
- Triple Action Cruciferous Vegetable Extract
- Venotone
- Whole Grape Extract

**FOOD**
- Spicy Cruciferous Vegetable Soup
- Cruciferous Vegetable Soup
- Rich Rewards Coffee

**HAIR CARE**
- Dr. Proctor’s Advanced Hair Formula
- Dr. Proctor’s Shampoo
- Life Extension Shampoo and Conditioner
- Super-Absorbent Tocotrienols

**HEART HEALTH**
- AppleWise Polyphenol
- CDP Choline Capsules
- Fast Acting Joint Formula
- Natural Relief 1222™ Cream
- Natural BP Management
- Norwegain SX-Fraction
- Oreganoforce™
- Omega-3 Whirl
- Omega-3 Whirl with AprèsFlex™
- ProFem Cream
- ProBoost™ Thymic Protein A
- Pure Gar™
- Sambu® Guard
- SuperBio-Curcumin®
- Super Gingko Extract
- Triple Action Cruciferous Vegetable Extract
- Venotone
- Whole Grape Extract

**HERBAL/PHYTO PRODUCTS**
- Artichoke Leaf Extract
- Astaxanthin
- Berry Complete
- Blueberry Extract
- Blueberry Extract w/Pomegranate
- Butterbur Extract w/Standardized Rosmarinic Acid
- Calcium D-Glucarate
- Celery Herbal Extract
- Citrus Bioflavonoid
- Enhanced Berry Complete with RZD™ Acai Floradix® Iron & Herbs
- Enhanced extract with Resveratrol & Pterostilbene
- Huperzine A with Natural Vitamin E
- Kyolic® Garlic Formula 105
- Kyolic® Reserve
- Mega Green Tea Extract
- Mega Green Tea Extract (Decaffeinated) (also w/CoffeeGenic Green Coffee extract)
- Mega Lycopene Extract
- Nutrim
- Optimized Ashwagandha Extract
- Optimized Garlic
- Pomegranate Extract
- Pomegranate Juice Concentrate
- ProGreens®
- Pure-Gar™
- Pycnogenol
- Optimized Quercetin
- Resveratrol with Synergistic Grape-Berry Actives
- Rhodiola Extract
- Rosmarinic Acid Extract
- Silymarin
- SODzyme™ with GluSODin®
- Stevia Extract
- Super-Bio Curcumin®
- Super Gingko Extract
- Triple Action Cruciferous Vegetable Extract
- Venotone
- Whole Grape Extract

**HORMONES**
- Advanced Natural Sex for Women®
- Cordyceps CS-4
- 7-Keto™ DHEA
- DHEA
- DHEA Complete
- GH Pituitary Support Day Formula
- GH Pituitary Support Night Formula
- Melatonin
- Melatonin Timed Release
- Natural Estrogen with Pomegranate Extract
- Pregnenolone
- Pure IGF
- Super Miraforte with Starcharized Lignans

**IMMUNE ENHANCEMENT**
- AHCC® (Active Hexose Correlated Compound)
- Aloe Vera Force™
- Buffered Vitamin C Powder
- Echinacea
- Enhanced Life Extension Whey Protein
- 126 Hyperimmune Egg
- Immune Protect with PARACTIN®
- Lactoferrin
- LifeShield™ Immunity™
- Maitake SX-Fraction
- Norwegian Shark Liver Oil
- Optimized Fucoidan w/Maritech® 926
- Primal Defense™
- ProBoost™ Thymic Protein A
- Pure Gar™
- Sambu® Guard
- SuperBio-Curcumin®
- Thymic Immune Factors
- Ultimate Flora Advanced Immunity
- Vitamin C with Dihydroquercetin
- Zinc Loxenges with Vitamin C

**INFLAMMATORY REACTIONS**
- Arthromune Joint Support
- ArthroMax™ with Theaflavins
- Boswellia
- Boswellia™ Topical Cream
- Bromelain (Specially-coated)
- Emulsified Norwegian Cod Liver Oil
- Emulsified Super Twin EPA/DHA
- Fast Acting Joint Formula
- Ginger Force
- Krill Oil
- 5-LOXInhibitor w/AprèsFlex™
- Mega EPA/DHA
- Mega GLA with Sesame Lignans
- MSM
- Natural Relief 1222™ Cream
- Omega-3 Whirl
- Serraffayme
- SODzyme™ with GluSODin® and Wolfberry
- Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
- Tart Cherry
- Udo’s Choice Oil
- Zyflamend Easy

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

**MINERALS**
- Biosil
- Bone Restore
- Bone Strength Formula w/KoAct™
- Bone-Up™
- Boron Capsules
- Calcium Citrate with D3
- Chromium Ultra
- Copper
- Dr. Strum’s Intensive Bone Formula
- Flordis® Iron & Herbs

**DIGESTIVE**
- Bifido GI Balance
- Bromelain Powder
- Carnosoothe w/PicroProtect
- Daily Ginseng®
- Digest RC™
- Enhanced Super Digestive Enzymes
- Life Flora™
- Natural EsophagaGuard
- Pancreatin
- Probiotic All-Flora®
- Probiotic Colon™
- Regimint
- Theralac Probiotics

**DURK AND SANDY PRODUCTS**
- Blast®
- Dual-C
- Inner Power™
- Memory Upgrade™

**EYE CARE**
- Bilberry Extract
- Blackcurrant Freeze Dried Extract
- Brite Eyes III
- Eye Pressure Support with Mirtogenol®
- Overcast Polarized Sunglasses
- Solarshield Sunglasses
- Super Zeaxanthin with Lutein & Meso-Zeaxanthin and C3G
- (Plus Astaxanthin also available)
- Vision Optimizer

**MINERALS**
- Biosil
- Bone Restore
- Bone Strength Formula w/KoAct™
- Bone-Up™
- Boron Capsules
- Calcium Citrate with D3
- Chromium Ultra
- Copper
- Dr. Strum’s Intensive Bone Formula
- Flordis® Iron & Herbs
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**SUB-TOTAL OF COLUMN 2**
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<td>BROMELAIN POWDER - 100 grams</td>
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<td>BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID - 60 softgels</td>
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<td>CARNITINE w/GLYCOLARIN® (OPTIMIZED) - 60 veg. caps</td>
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<td>CDP CHOLINE CAPS - 250 mg, 60 caps</td>
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<td>CELL SENSOR-EFP DETECTION METER</td>
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<td>CHILDREN'S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets</td>
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<td>CHOLESTRA - 500 mg, 200 tablets</td>
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<td>CHLOROPHYLLIN w/ZINC - 100 mg, 100 veg. caps</td>
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<td>CHO-LEEF™ - 90 capsules</td>
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<td>CHLORINE CHLORIDE - 16 oz liquid</td>
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**SUB-TOTAL OF COLUMN 3**

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<td>COD LIVER OIL (EMULIFIED) - 12 fl oz (355 ml)</td>
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<td>COMPREHENSIVE NUTRIENT PACK - 30-day supply</td>
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<td>COPPER CAPSULES - 2 mg, 100 caps</td>
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**SUB-TOTAL OF COLUMN 4**

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

SEPTEMBER 2012
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**SUB-TOTAL OF COLUMN 5**
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<td>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz</td>
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<td>ENDOTHELIAL DEFENSE™ w/GLIOIDIN® - 60 veg. caps</td>
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<td>EYE PRESSURE SUPPORT w/MIRTGENOL® - 30 veg. caps</td>
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Life Extension Members receive 25% off the retail price of all products.
# Buyers Club Order Form

## To order call: 1.954.766.8433 or 1.800.544.4440

<table>
<thead>
<tr>
<th>No.</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
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<td>GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps</td>
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<td>00113</td>
<td>GLUTATHIONE, CYSTEINE &amp; C - 750 mg, 100 caps</td>
<td>$18.00</td>
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<tr>
<td>00314</td>
<td>L-GLUTATHIONE (MEGA) - 250 mg, 60 caps</td>
<td>$39.64</td>
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<td>00795</td>
<td>GLYCINE - 1000 mg, 100 caps</td>
<td>$12.00</td>
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<td>00128</td>
<td>GLYCINE POWDER - 300 grams</td>
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<td>01091</td>
<td>GRAPE EXTRACT w/RESVERATROL (WHOLE) - 60 veg. caps</td>
<td>$36.00</td>
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<td>GRAPE SEED EXTRACT w/RESVERATROL &amp; PTEROSTILBENE - 100 mg, 60 veg. caps</td>
<td>$36.00</td>
<td>$27.00</td>
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<tr>
<td>01604</td>
<td>GREEN COFFEE EXTRACT COFFEEGENIC™ - 200 mg, 90 veg. caps</td>
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<td>GREEN TEA EXTRACT (MEGA) - lightly caffeinated - 100 veg. caps</td>
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<td>GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps</td>
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<td>GREEN TEA W/COFFEEGENIC™ GREEN COFFEE EXTRACT (MEGA) 120 veg. caps, low caffeine</td>
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<td>S-TP - 100 mg, 60 caps</td>
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<td>00110</td>
<td>HAIR CONDITIONER - 16 oz</td>
<td>$6.00</td>
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<td>00230</td>
<td>HCA - 90 caps</td>
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<td>01629</td>
<td>HEAROS™ EAR PLUGS - 1 pack - regular size</td>
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<td>01635</td>
<td>HEAROS™ EAR PLUGS - 1 pack - small size</td>
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<td>01393</td>
<td>HEPATOPRO - 900 mg, 60 softgels</td>
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<td>01433</td>
<td>HOLY BASIL - 60 softgel caps</td>
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<td>HOLY BASIL - 120 softgel caps</td>
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<td>HOMOCYSSTEINE RESIST - 100 caps</td>
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<td>HUPERZINE A - 200 mcg, 60 veg caps</td>
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<td>00661</td>
<td>HYDRODERM® - 1 oz</td>
<td>$79.95</td>
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<td>01060</td>
<td>&quot;26&quot; HYPERIMMUNE EGG - 140 grams powder</td>
<td>$49.99</td>
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<td>01319</td>
<td>&quot;26&quot; HYPERIMMUNE EGG - 135 capsules</td>
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<td>&quot;26&quot; HYPERIMMUNE EGG CHEWABLES - (vanilla) 45 tablets</td>
<td>$31.99</td>
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<td>IDEAL BOWEL SUPPORT 299V - 30 veg. caps</td>
<td>$21.95</td>
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**SUB-TOTAL OF COLUMN 9**

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<td>IMMUNE PROTECT W/PRACITIN® - 30 veg. caps</td>
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<td>01049</td>
<td>INNERPOWER® - 555 grams powder</td>
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<td>00155</td>
<td>INSISION - 500 mg, 60 caps</td>
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<td>00410</td>
<td>INSISTOT CAPSULES - 1000 mg, 360 caps</td>
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<td>00108</td>
<td>INSISTOT POWDER - 100 grams</td>
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<td>01292</td>
<td>INTEGRA-LEAN® IRVINGIA - 150 mg, 60 veg. caps</td>
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<td>IODORAL® - 180 tabs</td>
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<td>00563</td>
<td>IRON PROTEIN PLUS - 300 mg, 100 caps</td>
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<td>01492</td>
<td>IRVINGIA W/PHASE 3™ - 120 veg. caps CALCIUM CONTROL COMPLEX (OPTIMIZED)</td>
<td>$56.00</td>
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<td>00506</td>
<td>JARRO-DOPHIUS EPS™ - 60 veg. caps</td>
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<td>$16.46</td>
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<td>01387</td>
<td>JARRO-DOPHIUS ORAL PROBIOTIC GUM - Pom-Berry flavor, 8 pieces</td>
<td>$4.95</td>
<td>$3.71</td>
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<td>01388</td>
<td>JARRO-DOPHIUS ORAL PROBIOTIC LOZENGE - Pom-Berry flavor, 8 pieces</td>
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<td>01224</td>
<td>KYOLIC® A200 FORMULA - 3000 units</td>
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<td>KRILL HEALTHY JOINT FORMULA - 30 softgels</td>
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<td>01050</td>
<td>(NOK) KRILL OIL - 60 softgels</td>
<td>$33.95</td>
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<td>KYOLIC® GARLIC FORMULA 102™ - 200 caps</td>
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<td>00214</td>
<td>KYOLIC® GARLIC FORMULA 105™ - 200 caps</td>
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<td>00789</td>
<td>KYOLIC® RESERVE - 600 mg, 120 caps</td>
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<td>00513</td>
<td>LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps</td>
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<td>LAVILIN UNDERARM DEODORANT - 12.5 grams cream</td>
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<td>LECITHIN - 16 oz. granules</td>
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<td>LIFE EXTENSION MIX™ - 315 tablets</td>
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<tr>
<td>01657</td>
<td>LIFE EXTENSION MIX™ w/EXTRA NACIN - 315 tablets</td>
<td>$98.00</td>
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<tr>
<td>01654</td>
<td>LIFE EXTENSION MIX™ - 490 caps</td>
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<td>$82.50</td>
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<tr>
<td>01656</td>
<td>LIFE EXTENSION MIX™ POWDER - 14.81 oz</td>
<td>$98.00</td>
<td>$73.50</td>
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<td>01665</td>
<td>LIFE EXTENSION MIX™ - 315 tablets w/copper</td>
<td>$98.00</td>
<td>$73.50</td>
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</table>

**SUB-TOTAL OF COLUMN 10**

September 2012

Life Extension Members receive 25% off the retail price of all products.

Note: Buy 4 bottles, price each for 10% savings.
### Buyers Club Order Form

**To order online visit: www.LifeExtension.com**

**Life Extension Members Receive 25% Off the Retail Price of All Products**

#### SEPTEMBER 2012

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
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<tr>
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<td>MEMORY UPGRADE™ - 600 grams powder</td>
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<td>MIGRA-EEZE™ (BUTTERBUR) - 60 softgels</td>
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<td>01522</td>
<td>MILK THISTLE (CERTIFIED EUROPINO) - 750 mg, 60 veg. caps</td>
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<td>00623</td>
<td>MINERAL FORMULA FOR MEN - 100 caps</td>
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<td>01568</td>
<td>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ™ - 120 caps</td>
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<td>00813</td>
<td>MIST ORAL III w/CQ10 - 2 fl oz</td>
<td>28.00</td>
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<tr>
<td>00865</td>
<td>MK-7 - 90 mcg, 60 softgels</td>
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<td>01279</td>
<td>MOUTHWASH w/POMEGRANATE - 16 oz</td>
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<td>MSM (METHYLSULFONYLMETHANE) - 1000 mg, 100 caps</td>
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<td>00984</td>
<td>NATURAL BP MANAGEMENT - 60 tablets</td>
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<td>NATURAL ESOPHAGUARD - 10 softgels</td>
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<td>NATURAL ESTROGEN w/POMEGRANATE EXTRACT - 60 caplets</td>
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<td>NATURAL FEMALE SUPPORT - 30 veg. caps</td>
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<td>NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps</td>
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<td>NATURAL RELIEF 1222™ - 2 oz</td>
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<td>NATURAL SEX FOR WOMEN + (ADVANCED) - 60 veg. caps</td>
<td>42.00</td>
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#### SUB-TOTAL OF COLUMN 11

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<th>Member Each</th>
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<td>LIFE EXTENSION MIX™ - 490 caps w/o copper</td>
<td>110.00</td>
<td>82.50</td>
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<td>LIFE EXTENSION MIX™ POWDER - 14.81 oz w/o copper</td>
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<td>LIFE FLORA™ - 300 mg, 120 caps</td>
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<td>LIFESHIELD® BREATHE™ - 60 veg. caps</td>
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<td>01101</td>
<td>L-lysine - 620 mg, 100 caps</td>
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<td>L-lysine powder - 300 grams</td>
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<td>LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE - 120 veg. caps</td>
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<td>LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels</td>
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<td>Maitake® SX-FRACTION - 90 veg. tablets</td>
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<td>MELATONIN - 500 mcg, 200 veg. caps</td>
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<td>MELATONIN - 3 mg, 60 caps</td>
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<td>MELATONIN - 3 mg, 60 time-release veg. caps</td>
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<td>MELATONIN TIME RELEASE - 300 mcg, 100 veg. caps</td>
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#### SUB-TOTAL OF COLUMN 12

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS
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<tr>
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<th>Description</th>
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<th>Member Each</th>
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<td>Buy 4 bottles, price each</td>
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<tr>
<td>01084</td>
<td>OMEGA-3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 60 softgels</td>
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<td>9.74</td>
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<tr>
<td></td>
<td>Buy 4 bottles, price each</td>
<td>10.00</td>
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<tr>
<td>01507</td>
<td>OMEGA-3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 120 softgels</td>
<td>22.00</td>
<td>16.50</td>
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<tr>
<td></td>
<td>Buy 4 bottles, price each</td>
<td>20.00</td>
<td>15.00</td>
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<tr>
<td>01151</td>
<td>OMEGA-3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 30 softgels</td>
<td>20.00</td>
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<td>Buy 4 bottles, price each</td>
<td>18.00</td>
<td>13.50</td>
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<tr>
<td>01085</td>
<td>NATURAL SEX MELATONIN® - 5 mg, 60 veg. caps</td>
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<td>NATURAL STRESS RELIEF - 30 veg. caps</td>
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<td>Buy 4 bottles, price each</td>
<td>24.00</td>
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<td>NEURO-MAG® MAGNESIUM L-THREONATE - 90 veg. caps</td>
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<td>NEURO-MAG® L-THREONATE W/CALCium &amp; VITamin D 205 grams - Lemon flavor</td>
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<td>OLIVE LEAF VASCULAR SUPPORT - 500 mg, 60 veg. caps</td>
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<td>01483</td>
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<td>Buy 4 bottles, price each</td>
<td>16.00</td>
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<td>01482</td>
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<td>28.00</td>
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<td>Buy 10 bottles, price each</td>
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<td>01484</td>
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<td>Buy 10 bottles, price each</td>
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<td>18.68</td>
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<td>OMEGA-3 LEMON WHIRL - 16 oz bottle</td>
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<td>01601</td>
<td>ONE PER-DAY - 60 veg. tablets</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>01348</td>
<td>OREGANOFORCE™ - 30 softgels</td>
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<td>01070</td>
<td>ORGANIC TOTAL BODY CLEANSE™ - 14-day supply</td>
<td>34.99</td>
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**SUB-TOTAL OF COLUMN 13**
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<td>PTEROPORE™ - 50 mg Pterostilbene 60 veg. caps</td>
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<td>PURE PLANT PROTEIN - Natural Vanilla 450 grams powder</td>
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<td>01210</td>
<td>PUMPKIN SEED EXTRACT w/JOY ISOFLAVONES (WATER-SOLUBLE) - 60 veg. caps</td>
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<td>PYCNOGENOL® - FRENCH MARITIME PINE BARK EXTRACT - 100 mg, 60 veg. caps</td>
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<td>PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps</td>
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<td>Q, R</td>
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<td>01309</td>
<td>QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps</td>
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<tr>
<td>01330</td>
<td>RED YEAST RICE (Bluebonnet) - 600 mg, 60 veg. caps</td>
<td>$17.50</td>
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<td>00979</td>
<td>RED YEAST RICE (Nature’s Plus) - 600 mg, 60 veg. caps</td>
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<td>00660</td>
<td>RED YEAST RICE EXTENDED RELEASE - 30 veg. tablets</td>
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<tr>
<td>00605</td>
<td>REGIMINT - 60 enteric-coated caps</td>
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<td>01448</td>
<td>REJUVENEX® BODY LOTION - 6 oz</td>
<td>$24.00</td>
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<td>00918</td>
<td>REJUVENEX® FACTOR - 1.7 oz airless pump</td>
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<td>01621</td>
<td>REJUVENEX® FACTOR FIRMING SERUM - 1.7 oz</td>
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<td>REJUVENEX® (ULTRA) - 2 oz</td>
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<td>00676</td>
<td>REJUVENIGHT® (ULTRA) - 2 oz</td>
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<td>00706</td>
<td>REJUVENIGHT® w/PROGESTERONE (ULTRA) - 2 oz</td>
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<td>RESVERATROL w/ PTEROSTILBENE - 20 mg, 60 veg. caps</td>
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<td>RESVERATROL w/ PTEROSTILBENE - 100 mg, 60 veg. caps</td>
<td>$36.00</td>
<td>$27.00</td>
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<td>01430</td>
<td>RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps</td>
<td>$46.00</td>
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<tr>
<td>00889</td>
<td>RHODIOLA EXTRACT - 250 mg, 60 veg. caps</td>
<td>$11.75</td>
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<tr>
<td>00972</td>
<td>(D) NIBOSE POWDER - 150 grams</td>
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<td>01473</td>
<td>(D) NIBOSE TABLETS - 100 veg. tabs</td>
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<td>SUB-TOTAL OF COLUMN 15</td>
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<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<td>RICH REWARDS BREAKFAST GROUND COFFEE - 12 oz. bag</td>
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<td>RICH REWARDS DECAF FRONT STREET GROUND COFFEE - 12 oz. bag</td>
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<td>R-LIPIC ACID (SUPER) - 300 mg, 60 veg. caps</td>
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<td>RNA CAPSULES - 500 mg, 100 caps</td>
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<td>ROSMARINIC ACID EXTRACT - 60 veg. caps</td>
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<td>SACCHAROMYCES BOULARDI+ - 90 veg. caps</td>
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<td>SAFFRON w/SATIERAL (OPTIMIZED) - 60 veg. caps</td>
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<td>SAMBU® GUARD - 175 ml</td>
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<td>SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets</td>
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<td>SELENIUM - 2 oz dropper bottle</td>
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<td>SE-METHYL L-SELENCYSTEINE - 200 mcg, 100 caps</td>
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<td>SERRAFLAZYME - 100 tablets</td>
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<td>SHAMPOO - 16 fl oz</td>
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<td>SHARK LIVER OIL (NORWEGIAN) - 1000 mg, 30 softgels</td>
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<td>00961</td>
<td>SODIUM™ w/GLISODIN® and WOLFBERRY - 90 veg. caps</td>
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<td>SOLARSHIELD SUNGLASSES - 1 pair smoke color</td>
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<td>STABILUM® 200 - 30 caps</td>
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<td>00432</td>
<td>STEVIA EXTRACT - 100 packets, 1 gram each</td>
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<td>STRONTIUM - 750 mg, 90 veg. caps</td>
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<th>Member Each</th>
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LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

SEPTMBER 2012
BUYERS CLUB ORDER FORM

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<td>L-TYROSINE - 500 mg, 100 tablets</td>
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SUB-TOTAL OF COLUMN 17

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SUB-TOTAL OF COLUMN 18

SEPTMBER 2012

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**SUB-TOTAL OF COLUMN 19**

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**Not eligible for member discount or member renewal product credit.
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SEPTEMBER 2012
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**ORDER TOTALS**

Sub-Total (Sub-total of Columns 1 through 19)

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

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

Shipping

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

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