Why Did So Many Americans Ignore Our WARNING?

Reverse Signs of Aging
Around the Eyes

Reduce Intraocular Pressure Naturally

Critical Importance of Annual Blood Testing

PLUS–
LowerStubbornly High Triglycerides

Vitamin E Reduces Risk of ALS

New Study: Green Tea Safeguards Kidneys
**Fish Oil Blend with Sesame Lignans and a MORE Concentrated Olive Fruit Extract**

**A Comprehensive Fatty Acid Formula**

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, easy-to-tolerate fish oil supplement, Life Extension® SUPER OMEGA-3 EPA/DHA is molecularly distilled. This patented process ensures any pollutants are reduced to virtually undetectable levels. The result? Our fish oil enjoys a 5-star rating for purity, quality, and concentration from the International Fish Oil Standards program (IFOS)—the highest possible rating 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 when combined with olive oil, fish oil supplements help 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** supplies the equivalent content of 6 ounces of extra virgin olive oil. Take two softgels twice daily with meals.

---

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

<table>
<thead>
<tr>
<th>Ingredient</th>
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<tr>
<td>EPA Pure+™ Extract</td>
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<td>DHA Pure+™ Extract</td>
<td>1000 mg</td>
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<tr>
<td>Olive Fruit Extract</td>
<td>600 mg</td>
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<tr>
<td>Sesame Seed Lignan Extract</td>
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For those with sensitive stomachs, Super Omega-3 is also available with enteric coating and retails for $34. If a member buys four bottles, the price is reduced to $23.25 per bottle. If 10 bottles are purchased, the cost is just $21 per bottle. Item #01484

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

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

**References:**

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

IFOS® certification mark is a registered trademark of Nutrasource Diagnostics, Inc. These products have been tested to the quality and purity standards of the IFOS® program conducted at Nutrasource Diagnostics, Inc.
AS WE SEE IT

7  FDA’S MOST HEINOUS DRUG APPROVAL
One of the reasons members have their blood tested annually is to detect drug toxicities before permanent tissue damage is inflicted. When it comes to the fraudulent drug you are about to read about however, it would have been challenging for any of us to have survived. This deadly drug was administered intravenously during surgical procedures. It killed 1,000 people a month before it was withdrawn from the marketplace, not because the FDA demanded it, but due to numerous wrongful death lawsuits that were piling up against the pharmaceutical company.

15  IN THE NEWS
Apple polyphenols boost longevity in experimental model; landmark calorie restriction study planned; coffee drinkers have fewer strokes; increased supplement use among specialists; and more.

DEPARTMENTS

44  NATURAL METHOD TO REVERSE GLAUCOMA RISK FACTOR
Glaucoma is the second leading cause of blindness worldwide. Optic nerve damage is preceded by increased intraocular pressure. Up to 50% of people with elevated intraocular pressure remain undiagnosed. A nutrient compound developed in Europe has been shown to reduce intraocular pressure by 24% when used alone and by 40% when combined with conventional therapy.

54  REVERSE SKIN AGING AROUND YOUR EYES
The area of thin, delicate skin around the eyes is one of the first places where signs of aging appear. While not always a sign of fatigue or illness, the emergence of crow’s feet, bags, and dark circles can make you look older than you really are. Discover what causes these visible indicators of aging and how to reverse them naturally.

66  PROPRIETARY GREEN TEA EXTRACT PROTECTS THE KIDNEYS
Chronic kidney disease is a stealth affliction affecting 26 million Americans. If allowed to progress unchecked, kidney damage disables aging individuals to the point where they require dialysis three times a week. Early detection is essential. In a significant advance, the green tea extract contained in Life Extension’s formula was shown to protect against drug-induced kidney damage.

78  REDUCE STUBBORNLY HIGH TRIGLYCERIDES
Mainstream doctors erroneously believe that blood triglyceride levels up to 149 mg/dL are safe. Reality is that aging people should strive to keep them far below 100 to protect against heart attack and ischemic stroke. A recent study shows that tocotrienols can lower artery-clogging triglycerides by 28%. This is especially relevant for those who have less-than-optimal triglyceride levels even though they take the proper dose of fish oil.

89  OBSCENE PROFITS OVER HUMAN LIFE
As a follow-up to this month’s “As We See It,” the CNN investigative report reprinted here shocks the conscience. It provides a scandalous portrait of how Federal officials collaborated with Pfizer to push yet another drug known to be deadly onto trusting patients, hide the evidence, and shield the drug company behemoth from criminal prosecution.
Personal Consultation with
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The Most Complete Line of Life Extension Supplements
AND MUCH MORE!

Features to look for in the Life Extension Forum:
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• Multiple languages
• Email reply notification and Forum subscriptions
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For a large percentage of men over the age of 50, having a healthy prostate is the key to living a normal life. Dietary supplementation for urinary and prostate health helps men maintain a normal hormonal balance, which promotes normal urinary flow and prostate health. Choosing to support a healthy prostate through supplementation is one of the smartest choices an aging man can make.

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

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

In order to boost its anti-estrogen capabilities, Ultra Natural Prostate Formula incorporates 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.

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

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

Contains soybeans.

* 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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In 2010, there were more than 160 published studies on curcumin. Every week, scientists discover new benefits of curcumin, such as reducing inflammation and promoting healthy DNA function.

Unfortunately, not all forms of curcumin are readily absorbed into the bloodstream. As a result, you may not be achieving peak blood levels of this vital nutrient.

Super Bio-Curcumin® is absorbed up to seven times more than regular curcumin.\(^1,2\)

The graphs on this page illustrate that just one 400 mg capsule of Super Bio-Curcumin® can provide curcumin levels equivalent to ingesting 2,500-2,800 mg of other curcumin supplements.

Additionally, Super Bio-Curcumin® can stay in the bloodstream almost twice as long as other curcumin supplements.

Life Extension®’s Super Bio-Curcumin® contains the newly patented BCM-95® turmeric compound. A bottle containing 60 Super Bio-Curcumin® with BCM-95® capsules retails for $35. If a member buys four bottles, the price is reduced to just $24 per bottle. Each bottle will last most members two months.

Contains rice.

References:

To order Super Bio-Curcumin® with BCM-95®, call 1-800-544-4440 or visit www.LifeExtension.com

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These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
The FDA’s Most Heinous Drug Approval

BY WILLIAM FALOON

When it comes to lethal FDA-approved drugs, I always felt that Life Extension® members had a better chance of surviving adverse reactions compared to the general public.

One reason is that members have their blood tested annually so they can detect many types of drug toxicities before permanent damage is inflicted. Another defense members have are the healthy lifestyles they follow, which confers protection against mechanisms by which prescription drugs kill, such as glutathione depletion and fatty acid metabolite imbalance.1-5

As it relates to the fraudulent drug you are going to read about, however, it would have been challenging for any of us to survive. This deadly drug was administered intravenously during complex surgical procedures where one’s life is completely at the mercy of others.

I am going to relate what may be the most atrocious cover-up of a toxic drug that a pharmaceutical company has ever perpetrated—a drug that the FDA should have never approved.
Bayer lobbied the FDA hard, and by 1998, the FDA expanded approval of Trasylol® to cover all heart bypass patients.9 Sales of Trasylol® in 2005 hit $300 million, and Bayer envisioned a billion-dollar-per-year blockbuster.10 These kinds of profits provide an enormous war chest to lobby FDA officials to turn a blind eye, even while thousands of surgical patients were dying each year from kidney failure caused by Trasylol®.

Investigators were initially perplexed because kidney toxicity showed up in some studies, but not others. Critics maintain that Bayer never paid for studies large enough to determine the renal toxicity of Trasylol®. The primary side effect mechanism of Trasylol® is that it causes excess blood clotting inside blood vessels (thrombosis).11 This made tissues throughout the body vulnerable to loss of blood flow, which is why patients given Trasylol® sometimes died from multiple organ failure—plus amputation of limbs.

**Trasylol® Carnage Covered Up by Bayer**

In 2006, a study was released showing that thousands of Americans were being killed each year by Trasylol®.11 The FDA responded by issuing an “advisory” alerting doctors to this potential problem, but did not plan to have a formal meeting about Trasylol® for eight months.12,13 Bayer was desperate to keep Trasylol® on the market, so they hired a respected Harvard professor to look at the records of nearly 70,000 patients treated with Trasylol®. The Harvard professor’s report did not please Bayer.

**The FDA’s Erroneous Approval of Trasylol®**

Despite data showing that Trasylol® inflicted severe kidney damage in animals,8 the FDA approved it for human use in 1993.7 Low-cost alternative anti-bleeding drugs are less likely to produce this lethal side effect.

Soon, the same kidney side effects observed in animals were occurring in humans. One surgeon observed that the most common side effect seen in patients given Trasylol® was renal dysfunction. This surgeon then conducted a 20-patient study (not funded by Bayer) and found that 13 of 20 patients given Trasylol® had problems with kidney function after the surgical procedure.8 When the FDA approved Trasylol®, they did note that kidney toxicity was a problem. But
It revealed that horrific numbers of Americans had died from Trasylol®. The Harvard professor wrote that patients on Trasylol® had an elevated risk of death and acute kidney failure.10

When the FDA finally held an advisory committee meeting to address the Trasylol® deaths, Bayer intentionally withheld the Harvard professor’s exhaustive study.14 Since the FDA did not know of Bayer’s negative study, it voted to keep Trasylol® on the market.

A week later, the Harvard professor went to the FDA to inform them that Bayer had hidden the study showing the lethal dangers of Trasylol®.15 The FDA’s response was to issue another warning to doctors.16 Bayer meanwhile continued to sell hundreds of millions of dollars worth of Trasylol® to unsuspecting surgical patients.

One Thousand Lives Lost Each Month Because of the FDA’s Delay in Removing Trasylol®

In 2007, the Canadian government terminated a study using Trasylol® because too many patients were dying.17 Germany responded to this study by banning Trasylol® altogether.18 The FDA’s initial response was to convince Bayer to suspend marketing of Trasylol® only temporarily.19,20

In 2008, amid a flurry of lawsuits, Bayer announced that it was removing the remaining supply of Trasylol® from the American market.21

Experts estimate that had the FDA taken action when the first report came out, 22,000 lives could have been saved—which equates to about 1,000 needless deaths each month the FDA failed to act.10

Bayer suspended two employees22 for failing to disclose the Harvard study to the FDA. As with other pharmaceutical companies that cover up the lethal dangers of their drugs, the FDA has taken no action against Bayer. Contrast FDA inaction against Bayer to FDA’s threats to imprison growers of cherries and walnuts for promoting the health benefits of their foods.23,24

Why Health Care Costs So Much

The side effects attributed to Trasylol® include heart attack, stroke, kidney failure, and excruciating slow deaths.25

The medical costs of caring for patients injured by Trasylol® are incomprehensible. In some cases, relatively healthy people suffered so much tissue damage that they were hospitalized in ICU units for months before they died. Other victims require thrice weekly kidney dialysis, kidney transplants, lifetime nursing home care, and numerous other medical costs, not to mention lost productivity.26,27

If you ever wonder why medical costs are bankrupting the United States, look no further than the fraudulently approved drugs that permeate the marketplace. When government-approved medicines inflict this kind of carnage, the inevitable result is an explosive growth in the numbers of Americans requiring expensive chronic healthcare.

Federal Government Does Not Protect Us

In this issue of Life Extension Magazine®, we reprint an article published by CNN titled “Feds Found Pfizer Too Big to Nail.” It describes in detail the criminal
activities Pfizer perpetrated to illegally market the drug Bextra® to treat surgical pain.

Like other drugs in the COX-2 inhibitor class, Bextra® was shown to increase heart attack risk and was withdrawn from the market.28 The unfortunate consequence for many surgical patients, however, is that they were exposed to two lethal drugs (Trasylol® and Bextra®) at a time when these patients were particularly vulnerable to pathological clotting inside blood vessels (thrombosis).

Trasylol® was first administered intravenously to prevent excess bleeding, but in reality it caused excess blood clotting inside the arteries of many of its victims.29 In the post-surgical setting, patients were sometimes prescribed a double dose of Bextra® to alleviate surgical pain. One pathological effect of Bextra® is to increase a fatty acid metabolite called thromboxane A2, which further increases thrombotic risk.4,5 If you wonder why so many hospital patients die from "surgical complications," look no further than FDA-approved drugs they were given.

Trasylol® was allowed to remain on the market for 14 years, whereas Bextra® was illegally touted for less than 5 years before being withdrawn.30 Life Extension warned about the dangers of drugs like Bextra® and Vioxx® within a year of the FDA approving them.31 We were in the dark about Trasylol®, however, since this was a drug that surgeons made a decision on using.

The bottom line is that prescription drug costs are contributing to the bankruptcy of this nation’s healthcare system. Yet the federal government continues to deceive consumers into believing that they must pay inflated costs in order to be assured of safety and efficacy.

The reality is that high costs give pharmaceutical companies enormous profits that they use to fraudulently promote their drugs, pay off doctors, and lobby the FDA/Congress to protect their stranglehold over what drugs consumers have access to.32-34

Life Extension remains committed to protecting its members against the blatant corruption that exists today between pharmaceutical companies that engage in fraud to promote dangerous drugs and the politicians and bureaucrats who allow this murderous conspiracy to perpetuate.

Blood Tests Can Detect Drug Toxicities in Time to Reverse Damage

Blood tests that evaluate liver, kidney, muscle, and bone marrow function can detect a wide range of drug toxicities long before permanent damage occurs.
For instance, if a blood test finding uncovers specific tissue damage, a careful evaluation of the drugs you are taking can pinpoint the one causing the problem so you can discontinue it. This usually reverses the damage. Failure to catch a drug-induced pathology in time can result in irreversible system failure.

Regular blood testing can also enable your doctor to adjust the dose of drugs you are taking, and enable you to change your nutrient dose in order to obtain better and safer results.

For example, doctors often prescribe the same dose of a statin drug to every patient. The problem is that the dose of statin drugs required varies considerably between patients. Some can take a small dose (10 mg/day) of a drug like simvastatin and achieve LDL levels below 80 mg/dL, whereas others require higher doses (in addition to nutritional interventions).

Comprehensive blood tests function as a “report card” to verify that medications, hormones, and supplements you take each day are providing the desired benefits and not inflicting side effects.

When it comes to over-the-counter (OTC) drug toxicity, we at Life Extension have uncovered it in people as young as 21 years old and reversed it by getting them off high-dose analgesics like ibuprofen.

Annual blood testing saves lives not only by detecting drug toxicities, but also revealing vascular risk factors such as elevated triglycerides, glucose, C-reactive protein, and LDL in time to take corrective actions. Hormone imbalances can also be uncovered by proper blood testing. Results from these tests provide a roadmap to enable hormones to be safely restored to youthful ranges.

**Low-Cost, Convenient Blood Testing**

The high prices charged by commercial labs deny most people access to comprehensive blood tests. This is a tragedy as proper blood testing can identify reversible factors before stroke, cancer, kidney failure, diabetes, or coronary artery blockage is diagnosed.

Life Extension has torn down these high-cost barriers by offering comprehensive Male and Female Blood Test Panels. Once
a year, we discount these popular panels down to only $199—which is about 80% less than what commercial labs charge.

When you place your order, we send you a pre-filled-in requisition form and list of drawing stations in your area where you can go at your convenience.

The Blood Test Super Sale this year expires on June 6, 2011. You should not delay in placing your order to take advantage of these extra-discounted prices.

Once you have your requisition form, you can have your blood drawn anytime thereafter. The results are mailed directly to you. If you have any questions when your results come back, you are welcome to call our health advisor helpline.

The page on the right describes the many tests included in the comprehensive Male and Female Blood Test Panels and the ease with which you can order them today.

For longer life,

William Faloon

P.S. If you want to view the televised report that CBS News did on the Trasylol® travesty, just go to Google and type in: “Trasylol® and 60 Minutes.”

References

24. Faloon W. FDA says walnuts are illegal drugs. Life Extension Magazine®. Publication pending.
Unlike commercial blood tests that evaluate only a narrow range of risk factors, Life Extension’s Male and Female Blood Test Panels measure a wide range of blood markers that predispose people to common age-related diseases. Just look at the huge numbers of parameters included in the Male and Female Blood Test Panels:

**Male Panel**

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

**Lipid Profile**
- LDL (low-density lipoprotein) calculated
- HDL (high-density lipoprotein)
- Triglycerides
- Total Cholesterol

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

**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**

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

**Lipid Profile**
- LDL (low-density lipoprotein) calculated
- HDL (high-density lipoprotein)
- Triglycerides
- Total Cholesterol

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

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

**Complete Blood Count (CBC)**
- Red Blood Cell count including: hemoglobin, hematocrit, MCV, MCH, MCHC, RDW
- White Blood Cell count including: lymphocytes, monocytes, eosinophils, neutrophils, basophils
- Platelet count

Non-member retail price: $400 • Everyday member price: $269
Blood Test Super Sale member price: $199 • Enjoy these savings until June 6, 2011

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

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

If you plan to use the result of these blood tests to assist in a medically supervised weight loss program, consider ordering the Male or Female Weight Loss Panel for the blood test super sale member price of $224.25 through June 6, 2011. These panels were designed to offer additional hormones for those desiring assistance with weight loss.
Since Life Extension® introduced CoQ10 in 1983, our scientists have continued to develop increased potency and absorbability.

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

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

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

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

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

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

References:

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

The retail price for 60 100 mg softgels of Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ is $62. If a member buys four bottles, the price is reduced to $42 per bottle. Item # 01426

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

To order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ 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.
Milestone Study To Look At Genetic Effects of Caloric Restriction

Scientists from the University of California at San Francisco, Stanford, and the Buck Institute for Age Research are teaming up to study whether calorically restricted humans manifest the same age-slowing signaling seen in calorically restricted animals.*

The scientists wonder if humans on caloric restriction show the same benefits as animals, given many differences in genetics and the important role of lifestyle in human health. Finding the answer to this question prompted Dr. A. Janet Tomiyama at UCSF to organize some of the world’s greatest scientists to join the exploration. The team includes: Nobel Prize-winning telomere researcher Elizabeth Blackburn (UCSF), Anne Brunet (Dept. of Genetics, Stanford), Elissa Epel (Psychiatry, UCSF), Pankaj Kapahi (Buck Institute for Age Research), Cynthia Kenyon, (Biophysics and Biochemistry, UCSF), Jue Lin (Biochemistry & Biophysics, UCSF), and Eric Verdin (Gladstone Institute of Virology and Immunology at UCSF).

Paul McGlothin and Meredith Averill, of The CR Way Longevity Center, are helping the scientists identify people on long-term caloric restriction and sharing their insights into human caloric restriction practice, dietary regimens that support the biochemistry of caloric restriction, and identification of the world’s healthiest caloric restrictors who will converge on San Francisco—a city appropriately famous for health consciousness—for testing.

—J. Finkel


Apple Polyphenols Extend Life Span in Fruit Fly Experiment

A recent issue of the Journal of Agricultural and Food Chemistry reported that the administration of apple polyphenols to fruit flies resulted in longer average life span and the increased expression of genes involved in the production of antioxidant enzymes.*

Zhen-Yu Chen and colleagues evaluated apple polyphenols’ effects on fruit flies, a common test subject in longevity experiments. Treatment with the polyphenols extended the insects’ average life span by 10% and prolonged their ability to walk and climb. Apple polyphenols also reversed markers of aging and imminent death, while upregulating the genes for superoxide dismutase 1 (SOD1), SOD2, and catalase.

The study, which is the first to associate an extension of life span with consumption of apples, adds evidence to the benefits revealed in other investigations, including a study that found a decrease in heart disease risk in women who consumed the fruit.

Editor’s note: Flies in which the genes for superoxide dismutase and catalase were knocked out failed to experience prolonged survival, indicating that apple polyphenols’ life-extending mechanism is at least partly mediated by its action on these genes.

—D. Dye

IN THE NEWS

Study Finds Coffee Drinkers Have Fewer Strokes

An article published in the journal Stroke reveals the results of a study of Swedish women that found a lower risk of stroke in those who consumed coffee.*

Susanna Larsson, PhD, and her associates evaluated data from 34,670 women enrolled in the Swedish Mammography Cohort. The women were followed for ten years, during which 1,310 ischemic strokes, 154 intracerebral hemorrhages, 79 subarachnoid hemorrhages, and 137 unspecified strokes occurred.

The researchers found a 22-25% lower adjusted risk of total stroke, cerebral infarction, and subarachnoid hemorrhage among women who drank at least one cup of coffee per day compared with those who consumed less.

“To our knowledge, only one previous prospective study has assessed the association between coffee consumption and the incidence of stroke among healthy women,” the authors write. “Given that coffee is one of the most popular beverages consumed worldwide, even small health effects of substances in coffee may have large public health consequences.”

Editor’s note: The dietary questionnaires completed by the participants did not differentiate between regular or decaffeinated coffee, however, the authors note that decaffeinated coffee consumption is uncommon in Sweden.

—D. Dye


Dietary Supplement Use Common Among Specialists

Results of a survey reported in Nutrition Journal reveal that the use of nutritional supplements is common among specialist physicians, and that they frequently recommend them to their patients.*

The Healthcare Professionals Impact Study surveyed 300 cardiologists, 300 dermatologists, and 300 orthopedic surgeons concerning the type of supplements used and recommended. Fifty-seven percent of cardiologists, 75% of dermatologists, and 73% of orthopedists reported personal use, and supplements were recommended to patients by 72, 66, and 91% of these specialists, respectively. Half of the physicians on average reported using multivitamins, with dermatologists leading the group. Omega-3 and fish oil supplements and botanicals including green tea were also commonly used.

The study contributes to previous findings which determined that physicians and nurses engaged in regular use of supplements in a manner similar to that of the general public and that the majority recommended them to their patients.

Editor’s note: Reasons given for recommending supplements to patients were dependent upon the physician’s specialty, including the recommendation of cholesterol-reducing supplements by cardiologists and bone-building nutrients by orthopedists.

—D. Dye


Vitamin D Insufficiency Could Play a Role in the Development of Parkinson's Disease

In the Archives of Neurology, researchers report the finding of a correlation between insufficient levels of vitamin D and the development of early Parkinson’s disease (PD).*

The study included 157 placebo recipients who participated in the DATATOP trial of men and women with early Parkinson’s disease. Blood samples obtained upon enrollment and at the final visit after 13 months were analyzed for 25-hydroxyvitamin D.

While 69.4% had vitamin D insufficiency at the beginning of the study, 26.1% were classified as deficient with levels of less than 20 ng/mL. The prevalence of insufficiency at the final visit was 51.6%, and deficiency occurred in 7%.

“We confirm a high prevalence of vitamin D insufficiency in patients with recent onset of PD, during the early clinical stages in which patients do not require symptomatic therapy,” the authors conclude.

Editor’s note: The authors remarked that, “Contrary to our expectation that vitamin D levels might decrease over time because of disease-related inactivity and reduced sun exposure, vitamin D levels increased over the study period. These findings are consistent with the possibility that long-term insufficiency is present before the clinical manifestations of Parkinson’s disease and may play a role in the pathogenesis of PD.”

—D. Dye

Short Telomeres Linked with Increased Mortality Risk Over Six-Year Period

The Journal of Gerontology: Biological and Medical Sciences reports the finding of Annette L. Fitzpatrick of the University of Washington and her colleagues of an association between shorter telomere length and an increased risk of dying over 6.1 years of follow-up.*

The current study included 1,136 participants in the Cardiovascular Health Study of adults aged 65 and older. Blood samples obtained upon enrollment between 1992 and 1993 were analyzed for leukocyte telomere length. Cause was ascertained for 468 deaths that occurred over 6.1 years of follow-up.

Adjusted analysis of the data found that subjects whose telomeres were among the shortest 25% of participants had a 60% greater risk of dying over follow-up, compared with those whose telomeres were among the longest 25%. When deaths were analyzed by cause, infectious disease emerged as significantly associated with shorter telomeres, while cardiac arrhythmia was shown to have a weaker association.

Editor’s note: The authors explain that, “Data strongly suggest that erosion of telomeres is the result of an accruing burden of oxidative stress and inflammation, which is known to be enhanced by exposure to infectious and inflammatory diseases. The significant relationship between leukocyte telomere length and interleukin-6, a biomarker of inflammation, found here and in our earlier study, supports this finding.”

—D. Dye


Neuropathy in Extremities Caused By Old Mitochondria?

Johns Hopkins scientists recently posited in a new study that the burning, tingling pain of neuropathy may affect feet and hands prior to other parts of the body because the powerhouses of nerve cells, called mitochondria, that supply the extremities age and become dysfunctional.† They hope this finding could lead to new ways to fight neuropathy, a condition that often accompanies other diseases including HIV/AIDS, diabetes, and circulatory disorders.

Mitochondria for most cells in the body replace themselves every month or so, but mitochondria in nerve cells often live much longer to accommodate the sometimes long journey from where a cell starts growing to where it ends.

“Our mitochondria age as we age, and they have even longer to travel in tall people,” study leader Ahmet Hoke, MD, PhD, said. “In people who are older or taller, these mitochondria in the longest nerves are in even worse shape by the time they reach the feet.” Hoke also noted that if this discovery is confirmed for other types of neuropathy, it could lead to mitochondria-specific ways to treat this condition. Ideally, doctors may be able to one day give a patient a drug that boosts the function of older mitochondria, thus boosting the performance of the nerve cells and reducing pain.

—J. Finkel

Green Tea May Be Alzheimer’s Disease Fighter

Recent research by scientists at Newcastle University suggests that regularly drinking green tea could protect the brain against developing Alzheimer’s and other forms of dementia.* The study was led by Dr. Ed Okello and was published in the academic journal *Phytomedicine*. In addition to its potential as an Alzheimer’s fighter, the study also suggests the tea could play a vital role in protecting the body against cancer.

While hydrogen peroxide and a protein known as beta-amyloid have been known to play a major role in the development of Alzheimer’s disease, past studies have shown that compounds found in green or black tea called polyphenols have neuroprotective properties, binding with the toxic compounds and protecting the brain cells.

“What was really exciting about this study was that we found when green tea is digested by enzymes in the gut, the resulting chemicals are actually more effective against key triggers of Alzheimer’s development than the undigested form of the tea,” explains Dr. Okello, who is based out of the School of Agriculture, Food and Rural Development at Newcastle University.

“In addition to this, we also found the digested compounds had anti-cancer properties, significantly slowing down the growth of the tumor cells which we were using in our experiments.”

—J. Finkel


More Vitamin D Could Help Prevent Lung Cancer Recurrence

Researchers report in *Clinical Cancer Research* that an enzyme elevated in lung cancer that reduces the active form of vitamin D is associated with more aggressive tumors and worse survival.*

Nithya Ramnath, MD, and colleagues evaluated tumor samples from 86 patients with lung adenocarcinoma to determine the level of CYP24A1, which encodes an enzyme that is overexpressed in many cancers. This enzyme breaks down calcitriol (1-alpha,25-dihydroxyvitamin D3), which has an antiproliferative effect in lung adenocarcinoma. The team found that CYP24A1 expression was 8 to 50 times higher in cancerous compared to healthy lung tissue. Patients with higher levels of CYP24A1 had an increased likelihood of aggressive tumors and a 42% chance of survival after five years compared with an 81% chance for those with low CYP24A1.

Scientists are now attempting to identify compounds that block CYP24A1, which would increase vitamin D’s anticancer potential and could be combined with vitamin D treatment.

**Editor’s note:** Dr. Ramnath remarked that, “A natural compound like vitamin D is attractive because it has few side effects, but it’s even better if we can determine exactly who would benefit from receiving vitamin D.”

—D. Dye


Few Meet Definition of Optimal Heart Health

The outcome of a study recently published in the journal *Circulation* has resulted in the dismal conclusion that only one in 1,933 Americans may be meeting the American Heart Association’s criteria for good heart health.*

Steven E. Reis, MD, and his associates analyzed data from 1,933 men and women who participated in the Heart SCORE study. Surveys, examinations, and test results provided information concerning the presence of the following factors: not smoking, meeting physical activity and healthy diet goals, having a body mass index lower than 25, untreated cholesterol level of less than 200, blood pressure of lower than 120/80 mmHg and fasting glucose below 100 mg/dL.

Only one participant met all seven criteria of ideal heart health and fewer than 10% of participants had five or more components. “Of all the people we assessed, only one out of 1,900 could claim ideal heart health,” stated Dr. Reis.

**Editor’s note:** “Our next step is to analyze additional data to confirm this and, based on the results, try to develop a multifaceted approach to improve health,” Dr. Reis added.

—D. Dye

Brenda Watson, C.N.C., is the author of the New York Times bestselling book, The Fiber35 Diet. She has written six books, although her newest publication, The Road to Perfect Health: Balance Your Gut, Heal Your Body, is more similar to a gut-brain connection bible than a book.

Watson, one of the leading digestive care experts in the United States, has compiled a book that addresses 50 common health conditions. In addition, she discusses how digestive imbalances can lead to a host of serious illnesses outside of your digestive system, and she also offers natural options that can help realign the body’s digestive and overall balance.

The subtitle of the book is “A modern guide to curing chronic disease,” and at first glance, it seems as though that’s a lot of ground to cover in one book. Once you open the first few pages however, you see that the book is organized in such an efficient way that tackling the many issues that can be caused by poor gut function is not going to be a problem.

In fact, in the preface, Watson answers the first question that many people may be thinking when they encounter this publication: What does gut health have to do with overall sickness?

“Gut health is the core of our health. It is where we extract the nutrients from our food that feeds the cells and tissues and organs of our body. Think about it. Every bite of food we eat, every sip of liquid we drink goes to the gut first.”

Using this explanation as a jumping off point, Watson leads readers into her book with the first chapter, titled: “Basics of Digestion.” This is an excellent primer that explains everything from peristalsis to beneficial bacteria and gut immunity. Following this foundation of knowledge, the chapters cover nearly every system of the body, including the brain and nervous system, the cardiovascular system, the digestive system, the endocrine system, the genitourinary system, the immune system and infections, the musculoskeletal system, the respiratory system, skin conditions, environmental conditions, and cancer.

Each chapter is then broken up into conditions that may be caused or exacerbated by poor digestive health. The conditions are explained simply, as are the signs and symptoms that go along with them. Special highlighted sections allow expert medical professionals in that particular field to discuss their experiences with a certain condition and in some cases go over a few case studies to give the reader a better idea of what they may be dealing with.

At the culmination of each section discussing a certain condition, Watson gives her bottom line assessment of the condition, as well as how to cope with it. She writes about what other illnesses you should rule out, what tests you should order to confirm this illness, and how diet and lifestyle can affect it. Following that is a table that lists the supplements to take to combat the condition, including the dosage, the benefit, and her additional comments.

For instance, if a reader has diarrhea, she recommends 10 grams of L-glutamine powder with gamma-oryzanol split into two doses on an empty stomach with water for two weeks. She writes that it helps repair and keep digestive lining healthy and that it is best taken in loose powder form for optimum contact with the esophageal lining.

This attention to detail is evident in section after section of the book, making it a must-buy for those who seek to improve their health, cure a chronic infection, or prevent one from ever manifesting.
The Next-Generation Pomegranate Formula

Life Extension® offers an advanced, cutting-edge pomegranate formula that brings together novel phytonutrients for the first time in a unique, high-potency blend.

Full-Spectrum Pomegranate™ combines standardized extracts from the whole fruit and flower, along with pomegranate seed oil, to support system-wide health. In addition to the highly absorbable antioxidant powerhouses found in pomegranate fruit,2-4 Full-Spectrum Pomegranate™ augments these polyphenols with newly discovered biologically active compounds from other parts of the pomegranate plant.

These little-known nutrients include: punicanolic acid, a member of the triterpene family of essential oils that provides cellular support to help with inflammation,5 and pomegranatate, to combat age-related metabolic changes.6

This superior formula supplies the complete nutritional profile of the pomegranate plant. Just one softgel of Full-Spectrum Pomegranate™ provides polyphenols equivalent to 12.3 ounces of pomegranate juice (or 24 pomegranates) plus a proprietary blend of seed oil and flower extract.

One softgel of Full-Spectrum Pomegranate™ contains:

POMELLA® Pomegranate.................................................................400 mg
(Punica granatum) Extract (fruit) [std. to 30%
punicalagins (120 mg)]
PomComplete™ Pomegranate ..................................................137.5 mg
(Punica granatum) Blend [flower extract and
seed oil (standardized to 22% (30 mg) punicic acid)]

Full-Spectrum Pomegranate™

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

Item# 01423

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.
You can also obtain Full-Spectrum Pomegranate™ in a supplement called Endothelial Defense™ that includes a bioavailable form of SOD (superoxide dismutase) that helps protect vital nitric oxide in arterial walls. Blood vessels require nitric oxide to expand and contract with youthful elasticity. Full-Spectrum Pomegranate™ (active constituents from fruit, flower and seed) helps boost vascular protecting factors (such as PON-1) while providing support for youthful lipid and glucose metabolism, natural immunity, and help with inflammatory factors.7

The daily serving of 2 softgels of Endothelial Defense™ with Full-Spectrum Pomegranate™ contains:

**Superoxide Dismutase/Gliadin Complex** ............ 500 mg (GliSODin®) [SOD (Superoxide Dismutase) Enzyme Activity = 500 IU]

**POMELLA® Pomegranate** (Punica granatum) ........ 400 mg Extract (fruit) [std. to 30% punicalagins (120 mg)]

**Pomegranate** (Punica granatum) .......................... 100 mg 5:1 Extract (fruit)

**PomComplete™ Pomegranate** (Punica granatum) .... 137.5 mg Blend [flower extract and seed oil (standardized to 22% (30 mg) punicic acid)]

Endothelial Defense™ with Full-Spectrum Pomegranate™

A bottle containing 60 softgels of Endothelial Defense™ with Full-Spectrum Pomegranate™ retails for $56. If a member buys four bottles, the price is reduced to just $39 per bottle. Item#01498

Contains soybeans and wheat. Contains gluten.

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To order Full-Spectrum Pomegranate, call 1-800-544-4440 or visit www.LifeExtension.com

Blueberry Extract with Pomegranate

To augment the multiple benefits of blueberry extract,

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References:
Assert **Control** over the Calories You Eat!

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

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

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

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

**Comprehensive Calorie Management**

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

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

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

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

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

**Life-Saving Importance of Taking Calorie Control Weight Management Formula with African Mango Irvingia Before Heavy Meals**

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

The retail price for a one month (60-serving) supply of **Calorie Control Weight Management Formula with African Mango Irvingia** is $50. If a member buys four jars, the price is reduced to $33. If eight jars are purchased the member price is slashed to only $30 per jar.

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

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

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.*
Life Extension® first introduced SAMe in 1997. Since then, researchers continue to discover impressive benefits of this versatile nutrient. Largely known for its effects on optimal mood, SAMe has also shown benefits for the liver, brain, and joints.

A recent study conducted at Harvard Medical School and Massachusetts General Hospital cited the impressive benefits of SAMe for mood elevation.\(^1\)

A report published in Germany indicates that SAMe may help maintain healthy neurological function.* The impressive results showed that:

- SAMe increased glutathione levels by 50% and glutathione enzyme activity by 115%.\(^2\)
- SAMe decreased a measurement of free radical activity by 46%.\(^2\)
- SAMe inhibited lipid peroxidation by 55% in culture.\(^2\)

In addition to these findings, SAMe also improves brain cell methylation, thereby facilitating youthful DNA enzymatic actions (which may help account for SAMe’s mood elevating properties). These enzymatic reactions are required for the healthy conversion of neurotransmitters such as serotonin and dopamine.

The good news is that SAMe prices continue to plummet. Compared to when SAMe was first introduced to the United States in 1997, Life Extension members can now obtain it for 78% less. On an inflation-adjusted basis, the savings are even greater.

A box of 20 400 mg SAMe tablets retails for $32. When a member buys six boxes, the price is reduced to only $18.75 a box—a savings of 40%!

(SAME is also available in bottles containing 50 400 mg tablets. Retail price is $72. If a member buys four bottles, the price is reduced to $49.50 per bottle.) (Item #01055)

References

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Optimize Your Internal Defenses Against Radiation Exposure
At the time of this writing, three nuclear reactors in Japan were crippled, releasing radioactive particles into the air, sea, and groundwater. A potential medical crisis has been generated—one that Life Extension members were warned about long ago.  

Just days after the devastating tsunami struck Japan’s nuclear reactors—suppliers of the radioprotective compound potassium iodide had no inventory left.

The reason potassium iodide needs to be available for a nuclear emergency is that the most carcinogenic of the radioactive isotopes of iodine (iodine-131) can destroy thyroid tissue and cause cancer. If potassium iodide is taken in time, it saturates the thyroid gland with iodine so the radioactive iodine cannot easily enter. 

Potassium iodide is the most important primary intervention to protect against thyroid cancer. It has long been approved by the FDA for this purpose.

Based on our warnings dating back to 2002, most of our members had already stocked up and were prepared in case of emergency.

Not everyone heeded our prior advice. Had there been a nuclear emergency in the United States, those without immediate access to potassium iodide could have been exposed to lethal amounts of radioactive iodine.

Radioactive particles damage far more than the thyroid gland, as leukemia and other cancers are elevated in those exposed to radiation. We know that radiation inflicts free radical damage to our cells. Fortunately, supportive data reveals many of the nutrients already taken by Life Extension members may optimize one’s defenses against radiation exposure.
OPTIMIZE YOUR INTERNAL DEFENSES AGAINST RADIATION EXPOSURE

in the United States,\textsuperscript{11,12} Government officials state there is no danger. The track record of our government when it comes to recognizing the long-term consequences of radiation exposure, however, is quite dismal.

Since most Life Extension members recognize the dangers that free radicals pose to healthy tissues, they are already obtaining some degree of protection by taking nutrients that boost natural protection against radiation.

In the event that radiation levels in the United States spike, it would appear prudent to increase one’s ingestion of the specific nutrients that are described in this article.

What Are the Real Risks Americans Face from Japan?

In the May 2002 issue of Life Extension Magazine\textsuperscript{®}, we published an article titled “Vindication for Linus Pauling.”\textsuperscript{5}

This article (re-printed on page 36 of this month’s issue), described a belated report from our Federal government whereby they admitted that above-ground nuclear testing that took place between 1951 and 1962 directly caused at least 15,000 cancer deaths in the United States.\textsuperscript{6,7}

If it were not for Linus Pauling, above-ground nuclear testing would have continued, killing thousands more Americans from what the Federal government initially claimed was “harmless” radioactive ash.\textsuperscript{5,7,8}

At the time that Linus Pauling was warning about the lethal dangers of radioactive fallout, our Federal government was devising ways to have him (and others) incarcerated on pretenses that they were enemies of the state.

But it was not only above-ground testing in the United States that was causing these cancers. Above-ground nuclear testing in the former Soviet Union and on Pacific Islands used by the US and its allies was also generating radioactive particles that reached the United States.\textsuperscript{7,9,10}

We know today that small amounts of radiation from the crippled Japanese reactors are being detected in Japan.

A Bacterium That Thrives Inside Nuclear Reactors!

Most people think radiation is toxic to all living organisms.

Not so with a bacterium called \textit{D. radiodurans},\textsuperscript{13} whose ultra-high levels of antioxidants superoxide dismutase (SOD) and catalase enable it to thrive inside nuclear reactors.\textsuperscript{14}

Radiation acutely kills by inflicting free radical damage to life-sustaining cells. Due to its naturally high antioxidant status, \textit{D. radiodurans} can withstand a radiation dose that is 3,000 times greater than what would kill a human.\textsuperscript{15,16}

Delicate cellular strictures are oxidized in the presence of high levels of radiation.\textsuperscript{17} Intriguing data suggests that maintaining high levels of antioxidants confers at least partial protection against radiation-induced free radicals.\textsuperscript{18}

So while it is important to have potassium iodide on hand to protect the thyroid gland in case of a nuclear emergency,\textsuperscript{19} maintaining high cellular antioxidant levels could add an additional layer of protection to cells throughout the body.\textsuperscript{20,21}

This article first explains how potassium iodide protects the thyroid gland and then more importantly, describes the specific antioxidants and other nutrients that have demonstrated radiation-protective effects in peer-reviewed published studies.

Potassium Iodide: First Line Defense

Thyroid cancer is the most common malignancy caused by exposure to materials released from damaged nuclear power plants.\textsuperscript{22} Reactor accidents release a number of radioactive elements, the most common of which is called iodine-131.\textsuperscript{22,23} Radioactive iodine is
readily absorbed into the body primarily by inhalation of contaminated air and also by ingestion of contaminated vegetation, dairy, and meat. It is rapidly taken up into the thyroid gland.24 In the thyroid, ionizing radiation given off by the isotope damages DNA and causes cancer.

You can block absorption of radioactive iodine into the thyroid gland by taking a 130 mg dose of potassium iodide not later than 2 hours after possible inhalation or ingestion of radioactive iodine. (Note that 130 mg is the adult dosage. The dose for children ages 3-18 years old is 65 mg; the dose for children 1 month-3 years is 32 mg, and the dose for infants up to 1 month old is 16 mg.)23-26

The thyroid gland absorbs all forms of iodine equally; supplying the body with optimal amounts of iodine in the form of potassium iodide prevents radioactive iodine from reaching vulnerable thyroid tissue in appreciable amounts. A dose of potassium iodide taken appropriately can reduce the risk of thyroid cancer by a factor of 3 and is the single most effective means of preventing thyroid cancer following a nuclear disaster.23,24

Keep potassium iodide tablets readily available in your home, office, and any vehicle—there is not yet sufficient supply nor production capacity to obtain them during an actual event. (Despite the Congressional legislation mandating it be available, only the state of Vermont has implemented a program for distributing potassium iodide to its citizens living within 10 miles of the state’s nuclear facilities.)27

Potassium iodide, however, should not be taken on a regular basis as general protection. There are other nutrients, however, that have been shown to confer a multitargeted radioprotective benefit. They may help to maximize your body’s ability to withstand the effects of ionizing radiation, the source of free radical damage that ultimately leads to radiation-induced cancer:28-34

**Polyphenols**

**Polyphenols** are versatile molecules found in plants. They act across a range of biomolecular pathways in the body, including favorable modification of gene expression that protects tissues from ionizing radiation.35,36

**Resveratrol**, **quercetin**, and **green tea** polyphenols rank among the best-studied and most potent radioprotectants in this class. Resveratrol is both a radioprotector in healthy tissue and also has antitumor activity.37,38 In animal models, resveratrol has been shown to protect chromosomes from radiation-induced damage.39 Its antioxidant properties prevent...
radiation toxicity to animal liver and small intestines, two tissues most immediately sensitive to radiation’s ill effects.40

Quercetin and its related compounds protect lipids and proteins from otherwise-lethal doses of gamma radiation, again largely through their antioxidant properties.41 Quercetin and other polyphenols not only provide chromosomal radioprotection, but also shield mitochondrial DNA from radiation-induced oxidant damage.42 Quercetin also ameliorates biochemical changes in human white blood cells following radiation exposure.43

The polyphenol epigallocatechin gallate (EGCG), derived from green tea, also protects animals from whole-body radiation, blocking lipid oxidation and prolonging life span.44 Green tea extracts can protect rapidly reproducing cells in the intestine and hair follicles from the damaging effects of radiation therapy, a form of radiation exposure far more intense than typical computed tomography (CT) doses—and one that more closely resembles the immediate effects of exposure to a nuclear plant disaster.45,46

Soybeans also contain a radioprotective enzyme inhibitor known as the Bowman-Birk inhibitor (BBI).56 BBI activates genes involved in DNA repair, making it among the most valuable compounds for preventing or mitigating the effects of radiation toxicity.57,58 BBI also stabilizes enzymes that would otherwise produce radiation-induced arrest of skin cell growth.59 Remarkably, BBI enhances survival of healthy cells, but not diseased cells, following radiation exposure.60,61 BBI survives processing in commercial soybean products (e.g., soy milk, soybean concentrate, and soy protein isolates), making it a highly accessible radioprotectant.62,63

Soy

Soybeans contain a wealth of health-promoting substances, among them several with remarkable radioprotective effects. Genistein, an isoflavone, can protect mice from ionizing radiation injury after a single dose.51 One mechanism is its protection against radiation-induced lipid peroxidation, which when unchecked disrupts cell membranes and structures.52 Genistein also stimulates production of red and white blood cells following whole-body radiation, again after as little as a single dose.53,54 (Blood stem cells in bone marrow are among the most vulnerable to radiation’s deadly effects.) Because of its powerful induction of cytokines that stimulate new blood cell formation, genistein is under intensive study as a way to protect military and civilian personnel against a potential nuclear threat.55

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Nuclear Power and Radiation Risks

It has been known since the 1940s that so-called ionizing radiation damages human DNA, causing many different kinds of cancers, most notably thyroid cancer and leukemias. Ionizing radiation also causes immediate, catastrophic radiation sickness following short-term, high-dose exposure. Recent events at Japan’s Fukushima Daiichi Nuclear Power Station serve as a grave reminder that these threats are neither futuristic nor theoretical.

There have been eight nuclear power plant accidents, each causing more than $300 million in property damage, since 1975. While the costs in human lives and long-term health from the Fukushima tragedy remain unknown, we can expect them to be substantial. The worst previous nuclear disaster, in Chernobyl in 1986, resulted in 237 cases of acute radiation sickness with 31 immediate deaths, and more than 5,400 cases of thyroid cancer in the 22 years following the accident. The risk of thyroid cancer following that accident was determined to be increased by 4.5-fold in adults, 12.7-fold in adolescents, and 87.8-fold in children.

Curcumin and Other Plant Extracts

Compelling scientific evidence suggests that many plant extracts have valuable gene expression-modifying effects that are relevant in protecting our bodies from radiation exposure.

Curcumin, derived from the curry spice turmeric, exerts powerful radioprotective effects as a result of its antioxidant and detoxifying characteristics. Curcumin supplements reduce DNA damage and tumor formation in rats; they reduce both DNA damage and lipid peroxidation in cultured human white blood cells. Curcumin has “dual action.” Its antioxidant effects protect normal tissue from radiation. But it also upregulates genes responsible for cell death in cancers, enhancing tumor destruction by radiation. The result is increased survival in animals exposed to high-dose radiation.

Together, garlic and ginger also afford significant radioprotection. Garlic’s high sulfur content supports natural antioxidant systems. Garlic extracts protect red blood cells from radiation damage by a glutathione-related mechanism. In mice, garlic extracts have been shown to prevent radiation damage to chromosomes in vulnerable bone marrow cells. Via a discrete physiological mechanism, garlic extracts downregulate X-ray-mediated increases in the inflammatory nuclear factor-kappaB (NF-kB) system. Ginger extracts boost glutathione activity and reduce lipid peroxidation by a separate and complementary mechanism. These extracts directly scavenge a host of free oxygen and nitrogen radicals immediately following their formation by radiation.

Lab studies show that extracts of ginkgo biloba reduce the effects of clastogenic factors—external materials (including plutonium and other radioactive substances) that fragment or delete DNA and inflict chromosomal damage, leading to mutation and cancer proliferation. This effect is so powerful that it proved useful in treating workers at the Chernobyl nuclear plant long after their exposure. More recently, ginkgo extracts proved to protect animals’ organs from direct radiation-induced damage. Ginkgo also protected humans from cell damage following radioactive iodine treatment for hyperthyroid Grave’s disease.

Ginseng is another plant important in traditional medicine that confers substantive radioprotective effects. A variety of ginseng extracts have been shown to protect against radiation-induced DNA damage. It protects hair follicles and other rapidly reproducing (but healthy) tissues from damage by radiation. Its antioxidant effects have resulted in protection of a variety of radiation-sensitive tissues, including cells in bone marrow, spleen, and testicles. Ginseng’s immunomodulatory effects make it especially useful in defending our bodies against the ravages of radiation injury.
ginseng extract was recently found to protect human white blood cells from DNA damage even up to 90 minutes following radiation exposure. That makes it of great interest to defense and national security researchers—and to the general public in an era of concern about nuclear plant safety.

**Silymarin**, an active compound found in milk thistle, is well known for its ability to protect liver cells from alcohol and various chemical toxins. Less well known is its power to protect liver tissue from radiation damage as well. It reduces DNA damage and extends survival in animals exposed to dangerous levels of radiation. Silymarin’s free radical-scavenging and direct antioxidant effects are credited with producing these results.

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**S-adenosylmethionine (SAMe)**

Like NAC, S-adenosylmethionine (SAMe) is a powerful compound essential for maintaining cellular levels of glutathione. Enzymes vital for DNA repair (and hence cancer protection) can’t function properly in the absence of methyl donors such as SAMe. In early 2010 we learned that ionizing radiation suppresses SAMe levels in animal models. Increasing the animals’ SAMe levels, on the other hand, minimized DNA damage from ionizing radiation.

**Antioxidant Vitamins**

The “ACE” vitamins (A, C, and E) offer proven antioxidant protection as a result of their molecular structures. High intakes of these vitamins and other antioxidants have been shown to protect airline pilots from radiation-induced chromosomal damage, an occupational hazard for those who work at high altitudes. ACE supplements have been proposed as “space foods” to protect astronauts from high radiation levels.

**Beta-carotene**, the precursor of vitamin A, was first used clinically in the wake of the Chernobyl nuclear accident as a first-line treatment for children from the region. Supplementation reduced the amount of radiation-induced oxidized lipids. More controlled animal studies showed that vitamin A could reverse radiation-induced gene expression abnormalities that could lead to cancer. Other studies show that vitamin A ameliorates other radiation effects and enhances death of cancerous cells. Still other studies reveal that vitamin A can actually prevent radiation-induced death of healthy cells.

Vitamin C, together with natural antioxidant systems such as glutathione, helps protect DNA and chromosomes from oxidative damage. Vitamin C also inhibits radiation-induced death of human blood cells through modulation of protective gene expression. Remarkably, vitamin C can counteract radiation-induced “long-lived radicals” (LLRs) that destabilize chromosomes and induce cancerous mutations. The ability to counter both classical radicals and LLRs may be vital in preventing genetic damage from radiation.

Like vitamin C, vitamin E quenches free radicals once they form, reducing their toxicity, an effect vital in radioprotection. Importantly, vitamin E enhances the growth-inhibiting effect of radiation on cancer tissue while simultaneously protecting normal cells. Animal studies show that vitamin E significantly
Evidence suggests that lipoic acid may offer important protection against the threats posed by various types of radiation exposures.

When used in combination with other antioxidants including selenium, vitamin C, vitamin E, N-acetyl cysteine, and coenzyme Q10, lipoic acid helped improve survival of mice following total-body irradiation. This study was particularly noteworthy because the antioxidant combination was effective even when administered 24 hours after a dose of radiation exposure that is often lethal.

A remarkable study among X-ray technicians reveals just how powerful antioxidant vitamins can be. Radiology technicians are nominally protected by elaborate shielding, but they’re still exposed to unnaturally high levels of radiation over the course of a lifetime. As a result, they tend to have higher levels of tissue oxidation. But when a group of techs was supplemented with vitamins C (500 mg) and E (150 mg) daily for 15 weeks, their markers of tissue oxidation plummeted, and their levels of natural antioxidants (such as glutathione and glutathione peroxidase in red blood cells) rose significantly.

**Lipoic Acid**

Lipoic acid is often referred to as the “universal antioxidant” because it quenches free radicals in both aqueous and lipid-soluble environments, such as cellular membranes. Lipoic acid exists in two mirror-image forms: R-lipoic acid and S-lipoic acid. While most commercially available products contain a 50:50 mixture of the two forms, only R-lipoic acid is produced by life processes and is thus likely to be the more potent of the two. Compelling evidence suggests that lipoic acid may offer important protection against the threats posed by various types of radiation exposures.

When used in combination with other antioxidants including selenium, vitamin C, vitamin E, N-acetyl cysteine, and coenzyme Q10, lipoic acid helped improve survival of mice following total-body irradiation. This study was particularly noteworthy because the antioxidant combination was effective even when administered 24 hours after a dose of radiation exposure that is often lethal.

Lipoic acid shows benefits for supporting the immune health of individuals who were involved in the clean-up of the Chernobyl nuclear accident, even years after the event. Eleven to twelve years after the Chernobyl clean-up, study participants received 600 mg of lipoic acid daily for two months. Signs of general immune health improved, and white blood cells called neutrophils demonstrated an improved ability to ingest invading cells and cellular debris.

Radiation therapy as a component of cancer treatment frequently causes adverse effects on skin health such as swelling and a sunburned appearance. When animal skin cells were incubated with lipoic acid, they experienced less cell injury, compared with skin cells that received radiation but no lipoic acid. These promising findings suggest that lipoic acid may have important applications in preserving skin health in individuals who must undergo cancer radiation therapy.
**Trace Minerals**

Your body’s internal antioxidant defenses, including *superoxide dismutase*, *catalase*, and *glutathione peroxidase* all depend on trace minerals as cofactors for their function. **Zinc** and **manganese** are of particular importance for sustaining whole-body resistance to ionizing radiation. Zinc supplements have been shown to protect rats from oxidative damage to their red blood cells induced by radioactive iodine.130,131 And a zinc supplement protected bone marrow, but not tumor cells, from radiation-induced damage.132 Since mitochondria produce huge amounts of free radicals, they are especially susceptible to radiation damage. Both zinc and manganese provide powerful mitochondria-specific radioprotection in animal studies.133

**Other Potent Radioprotective Nutrients**

Most nutrients with powerful antioxidant activity can be expected to protect you against radiation exposure from medical tests and from temporary increases in radiation in the environment.134 In addition to those already examined, there’s good evidence for radioprotection by **spirulina** extracts, which protect bone marrow cells from DNA damage.135 **Melatonin** also protects dividing cells and circulating blood cells from chromosomal injury by radiation.136,137 **Licorice** extracts block DNA damage and protect cellular organelles from radiation.138 The **Indian gooseberry** (*Emblica officinalis*) increases survival time and reduces mortality of mice exposed to whole-body radiation.139 Effects include protection against lipid peroxidation and protection of rapidly-dividing cells in the intestine.140 Carnosic acid and other **rosemary extracts** protect against DNA damage through their antioxidant activity, both before and after radiation exposure.141

**Summary**

Potassium iodide is the single most important intervention to prevent lethal damage from radiation exposure. Life Extension long ago warned the American public to keep supplies of potassium iodide on hand in the event of a nuclear catastrophe. Not everyone heeded our warning.

As we predicted, the world’s leading potassium iodide makers failed to maintain adequate supplies and ran out amidst Japan’s ongoing nuclear disaster. In addition to keeping adequate supplies of potassium iodide on hand for short-term radioprotection, there exists a broad array of scientifically-validated nutrients that may optimize your body’s natural defenses against radiation exposure.

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**References**


A new government study says that radioactive fallout from nuclear weapons testing has caused at least 15,000 cancer deaths in the United States. This report was prepared as a joint effort by the National Cancer Institute and Centers for Disease Control and Prevention. Here is a chilling revelation from this report:

“Any person living in the contiguous United States since 1951 has been exposed to radioactive fallout, and all organs and tissues of the body have received some radiation exposure.”

For those who don’t know, more than 2,000 nuclear tests have been conducted worldwide since the first nuclear bomb was built. The latest government report considered only above-ground tests that took place between 1951 and 1962. This study uncovered intense radioactive “hot spots” in the continental United States all the way from California and Washington to Vermont, New Hampshire, and North Carolina.1

This report of 15,000 cancer deaths, however, is but preliminary. The full study is still being withheld from the public. Critics are accusing the Federal government of slowing the release of this information to minimize the consequences.

For decades, the Federal government contended that radioactive fallout from nuclear testing was harmless. Government propaganda films in the 1950s even showed American children playing in fresh radioactive ash to demonstrate that it was “safe as snow.”1

Now that the lethal consequences of the government’s deceit are being exposed, we commemorate the scientist who risked imprisonment for organizing protests that eventually caused the United States and [the former] Soviet Union to ban above-ground nuclear testing.

Linus Pauling: The Scientist

Linus Pauling is the only person to ever win two undivided Nobel Prizes. The New Scientist magazine ranked Dr. Pauling as one of the twenty greatest scientists to ever live, an honor shared with such figures as Albert Einstein, Charles Darwin, and Isaac Newton.

Dr. Pauling’s research focused primarily on physical chemistry. In 1939 he published The Nature of the Chemical Bond and the Structure of Molecules and Crystals and was awarded the Nobel Prize in Chemistry in 1954.

During World War II, Pauling participated in scientific enterprises deemed vital to the protection of the country. Early in the war he was a consultant to the National Defense Research Commission and later became a member of the Research Board for National Security. For his contributions, which included work on rocket propellants, an oxygen deficiency indicator for pressurized space, such as that in submarines and aircraft, and on a substitute for human serum in medical treatment, he was awarded the Presidential Medal of Merit in 1948.

Pauling’s interest in the “behavior” of molecules led him from physical chemistry to biological chemistry. Dr. Pauling’s research into amino acids resulted in the development of the first substitute for blood plasma.

In 1950, Dr. Pauling constructed the first satisfactory model of a protein molecule, a discovery that has implications for the understanding of the living cell. He studied and published papers on subjects as diverse as the effects of blood cell abnormalities, the relationship between molecular abnormality and heredity, the possible chemical basis of mental retardation, the functioning of anesthetics, the relationship of vitamin C deficiency to heart disease, etc.

Many of today’s scientific and medical breakthroughs emanate from Linus Pauling’s pioneering research in the fields of both physical and biological chemistry.

How Linus Pauling Got into Trouble

Linus Pauling knew that radioactive fallout–generated free radicals would cause cancer and other diseases in humans. Pauling joined with Albert Einstein and five others to form the Emergency Committee of Atomic Scientists. Their mission was to inform the
public about the dangerous consequences that nuclear weapons and nuclear testing held for civilization.

In 1957, Pauling wrote a scientific appeal petition calling for a nuclear test ban treaty and distributed it throughout the scientific community. He soon gathered over 9,000 signatures from 49 countries, including 2,000 American scientists. In 1958, Pauling presented the petition to the Secretary-General of the United Nations, announcing that it represented the general consensus of the world’s scientists and their plea for a ban on future nuclear testing.

Pauling gave hundreds of lectures against nuclear weapons testing and war. Unfortunately, he toured during a time of heightened Cold War suspicions and was marked a Communist supporter. The Federal government refused to give Pauling a passport, thus denying him the opportunity to attend international scientific conventions. Pauling was twice subpoenaed to appear before congressional committees investigating anti-American activities to declare that he was not a Communist. On October 11, 1960, Pauling was threatened to be held in contempt of Congress because he refused to reveal the names of those who helped circulate his petition to ban nuclear testing.

Despite unrelenting governmental oppression, Pauling remained undaunted and continued his crusade by writing a draft resolution for a nuclear test ban treaty. He sent letters and copies of his resolution to both President Kennedy and Premier Khrushchev. The two superpowers eventually agreed on a limited test ban treaty, one that was strikingly similar to Pauling’s. The treaty went into effect on October 10, 1963, the very day it was announced that Pauling was to receive his second Nobel Prize.

**Too Far Ahead of His Time**

By disseminating his knowledge about the lethal dangers of radioactive fallout, Pauling became a target of government persecution, harassment in the press, and charges of working for the enemy. He could have been jailed for refusing to provide Congress with the names of those involved in gathering more than 9,000 signatures for the scientific petition to ban above-ground nuclear testing.

We are now learning that the government knew about the effects of above-ground nuclear testing, but covered it up. In the 1950s for example, government officials notified suppliers of photographic film of expected fallout patterns so they could protect their film, but did not share the information with milk producers. Many children drank this radioactive contaminated milk.

A 1997 report by the National Cancer Institute indicated that farm children who drank goats’ milk in the 1950s in high fallout areas were as severely exposed as the worst exposed children after the 1986 Chernobyl nuclear plant accident. Death rates from leukemia and other cancers, and diseases caused by the Chernobyl accident, are estimated to kill tens of thousands in the future.²

Environmental groups are calling for the US government to expand its compensation program for test site “downwinders” to include hot spots thousands of miles from the test sites, and to formulate and implement a comprehensive response to the public health threat posed by the fallout.

This preliminary report about the lethal effects of nuclear testing has alarmed some members of Congress, including Sen. Tom Harkin of Iowa. “What we know is maybe the tip of the iceberg here,” Harkin said. “We know that there’s been upwards of perhaps 15,000 deaths that are attributable to these nuclear tests.” Congress received the preliminary report last August. The report was endorsed by the prestigious Institute for Energy and Environmental Research, but the government has yet to formulate a public health response.
“People have a right to know if they were exposed, where the big areas of fallout were, and they need to be screened and told what to do to protect their health,” Senator Harkin said.

It is interesting to note that what Senator Harkin advocates today would have been considered heresy in the 1950s, since the government’s official position at that time was that radioactive fallout was harmless.

Forty-five years ago, Dr. Linus Pauling formulated a public health response to eradicate this problem, but the Federal government chose instead to persecute this brilliant scientist and humanist so that the practice of raining radioactive fallout throughout the United States could continue.

As is too often the case, when the government makes a criminal accusation against a political dissident (in this case Linus Pauling), history later shows that it was the government itself that was involved in the sinister activities. What could be more anti-American than inflicting cancer on 15,000 innocent people?

**Linus Pauling’s Theory about Vitamin C and Heart Attack**

Linus Pauling never stopped taking controversial positions. In the 1960s, he began to investigate the role that vitamin C played in human health. Pauling postulated that a cause of atherosclerosis is a lifelong vitamin C deficiency.

One of the great misfortunes of human evolution, Pauling explained, was when our human ancestors lost their ability to manufacture vitamin C. Ever since proto-humans moved out of fruit- and vegetable-rich habitats, Pauling said, they have suffered great deficiencies of vitamin C. Pauling recommended that people make up for this deficiency with daily doses of vitamin C much greater than the 60 mg recommended by the government.

Pauling laid out a molecular basis to explain vitamin C’s connection with lipoprotein-a, a substance whose levels in the blood have been linked to cardiovascular disease. Lipoprotein-a is also a major component of the plaques found in the blood vessels of atherosclerosis patients.

Pauling has published studies asserting that lipoprotein-a is a surrogate for vitamin C, serving to strengthen blood vessel walls in the absence of adequate amounts of the vitamin in the diet. Pauling noted that animals that manufacture their vitamin C have very little lipoprotein-a in their blood.

Pauling was convinced that high doses of vitamin C could help prevent the onset of cardiovascular disease, inhibiting the formation of disease-promoting lesions on blood vessel walls and perhaps decreasing the production of lipoprotein-a in the blood.
Linus Pauling’s position on vitamin C once again put him under intense criticism, this time from the medical establishment who asserted that vitamin C had nothing to do with heart attack risk.

**Linus Pauling Again Exonerated**

Over the past 12 years, a large volume of published studies has supported Linus Pauling’s position on the role of vitamin C and heart disease. Many of these studies look at the beneficial effects that vitamin C has on the arterial wall, but what is most impressive are human epidemiological studies showing that people with high levels of vitamin C live longer and suffer fewer heart attacks compared to those with low vitamin C.

One of the first human studies that substantiated the benefits of vitamin supplements was announced in 1992 and showed that men who took 800 mg a day of vitamin C lived six years longer than those who consumed the FDA’s recommended daily allowance of 60 mg a day. This ten-year study, published in the journal *Epidemiology,* showed that high vitamin C intake extended average life span and reduced mortality from cardiovascular disease.

A compelling report that high-potency supplements extend life span in humans was published in the August 1996 issue of the *American Journal of Clinical Nutrition.* This study involved 11,178 elderly people, who participated in a trial to establish the effects of vitamin supplements on mortality. When the effects of vitamin C and E were compared, overall mortality was reduced by 42%. What made these findings significant was that the study compared people who took low potency “one-a-day” multiple vitamins to those who took higher potency vitamin C and E supplements. Only the participants taking high-dose vitamin C and E supplements benefitted.4

A study published in the *British Medical Journal* evaluated 1,605 randomly selected men in Finland aged 42 to 60 years between 1984 and 1989. None of these men had evidence of pre-existing heart disease. After adjusting for other confounding factors, men who were deficient in vitamin C had 3.5 times more heart attacks than men who were not deficient in vitamin C. The scientists’ conclusion was, “Vitamin C deficiency, as assessed by low plasma ascorbate concentration, is a risk factor for coronary heart disease.”5
In a study published last year in *The Lancet*, researchers at Cambridge University in England looked at serum vitamin C and how long people lived. People who had the lowest levels of vitamin C were twice as likely to die compared to those with the highest serum vitamin C levels. This study was based on the findings from over 19,000 people.6

**Does Vitamin C Cause Kidney Stones?**

Linus Pauling came under attack by medical doctors who asserted that vitamin C caused kidney stones. Based on Dr. Pauling’s molecular knowledge of chemistry, he meticulously rebutted these unfounded allegations. What Dr. Pauling lacked in the 1960s and 1970s, however, were human studies to validate that vitamin C did not increase kidney stone risk.

Dr. Pauling was exonerated again by a report from Harvard Medical School that showed no increased risk of kidney stones when evaluating 85,557 women over a 14-year study period. This report, published in the April 1999 issue of the *Journal of the American Society of Nephrology*, showed that women who consumed 1,500 mg a day or more of vitamin C were no more likely to develop kidney stones than women who consumed less than 250 mg of vitamin C a day. The study did reveal that women who consumed 40 mg or more of vitamin B6 were 34% less likely to develop kidney stones compared to women taking fewer than 3 mg a day of B6.7

The only reason Linus Pauling was not thrown in jail for promoting the benefits of vitamin C is that he did not sell it. Before 1994, the FDA prohibited distributors of vitamin supplements from making health claims.

**Can We Stop Persecuting Today’s Linus Paulings?**

Those with new ideas often face fierce attack by the establishment and the Federal government. A recent example was the announcement that human embryonic stem cells had been produced and that there is now an opportunity to cure many of today’s lethal diseases.

You would think that the scientist who made this remarkable discovery, Dr. Mike West, would be proclaimed a hero. Instead, government leaders immediately vowed to pass new laws to make it a crime to create embryonic stem cells for therapeutic cloning purposes. In Senate hearings, scientists and people afflicted with disease are appealing to lawmakers to not ban therapeutic cloning research.

Our concern is that only a miniscule number of brilliant minds like Linus Pauling are ever born. When Linus Pauling stated that radioactive fallout caused cancer in humans, he was ridiculed, persecuted and almost incarcerated. Now 45 years later, Pauling has been proven right. This vindication does nothing for the 15,000 Americans who have perished from radioactive fallout-induced cancer.

Today, there are pockets of exceptional intelligence that are stifled by bureaucratic red tape. In order to create the scientific renaissance needed to radically extend the healthy human life span, we must break down the barriers that suppress implementation of new ideas.

We as citizens and Life Extension® members must protect those brilliant minds (the Linus Paulings of today) who may be too intimidated to risk their personal freedom to bring forth the scientific truth.

**References**

Life Extension® has developed a potassium iodide supplement containing 130 mg of potassium iodide. Tablets are scored for easy breakage should the need arise for doses of less than 130 mg.

The retail price for a box of 14 tablets of Potassium Iodide is $6.95. If a member buys four boxes, the price is reduced to only $3.94 a box.

**The Neurologically Active Form of VITAMIN B12**

Methylcobalamin is the form of vitamin B12 active in the central and peripheral nervous system. Methylcobalamin has been shown to protect against glutamate-induced “excitotoxic” neuronal damage. For fastest absorption and utilization, hold lozenge in mouth until completely dissolved.

The Life Extension Foundation Buyers Club imports this pharmaceutical-grade methylcobalamin, the neurologically active form of vitamin B12, at remarkably low prices. Methylcobalamin lozenges come in a good-tasting vanilla flavor.

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

To order vanilla-flavored methylcobalamin lozenges, 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.
World’s Most Advanced
RESVERATROL Formula

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

Since then, we have gone to extraordinary lengths to identify 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.

For example, initial research funded by Life Extension showed that resveratrol induced many of the favorable gene expression changes observed in calorie-restricted animals.

We have since uncovered compelling evidence that certain compounds found in berries, such as pterostilbene and fisetin, also 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:

<table>
<thead>
<tr>
<th>Ingredient</th>
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<tr>
<td>Trans-Resveratrol</td>
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<tr>
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<td>Quercetin</td>
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<td>Trans-Pterostilbene</td>
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<tr>
<td>Fisetin</td>
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Contains yeast.

To order Optimized Resveratrol, 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.
Optimized FUCOIDAN

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

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

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

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

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

References

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

To order Optimized Fucoidan with Maritech® 926 call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Nutrient Intervention for
GLAUCOMA
Glaucoma is the second-leading cause of blindness.\textsuperscript{1} It often progresses without symptoms until it succeeds in damaging the optic nerve.\textsuperscript{2} Up to 50\% of people with glaucoma remain undiagnosed,\textsuperscript{3} and as many as one in ten individuals aged 80 or older are afflicted by it.

Encouraging news reveals that several of glaucoma's underlying causative factors may be prevented and even reversed through natural interventions, offering new hope to the millions at risk for this widespread, debilitating condition.

In this article, you will learn of a recently published human study revealing how proprietary, standardized extracts of French maritime pine bark and bilberry may effectively target the underlying mechanisms that lead to glaucoma. In a group of human subjects, these nutrients combated one of glaucoma's primary contributing factors, elevated pressure in the eyes, with reductions as much as 24\%. Even more impressive results occurred when these same nutrients were combined with standard therapy.\textsuperscript{4}
Latanoprost is a synthetic agent developed to mirror in structure and function the messaging molecule prostaglandin F2α (PGF2α). Among other actions, PGF2α causes smooth muscle cells, such as those in blood vessels and the eyes, to relax or contract. Prostaglandins are used in medical therapy of glaucoma to lower pressure inside the eye. However, in part due to complications associated with its short- and longer-term use, latanoprost and other PGF2α-derived prescription eye drops are not acceptable preventive agents to halt glaucoma from developing for many people with elevated intraocular pressure or other predisposing conditions. This last limitation of the prescription medication helped generate excitement for this study, as this oral nutrient compound containing pine bark/bilberry has not been associated with the type of side effects seen with the prostaglandin-type drugs, such as ocular cysts, swelling, and inflammation.

In the study, all three treatment groups showed improvement, or lowering of their intraocular pressure, which was measured carefully under protocol and in triplicate to decrease chances of random variation or error. Initially, subjects who received the prescription eye drops saw the most rapid drop in their eye pressures of 28%, beginning at four weeks of treatment. The group that received the pine bark/bilberry compound began to show a statistically significant drop in intraocular pressure beginning at the sixth week of treatment that continued throughout the study period, to a 24% reduction at 16 weeks. While the pressure drop approached the degree of intraocular pressure-lowering associated with latanoprost drops, the group given the pine bark/bilberry compound alone did not reach the exact same level of pressure lowering with latanoprost alone.

However, the most exciting results emerged from the group that used both agents. This group also began showing statistically significant pressure lowering of 28% at four weeks. However, the degree of pressure lowering at 24 weeks with both agents was 40%, far greater than what was seen in those receiving the prescription drug alone (28%). The pine bark/bilberry compound plus the synthetic prescription eye drops appeared to work in synergy to amplify the lowering of intraocular pressure better than either agent alone.

In the most recent study, researchers have found a nutrient intervention that brings us a step closer to conquering vision-robbing glaucoma, the second-leading cause of blindness worldwide. Glaucoma is a group of diseases that silently and without warning can cause blindness or disabling vision loss that result from damage to the eye’s optic nerve.

Hope may not be far off for millions of people affected or at risk for this devastating disease. The revealing study, reported in the May 2010 issue of Clinical Ophthalmology, involved 79 subjects who had elevation of the pressure within the eyes, known as intraocular pressure or IOP. Persistent and progressive IOP has been considered the single most important factor associated with the development of the most common type of the disease—open angle glaucoma, diagnosed in more than eight out of ten glaucoma patients.

In the most recent study, subjects had high intraocular pressure, but did not yet show signs of open-angle glaucoma when given complete eye exams. No subjects with age-related eye disease or other generalized or systemic diseases were included in the trial.

Subjects were randomly assigned to receive either an oral nutrient compound containing both standardized French maritime pine bark extract and a phenolic bilberry (Vaccinium myrtillus) extract, standard medical therapy with latanoprost (Xalatan®) eye drops, or both the nutrient compound and latanoprost drops for 24 weeks.
improved ocular blood flow in three different blood vessels over baseline values taken at study entry and when compared to untreated controls.

Aside from rigorous and regular eye examination by a trained professional, there currently is no accepted preventive strategy for glaucoma, and certainly not one that can be generalized or safe for large populations. Given the need for ways to prevent the progression of this sight-robbing disease, the findings in this study are very promising and call out for larger studies in broader populations.

The promising findings from the May 2010 study also add to the body of evidence pointing to a greater role of prevention in maintaining sharp vision and eye health. This strategy recognizes that delicate eye tissues, under assault by environmental toxins, free radicals, and other cellular byproducts associated with aging, injury, and oxidative stress, can be supported or protected by nutritional or other therapeutic means.

Natural prevention takes on an added dimension in the fight against glaucoma as eye specialists recognize that high IOP may not be the defining characteristic for diagnosing glaucoma or predicting whether the disease will worsen. It turns out that 25-50% of people with glaucoma have intraocular pressure measurements that fall within the normal range. In addition, up to one in ten glaucoma patients who are treated with standard medical or surgical therapies may still progress to glaucoma.

Why Pine Bark and Bilberry Extracts?

Many prescription eye drops, including prostaglandin analogs or look-alikes such as latanoprost, are believed to lower pressure within the eyes by increasing fluid outflow. Some studies have suggested that latanoprost may help glaucoma patients by assisting

Nutrient Intervention for Glaucoma

- The most common type of glaucoma is an age-related, painless disease that often goes undetected and can lead to vision loss or blindness.
- While all people are at risk for glaucoma, those at increased risk include African-Americans, Hispanics, Asians, diabetics, and people 60 years of age and older.
- Many glaucoma patients are unable or unwilling to stick to a daily regimen of prescription eye drops, which can put them at greater risk for continued vision loss or blindness.
- In a first for a nutritional formulation, a combination of standardized maritime pine bark extract and standardized bilberry extract has shown promise in human studies to reduce intraocular pressure on its own and in combination with standard prescription eye drop latanoprost therapy.
- Newer adjunct and investigational therapies for glaucoma include neuroprotection, which may involve additional nutrient support of vascular integrity and antioxidant pathways.
NUTRIENT INTERVENTION FOR GLAUCOMA

How Does Glaucoma Occur?

The optic nerve is a critical structure located at the back of the eye that acts as a conduit between what our eyes see and what the brain understands as sight. A healthy optic nerve comprises nerve filaments or axons that radiate from retinal ganglion cells, or the specialized nerve cells that collect and transmit electrical signals that bombard our eyes as colors, light, shapes, sizes, patterns and other imagery that the brain translates as sight.

The vision defect commonly associated with glaucoma is tunnel vision, a very real phenomenon that occurs when about 40% of the nerve fibers exiting the eye at the optic nerve die. In this type of permanent vision loss, nerve filaments die off because each is associated with a mother cell known as the retinal ganglion cell, or RGC. These RGCs are susceptible to injury from free radicals that result from overstimulation of receptors, particularly the N-methyl-D-aspartate (NMDA) receptor types for glutamate. Even though glutamate is one of the brain’s most important stimulatory neural biochemicals, or neurotransmitters, glutamate must be regulated or cleared by healthy tissues to avoid secondary damage. As nerve filaments die off, the edge of special nervous tissue inside the eye called the neural rim thins out and the cup in which the optic nerve rests becomes larger. When this happens, a person may notice being less able to see at the edges of their field of vision, known as peripheral vision. As loss of peripheral vision continues, that person may be able to clearly see only what is in the center of his or her field of vision, which produces the glaucoma-associated condition known as tunnel vision.

The eye’s self-regulation, rather than by affecting blood pressure of the eye’s circulation itself. The two active components of the pine bark/bilberry compound may act on a molecular level to decrease inflow of aqueous humor, improve microvascular tone and integrity, decrease resistance across the region of the eye responsible for fluid drainage, and possibly contribute to better fluid outflow. Each component of the pine bark/bilberry compound was chosen for its range of actions that appear particularly suited to aiding the complex balance at the level of the eye chambers.

French maritime pine bark is a powerful antioxidant rich in proanthocyanidins, which are known for their ability to scavenge and neutralize harmful free radicals. The biologic effects of French maritime pine bark also extend to the natural agent’s abilities to help regulate the cell’s antioxidant network and associated genes, as well as dampen gene expression related to nuclear factor-kappaB (NF-kB)-dependent pathways inside cells, which have been shown to result in anti-inflammatory effects.

Human studies have also shown the ability of French maritime pine bark to improve vascular endothelial function, which involves the delicate layer of critical lining cells inside blood vessels that possess wide-ranging effects on vessel tone, integrity, inflammation, antioxidant protection, and repair. Disorders of endothelial function have also been cited as contributing factors to the development or progression of glaucoma, which lends further support to the use of French maritime pine bark.

Microcirculation also appears to benefit from French maritime pine bark’s anti-platelet actions that inhibit the formation of clots. Other studies support its promise in prevention of leg swelling and clot formation in at-risk people who travel on long flights.

Interest in the benefits of French maritime pine bark grew with our understanding of the damage caused by free radicals. Mitochondrial-associated oxidative damage affects the eyes’ drainage system, whose tissue integrity is essential to maintaining normal eye fluid outflow and pressure. This understanding of the role played by faulty mitochondrial function in the development of glaucoma pointed investigators toward possible dietary solutions.
Standardized bilberry extract provides the other half of the nutrient compound’s one-two punch. Many studies have demonstrated the superior and efficient antioxidant and free radical-scavenging activity of bilberry and other related berry fruits, along with genetic signaling abilities that favor their use in health promotion and disease prevention. Bilberry has also shown its might in bolstering defense systems against harmful oxidative stress. In research involving tissue from the pigmented layer of the retina, bilberry proved a potent influence on beneficial gene pathways involved in the antioxidant response effort. In addition to a huge body of research showing bilberry’s benefits in vascular models of disease and atherosclerosis, bilberry has also shown its protective effects in other models of inflammatory eye diseases such as uveitis, with greater protection afforded by increasing extract dosage, or the so-called dose-response.

Summary

Glaucoma presents a risk to everyone, from newborns to the elderly. Even with standard treatments, pressures inside the eye may continue to increase or glaucoma can advance, which often ends in progressive and irreversible vision loss or blindness.

With greater understanding of the many factors associated with development of the disease, researchers have looked to nutritional antioxidant and other related actions on cell signaling and defense to support the integrity of delicate eye tissues and support the healthy flow of eye fluids, or aqueous humor.

A dual-action compound of standardized French maritime pine bark and bilberry extract has been shown in human studies to decrease pressure within the eye by itself and even more so when combined with standard prescription eye drops. Future studies may show this compound’s ability in the fight against glaucoma-associated vision loss and blindness.

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

The pressure inside a channel is a function of rates of fluid inflow and outflow, as well as resistance factors. Resistance may build inside channel walls itself, as occurs with stiffening of blood vessel walls and high blood pressure, or within meshlike structures through which fluid enters or exits, as in the eye. Aqueous humor is the name for the clear liquid that circulates in the front part of the eye. At an area of eye called the drainage angle, this fluid passes through a mesh-like structure called the trabecular meshwork made of cells and support tissues, or matrix. If outflow is sluggish or blocked, or if fluid flow across the meshwork is impaired by increased resistance—due to fewer cells, greater matrix buildup, or both—the fluid backup causes pressure within the eye to build, leading to increased IOP, or intraocular pressure.

Among the many antioxidant and nutritional products under study for their potential in halting changes associated with glaucoma is resveratrol, a natural phytochemical found in grape skins, seeds, chocolate, peanuts, and berries. Tissue culture experiments used porcine meshwork cells in a low-oxygen environment to create oxidative stress and generate free radicals and reactive oxygen species (ROS). Chronic administration of resveratrol was associated with a significant lowering of inflammatory indicators, oxidative damage and age-related degenerative markers in trabecular meshwork cells. The experimental findings at Duke Eye Center led investigators to consider a possible role for resveratrol or other similar dietary agents to prevent changes associated with the development or progression of open-angle glaucoma, the most common type of the vision-robbing disease.

References

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 or structural dysfunctions 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.

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

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.
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

SolarShield® is a registered trademark Dioptics, Inc.
As you grow older, the fluid contained within the chambers of your eyes may gradually and unnoticed increase. This has been shown to contribute to a host of unwanted age-related vision issues encountered by millions of aging Americans.

In a significant scientific advance, researchers have found that a proprietary blend widely available in Europe called Mirtogenol® may effectively support eye pressure already within healthy range as you age. 1

Two Potent Nutrients in One Innovative Formula

At the core of Mirtogenol®'s eye health-promoting power are two standardized, proprietary phytoneutrient (plant-based) compounds: Mirtoselect® European bilberry extract and Pycnogenol® French Maritime Pine bark extract.

In a 2010 human study, Mirtogenol® induced up to a 24% reduction in already-healthy eye pressure. 1

Extracts of French Maritime Pine bark and bilberry have long been shown to promote healthy blood flow in multiple areas of the body. 2-6 The new Eye Pressure Support with Mirtogenol® formula may support healthy blood flow within the tiny vessels (microvasculature) of your eyes, helping to promote healthy fluid pressure inside the ocular chamber.

A daily serving of just one vegetarian capsule of Life Extension®'s new Eye Pressure Support formula contains 120 mg of Mirtogenol®, delivering optimal amounts of both Mirtoselect® European bilberry fruit extract and Pycnogenol® dried French Maritime pine extract.

A bottle containing 30 vegetarian capsules of Eye Pressure Support with Mirtogenol® retails for $38. If a member buys 4 bottles, the price is only $25.50 per bottle.

References

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

One of the first places where visible signs of aging begin to emerge is around your eyes. The delicate skin in this area is extremely thin—becoming even thinner as you age—and is especially vulnerable to unsightly age-related changes in appearance, including dark circles, “crow’s feet,” and bags or swelling under or around the eyes.

While not necessarily an indication of extreme exhaustion or serious illness, dark circles and bags certainly make you look and feel a lot older than you really are.¹

In response to Life Extension® member inquiries into how best to deal with this problem naturally, renowned dermatologist Dr. Gary Goldfaden drew upon his extensive expertise to offer a number of safe, innovative solutions. This article details why dark circles and swelling develop in aging skin—and how natural interventions including plant stem cells and phytonutrients afford optimal protection for the delicate tissues around the eyes. > >
key factor is the destructive influence of *glycation* that occurs when simple sugars attach themselves to proteins in collagen.\(^6\) The resulting *cross-linked* collagen fibers lose their flexibility and strength, resulting in looseness of skin in this area.

As a result, facial contractions in mature skin can leave a lasting impression due to a compromised collagen network. Thinning skin and loss of fat and collagen also make the skin appear thinner and more translucent\(^4\) so that the reddish-blue blood vessels under the eyes become more obvious and contribute to another cause for concern—the appearance of dark circles under the eyes.

While dark circles have a hereditary component, external factors such as exposure to pollution and topical irritants also play a significant role by triggering inflammatory processes in the skin, which can also contribute to puffy eyes.\(^5,7,8\) Exposure to sunlight also prompts the body to produce *melanin*, the pigment that gives skin its color, which can make the area under the eyes appear darker. In people with allergies, excessive rubbing and touching of the skin around the eyes can worsen the condition.\(^9,10\)

In basic physiological terms, dark circles and puffiness under the eyes indicate a problem retaining blood in the skin's upper layers.\(^9\) This is caused by poor or compromised hemodynamic properties and limited

While Americans spend millions on cosmetics to *conceal* problems around the eyes, studies have shown that it is possible to remedy the physiological *causes* behind dark circles and puffiness while improving aging skin.

An active complex of nutrients consisting of soy and rice bran peptides, stem cells of a rare apple, and blueberry and pomegranate extracts can help target both dark circles and puffiness, while strengthening the skin around the eyes. This unique combination of active nutrients has also been shown to improve the appearance of fine lines and wrinkles around the eyes.

The skin differs in thickness and function across the body, and the skin around the eyes is unique for a number of reasons.\(^2\) This delicate area contains little subcutaneous fat tissue that becomes less plump with aging.\(^3,4\) As a result, it is especially sensitive to stress from facial movements such as laughing and squinting that contribute to wrinkle development.

The eye area is also surrounded by several muscles that contract with facial expressions. With aging, however, the thick collagen network that gives skin the structural support it needs begins to lose its integrity for a number of reasons. External factors such as exposure to sunlight increase the levels of enzymes that break down collagen in the skin.\(^3\) Collagen also comes under assault from internal processes in the body. One
blood flow. If left untreated or treated inappropriately, this can lead to a build-up of venous back pressure in the tiny capillaries in the skin, causing blood retention and eventually resulting in greater damage to the already compromised collagen and connective tissue. As a result, these fine capillaries can look more prominent through the under-eye area, which is very thin. As the damage worsens, the supply of oxygen to the affected area is likewise compromised. Fluid can also build up as lymphatic drainage decreases with aging and capillary permeability increases, both of which contribute further to puffiness around the eyes.

To be effective, any anti-aging eye care topical formulation needs to be gentle yet strong enough to target the factors described above. Fortunately, a number of natural skin care nutrients can reduce dark circles and puffiness and help preserve collagen integrity in this delicate area.

**Soy and Rice Bran: Targeting Dark Circles and Puffy Eyes**

An anti-aging complex made of soy and hydrolyzed rice bran peptides has shown promising results in improving microcirculation, which prevents blood from stagnating in these fine blood vessels and increases oxygen supply to the delicate tissues around the eyes. It has also been shown to strengthen collagen integrity in the skin as well as minimize the harmful effects of inflammation, visibly reducing dark circles and puffiness around the eyes.

In a clinical study, 20 subjects aged 30 and older with dry skin and visible signs of aging applied a topical formulation comprising specially purified soy and hydrolyzed rice bran peptides twice a day for eight weeks. At the study's end, they showed significant reductions in dark circles, puffiness, and wrinkles. These impressive results consisted of a 35% reduction in dark circles, 32% reduction in puffiness, and 42% improvement of skin texture, while the placebo group showed only marginal improvements in these parameters.

Delving deeper for an explanation of these effects, the researchers conducted laboratory tests to study blood coagulation pathways under the skin. They showed that the complex of soy and rice bran peptides increases the time it takes for a blood clot to form. In terms of hemodynamics, this translates to a beneficial effect on the capillary circulation, or improved blood flow and oxygenation to the eye area, which explains the visible reduction in dark circles and puffiness as seen in the clinical trial. The scientists also found that in vitro treatment with this
peptide complex stimulated the proliferation of major skin cells by up to 200%, which helps explain the collagen-strengthening benefits seen in the trial.11

Let’s take a look at the individual properties of soy and rice bran peptides that contribute to these effects.

**Cutaneous Benefits of Soy**

A staple of many Asian diets for centuries, soybeans and soybean products such as tofu are packed with a number of phytonutrients that provide beneficial anti-oxidant and anti-inflammatory effects.12 Among the most notable are a group of phytoestrogens called isoflavones. Soy isoflavones have weak estrogenic effects. The isoflavone genistein shows potential to help build and maintain healthy bone density.13,14

Soy has considerable versatility beyond its application as a food ingredient. Topical soy has been shown to improve hyperpigmentation, elasticity, and moisture in the skin.15-17 In laboratory studies, soy has been shown to stimulate collagen synthesis and initiate the skin’s process of repairing elastin.18-20

 Constituents of soy are also effective in suppressing the increase in collagen-degrading enzymes in the skin (called matrix metalloproteinases, or MMPs) that occurs in response to ultraviolet (UV) irradiation.21 Topical delivery of soy extracts is effective in protecting the skin against UV radiation-induced photoaging, oxidative stress, and secretion of inflammatory mediators within the skin.22,23

The benefits of soybeans are further augmented by virtue of their content of small proteins known as serine protease inhibitors, which have been suggested to regulate skin pigmentation—one of the factors implicated in dark circles.24,25

Researchers studied 65 women with moderate facial photodamage who applied either a soy or placebo moisturizer to their skin for 12 weeks.25 At the end of this period, the active soy moisturizer was statistically better than the vehicle in improving mottled pigmentation, blotchiness, dullness, fine lines, skin tone, and appearance. The superiority of the active formulation was observed starting at week two. Furthermore, by week twelve, all subjects showed decreased skin roughness and increased skin clarity. The researchers concluded, “a moisturizer containing stabilized soy extracts is safe and effective, and can be used to ameliorate overall skin tone and texture attributes of photoaging.”

While both soybeans and rice bran have individually demonstrated impressive actions against hyperpigmentation, free radical-induced inflammation, and UV damage, the unique combination of both is even more effective than either one alone.

**What Makes Rice Bran Important**

Like the soybean, rice bran has been highly valued in the Far East. For a long time, Japanese women who rubbed rice brans onto their faces to keep their skin smooth were referred to as “nuka bijin” or “rice bran beauty.” Given their cultural obsession for flawless skin and youth, Japanese beauty products such as rice bran have traditionally focused on anti-aging and sun damage. Now, these prized eastern beauty treatments are making their way to the west.

Rice bran is a co-product obtained from rice processing. What makes it so special is that it contains high levels of two remarkable antioxidants: gamma-oryzanol, made up of a mixture of phytonutrients called sterols and ferulic acid, and vitamin E,26 which together help slow the formation of facial wrinkles and reduce inflammation.27,28

Rice extracts also have moisturizing and UV-absorbing properties, which helps prevent melanin formation and age spots, making these ingredients
effective against dark circles and sunburn. Given its UV-protective properties, formulators have made rice bran a common ingredient in sunscreen products as well as lipsticks.

Another skin-smoothing ingredient found in rice bran is called phytic acid, which is a major component of all plant seeds. Phytic acid is an antioxidant that may help improve skin color by inhibiting tyrosinase, a key enzyme involved in skin pigmentation.

Rice bran also contains small quantities of the powerful emollient squalene, which forms a major component of skin surface polyunsaturated lipids and is critical for reducing free radical-induced oxidative damage to the skin.

While both soybeans and rice bran have individually demonstrated impressive actions against hyperpigmentation, free radical-induced inflammation, and UV damage, the unique combination of both is even more effective than either one alone at combating dark circles and puffiness around the delicate eye area.

Apple Stem Cells: Epidermal Renewal

Epidermal cells are crucial in replacing skin cells lost due to continual shedding. Like humans, plants also have stem cells. Scientists have been keenly interested in the benefits of the fruit of a rare Swiss apple tree. When they cultivated the stem cells from this tree for its anti-aging effects, they found that they stimulated human stem cell proliferation, protected human stem cells against UV-induced death, and mitigated aging-related changes in gene expression.

In a clinical trial, 20 participants applied an anti-wrinkle cream containing the apple stem cell extract twice daily to the crow's feet area around the eyes. The scientists found a 15% reduction in wrinkle depth after just 4 weeks. This special apple extract therefore provides a valuable topical agent that helps reduce the signs of aging.

To complement all of the above botanical extracts, two other scientifically proven nutrients described below can help inhibit the glycative processes that cause cross-linking of the skin’s collagen fibers.

Blueberries and Pomegranate: Rebuilding the Dermal Matrix

Blueberries contain powerful constituents that complement soy and rice bran extracts by blocking the detrimental sugar-protein reactions that occur during skin glycation. Blueberries contain abundant quantities of phytonutrients called anthocyanins that have been shown in studies to naturally protect against glycation by stabilizing the collagen matrix, promoting collagen biosynthesis, and improving microcirculation.

A controlled clinical study in which a preparation containing 4% blueberry extract was topically applied to the skin of 63 women aged 45-61 years found significant improvements in cracking, creping, and thinning of the skin after three months. All test subjects in this
A special dermatologist-formulated topical preparation using stem cell technology has been shown to quickly and effectively target dark circles and puffiness around the eyes. At the core of this active botanical complex is a combination of soy and rice bran extracts that have been clinically proven to improve microcirculation, preserve elastin and collagen, and combat free radical damage in tissues surrounding the eye area. These extracts are supported by powerful phytonutrients found in blueberries, which inhibit the glycate processes that contribute to skin aging, along with natural antioxidants from pomegranate and tea extracts that strengthen skin around the delicate eye area.

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


Antioxidant Support with Tea Extracts

Natural antioxidants found in white, green, black, and red tea provide complementary support for topical skin-rejuvenating nutrients. All of these tea extracts lend powerful antioxidant support, while strengthening the zone of protection against UV light and free radical-induced damage and inflammation to the under-eye area.41-44


26. No authors listed. Amended final report on the safety assessment of Oryza sativa (rice) bran oil, Oryza sativa (rice) germ oil, rice bran acid, Oryza sativa (rice) bran wax, hydrogenated rice bran wax, Oryza sativa (rice) bran extract, Oryza sativa (rice) extract, Oryza sativa (rice) germ powder, Oryza sativa (rice) starch, Oryza sativa (rice) bran, hydrolyzed rice bran extract, hydrolyzed rice bran protein, hydrolyzed rice extract, and hydrolyzed rice protein. *Int J Toxicol.* 2006;25(Suppl 2):91-120.


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The area of soft skin around your eyes is highly susceptible to the visible impact of aging, from “crow’s feet” and wrinkles to fine lines and bags. The reason? It’s thinner and more delicate than the skin on other parts of your face, with less subcutaneous fat to maintain suppleness as you age.

Just as important, the underlying muscles in this region tense each time you change facial expressions, gradually eroding the skin’s vulnerable collagen matrix. The result? Unsightly crevasses gradually replace your eyes’ youthful glow over time.1-3

Unleash the Rejuvenating Power of Apple Stem Cells

Plant stem cells work just like stem cells do in humans, i.e., they possess the regenerative ability to develop into any other type of cell.

The new Advanced Under Eye Formula contains stem cells drawn from a specific species of Swiss apple. These apple-derived stem cells are generating significant interest among dermatologists for their beautifying effects.

In a clinical trial,4 twenty aging individuals used a cream containing this apple stem cell extract, applying it twice daily to problem areas around the eyes. After only one month, a 15% reduction was observed in the appearance of wrinkles.

The Moisturizing Secrets of the Far East ...

To augment these beautifying effects, moisturizing extracts of rice bran and soy are included in the Advanced Under Eye Formula to help keep skin soft and smooth. Women of the Far East have benefited from the age-defying and moisturizing properties of soy and rice bran for centuries. A recent study of a soy-based compound revealed decreased skin roughness and increased skin clarity in sixty-five aging women after just 12 weeks.5

... Plus Ultimate Antioxidant Support

When it comes to antioxidant potency, few fruits can beat pomegranate and blueberries. They’re rich in polyphenols (plant-based compounds) to help support the soft skin around the eyes from the many external insults that accelerate onset of the wrinkled, papery look often seen in maturing individuals.

A .33 oz bottle of Cosmesis Advanced Under Eye Serum with Stem Cells retails for $49. If a member buys two bottles, the price is reduced to $31.50 per bottle.

To order Cosmesis Advanced Under Eye Serum with Stem Cells call 1-800-544-4440 or visit www.LifeExtension.com

References
Back in the early 1980s, Life Extension® was the first to introduce CoQ10 as a proven method to enhance mitochondrial energy production.

CoQ10 has since gained universal scientific recognition for its role in supporting cellular performance throughout the body.¹⁻⁶

Today, a major advance in combating cellular aging called PQQ (pyrroloquinoline quinone) is being launched. In an unprecedented breakthrough, researchers have discovered that PQQ supports mitochondrial biogenesis—the spontaneous growth of new mitochondria in aging cells!⁷

Mitochondria are the 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.\(^5\)

- **Favorably modulates gene expression.** PQQ activates genes that promote formation of new mitochondria\(^7\)—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.\(^8\)

- **Mitochondrial defense.** Mitochondria possess their own DNA, distinct from the DNA contained in the nucleus. Unfortunately, compared to nuclear DNA, mitochondrial DNA is relatively unprotected. PQQ’s antioxidant potency and favorable gene expression profile act to support mitochondrial defense.

Vital Protection for the Aging Heart and Brain

PQQ is an essential nutrient, meaning your body cannot make it on its own. A growing body of research indicates that PQQ’s unique nutritional profile supports heart health and cognitive function—alone and in combination with CoQ10.\(^1,\(^12\)\(^,\(^13\)\) 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.\(^19\)

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.\(^20\)

References

Proprietary GREEN TEA EXTRACT Protects the Kidneys
More than 26 million Americans suffer from chronic kidney disease—many without knowing it.¹

Early detection is critical because, if caught in time with blood testing, many forms of kidney impairment are reversible.

If kidney damage is allowed to progress unchecked, a patient may have to rely on side effect–prone drugs,²,³ or even worse, dialysis sessions three times a week. Kidney dialysis patients suffer many ill effects, especially to their vascular systems, and their life spans are significantly shortened.

In 2011, a team of researchers reported that the green tea extract in Life Extension®’s green tea formula prevented kidney damage in lab animals given gentamicin,⁴ a commonly prescribed antibiotic notorious for its potential to induce profound damage to the kidneys, including end-stage renal failure.

In this article, the results of their compelling findings are detailed, along with the underlying mechanisms of action by which green tea extracts target multiple factors implicated in kidney damage. You will also discover compelling data on green tea’s capacity to support and promote system-wide health across a range of age-related conditions. > >
Green tea has been used for millennia as a health-promoting drink, and its extracts are achieving recognition by serious scientists around the world. Green tea is rich in polyphenol compounds called catechins, of which epigallocatechin-3-gallate (EGCG) is the best-studied and has shown the greatest range of beneficial effects. In a recent investigative study, Dr. Francesco Marotta and colleagues at the ReGenera Research Group for Aging-Intervention in Milan, Italy, chose to use Life Extension's green tea extract consisting of 98% polyphenols (including 45% EGCG) to ascertain if it could protect rats from kidney damage that results from the use of the antibiotic gentamicin.

Gentamicin is an antibiotic that is widely used for treating urinary tract and kidney infections. Unfortunately, gentamicin has also become notorious for damaging vulnerable structures in the kidney, especially the tiny tubules where urine is produced. One of the ways in which gentamicin exerts its destructive effects is by triggering production of reactive oxygen species (ROS), while at the same time impairing natural antioxidant defenses. This one-two punch results in direct damage to kidney tubules, which is then complicated further by development of localized inflammatory changes.

When Marotta’s group treated lab rats with gentamicin alone, they saw precisely those destructive changes in the animals’ kidneys, along with evidence in the urine of kidney malfunction and oxidative stress. But when they administered Life Extension’s green tea extract at the same time as a dose of gentamicin, they discovered that they could reverse most of those harmful results. Marotta’s findings, presented in early 2011, confirm earlier work revealing that green tea extracts exert powerful antioxidant and anti-inflammatory effects, both in the kidney and in other tissues. And since most age-related diseases involve the combination of oxidative stress and inflammation, that’s powerful news for people interested in using green tea as an important component of a science-based longevity program.
Cancer

Today we understand cancer, regardless of its type, to be the result of a multi-stage process. Cancer initiation involves early DNA damage or modification by toxins, radiation, or infectious agents. The accumulation of mutagens in genes that regulate cell proliferation is the underlying initiating event. Cancer promotion occurs as a result of internal factors, often involving inflammatory factors. Once a tumor begins to grow, it invades tissue by secreting enzymes that “melt” the surrounding matrix and by generating new blood vessels in the process called angiogenesis. Finally, cancers multiply and spread when they shed small bundles of malignant cells that secrete their own adhesion molecules, helping them find fertile ground for establishing new tumors far from the original primary site.

We now know that we can intervene at each of these steps, and green tea polyphenols, especially EGCG, are active against most of them.21 Because cancers are hard to cure, much interest is focused on ways that green tea extracts can provide chemoprevention, stopping cancers long before they become clinically evident.22

Green tea extracts prevent DNA damage through their antioxidant properties, and they also trigger innate DNA repair mechanisms to quickly patch up damage before it is transmitted to new cells.23 In human studies, consumption of green tea or its catechins rapidly reduce DNA damage throughout the body, resulting in reduced excretion of damaged DNA fragments in the urine.”24,25

EGCG’s anti-inflammatory characteristics add another layer of protection, helping to reduce production of inflammatory cytokines in stressed tissue. This has been well-documented in people at known risk for colon cancer, which is among the most common adult malignancies. Colon cancers usually begin as benign polyps that undergo malignant change in response to local inflammatory factors in the intestine. Green tea extracts may slow or stop that transition by reducing production of inflammatory cytokines.26

When nascent cancers start to grow, EGCG-rich green tea extracts quash their spread by several mechanisms. They prevent expression of a vascular endothelial growth factor (VEGF), which is required for generation of new blood vessels to feed the growing tumor.27,28 And they down-regulate production of tissue-melting proteins called matrix metalloproteinases (MMPs) that are essential for both local and metastatic spread to occur.29,30

Finally, cancer cells can be triggered to undergo programmed death, or apoptosis; green tea extracts are among the many nutraceuticals capable of...
inducing apoptosis via many different mechanisms in cancer cells.\textsuperscript{12,31}

Human studies bear out these remarkable laboratory findings. Green tea extracts produce a rapid clinical response in at least 69\% of women with human papilloma virus (HPV) lesions on their cervixes, which in turn dramatically reduces their risk of cervical cancer.\textsuperscript{32} Another virus, HTLV-1, is causatively associated with adult T-cell leukemia, and daily consumption of a green tea extract significantly reduced the number of viral particles in infected people.\textsuperscript{33}

Dramatic findings are appearing with regard to prostate cancer and green tea extracts. Human prostate tissue rapidly accumulates tea polyphenols such as EGCG after oral supplementation.\textsuperscript{34} Men with certain biopsy findings called HG-PIN (high-grade prostatic intraepithelial neoplasia) are at a 30\% risk of developing prostate cancer within a year, making them candidates for urgent intervention.\textsuperscript{35} When Italian oncologists treated men who had HG-PIN with a green tea extract, they found only a 3\% rate of cancer development, compared with 30\% in the control group.\textsuperscript{35} Symptom scores and overall quality of life improved as well. A subsequent study demonstrated long-term effects of the supplement, reducing new cancer diagnoses by nearly 80\%.\textsuperscript{36}

Later studies have consistently shown reduction in risk of advanced prostate cancer in men, often reducing their odds for developing the cancer by nearly 50\%.\textsuperscript{37} And green tea extracts can reduce levels of the prostate-specific antigen (PSA), while inhibiting production of factors that enhance tumor spread.\textsuperscript{28}

A virtually identical risk reduction (51\%) has been shown in adults at risk for colon cancer.\textsuperscript{38} In that study, the size of new tumors was also smaller in the green tea extract group than in the control group.

Breast cancer cells respond in a remarkable way to green tea extracts, switching from the difficult-to-treat estrogen receptor-\alpha (ER\textsubscript{\alpha})-negative types to ER\textsubscript{\alpha}-positive cells that are amenable to treatment with standard drugs.\textsuperscript{17} Green tea extracts also favorably regulate breast cancer tumor suppressor genes.\textsuperscript{39}

\section*{Cardiovascular Health}

There’s ample epidemiological evidence showing that green tea consumption helps modulate the risk of cardiovascular diseases.\textsuperscript{40-42} Until recently, though, the underlying mechanisms were unknown.\textsuperscript{43} As our picture of the real causes of atherosclerosis has become clearer, however, we’ve also begun to see how the catechins in green tea can operate at multiple targets to reduce our risk.\textsuperscript{44}

Oxidation and inflammation are the earliest steps in producing endothelial dysfunction, the dangerous changes in blood vessel-lining tissues that can lead to arterial wall stiffening and ultimately to plaque formation. EGCG and other green tea catechins act powerfully to improve endothelial function.\textsuperscript{45-47} They enhance production of beneficial nitric oxide (NO), which in turn signals vessel walls to relax and dilate in response to blood flow.\textsuperscript{4,48,49}

Green tea extracts reduce blood pressure in human subjects.\textsuperscript{50,51} Improved endothelial function is one mechanism, but others are active as well. Green tea desensitizes calcium-signaling channels through effects on the cardiac enzyme troponin, improving heart function during the relaxation (diastolic) phase.\textsuperscript{52} And green tea extracts also inhibit angiotensin-converting enzyme (ACE), which bumps up blood pressure.\textsuperscript{43} Finally, green tea extracts reduce dangerous cardiac remodeling in overweight and obese animals, limiting vessel stiffness and reducing cardiovascular risk.\textsuperscript{53}

Green tea extracts help to favorably modify lipid profiles, reducing levels of low-density lipoprotein (LDL) that, when oxidized, triggers additional inflammation and contributes to growing arterial plaques.\textsuperscript{50,51,54} And circulating markers of inflammation, particularly those triggered by obesity, are reduced by green tea extracts, while those such as adiponectin, which reduce fat-related inflammation, are bolstered.\textsuperscript{55}
By virtue of their antioxidant characteristics, and their ability to modulate gene expression, green tea extracts can help fight the dangerous ischemia/reperfusion (IR) injury that follows a heart attack or stroke. IR injury creates a “storm” of oxidants and cytokines that can do more damage than the original event. Numerous animal studies reveal the extent to which EGCG improves the ischemic environment, triggering biochemical pathways that limit the extent of IR injury.

But perhaps the most exciting news of all about green tea and cardiovascular disease is its potential effect on body composition, particularly on fat stores, now known to be the source of dangerous cytokines that set us up for most chronic conditions. Animal and human studies demonstrate that EGCG-rich green tea extracts can reduce fatness, limit fat-related cytokine production, and help reduce body weight.

Combating “Diabesity”

Obesity, and even moderate overweight, are precursors of the metabolic syndrome and type 2 diabetes, leading some researchers to refer to the entire syndrome as “diabesity.” EGCG and other catechins in green tea fight obesity by many different mechanisms. EGCG is a thermogenic compound, that is, it triggers the body to burn fat and produce heat, helping to consume fat stores even at rest. EGCG also improves glucose control and modifies body composition through alterations in gene expression in laboratory animals fed a high-fat diet.

Green tea extracts improve satiety, the feeling of fullness after eating. This effect may help reduce total caloric intake. The extracts also produce mild carbohydrate malabsorption, inhibiting sugars from rapidly entering the bloodstream after a meal. EGCG acts via several mechanisms to reduce the amount of fat the body puts away in adipocytes, for example by limiting fat cells’ response to insulin stimulation. EGCG also directly inhibits an enzyme vital for formation of triglycerides, helping to reduce the body’s total burden of these dangerous fats. Green tea extracts can limit fat synthesis in liver cells as well.
PROPRIETARY GREEN TEA EXTRACT PROTECTS THE KIDNEYS

Summary

In early 2011, a team of researchers reported that the same green tea extract contained in Life Extension’s green tea formula prevented kidney damage in an animal model using gentamicin, a commonly prescribed antibiotic notorious for damaging and even destroying the kidneys. Green tea extracts are rich in catechins, flavonoid molecules with potent antioxidant and anti-inflammatory effects. Their multi-targeted mechanisms of action have also been shown to support system-wide health against cancer, cardiovascular disease, unhealthy body weight, and decreased insulin sensitivity.

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


These biochemical changes have real impact in human studies. Obese men and women lose more weight when restricting calorie intake and supplementing with green tea extracts than do control subjects who only restrict calorie intake. Body composition is also favorably affected by green tea supplements, with reduction in visceral fat stores and significant reductions in waist circumference.

Exercise remains a key component of any good weight loss program, and green tea supplements help exercising people lose even more weight safely. Blood pressure, LDL, and markers of inflammation are also typically reduced in obese patients using green tea supplements.

Green tea extracts fight the diabetes/metabolic syndrome components of diabesity as well. Green tea extracts help control blood sugar and reduce levels of hemoglobin A1c, the blood marker associated with chronically elevated glucose. Green tea extract improves insulin sensitivity and glucose tolerance in animal and human studies, while burning fat through its thermogenic effects. Finally, the reduction in LDL and increase in high-density lipoprotein (HDL) seen with a polyphenol-rich nutrient blend including green tea, pomegranate, and vitamin C has a powerful beneficial effect on diabetic patients, who are at risk for cardiovascular complications.


61. Grove KA, Lambert JD. Laboratory, epidemiological, and human intervention studies show that tea (Camellia sinensis) may be useful in the prevention of obesity. *J Nutr*. 2010 Mar;140(3):446-53.


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

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

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

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

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

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

Contains tree nuts (coconut).

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

Ask your doctor if you can take a low dose (45 mcg a day) of vitamin K2 in the long-acting MK-7 form for the purpose of stabilizing your INR levels and also protecting your body against long-term vitamin K deficit. Do not initiate any form of vitamin K supplementation without full cooperation of your treating doctor, as your doctor may need to increase your dose of warfarin to compensate for the vitamin K you supplement with.

Life Extension provides several forms of low-dose vitamin K for physician consideration.

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

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It starts with forgetting where you put your car keys. Then you can’t remember a loved one’s birthday. A few years later, it takes a moment to recall an old friend’s name. Sadly, brain degeneration affects all aging adults. However, enhanced communication between neurons may hold the key to maintaining youthful cognition and memory.

Cognitex® with Pregnenolone & NeuroProtection Complex provides 9 cutting-edge brain boosting supplements in one exciting formula!

We all strive for a youthful brain, but the key to brain power may come from uridine-5’-monophosphate (UMP), a compound that is naturally found in the milk of nursing mothers and is essential to humans when their brains are the youngest — as infants. More importantly, UMP supports superior cognitive function in aging adults.

In order to bolster this improved 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 has been added to protect against free-radical damage, and pregnenolone may have beneficial properties as well.

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

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 (A-GPC) 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 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®, call 1-800-544-4440 or visit www.LifeExtension.com

Just three softgels of Cognitex® provide the following nutrients:

- Alpha-Glycerol Phosphoryl Choline (A-GPC) 600 mg
- Phosphatidylserine-DHA (PS-DHA) 100 mg
- Pregnenolone 50 mg
- Vinpocetine 20 mg
- Wild Blueberry Extract 150 mg
- Sensoril® Ashwagandha Extract 125 mg
- Uridine-5’-Monophosphate (disodium) 50 mg
- Proprietary NeuroProtection Complex Blend 125 mg

Caution: Cognitex® is also available without pregnenolone for those with existing steroid hormone-sensitive cancer.

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

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

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

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

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

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

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

Contains rice.

To order Mega Green Tea Extract, call 1-800-544-4440 or visit www.LifeExtension.com

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REDUCE STUBBORNLY HIGH TRIGLYCERIDES
Hundreds of published studies document the ability of vitamin E to combat cancer, heart disease, obesity, kidney failure, neurodegenerative disorders, and inflammatory responses.¹⁻⁶

At the same time, we know that conventional vitamin E (alpha-tocopherol) does not by itself confer the omnibus protection that aging people need to remain disease-free.

Scientists continue to uncover unique biological properties of a class of vitamin E compounds called tocotrienols. In late 2010, researchers in Singapore released findings from a human study showing that a tocotrienol extract slashed levels of artery-clogging triglycerides by 28%.⁷

In this article you will learn of the implications this discovery has for individuals with stubbornly high blood lipid levels characteristic of the constellation of pathologies known as metabolic syndrome. > >
Why High Triglycerides Are Dangerous

Triglycerides accumulate in various organs, where they exert numerous harmful effects, most prominently in cardiac tissue. They influence expression of genes related to susceptibility to coronary artery disease. Accumulating in the heart, they reduce left ventricular function in a fashion specific to people with metabolic disorders.

Triglycerides also trigger increased platelet activation, substantially boosting risk of dangerous clot formation. Elevated triglycerides increase incidence of stroke—a risk that can be mitigated by lowering levels of these dangerous fat compounds.

Elevated triglycerides contribute to the three-fold elevation of cardiovascular disease risk seen in those with metabolic syndrome. People with type 2 diabetes and high liver triglyceride content have poorer blood flow and impaired energy metabolism in their heart tissue.

The Singapore Study

A report published in 2002 revealed a startling 40% of adults 60 years and older suffered from metabolic syndrome, placing them at considerably higher risk for heart attack, stroke, and other age-related diseases.

A common characteristic of metabolic syndrome is high blood levels of LDL and triglycerides, along with impaired glucose control, abdominal obesity, and hypertension.

Previous reports indicated that tocotrienols could improve the body’s ability to safely lower LDL and triglycerides. A team of Singapore researchers performed a multi-phase study to determine precisely how tocotrienols can exert such favorable effects on blood lipid profiles.

The Singapore team began with cultured human liver cells, moved on to mice, and finally to human subjects.

The cell culture studies revealed that tocotrienols (gamma & delta) suppressed gene expression involved in lipid (fat) formation, driving down production of triglycerides and cholesterol. Tocotrienols further enhanced clearance of LDL by up-regulating genes governing LDL’s ability to attach to cells.

Animal models revealed that tocotrienol treatment of mice with elevated cholesterol and triglycerides reduced total cholesterol by 25% and triglyceride levels by 19%. (Levels of beneficial HDL were not suppressed.)

The human portion of the study showed that serum triglyceride levels plummeted by 28% in subjects taking 120 mg per day of gamma-delta-tocotrienol. This was accompanied by a reduction of about 13% in very-low density lipoprotein (VLDL), another lipid

Tocotrienols, particularly gamma-tocotrienol, have been linked to anti-cancer actions, primarily through their antioxidant and anti-inflammatory effects.
involved in arterial occlusion. Tocotrienols were also shown to suppress levels of *chylomicrons*, lipoprotein complexes that transport fats from your intestines to the liver and other parts of your body.7

**Confirmatory Studies**

An abundance of supportive data reinforces the Singapore team’s findings.

Diabetic rats treated with palm oil-derived tocotrienols had significantly lower levels of total cholesterol, LDL, and triglycerides, and higher HDL levels compared with control animals. Further, the supplemented animals had lower blood sugar and hemoglobin A1c (HbA1c) levels, and microscopic examination of their major blood vessels revealed substantially less disruption than seen in untreated controls.17

Tocotrienols suppress differentiation of pre-adipocytes into mature adipocytes (fat cells), helping to reduce the overall burden of inflammation-generating fat tissue.18 They also reduce synthesis of triglycerides and VLDL particles in the liver, contributing to a reduction in fatty liver in animal studies.7,19

A tocotrienol-rich palm oil preparation has been shown to reduce total cholesterol and LDL levels by as much as 37% in aging individuals with abnormal lipid profiles.20,21 Both tocotrienol-rich palm oil, rice oils, and purified tocotrienols at doses of approximately 100-200 mg per day have induced these beneficial effects.22-24

Diabetics are at especially high risk for these dyslipidemias, and tocotrienol supplements can be particularly helpful in that context. Perhaps because of their especially disrupted lipid profiles, diabetics experience even more powerful lipid-lowering effects from tocotrienol supplementation, including as much as a 42% reduction in LDL.25

As potent antioxidants, tocotrienols have been shown to induce regression of carotid artery narrowing in patients at risk for stroke from atherosclerosis and inhibit LDL oxidation, a precursor to the formation of atherosclerotic lesions.26,27

**Quenching the Pro-Inflammatory Fire**

Inflammation lies at the core of most chronic age-related diseases. Tocotrienols exert powerful anti-inflammatory effects throughout the body.

They have been shown to attenuate oxidative stress in diabetic tissues, halting a pro-inflammatory cascade that otherwise leads to diabetic neuropathy (nerve pain and damage).28 Tocotrienols favorably
modulate the gene-regulating “master switch” nuclear factor-kappaB (NF-kB) to down-regulate expression of cytokines that wreak inflammatory havoc on a host of target tissues.\textsuperscript{29-31} This mechanism of action protects vulnerable organs such as the kidney from many of the consequences of metabolic syndrome.

Still further along the same pro-inflammatory cascade, they prevent intestinal scar-forming cells from proliferating in response to inflammatory bowel disease, helping to reduce the risks of dangerous narrowing of the intestine.\textsuperscript{32} The anti-inflammatory power of tocotrienols even benefits the skin, which undergoes severe oxidative stress following exposure to UV rays in sunlight.\textsuperscript{33,34}

By suppressing oxidative stress and related NF-kB-related inflammation, tocotrienols prevent the cognitive decline associated with diabetes in laboratory animals.\textsuperscript{35,36} This effect is powerful enough even to prevent chronic alcohol-induced cognitive losses in rat studies.\textsuperscript{37}

### Anti-Cancer Mechanisms

Tocotrienols, particularly gamma-tocotrienol, have been linked to anti-cancer actions, primarily through their antioxidant and anti-inflammatory effects.\textsuperscript{38,39} In 2010 alone, scientists from prestigious

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**What Are Triglycerides?**

**Triglycerides** are the form in which most fat exists within the body. Triglycerides in the blood are derived from fats eaten in foods or are made in the body from other sources like carbohydrates.

**Triglycerides** can accumulate on the walls of arteries and contribute to the buildup of atherosclerotic plaque. Elevated blood triglycerides are involved in the deadly **metabolic syndrome** that predisposes individuals to type 2 diabetes and its related vascular complications.\textsuperscript{50}

**Triglycerides** are the major constituent of belly fat. Excess blood triglycerides induce an accumulation of undesirable body fat (especially in the visceral abdominal region). Abdominal obesity is a major risk factor for heart attack, stroke, dementia, and a host of chronic inflammatory diseases.\textsuperscript{51-53}

The **American Heart Association** website says that triglyceride levels up to 149 mg/dL are safe, but **Life Extension** has long maintained that optimal fasting triglycerides are **under 100 mg/dL of blood**. More recent evidence suggests that fasting triglycerides should be even **lower**.\textsuperscript{54}

Two years ago, Life Extension reduced the recommendation for optimal **fasting** triglyceride levels to **under 80 mg/dL of blood**. We know that achieving this lower level will be challenging to certain individuals, especially those suffering from obesity, type 2 diabetes, and/or metabolic syndrome. Fortunately, nutrients (like fish oil) and drugs (like metformin) can dramatically slash triglyceride blood levels.

With new evidence showing that certain **tocotrienol** fractions can lower triglycerides by 28\%, those with stubbornly high triglycerides have a new weapon to reduce this deadly blood fat.

The **Male and Female Blood Tests** include a measurement of **triglycerides** in your blood. Until **June 6, 2011**, Life Extension members can obtain these comprehensive blood test panels for only **$199** by calling **1-800-208-3444** (24 hours).
institutions such as the MD Anderson Cancer Center and the National Institute on Aging have contributed to a number of new discoveries about tocotrienols and cancer.

These discoveries reveal the unique actions of tocotrienols on regulatory proteins such as NF-κB, on DNA-repair proteins, and on intracellular signaling systems, all of which contribute to cancer development.\textsuperscript{40-43} Gamma-tocotrienol, for example, controls expression of cell regulatory and detoxifying proteins in breast cancer cells, suppressing proliferation and preventing progression of nascent cancers.\textsuperscript{44}

Even if a cancer does get started at a microscopic level, tocotrienols can snuff it out by triggering its cells to commit suicide through activation of the aptly named \textit{cellular death receptors}.\textsuperscript{45} And in the event of actual tumor development, tocotrienols sensitize cancerous cells to chemotherapy drugs, potentially reducing their required doses and side effects.\textsuperscript{38,46} Intriguingly, gamma-tocotrienol has been found to target a unique population of cells in prostate tumors.\textsuperscript{47} These so-called cancer stem cells are unaffected by conventional cancer therapies, thereby accounting for many cases of treatment-resistant cancers and relapses.

Tocotrienols also show promise in protecting against the potentially cancer-inducing effects of radiation. While radiation is a cornerstone of modern cancer treatment, it can also increase an individual’s future risk of leukemia and other cancers.\textsuperscript{48} A preclinical study showed that gamma-tocotrienol protected mice against the depletion of blood-forming cells that typically occurs in response to full-body radiation exposure.\textsuperscript{49} These preliminary findings offer hope that tocotrienols could offer protection against the adverse effects of medical, environmental, and occupational radiation exposures.

**Summary**

A 2010 study revealed that tocotrienols slash levels of \textit{triglycerides} by 28\% in humans, while supportive research suggests they also mitigate other cofactors implicated in \textit{metabolic syndrome}. Their multi-targeted anti-inflammatory effects are being recognized as factors in their ability to combat common age-related disorders.

---

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**


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

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

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

Contains corn.

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

Four capsules of Bone Strength Formula with KoAct™ provide:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collagen</td>
<td>2,700 mg</td>
</tr>
<tr>
<td>(from 3,000 mg KoAct™ Calcium Collagen Chelate)</td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td>300 mg</td>
</tr>
<tr>
<td>(from 3,000 mg KoAct™ Calcium Collagen Chelate and calcium fructoborate)</td>
<td></td>
</tr>
<tr>
<td>Vitamin D3 (as cholecalciferol)</td>
<td>1,000 IU</td>
</tr>
<tr>
<td>Magnesium (as magnesium citrate)</td>
<td>100 mg</td>
</tr>
<tr>
<td>Silica [from standardized Bamboo (Bambusa vulgaris) extract (stem)]</td>
<td>5 mg</td>
</tr>
<tr>
<td>Dried Plum (Prunus domestica) extract (fruit) [standardized to 50% polyphenols (50 mg)]</td>
<td>100 mg</td>
</tr>
<tr>
<td>Boron</td>
<td>3 mg</td>
</tr>
<tr>
<td>(calcium fructoborate as patented FruiteX B® OsteoBoron™)</td>
<td></td>
</tr>
</tbody>
</table>

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

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
A wealth of published studies have firmly established vitamin E’s essential role in promoting cardiac health, healthy body weight, healthy nerve cell function, kidney health, and inflammatory issues, among other age-related conditions.1-6

New research continues to emerge on the arterial health-promoting properties of a set of compounds contained within vitamin E called tocotrienols.

In 2010,7 a team of Asian scientists demonstrated that this class of nutrients, which are difficult to obtain in sufficient quantities through dietary sources alone, may provide superior support in maintaining triglyceride levels already within healthy range in aging individuals. Just 120 mg per day of gamma-delta tocotrienols (provided in 2-3 softgels) induced a 28% decline in triglyceride levels in the blood after just one month.

Life Extension®’s tocotrienol formula also contains sesame lignans, which have been shown to help slow down or prevent altogether enzymatic activity that breaks down tocotrienols,8 enabling them to reach optimal levels in your body.

Each softgel of Tocotrienols with Sesame Lignans contains:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin E (as D-alpha tocopherol)</td>
<td>28.7 IU</td>
</tr>
<tr>
<td>Tocomin® Full-Spectrum</td>
<td>192 mg</td>
</tr>
<tr>
<td>Natural Tocotrienol/Tocopherol Complex</td>
<td></td>
</tr>
</tbody>
</table>

Typical distribution:

- Alpha tocotrienol: 21.12-26.88 mg
- Beta tocotrienol: 2.88 mg
- Delta tocotrienol: 10.56-13.44 mg
- Gamma tocotrienol: 38.4-46.08 mg
- Alpha tocopherol: 19.2-26.88 mg
- Sesame lignans: 20 mg

Contains soybeans. Contains sesame.

A bottle containing 60 softgels of Tocotrienols with Sesame Lignans retails for $38. If a member buys four bottles, the price is $27 per bottle.

To order Tocotrienols with Sesame Lignans 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.

References
VINPOCETINE
A Natural Weapon in the Battle against Brain Aging

A compound found in the leaf of the periwinkle plant called vinpocetine has been shown to provide significant support for brain health and cognitive function as you age.
Among its many benefits, vinpocetine has been shown to:

- Provide support for age-related cognitive issues.
- Promote memory.
- Support healthy blood flow inside the brain.
- Promote overall nervous system health.
- Support clotting factor levels already within healthy range within the brain.

CLINICALLY VALIDATED FOR BRAIN HEALTH
In a double-blind clinical trial, researchers split 84 people with age-related cognitive issues into two groups. One took 10 mg of vinpocetine every day for a month, then 5 mg for another two months. The other group took a sugar pill. The vinpocetine group performed significantly better on cognitive tests and exhibited improved mood.

A separate three-month trial confirmed that vinpocetine supports healthy blood flow in the brain even while you’re at rest. Vinpocetine ingestion was found to significantly improve intra-cerebral blood flow after just 12 weeks.

TWICE THE POTENCY AT THE SAME VALUE PRICE
Vinpocetine’s power to support cognitive function has gained worldwide recognition. So much so that it’s available as a prescription drug in nearly 50 countries, including Hungary, Germany, Poland, Russia, and Japan.

Unlike pharmaceutical companies in the US that constantly increase the price of what are often mediocre drugs, Life Extension® has doubled the potency in its vinpocetine tablets…. but kept the price the same!

Maturing individuals concerned about brain aging may choose to take up to three 10 mg tablets per day of Vinpocetine initially for optimal brain health support.

Many members already take the Cognitex® formula, which contains 20 mg of vinpocetine in each daily serving. Most people taking Cognitex® do not need additional vinpocetine.

A bottle containing 100 tablets of Life Extension® Vinpocetine retails for $18. If a member buys 4 bottles, the price is reduced to just $10.50 per bottle.

References
Obscene Profits Over HUMAN LIFE

How the Government Helped Pfizer Make Millions While Breaking the Law

As discussed in this month’s “As We See It,” the information contained in the following online investigative report from CNN Health shocks the conscience.

It offers a clear and compelling portrait of how Pfizer paid doctors to illegally push a deadly drug it knew to be unsafe on unsuspecting patients. You will learn how the federal government not only let them get away with it, but cut a deal with Pfizer to limit the financial impact of any potential criminal conviction.

You will also discover precisely how the very regulatory structures charged with protecting the public, including the US Department of Health and Pfizer’s internal corporate “compliance” departments, colluded in these immoral activities.

Pfizer’s deplorable practices have helped make it the second largest pharmaceutical company as of March 2010, raking in annual revenues of over $50 billion. The punishment meted out for the outrageous crimes detailed in the following CNN investigative report amounted to a pittance. Just like those “too-big-to-fail” Wall Street firms, when enormous financial losses are at stake, drug company interests and government interests become one and the same.

From internal Pfizer memos detailing how to turn doctors into corporate tools to Department of Health officials perversely arguing against prosecuting Pfizer out of concern for “harming our patients”—what you will read here should leave no trace of a doubt: the costs to American society imposed by our corrupt, drug company–controlled health care system may be measured not only in dollars, but in human lives. > >
FEDS FOUND PFIZER TOO BIG TO NAIL
BY DREW GRIFFIN AND ANDY SEGAL,
CNN SPECIAL INVESTIGATIONS UNIT
APRIL 2, 2010 4:44 P.M. EDT

(CNN)—Imagine being charged with a crime, but an imaginary friend takes the rap for you.
That is essentially what happened when Pfizer, the world’s largest pharmaceutical company, was caught illegally marketing Bextra, a painkiller that was taken off the market in 2005 because of safety concerns.

When the criminal case was announced last fall, federal officials touted their prosecution as a model for tough, effective enforcement. “It sends a clear message” to the pharmaceutical industry, said Kevin Perkins, assistant director of the FBI’s Criminal Investigative Division.

But beyond the fanfare, a CNN Special Investigation found another story, one that officials downplayed when they declared victory. It’s a story about the power major pharmaceutical companies have even when they break the laws intended to protect patients.

BIG PLANS FOR BEXTRA

The story begins in 2001, when Bextra was about to hit the market. The drug was part of a revolutionary class of painkillers known as Cox-2 inhibitors that were supposed to be safer than generic drugs, but at 20 times the price of ibuprofen.

Pfizer and its marketing partner, Pharmacia, planned to sell Bextra as a treatment for acute pain, the kind you have after surgery.

But in November 2001, the U.S. Food and Drug Administration said Bextra was not safe for patients at high risk of heart attacks and strokes.

The FDA approved Bextra only for arthritis and menstrual cramps. It rejected the drug in higher doses for acute, surgical pain.

Promoting drugs for unapproved uses can put patients at risk by circumventing the FDA’s judgment over which products are safe and effective. For that reason, “off-label” promotion is against the law.

If we prosecute Pfizer ... a lot of the people who work for the company who haven’t engaged in criminal activity would get hurt.

—Mike Loucks, federal prosecutor

But with billions of dollars of profits at stake, marketing and sales managers across the country nonetheless targeted anesthesiologists, foot surgeons, orthopedic surgeons and oral surgeons.

“Anyone that use[d] a scalpel for a living,” one district manager advised in a document prosecutors would later cite.

A manager in Florida e-mailed his sales reps a scripted sales pitch that claimed—falsely—that the FDA had given Bextra “a clean bill of health” all the way up to a 40 mg dose, which is twice what the FDA actually said was safe.

DOCTORS AS PITCHMEN

Internal company documents show that Pfizer and Pharmacia (which Pfizer later bought) used a multimillion-dollar medical education budget to pay hundreds of doctors as speakers and consultants to tout Bextra.

Pfizer said in court that “the company’s intent was pure”: to foster a legal exchange of scientific information among doctors.

But an internal marketing plan called for training physicians “to serve as public relations spokespeople.”

According to Lewis Morris, chief counsel to the inspector general at the U.S. Department of Health and Human Services, “They pushed the envelope so far past any reasonable interpretation of the law that it’s simply outrageous.”

Pfizer’s chief compliance officer, Doug Lanker, said that “in a large sales force, successful sales techniques spread quickly,” but that top Pfizer executives were not aware of the “significant mispromotion issue with Bextra” until federal prosecutors began to show them the evidence.

By April 2005, when Bextra was taken off the market, more than half of its $1.7 billion in profits had come from prescriptions written for uses the FDA had rejected.

TOO BIG TO NAIL

But when it came to prosecuting Pfizer for its fraudulent marketing, the pharmaceutical giant had a trump card: Just as the giant banks on Wall Street were deemed too big to fail, Pfizer was considered too big to nail.

Why? Because any company convicted of a major health care fraud is automatically excluded from Medicare and Medicaid. Convicting Pfizer on Bextra would prevent the company from billing federal health programs for any of its products. It would be a corporate death sentence.

Prosecutors said that excluding Pfizer would most likely lead to Pfizer’s collapse, with collateral consequences: disrupting the flow
of Pfizer products to Medicare and Medicaid recipients, causing the loss of jobs including those of Pfizer employees who were not involved in the fraud, and causing significant losses for Pfizer shareholders.

“We have to ask whether by excluding the company [from Medicare and Medicaid], are we harming our patients,” said Lewis Morris of the Department of Health and Human Services.

So Pfizer and the feds cut a deal. Instead of charging Pfizer with a crime, prosecutors would charge a Pfizer subsidiary, Pharmacia & Upjohn Co. Inc.

The CNN Special Investigation found that the subsidiary is nothing more than a shell company whose only function is to plead guilty.

According to court documents, Pfizer Inc. owns (a) Pharmacia Corp., which owns (b) Pharmacia & Upjohn LLC, which owns (c) Pharmacia & Upjohn Co. LLC, which in turn owns (d) Pharmacia & Upjohn Co. Inc. It is the great-great-grandson of the parent company.

Public records show that the subsidiary was incorporated in Delaware on March 27, 2007, the same day Pfizer lawyers and federal prosecutors agreed that the company would plead guilty in a kickback case against a company Pfizer had acquired a few years earlier.

As a result, Pharmacia & Upjohn Co. Inc., the subsidiary, was excluded from Medicare without ever having sold so much as a single pill. And Pfizer was free to sell its products to federally funded health programs.

AN IMAGINARY FRIEND

I can tell you, unequivocally, that Pfizer perceived the Bextra matter as an incredibly serious one.

—Doug Lankler, Pfizer’s chief compliance officer,

Two years later, with Bextra, the shell company once again pleaded guilty. It was, in effect, Pfizer’s imaginary friend stepping up to take the rap.

“It is true that if a company is created to take a criminal plea, but it’s just a shell, the impact of an exclusion is minimal or nonexistent,” Morris said.

Prosecutors say there was no viable alternative.

“If we prosecute Pfizer, they get excluded,” said Mike Loucks, the federal prosecutor who oversaw the investigation. “A lot of the people who work for the company who haven’t engaged in criminal activity would get hurt.”

Did the punishment fit the crime? Pfizer says yes.

It paid nearly $1.2 billion in a criminal fine for Bextra, the largest fine the federal government has ever collected.

It paid a billion dollars more to settle a batch of civil suits—although it denied wrongdoing—on allegations that it illegally promoted 12 other drugs.

In all, Pfizer lost the equivalent of three months’ profit.

Pfizer says it maintains its ability to do business with the federal government.

Pfizer says it takes responsibility for the illegal promotion of Bextra.

“I can tell you, unequivocally, that Pfizer perceived the Bextra matter as an incredibly serious one,” said Doug Lankler, Pfizer’s chief compliance officer.

To prevent it from happening again, Pfizer has set up what it calls “leading-edge” systems to spot signs of illegal promotion by closely monitoring sales reps and tracking prescription sales.

It’s not entirely voluntary. Pfizer had to sign a corporate integrity agreement with the Department of Health and Human Services.

For the next five years, it requires Pfizer to disclose future payments to doctors and top executives to sign off personally that the company is obeying the law.

Pfizer says the company has learned its lesson.

But after years of overseeing similar cases against other major drug companies, even Loucks isn’t sure $2 billion in penalties is a deterrent when the profits from illegal promotion can be so large.

“I worry that the money is so great,” he said, that dealing with the Department of Justice may be “just of a cost of doing business.”

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Female

BIO-IDENTICAL HORMONE REPLACEMENT SYMPOSIUM
& THE FELLOWSHIP IN ANTI-AGING REGENERATIVE MEDICINE

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LAS VEGAS
JUNE 24-26, 2011

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Becoming Board Certified in Anti-Aging and Regenerative Medicine by The American Academy of Anti-Aging Medicine (A4M) will set you apart from all other physicians and practitioners who are practicing in this specialty without proper training and credentials.

THE FOLLOWING MODULES WILL BE OFFERED JUNE 24-26, 2011 IN LAS VEGAS:

Module IV
A Metabolic and Anti-Aging Approach to Amino Acid and Fatty Acid Metabolism, Drug Induced Nutrient Depletion, Stem Cells and Regenerative Medicine, Spirituality and Osteoporosis

Module VI
Herbology and The Functional Regenerative Matrix

Module IX*
A Metabolic and Function Approach to Children's Health

*Module IX-XVI, are optional and not required to complete the Fellowship program.

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Restrictions apply. Subject to availability.
The true cornerstone of any preventive health care program is annual blood screening. Proactive blood screening can help you greatly reduce your risk of disorders such as heart and kidney disease, stroke, liver conditions, anemia, and diabetes. Plus it’s particularly valuable in helping you prevent and treat symptoms associated with hormone imbalance, such as fatigue, memory impairment, bone loss, weight gain, and depression. Blood testing remains one of the most important things you can do for yourself and your loved ones. More than any other measure, annual blood testing holds tremendous potential to help you prevent and treat symptoms of atherosclerosis. Lp-PLA2 is a biomarker associated with coronary heart disease, and ischemic stroke. The Omega Score™ also measures deamidated gliadin IgA; tissue transglutaminase IgA; and to determine iron deficiency anemia.

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

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

For Our Local Members:
For those residing in the Ft. Lauderdale, Florida area, blood draws are also performed at the Life Extension Nutrition Center from 9:00 am to 2:00 pm Monday through Saturday. Simply purchase the blood test and have it drawn with no wait! Our address is 1100 West Commercial Blvd, Ft. Lauderdale, FL, 33309. We’re located at Commercial Blvd and Powerline Road, just west of I-95. For more information or directions call 954-766-8144.

**FIBRINOGEN** (LC001610)  
High levels of this blood clotting factor increase the risk of heart attack and stroke. $23.25

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This test is used to help assess adrenal function. $29.25

**LP-PLA2 (PLAC TEST)** (LC123240)  
This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. $93.75

**CELIAC DISEASE ANTIBODY SCREEN** (LC334971)  
This test measures deamidated gliadin IgA; tissue transglutaminase IgA; serum IgA quantification. $74.25

**FERRITIN** (LC004598)  
Used to evaluate iron stores in the body and to determine iron deficiency anemia. $21

**HEMOGLOBIN A1C** (LC004598)  
Used to assess long-term glucose control. $23.25

**VITAMIN B12/FOLATE** (LC000810)  
This test measures the amount of vitamin B12 and folic acid in the blood. $24.75

For non-member pricing call 1-800-208-3444.  ** This test is packaged as a kit, requiring a finger stick performed at home.
OTHER POPULAR PANELS

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<th>Panel Name</th>
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<td>CBC/Chemistry Profile (LC381822)</td>
<td>$26</td>
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<tr>
<td>CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, C-Reactive Protein (high-sensitivity), Progesterone, free and total Testosterone, TSH, SHBG, Free T3, Free T4, Insulin.</td>
<td>$224.25</td>
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<tr>
<td>CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, C-Reactive Protein (high-sensitivity), PSA, free and total Testosterone, TSH, SHBG, Free T3, Free T4, Insulin.</td>
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<td>This test shows if you are taking the proper amount of DHEA.</td>
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<td>CBC/Chemistry Profile (LC508142)</td>
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<td>Measures serum concentrations of DHT.</td>
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<td>CBC/Chemistry Profile (LC004515)</td>
<td>$24.75</td>
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<tr>
<td>For men and women. Determines the proper amount in the body.</td>
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<tr>
<td>CBC/Chemistry Profile (LC480780)</td>
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<tr>
<td>Recommended to determine if an elevated PSA is indicative of prostate cancer.</td>
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<td>CBC/Chemistry Profile (LC140103)</td>
<td>$74.25</td>
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<tr>
<td>Determines whether testosterone replacement should be considered as a therapy for depression, abdominal obesity, low energy, poor mental performance, or loss of libido.</td>
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<tr>
<td>CBC/Chemistry Profile (LC004317)</td>
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<td>Primarily for women. Determines the proper amount in the body.</td>
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<td>CBC/Chemistry Profile (LC140707)</td>
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<td>Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.</td>
<td></td>
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<tr>
<td>CBC/Chemistry Profile (LC080283)</td>
<td>$66</td>
</tr>
<tr>
<td>Magnesium plays many vital roles in preventing heart disease, controlling blood pressure, and maintaining healthy cholesterol levels.</td>
<td></td>
</tr>
<tr>
<td>CBC/Chemistry Profile (LC002212)</td>
<td>$41.25</td>
</tr>
<tr>
<td>Having high levels of reverse T3 is known as thyroid resistance and produces symptoms of low thyroid function (hypothyroidism).</td>
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</tbody>
</table>

**TOTAL CHOLESTEROL**

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

**GLOBULIN**

- Total Protein
- Albumin
- Globulin
- Albumin/Globulin Ratio

**ALBUMIN/GLOBULIN**

- Baso (Absolute)
- Polynucleated Cells
- Monocytes
- Neutrophils (Absolute)
- Lymphs (Absolute)
- MCV
- RDW
- Basophils
- Hemoglobin
- Eosinophils
- Platelet Count
- Hematocrit
- White Blood Cell Count
- Red Blood Cell Count
- Eosinophils
- Monocytes
- Neutrophils (Absolute)
- Baso (Absolute)
- Polynucleated Cells
- Albumin/Globulin Ratio
- Calcium
- Sodium
- Potassium
- Chloride
- Phosphorus
- Iron

**LABORATORY SERVICES**

- CBC/Chemistry Profile (LC381822) $26
- CBC/Chemistry Profile (LC304131) $56.25
- CBC/Chemistry Profile (LC004697) $45.75
- CBC/Chemistry Profile (LC508142) $74.25
- CBC/Chemistry Profile (LC004515) $24.75
- CBC/Chemistry Profile (LC480780) $45.75
- CBC/Chemistry Profile (LC140103) $74.25
- CBC/Chemistry Profile (LC004317) $41.25
- CBC/Chemistry Profile (LC140707) $87
- CBC/Chemistry Profile (LC080283) $66
- CBC/Chemistry Profile (LC002212) $41.25

**ORDER LIFESAVING BLOOD TESTS FROM VIRTUALLY ANYWHERE IN THE US!**

1-800-208-3444

**TERMS AND CONDITIONS**

This blood test service is for informational purposes only and no specific medical advice will be provided. National Diagnostics, Inc., and the Life Extension Foundation contract with a physician who will order your test(s), but will not diagnose or treat you. Both the physician and the testing laboratory are independent contractors and neither National Diagnostics, Inc., nor the Life Extension Foundation will be liable for their acts or omissions. Always seek the advice of a trained health professional for medical advice, diagnosis, or treatment. When you purchase a blood test from Life Extension/National Diagnostics, Inc., you are doing so with the understanding that you are privately paying for these tests. There will be absolutely no billing to Medicare, Medicaid, or private insurance. I have read the above Terms and Conditions and understand and agree to them.

Signature of Life Extension Member

X

**MEMBER NO.**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
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</table>

**Date of Birth (required) / / **

**Address**

City

State Zip

**Phone**

**Credit Card No.**

**Expiration Date / / **

Mail your order form to:

**Life Extension**

1100 West Commercial Blvd., Ft. Lauderdale, FL 33309

Phone your order to: 1-800-208-3444

Fax your order to: 1-866-728-1050

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

**This is NOT a complete listing of LE blood test services. Call 1-800-208-3444 for additional information.**
AMINO ACIDS
Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
D,L-Phenylalanine Capsules
GABA Powder
Glycine Capsules
Glycine Powder
Arginine Capsules
L-Arginine Free Base Powder
Arginine/L-Ornithine Capsules
Tryptopure® Tryptophan (also available with Probiotics)
NeuroProtection Complex
Acetyl-L-Carnitine
Arginine/L-Ornithine Capsules
Agave Digestive-Immune Support
Tryptopure® Tryptophan (Optimized)
Bone & Joint Health
ArthroMax™ with Theaflavins
Bone-Up™
Bone Restore™
Bone Strength Formula w/KoAct™
Chondroitin Sulfate
Chondrox
Fast Acting Joint Formula
Glucosamine Chondroitin Capsules
BRAIN HEALTH
Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
CDP Choline Capsules
Cognitex with NeuroProtection Complex
Cognitex with Pregnenolone & NeuroProtection Complex
Cognitex Basics
DMAE
DMAE-Gingko
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin with B5 and BHA
Lecithin Granules
Methylcobalamin Lozenges
Optimized Ashwagandha Extract
Phosphatidylserine Capsules
Rhodiola Extract
Super Ginkgo Extract
Vinpocetine
DIGESTIVE
Agave Digestive-Immune Support
Bromelain Powder
Carnosoothe w/PicroProtect
Digest RC™
Enhanced Super Digestive Enzymes (also available with Probiotics)
Florastor
Intact Digest
Life Flora™
Natural Esophaguard
N-Zimes™
Pancreatin
Primal Defense™
Regimint
Sacharomyces Boulardii+mos
DURK AND SANDY PRODUCTS
Blast™
Dual-C
Inner Power™
Memory Upgrade™
EYE CARE
Blackcurrant Freeze Dried Extract
PhosChol® (Nutrasal)
Buffered Vitamin C Powder
Echinacea
Enhanced Life Extension Whey Protein
26 Hyperimmune Egg
Immune Protect with PARACTIN®
Lactoferrin
Lifesheld™ Immunity™
Maitake SX-Fraction
Norwegian Shark Liver Oil
Optimized Fucoidan w/Maritech® 926
Optimized Ashwagandha Extract
Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with Enhanced Mitochondrial™ Support
Syrtilon™
Theaflavin Standardized Extract
TMG Powder
TMG Tablets
HERBAL/PHYTO PRODUCTS
Artichoke Leaf Extract
Astragalin
Berry Complete
Blackcurrant Juice Concentrate
Blueberry Extract
Blueberry Extract w/Pomegranate
Butterbur Extract w/Standardized Rosmarinic Acid
Calcium D-Glucarate
Cilantro Herbal Extract
Citrus Bioflavonoid
Enhanced Berry Complete with RZD™ Acai Full-Spectrum Pomegranate™
Grapeseed Extract with Resveratrol & Pterostilbene
Huperzine A with Natural Vitamin E
KyoLytic® Garlic Formula 105
KyoLytic® Reserve
Mega Green Tea Extract
Mega Green Tea Extract (Decaffeinated)
Mega Lycopene Extract
N-Acetyl L-Cysteine
Optimized Ashwagandha Extract
Pomegranate Extract
Pomegranate Juice Concentrate
ProGreen®
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 Curcumin with Bioperine®
Super Ginkgo Extract
Triple Action Cruciferous Vegetable Extract
Venotone
Whole Grape Extract
HORMONES
7-Keto™ DHEA
DHEA
DHEA Complete
GH Pituitary Support Day Formula
GH Pituitary Support Night Formula
Melatonin
Melatonin Timed Release
Natural Estrogen with Pomegranate Extract
Pregnenolone
ProFen Cream
Pure IGF
Super Miraforte with Standardized Lignans
THEMATIC ENHANCEMENTS
Agave Digestive-Immune Support
AHCC® (Active Hexose Correlated Compound)
Buffered Vitamin C Powder
Chromium
Enhanced Life Extension Whey Protein
26 Hyperimmune Egg
Immune Protect with PARACTIN®
Lactoferrin
Lifesheld™ Immunity™
Maitake SX-Fraction
Norwegian Shark Liver Oil
Optimized Fucoidan w/Maritech® 926
Primal Defense™
ProBoost™ Thymic Protein A
Pure Gar™
Sambus® Guard
Theralac Capsules
Thymic Immune Factors
Ultimate Flora Advanced Immunity
Vitamin C with Dihydroquercetin
Zinc Lignozens with Vitamin C
IMMUNE ENHANCEMENT
Arthro-Immune Joint Support
ArthroMax™ with Theaflavins
Barlean’s Kids DHA
Boswella
Boswellia™ Topical Cream
Bromelain (Specially-coated)
Coromega Kids Brain and Body (DHA)
DHA 240
Emulsified Norwegian Cod Liver Oil
Emulsified Super Twin EPA/DHA
Fast Acting Joint Formula
Ginger Force
Koil Oil
5-LOXIN™
Mega EPA/DHA
Mega GLA with Sesame Lignans
MSM
Natural Relief 1222™ Cream
Serrafflazyme
SODzyme™ with GluSODin® and Wolfberry
Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
Tart Cherry
Udo’s Choice Oil
Zyflame Easy
LIVER HEALTH
Branched Chain Amino Acids
N-Acetyl Cysteine
Liver Force
Certified European Milk Thistle
PhoChol® (Nutrasal)
SMAE
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
Iodoral
Iron Protein Plus
Magnesium
Magnesium Citrate
Mineral Formula for Men
Mineral Formula for Women
Only Trace Minerals
OptiMum Chromium w/Crominex® 3+
OptiZinc
Sea-Iodine™
 Selenium
Se-Methyl L-Selenocysteine
Strontium
Vanadyl Sulfate
Zinc/Vitamin C Lozenges

MISCELLANEOUS
Blood Pressure Monitor Arm Cuff Medium
Cell Sensor Gauss Meter™
CR Way Edition Advanced Dietary Software
Empty Gelatin Capsules
The Capsule Filler Machine
The Pill Cutter and Grinder

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

MOOD RELIEF
Bioactive Milk Peptides
L-Theanine
5 HTP
Enhanced Natural Sleep* w/ Melatonin
Enhanced Natural Sleep* w/o Melatonin
Natural Stress Relief
Optimized TryptoPure™ Plus
Stabilitum® 200
SAMe
St. John’s Wort Extract
Tryptophan™ L-Tryptophan

MOUTH CARE
Advanced Oral Hygiene
Dr. Tung’s Tongue Cleaner
Mist Oral III™ with CoQ10
Mouthwash w/Pomegranate Toothpaste

MULTIVITAMIN
Children’s Formula Life Extension Mix
Comprehensive Nutrient Pack
Life Extension Booster
Life Extension Mix™ Capsules
Life Extension Mix™ Powder
Life Extension Mix™ Tablets
Life Extension Mix™ w/o Copper Capsules
Life Extension Mix™ w/o Copper Tablets
Life Extension Mix™ w/Extra Nicacin w/o Copper
Life Extension Mix™ w/Stevia Powder
Life Extension Mix™ w/Stevia w/o Copper Powder
Life Extension Mix One-Per-Day
Life Extension Two-Per-Day
Super Booster Softgels with Advanced K2 Complex
Vital Greens Mix

PET CARE
Cat Mix
Dog Mix

PROSTATE & URINARY HEALTH
BetterWOMAN™
Optimized Cran-Max® with UTIRose™
5-LOXIN®

(Special Purpose) Pumpkin Seed Extract
Super Saw Palmetto with Beta-Sitosterol
Super Saw Palmetto/Nettle Root Formula
Ultra Natural Prostate Formula

SKIN CARE
Advanced Under Eye Serum with Stem Cells
Amber Self MicroDermabrasion
Anti-Aging Mask
Anti-Glycation Serum
Antioxidant Rejuvenating Foot Cream
Antioxidant Rejuvenating Foot Scrub
Antioxidant Rejuvenating Hand Cream
Antioxidant Rejuvenating Hand Scrub
Anti-Redness & Blemish Lotion
Cellulite Suppression™ Formula
Corrective Clearing Mask
DermaWhey
Dual-Action MicroDerm Abrasion
Essential Plant Lipids Reparative Serum
Face Master™ Platinum
Face Rejuvenating Antioxidant Cream
Enhanced FernBlock® w/ Sendara™
Fine Line-Less
Hair Suppression Formula
Healing Formula All-in-One Cream
Healing Mask
Hyaluronic Facial Moisturizer
Hydrating Anti-oxidant Face Mist
Hydroderm®
Lavilin Underarm Deodorant
Lifting & Tightening Complex
Melatonin Cream
Mild Facial Cleanser
NaPCA w/Aloe Vera
Neck Rejuvenating Antioxidant Cream
New Face Solution
Peel Off Cleansing Mask
Pigment Correcting Cream (Ultra Rejuvenex®)
Rejuvenex® Body Lotion
Rejuvenex® Factor
Rejuvenating Serum
Skin Lightening Serum
Skin Restoring Ceramides w/Lipowheat™
Skin Stem Cell Serum
Sun Protection Spray
Total Sun Protection Cream
Triple Action Under Eye Rejuvenator
Ultra Rejuvenex®
Ultra RejuveNight® w/ Progesterone
Ultra RejuveNight® w/o Progesterone
Ultra Lip Plumper
Ultra Wrinkle Relaxer
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Serum
Vitamin D Lotion
Vitamin K Healing Cream

SOY
Natural Estrogen w/Pomegranate
Soy Protein Concentrate
Super Absorbable Soy Isoflavones
Ultra Soy Extract

SPECIAL PURPOSE FORMULA
Anti-Alcohol Antioxidants w/HepatoProtection Complex
Bilirubinamide w/Thiamine
Breast Health Formula
Butterbur Extract w/Standardized Rosmarinic Acid
Chlorella
Chlorophyllin w/Zinc
Cleanse Smart
CoQ10 Super Strength
CR Minette Longevity Formula
DermaVita™
Cinsulin® w/InSea™
and Cromine® S+
EDTA
European Leg Solution Diosmin 95
Fen Dophiolus
Femmenessence MacaPause®
Flush & Be Fit

VITAMINS
Ascorbic Acid Powder
Ascorbyl Palmitate Capsules
B1
B2
B12
Beta-Carotene
Biotin Capsules
Biotin Powder
Buffered Vitamin C Powder
Complete B Complex
Essential Fat-Soluble Nutrient
Folic Acid + B12
Gamma E Tocopherol w/Sesame Lignans
Gamma E Tocopherol/Tocotrienols
Inositol Capsules
Inositol Powder
Mega Lycopene Extract
Methylcobalamin MK-7
No-Flush Niacin
Optimized Folate
PABA Capsules
PABA Powder
Super Ascorbate C Capsules
Super Ascorbate C Powder
Super K w/Advanced K2 Complex
Tocotrienols w/Sesame Lignans
Vitamin A Nutrisorb
Vitamin B3 (Nicacin) Capsules
Vitamin B6
Vitamin B12 Tablets
Vitamin C
Vitamin D
Vitamin D3
Vitamin D3 w/Sea-Iodine™
Vitamins D and K w/Sea-Iodine™
Vitamin E
Vitamin K1

WEIGHT MANAGEMENT
Alli® Refill Pack
Belly Slim & Tone
Calorie Control Weight Management Formula
7-Keto DHEA
DHEA Complete
Fucoxanthin Slim™
HCA
IntegraLean® Irvingia
LuraLean® Caps Special Propolmannan
Particle Size
Optimized Irvingia with Phase 3™ Calorie Control Complex
Optimized Saffron with Satireal®
Natural Appetite Control
Natural Glucose Absorption Control
Stevia Liquid Extract
Super CLA Blend w/Guarana and Sesame Lignans
Udo’s Choice Wholesome Fast Food Blend
WellBeX PGX® Soluble Fiber Blend

GLUCOFIT™
Ideal Bowel Support 299
Lustrem™
Maitake SX-Fraction™
Menopause Solutions
Migra-eeze™
Natural Female Support
Organic Total Body Cleanse
PectaSol®
Potassium Iodide
POQ Caps w/BioPOQ™
PteroPure™
Prelox® Natural Sex for Men®
Pyridoxal 5‘-Phosphate
Rosmarinic Acid Extract

SPORTS PERFORMANCE
Creatine Capsules
Creatine Powder
Enhanced Life Extension Protein
DMG (N, N-dimethylglycine)
Inosine
L-Glutamine Capsules
L-Glutamine Powder
Octacosanol
**Buyers Club Order Form**

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<th>No.</th>
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<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<tr>
<td>0049</td>
<td>ACETYL-L-CARNITINE - 500 mg, 100 caps</td>
<td>$56.00</td>
<td>$42.00</td>
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<tr>
<td>00788</td>
<td>ACETYL-L-CARNITINE ARGINATE - 100 caps</td>
<td>59.00</td>
<td>44.25</td>
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<tr>
<td>01308</td>
<td>ADVANCED LIPID CONTROL - 60 veg. caps</td>
<td>30.00</td>
<td>22.50</td>
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<td>01300</td>
<td>ADVANCED ORAL HYGIENE - 60 veg. mint lozenges</td>
<td>20.00</td>
<td>15.00</td>
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<tr>
<td>01417</td>
<td>AGAVE DIGESTIVE IMMUNE SUPPORT - 360 grams powder</td>
<td>30.00</td>
<td>22.50</td>
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<tr>
<td>00681</td>
<td>AHCC - 500 mg, 30 caps</td>
<td>48.98</td>
<td>36.74</td>
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<td>46925</td>
<td>ALLI® REFILL PACK - 120 caps</td>
<td>69.95</td>
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<td>00457</td>
<td>ALPH-A-LIPID ACID W/BIOTIN (SUPER) - 250 mg, 60 caps</td>
<td>37.00</td>
<td>27.75</td>
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<td>01440</td>
<td>ANTI-ALCOHOL ANTIOXIDANTS W/HEPATOPO - 100 caps</td>
<td>26.00</td>
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<td>00105</td>
<td>APPLE PECTIN POWDER - 227 grams</td>
<td>14.75</td>
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<td>01012</td>
<td>ARGinine CAPS - 800 mg, 200 caps</td>
<td>26.50</td>
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<td>01039</td>
<td>ARGinine/ORNithine - 500/250, 100 caps</td>
<td>16.00</td>
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<td>00038</td>
<td>ARGinine/ORNithine Powder - 150 grams</td>
<td>22.95</td>
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<td>(L)-ARGinine FREE-FORM POWDER - 100 grams</td>
<td>15.98</td>
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<td>01317</td>
<td>ARTHROMAX® w/THEAFLAVINS - 120 veg. caps</td>
<td>44.00</td>
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<td>01404</td>
<td>ARTHRO-IMMUNE JOINT SUPPORT - 60 veg. caps</td>
<td>30.00</td>
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<tr>
<td>00919</td>
<td>ARTICHOKE LEAF EXTRACT - 500 mg, 180 veg. caps</td>
<td>28.00</td>
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<td>00086</td>
<td>ASCORBATE C (SUPER) - 8 oz powder</td>
<td>26.99</td>
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<td>ASCORBIC ACID POWDER - 454 grams</td>
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<td>ASCORBYL PALMITATE - 500 mg, 100 caps</td>
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<tr>
<td>00888</td>
<td>ASHWAGANDHA EXTRACT (OPTIMIZED) - 60 veg. caps</td>
<td>10.00</td>
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<tr>
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<td>ASPRIN - 81 mg, 30 enteric coated tablets</td>
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<tr>
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<td>ASTAXANTHIN - 2 mg, 30 softgels</td>
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**SUB-TOTAL OF COLUMN 1**

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<td>01040</td>
<td>BELLY SLIM &amp; TONE - 6 fl oz</td>
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<td>00920</td>
<td>BENFOTIAMINE W/ THIAMINE - 100 mg, 120 veg. caps</td>
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<td>BERRY COMPLETE - 30 veg. caps</td>
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<td>BERRY COMPLETE w/RZ® ACAI (ENHANCED) - 60 veg. caps</td>
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<td>BETA-CAROTENE - 25,000 IU, 100 softgels</td>
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<td>BILBERRY EXTRACT - 100 mg, 100 veg. caps</td>
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<td>01512</td>
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<td>18.00</td>
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<td>01006</td>
<td>BIOSIL™ - 5 mg, 30 veg. caps</td>
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<td>01007</td>
<td>BIOSIL™ - 1 fl oz</td>
<td>29.99</td>
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<td>BIOTIN - 600 mcg, 100 caps</td>
<td>7.50</td>
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<td>BIOTIN POWDER - 30 grams</td>
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<td>BLACKCURRANT FREEZE DRIED EXTRACT - 60 veg. caps</td>
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<td>BLACKCURRANT JUICE CONCENTRATE - 12 fl. oz</td>
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<td>01008</td>
<td>BLAST™ - 600 grams of powder</td>
<td>26.95</td>
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<td>70000</td>
<td>BLOOD PRESSURE MONITOR-ARM CUFF (medium)</td>
<td>99.95</td>
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<td>BLOOD PRESSURE MONITOR-WRIST (travel size)</td>
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<td>BLUEBERRY EXTRACT - 60 veg. caps</td>
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**SUB-TOTAL OF COLUMN 2**

*Life Extension Members receive 25% off the retail price of all products.*
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**SUB-TOTAL OF COLUMN 5**

| SUB-TOTAL OF COLUMN 6 |

**SUB-TOTAL OF COLUMN 6**
LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

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**SUB-TOTAL OF COLUMN 7**

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**SUB-TOTAL OF COLUMN 8**
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<td>HOODIA GORDONII - 60 caps</td>
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<td>00627</td>
<td>HUPERZINE A W/NATURAL VITAMIN E - 50 mcg, 60 caps</td>
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<td>Buy 2 bottles, price each</td>
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<td>(NKO) KRILL OIL - 60 softgels</td>
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<td>64.50</td>
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<td>LIFESHIELD® IMMUNITY™ - 60 veg. caps</td>
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JUNE 2011

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

To order call: 1.954.766.8433 or 1.800.544.4440
Buyers Club Order Form

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
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</thead>
<tbody>
<tr>
<td>01277</td>
<td>LIVER FORCE - 30 veg. caps</td>
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<tr>
<td>00999</td>
<td>5-LOXIN™ - 75 mg, 100 veg. caps</td>
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<td>01013</td>
<td>L-LYSINE - 620 mg, 100 caps</td>
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<td>00129</td>
<td>L-LYSINE POWDER - 300 grams</td>
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<td>01470</td>
<td>LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE - 120 veg. caps</td>
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<td>01017</td>
<td>LUSTRE® - 90 tablets</td>
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<td>00455</td>
<td>LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels</td>
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<td>01044</td>
<td>MAGNESIUM CAPS - 500 mg, 100 caps</td>
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<td>00502</td>
<td>MAGNESIUM CITRATE - 160 mg, 100 caps</td>
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<td>MITOQQ® 3X-FRACTION - 90 veg. tablets</td>
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<td>MELATONIN - 300 mcg, 100 caps</td>
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<td>01083</td>
<td>MELATONIN - 500 mcg, 200 veg. caps</td>
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<td>MELATONIN - 1 mg, 60 caps</td>
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<td>MELATONIN - 3 mg, 60 caps</td>
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<td>01086</td>
<td>MELATONIN - 3 mg, 60 time-release veg. caps</td>
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<td>00331</td>
<td>MELATONIN - 10 mg, 60 caps</td>
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<td>00332</td>
<td>MELATONIN - 3 mg, 60 lozenges</td>
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<td>01087</td>
<td>MELATONIN TIME RELEASE - 300 mcg, 100 veg. caps</td>
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<td>01088</td>
<td>MELATONIN TIME RELEASE - 750 mcg, 60 veg. caps</td>
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<td>01009</td>
<td>MEMORY UPGRADE® - 600 grams powder</td>
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<td>MENOPAUSE SOLUTIONS - 120 tablets</td>
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<td>00536</td>
<td>METHYLCOBALAMIN - 1 mg, 60 lozenges (vanilla)</td>
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<td>00537</td>
<td>METHYLCOBALAMIN - 5 mg, 60 lozenges (vanilla)</td>
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<td>MIGRA-EZE™ (BUTTERBUR) - 60 softgels</td>
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<td>MILK THISTLE (CERTIFIED EUROPEAN) - 120 veg. caps</td>
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<td>00623</td>
<td>MINERAL FORMULA FOR MEN - 100 caps</td>
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<td>00624</td>
<td>MINERAL FORMULA FOR WOMEN - 100 caps</td>
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<td>MIRAFORTÉ®/STANDARDIZED LIGNANS (SUPER) - 120 caps</td>
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<td>01568</td>
<td>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ® - 120 caps</td>
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<td>00803</td>
<td>MIST ORAL III w/COQ10 - 2 fl oz</td>
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<td>00065</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 (METHYLISULFONYLMETHANE) - 1000 mg, 100 caps</td>
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<td>N-Acetyl Cysteine - 600 mg, 60 caps</td>
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<td>NAPCA W/ALOE VERA - 8 fl oz</td>
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<td>NATTOKINASE - 60 softgels</td>
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<td>00981</td>
<td>NATURAL APPETITE CONTROL - 90 softgels</td>
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<td>00984</td>
<td>NATURAL BP MANAGEMENT - 60 tablets</td>
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<td>00913</td>
<td>NATURAL ESOPHAGUARD - 10 softgels</td>
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<td>NATURAL ESTROGEN w/POMEGRANATE EXTRACT - 60 caplets</td>
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<td>01221</td>
<td>NATURAL FEMALE SUPPORT - 30 veg. caps</td>
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<td>01471</td>
<td>NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps</td>
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<td>00698</td>
<td>NATURAL RELIEF 1222® - 2 oz</td>
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<td>01084</td>
<td>NATURAL SLEEP® - 3 mg, 60 veg. caps</td>
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<td>NATURAL SLEEP® (ENHANCED) W/ MELATONIN - 30 caps</td>
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<td>NATURAL SLEEP® (ENHANCED) W/O MELATONIN - 30 caps</td>
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LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

SUB-TOTAL OF COLUMN 1

SUB-TOTAL OF COLUMN 11

SUB-TOTAL OF COLUMN 12
Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

<table>
<thead>
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<th>No.</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
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<td>Buy 4 bottles, price each 22.00</td>
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<td>00482</td>
<td>Buy 4 bottles, price each 12.50</td>
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<td>Buy 4 bottles, price each 24.00</td>
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<td>00473</td>
<td>Buy 4 bottles, price each 20.00</td>
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<td>00472</td>
<td>Buy 4 bottles, price each 18.00</td>
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<td>Buy 400 mg, price each 10.99</td>
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<tr>
<td>00481</td>
<td>Buy 1 oz bottle 50.00</td>
<td>37.50</td>
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**SUB-TOTAL OF COLUMN 13**

**SUB-TOTAL OF COLUMN 14**

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

JUNE 2011
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<td>01030</td>
<td>RED YEAST RICE (Bluebonnet) - 600 mg, 60 veg. caps</td>
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<td>00918</td>
<td>REJUVENEX® FACTOR - 1.7 oz airless pump</td>
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<td>REJUVENEX® (ULTRA) - 2 oz</td>
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<td>REJUVENIGHT (ULTRA) - 2 oz</td>
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<td>(DI) RIBOSE TABLETS - 100 veg. tabs</td>
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<td>SACCHAROMYCES BOULARDII + MOS - 90 veg. caps</td>
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<td>SASSFRON W/SATIREAL (OPTIMIZED) - 60 veg. caps</td>
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<td><strong>00573</strong></td>
<td>SAMBU GUARD - 175 ml</td>
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<td>SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets</td>
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**SUB-TOTAL OF COLUMN 15**

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**SUB-TOTAL OF COLUMN 16**

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

JUNE 2011
## Buyers Club Order Form

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### V

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Don’t suffer the harsh side effects of antibiotics.

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ANTIBIOTICS AND THERALAC WORK HAND IN HAND.

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

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Theralac assists with nutrient absorption and helps regulate peristaltic action. Theralac helps maintain estrogen, cholesterol and glycemic levels in those already within normal range.

LEADING DOCTORS RECOMMEND THERALAC.

Dr. Russell Blaylock, MD, recommends taking 2-4 Theralac capsules daily while on antibiotics, continuing for two weeks following antibiotic therapy. And key doctors of Lyme disease patients rely on Theralac to help patients suffering from severe antibiotic-associated diarrhea.

So to ensure digestive health while taking antibiotics, order Theralac today by calling 800-544-4440 or visit LifeExtension.com. Then take your antibiotics and avoid unintended consequences.

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Ginger Naturally Promotes a Healthy Inflammation Response*

Leading phytochemical databases maintained by the USDA and a major U.S. university identify multiple constituents in Gingerforce as modulating the 5-lipoxygenase enzyme.* Recent scientific studies, including one published in the Proceedings of the National Academy of Sciences, suggest that 5-lipoxygenase modulation may serve an important role in supporting normal cell growth and activity in a number of the body’s organ systems.*

Scientific research further supports ginger as an effective prostaglandin modulator, naturally promoting a healthy inflammation response throughout the body.* Ginger promotes fat-digesting bile and starch-digesting saliva.* The active ingredients of ginger promote the growth of beneficial intestinal microorganisms, which are vital for intestinal health.* Ginger contains at least 12 anti-aging and cardiotonic constituents that inactivate oxygen free radicals, some of these constituents shown in vitro to be up to 40 times more effective than Vitamin E.*

Gingerforce Supports Stomach, Liver, and Intestinal Health*

New Chapter’s patent-pending Gingerforce features the world’s most potent full-spectrum ginger extract, at least 250 times the concentration of fresh ginger. This premier extract is Potency Assured™ to a minimum of 2.8 mg pungent compounds, and also contains at least 4.3 mg zingiberene, an important and active component of the essential oil of ginger. Because this is a full-spectrum extract, it contains hundreds of naturally occurring beneficial ingredients not similarly present in other extracts.

The Revolutionary New Chapter Supercritical Extraction Process

Our supercritical extraction process is a breakthrough in herbal extraction. It’s the cleanest, purest way to extract the plant’s value and yields a superior extract that’s highly concentrated, super pure and delivers the full spectrum of nature’s powerful phytonutrients.

People assume that all herbal extracts are pretty much the same. Nothing could be further from the truth. The difference is incredibly meaningful: You get the maximum nutritional, protective health benefits of the whole herb – all of the important compounds – not just the isolated chemical constituent.

How Supercritical Extraction Works

Rather than using a chemical solvent to extract the herb’s nutrients (like a dry cleaner removing a stain), New Chapter uses a natural compound: compressed carbon dioxide (CO2).

It’s a harmless natural gas found in the air we breathe and absorbed by plants all around us. And unlike chemical extraction, our process doesn’t contaminate the herb, the environment, or your body.

We compress this natural gas until it’s a semi-liquid. It can then “wash through” the natural source; collecting all of the key nutritive compounds. This gives us an extract that is all-natural, super potent, super pure and chock full of the precious, vital, life-enhancing ingredients your body craves.

The Result: Super Potent, Super Pure Extracts

Consider that it takes as much as 250 pounds of fresh herbs to get just one pound of supercritical extract. It’s intensive and costly, but it’s the best way to obtain an herbal therapeutic that’s super potent, super pure and delivers the full wisdom of nature.

GingerForce 60 Softgels Item# 01228
Retail Price: $29.95 Member Price: $22.46
To order GingerForce, call 1-800-544-4440 or visit www.LifeExtension.com

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Better Bones by Design

2%-4% of your skeleton is “rebuilt” every year as calcium and minerals leave the bone and must be replaced.

Jarrow FORMULAS® Presents . . .

A Complete Multi-Nutrient Bone Health System!

Bone-Up® provides your body with much needed calcium as well as essential nutrients for building strong bones.* It utilizes the finest source of calcium available: Australian/New Zealand bovine bone hydroxyapatite from chemical-free, range grazed calves less than two years old.

Bone-Up® is a clinically-validated formula and an effective addition to any bone health regimen.* It features added vitaminds and minerals that synergistically support healthy bone density and overall bone health*:

- **Ossein Microcrystalline Hydroxyapatite (MCNA):** Promotes calcium balance.*
- **Vitamin D3:** Converts to calcitriol to enhance calcium absorption.
- **MK-7:** The more bioavailable form of Vitamin K3, which is needed for building bone matrix and proper calcium distribution.
- **Boron:** A trace mineral important in calcium retention.*
- **Manganese, Copper and Zinc:** Essential trace minerals involved in the formation of bone.

Jarrow Formulas® Bone-Up®, 240 capsules Item #00313: $24.95
If a member buys four bottles, the price will be reduced to $16.88 per bottle.
To order, call (800) 544-4440 or visit www.LifeExtension.com

www.Jarrow.com

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

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

Maintain Macular Density

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

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

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

Combat “Eye Fatigue”

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

Super Zeaxanthin contains a potent dose of astaxanthin, a carotenoid found in red algae. Studies show that taking astaxanthin with other carotenoids protects against free radical induced DNA damage, repairs UVA-irradiated cells, and inhibits inflammatory cell infiltration.1-4 Astaxanthin also helps support vascular health within the eye and improves visual acuity.5 Its fat-soluble nature offers protection to sensitive cells inside the eye.5

Enhanced Night Vision!

Falling down is responsible for 70% of accidental deaths in older people.6 Poor lighting conditions are often the culprit.

Fortunately, C3G derived from black currant supports eyesight in dark conditions by promoting the healthy function of delicate structures within the retina that support night vision.7 Super Zeaxanthin now contains a potent dose of C3G to nourish cells throughout the body.

Comprehensive Ocular Protection in One Daily Capsule

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

- OptiLut®, Lutein Plus® and MZ® .................. 38 mg
  Marigold (Tagetes erecta) Extract (flower)
  [free lutein equivalent 10 mg]
- Zeaxanthin & Meso-zeaxanthin blend .......... 3.75 mg
  [micronized zeaxanthin, OptiLut®, Lutein Plus®
  and MZ® Marigold Extract (flower)]
- Natural Astaxanthin .................................. 6 mg
  (AstaREAL® and Zanthin® CO2 extracts of Haematococcus pluvialis algae)
- C3G (Cyanidin-3-glucoside) ......................... 2.2 mg
  [from European black currant (Ribes nigrum) extract (fruit)]

The retail price for a bottle containing 60 softgels of Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G is §42. If a member buys four bottles, the price is reduced to just $28.50 per bottle.

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

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

References
REVERSE SKIN AGING AROUND YOUR EYES
PAGE 54 • The area of thin, delicate skin around the eyes is one of the first places where signs of aging appear. The consequent emergence of crow’s feet, bags, and dark circles make you look older than you really are. Discover their causes and how to reverse them naturally.

OUR WARNINGS ABOUT RADIATION WERE IGNORED!
PAGE 24 • In 2002, we urged that people keep a personal supply of thyroid-protective potassium iodide in case of a nuclear emergency. Most Life Extension® members were thus prepared for the disaster in Japan, despite an ensuing global shortage. Here we detail a nutritional regimen to protect the entire body if a nuclear event occurs near you.

REDUCE STUBBORNLY HIGH TRIGLYCERIDES
PAGE 78 • Most doctors believe triglyceride levels up to 149 mg/dL are safe. The reality is they must be far below 100 to protect against heart attack and ischemic stroke. A recent study shows tocotrienols can lower artery-clogging triglycerides by 28%. This is especially relevant for those with sub-optimal triglyceride levels despite daily fish oil intake.

NATURAL METHOD TO REDUCE GLAUCOMA RISK FACTOR
PAGE 44 • Glaucoma is the second leading cause of blindness worldwide. Increased intraocular pressure is a silent risk factor. A European nutrient compound may reduce intraocular pressure by up to 24% . . . and by 40% when combined with conventional therapy.

PROPRIETARY GREEN TEA EXTRACT PROTECTS THE KIDNEYS
PAGE 66 • Chronic kidney disease affects 26 million Americans. Early detection is essential. Left unchecked, it may result in the need for dialysis. The green tea extract contained in Life Extension™’s formula was shown to protect against drug-induced kidney damage.

OBSCENE PROFITS OVER HUMAN LIFE
PAGE 89 • A recent CNN report presents a scandalous portrait of how federal officials collaborated with Pfizer to push a deadly drug on trusting patients—and shield the drug-company behemoth from prosecution.