How to Turn 8 Pennies Into $600

Remarkable Longevity Benefits of Tart Cherries

Newly Discovered Effects of Quercetin

Calorie Restriction Benefits Confirmed

PLUS—
Metformin Stabilizes Metastatic Prostate Cancer
Green Tea Shown To Reduce Pancreatic Cancer Risk
Magnesium Lowers C-Reactive Protein in Diabetics
Ceramides are essential for preserving healthy-looking skin. That's why they're included in so many anti-aging face creams.

Your body's production of ceramides declines with age. That's bad news, since ceramides make up 35-40% of the binding matrix that maintains moisture balance and protects the skin's surface. It's therefore critical that ceramides lost to aging are replaced.

Restore Ceramides Naturally from Within!

The ceramides that young skin naturally produces to retain its supple appearance are identical to those present in wheat! Wheat-derived oils have been used topically for centuries as a natural moisturizer. But you can't get enough ceramides from topically applied wheat oil to have a long-term impact on your skin's appearance. And they don't appear in sufficient concentration in your diet. That's why Life Extension® brought together these skin-nourishing oils in a concentrated oral formula called Skin Restoring Phytoceramides with Lipowheat®.

Lipowheat® is a proprietary ceramide blend that offers nutritional support for aging skin to complement the topical products you may already be using.

The Moisturizing Pill the Japanese Have Enjoyed for a Decade!

Lipowheat® ceramides have been available to Japanese women as a functional food since 2000. The hydrating action of Lipowheat® ceramides have proven effective in clinical trials.

Aging Americans can now offset the visible impact of the gradual decline in their ability to produce enough ceramides by using Skin Restoring Phytoceramides with Lipowheat®.

For most of 2014, demand for Skin Restoring Ceramides has far outstripped supply, causing us to back order it for most customers. We are now fully stocked and will ship orders usually within one business day of receipt.

One bottle containing 30 350 mg vegetarian liquid capsules of Skin Restoring Phytoceramides with Lipowheat® retails for $25. If a member buys four bottles, the price is reduced to $17.25.

Contains wheat.

Lipowheat® is a registered trademark of LAVIPHARM Group of Companies.

References
24 REDUCE ABSORPTION OF DANGEROUS DIETARY FATS

Alpha-cyclodextrin, a patented natural fiber, can absorb up to 500 calories a day of dietary fat before it gets absorbed into the bloodstream. Compared to regular fiber, alpha-cyclodextrin selectively eliminates nine times more pro-inflammatory fats, while leaving healthy omega-3s untouched.

36 NEW STUDY CONFIRMS CALORIE RESTRICTION EXTENDS LIFE SPAN

A recent study confirms that calorie restriction reduces age-related and all-cause mortality in primates. The calorie-restricted group was almost three times less likely to die, suggesting effective food restriction might be as simple as keeping calorie intake moderate and choosing nutrient-dense foods.

44 TART CHERRIES: A WIDE SPECTRUM OF PROTECTIVE ANTHOCYANINS

Rich in anthocyanins, tart cherry targets a wide spectrum of degenerative diseases at their inflammatory root. For those suffering from gout, a form of arthritis, tart cherries lower both uric acid and C-reactive protein.

56 QUERCETIN FOR CARDIAC PROTECTION

People with high intakes of quercetin have significantly lower risk for cardiovascular diseases. Quercetin provides multimodal cardiac protection such as triggering reverse cholesterol transport and improving after-meal endothelial function by 31.4%.

66 NEWLY DISCOVERED BENEFITS OF VITAMIN K

New research confirms that vitamin K can slash the risk of arterial calcification, coronary heart disease, cancer, type II diabetes, and metabolic syndrome. Most compelling is a study showing that those with the highest intakes of vitamin K are less likely to die from any cause.
Validated in Huge New Study: Vascular Benefits of a Mediterranean Diet

A large, rigorous study published in the *New England Journal of Medicine* confirmed the health benefits of those who switch to a Mediterranean diet rich in omega-3 fish oil as well as protective nutrients called polyphenols found in olive oil, fruits, vegetables, nuts like walnuts, and wine. The study ended early because the benefits were so overwhelming, with startling benefits for vascular health, that it was considered unethical to continue to deprive the control group.

In addition to the health-promoting benefits of vegetables and fruits with their abundance of polyphenol nutrients, the Mediterranean diet group took at least 4 tablespoons of polyphenol-rich extra-virgin olive oil a day. The sesamoids not only direct the omega-3 fatty acids toward more effective pathways in the body, but guard the delicate fish oil from oxidation.

**Life Extension® Members Benefited Long Ago**

Starting in 2005, Life Extension members began taking a supplement (Super Omega-3) that provided potent concentrations of fish oil and olive polyphenols like hydroxytyrosol and oleuropein. This supplement also provided standardized sesamoids to support the beneficial effect of omega-3 fatty acids in the body.

Olive oil contains polyphenol nutrients that have demonstrated wide-ranging health benefits. The recommended twice daily dose of Super Omega-3 supplies a similar polyphenol content to that found in 4 to 6 tablespoons of olive oil.

**References**

**CAUTION:** If you are taking anticoagulant or antiplatelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

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.

**Super Omega-3 with Sesame Lignans and Olive Fruit Extract**

To ensure the purest, most stable, and easy-to-tolerate fish oil, Super Omega-3 EPA-DHA is molecularly distilled. It enjoys the highest 5-star rating for purity, quality, and concentration from the renowned International Fish Oil Standards program. The sesamoids not only direct the omega-3 fatty acids toward more effective pathways in the body, but guard the delicate fish oil from oxidation.

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

The daily dose (four regular size softgels) of Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract provides:

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<td>Olive Extract (fruit and leaf)</td>
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<td>[39 mg polyphenols, 10.4 mg hydroxytyrosol/tyrosol, 8.8 mg verbascoside/oleuropein]</td>
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<td>Sesame Seed Lignan Extract</td>
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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

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.
Gustavo Tovar Baez, MD, operates the Life Extension Clinic in Caracas, Venezuela. He is the first physician in Caracas to specialize in anti-aging medicine.

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Sergey A. Dzugan, MD, PhD, was formerly chief of cardiovascular surgery at the Donetsk Regional Medical Center in Donetsk, Ukraine. Dr. Dzugan’s current primary interests are anti-aging and biological therapy for cancer, cholesterol, and hormonal disorders.

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Miguelangelo Gonzalez, MD, is a certified plastic and reconstructive surgeon at the Miguelangelo Plastic Surgery Clinic, Cabo San Lucas.

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Örn Adalsteinsson, PhD, is chairman of the Life Extension® Scientific Advisory board. He holds a master’s and doctorate from the Massachusetts Institute of Technology (MIT). He has specialized in human therapeutics including vaccines, monoclonal antibodies, product development, nutraceuticals, formulations, artificial intelligence, hormones, and nutritional supplementation. He has also authored articles and contributed to peer-reviewed publications and served as an editor for the Journal of Medicinal Food.

Aubrey de Grey, PhD, is a biomedical gerontologist and Editor-in-Chief of Rejuvenation Research, the world’s highest-impact peer-reviewed journal focused on intervention in aging. He received his BA and PhD from the University of Cambridge in 1985 and 2000 respectively. Dr. de Grey is a Fellow of both the Gerontological Society of America and the American Aging Association and sits on the editorial and scientific advisory boards of numerous journals and organizations.

John Boik, PhD, is the author of two books on cancer therapy, Cancer and Natural Medicine (1996) and Natural Compounds in Cancer Therapy (2001). He obtained his doctorate at the University of Texas Graduate School of Biomedical Sciences with research at the MD Anderson Cancer Center, focusing on screening models to identify promising new anticancer drugs. He conducted his postdoctoral training at Stanford University Department of Statistics. He is currently president of New Earth BioMed, a nonprofit cancer research corporation that studies mixtures of natural products.

Frank Eichorn, MD, is a urologist specializing in prostate cancer for 10 years. He has a private practice in Bad Reichenhall, Germany, and is prostate cancer consultant at the Urologische Klinik Castrignius, Planegg, Munich. In his integrative approach to prostate cancer he is working together with an international network of experts to improve treatment outcomes for prostate cancer patients with a special focus on natural and translational medicine.

Deborah F. Harding, MD, is founder of the Harding Anti-Aging Center. She is double board-certified in internal medicine and sleep disorder medicine. She also earned the Cenegenics certification in age management medicine. She is a faculty member of the new University of Central Florida Medical School.

Steven B. Harris, MD, is president and director of research at Critical Care Research, a company that grew out of 21st Century Medicine in Rancho Cucamonga, CA. Dr. Harris participates in groundbreaking hypothermia, cryothermia, and ischemia research. His research interests include antioxidant and dietary-restriction effects in animals and humans.

Stanley W. Jacob, MD, is Gerlinger Distinguished Professor, Department of Surgery, Oregon Health and Science University. He has authored 175 scientific articles and 15 books and holds 3 patents, including the initial patent on the therapeutic implications of dimethyl sulfoxide (DMSO).

Richard Kratz, MD, DSc, is clinical professor of ophthalmology at the University of California, Irvine, and the University of Southern California (Los Angeles). Dr. Kratz pioneered the cataract-removal technique called phacoemulsification and developed intraocular lenses to replace the crystalline lens. He is currently involved in projects relating to glaucoma, cataract extraction, and facilitating eyesight for the totally blind.

Peter H. Langsjoen, MD, FACC, is a cardiologist specializing in congestive heart failure, primary and statin-induced diastolic dysfunction, and other heart diseases. A leading authority on coenzyme Q10, Dr. Langsjoen has been involved with its clinical application since 1983. He is a founding member of the executive committee of the International Coenzyme Q10 Association, a fellow of the American College of Cardiology, and a member of numerous other medical associations.

Dipnarine Maharaj MD, MB, ChB, FRCP (Glasgow), FRCP (Edinburgh), FRCPATH, FACP Dr. Dipnarine Maharaj is the Medical Director of the South Florida Bone Marrow Stem Cell Transplant Institute and is regarded as one of the world’s foremost experts on adult stem cells. He received his medical degree in 1978 from the University of Glasgow Medical School, Scotland. He completed his internship and residency in Internal Medicine and Hematology at the University’s Royal Infirmary.

Ralph W. Moss, PhD, is the author of books such as Antioxidants Against Cancer, Cancer Therapy, Questioning Chemotherapy, and The Cancer Industry, as well as the award-winning PBS documentary “The Cancer War.” Dr. Moss has independently evaluated the claims of various cancer treatments and currently directs The Moss Reports, an updated library of detailed reports on more than 200 varieties of cancer diagnoses.

Michael D. Ozner, MD, FACC, FAHA, is a board-certified cardiologist who specializes in cardiovascular disease prevention. He serves as medical director for the Cardiovascular Prevention Institute of South Florida and is a noted national speaker on heart disease prevention. Dr. Ozner is also author of The Great American Heart Hoax and The Miami Mediterranean Diet (2008, Benbella Books). For more information visit www.drozner.com.

Jonathan V. Wright, MD, is medical director of the Tahoma Clinic in Tukwila, WA. He received his MD from the University of Michigan and has taught natural biochemical medical treatments since 1983. Dr. Wright pioneered the use of bioidentical estrogens and DHEA in daily medical practice. He has authored 11 books and publishes Nutrition and Healing, a monthly newsletter with a worldwide circulation of more than 100,000.
Super Potent Multi-Nutrient Formula

To order Life Extension Two-Per-Day Tablets or Two-Per-Day Capsules, call 1-800-544-4440 or visit www.LifeExtension.com

Compared to Centrum® Silver® Adults 50+,
Two-Per-Day Tablets or Capsules provide about:

- 4 times more Vitamin D
- 8 times more Vitamin C
- 2 times more Vitamin E
- 10 times more Biotin
- 20 times more Boron
- 4 times more Selenium
- 25 times more Vitamin B6
- 50 times more Vitamin B1
- 12 times more Vitamin B12
- More than twice as much niacin, zinc, and many other nutrients

A bottle containing 120 tablets of Two-Per-Day Tablets retails for $20. If a member buys four bottles, the price is reduced to $13.50 per bottle. (Item #01815)
A bottle containing 120 capsules of Two-Per-Day Capsules retails for $22. If a member buys four bottles, the price is reduced to $15 per bottle. (Item #01814)
Each bottle of Two-Per-Day lasts 60 days, so members can obtain the benefits of this high-potency formula for as little as $6.75 per month.

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How To Turn 8 Pennies Into $600

By William Falloon

This nation’s finances are being crippled by high medical prices.

Hidden from the debate is the fact that today’s healthcare cost crisis is largely a facade. The underlying culprit is an antiquated regulatory structure that inflates medical costs beyond rational affordability.

The government misleads the public into believing that generic drugs are a partial solution to high-priced pharmaceuticals. What few understand is that the FDA gets to pick and choose which companies are allowed to make certain generics. This favoritism enables collusive behavior among drug makers that results in extortionist prices for off-patent medicines.

To document this consumer rip-off, I did some research to uncover the active-ingredient cost for a popular generic drug. This price information was not easily obtainable, and I had to jump through some hoops to procure it.

What I discovered is beyond shocking.

If you encounter a shingles or herpes outbreak, you may be prescribed a topical ointment (acyclovir) that alleviates pain and slightly shortens disease duration. What may hurt more than the viral outbreak is the price of a 30-gram (about 1-ounce) tube of acyclovir! American pharmacies are charging close to $700 for this off-patent ointment. The cost of the active ingredient for the entire tube, however, is only 8 cents!

Don’t blame your pharmacy for this price gouging. The pharmacy’s cost for a 30-gram tube of acyclovir from the generic maker is around $600—and the pharmacy has its own costly bureaucratic mandates to contend with.

In a free market, the price of acyclovir ointment would fall to under $10. Today’s moronic regulatory structure precludes this.

Instead, pharmaceutical companies are able to collude in ways that deny low-cost competitors access to the marketplace. They do this using their political connections and massive wealth to influence Congress, the FDA, and other parts of government to erect barriers that protect their cozy price-gouging machine.

Their reward for maintaining the regulatory status quo is billions of dollars in excess payments from struggling consumers, government programs, and health insurance companies. Drug companies of course spend lots of money on lobbying. They’d hate to see anyone in government attempt to abolish regulations that guarantee their virtual monopoly.
The federal government would have you believe that the only way to provide affordable healthcare is to force each American to purchase health insurance or provide free medical care to those who can’t pay the premiums. Free healthcare is provided by Medicaid, Medicare, and the Veteran’s Administration. Most Americans forced to buy private insurance receive federal subsidies ultimately paid for by tax dollars.

A more efficient solution would be to remove needless regulations that cause the citizenry to pay pricy premiums for health insurance that has higher deductibles and co-pays than ever before.

**Acyclovir Should Not Be A Prescription Drug**

Acyclovir was approved by the FDA in 1981 and sold initially under the trade name Zovirax®. It’s far from a miracle drug, but it does provide much appreciated relief from the harsh stinging pain of herpes and shingles outbreaks.

Cold sores on the lips and face are typically caused by herpes simplex-1. A similar virus that usually affects the genital areas is called herpes simplex-2. The virus that causes shingles is called herpes zoster (also known as the chickenpox virus). Shingles occurs when one’s immune function that originally suppressed the chickenpox virus becomes impaired by aging (immunosenescence).

In addition to providing temporary pain relief, the topical application of acyclovir ointment reduces viral shedding (to lower risk of transmitting the virus to others) and slightly shortens the duration of the herpes virus outbreak.

Acyclovir ointment is one of many overpriced prescription drugs that should be sold over-the-counter without any kind of FDA registration requirement. It is not generally associated with serious side effects. If a disreputable company made an ineffective product, users would discover this immediately since it would not provide immediate pain relief when applied to skin lesions. It is doubtful that any company would fail to put into the tube the 8 cents worth of active ingredient. A bigger expense is the cost of the tube and the quality-control to ensure that the acyclovir is evenly spread through the ointment. Acyclovir comprises 5% of the finished product. The remainder is filler.

If acyclovir were sold over the counter, those who encountered a herpes outbreak could purchase it anywhere and obtain some immediate relief. The risk of transmitting the disease to others would be reduced and the disease duration shortened. The cost would quickly plummet from $700 to under $10. At some point it would cost less than $5. Those with recurrent herpes/shingles outbreaks would not need to squander money and time for needless doctor visits merely to obtain a refill for what is now “prescription” acyclovir ointment.

A member asked me why their CVS pharmacy charged so much for a tube of acyclovir the size of a small tube of toothpaste. Their co-pay was $52, while their insurance company got stuck with a tab of around $648.

At first I thought this must have been an error as I knew acyclovir had been around for decades. It’s no longer even the best treatment for cold sore outbreaks since newer topical drugs (like Denavir®) purportedly work better.

I had to make quite a few calls and send many emails to get makers of the active acyclovir ingredient to disclose the actual cost. It seemed obvious to me they did not want to reveal this pricing information. In fact, 8 cents a tube for the active ingredient was the highest price I found. Other manufacturers of acyclovir quoted less money.

Herpes has been a pandemic disease dating back to ancient times. Worldwide sales of acyclovir are gargantuan. It sells for less in countries that don’t have the onerous regulatory strangleholds that exist in the United States.

What’s obscenely absurd is when politicians and bureaucrats pretend that drug regulations are the only way to provide affordable healthcare.
“protect” consumers. Reality is these regulations enable pharmaceutical companies to collude and financially exploit the citizenry by selling drugs at exploitive prices.

**New Hepatitis C Drug Costs $1,000 Per Pill!**

**Hepatitis C** is a virus that primarily attacks the liver. Over 3 million Americans are infected with hepatitis C. Many don’t find out they’re infected until liver failure or primary liver cancer is diagnosed.

There is now a good reason for everyone to have their blood tested for hepatitis C. A new drug called Sovaldi® has been shown to cure 90% of hepatitis C patients with relatively few side effects.

If Sovaldi® works nearly as well in the real-world setting (as opposed to tightly controlled clinical trials), it represents a medical breakthrough. Up until now, curing hepatitis C has been challenging, involving drug regimens with harsh side effects that often did not work.

A typical course of treatment for Sovaldi® alone will cost $84,000, plus physician and necessary companion drug costs. Some people will need two courses of treatment, so their total price tag will be around $200,000.

Harsh criticism has been lodged against the maker of Sovaldi® for charging such high prices. Conservative estimates of the actual manufacturing costs of the drug for a 12-week treatment cycle are under $160. Yet patients and/or their insurance provider will have to pay $84,000—a staggering 525-fold markup over the cost to produce the drug!

Said differently, a pill that costs under $2 to make will sell to consumers for $1,000 per pill. These estimates of less than $2 per pill to make with a sales price of $1,000 per pill leads to a gross profit margin of 49,000% for the formulation.

Since virtually no one can afford these outlandish prices, the federal government is forcing Americans to pay via their health insurance premiums, co-pays, high deductibles, and Medicare contributions. Low-income individuals will be covered by Medicaid and similar programs paid for by the taxes collected by federal and state governments. What this means is that all of us are paying these rip-off drug prices in one way or another.

**How To Use Sovaldi®**

The dose of Sovaldi® is one 400 mg tablet taken once a day. For hepatitis C genotype 2 or 3, the drug ribavirin must be taken with it.

For hepatitis genotype 1 or 4, the required dose is the same 400 mg/day of Sovaldi® plus ribavirin and peginterferon alfa.

The maker of Sovaldi® justifies its $1,000-per-pill cost as a fair price for the value it brings to the healthcare system and hepatitis C patients. This argument can be supported by the high costs of caring for end-stage hepatitis C patients. This argument can be supported by the high costs of caring for end-stage hepatitis C patients using less effective treatments. The bottom line, however, is that this nation is being rendered insolvent because of these kinds of drug prices. The reason they are so high-priced is the overregulation that makes getting approval for a drug like Sovaldi® the equivalent to winning a lottery, and who wouldn’t want to cash in on their winning lottery ticket?
It is crucial for those infected with the hepatitis C virus to eliminate the virus from their bodies before it causes irreversible liver damage. The scientific literature strongly supported the use of ribavirin and interferon as the primary treatment for most hepatitis C infections. The FDA disregarded these studies because they despised the company that made ribavirin. The company's sin was to “publicize” favorable results from the ribavirin clinical trials. The FDA hates when companies promote a drug before approval because it puts pressure on the FDA to approve it sooner. The FDA would prefer to take their bureaucratic time in approving a new drug rather than capitulate to the pressure of dying Americans who might be cured by the yet-to-be-approved therapy.

The FDA's political suppression of ribavirin provides a real world example of what’s wrong with today's medical regulatory system. The clinical data consistently showed that when ribavirin plus interferon-alpha were combined during treatment, it resulted in complete eradication of the hepatitis C virus 50 to 100% more often than with interferon alone.

Ribavirin is a broad-spectrum antiviral drug that has been shown to significantly suppress hepatitis C infection when combined with interferon-alpha. After the FDA approved ribavirin, they required hepatitis C patients to first fail a grueling six-month regimen of interferon therapy before they were allowed to try combination interferon-ribavirin.

The hepatitis C virus inflicts massive damage to liver cells that often leads to cirrhosis and primary liver cancer. It's the leading reason why 17,000 Americans are awaiting liver transplants today—and no one should think a liver transplant is easy.

The FDA preferred to punish the maker of ribavirin rather than save human lives.

Example Of How Medical Progress Occurs

Life Extension’s discovery of ribavirin's multi-benefits was somewhat serendipitous. Scientists supported by Life Extension faced a viral epidemic in their animal colony. They went to Mexico in 1983 to purchase ribavirin, hoping it would save their research project. The ribavirin cured the animals. When the scientists contracted viral infections themselves, the ribavirin cured the scientists. So Life Extension knew ribavirin was effective from studies that had been published in the scientific literature, by the fact it had been approved by drug regulators in most other countries, and because it worked on animals and humans infected with a wide array of viruses.

Ribavirin by itself is not a cure for hepatitis C. It has to be combined with the FDA-approved drug interferon-alpha to achieve viral eradication. Many hepatitis C patients do achieve viral eradication with interferon alone, but it is a grueling therapy.

So first there was interferon-alpha that cured some hepatitis C patients. In those it failed to cure, it still reduced future risk of liver cancer. When ribavirin was added to interferon-alpha, eradication rates doubled, according to some research. This was a major advance, but the FDA still required hepatitis C patients to undergo six-month treatment using interferon, which inflict horrific side effects.

With the approval of Sovaldi®, 90% of hepatitis C patients will be
cured\textsuperscript{19} and most of them should be able to avoid interferon-alpha therapy. But for Sovaldi\textsuperscript{8} to optimally work, it needs ribavirin.

I hope you see the stair-step approach often required for real medical breakthroughs to occur. If it were not for a Herculean battle waged in the 1980s-1990s to get ribavirin approved, Sovaldi\textsuperscript{8} may never have made it past initial clinical testing. It needed co-administering of ribavirin to achieve its curative effect.

The FDA now states that Sovaldi\textsuperscript{8} should not be used without ribavirin.\textsuperscript{56} Yet before 1998, the FDA initiated criminal investigations against those who promoted ribavirin’s antiviral benefits.\textsuperscript{21}

The problem is that there are precious few resources available to identify which of the thousands of compounds in the developmental stage should be fast-tracked to save lives today. It’s in the interest of some drug companies to delay expending billions to get a better drug approved if that superior drug would compete with existing, already approved patented drugs.

Life Extension’s mission is not to incite revolts against bureaucrats who refuse to recognize good science. Yet we have been put in that position as the pharmaceutical establishment cowers to governmental whim and edict when it comes to obtaining official drug approval.

The frightening aspect of this is that no one really knows how many cures are being suppressed by pharmaceutical companies to delay new drug approval by some companies. Life Extension is not the first group to raise this issue. In 1994, a group of researchers and medical professionals published a paper in the New England Journal of Medicine: "The High Cost of Drug Development." The authors noted that the cost of developing a new drug was much higher than previously estimated. They estimated that the cost of developing a new drug was between $1.3 to $2.3 billion, compared to the previous estimate of $500 million. The paper also noted that the average time to bring a new drug to market was 12 years, compared to the previous estimate of 8 years. The authors concluded that the high cost and long time required to bring a new drug to market were due to the lack of incentives for pharmaceutical companies to invest in new drug development. Life Extension has been a vocal advocate for greater transparency in drug development and for increasing incentives for pharmaceutical companies to invest in new drug development. We believe that the high cost and long time required to bring a new drug to market are due to the lack of incentives for pharmaceutical companies to invest in new drug development. Life Extension has been a vocal advocate for greater transparency in drug development and for increasing incentives for pharmaceutical companies to invest in new drug development.
companies that don’t want their valuable patents diminished by bringing out more effective treatments. There is also the risk that the FDA might overlook good science and reject an effective therapy after billions have been spent.

We need to tear down bureaucratic barriers that stifle medical progress. Huge numbers of hepatitis C patients could have been saved had the FDA not blocked the approval of ribavirin. Even today, many health insurance companies are refusing to pay for Sovaldi (the $84,000 drug) until after hepatitis C patients succumb to liver failure.

__Our 30-Year War Against Extortionist Drug Prices__

Life Extension has members worldwide. This is one reason why we are able to discover novel approaches to disease prevention and treatment before they become accepted by the medical mainstream.

A consistent comment we hear from members in other countries is how low priced their drugs are compared to the US. We’ve used this information to expose the incestuous relationship that exists between pharmaceutical companies, government bureaucrats, and elected politicians that cause American drugs to be so outlandishly priced.

To put this in context, Life Extension compiled the chart on the previous page nearly 12 years ago to expose the outlandish markups of prescription drugs. This chart was blown up and used on the floor of the House of Representatives to push through a bill that would allow Americans to import lower-cost medications from other countries. Aggressive consumer activism enabled this bill to be signed into law.

The FDA mixed the law on technical grounds that it (the FDA) did not have the resources to ensure the safety of imported drugs. This single act by the FDA provided the pharmaceutical industry with a financial windfall as Americans struggle to pay increasing health insurance premiums, co-pays, deductibles, and higher taxes to subsidize government-mandated insurance programs like the Affordable Care Act.

I relate this history to let new members know that we are no strangers to drug price gouging. The markup on acyclovir ointment where consumers pay close to $700 for an ingredient that costs 8 pennies exceeds anything we’ve seen in the past.

These irrational prices are being forced on consumers who need pharmaceuticals often to stay alive. These outrageous markups would never survive in a free-market environment.

This blatant price gouging exists because of government-imposed regulations under the guise of consumer protection. These regulations stifle innovation, strangle creation of new treatments, and cost the public their money and longevity.

The obvious solution is to open up the market so that any reputable company could produce something as simple as acyclovir ointment and the many other generics that don’t require specialized manufacturing expertise.

For longer life,

William Falam

References


Choosing the Right Probiotic for You

While many supplements provide just one type of bacteria, taking a probiotic with multiple varieties of good bacteria can help better fight off bad bacteria. FlorAssist® offers a new way to help maintain the proper balance of intestinal flora.

FlorAssist® Probiotic Liquid Vegetarian Capsules provide a proprietary blend of six bacterial strains! Each FlorAssist® dual capsule contains 15 billion CFU consisting of:

- Lactobacillus acidophilus LA-14
- Bifidobacterium lactis BL-04
- Lactobacillus paracasei LPC-37
- Lactobacillus rhamnosus LR-32
- Bifidobacterium bifidum/lactis BB-02
- Bifidobacterium longum BL-05

These potent strains of probiotic bacteria adhere to the soft lining of the intestinal tract, help maintain a healthy surface, and support the digestive system.

The retail price for a bottle containing 30 capsules of FlorAssist® Probiotic Liquid Vegetarian Capsules is $33. If a member buys four boxes, the price is reduced to just $22.50 per box.

Why Don’t Probiotics Always Work?

One of the complications many commercial probiotics face is their inability to overcome hurdles in the digestive tract before hitting their target area—an aspect that can greatly limit their beneficial effects. FlorAssist® Probiotic Liquid Vegetarian Capsules utilize a “dual encapsulation” technology to combat the shortcomings of many commercial probiotics, delivering unprecedented amounts of live bacterial colonies to where your body needs them.

FlorAssist® Probiotic Liquid Vegetarian Capsules...

- Contain probiotic strains that are acid resistant, protecting them from stomach acid that can destroy the viability of the strains;
- Have dual encapsulation technology, keeping the capsule intact longer, and ensuring that the probiotic reaches the small intestine,
- Provide a high CFU (Colony Forming Units) of 15 billion per capsule!
Healthy aging requires a dynamic immune system. A youthful body is dependent on balanced immune-cell activity to maintain effective, responsive, and modulated immunity.¹

Extracts from the white peony root have been used in China for immune balance for more than 1,200 years.² Modern science now recognizes the immune importance of a bioactive peony extract component called paeoniflorin.³⁻⁵

**Peony Immune White Peony Root Extract** is a standardized extract of active white peony compounds that have been shown to help maintain the balanced responsiveness, sensitivity, and strength of a properly-modulated immune response.⁶⁻¹⁰

Through a host of subtle mechanisms, **Peony Immune White Peony Root Extract** promotes immune homeostasis—optimal immune health—by limiting production of inflammatory molecules and naturally balancing inflammation-suppressing cells and pro-inflammatory cells.³⁻⁵

A host of human clinical trials have demonstrated that the compounds in **Peony Immune White Peony Root Extract** promote a healthy and balanced inflammatory response.⁶⁻¹⁰

The suggested twice-daily dosage of one vegetarian capsule of **Peony Immune White Peony Root Extract** provides:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>White peony extract (root)</td>
<td>1,200 mg</td>
</tr>
<tr>
<td>[providing 504 mg paeoniflorin]</td>
<td></td>
</tr>
</tbody>
</table>

A bottle of 60 vegetarian capsules of **Peony Immune White Peony Root Extract** retails for $36. If a member buys four bottles, the price is reduced to $24 per bottle.

To order **Peony Immune White Peony Root Extract**, call 1-800-544-4440 or visit www.LifeExtension.com

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**References**


These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
ARE YOU TAKING THE OPTIMAL FORMS OF VITAMIN E?

According to the Proceedings of the National Academy of Sciences, alpha tocopherol (vitamin E) displaces critically important gamma tocopherol in the cells. While alpha tocopherol inhibits free-radical production, gamma tocopherol is required to trap and neutralize existing free radicals.2

Prestigious scientific journals have highlighted gamma tocopherol as one of the most critically important forms of tocopherols, which includes d-alpha tocopherol (natural vitamin E) for those seeking optimal health benefits.

Most commercial vitamin E supplements contain little, if any, gamma tocopherol. They instead rely on alpha tocopherol as the primary ingredient. However, it is gamma tocopherol (not the alpha form) that quenches peroxynitrite, the free radical that plays a major role in the development of age-related decline.2,3

SESAME LIGNANS: THE NATURAL VITAMIN E BOOSTER

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

In a human study that combined gamma tocopherol with sesame lignans, gamma tocopherol/sesame was 25% more effective than gamma tocopherol/tocotrienols in suppressing tissue measurements for free-radical and inflammatory damage.4,5 Since tocotrienols are considered nature’s most potent antioxidants, the fact that low-cost gamma tocopherol with sesame is more effective is a remarkable finding.

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

WORLD’S MOST COMPREHENSIVE VITAMIN E FORMULA!

The Gamma E Tocopherol with Sesame Lignans formula provides potent doses of critically important gamma tocopherol along with sesame lignans to augment its antioxidant effects. Suggested dose is one softgel once or twice daily.

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

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

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

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

References

To order Gamma E Tocopherol 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.
Active Component In Green Tea Could Reduce Pancreatic Cancer Risk

A study published online in the journal *Metabolomics* found that the powerful catechin in green tea called EGCG (epigallocatechin-3-gallate) changed the metabolism of pancreatic cancer cells by suppressing the expression of the LDHA (lactate dehydrogenase) enzyme associated with cancer metabolism.*

Study author Dr. Wai-Nang Lee, of the Los Angeles Biomedical Research Institute, and colleagues also discovered an enzyme inhibitor called oxamate, which is known to reduce LDHA activity, functioned in a similar manner and also disrupted the metabolic system of pancreatic cancer cells.

Metabolism is the chemical processes that occur in an organism’s cells, either normal or cancerous, that keeps cells alive and multiplying.

“Scientists had believed they needed a molecular mechanism to treat cancer, but this study shows that they can change the metabolic system and have an impact on cancer,” said Dr. Lee. “By explaining how green tea’s active component could prevent cancer, this study will open the door to a whole new area of cancer research and help us understand how other foods can prevent cancer or slow the growth of cancerous cells.

“This is an entirely new way of looking at metabolism. It is no longer a case of glucose goes in and energy comes out,” continued Dr. Lee. “Now we understand how cancer cell metabolism can be disrupted, and we can examine how we can use this knowledge to try to alter the course of cancer or prevent cancer.”

*Editor’s Note:* A 2012 study recommended that consuming green tea may reduce risk of digestive system cancers in women, while a separate study found that EGCG delivered directly into tumors made two-thirds of them shrink or disappear entirely within a month with no side effects to normal tissue.

—A. Kessler

Intense Exercise Linked To Atrial Fibrillation

The results of a study published in the journal *Heart* found a link between men who exercised intensely for more than five hours a week and an increased risk for developing an irregular heartbeat known as atrial fibrillation, a risk factor for stroke.*

Researchers from Karolinska Institute, Sweden, analyzed 44,410 men between the ages of 45 and 79 regarding their exercise habits at the ages of 15, 30, 50, and during the past year, when their average age was 60. They also monitored and recorded the heart health of these men for an average of 12 years, looking in particular for atrial fibrillation.

Those that worked out intensely—more than five hours a week at the age of 30—were 19% more likely to have an irregular heartbeat by the time they turned 60 than the men who exercised less than one hour per week. The risk level rose to 49% among those who worked out more than five hours per week at the age of 30 and exercised less than an hour by the age of 60.

However, the men who exercised less intensely—walking briskly or cycling—for an hour a day or more at age 60 were 13% less likely to develop atrial fibrillation than those who got no exercise at all.

*Editor’s Note:* In an accompanying editorial, researchers Eduard Guasch and Lluís Mont say that when it comes to exercising “maximum cardiovascular benefits are obtained if performed at moderate doses, while these positive aspects are lost with (very high) intensity and prolonged efforts.”

—A. Kessler

* *Metabolomics.* 2014 May 30.

* *Heart.* 2014 May 14.
Zinc Supplementation Supports Prevention Of Premature Mortality In Malnourished Children

The Cochrane Library published a review on May 15, 2014, which concluded that supplementing with zinc reduced the risk of morbidity and mortality in malnourished children, while improving growth.*

Professor Zulfiqar Bhutta, of the Center of Excellence in Women and Child Health at Aga Khan University in Karachi, Pakistan, and colleagues selected 80 randomized controlled trials that included a total of 205,401 boys and girls between the ages of 6 months and 12 years for their review. They found that supplementing with zinc decreased the risk of diarrhea, a major cause of death among children in developing countries. Zinc supplementation was also associated with a reduction in the risk of mortality from diarrhea, lower respiratory tract infection, and malaria, as well as death from all causes.

Editor's Note: Additionally, children who were supplemented with zinc were slightly taller at the end of the trials included in the current study, in comparison with those who did not receive the supplement.

—D. Dye


Metformin Aids In The Stabilization Of Metastatic Prostate Cancer

An article published in European Urology reports the outcome of a Swiss trial involving men with castration-resistant prostate cancer (defined as a testosterone level of less than 50 ng/dL with progressive disease) who were given the antidiabetic drug metformin.*

For the trial, 44 nondiabetic men who had not been treated with chemotherapy for progressive, metastatic castration-resistant prostate cancer causing few or no symptoms were given 1,000 mg metformin twice a day until disease progression. Assessment of disease status—including computed tomography of the abdomen, pelvis, and chest, bone scanning, and serum prostate cancer specific antigen (PSA) level measurement—was conducted every 12 weeks.

After initiation of metformin therapy, 36% of the group was progression-free at 12 weeks, and 9% were still progression-free at 24 weeks. PSA doubling time, a measure of disease progression, was beneficially prolonged in 52% of patients after the initiation of metformin.

Editor's Note: The drug was also associated with improved insulin sensitivity.

—D. Dye


Black Cumin Seed Oil Improves Abnormal Semen Quality In Infertile Men

Phytomedicine published the results of a clinical trial that revealed black cumin seed oil, Nigella sativa L., markedly boosts semen quality, motility, and volume with no adverse effects.*

In the study, researchers from Payame Noor University and Shahid Beheshti University of Medical Sciences, in Tehran, Iran, and Institute of Medicinal Plants, Karaj, Iran, tested 34 infertile men with sperm counts below 20 million per mL, or had less than 30% abnormal sperm morphology or type A and B (fast-moving forward and slow-moving forward) motility less than 25 to 50% respectively. They also tested the pH of the semen since pH often determines the level of motility of the sperm.

The men received either 2.5 mL of Nigella sativa L. seed oil or a placebo twice each day. After eight weeks, the researchers again tested the motility, morphology, and sperm counts for the participants. They found the group supplemented with 5 mL of black cumin seed oil daily for two months had significantly higher sperm count, better motility and morphology, and improved pH levels compared to the placebo group and compared to the beginning of the study.

Editor's Note: Sperm counts around the world have been dropping. A 2012 study by researchers at the Institut de Veille Sanitaire (Sanitary Surveillance Institute), Saint Maurice, France, of around 26,000 men with an average age of 35 found that sperm concentrations dropped 32% over a 17-year period by a change rate of about 1.9% a year.

—A. Kessler

* Phytomedicine 2014 May 15.
New Study Link Diabetes and Pancreatic Cancer

A study published in the *Annals of Surgical Oncology* found that people with diabetes have two times the risk of pancreatic cancer compared to those who don’t have diabetes, according to an analysis of 88 international studies conducted between 1973 and 2013.*

Diabetes has long been associated with pancreatic cancer, but it hasn’t been clear which condition came first. Dr. Mehrdad Nikfarjam, liver, pancreas, and biliary specialist in the Department of Surgery at the University of Melbourne, Australia, said pancreatic cancer is often diagnosed at an advanced, incurable stage.

“The study revealed the risk of pancreatic cancer was greatest after the diagnosis of diabetes, but remained elevated long after the diagnosis,” Dr. Nikfarjam said. “The presence of diabetes remains a modest risk factor for the development of a cancer later in life.”

While pancreatic cancer cases in the general population remain relatively low, the analysis suggests screening for cancer should be recommended, especially for all newly diagnosed diabetics.


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A Purpose-Driven Life Reduces Mortality

An article published in *Psychological Science* links having a purpose in life to a reduced risk of premature mortality.*

“Having a purpose in life has been cited consistently as an indicator of healthy aging for several reasons, including its potential for reducing mortality risk,” write authors Patrick L. Hill and Nicholas A. Turiano.

“In the current study, we sought to extend previous findings by examining whether purpose in life promotes longevity across the adult years.”

By evaluating data from over 6,000 men and women enrolled in the Midlife in the United States study, Hill and Turiano uncovered an association between a greater sense of purpose and a reduced risk of dying over 14 years of follow-up.

“Our findings point to the fact that finding a direction for life, and setting overarching goals for what you want to achieve, can help you actually live longer, regardless of when you find your purpose,” Dr. Hill noted.


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New Home Healthcare Diagnostic Tool

A miniature medical lab that’s small enough to hold in your hand will soon allow consumers to run a variety of diagnostic tests from the comfort of their own homes. Known as the Cue, the device can test and track five key health indicators—testosterone, vitamin D, the flu virus, luteinizing hormone (which indicates a woman’s fertility), and C-reactive protein (CRP, which serves as a marker of inflammation). Cue developers identify these as the most common tests run by health care practitioners in the US.

Tests are undertaken as the consumer submits a small sample (blood, nasal swab, or saliva) into a customized cartridge, which is then placed inside the Cue. Within moments, it’s analyzed and the information is sent to your smartphone or tablet where it’s displayed in an easy-to-read format.

The device is expected to retail in the spring of 2015 for $300, with a price of $20 for five test cartridges.*

*Cartridges for the influenza tests are slightly more expensive at three for $30, but aren’t needed as regularly as other test cartridges.

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* Editor’s Note: The authors are currently attempting to determine if the reason for the study’s finding is due to the practice of healthier lifestyles among those having a purpose. They also plan to explore the effect of life purpose on other aspects of well-being.

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**Cardiovascular Risks Overlooked In Antidiabetes Drug Trials**

In a personal view, written in *The Lancet Diabetes & Endocrinology*, John McMurray, of the University of Glasgow, and colleagues ask why heart disease is rarely considered in clinical trials regarding glucose-lowering drugs.* Hospitalization for heart failure is a common and important cardiovascular complication of diabetes, he continues, and increasing evidence shows that some glucose-lowering drugs increase the risk of heart failure. Such findings have prompted the FDA to make new regulations requiring cardiovascular outcome trials for new drugs.

“Fortunately, some trials in progress are taking heart failure into account as a secondary outcome,” said Professor McMurray. “But many others are neglecting to report this important complication as a key trial outcome. Until heart failure is systematically evaluated in clinical trials, the cardiovascular safety of antidiabetes drugs will remain uncertain.”

**Editor’s Note:** Cardiovascular outcome trials usually use MACE events (major adverse cardiovascular events, which include death, heart attack, and stroke) as a primary outcome. As McMurray points out, heart failure can be more common than these events, especially in patients with advanced diabetes.

—A. Kessler


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**Supplementation With Magnesium Lowers C-Reactive Protein In Prediabetes**

An article published online on May 7, 2014, in the *Archives of Medical Research* reports the results of a double-blind trial of subjects with prediabetes and low magnesium levels that found a benefit for magnesium supplementation in reducing C-reactive protein (CRP), a marker of inflammation.*

The trial included 62 men and women between the ages of 18 to 65 years with newly diagnosed prediabetes who had magnesium levels below 0.74 mmol/L. Participants received an oral magnesium chloride solution containing 382 mg magnesium or a placebo daily for three months, and both groups received advice concerning physical activity and the components of a healthy diet. Plasma glucose, serum magnesium, and CRP levels were measured before and after the treatment period.

While both groups experienced a decline in CRP, the decrease was significantly greater among those who received magnesium.

**Editor’s Note:** Additionally, at the end of the study, serum magnesium was higher, and fasting and two-hour post-load glucose levels were lower among those who received magnesium in comparison with the placebo.

—D. Dye

* *Arch Med Res.* 2014 May 7.

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**Meta-Analysis Links Greater Sugar Intake To Higher Blood Pressure And Lipids**

An article published in the *American Journal of Clinical Nutrition* details the findings of New Zealand researchers of higher blood pressure and cholesterol among men and women who consumed the most sugar.*

Researchers in New Zealand selected 40 trials for their analysis, which included a total of 1,699 men and women. Thirty-nine of the studies provided data concerning lipid levels and 12 reported blood pressure. Studies included those in which dietary interventions intended to alter sugar intake in one group of participants were compared to a group with a differing intake. The researchers found an association between increased sugar intake and higher total cholesterol and triglycerides in comparison with levels measured in subjects who had a lower intake, which was particularly strong in subgroup analyses of studies in which no significant difference in weight change occurred between the groups.

**Editor’s Note:** An association between greater sugar intake and higher systolic blood pressure was observed in trials lasting eight weeks or more.

—D. Dye

* *Am J Clin Nutr.* 2014 May 7.
Nearly 6,000 studies have been published on the broad-spectrum health benefits of green tea. Research shows that green tea favorably influences cardiovascular health, lipid clearance, glucose tolerance, healthy body weight, DNA repair, prostate and breast health, and healthy cell division. Scientists have identified the polyphenol EGCG as the key compound for green tea’s multimodal health benefits.

Life Extension® has created a high-potency, standardized 98% polyphenol green tea extract. These highly concentrated Mega Green Tea Extract Capsules contain 725 mg of either lightly caffeinated or decaffeinated 98% standardized green tea extracts.

The retail price for 100 vegetarian capsules of Mega Green Tea Extract is $30. If a member buys four bottles of 725 mg Mega Green Tea Extract capsules, the price is reduced to $18 per bottle. Each bottle will last over three months at the typical dose of one capsule daily.

References

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

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
Magnesium is the most important mineral in the body, yet most Americans do not obtain sufficient magnesium from their diet. Magnesium is required for more than 300 biochemical reactions and many of the body’s critical functions are dependent upon it. Magnesium helps:¹ ²

- Maintain normal muscle and nerve function.
- Keep heart rhythm steady.
- Support a healthy immune system.
- Keep bones strong.
- Maintain blood sugar levels already within normal range.
- Promote normal blood pressure. Magnesium is also...
- Involved in energy metabolism and protein synthesis.

The recommended intake of magnesium to maintain vascular health is 500 mg or more a day. With Life Extension Magnesium Caps, you can easily obtain 500 mg of elemental magnesium for less than 7 cents a day!

A bottle of 100 vegetarian capsules of 500 mg Magnesium Caps retails for $12. If a member buys four bottles, the price is reduced to $7.50 per bottle.

Caution: If taken in high doses, magnesium may have a laxative effect. If this occurs, divide dosing, reduce intake, or discontinue use.

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.
As we age, a balanced immune and inflammatory response becomes critical to guarding our health.¹-⁵
Research has shown Black Cumin Seed Oil to be particularly effective.⁶-⁷

**UNIQUE MOLECULAR COMPLEX**

Scientists have determined that black cumin seeds contain a broad spectrum of active compounds.⁸ Combined, these compounds provide powerful and wide-ranging immune support and promote healthy inflammatory response.⁹-¹⁰

**DUAL IMMUNE SUPPORT**

A number of biological factors contribute to the body’s normal inflammatory activity, including cell-signaling chemicals and hormone-like messengers.⁵ In a series of scientific studies, Black Cumin Seed Oil has been shown to support the normal effectiveness of these inflammatory factors.⁶,⁷

Also, an aging, healthy immune system needs to orchestrate the activity of macrophages and helper T-cells that work together to identify and destroy dangerous microbes and abnormal cells. Black Cumin Seed Oil was also shown to support the optimal function of these vitally important defensive activities.⁹¹¹

**A BALANCED INFLAMMATION RESPONSE**

By acting on both immune factors and inflammatory factors, Black Cumin Seed Oil supports a healthy immune system—which is increasingly important as we age—and facilitates a healthy inflammatory response!

The suggested daily dosage of two softgels of Black Cumin Seed Oil provides:

- Thymocid™ organic Black Cumin seed oil (Nigella sativa) 1,000 mg

A bottle containing 60 softgels of Black Cumin Seed Oil retails for $16. If a member buys four bottles, the price is reduced to $10.50 per bottle. (Item# 01709)

Since curcumin possesses some of the properties of black cumin seed oil, some people might want to take both nutrients in the same capsule.

The suggested daily dose of two softgels of Black Cumin Seed Oil with Bio-Curcumin® provides:

- BCM-95® Bio-Curcumin® (turmeric 25:1) extract (root) 400 mg
- Thymocid™ organic Black Cumin Seed Oil (Nigella sativa) 1,000 mg

A bottle containing 60 softgels of Black Cumin Seed Oil with Bio-Curcumin® retails for $32. If a member buys four bottles, the price is reduced to $22.50 per bottle. (Item# 01710)

To order Black Cumin Seed Oil or Black Cumin Seed Oil with Bio-Curcumin®, call 1-800-544-4440 or visit www.LifeExtension.com

References

Thymocid™ is a trademark of Verdure Sciences, Inc.
Bio-Curcumin® and BCM-95® are registered trademarks of Dolcas-Biotech, LLC. U.S. Patents Nos. 7,883,728, 7,736,679 and 7,879,373.

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.
Visceral fat is the fat mass that surrounds the internal organs of our abdomen. Excess visceral fat promotes systemic inflammation, which accelerates the diseases of aging.¹

Ingestion of simple sugars and certain types of dietary fat, including trans fats and saturated fat, all contribute to inflammation.

Typical Americans ingest too many sugars, starches, and unfriendly fats. The result is they frequently carry around excess abdominal fat despite all the exercise and weight-loss programs available.

Drugs that block dietary fat absorption are typically non-selective, meaning they impede the absorption of anti-inflammatory omega-3 fatty acids as well as pro-inflammatory saturated fatty acids. These drugs are also well-known for side effects like diarrhea and bloating.

A product that selectively binds pro-inflammatory fats like trans fat and saturated fats while sparing beneficial anti-inflammatory fatty acids would be ideal.
Researchers have identified a natural fiber called alpha-cyclodextrin that selectively absorbs and eliminates bad fats such as trans fat or saturated fat while leaving good fats like omega-3s untouched to deliver their benefits.

This remarkable molecule binds up to nine times more dietary fat from the intestinal tract in comparison with other fibers.²

Studies showed that if alpha-cyclodextrin were taken three times a day during high-fat meals (2 grams per meal), one could engulf as much as 2 ounces of trans fat and saturated fat each day, which represents up to 500 calories of pure fat that never gets absorbed into the bloodstream.²
Most Americans consume too many **saturated fats** in their diet, and deadly **trans fats** continue to be hidden in commercially prepared foods.

Reducing the quantity of these ingested fats that are **absorbed** into one’s bloodstream provides a myriad of health benefits.

For example, for people who eat two heavy-fat meals a day, 2 grams of **alpha-cyclodextrin** taken before each of these meals can remove up to 320 calories from the body before absorption.

**Alpha-cyclodextrin** can be a helpful strategy in maintaining healthy cholesterol and triglyceride levels while reducing the risk of **metabolic syndrome**. This fiber has been shown to lower the dangerous apolipoprotein B (ApoB) type of cholesterol, known to increase with ingestion of pro-inflammatory saturated fat. Elevated ApoB has been shown to contribute to atherosclerosis.4

Human research demonstrates that **alpha-cyclodextrin** can be a highly useful component in controlling the negative impact of harmful fats before they enter the bloodstream.

### The Problems With Fat-Blocking Drugs

Many people have tried—and given up on—fat-blocking drugs such as **orlistat**, which is marketed as **Alli** or **Xenical**. There are problems with these drugs that make them difficult to use. Unlike **alpha-cyclodextrin**, these medications rely on inhibiting the lipase enzyme that breaks down triglycerides (the major form of dietary fat) into single fatty acid molecules.5

Instead of isolating dietary fatty acids from the rest of the intestinal contents the way **alpha-cyclodextrin** does, these drugs leave triglycerides “loose” in the colon. There, they may undergo digestion or fermentation to produce gas and fluids, leading to flatulence, urgency, cramping, loose stools, and possibly diarrhea or release of oily material from the rectum.5

An additional problem with fat-blocking drugs is they remove all types of fats, regardless of whether they are good fats or bad fats.

As you’ll read, the fat-absorbing qualities of **alpha-cyclodextrin** translate directly into reduced markers of cardiovascular and metabolic risk.

### Alpha-Cyclodextrin’s Broad Spectrum Of Benefits

For nearly 30 years, researchers have been investigating **alpha-cyclodextrin** as a dietary fiber that can modulate fat (lipid) metabolism in animals.6 This effect was first established by scientists in Japan who fed young, growing rats a fiber supplement containing alpha-cyclodextrin in their diets. The result was less weight gain and less body fat deposition compared with animals that did not receive this fiber.6 As an added benefit, these rats showed reduced levels of triglycerides in both blood and liver tissue.

Improvements in lipid profile have since been shown in numerous animal studies involving the use of alpha-cyclodextrin. Laboratory mice fed a high-fat, Western-style diet were supplemented with alpha-cyclodextrin for 14 weeks. This supplemented group showed decreases of 15.3% in total cholesterol, 20% in free cholesterol, and 14% in cholesterol esters (a bound form of cholesterol).7

Importantly, the majority of the type of cholesterol that was reduced was the dangerous ApoB, known to be increased with the intake of dietary saturated fat, and which is associated with a higher risk for atherosclerosis.7 This ApoB cholesterol fraction can be measured through a VAP blood test. A further reduction in the risk of atherosclerosis and cardiovascular disease was seen when the animals’ fatty acid blood levels were measured. Alpha-cyclodextrin supplementation increased beneficial unsaturated fats by 2.5%, while reducing pro-inflammatory saturated fats and trans fats by 4.5 and 11%, respectively.7

This led researchers to believe that **alpha-cyclodextrin** could **selectively** reduce unhealthy fats, while leaving alone the safer fats. In a compelling confirmatory experiment, rats were fed diets containing alpha-cyclodextrin or control supplements, and then given a test diet with radioactively labeled saturated or unsaturated fats. The result was a **seven-fold increase** in excretion of saturated fats in those given alpha-cyclodextrin compared with control animals. And in
the alpha-cyclodextrin group, there was no increase in excretion of the beneficial polyunsaturated fats like omega-3s.8

Further exciting evidence that alpha-cyclodextrin preferentially reduces dangerous fats comes from an animal experiment in which mice were fed either a standard Western diet laden with fat, or the same diet with alpha-cyclodextrin supplementation.4 As can be seen in Figure 1, the alpha-cyclodextrin-supplemented animals had major reductions in almost all fatty acids in their blood, indicating the elimination of those fats from the body. But the most interesting thing about this figure lies in exactly which fats were decreased, and which were increased.

There was a 25% reduction in deadly trans fats as well as a significant 10% reduction in the saturated fats that also contribute to cardiovascular risk.4 At the same time, there was a roughly 13% increase in beneficial omega-3 DHA. In this same study, the ratio of LDL (“bad”) to HDL (“good”) cholesterol was reduced by nearly 5% in the alpha-cyclodextrin group, demonstrating further reduction in cardiovascular risk. Recent studies reveal that elevated LDL cholesterol is not only a cardiovascular catastrophe, it also has now been shown to promote the spread of cancer throughout the body.1

Note that these changes were made entirely without reducing dietary intake of dangerous fats, and
How Alpha-Cyclodextrin Engulfs And Eliminates Trans Fat And Saturated Fat

The selective fat-absorbing effectiveness of the natural fiber alpha-cyclodextrin is due to the unique structure of this molecule.

In contrast to conventional fiber molecules that are linked in large, bulky chemical chains and bind fat non-selectively, each molecule of alpha-cyclodextrin is composed of streamlined chemical chains, linked head-to-tail to form a doughnut-like shape.

The outer section of the alpha-cyclodextrin doughnut-like shape dissolves readily in the water found in the intestinal tract. But the inner walls (the walls of the “doughnut hole”) repel water, and selectively cling to fat molecules.

Due to the molecular structure of saturated fats, these pro-inflammatory fats are strongly attracted to the soluble alpha-cyclodextrins. Once the saturated fats are bound in the “doughnut hole” of the cyclodextrins, the cyclodextrin/fat complexes become insoluble in water, so they form tiny clumps of material that are readily excreted from the body before entering the bloodstream.

As millions of small alpha-cyclodextrin “doughnut” molecules mix in the intestine, they rapidly and selectively “suck up” unhealthy, pro-inflammatory fat molecules (trans fat, saturated fat) and safely carry them out of the body in fecal matter.

Unlike conventional dietary fiber, which non-selectively binds fat in about a 1:1 ratio, a single gram of alpha-cyclodextrin is able to bind up to approximately 9 grams of fat. The math is easy to do: At a daily dose of 6 grams of alpha-cyclodextrin, this fiber has the potential to grab up to approximately 54 grams of fat (6 x 9 fat grams equaling 54 grams of fat).

That’s about 2 ounces of pro-inflammatory trans fat and saturated fat exiting the colon that the body will never see circulating in its bloodstream. Equally impressive, taking just 6 grams of alpha-cyclodextrin can potentially eliminate nearly 500 fat calories/day.

also without supplementation with omega-3 and other beneficial fats. Rather, the alpha-cyclodextrin itself appears to have caused these favorable shifts in lipid profiles through its remarkable ability to selectively bind and eliminate destructive lipid molecules.

Dumping out significant quantities of unabsorbed dietary fat might be expected to combat weight gain and improve markers of the metabolic syndrome. That’s exactly what scientists found when they fed a high-fat diet to rats that were supplemented with alpha-cyclodextrin. All of the animals on the unhealthy diet that were not supplemented with alpha-cyclodextrin gained weight. The supplemented animals had significantly less weight gain, and had a 30% reduction in plasma triglycerides, a 9% reduction in cholesterol, and an increased amount of fat excretion in their feces, demonstrating successful elimination of unabsorbed fat from the intestine. In addition, these animals had improved insulin sensitivity and showed normalization of serum leptin, the satiety hormone that signals the body that it no longer has to feel hungry.

Human Studies Confirm Metabolic Effects Of Alpha-Cyclodextrin

Human studies showing the effectiveness of alpha-cyclodextrin on reducing blood lipids, body fat, and body weight have confirmed the evidence found in animal and lab studies. In one such study, obese patients with type II diabetes were randomly assigned to take 2 grams of alpha-cyclodextrin with each fat-containing meal. Patients were asked not to change their regular eating habits or daily routine.

For 30 days before the beginning of the supplement period, participants in both groups gained an average of 2.2 pounds each, but once the supplement period
began, placebo recipients continued to gain weight, while subjects in the alpha-cyclodextrin group had no significant further weight gain.\textsuperscript{10}

There was also good news on the blood lipid front: Among those who started the study with elevated lipids, supplemented patients had an \textit{8.2\% reduction} in total cholesterol, while those in the placebo group saw their total cholesterol \textit{rise} significantly by \textit{5.2\%}.\textsuperscript{10}

In addition, patients taking alpha-cyclodextrin had an increase in levels of \textit{adiponectin}, a hormone that appears to be protective against atherosclerosis, while levels of this beneficial substance fell in the placebo group.

After a fat-rich meal, blood triglyceride levels tend to rise very sharply, and the degree of that rise is a strong predictor of cardiovascular risk. Thus, lowering post-meal triglyceride levels is an important component for reducing heart disease.\textsuperscript{11-14}

In an attempt to acutely lower post-meal triglycerides, researchers randomly assigned healthy adults to receive either \textbf{2 grams} alpha-cyclodextrin or a placebo immediately following a commercially prepared high-fat breakfast rich in saturated fat.\textsuperscript{15} Compared to placebo recipients, patients supplemented with this one-time dose of alpha-cyclodextrin absorbed \textbf{69\% less} of the fat provided in the test meal.

Alpha-cyclodextrin’s effects can be sustained over long periods of time, according to a study of 66 obese diabetic patients.\textsuperscript{2} Subjects were randomly assigned to receive either placebo or two \textbf{1 gram} tablets of alpha-cyclodextrin with each meal for three months (total \textbf{6 grams/day}). Those with the highest intakes of total and saturated fat lost more weight than those with lower intakes, again demonstrating that alpha-cyclodextrin has a preferential affinity for the more dangerous saturated fats. Careful analysis also showed that the amount of fat (in grams) excreted by these subjects was about \textbf{nine times} the amount of alpha-cyclodextrin that they had ingested, confirming previous laboratory studies.

**Effect Of Alpha-Cyclodextrin In Healthy Adults**

So far we have looked at human studies involving obese and/or diabetic individuals. But a recent study showed that alpha-cyclodextrin has benefits on body weight and lipid profiles even in healthy, non-obese, nondiabetic people, demonstrating genuine preventive effects.\textsuperscript{16}

A group of overweight people (with a body mass index of 25 to 30) were randomly assigned a placebo or \textbf{2 grams} alpha-cyclodextrin with each meal (\textbf{6 grams/day}). After two months, supplemented individuals had an average weight loss of just under a pound with decreases in total cholesterol (\textbf{5.3\%}) and LDL (“bad”) cholesterol (\textbf{6.7\%}). The atherosclerosis-promoting protein ApoB also fell \textbf{5.6\%} in supplemented patients, while serum insulin levels fell \textbf{9.5\%}, compared to controls.\textsuperscript{16}

In a similar study on healthy volunteers, these beneficial effects on metabolic parameters were further validated.\textsuperscript{17} After an overnight fast, subjects consumed either \textbf{100 grams} (about \textbf{3.3 ounces}) of white bread with water or \textbf{100 grams} of white bread with \textbf{10 grams} alpha-cyclodextrin in water. Researchers recorded the \textit{glucose} and \textit{insulin} responses following this “meal” in both groups over a three-hour period.
As might be expected, the control group that was not taking alpha-cyclodextrin had a dramatic post-meal rise in both glucose and insulin levels. By contrast, the subjects supplemented with alpha-cyclodextrin had hardly any rise in post-meal glucose (Figure 2), as well as a delayed and much reduced increase in post-meal insulin (Figure 3).

This study is especially important, given the outsized impact on cardiovascular and diabetic risk posed by such sharp after-meal spikes in insulin and glucose (a 51% increase in the risk of having a cardiovascular event and an 89% increase in the risk of dying). It also shows that you can gain control not only of your blood lipids and body weight, but also metabolic and cardiovascular risks, by taking alpha-cyclodextrin before meals.

Similar results were obtained in a study in which the alpha-cyclodextrin (at doses of 2, 5, and 10 grams) was directly mixed with boiled white rice. At 5 and 10 grams of alpha-cyclodextrin, the amount of glucose that was absorbed was significantly reduced and the volunteers experienced a greater feeling of satiety.

As has long been reported in Life Extension magazine, after-meal (postprandial) surges in blood glucose and insulin levels create metabolic havoc and sharply increase vascular disease risk.

**Summary**

Too much saturated fat in the diet is one of the leading causes of America’s ongoing epidemic of obesity, lipid disturbances, and the resulting high risk of cardiovascular disease.

Even with the best attempts to eat a balanced diet and get regular exercise, many people find it difficult to lose weight, balance their blood lipid profiles, and reduce their risk of dying early.

A new form of fiber, *alpha-cyclodextrin*, selectively engulfs dietary fat from the intestine, holding about 9 grams of fat for each gram of the supplement ingested. This high-efficiency dietary fat absorber can cut your
exposure to dietary fat by about **2 ounces** per day, at a daily savings of around **500 calories**.

And just as importantly, alpha-cyclodextrin, dosed at about **6 grams/day**, can reduce high levels of triglyceride, cholesterol, and pro-atherosclerosis lipid-carrying proteins like ApoB, the latter of which is known to be increased by dietary saturated fat.

Studies show that regular use of alpha-cyclodextrin slows weight gain in both obese and non-obese patients, and those both with and without type II diabetes.

The fact that keeping nearly **500 calories a day** of fat from entering the bloodstream does not result in substantial weight loss demonstrates how challenging it can be for aging individuals to shed body fat. If one were to engage in an aggressive diet and exercise program, it would appear that the addition of **6 grams a day** of alpha-cyclodextrin would produce an additive weight-loss effect.

Alpha-cyclodextrin is available in a chewable tablet with a pleasant taste and texture and a near-complete lack of the intestinal side effects common with other, less selective “fat-blocking” drugs.

**NOTE:** Alpha-cyclodextrin is best taken in a chewable tablet that allows the unique fiber to be masticated and ready to work once it hits the stomach.

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The Dangers Of High After-Meal Glucose

After-meal surges in blood **glucose** create a long-lasting metabolic disaster that can lead to vascular diseases including heart attacks, strokes, kidney damage, retinal disease, and more.

In this article you learned that alpha-cyclodextrin, in addition to quelling dangerously elevated fat levels, helps reduce those after-meal glucose spikes. Several other unique compounds have been shown to tame these surges as well, and should be considered in people who want to maximize their protection.

Such supplements are remarkable for the similarity in their mechanisms of action to alpha-cyclodextrin: They “trap” carbohydrate molecules in the intestine and prevent their entry into the bloodstream, just as alpha-cyclodextrin “traps” saturated fatty acids in the intestine. Here is a summary of those compounds:

- **Transglucosidase**, which converts readily digested starch into non-digestible, prebiotic fiber molecules. This action retains the sugar from ingested starch in the intestinal tract, while nourishing beneficial gut bacteria.

- **Extracts of mulberry leaf and green coffee**, which inhibit the alpha-glucosidase enzyme responsible for breaking simple starches into free sugars. Again, the net effect is the trapping of sugar in the intestine, rather than allowing its absorption.

- **Phloridzin from apple extract**, which inhibits the molecular carriers responsible for transporting sugars from the intestine into the bloodstream. In the presence of phloridzin, these sugars are trapped in the gut.

- **Extracts of white kidney bean**, which inhibit the enzyme **amylose**, another vital step in the breakdown of branched starch molecules into simple sugars. Sugars in unbroken-down amylose starch remain in the gut and are excreted before they can be absorbed to contribute to high blood sugar.

- **Propolmannan**, which slows stomach emptying, delaying delivery of carbohydrates to the small intestine for absorption.
Why You Still Need Adequate Dietary Fiber

Alpha-cyclodextrin is a novel dietary fiber, but it is highly specialized for the purpose of vacuuming up fats that have been ingested in the diet. One of its remarkable properties is that you only need a relatively small dose (on the order of 6 grams daily) to achieve important reductions in the amount of fat and calories absorbed from meals.

Unlike other dietary fiber sources, however, alpha-cyclodextrin, once loaded with its cargo of fat, is excreted intact, without further breakdown by bacteria living in the colon. That’s why you still need ample dietary fiber in order to provide the beneficial breakdown products your colon cells need to stay healthy. You should aim for a minimum of 30 grams (a bit more than an ounce) of dietary fiber each day, in addition to your regular dosing of alpha-cyclodextrin, to optimally promote your cardiovascular, metabolic, and colonic health.

References

8. Gallaher DD, Gallaher CM, Plank DW. Alpha-Cyclodextrin: a novel dietary fiber, but it is highly specialized for the purpose of vacuuming up fats that have been ingested in the diet. One of its remarkable properties is that you only need a relatively small dose (on the order of 6 grams daily) to achieve important reductions in the amount of fat and calories absorbed from meals. Unlike other dietary fiber sources, however, alpha-cyclodextrin, once loaded with its cargo of fat, is excreted intact, without further breakdown by bacteria living in the colon. That’s why you still need ample dietary fiber in order to provide the beneficial breakdown products your colon cells need to stay healthy. You should aim for a minimum of 30 grams (a bit more than an ounce) of dietary fiber each day, in addition to your regular dosing of alpha-cyclodextrin, to optimally promote your cardiovascular, metabolic, and colonic health.

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The optimal dose of PQQ is 20 mg each day. Members taking Mitochondrial Energy Optimizer, Mitochondrial Basics, or PQQ 10 mg caps obtain this optimal PQQ dose when taking the new Super Ubiquinol CoQ10 with BioPQQ®.

The suggested dosage of one softgel daily of Super Ubiquinol CoQ10 with BioPQQ® provides:

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<th>Ingredient</th>
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<tr>
<td>Ubiquinol (as Kaneka QH Ubiquinol®)</td>
<td>100 mg</td>
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<tr>
<td>PrimaVie® Shilajit fulvic acid complex</td>
<td>100 mg</td>
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<tr>
<td>BioPQQ® Pyrroloquinoline quinone disodium salt</td>
<td>10 mg</td>
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</tbody>
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A bottle of 30 softgels of Super Ubiquinol CoQ10 with BioPQQ® retails for $54. If a member buys four bottles, the price is reduced to $37.50 per bottle.

References

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To order Super Ubiquinol CoQ10 with BioPQQ®, call 1-800-544-4440 or visit www.LifeExtension.com

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Many aging individuals find themselves under assault from rising blood sugar levels.

Despite a healthy diet and exercise, blood sugar levels can rise due to a number of factors including excess gluconeogenesis whereby the liver produces glucose from protein. Another issue is the rapid conversion of any starch, including whole grains, into glucose. The result is that even health-conscious, active people can experience higher-than-desired blood sugar levels as they age.1,2

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

Tri Sugar Shield™ provides three plant-derived nutrients that—through their rich array of complementary mechanisms3-8—afford an unrivaled level of optimal, broad-spectrum support for healthy glucose metabolism in aging individuals within normal range.

MULTI-PRONGED APPROACH

Life Extension® Tri Sugar Shield™ contains the following three nutrients:

Sorghum Extract

Sorghum has long been cultivated in Asia (and now is grown in Africa, India, China, Australia, and the USA) and helps maintain healthy blood sugar levels, among those in the normal range, by modulating four different mechanisms:

- Balances the rate of sugar manufacture in the liver (gluconeogenesis).5
- Promotes insulin sensitivity.6
- Regulates PPAR-gamma, a metabolic thermostat controlling glucose metabolism.5,8
- Regulates the enzyme alpha-amylase, which in turn controls the release of sugar found in starch.3,4

Mulberry Leaf Extract

Mulberry leaf has been used in Chinese traditional medicine for centuries. Mulberry leaf extract targets three different mechanisms:

- Targets the alpha-glucosidase enzyme to regulate conversion of starch into glucose.6,10
- Supports glucose transporter GLUT4 that moves glucose out of the bloodstream and into muscle and liver cells.11,12
- Promotes insulin sensitivity.13

Phloridzin

Phloridzin is a natural polyphenol found in various fruit trees.14 Phloridzin helps maintain healthy blood sugar levels, among those in the normal range by:

- Targeting carrier protein SGLT1, in turn helping to block the absorption of glucose into the bloodstream.15,16
- Targeting carrier protein SGLT2, in turn supporting glucose elimination via urine.17,18

By targeting all of these diverse glucose pathways, Life Extension® Tri Sugar Shield™ delivers the widest possible support to help naturally stabilize already healthy glucose levels!

The suggested daily dose of one vegetarian capsule taken twice daily before the heaviest carbohydrate or sugar-containing meals/drinks of Tri Sugar Shield™ provides:

A bottle of 60 vegetarian capsules of Life Extension® Tri Sugar Shield™ retails for $36. If a member buys four bottles, the price is reduced to $24 per bottle.

References

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Combating excess dietary fat is one of the most difficult challenges for those trying to lose weight and avoid the effects of unhealthy lipids. CalReduce Selective Fat Binder safely binds to excess fats in your body and can help you maintain a healthy weight.

The primary ingredient in this formula is alpha-cyclodextrin, a patented super-fiber that absorbs fat molecules from your food before they enter your bloodstream. This soluble fiber absorbs 9 times its weight in dietary fat—without undesirable gastrointestinal side effects.¹ And research shows that alpha-cyclodextrin selectively binds to unhealthy saturated and trans fats without affecting healthy fats such as polyunsaturated fatty acids.²,³ In one experimental study, it was shown that alpha-cyclodextrin caused an approximately 13% increase in beneficial omega-3 DHA blood levels.³

Chewing the recommended two tablets after each fat-containing meal binds up to 36 grams of pure dietary fat, assuming you eat two fat-containing meals daily. This is sufficient to decrease up to 320 calories from the fat in your food.¹ If all your daily meals are high in fat, chew two tablets of CalReduce Selective Fat Binder with each of your three meals to reduce your caloric intake up to 500 calories a day.

This supplement should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.

A bottle of 120 CalReduce Selective Fat Binder chewable mint tablets retails for $45. If a member buys four bottles, the price is reduced to $28.50 per bottle...a huge savings!

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Eating less can enable you to live longer in a far healthier state.

A controversy erupted two years ago when researchers at the National Institute on Aging proclaimed that humans may not benefit by consuming fewer calories.

The media reacted by running headlines and news articles stating that how much you eat has no effect on health and longevity.

Life Extension® knew the National Institutes of Health’s findings were erroneous and published rebuttals to it.

We are pleased to report that a 2014 primate study at the University of Wisconsin showed that compared to calorie-restricted monkeys, those in the control group (not calorie restricted) were almost three times more likely to die from age-related causes.
Starting almost 80 years ago, every living organism studied—from yeast to humans—has shown the robust life-extension and disease-protection effects of calorie restriction.\(^1,2\)

But in 2012, researchers from the National Institute on Aging released a controversial finding: no survival benefit from calorie restriction in their rhesus monkey study.\(^3\)

If true, that would be bad news for human calorie restrictors. Monkeys age in very human-like ways: Gray hair, declining muscle strength, and thinning bones are common. Age-related diseases, like cancer and diabetes, also often occur as monkeys age.\(^4\)

Fortunately, newly published results from the University of Wisconsin’s (UW) long-term study of calorie restriction in rhesus monkeys are very promising.\(^4\) The UW researchers found a significant survival benefit for calorie restriction in comparison to the non-calorie-restricted controls that were allowed to eat as much as they wanted.

Why did the two studies have such very different outcomes?
Two Calorie Restriction Studies Compared

Ben Best, in his excellent report on the European Biogerontology Conference in the May 2014 issue of this publication, analyzed differences between the two studies that would likely account for such findings.

...the UW control monkeys could eat whenever they wanted (which represents the typical human diet), whereas the NIA control monkeys received a standard allotment of food, which mildly restricted their calories. On average, there was a greater difference in body weight between the calorie-restricted and the control monkeys at UW than at the NIA. In rats, very low levels of dietary restriction have a significant effect on survival, so the NIA controls may be showing those benefits, which diminished the longevity difference between the two groups of monkeys (calorie-restricted versus controls).

Ben Best also mentioned important differences in the carbohydrate composition between the two studies:

Although both the NIA and the UW monkeys received nearly 60% carbohydrates, the UW diet was 28.5% sucrose, whereas the NIA diet was only 3.9% sucrose. The UW protein source was lactalbumin, whereas the NIA diet included fish meal, which is rich in omega-3 fatty acids. Omega-3 fats are known to reduce cardiovascular disease.

The NIA paper caused a media frenzy with headlines, declaring that calorie restriction doesn't work. And calls came in to our group, the CR Way™, asking for clarification of the results. So we collaborated with the CR Society in organizing a joint meeting of scientists who study calorie restriction in rhesus monkeys and those studying long-term caloric restriction in humans.

Many important ideas were exchanged that are outside the scope of this article. But one important outcome was that the scientists plan to issue a paper analyzing the NIA and UW studies together.

For most members of LivingTheCRWay.com, the studies made little difference. Every day, we experience extraordinary results that would be common for people of much younger ages. But for millions who are influenced by headlines, the negative stories discouraged them from finding out how calorie restriction might help them live better and possibly longer.

In April 2014, the Wisconsin scientists’ paper titled “Caloric restriction reduces age-related and all-cause mortality in rhesus monkeys,” was published.

The researchers acknowledge that their data contrasts with findings in the widely reported 2012 National Institute on Aging study; however, they emphasize an important point that Ben Best identified: The NIA control monkeys were effectively practicing modest calorie restriction because their food allotments were well controlled.

The CR Way™

If you are considering starting a calorie-restricted diet, the Wisconsin research results should be encouraging: All the monkeys in the study were adults, suggesting that you can start a calorie-restricted diet now and reap significant benefits. In fact, the study includes a helpful statistical analysis, indicating that the control animals had 2.9 times greater rate of death from age-related causes than the calorie-restricted animals.

Modest calorie restriction resonates with the CR Way™. The days are gone when human calorie restrictors practiced draconian diets that produced extremely low body weights. The CR Way™ changed that. It takes advantage of the latest scientific research, showing that activation of longevity cell signals is the important factor for slowing aging. As the rhesus monkey studies confirm, this may be as simple as keeping calorie intake moderate and choosing nutrient-dense foods. Regular moderate exercise and maintaining a happy approach to life are also important.

The Wisconsin study results support the findings of the extensive human study of elderly Okinawans who followed “modest” calorie restriction for 60 years, limiting calories by only 11%. Their average life span is the longest recorded in the world. They also experience less heart disease, cancer, diabetes, and Alzheimer’s disease. Their quality of life is better too.
Many Okinawans who practice calorie restriction remain active well into their 90s and beyond.6 We see similar results among LivingTheCRWay.com members. The CR Way™ encourages moderate calorie restriction, which improves quality of life and is easy to follow.

Summary
Interestingly, both the University of Wisconsin and National Institute of Aging studies indicate that greatly extended life span may be possible from moderating calorie intake. For example, five monkeys in the NIA study—four calorie-restricted and one (mildly calorie-restricted) control monkey—lived exceptionally long lives, beyond 40 years of age, when the average age of death of monkeys in captivity is 26. Following a CR Way™-type lifestyle has produced supercentenarians, such as the famed Jiroemon Kimura, who ate small meals, didn't smoke, and exercised by farming for 25 of his elder years, and is verified as the longest-lived (116 years) man in history.7

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

Paul McGlothin and Meredith Averill are co-authors of The CR Way™ (HarperCollins, 2008) and they lead The CR Way™ Longevity Center. To learn more about the CR Way™ or the CR Society International, visit www.LivingTheCRWay.com or www.CRSociety.com

References
Over 6,000 studies have been published on resveratrol, a compound shown to favorably alter genes that help slow the aging process. In fact, resveratrol triggers many of the same beneficial genes activated by calorie restriction.¹

In addition, researchers have identified specific compounds found in berries, such as pterostilbene and fisetin, that work in synergy with resveratrol to activate the body’s own “longevity genes.”

Standardized trans-resveratrol combined with botanical extracts is the most complete resveratrol complex available.

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 $31 per bottle. The suggested dose is one capsule daily.

Reference

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This is not like many books or CDs that are bought, put on the shelf, and never used. You’ll join two friendly classes via live teleconference with others who share your passion for healthful living. You never have to leave your home to receive caring guidance from experts, Paul McGlothin & Meredith Averill, who show you how delicious and easy low-glucose living can be.

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After all, it’s been our mission for 34 years to provide you with this kind of lifesaving information. So we’ve packed *Disease Prevention and Treatment* with detailed suggestions that can help you break free of the conventional “one-size-fits-all” approach to disease management.

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Julian Whitaker, MD
Whitaker Wellness Institute

LifeExtension
Foundation for Longer Life
Your brain is under constant onslaught from environmental and stress-related challenges, as well as normal aging processes. Fortunately, our brain cells have built-in, self-healing systems that provide natural defenses against these ongoing threats. Even more remarkable, molecular science is revealing that the human brain has the capacity to preserve the neurons involved in brain remodeling (plasticity).

Scientists in China and Singapore have found that gastrodin, a compound typically derived from a traditional Chinese orchid (Gastrodia elata), provides powerful support for the brain's normal defenses and regenerative mechanisms.

To make these benefits available to members, Life Extension® introduces Brain Shield®, providing 300 mg of gastrodin in each capsule for maximum brain support.

**MULTI-FACTORIAL BENEFITS!**

Recent studies confirm that the gastrodin in Brain Shield® is one of the most powerful compounds for supporting healthy brain function at any age! Gastrodin works by the following mechanisms:

- To retain normal function, the aging brain relies on adequate blood flow to get sufficient oxygen and fuel. It has been repeatedly shown that formulas containing gastrodin beneficially support normal, healthy levels of brain blood flow in both animals and in humans.
- The body maintains a delicate balance of neurotransmitters, such as GABA, which is of tremendous importance to healthy brain function. Studies show that alone or in combination the active compound gastrodin helps maintain healthy levels of vital neurotransmitters in those whose levels are already within the normal range.
- With aging, short-term memory function is often impaired. Studies show that gastrodin helps support the healthy body's normal defenses against the mild memory problems associated with aging.
- Scientists have shown that the breakdown metabolites of gastrodin help provide support against the normal stress and tension of daily life.
- And Brain Shield® helps alleviate the occasional cranial pain associated with daily life.

Those seeking maximum benefit should start with one 300 mg capsule of Brain Shield® taken twice daily. After 30 days, one Brain Shield® (gastrodin) capsule daily may be sufficient based upon the experience of gastrodin as an over-the-counter (OTC) pharmaceutical agent. Those taking Cognitex® are obtaining 50 mg of gastrodin in the daily dose along with complementary nutrients. As additional research continues on gastrodin, better clarification on optimal dosing for a wide range of neurovascular and neuro-inflammatory conditions should be available.

A bottle of 60 300 mg vegetarian capsules of Brain Shield® retails for $53. If a member buys four bottles, the price is reduced to $22.50 per bottle.

**SUPPORT for COGNITIVE FUNCTION with AGING**

To order Life Extension® Brain Shield®, call 1-800-544-4440 or visit www.LifeExtension.com

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Scientists at the annual meeting of the American College of Sports Medicine concluded that tart cherries provide impressive anti-inflammatory activity in comparison to most other foods.\(^1\)

The main ingredient responsible for their potency are anthocyanins, a special class of flavonoids that provides tart cherries with their characteristic pigmentation and diverse health benefits.\(^2\)

Every anthocyanin-rich food has its distinct set of anthocyanins, flavanols, and other polyphenols.\(^3\) And for that reason, each of these foods helps protect against a unique set of—but not all—diseases.

Compared to bilberries, blueberries, and cranberries, tart cherries contain a very broad range of anthocyanins.\(^4,5\) As a result, they target a much wider spectrum of inflammation-induced diseases, including diabetes, arthritis, heart disease, Alzheimer’s, and more.\(^6-9\)

In addition, tart cherry compounds have been shown to increase the activity of the body’s key antioxidant enzyme, superoxide dismutase (SOD).\(^10\)

In this article, you’ll learn how tart cherries block inflammatory factors in a range of degenerative diseases\(^6-9\).
Tart Cherries Deliver Superior Range Of Key Anthocyanins

Anthocyanins are a special class of flavonoids, the colorful compounds in fruit known for their free-radical-scavenging capacity and anticancer effects.9

But it’s not simply their high overall anthocyanin content that results in tart cherries’ greater range of targeted diseases. After all, other foods also have high total levels of these potent compounds.
Let’s now look at how this impressive range of anthocyanins in tart cherries work together to fight against some key chronic conditions.

**Inhibit Cancer’s Origins**

Tart cherries' array of anthocyanins promotes broad protection against cancer, the second leading cause of death in the US.\(^6\)

When scientists conducted a thorough review of past studies, they concluded that cherries exert a variety of potent anticarcinogenic effects.\(^6\)

A tart cherry diet fed to mice significantly inhibited both the number and size of adenomas (benign tumors) of the cecum, an area at the beginning of the large intestine that is a common colon cancer site.\(^13\) In the same study, tart cherry anthocyanins reduced the growth of human colon cancer cell lines.\(^13\)

Cyanidin, a flavonoid in cherries, has been shown to inhibit colonic carcinogenesis in animal models.\(^15\)

All of these anticancer benefits derive from tart cherries' ability to battle cancer via several distinct mechanisms.

Studies demonstrated that the anthocyanins in tart cherry naturally switch off genes that can promote cancer. These include genes that activate cell proliferation and inflammation as well as genes that promote angiogenesis, the growth of new blood vessels that nourish a tumor.\(^9,16,17\)

Tart cherry anthocyanins can also trigger apoptosis, the programmed cell death that causes precancerous cells to self-destruct.\(^16,18\)
Reverse Cardiovascular Risk Factors

The risk of developing atherosclerosis and other cardiovascular diseases is much greater among those with elevated readings of low-density lipoprotein (LDL) cholesterol.19

Fortunately, evidence demonstrates that tart cherries reverse some of the most prominent risk factors for cardiovascular disease, including high cholesterol, high triglycerides,20 and excess weight.

Tart cherries are also able to calm inflammation at critical body sites—such as the belly and heart—that are specifically linked to heart disease risk.21-23

As a result, mice given tart cherry powder experienced a 26% decrease in cholesterol and a 65% reduction in early death, believed to be due to improved cardiovascular health.21

In human studies, consuming just 8 ounces daily of tart cherry juice for four weeks was found to lower triglyceride levels by an average of over 17%.24

The ability of tart cherries to safely reverse these prominent risk factors for cardiovascular disease is especially important considering that the standard medical therapies, such as cholesterol-lowering statins or fibrates, involve risks ranging from myalgia to liver dysfunction to rhabdomyolysis, a condition in which damaged skeletal muscle is broken down, sometimes resulting in kidney failure.25,26

Protect Against Oxidative Stress

Oxidative stress, combined with aging, can cause some nerve cells in certain regions of the brain to die. This process contributes to neurodegenerative disorders such as Alzheimer’s,27 Parkinson’s28 and Huntington’s29 diseases, as well as amyotrophic lateral sclerosis (ALS or Lou Gehrig’s disease) and general cognitive decline.27

One of the best ways to battle against these diseases is to fight the oxidative stress that underlies those conditions—and that’s exactly what tart cherries do.

Tart cherries are rich in flavonoids (such as anthocyanins)2 and researchers found that flavonoids have strong neuroprotective activity—specifically against cell-damaging oxidative stress.27

However, although both sweet and tart cherries provide broad benefits against multiple degenerative diseases,9,30,31 tart cherries contain higher concentrations of anthocyanins that protect neurons from dangerous oxidative stress.31

Scientists concluded that tart cherries’ rich phenolic content—including its highly diverse supply of anthocyanins—was responsible for this enhanced neuron defense, which they described as “strong anti-neurodegenerative activity.”31

What You Need To Know

Tart Cherries Offer Potent Protection

• Free-radical-induced inflammatory molecules are key contributors to the onset of diabetes, arthritis, obesity, heart disease, Alzheimer’s, and cancer—virtually all degenerative diseases.

• Scientists have found a nutrient that both quenches free radicals and delivers an unrivaled, direct inflammomodulatory effect.

• Researchers have stated that tart cherries “have the highest antioxidant and anti-inflammatory content of any food.” Also, tart cherry compounds increase the activity of superoxide dismutase (SOD), your body’s key antioxidant enzyme.

• While tart cherries owe their potency in part to high anthocyanin content, their real secret is their extremely broad range of anthocyanins. As a result, tart cherries synergistically target a remarkably wide spectrum of oxidation- and inflammation-induced diseases.
Inhibit Early Development Of Diabetes

Remarkable evidence indicates that tart cherries’ broad variety of anthocyanins may reverse elements involved in metabolic syndrome, a condition that often precedes the development of type II diabetes. Metabolic syndrome is a collection of conditions that includes high triglycerides, high blood pressure, high fasting blood sugar, abnormal lipid profiles, and excess weight. In addition to raising your risk of diabetes, it can also increase the risk of heart disease and stroke.

When obesity-prone rats were fed a diet partly comprised of whole tart cherry powder, various components of metabolic syndrome were substantially decreased—after 90 days. For example, the compounds in tart cherries reduced fat mass, weight around the abdomen, elevated blood lipids, expression of inflammation markers and tumor necrosis factor; and exerted other beneficial metabolic changes.

The research team concluded that, “Tart cherries may reduce the degree or trajectory of metabolic syndrome, thereby reducing risk for the development of type II diabetes and heart disease.”

Tart Cherry Juice Versus Extract

Many of the studies cited in this article use tart cherry juice. However, many people prefer to use a tart cherry extract to avoid the high calories and sugar content in tart cherry juice. For the purposes of comparison, two vegetarian capsules (1,231 mg) of the leading tart cherry extract are the equivalent to approximately 45 ounces of tart cherry juice.

Inhibit The Inflammatory Pathway Of Gout

Gout is another type of inflammatory arthritis that is caused by high concentrations of uric acid in the body and is associated with higher risks of cardiovascular disease and mortality.

Drugs such as allopurinol and probenecid are typically used to help reduce uric acid levels, but the side effects can include breathing difficulties, unusual bleeding, vomiting, nausea, severe rash—and even death. These drugs may also interfere with other medications.

Fortunately for gout sufferers, cherries have been shown to safely and naturally prevent the underlying factors involved in gout. Researchers first proposed cherries as a gout inhibitor in 1950. A preliminary study showed daily cherry...
Tart Cherries’ Comprehensive Phytonutrient Profile
Here’s how some other sample fruits match up alongside cherries’ broad-spectrum phytonutrient composition.4

<table>
<thead>
<tr>
<th>Natural Compound</th>
<th>Cherries</th>
<th>Strawberries</th>
<th>Grapes (black/red)</th>
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Consumption relieved gout attacks and reduced serum uric acid levels. Since then, several studies have further established this defense.

Scientists at the USDA’s ARS Western Human Nutrition Research Center at the University of California, Davis; ARS Arkansas Children’s Nutrition Center, Little Rock; and Department of Pomology, University of California, Davis, gave healthy women between 20 and 40 years old 280 grams of cherries following an overnight fast. Over the next five hours, the participants’ uric acid levels dropped by 14.5%, and their C-reactive protein levels also decreased.

No significant reductions in any of these levels were observed with similar doses of grapes, strawberries, or kiwifruit. The researchers concluded that the wide variety of compounds such as anthocyanins in cherries inhibited the inflammatory pathways of gout.

With the knowledge that cherries are able to inhibit the onset of gout, scientists at Boston University set out to determine if cherry extract could reduce the recurrence of gout attacks. When they gave a cherry extract to 633 gout sufferers, they found that cherry extract reduced the risk of attacks by 45%. And when cherry intake was combined with the drug allopurinol, gout attacks were decreased by 75% compared to no intervention.

Put the Brakes On Age-Related Muscle Loss

The anti-inflammatory effects of tart cherries prompted investigations into their potential to lower muscle pain, protect muscle strength, and accelerate muscle repair. This is especially important for aging individuals who experience loss of muscle mass and strength (sarcopenia).

Choosing The Right Type Of Cherry

Not all cherries provide the full antioxidant and anti-inflammatory punch that scientists have described as “the highest antioxidant and anti-inflammatory content of any food.”

The two cultivated varieties of cherry are the sweet cherry (Prunus avium L.), sometimes known as the wild cherry, and the tart cherry (Prunus cerasus L.), sometimes known as sour cherry or pie cherry.

They don’t deliver the same type or the same amounts of their potent compounds.

All cherries provide substantial quantities of antioxidants and other nutrients. But compared to their sweet cousins, tart cherries provide:

- Less sugar and fewer calories than sweet cherries.
- Much higher content of various anthocyanins.
- Twice the level of various phenolic compounds and greater levels of other nutrients.
- Compounds that increase the activity of superoxide dismutase (SOD), the body’s key antioxidant enzyme.
- Powerful antioxidant and anti-inflammatory effects when compared to other foods.
- A superior range of anthocyanins and other phytonutrients.

Due to their superior anthocyanin and phenolic matrix, tart cherries may help reduce the risk of osteoarthritis, gout, cardiovascular disease, metabolic syndrome, diabetes, and neurodegenerative diseases such as Parkinson’s and Alzheimer’s.

But keep in mind that tart cherries are not the cherries you’re likely to see at the grocery store, which will almost certainly be sweet cherries. The potent but less common tart cherries are chiefly used for baking and usually come frozen, canned, dried, or juiced. Tart cherries may occasionally be located at a farmer’s market.

Fortunately, standardized extracts of tart cherries are available so you can take advantage of the latest scientific findings regarding tart cherries and their potent health benefits.
In one study, runners who drank 710 mL of tart cherry juice—providing at least 80 mg of various anthocyanins—daily for one week prior to and during a 24-hour relay race experienced substantially less post-race pain, compared to controls.53

Another group of runners who drank tart cherry juice daily from five days before until two days after a marathon had significantly reduced inflammation markers (interleukin-6 and C-reactive protein) compared to controls. They also recovered isometric strength faster.54

Also, in young men who normally never exercised, drinking 12 ounces of tart cherry juice twice daily for eight days resulted in only a 4% decrease of arm strength after repeated arm exercises—compared to a strength decrease of 22% in controls.55

Scientists then conducted a trial on 10 men to assess muscle-repair potential. Initially, each participant conducted an intensive leg exercise on one leg only. Then, the exercise was repeated on the other leg after two weeks. For seven days before and 48 hours after exercise, participants consumed 1 ounce of tart cherry drink or placebo twice daily. Faster recovery of the knee extension (maximum voluntary contraction force) was observed with the tart cherry juice protocol versus control—which researchers believed was due to attenuation of oxidative damage.56

These studies confirm that tart cherries deliver significant muscle-protecting benefits.

Unparalleled Protection
And Anti-Inflammatory Potency

There are multiple elements behind tart cherries’ proven superiority at targeting the underlying oxidative and inflammatory origins of disease. Recent evidence indicates that anthocyanin-rich tart cherries exert their effects in 15 different ways. Tart cherries have been shown to:

1. Enhance the body’s own endogenous antioxidants.65
2. Beneficially inhibit certain enzymes5,66 while boosting others.7,67,68
3. Provide compounds that increase the activity of the body’s antioxidant enzyme, superoxide dismutase (SOD).10
4. Deliver a higher content of anthocyanins than sweet cherries.2,5,31
5. Contain a wider range of anthocyanins,4 including some not found in other berries.5
6. Deliver over 20 richly bioactive anti-oxidants.4,10
7. Provide an abundance of phenolic compounds—such as gallic acid, p-coumaric acid, kaempferol, and quercetin—that are both antioxidant and inflammomodulatory chemicals.10
8. Contain cyanidin, which forms cyanidin-DNA complexes that make DNA more resistant to oxidative damage.59,70
9. Modulate inflammatory cell-signaling molecules such as tumor necrosis factor.92
10. Decrease levels of C-reactive protein (CRP), uric acid, and nitric oxide.50
11. Strongly inhibit inflammatory diseases71,72 and inflammatory pain.73
12. Reduce early mortality in animal studies.21
13. Switch on cancer defenses.6,13,74
14. Reduce blood glucose.75
15. Decrease levels of cholesterol and triglycerides.21,24

With so many beneficial activities, it’s no wonder that tart cherries have been shown to have a superior ability1 to protect against the full range of conditions associated with oxidative stress-induced inflammation—including cancer, cardiovascular disease, metabolic syndrome, and Alzheimer’s disease.6,9
Summary

Inflammatory molecules contribute to the onset of diabetes, arthritis, obesity, heart disease, Alzheimer’s, and cancer—virtually every degenerative disease. Tart cherries deliver an unrivaled, direct immunomodulatory effect. In fact, some scientists have stated that tart cherries “have the highest antioxidant and anti-inflammatory content of any food” and they also increase the activity of your body’s key antioxidant enzyme, superoxide dismutase (SOD).

Tart cherries have high anthocyanin content. But the real secret to their effectiveness against many inflammatory diseases is their broad range of anthocyanins. As a result, tart cherries synergistically target a remarkably wide spectrum of oxidation- and inflammation-induced diseases.

Tart cherries allow aging individuals to block an extremely wide range of degenerative diseases—at their oxidative-inflammatory root!

References


Reishi mushroom, a medicinal mushroom used for centuries in traditional Chinese medicine, was known as “the mushroom of immortality.” Science has now confirmed what the ancients knew—Reishi boosts immune vitality. Its broad-spectrum benefits have been demonstrated in thousands of studies.²

Reishi supports a healthy immune system. An abundance of evidence demonstrates that Reishi mushroom enhances the protective activity of the body’s crucial immune factors.³⁻¹⁰ The Reishi mushroom also supports the body’s production of antioxidant enzymes—such as superoxide dismutase (SOD), catalase, and glutathione—which, in turn, support the body’s natural immune defenses against free radical damage.¹¹⁻¹²

Reishi Extract Mushroom Complex delivers powerful compounds thanks to an advanced extraction technology. This full-spectrum Reishi extract has multiple components that have been shown to support healthy immune function and enhanced longevity in an experimental aging model.¹³

The suggested two vegetarian capsules a day of Reishi Extract Mushroom Complex provide:

<table>
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<tr>
<th>Component</th>
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<tr>
<td>Reishi mushroom (Ganoderma lucidum) extract</td>
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<td>(Fruit body) [standardized to 13.5% polysaccharides (132.3 mg) and 6% triterpenes (58.8 mg)]</td>
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<td>Shell-broken Reishi mushroom (Ganoderma lucidum) spore</td>
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</tr>
</tbody>
</table>

A bottle containing 60 vegetarian capsules of Reishi Extract Mushroom Complex retails for $30. If a member buys four bottles, the price is reduced to $20.25.

References
13. FASEB. 2012;26:373.2

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.
Tart cherries are packed with unique compounds that have been shown to block the COX-1 and COX-2 inflammatory enzymes. The benefits of tart cherry include rapid muscle recovery after exercise and fast relief from the minor aches, discomfort, and stiffness that can follow everyday muscle exertion.

Clinically Proven

In human studies, researchers have scientifically confirmed the muscle-supporting benefits of tart cherries. For example, a randomized controlled trial found that consuming tart cherry juice twice daily produced a substantial decrease in muscle symptoms related to exercise. In the same study, the exercise-induced loss of strength over the four days following a workout was reduced from 22% to only 4%.

Anthocyanins

Anthocyanins are powerful flavonoids that provide the dark pigmentation in blueberries, raspberries, and bilberries. What has drawn the attention of scientists is that tart cherries contain a higher content of anthocyanins than other fruits. Anthocyanins have been extensively studied for their numerous advantages that include heart, cellular, and cognitive health.

Life Extension® now offers 100% natural Tart Cherry Extract, a supplement that opens the door to the remarkable benefits of continued physical activity—at any age! This formulation provides all the muscle-supporting benefits of tart cherries and mimics the anthocyanin dose used in successful clinical trials by providing a standardized 40 mg dose of anthocyanins in each capsule.

The serving size of one vegetarian capsule of Tart Cherry Extract contains:

CherryPURE® Tart cherry (Prunus cerasus) extract (skin) 615.5 mg

[std to 6.5% anthocyanins (40 mg)]

A bottle of 60 vegetarian capsules of Tart Cherry Extract with Standardized CherryPURE® retails for $22. If a member buys four bottles, the price is reduced to $15 per bottle.

CherryPURE® is a registered trademark of Shoreline Fruit, LLC.
In our quest to identify cutting-edge therapies to protect against age-related disorders, we sometimes overlook the basics.

Found in certain fruits and vegetables, quercetin has been studied for decades and evidence supporting its biological properties is substantial.

Recent lab and human studies are confirming that quercetin can prevent many of the underlying factors that are destructive to our health. These deleterious biological events are often unnoticed by medical doctors until they manifest as major diseases.

Quercetin fits nicely into a broad-based anti-aging strategy and has long been included in nutrient formulas used by health-conscious individuals.
People with high intakes of dietary flavonols and flavones such as quercetin have a demonstrably lower risk for cardiovascular diseases.¹² Exciting new research suggests that a big part of the reason for this protection is quercetin’s effects on mitochondria.

Proof of the impact of quercetin’s mitochondrial “boost” can be seen in a pair of animal and human exercise studies. Untrained mice supplemented with quercetin for seven days increased both their maximal endurance capacity on a treadmill and their voluntary use of the treadmill, while biopsies showed formation of new mitochondria in their muscles and brains.³

In the companion human trial, untrained volunteers took 500 mg/day of quercetin, or placebo, for seven days, with their exercise performance measured before and after the trial period.⁴ Subjects taking quercetin modestly increased their oxygen consumption by 3.9%, but increased their riding time to fatigue by 13.2%, entirely without additional training!
In a similar trial, untrained young men who took 1,000 mg/day of quercetin for two weeks also increased the distance they could run on a treadmill by 2.9%, while placebo subjects lost 1.2%; muscle mitochondrial numbers grew by 4.1% in supplemented subjects, while falling 6% in placebo recipients. The improvements in exercise capacity were associated with increased muscle mitochondrial number and enzyme activity.

**Plaque Regression**

Quercetin has been analyzed for its ability to counteract atherosclerosis—the gradual blockage of blood flow through arteries. Atherosclerotic plaques are a major cause of heart attack and stroke, two of the top killers of Americans.

In a study of rabbits fed a high-cholesterol diet, quercetin prevented the oxidative and inflammatory effects of the diet on arterial walls, as expected. But it also promoted regression of atherosclerotic plaque, a direct effect of its inhibition of inflammatory enzymes such as COX and 5-LOX (these enzymes produce pro-inflammatory molecules called prostaglandins and leukotrienes).

This plaque regression is likely driven by a recently discovered property of quercetin. Scientists found that quercetin triggers reverse cholesterol transport, which is the removal of cholesterol from the arterial wall by HDL for transport to the liver for safe disposal.

Quercetin has additional benefits for the endothelial cells lining the blood vessels that normally control blood flow and pressure. Quercetin restores normal production of the relaxation-signaling molecule nitric oxide, and has been shown to produce relaxation of major arteries to promote improved blood flow. This played out in an impressive fashion in a human study showing that a quercetin-containing food improved after-meal endothelial function by 31.4%. New data on quercetin’s many cardiovascular benefits are being published regularly. Here are just a few highlights from the recent literature:

- Quercetin counteracts the development of tolerance to nitroglycerin and related drugs used in treatment of angina.
- Quercetin reduces abnormal heart rhythms in patients with ischemic heart disease who were already on standard medical therapy.
- Quercetin reduces the incidence of abdominal aortic aneurysms in animal models; these defects in the wall of the aorta can lead to sudden death.
- Quercetin helps to slow platelet aggregation, which can lead to blood clots that produce heart attacks and strokes.
Potent Neuroprotection

Like the heart, the human brain is a major consumer of energy. That means it depends heavily upon its mitochondria to deliver the power needed for normal thought, memory, and cognition. Aging reduces mitochondrial function in the brain, mainly as a result of the strong oxidant impact of electrical and chemical activity.\(^\text{19}\)

Quercetin is showing real promise as a neuroprotective nutrient. Studies show that quercetin protects brain cells against excitotoxicity, the damage done by repeated excitatory electrical impulses observed in Alzheimer’s and other neurodegenerative diseases.\(^\text{20-23}\) Acting through its antioxidant mechanisms, quercetin may reduce toxicity of the dangerous and abnormal amyloid-beta proteins that accumulate in the brain, eventually producing symptoms of memory loss and dementia.\(^\text{24}\) In fact, quercetin has now been found to prevent brain cell death in animal models of Parkinson’s disease.\(^\text{25}\)

Excitingly, quercetin has been found to activate the brain’s powerful natural antioxidant defense system (called \textit{Nrf2}) that upgrades cellular defenses such as glutathione and prevents brain cell death.\(^\text{26}\) Quercetin also increases brain mitochondrial expression of the protective paraoxonase 2 (PON2), which scavenges the free radicals that break down mitochondrial membranes and cause them to lose their electrical potential.\(^\text{27-29}\)

Chronic oxidation leads to chronic inflammation in the brain as it does in the rest of the body, eventually producing changes that can lead to both Alzheimer’s and Parkinson’s diseases.\(^\text{30}\) Quercetin is among the nutrient molecules capable of preserving vital brain cell function in the face of those changes, limiting the cell death that produces neurodegenerative diseases.\(^\text{31}\)

Obesity And Metabolic Syndrome

Obesity is best thought of in relation to other metabolic disturbances, such as blood lipid abnormalities, elevated blood sugar, insulin resistance, and hypertension. Together, these problems define \textit{metabolic syndrome}, which is strongly associated with poor health outcomes and sudden death.\(^\text{32,33}\) A prospective study assessing the mortality status of 6,678 healthy middle-aged men concluded that metabolic syndrome increased the risk of sudden death from heart attack by \textbf{68}\%.\(^\text{33}\)

It is widely recognized that plant flavonoids, especially quercetin, can play important roles in fighting individual components of metabolic syndrome, and may work to reduce the impact of the syndrome as a whole.\(^\text{34,35}\) In a laboratory animal model, quercetin

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**What You Need To Know**

**Quercetin Can Restore And Refurbish Mitochondria**

- Studies show that quercetin triggers reverse cholesterol transport, which results in the removal of cholesterol from the arterial wall by HDL for transport to the liver for safe disposal.
- Excitingly, quercetin has been found to activate the brain’s powerful natural antioxidant defense system (called \textit{Nrf2}) that upgrades cellular defenses such as glutathione and prevents brain cell death.
- As a neuroprotective agent, quercetin protects brain cells against excitotoxicity, the damage done by repeated excitatory electrical impulses observed in Alzheimer’s and other neurodegenerative diseases.
- Quercetin, found in onions and apples, has now been shown to preserve mitochondria in the heart, brain, liver, and skeletal muscles.
- Quercetin boosts cardiovascular function, muscular endurance and performance, protects against loss of brain cells, corrects blood glucose and lipid abnormalities in metabolic syndrome, and shows evidence of anticancer and bone health-promoting properties.
completely abolished glucose-induced life span reduction by enhancing natural cellular “clean-up” mechanisms that prevented loss of function.36

Lab studies show that quercetin is effective at suppressing fat accumulation in the liver,37 leading to a reduction in fat-induced inflammation triggered by high levels of leptin, the hormone produced in excess in fat tissue deposits.38,41 An eight-week study demonstrated that quercetin-rich onion skin extracts led to reduced internal fat accumulation while increasing levels of the hormone adiponectin, thus improving insulin sensitivity and promoting weight loss.42

Increased amounts of fat tissue lead directly to insulin resistance, which produces high blood sugar while at the same time starving cells of the glucose they need for normal function.43 In fact, even mild elevations of blood sugar, over a lifetime, can accelerate aging.36 In rats fed a high-fat, high-sugar diet, quercetin reduced blood sugar and insulin release, improving insulin resistance.44 Other studies show that quercetin-supplemented rats fed a high-fat, high-carbohydrate diet had less abdominal fat, lower blood pressure, and reduced heart and liver fat accumulations, likely due to antioxidant and anti-inflammatory mechanisms.32 Similar findings were made in diabetic and insulin-resistant rats.45

But these exciting results are not limited to lab and animal studies. In a group of overweight and obese adults with early metabolic syndrome, just 150 mg of quercetin daily reduced blood pressure and levels of oxidized LDL cholesterol, two major components of metabolic syndrome.46 Another human study found that the same dose of quercetin (150 mg/day) for eight weeks decreased waist circumference and after-meal systolic blood pressure, while also lowering after-meal triglyceride levels in a group of otherwise healthy men.35 Another study showed women with type II diabetes reduced systolic blood pressure nearly nine points after taking quercetin.47

In other words, quercetin supplementation in animal and now in human studies proved capable of reversing the major components of metabolic syndrome.

Cancer Protection From Quercetin

Quercetin has been shown to possess numerous anticancer properties, including the ability to interrupt the rapid cell proliferation cycle in growing cancers, and to induce apoptosis, the programmed cell death that cancer cells have lost.48,49 Quercetin’s actions appear to be cancer type- and site-specific, with its most aggressive action on the most aggressive and rapidly growing cancers of the blood (leukemia), brain, lung, uterus, and skin (melanoma).50

Additional data suggest that quercetin is highly effective in preventing the division of colon cancer cells as well.51 Indeed, one small human study has already shown that the combination of quercetin with curcumin, another potent anti-inflammatory nutrient, can slow the growth of precancerous colonic polyps in patients with familial polyposis, a condition always associated with colorectal cancers.52

Estrogen receptors present on the surface of cells can serve as growth stimulators in many cancer types, including lung cancer.53 A unique property of quercetin is its ability to modulate the activity of estrogen receptors,54 and in a lab study, this attribute was shown to
reduce the proliferation of lung cancer cells. It was also demonstrated that quercetin binds to estrogen receptors just as tightly as tamoxifen, the drug most commonly used in breast cancer therapy. As a result, quercetin effectively inhibited proliferation of dangerous drug-resistant breast cancer cells, while also preventing their accumulation into lump-like clusters capable of growth and invasion.

**Quercetin Fights Mitochondrial Threats To Bone And Joint Health**

Quercetin has powerful bone health-promoting effects, some of which were superior to the prescription anti-osteoporosis drug alendronate in preclinical research. Unlike such drugs, quercetin promotes new bone formation, rather than simply slowing bone degradation. This is important because alendronate and similar drugs act by essentially inhibiting the bone-resorbing cells in the hope that the bone-forming cells that remain intact will predominate and keep bones strong. Quercetin, by contrast, works by stimulating new bone production by bone-forming cells, allowing bones to retain their normal responses to physical stress.

“Secondary” osteoporosis and osteopoenia (a condition where bone mineral density is lower than normal) can occur with certain diseases and drug treatments, most commonly chronic steroid use. Lab studies show that both quercetin and alendronate could completely reverse steroid-induced osteoporosis, but quercetin also stimulated new bone formation in rat femurs by up to 36%, while alendronate did not. Very similar results were shown in animals with steroid-induced osteoporosis and osteopenia secondary to diabetes, both of which commonly cause bone loss.

In the management of arthritis, quercetin has demonstrated superior anti-inflammatory properties. When a group of flavonoids was studied, quercetin showed the strongest specific inhibitory effects on the pro-inflammatory enzymes COX-1 and 15-LOX, both of which produce powerful pro-inflammatory signal-molecules in arthritis. Recent studies suggest that quercetin may also reduce accumulation of stiff, fibrous tissue in inflamed joints, potentially improving their function.

Quercetin may also be effective in ameliorating the intensely painful arthritis caused by gout, in which crystals of uric acid accumulate in the joint and induce vigorous inflammation. Animals with gouty arthritis showed reduced joint swelling, reduced white blood cell infiltration, lower oxidant levels, and lower levels of inflammatory cytokines following supplementation with quercetin.

Human studies of quercetin in osteoarthritis are encouraging, especially given the lack of any known drug that can effectively modify or slow the disease’s progress. Added to a standard joint supplement containing glucosamine and chondroitin, 45 mg/day of quercetin for 12 or 16 weeks significantly improved joint pain and function scores compared with placebo, while laboratory markers of new collagen formation (important in preserving joint function) were increased.

**Summary**

Studies show that quercetin preserves and improves cardiovascular health, slows neurodegeneration, and fights metabolic syndrome. Moreover, quercetin may offer protection against cancer, osteoporosis, and osteoarthritis through its multiple beneficial mechanisms. The beneficial effects of whole fruits and vegetables in the human diet may be partially explained by the quercetin they contain. Those who don’t consume enough healthy fruits and vegetables can obtain this multi-faceted polyphenol (quercetin) in low-cost supplements.

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


As we get older, our eyes become vulnerable to a variety of insults that can cause irritation and dry eye. With just a few drops of the proper eye lubricant, eye irritation stemming from dryness may be alleviated.

Brite Eyes provides a powerful dose of two well-established lubricants in every drop, soothing eye discomfort without irritation.

Hydroxymethyl-cellulose 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.

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.

To order Brite Eyes III, call 1-800-544-4440 or visit www.LifeExtension.com
Scientists have discovered that quercetin, a compound found in onions, apples, and buckwheat, can revitalize tired tissues, including skeletal muscle, heart muscle, and brain tissue. In further studies, quercetin was shown to increase endurance and vital oxygen consumption.¹

To promote heart health, quercetin preserves endothelial integrity and supports blood glucose levels for those within normal range.²

**Optimized Quercetin** contains 250 mg of quercetin plus 250 mg of super food extracts that provide an array of added health benefits. A bottle of 60 vegetarian capsules of Optimized Quercetin retails for $22. If a member buys four bottles, the price is reduced to $15 per bottle.

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References

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These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Dr. Bruce Ames is one of the world’s leading authorities on aging and nutrition. Four years ago, Dr. Ames published research indicating that optimum intake of vitamin K plays an important role in longevity. A new 2014 study on vitamin K confirms that ample vitamin K intake can indeed help you live longer. In a group of more than 7,000 people at high risk for cardiovascular disease, people with the highest intake of vitamin K were 36% less likely to die from any cause at all, compared with those having the lowest intake.

This protection even extended to those with initially low vitamin K intake who boosted their consumption during the course of the study—demonstrating that it’s never too late to start gaining the benefits of vitamin K supplementation. Increasing intake conferred protection against cardiovascular death as well.
Vitamin K is capable of opposing many of the leading causes of death in modern-day Americans—including atherosclerosis, osteoporosis, diabetes, and cancer—because it has the unique ability to activate proteins involved in these conditions.

In this article, we will review a host of new studies that detail the impact of vitamin K supplementation on preventing these and other major age-related diseases.
The Many Benefits Of Vitamin K

Vitamin K was first discovered in 1935, when it was found to be an essential nutrient to prevent abnormal bleeding in chickens. For decades thereafter, vitamin K was identified as the “coagulation vitamin” (in fact, the initial “K” comes from the German spelling, koagulation.) During that time, it was established that vitamin K worked by activating certain proteins made in the liver that are required for normal blood clotting. Without sufficient vitamin K, blood would not clot, and severe bleeding would ensue.9,10

Vitamin K activates those blood-clotting proteins by making a small but vital chemical change in the proteins’ structure, specifically on the protein building block called glutamic acid.11

By the turn of the 21st century, scientists had learned that vitamin K produces similar changes to glutamic acid molecules to activate a handful of other vital proteins in the body, with the collective name of Gla-proteins.12-16 According to 2014 research, 16 different vitamin K-dependent Gla-proteins have been identified.17 This means that they depend on vitamin K to activate them in order to carry out their intended role.

With the discovery of the Gla-proteins, scientists learned that vitamin K is vital for much more than the healthy clotting of blood. For example, the Gla-protein in bone, called osteocalcin, is responsible for making sure calcium is deposited in bones, while the Gla-protein in arterial walls, called matrix Gla protein, prevents calcium from being deposited in arteries.18

Insufficient blood clotting was thought to be the main sign of vitamin K deficiency. However, scientists have since learned that you can have enough vitamin K to promote healthy blood clotting, yet still not have enough vitamin K for it to activate the Gla-proteins necessary to help prevent cardiovascular disease, osteoporosis, diabetes, and cancer, all conditions in which vitamin K-dependent proteins are known to be factors.13,14,19 Fortunately, studies show that vitamin K supplementation can significantly increase the amount of activated Gla-proteins in tissues—without over-activating the clotting proteins.18

Vitamin K And Atherosclerosis

As we age, calcium that belongs in our bones begins to make its appearance in other unwanted areas, including inside the linings of major arteries.20 Over time, normal smooth muscle cells in artery walls transform into bone-like cells through the deposition of calcium, essentially turning sections of artery into bony tissue that is not resilient and flexible, and does not have the ability to effectively regulate blood flow.19,21 This process lends literal reality to the term “hardening of the arteries,” which we now know as late-stage atherosclerosis.

Nature has provided a powerful inhibitor of arterial calcification in the form of matrix Gla protein, one of the 16 Gla-proteins.

### Risk Reduction By Increased Vitamin K Intake

<table>
<thead>
<tr>
<th>Condition</th>
<th>Vitamin K Form</th>
<th>Risk Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>All-Cause Mortality</td>
<td>K₂</td>
<td>26% (Highest vs. Lowest Intake)³</td>
</tr>
<tr>
<td>All-Cause Mortality</td>
<td>K₁</td>
<td>36% (Highest vs. Lowest Intake)²</td>
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<tr>
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<td>Coronary Artery Calcification</td>
<td>K₂</td>
<td>20% (Highest vs. Lowest Intake)³⁰</td>
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<td>Coronary Heart Disease</td>
<td>K₁</td>
<td>21% (Highest vs. Lowest Intake)⁶⁶</td>
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<td>Coronary Heart Disease</td>
<td>K₂</td>
<td>9% lower risk for each 10 microgram/d increased intake⁶⁷</td>
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<tr>
<td>Coronary Heart Disease Mortality</td>
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<td>57% (Highest vs. Lowest Intake)³</td>
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<tr>
<td>Metabolic Syndrome</td>
<td>K₁</td>
<td>27% for having low HDL-cholesterol* ⁴⁹ for having elevated triglycerides* ⁸² for having high blood sugar* (All Highest vs. Lowest Intake)⁶⁸</td>
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<tr>
<td>Type II Diabetes</td>
<td>K₂</td>
<td>7% lower risk for each 10 microgram/d increased intake⁵</td>
</tr>
<tr>
<td>Type II Diabetes</td>
<td>K₁</td>
<td>17% reduction for each 100 microgram/d increased intake⁶</td>
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<tr>
<td>Type II Diabetes</td>
<td>K₁</td>
<td>51% with increased K₁ intake vs. decreased or no change in intake⁶</td>
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</table>

*Based off of odds ratios
activated by vitamin K. This specific Glα-protein is produced in arterial walls, but is only activated when sufficient vitamin K is present.14,15,19,22-24 In the absence of sufficient vitamin K, arterial calcification is able to continue unopposed, leading to advanced atherosclerosis and its deadly consequences, heart attacks and strokes.14,16 Indeed, in older men and women who had the highest levels of inactive matrix Glα protein (indicating low vitamin K levels), there was a nearly 3-fold increased risk of cardiovascular disease compared to those with the lowest levels.23

Researchers have known for nearly 20 years that insufficient vitamin K intake in the diet is related to atherosclerosis in the aorta, the body’s largest blood vessel.16 Since that time, a host of basic science and laboratory studies have indicated that higher vitamin K intake is essential for preventing atherosclerosis in major vessels of all kinds. Animal studies even show that vitamin K can “rescue” calcified arteries that occur as a result of the overuse of drugs that inhibit vitamin K, such as certain blood thinners.25,26

Another way matrix Glα proteins help protect against atherosclerosis is by inhibiting the production of inflammatory signaling molecules (cytokines), which contribute to plaque formation and calcification.27 People with the highest dietary intake of vitamin K have significantly lower levels of those inflammatory markers, and also of substances involved in appetite generation and insulin resistance, both of which are important in preventing atherosclerosis.28 (Some of these effects may be related to increased levels of another vitamin K-dependent Glα-protein that suppresses inflammation and promotes glucose tolerance.)29

**Human Studies On Vitamin K**

Human studies on dietary vitamin K intake have been somewhat inconsistent, probably because of confusion about which form of the vitamin is most important.30

Vitamin K₁ (phylloquinone) is the main dietary form of the vitamin, but vitamin K₂ (menaquinone) has a stronger relationship to arterial calcification.15

In one study, people with the highest intake of vitamin K₂ were 57% less likely to die of coronary heart disease compared with those with the lowest intake.3 In another study, women with the highest intake of vitamin K₂ were found to be at a 20% lower risk for coronary artery calcification compared with women with the lowest intake levels, while the same study found that vitamin K₁ had no significant impact.30

Vitamin K supplementation studies suggest that both forms of the vitamin contribute to protection...
from arterial calcification in atherosclerosis, with a slight edge for vitamin K. For example, when healthy men and postmenopausal women supplemented with 500 micrograms of vitamin K per day, they experienced a modest 6% reduction in the progression of arterial calcification, but only in subjects with the most advanced disease at baseline.22 And a study using vitamin K1 in combination with vitamin D and minerals demonstrated that the combined supplement could slow the loss of arterial suppleness and promote elasticity.14

Similarly, supplementation with both 180 and 360 micrograms of vitamin K2 significantly reduced the amounts of inactivated matrix Gla protein, thereby lowering the risk of atherosclerosis with calcification; placebo recipients in that study showed no effect.31 In another study, a group of kidney disease patients on hemodialysis (who have a very high risk for advanced atherosclerosis with calcification) took either 135 or 360 micrograms of vitamin K2. Supplementation dramatically decreased the amount of inactivated matrix Gla protein by 77% at the lower dose, and 93% at the higher dose.32

Intriguingly, it is now apparent that women with atherosclerosis are more likely to have lower bone mass than women without atherosclerosis. They’re also more likely to have lower circulating vitamin K levels, highlighting the age-related trade-off between calcium in bones (which is desirable) and calcium in arterial walls (which is undesirable).20

**Vitamin K And Osteoporosis**

Sufficient vitamin K is also required in order to activate the Gla-protein osteocalcin, which binds tightly to bone minerals to create strong bones.33 With inadequate vitamin K, bones can’t hold on to vital calcium, which leads to osteoporosis.34 To make matters worse, the calcium has to go somewhere, so it enters the bloodstream, where it contributes to stiffening arteries.33

Fortunately, supplementation with vitamin K is an effective means of protecting your bones from osteoporosis.

A study of healthy postmenopausal women between 50 and 60 years old demonstrated that three years of supplementation with 1 mg/day of vitamin K1, plus 8 micrograms (320 IU)/day of vitamin D together with minerals, reduced the loss of bone in the hip and spine compared both to placebo recipients and to those supplemented with vitamin D and minerals alone.35

In another study, postmenopausal women with pre-existing osteoporosis took 1,500 mg of calcium carbonate and 45 mg of vitamin K2 or placebo each day for 48 weeks. Compared to baseline values, the women experienced an increase in spinal bone mineral density and a 55.9% reduction in inactive osteocalcin levels, while a 9.3% reduction occurred in the group taking only the calcium supplement.36 The same dose of K2 was later shown to maintain hip bone strength and improve the overall geometry of the femoral neck over a three-year period, while placebo recipients lost hip bone strength during that time.37

Even lower doses of 180 micrograms/day of vitamin K2 (especially in the form of longer-lasting MK-7, which is derived from natto or fermented soybeans), when given for three years, increased the amount of activated osteocalcin and produced significant improvements in bone mineral content and density in the lower spine and femoral neck, while also increasing bone strength and preventing loss of height in spinal vertebrae.38

Vitamin K2 has recently been recognized by the European Food Safety Authority as having an important role in maintaining normal bone health.38 When added to alendronate, a common anti-osteoporosis drug, vitamin K2 significantly increased bone mineral density in the femoral neck compared with alendronate alone.39

**Vitamin K And Diabetes**

Type II diabetics have an increased risk of bone fracture. This is likely due in part to the incomplete activation of the Gla-protein osteocalcin (caused by lack of vitamin K), and the decrease of calcium being
deposited in bone that occurs as a result. Conversely, people with the highest vitamin K1 intakes have reductions in inflammatory markers related to diabetes. Vitamin K has also been found to have a direct impact on the diabetic state itself. In a group of healthy volunteers between 26 and 81 years old, higher dietary vitamin K1 intake was associated with greater insulin sensitivity and lower post-meal glucose levels. And in a study of older adults at high risk for cardiovascular disease, the risk of developing type II diabetes was reduced by 17% per 100 micrograms of K1 intake per day.

Another study demonstrated that both vitamins K1 and K2 reduced the risk of developing diabetes. However, the stronger and more significant association occurred with K2, which reduced the risk of type II diabetes by 7% for each 10-microgram increase in intake.

In addition to reducing the risk of diabetes, vitamin K has been shown to reduce the effects of diabetes as well. Supplementation studies in animals show that diabetic rats, like diabetic humans, develop bone mineral loss. However, when diabetic rats were supplemented with vitamin K2, not only was osteopenia prevented, hyperglycemia was prevented as well.

Human supplementation studies demonstrate that both K1 and K2 are effective in combating the effects of diabetes. In older, non-diabetic men, three years of supplementation with 500 micrograms/day of vitamin K1 produced a significant reduction in insulin resistance compared with controls. And in a study of healthy young men, just four weeks of supplementation with 30 mg of K2 three times daily improved insulin sensitivity. This may have occurred as a result of an increase in the vitamin K-dependent Gla-protein osteocalcin, which has been shown in animal studies to increase insulin secretion and sensitivity.

**Vitamin K And Cancer**

Studies of vitamin K intake reveal potent preventive properties against several types of cancer, including prostate, colon, and liver cancers.

When prostate cancer cells in culture are treated with vitamin K2, both those sensitive to male hormones (androgens) and those resistant to male hormones are unable to reproduce, and eventually die. Vitamin K1 has been associated with a 63% lower risk of advanced prostate cancer in men with the highest intake of the nutrient. Similarly, a higher ratio of vitamin K-activated osteocalcin versus inactive osteocalcin correlates closely with reduced prostate cancer risk, demonstrating the molecular connection.

In human colon cancer cells, vitamin K2 has been shown to induce cancer cell death by several different mechanisms and to suppress the growth of colon tumors implanted into mice.

**Types Of Vitamin K**

It is clear that vitamin K affects specific and vital proteins throughout the body, well beyond the blood-clotting functions originally described for the vitamin. Less clear, at least for now, are differences in impact on the human body of several different types of vitamin K.

Phylloquinone, or K1, is the predominant source of vitamin K in the diet, but it becomes converted to menaquinone, or K2, in animals, including humans. Vitamin K2 itself has several different subtypes, based on molecular structure variations. The subtype MK-4, or menaquinone-4, predominates in animal tissues; it is the natural product of modification in the gastrointestinal tract. It is likely that both K1 and K2 are necessary for overall normal vitamin K function, and it appears that supplementation with both is useful, especially for the mounting number of biological tissues other than blood clotting that rely upon adequate vitamin K. The subtype of K2 called MK-7, menaquinone-7 has recently been shown to be more bioavailable than MK-4.
Supplementation studies also reveal vitamin K’s powerful effect on the most common kind of liver cancer, called hepatocellular carcinoma. This cancer is almost always associated with alcoholism or hepatitis B or C infection. Although surgical or radiation treatment can destroy the primary tumor, recurrence is common and typically determines the long-term prognosis. Several human studies show that vitamin K supplementation can dramatically reduce the recurrence rate in hepatocellular carcinoma and may impact the survival rate as well.

As with most nutrients, vitamin K is not the single answer to cancer prevention, but it shows tremendous promise, which highlights the importance of maintaining adequate levels through boosting your intake. A large European study showed that cancer death was 28% less likely overall in those with the highest versus lowest intakes of vitamin K.

<table>
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<tr>
<th>Impact Of Vitamin K&lt;sub&gt;2&lt;/sub&gt; Supplement On Liver Cancer Patients&lt;sup&gt;53&lt;/sup&gt;</th>
<th>Recurrence Rate, %</th>
<th>Survival Rate, %</th>
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<tr>
<td>12 mo</td>
<td>24 mo</td>
<td>36 mo</td>
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<tr>
<td>Vitamin K&lt;sub&gt;2&lt;/sub&gt;, 45 mcg/day</td>
<td>12.5</td>
<td>39.0</td>
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<tr>
<td>Controls</td>
<td>55.2</td>
<td>83.2</td>
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**Summary**

A recent large study confirms that people with the highest vitamin K intakes are significantly less likely to die from any cause, compared with those having the lowest intakes.

Because of its unique ability to activate proteins involved in atherosclerosis, osteoporosis, diabetes, and cancer, vitamin K is capable of opposing many of the leading causes of death in modern-day Americans. A host of new studies details the impact of vitamin K supplementation on preventing these, and possibly other, major age-related diseases.

Once considered just a blood coagulation vitamin, vitamin K<sub>2</sub> has now achieved the status of a multifunction vitamin. If you are interested in a longer and healthier life, consider supplementing with this often-overlooked nutrient.

If you are taking a blood-thinning drug, check first with your doctor to coordinate doses and follow-up testing.

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

People at risk for dangerous blood clots include those with various heart rhythm abnormalities (e.g., atrial fibrillation), as well as those with artificial heart valves, and other hardware, and those at risk for certain kinds of strokes. For these people, blood-thinning drugs known as anticoagulants offer significant protection.

But many traditional blood thinners, such as Coumadin® (warfarin), act specifically by inhibiting the action of vitamin K to produce clotting proteins. The emerging science of vitamin K is revealing a disturbing fact: While inhibiting vitamin K action on blood clotting proteins, these drugs also inhibit other vitamin K-dependent proteins, including the matrix Gla protein that naturally prevents arterial calcification.

Studies in both animals and humans now show that the use of anticoagulant drugs such as Coumadin (warfarin), while effective at clot prevention, do indeed accelerate arterial calcification, placing patients at increased risk for cardiovascular disasters. The good news is that by supplementing with low-dose vitamin K, you may help rescue arteries from calcification induced by warfarin.

However, if you are taking a blood-thinning drug, DO NOT stop using it and DO NOT begin any vitamin K supplementation on your own. Instead, speak with your doctor about starting a vitamin K supplement at a proper dose. With careful monitoring of coagulation tests, you are likely to find a balance between the benefits and the risks of anticoagulant use.

Newer blood-thinning drugs such as Pradaxa® (dabigatran) and Eliquis® (apixaban) are not affected by vitamin K intake, meaning you can take full-dose vitamin K and not compromise the desired anticoagulant effects.

References


LONGEVITY BENEFITS OF VITAMIN K

LONGEVITY BENEFITS OF VITAMIN K


Optimal heart health, including circulation, depends on the functioning of our **endothelium**—the thin layer of cells that lines the heart and its blood vessels.

Research has shown that **pomegranate** and **superoxide dismutase** can help maintain healthy endothelial function and circulation.

**POMEGRANATE POWER—THE NEXT GENERATION**

**Endothelial Defense™** provides **Full-Spectrum Pomegranate™** with active constituents of seed, flower, and fruit along with a proprietary **superoxide dismutase (SOD)** that survives stomach acids for absorption into the bloodstream.¹-⁸

The unique blend of **pomegranate** polyphenols in **Endothelial Defense™** promotes youthful lipid and glucose metabolism while regulating inflammatory factors.⁹

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 $39 per bottle. Contains soybeans and wheat.

**References**

**POMELLA® Extract** is covered under U.S. Patent 7,638,640. **POMELLA® Extract** is a registered trademark of Verdure Sciences, Inc. Isocell SA, France is the owner of US Patents Nos. 6,045,809 and 6,426,068B1 and the registered trademark of GliSODin®.

To Order **Endothelial Defense™ with Full-Spectrum Pomegranate™**, 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.
COOL DOWN AGING

Recently, scientists have identified one of the main culprits responsible for premature aging: rogue protein galectin-3. When galectin-3 is elevated due to aberrant cell growth, tissue injury, aging, or other factors, it stimulates an imbalanced inflammation response and triggers a cascade of consequences for cellular and cardiovascular function, joint and skin health, and more. But there is an answer. Derived from the pith of citrus fruits and modified to meet patented molecular specifications, PectaSol-C® Modified Citrus Pectin is the most researched natural galectin-3 inhibitor. The molecular features of PectaSol-C® allow it to enter the circulation with optimal bioactivity, so that it can bind to excess galectin-3 and block its pro-aging effects. PectaSol-C® is also shown to support immune function, as well as safe elimination of toxins and heavy metals such as lead, mercury, and arsenic.

Cool down aging with PectaSol-C®, the only clinically proven Modified Citrus Pectin delivering versatile anti-aging benefits.

Clinically researched PectaSol-C® delivers comprehensive anti-aging benefits:
- Supports Cellular and Cardiovascular Health*
- Safely Removes Heavy Metals and Toxins*
- Promotes Immune Health*
- Supports Healthy Galectin-3 Levels*

Available in Powder and Capsules

- **PectaSol-C®
  270 Veg. Capsules**
  Item #: 01080
  Retail: $79.95
  Member: $59.96

- **PectaSol-C®
  454 Grams Powder**
  Item #: 00342
  Retail: $109.95
  Member: $82.46

References
1. Cardiomed Drugs Ther 2014 May 2; DOI 10.1007/s10557-014-6520-2

To order PectaSol-C® Modified Citrus Pectin, call 1-800-544-4440 or visit www.LifeExtension.com

*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
The retail price for a bottle containing 90 softgels is $30. If a member buys four bottles, the price is reduced to $20.25 per bottle.

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

To Support Arterial Health And Bone Support

To Support Arterial Health

There are three forms of vitamin K that are key factors to promoting arterial health and bone support.

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

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

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

References

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

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

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.
Most people don’t get enough oil-based nutrients from their diet. **Super Booster** solves that problem with a once-a-day softgel that provides high potencies of fat-soluble nutrients and other compounds.

**Just one SUPER BOOSTER provides:**

- **Vitamin K2**: Studies show vitamin K2 provides superior benefits for bones, arteries, and other tissues. The MK-4 form of vitamin K2 is the most rapidly absorbed, but only remains active in the blood for a few hours. The MK-7 form of K2, however, remains bioavailable for a sustained **24 hours**. Super Booster provides a potent dose of MK-7 and MK-4 (along with vitamin K1) to keep calcium in the bones and out of the arteries.

- **Lutein**: This carotenoid helps maintain healthy cell division, supports eye health, and protects the endothelial lining of the arteries.

- **Gamma tocopherol**: Taking only alpha tocopherol displaces the critically important gamma tocopherol from cells in the body. Gamma tocopherol also quenches a dangerous free radical (peroxynitrite) that plays a major role in age-related decline. It is vital that those taking vitamin E supplements also consume at least **200 mg** a day of gamma tocopherol.

- **Sesame lignans**: Help boost tissue levels of gamma tocopherol via several different mechanisms.

- **Lycopene**: Evidence suggests those who ingest this carotenoid enjoy healthier prostate function. Lycopene also helps guard against LDL oxidation.

- **Ginkgo**: Hundreds of studies substantiate how *Ginkgo biloba* promotes healthy circulation and brain function.

- **Chlorophyllin**: Scientific studies indicate chlorophyllin may protect against environmentally induced DNA damage.

**Just one softgel of Super Booster supplies:**

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<tr>
<th>Nutrient</th>
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<td>Vitamin K2 (as menaquinone-4)</td>
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<td>100 mg</td>
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<tr>
<td>Sesame lignans</td>
<td>20 mg</td>
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<tr>
<td>Lycopene</td>
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<tr>
<td>Lutein</td>
<td>2 mg</td>
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<tr>
<td>Vitamin B12</td>
<td>300 mcg</td>
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<tr>
<td>Vitamin C</td>
<td>95 mg</td>
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**Super Booster** saves consumers big money by combining a variety of costly nutrients into one softgel. If you add up the price of the individual ingredients in **Super Booster**, you would spend **two to three** times more.

Just one **Super Booster** softgel should be taken each day with the heaviest meal.

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

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Patricia Richardson
A Rare Acting Talent Helps Battle Rare Disorders

The National Organization for Rare Disorders (NORD) has a motto that says, “Alone we are rare. Together we are strong.” The alone part refers to the fact that according to the Rare Disease Act of 2002, by definition a rare disease affects less than 200,000 people in the United States, which is around one in 1,500 people. There are nearly 7,000 such diseases affecting nearly 30 million Americans, says the National Institutes of Health (NIH).

The roots of the act actually took place in 1983 with the Orphan Drug Act, a federal law written and passed to boost research into possible cures for rare diseases. According to NORD, in the decade before this act there were only 10 new treatments brought to market by industry for diseases that today are defined as rare.
This is where the together part of the NORD motto comes in. By forming an organization to bring attention to all rare diseases under one umbrella, NORD is able to raise national awareness and recognition of the challenges faced by people living with rare diseases and the associated costs to society. Their goal is to create a nation where people with rare diseases can secure access to diagnostics and therapies that extend and improve lives.

When it comes to recognition, one of the best ways for an organization to raise its profile is to partner with a celebrity who can speak to their cause. Enter: Patricia Richardson.

You most likely know Richardson from her starring roles on Home Improvement with Tim Allen, Strong Medicine, and The West Wing. What you may not know is that in 2005 she lost her father to progressive supranuclear palsy (PSP), a rare neurodegenerative brain disease with no known cause, treatment, or cure.

“When my dad first started showing signs of PSP we thought he was just being a pain,” Richardson says. “We thought he had osteoarthritis. He had a difficult personality sometimes, but when he had open heart surgery, it accelerated the disease. That was when we noticed that he really stopped talking. People don’t understand that PSP attacks the brain cells that control speech and swallowing.”

Richardson says that it must have been so hard for her father to understand what was going on. Since you never know which brain cells are being overcome by the disease, emotional skills, motor skills, and everything in between can be affected. Richardson’s father’s face was essentially frozen, and at the end of his life she says it was like he was mummified and trapped inside his body.

“We would have to use hand signals or thumbs up or thumbs down signals to communicate with him,” she says. “When you go through this with a loved one, it’s like you no longer have this person to talk to. It’s like they’re gone but not really gone, so when they pass away, it’s not much different. I wondered if I’d be relieved when he passed away because he wasn’t in a terrible place anymore, but it was very painful when he died. It’s a parent and they’re suddenly off the planet.”

Richardson’s Vision Statement

The following are NORD’s guiding principles on which their advocacy initiatives are based:

- A national awareness and recognition of the challenges faced by people living with rare diseases and the associated costs to society.
- A nation where people with rare diseases can secure access to diagnostics and therapies that extend and improve their lives.
- A social, political, and financial culture of innovation that supports both the basic and translational research necessary to create diagnostic tests and therapies for all rare disorders.
- A regulatory environment that encourages development and timely approval of safe and effective diagnostics and treatments for patients with rare diseases.

Shedding Some Light

Back in 2005, Richardson says that they didn’t have a clue about how to handle PSP. There were support groups and physical therapists who could supposedly delay the symptoms, but that was all. As a way to cope with her own grief, Richardson became involved with a group called CurePSP to help raise money and awareness for the disease. After not even a decade into its founding, scientists have discovered that patients can be
helped by adding certain supplements into their nutrition regimen.

“Our patients have been helped by massive doses of CoQ10,” Richardson says. “Personally, I take alpha lipoic acid, potassium with vitamin D, vitamin C, and DHEA because I’m an aging female.”

In addition to supplements, Richardson says that their research has uncovered the importance of the tau protein in the disease’s development.

“They’re really making great strides,” she says. “Neurologists and biogenetic scientists have been coming up with some interesting ideas. But it’s all about money. There are cutbacks at NIH and the costs that are associated with big pharmaceutical companies and developing a drug with the FDA make new drug development difficult.”

**Joining With NORD**

Richardson came across NORD through her experience with her father’s PSP case.

“I came to NORD because they helped PSP so much,” she says. “NORD really came in handy for us. And they come in handy for other people. I was hosting a dinner and came across a family who had a child who was truly one of the only people on earth with a certain disease. NORD connected the family with the one other family they knew about who was dealing with the disease and they got the doctors in touch. The doctors were able to collaborate and through connections find potential clinical trials for their patients.”

The key, says Richardson, is that NORD combines over 200 advocacy groups for around 7,000 rare diseases. Those are essentially all the diseases that nobody has heard of, making NORD a catch-all support group.

“Having a disease that nobody else has is such a lonely place,” she says. “Or when you’re the caregiver and a loved one is battling a disease that is rare, people kind of just look at you. They don’t want to hear about this thing that could possibly happen to them that they’ve never even heard of.”

One of NORD’s main ideas is that there are rare diseases, but the experiences of the afflicted and their families aren’t rare.

“We’re a big lobbying group,” Richardson says. “We can get all these people to lobby Washington for more money to be allocated to helping to find cures. It’s like the motto says. Alone we are rare. Together we’re strong.”

For more information on NORD, please visit: www.rarediseases.org.

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.
New research on the vital benefits of vitamin D emerges on a daily basis. Studies confirm that optimal levels of vitamin D are in the range of 50-80 ng/mL of 25-hydroxyvitamin D. Life Extension® has created a large selection of highly absorbable vitamin D supplements in softgels to help you to achieve your individual vitamin D goals. Keep in mind that you may already be getting 1,000-3,000 IU of vitamin D in your current multi-nutrient formulas.

Vitamin D3 1,000 IU
250 softgels • Retail: $12.50
Four-bottle Member Price: $8.44 ea.
For most people, a 1,000 IU potency is insufficient to attain optimal vitamin D blood levels. However, this potency may be suitable for smaller individuals who obtain 2,000-3,000 IU in their multi-nutrient formulas (and children). Item # 01751

Vitamin D3 5,000 IU
60 softgels • Retail: $11
Four-bottle Member Price: $7.43 ea.
For those already obtaining 1,000-3,000 IU of vitamin D in their multi-nutrient formulas, this 5,000 IU potency is what may be needed to achieve optimal blood levels. Item # 01713

Vitamin D3 Liquid
2,000 IU (Natural Mint Flavor)
1 ounce • Retail: $28
Four-bottle Member Price: $18.75 ea.
Great for travel and for those individuals who have difficulty absorbing enough vitamin D3 from softgels, this liquid vitamin D is ideal. Item # 0732
Also available without mint. (Item # 00864)

Vitamin D3 5,000 IU With Sea-Iodine™
60 capsules (non-softgel) • Retail: $14
Four-bottle Member Price: $9.38 ea.
Most people, especially those seeking to reduce their salt intake, do not ingest enough iodine. Combining 5,000 IU of vitamin D3 with 1,000 mcg of iodine into one capsule makes taking these two nutrients economical and convenient. Due to the source of kelp, this product may contain fish and shellfish. Item # 01758

Vitamin D3 7,000 IU
60 softgels • Retail: $14
Four-bottle Member Price: $9.45 ea.
Some people (such as those weighing more than 180 pounds) may require even more vitamin D. When combined with 1,000-3,000 IU taken in a multi-nutrient formula, this 7,000 IU softgel should enable these individuals to attain blood levels above 50 ng/mL. Item # 01778

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

Caution: Individuals consuming more than 2,000 IU/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxyvitamin D measurement. Do not exceed 10,000 IU per day unless recommended by your doctor. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

*If you have a thyroid condition or are taking antithyroid medications, do not use without consulting your healthcare practitioner.
All brains decline with age, but numerous studies show that the proper nutrients can promote more youthful cognition and enhanced memory.

Only Cognitex® combines 11 essential ingredients in one cost-effective formula.

Sold separately, these components sell for a small fortune in Europe, where they are commonly prescribed for optimal brain health. Following is a sample of what you’ll find in each softgel:

- **Alpha-Glyceryl Phosphoryl Choline**: boosts levels of acetylcholine, which enables brain cells to communicate.
- **Gastrodin**: a brain shield that supports healthy levels of blood flow.
- **Grape Seed Extract**: boosts brain oxygen flow.
- **Vinpocetine**: increases circulation and brain cell conductivity.
- **Phosphatidylserine**: encourages improved concentration.
- **Pregnenolone**: a vital hormone that promotes mental energy.

Plus many more that make Cognitex® with Pregnenolone & Brain Shield® the most advanced neuro-enhancing formula on the market.

The retail price for 90 softgels of Cognitex® with Pregnenolone & Brain Shield® is $62. If a member buys four bottles, the price is reduced to $39.75 per bottle. If eight bottles are purchased, the price is reduced to $37.50.

Cognitex® is also available without pregnenolone at a slightly lower cost. Item # 01896

To order Cognitex® with Pregnenolone & Brain Shield®, call 1-800-544-4440 or visit www.LifeExtension.com

Contains soybeans.

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These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
A bottle of 60 vegetarian tablets of Natural Estrogen retails for $38. If a member buys four bottles, the price is reduced to $25.50 per bottle.

Contains soybeans.

References

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To order Natural Estrogen, call 1-800-544-4440 or visit www.LifeExtension.com
Dr. Michael Ozner is an award-winning pioneer in the field of preventative cardiology. He’s Medical Director of both Wellness and Prevention at Baptist Health South Florida and the Cardiovascular Prevention Institute of South Florida, and was recently elected to “Top Cardiologists in America” by the Consumer Council.

Dr. Ozner started his prevention-only cardiology practice over 20 years ago. He knew that surgical intervention wasn’t enough to stop the spread of America’s number-one killer. Patients who had undergone surgical procedures were returning for a second or third intervention while waiting in dread for their next cardiac event to occur. >
Our diet and lifestyle? do you consider so deadly about American lifestyle as “toxic.” What health.
Mediterranean diet is a game-changer when it comes to good
intervention.”

In this exclusive interview with Life Extension®, Dr. Ozner describes how a heart-healthy Mediterranean diet is a game-changer when it comes to good health.

LE: You describe the average American lifestyle as “toxic.” What do you consider so deadly about our diet and lifestyle?

MO: Our food is contaminated with pesticides and preservatives, and contains an excessive amount of dangerous fats, sugars, and salt. We no longer exercise and our lives are plagued by chronic stress.

In the last 50 years, there’s been an explosive rise in heart disease, stroke, high blood pressure, diabetes and obesity—diseases that have been directly linked to the food we eat and the lifestyles we lead. Despite the billions of dollars we spend on health care, we continue to suffer and die unnecessarily from diseases that can be prevented.

LE: You practice preventative cardiology and focus on three key areas to keep cardiovascular
disease at bay: nutrition, exercise, and stress management. Why is the Mediterranean diet such an important part of your disease-prevention plan? And what about the two-thirds of American adults who are overweight and need to shed pounds for health reasons?

MO: The Mediterranean diet—a well-balanced diet including healthy fats and complex carbohydrates—offers the best alternative if you’re looking to lose weight without sacrificing your health. There’s a reason the Mediterranean diet has been around for thousands of years. By pairing this diet with increased exercise and lowered stress, you don’t just lose weight, but lower your cholesterol, blood sugar, and blood pressure—and that’s just the beginning!

LE: What are some of the other chronic conditions that the Mediterranean diet protects against?

MO: The diet and lifestyle lowers the risk of a multitude of chronic diseases. It has been shown to reduce the risk of allergies, Alzheimer’s, arthritis, asthma, cancer, lung disease, depression, inflammatory bowel disease, and metabolic syndrome.

LE: How can one single eating plan afford all these benefits?

MO: That’s a fair question. The secret seems to lie in the fact that the Mediterranean diet is synergistic. That means that the components are not only nutritious in themselves, but when combined with one another, act together to provide added benefits. They are more powerful in combination than if they were eaten separately.

The Mediterranean diet is full of fruits and vegetables, which help prevent the damage to your body’s cells that cause heart disease, cancer, and other diseases. It also features whole-grain foods rich in fiber, which has been shown to help balance cholesterol and prevent some forms of cancer. It also decreases inflammation—which is strongly linked to the development of heart disease, cancer, and other ailments like arthritis.

LE: You call stress a “silent killer.” What specifically makes stress so deadly? And why is stress reduction such an integral part of the Mediterranean lifestyle?

MO: Chronic stress increases stress hormones such as cortisol and adrenaline, which in turn increase blood pressure, causing the heartbeat to become rapid and increase the likelihood of forming blood clots. Studies show chronic stress significantly increases the risk of heart attack.

People in Mediterranean countries tend to have less stress compared to their American counterparts. They spend more time enjoying meals with friends and family. They often relax and take a nap after lunch. A recent study showed that a regular midday nap reduced risk of death from heart disease by 37%.

LE: If a lunchtime nap is not realistic, what other steps for stress-reduction do you recommend?

MO: The first step in handling stress is to take a realistic view of the factors responsible for stress in our lives and try to modify them. Next, I recommend physical exercise, not because exercise eliminates stress, but because people who exercise are better able to handle it. I also encourage my patients to begin relaxation response training—yoga, self-hypnosis, or meditation. Finally, prayer offers significant stress reduction for some.
LE: Before we share some of your favorite recipes, do you have any final tips for our readers about the Mediterranean diet and lifestyle?

MO: Eat a variety of fresh, non-processed food, limit portion sizes, and avoid saturated fat, trans fats, refined sugar, and excess alcohol. Relax—and never lose your sense of humor. Laugh, smile, and enjoy life!

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

Michael Ozner, MD, FACC, FAHA, is a board-certified cardiologist, a Fellow of both the American College of Cardiology and the American Heart Association, Medical Director of Wellness and Prevention at Baptist Health South Florida, and a well-known regional and national speaker in the field of preventative cardiology. He was the recipient of the 2008 American Heart Association Humanitarian Award and was elected to “Top Cardiologist in America” by the Consumer Council of America. Dr. Ozner is the author of The Great American Heart Hoax, Heart Attack Proof, and The Miami Mediterranean Diet.

He is also a member of the Life Extension Foundation®’s Scientific Advisory Board.

The Complete Mediterranean Diet—Everything You Need to Know to Lose Weight and Lower Your Risk of Heart Disease features over 500 recipes, from soups and salads to main courses and delicious desserts. Here are two easy-to-make dishes you can serve tonight.

**Roasted Salmon With Wilted Spinach**

- 1/2 tablespoon brown sugar
- 1/2 tablespoon smoked paprika
- 1/2 teaspoon Saigon cinnamon
- 1/2 teaspoon orange zest
- 1/4 teaspoon salt (or to taste)
- 4 (4-ounce) skinless salmon fillets
- 2 teaspoons olive oil
- 3 teaspoons fresh minced garlic
- 1 (9-ounce) bag fresh spinach

Preheat oven and a shallow, heavy-bottomed roasting pan to 400 degrees. In a small bowl, combine sugar, paprika, cinnamon, orange zest, and salt. Rub both sides of fillets evenly with spice mixture and place in roasting pan. Roast for roughly 10 minutes, turning once after five minutes, or until fish flakes easily with a fork. While fish is roasting, add oil to skillet over medium heat, then add garlic and sauté until fragrant. Add a few bunches of spinach at a time, until all is wilted. When fillets are cooked, divide spinach onto four plates, top each with a salmon fillet, and serve.

Makes 4 servings • Approx. 292 calories per serving • 26g protein, 19g total fat, 3g saturated fat, 0 trans fat, 4g carbohydrate, 70mg cholesterol, 106mg sodium, 1g fiber

**Asparagus With Fresh Garden Herbs**

- 1 pound asparagus, tough ends removed
- 1 tablespoon finely chopped fresh parsley
- 1/2 tablespoon finely chopped fresh basil
- 1/8 teaspoon freshly ground pepper
- 3 tablespoons trans fat-free canola/olive oil spread, melted
- 2 Italian plum tomatoes, seeded and chopped
- 2 tablespoons shredded Parmesan cheese

Simmer asparagus in an inch of water for five minutes until crispy tender. Drain well and place on serving platter. Combine parsley, basil, pepper, and canola/olive oil spread. Drizzle over asparagus, sprinkle on chopped tomatoes and Parmesan cheese, and serve.

Makes 4 servings • Approx. 85 calories per serving • 4g protein, 9g total fat, 1g saturated fat, 0 trans fat, 4g carbohydrate, 2mg cholesterol, 119mg sodium, 2g fiber

To order The Complete Mediterranean Diet, call 1-800-544-4440 or visit www.LifeExtension.com

Retail price $19.95
Member price $14.96
Item #33867
Emerging research suggests that different sources of omega-3 fatty acids, such as fish oil and krill oil, provide complementary effects upon cellular targets throughout the body.¹

Scientists suggest that combining fish oil and krill oil may provide enhanced support for cardiovascular health and the brain due to the different ways that fish oil and krill oil are taken up by our cells.²

Fish oil and krill oil share many important similarities, such as reducing levels of omega-6 relative to beneficial omega-3 fatty acids.³ Most Americans consume too many omega-6 polyunsaturated fatty acids and not enough omega-3s.⁴

Evidence suggests that by combining both fish and krill oil, you can maximize uptake and the protective benefits of a wide spectrum of omega-3 fatty acids.⁵

To provide enhanced coverage, a new Super Omega contains a potent concentration of fish oil, olive fruit, and sesame lignans, plus krill and astaxanthin.

**Combined Benefits Of Fish And Krill Oils**

Human studies suggest that omega-3 fatty acids from fish oil result in a more rapid uptake into plasma triglyceride and platelet phospholipids, which specifically benefit the cardiovascular system.⁶

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With Krill & Astaxanthin

The omega-3s found in krill appear to be more rapidly incorporated into red blood cell phospholipids, which are rapidly absorbed into brain cells.1

When combined, krill and fish oil appear to offer enhanced benefits for both the cardiovascular and nervous system than either form by itself.

Astaxanthin: Super-Antioxidant

Astaxanthin protects cells by controlling free-radical activity and boosting mitochondrial function.2 This potent antioxidant carotenoid has been shown to help optimize joint, immune,6,7 brain,8,9 cardiovascular,10,11 DNA,12,13 and mitochondrial14,15 health. Astaxanthin also supports healthy vascular health within the eye16 and protecting the eyes’ sensitive cells.17,18

And astaxanthin crosses the blood-eye barrier, supporting enhanced benefits for joint, immune,19,20 brain,21,22 cardiovascular,23,24 DNA,25,26 and antioxidant carotenoid has been shown to help optimize blood sugar levels for those already in the normal range.27,28

In Super Omega with Krill & Astaxanthin, the natural astaxanthin content of krill is fortified with additional astaxanthin for maximum stability and benefit.

Newly Documented Benefits Of Mediterranean Diet

In 2013, the results of a huge trial of people who followed a Mediterranean diet were published in the New England Journal of Medicine. Those who supplemented this diet either with olive oil or nuts showed such a huge reduction in primary cardiovascular problems that the trial was stopped early to spare the lives of those on the control diet.22

The Mediterranean diet—rich in omega-3 fatty acids, monounsaturated fatty acids found in olive oil, and antioxidant-rich fruits, vegetables, and herbs—has long been associated with cardiovascular health and increased life span.29-31

To help emulate a Mediterranean diet, Super Omega provides a standardized olive fruit polyphenol extract to protect normal LDL from oxidation.32-34 Research shows that a combination of olive oil and fish oil supplements helps with inflammation better than a placebo or fish oil alone.27

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

Sesame Lignans Extend Fish Oil’s Benefits

The unstable nature of fatty acids like fish oil limits their biological efficacy in the body. Scientific studies show that when sesame lignans are supplemented with fish oil, the beneficial effects are augmented.38,39

Sesame lignans help guard against lipid peroxidation, thereby extending the stability of DHA in the body. These lignans also direct fatty acids toward pathways that can help with inflammatory reactions. Super Omega provides standardized sesame lignans to enhance the overall benefits of EPA/DHA marine oils.

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

The suggested daily dose of four softgels of Super Omega with Krill & Astaxanthin provides:

Pure-™ Wild Fish Oil Concentrate 4,050 mg

Yielding:

EPA (eicosapentaenoic acid) 1,400 mg

DHA (docosahexaenoic acid) 1,000 mg

Typical DPA (docosapentaenoic acid) 158 mg

Antarctic Krill (Euphausia superba) oil 300 mg

Polyphenol-Oil™ Olive extract (fruit and leaf) 400 mg

(providing 90 mg polyphenols,

20.50 mg verbascoside/oleuropein, 15 mg hydroxytyrosol)

Sesame seed lignin extract 10 mg

Natural Astaxanthin 4 mg

Contains crustacean shellfish (krill).

A bottle of 120 softgels of Super Omega with Krill & Astaxanthin retails for $45. If a member buys four bottles, the price is reduced to $31.50 per bottle.

Super Omega-3 Still Available

Life Extension members still have access to our premium Super Omega-3 with Olive Fruit Extract and Sesame Lignans. This formula costs less since it does not contain krill oil or astaxanthin.

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

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References


Uneven skin color and age spots can make skin look old beyond its years.

Age spots and discoloration begin when melanin, the skin's predominant pigment, is overproduced\(^1\) and unevenly distributed.\(^2\) This is medically termed hyperpigmentation.

**Cosmesis Advanced Lightening Cream** contains three natural compounds that, in combination, correct skin tone and dark spots—resulting in younger-looking skin.\(^3\)-\(^5\)

1. **Alpha-arbutin**, derived from bearberry plant leaves, removes pigment from age spots and helps inhibit further melanin production (*melanogenesis*) by up to \(60\)%.\(^3\)
   In one clinical study, over \(80\)% of individuals who topically applied alpha-arbutin showed noticeable reductions in the appearance of age spots in just three months.\(^4\),\(^5\)

2. **Indian gooseberry** binds to copper, which inhibits an enzyme (**tyrosinase**) involved in melanin production.\(^6\)
   Scientists found that topical application of *Indian gooseberry* extract substantially faded facial freckles for \(89.5\)% of participants—after just eight weeks.\(^6\)

3. **Niacinamide**—a derivative of vitamin B3 or niacin—evens out skin coloration via a different mechanism: It suppresses transfer of already produced melanin to the main cells on the skin surface (**keratinocytes**) by up to \(68\)%.

   In a double-blind clinical trial, topically applied niacinamide reduced total areas of hyperpigmentation by \(25\)% in eight weeks and subjects reported lightened skin.\(^7\)

**Cosmesis Advanced Lightening Cream** incorporates all three of these compounds into one synergistic formula that noticeably evens out pigmentation for a youthful, radiant skin tone! It is excellent for all skin types and can be used daily.

A 1-ounce jar of **Cosmesis Advanced Lightening Cream** retails for \$65. If a member buys two jars, the price is reduced to \$42.75 per jar.

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**References**


To order Cosmesis Advanced Lightening Cream, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)
Doctored Results
The Suppression Of Laetrile At Sloan-Kettering Institute For Cancer Research

“Moss was in a position of major trust; he knew my innermost thoughts.”
—Robert A. Good, MD, PhD
President of Sloan-Kettering Institute

“Lying to the American people wasn’t part of my job description.”
—Ralph W. Moss, PhD

Ralph W. Moss was the Assistant Director of Public Affairs at Memorial Sloan-Kettering Cancer Center in New York City. He started in the summer of 1974 and immediately became familiar with a substance that would become a turning point in his work with the organization.

As he states early in his book, Doctored Results, part of Moss’ job was to respond to letters written to Sloan-Kettering by the general public. He says there were often inquiries about specific therapies, suggestions concerning potential treatments, and as can be expected, some people writing with fringe ideas. >
But to Moss’ surprise, numerous letters were written in regard to a substance called amygdalin, or, more popularly, laetrile. Laetrile was a cancer treatment that came from the kernel of an apricot pit, and many of the letter writers suggested this could be a potent weapon in the war against cancer. Like many Americans at the time, Moss was familiar with the substance because earlier that year, 60 Minutes host Mike Wallace had featured a story about Americans traveling to Mexico to access this unapproved cancer treatment.

It was a scenario far too many *Life Extension* readers are familiar with: that of US citizens being forced to travel to foreign countries to receive treatments the FDA would not approve.

“As I read through the letters, I realized that some people were angry, very angry, that Sloan-Kettering wasn’t properly testing laetrile or refused to use this apricot pit ‘cure,’” Moss writes. “To answer them, Jerry [Moss’ boss] gave me a carefully worded statement that had been drawn up a year before. It said that the testing of laetrile at Sloan-Kettering Institute was ongoing but that, to date, it had been found to have no effectiveness in treating or preventing cancer. People should not abandon their proven, conventional treatments.”

Moss says that the general consensus around his office towards laetrile was one of “mild amusement or skeptical disbelief.” But that is not what a scientist working at Sloan-Kettering discovered. His research indicated that laetrile, while not a cure for cancer, was very powerful at preventing metastatic spread of the disease, at least in lab animals. The medical establishment, aware of this research, did everything imaginable to discredit it.

Once Moss lays the foundation of his own personal story in *Doctored Results*, he then goes on to give an interesting and fact-filled history of America’s war on cancer. In a particularly telling section, he explains the poor state of cancer research that existed in this country in the 1960s by comparing the cancer war to the space race.

“In the 1960s, America had spent $26 billion to land men on the Moon, and the only tangible reward had been a collection of rocks and dust of interest to a few astronomers,” he writes. “At that same time, all of the cancer scientists in the United States worked on a budget of $250 million a year—less than 1% percent of the Moon shot’s total.”

Having established his own experience and the state of cancer research in the United States at the time of his employment at Sloan-Kettering, Dr. Moss then begins to weave the tale of one of the biggest medical cover-ups the world of cancer research had ever seen. He introduces the major players with deftness and an objectivity often reserved for fiction, which is an impressive accomplishment in a book with this subject matter.

Moss goes through great pains to explain how each prominent doctor or scientist or politician or hospital board member came to play a role in the story of laetrile. One such person who stands out is Dr. Kanematsu Sugiura, who was deemed a “Living National Treasure” for his medical body of work. He was renowned for his legendary patience, which Moss says included running one experiment that called on him to inject mice with laetrile every day, seven days a week for two-and-a-half years. Dr. Sugiura never missed a single day.

As the story continues, Moss quotes Dr. Sugiura—a quote that resonates for the rest of the book.

Dr. Sugiura explained in an interview with Moss how his laetrile experiments were work-

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

**To order a copy of Doctored Results: The Suppression of Laetrile at Sloan-Kettering Institute for Cancer Research,** call 1-800-544-4440 or visit www.LifeExtension.com.

Item #33871
Retail price $19.95
Member price $14.96

In addition to the book, Dr. Moss is also the subject of a documentary called *Second Opinion*, which tells this same story. For more information, please visit www.secondopinionfilm.com.
Astaxanthin is a fat-soluble carotenoid compound. The challenge to deriving maximum benefits is its normally limited absorption—as low as about 50%. Assimilation of astaxanthin is impeded by limited uptake and intestinal degradation.

Astaxanthin 4 mg with Phospholipids combines 4 milligrams of natural astaxanthin with a proprietary blend of phospholipids.

By incorporating phospholipids, scientific study shows that carotenoid absorption may be enhanced several-fold.

Astaxanthin 4 mg with Phospholipids uses four different phospholipids to facilitate maximum absorption of astaxanthin into the bloodstream, where it is transported to cells throughout the body.

ASTAXANTHIN

Each softgel of Astaxanthin with Phospholipids provides 4 mg of natural astaxanthin along with 80 mg of proprietary phospholipid blend. Just one softgel a day provides tremendous systemic cellular support!

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

References
Discover the **Force** of the Whole Herb

Our delicate, whole-herb approach to extraction helps deliver Nature’s Wisdom.

**Time-Honored Herbs**

Ginger *Force* supports blood platelet health and cardiovascular function *in vitro.* Active ingredients support the growth of beneficial intestinal microorganisms, which are vital for intestinal health.* In addition, the Ginger *Force* formula includes supercritical Rosemary for its unique phytonutrients.

Ginger has been used for thousands of years in the most revered traditional herbal systems. In the Chinese herbal tradition, Ginger is known as *jiang,* meaning “defend.” In Ayurveda it is called *vishwabhesaj,* meaning “universal medicine.” Rosemary also has traditional significance. Since the times of the ancient Egyptians and Greeks, Rosemary has symbolized love, loyalty, friendship, and remembrance.

**Full-Spectrum Extraction: Our Difference**

Many companies isolate elements from an herb, concentrate them, and add the label “whole herb.” New Chapter aims to deliver Nature’s **whole wisdom.** Using only natural supercritical CO₂ or traditional techniques of extraction, our potent *Force* extracts guarantee the fullest spectrum of beneficial phytonutrients in their natural profile.

The innovative supercritical process uses natural carbon dioxide to gently extract delicate plant compounds, including beneficial oils. The method can also highly concentrate phytonutrients, so the constituents of the finest whole herbs can be delivered in just one or two softgels.

**Nature’s Profile of Beneficial Compounds**

We select only the finest and most pure whole herbs for our concentrated extracts. We do not isolate out single ingredients or spike our extracts with synthesized additives. In this way, we are Delivering the Wisdom of Nature by preserving the herb’s innate nuances, many of which may be lost or discarded when herbs are fractionated or altered.

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**Ginger *Force*** 60 Softgels | Item# 01228  
Retail Price: $31.95 | Member Price: $23.96

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

Learn more at newchapter.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.
Kale
Immunostimulatory And Anticancer Effects

For decades, scientists have known that the nutrients in cruciferous vegetables such as cabbage, broccoli, and kale offer unique protection against the type of DNA damage that too often results in malignancies. Kale, however, stands out. The total polyphenol content in kale has been found to be higher than in any other cruciferous vegetable.¹

Powerhouse Immune Support

Kale provides a superior level of sulforaphane—a unique cancer-fighting compound.² Sulforaphane boosts detoxification, the cleansing process by which the body eliminates harmful compounds, possibly by its induction of phase II detoxification enzymes, in addition to its boosting of antioxidant enzymes.²
IgA is a principle antibody class that acts as an important first line of defense in the secretions that bathe the mucosal surfaces of the gastrointestinal, respiratory, and genitourinary tracts—the largest area of exposure of the body to external pathogens. IgA is believed to interfere with pathogen adherence to mucosal epithelial cells (“immune exclusion”) and, in the serum, to serve as a second line of defense by eliminating pathogens that have breached the mucosal surface.

Thanks to these multiple modes of action, kale has been demonstrating to substantially reduce the risk of many cancers, including some of the deadliest forms, such as cancer of the pancreas, breast, colon, and esophagus. Although the exact anticancer mechanism for each of kale’s complex compounds is not known, the sulforaphane component alone has been shown to modulate cell
Cardiovascular Support

A study published in the American Journal of Clinical Nutrition reported that a high intake of cruciferous vegetables reduced the risk of dying from cardiovascular disease by as much as 22%. Yet the cardiovascular benefits of kale may be even stronger than other cruciferous vegetables.

Kale is especially abundant in the carotenoid lutein, which may help prevent atherosclerosis. An 18-month study from the University of Southern California found that in a group of 480 men and women aged 40 to 60 with no history of heart disease, those with the lowest serum lutein concentration had a five-fold greater increase in carotid artery thickness, a risk factor for heart disease, compared with those who had the highest serum lutein concentrations. This study also included an in vitro portion that compared tissue cultures of cells exposed to various combinations of lutein and low-density lipoprotein (LDL), which is known to promote atherosclerosis. The researchers found that pretreatment of cells with lutein dose-dependently protected the cells against inflammation associated with LDL plaque formation, further supporting a protective effort for lutein against atherosclerosis.

Another cardiovascular benefit of kale relates to its high fiber content, which may have a protective effect against high levels of C-reactive protein (CRP), an inflammatory marker associated with predicting cardiovascular disease risk. Researchers examined the relationship between dietary fiber intake and CRP levels in more than 3,900 men and women aged 20 and older. After adjusting for confounding factors such as age, gender, physical activity, and body mass index (BMI), those with the highest fiber intake had a 51% lower risk for elevated CRP levels compared with those with the lowest intakes.

Kale’s high-fiber content may also protect cardiovascular health by lowering cholesterol. Your liver uses cholesterol to make bile acids, specialized molecules that emulsify fat to aid in its digestion and absorption. When you eat a fat-containing meal, bile acids are released from your gallbladder into the intestine where they help ready the fat for interaction with enzymes and eventual absorption into the body. Fiber-related nutrients in kale bind together with some of the bile acids in your intestine in such a way that they remain in the intestine and pass out of the body in a bowel movement instead of getting absorbed along with the fat they have emulsified. When this...
happens, your liver replaces the lost bile acids by drawing on your existing cholesterol supply—lowering your body’s cholesterol level.32

A study demonstrated that the bile acid-binding—and therefore, cholesterol-lowering—ability of kale is greater than that of the other cruciferous vegetables, with the exception of collard greens, which proved only slightly more effective. The same study indicated that the fiber-related components in kale do a much better job of binding together with bile acids in your digestive tract when they’ve been consumed steamed instead of raw.32

Kale is also especially noteworthy for its high content of vitamin K, a fat-soluble vitamin that plays an important role in blood clotting.33,34

Broader Benefits

Kale is especially rich in lutein and zeaxanthin, two carotenoids known to absorb blue light. They act like sunglasses filters to prevent eye damage from excessive exposure to ultraviolet light. In several studies, people with a history of eating lutein-rich foods such as kale had up to 22% lower risk for cataracts.35,36 Also, one cup of kale provides over 200% of the daily recommended intake of vitamin A, an important nutrient for vision.

Because it is high in fiber and contains protein, kale may help balance blood sugar. Fiber helps slow the rise of blood sugar and protein helps anchor blood sugar. Anthocyanins, which are antioxidant superstars, are abundantly found in kale. These potent compounds may help combat obesity and weight gain by preventing fat cells from expanding. One study reported that, “anthocyanin-treated mice showed a 24% decrease in weight gain,” compared to those not given anthocyanins.37 Also, kale is incredibly low in calories, contains no trans fat, is low in sugar (in the form of vegetable carbohydrates), is practically fat free, and promotes satiety through its naturally occurring fiber and protein.38

Aside from its many exceptional compounds, kale delivers an abundance of vitamins and minerals. It is particularly rich in vitamins A, C, and K, as well as being a good source of calcium, manganese, copper, and potassium.38

Those who find it difficult to consume enough kale or other cruciferous vegetables in their daily diet can obtain standardized potencies of sulforaphane, zeaxanthin, and lutein in low-cost dietary supplements.

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

HOW MUCH CURCUMIN ARE YOU ABSORBING?

Derived from the Indian spice turmeric, curcumin is acclaimed for its wide range of health-promoting effects on almost every organ system,\(^1,\)\(^6\) while supporting the body’s healthy inflammatory response.\(^7\)

Most curcumin extracts are neither well absorbed nor well retained in the body.

**Advanced Bio-Curcumin\(^\circledR\) with Ginger & Turmerones** contains BCM-95\(^\circledR\), a patented, bioenhanced preparation of curcumin that has been shown to reach up to 7 times higher concentration in the blood than standard curcumin.\(^8\) In addition to the benefits of BCM-95\(^\circledR\) this advanced formula provides:

- **Turmerones**: botanical compounds that remain after curcumin is extracted, enhancing curcumin absorption and increasing the amount of curcumin inside cells.\(^9\)
- **Ginger**: a close relative of curcumin with overlapping, complementary health benefits.
- **Phospholipids**: an emulsifying molecule that greatly enhances absorption.\(^10\)

The suggested daily dosage of one softgel of Advanced Bio-Curcumin\(^\circledR\) with Ginger & Turmerones provides:

- **Turmeric Phospholipid Blend**
  - BCM-95\(^\circledR\) Bio-Curcumin Turmeric 25:1 extract (rhizome) [total curcuminoids complex with essential oils (380 mg)], Turmeric oil (rhizome) [providing 60 mg total turmerones], Phospholipids
- **Ginger CO\(_2\) extract** (root) [providing 60 mg gingerols]

Each softgel of Advanced Bio-Curcumin\(^\circledR\) with Ginger & Turmerones provides 400 mg of BCM-95\(^\circledR\) Super Bio-Curcumin, plus an array of turmerones and phospholipids.

A bottle of 30 softgels of Advanced Bio-Curcumin\(^\circledR\) with Ginger & Turmerones retails for $30. If a member buys four bottles, the price is reduced to $20.25 per bottle.

Contains soybeans.

**References**


Bio-Curcumin\(^\circledR\) and BCM-95\(^\circledR\) are registered trademarks of Dolcas-Biotech, LLC.

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

To order Life Extension\(^\circledR\) Advanced Bio-Curcumin\(^\circledR\) with Ginger & Turmerones, call 1-800-544-4440 or visit www.LifeExtension.com
Scientists continue to discover healthful benefits—including DNA protection—in cruciferous vegetables such as broccoli, cauliflower, cabbage, watercress, and Brussels sprouts. Unfortunately, no matter how healthy you eat, cooking destroys many of these protective plant extracts.

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

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

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

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

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

**References**


To order **Triple Action Cruciferous Vegetable Extract**, 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. These products are not intended to diagnose, treat, cure, or prevent any disease.
Blood testing provides the ultimate information regarding correctable risk factors that may predispose you to disorders such as cancer, diabetes, cardiovascular disease, and more. Information about general health and nutritional status can also be gained through standard blood analysis. Standing behind the belief that blood testing is an essential component of any program designed to attain optimal health and longevity, Life Extension® offers this innovative and convenient service at a very affordable price. Not only is comprehensive blood testing an important step in safeguarding your health, it is a simple process from virtually anywhere in the United States.

Five Easy Steps:
1. Call 1-800-208-3444 to discuss and place your order with one of our knowledgeable health advisors. (This order form can also be faxed to 1-866-729-1050 or mailed. Online orders can also be placed at www.lifeextension.com.)
2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit; whichever is applicable (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be sent directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable health advisors by calling 1-800-226-2370; or review the results with your personal physician.

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

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

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**COMPREHENSIVE PANELS**

**MALE LIFE EXTENSION PANEL (LC122582) $269**

Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes: C-Reactive Protein

DHEA-S Homocysteine

TSK for thyroid function Free Testosterone Estradiol Total Testosterone Vitamin D 25- hydroxy PSA (prostate-specific antigen) Hemoglobin Alc

**FEMALE LIFE EXTENSION PANEL (LC322535) $269**

Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes: C-Reactive Protein

DHEA-S Homocysteine

TSK for thyroid function Free Testosterone Estradiol Total Testosterone Progesterone Vitamin D 25- hydroxy Hemoglobin Alc

**WEIGHT LOSS LOSS PANEL-COMPREHENSIVE (LC100028) $275**

CBC/Chemistry profile (see description above), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin Alc, Vitamin D 25-hydroxy, C-reactive protein (high sensitivity), and Ferritin.

**WEIGHT LOSS PANEL-BASIC (LC100027) $130**

CBC/Chemistry profile (see description above), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Insulin and Hemoglobin Alc.

**MALE HORMONE ADD-ON PANEL (LCADDM)* $155**

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

**FEMALE HORMONE ADD-ON PANEL (LCADF)* $125**

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

**LIFE EXTENSION THYROID PANEL (LC304131) $75**

TSH, 14, Free T4, Free T3.

**FEMALE COMPREHENSIVE HORMONE PANEL* (LC100011) CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.

**MALE COMPREHENSIVE HORMONE PANEL* (LC100010) CBC/Chemistry Profile (see description above), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.

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**THE CBC/CHEMISTRY PROFILE (LC381822) $35**

Note: This CBC/Chemistry Profile is included in many Life Extension panels. Please check panel descriptions.

**CARDIOVASCULAR RISK PROFILE**

Total Cholesterol Cholesterol/HDL Ratio HDL Cholesterol Estimated CHD Risk LDL Cholesterol Glucose Triglycerides Iron

**LIVER FUNCTION PANEL**

AST (SGOT) Total Bilirubin ALT (SGPT) Alkaline Phosphatase LDH

**KIDNEY FUNCTION PANEL**

BUN BUN/creatinine Ratio Creatinine Uric Acid

**BLOOD PROTEIN LEVELS**

Total Protein Globalin Albumin Albumin/Globalin Ratio

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

Red Blood Cell Count Monocytes White Blood Cell Count Lymphocytes Eosinophils Platelet Count Basophils Hemoglobin Polys (Absolute) Hematocrit Lymphs (Absolute) MCV Monocytes (Absolute) MCH Eos (Absolute) MCHC Baso (Absolute) Polynucleated Cells RDW

**BLOOD MINERAL PANEL**

Calcium Sodium Potassium Phosphorus Iron

**COMPREHENSIVE THYROID PANEL**

(TC100018) TSH, Free T3, Free T4, Reverse T3, TPO, ATA

**FOOD SAFE ALLERGY TEST** (LC730001) $198

This test measures delayed (IgG) food allergies for 55 common foods.

**ADRENAL FUNCTION PANEL**

(LC100021) DHEA-S, AM/PM Cortisol, Glucose, Insulin, Lipid Panel, RBC magnesium

**OMEGA SCORE™** (LC302367) $131.25

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

**HEALTHY AGING PANEL-COMPREHENSIVE** (LC100026) $249

CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Homocysteine, Vitamin D 25-hydroxy, Hemoglobin Alc, Total Protein, Ferritin, Urinalysis, Fibrinogen, and Insulin.

**HEALTHY AGING PANEL-BASIC** (LC100025) $149

CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin Alc, TSH, Ferritin, and Insulin.

**VAP™ TEST** (LC803500) $90

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

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

** This test is packaged as a kit, requiring a finger stick performed at home.
**ENERGY PROFILE** (LC100005)
CBC/Chemistry Profile (see description),
Epstein – Barr Virus antibodies (IgG and IgM),
Cytomegalovirus Antibodies (IgG and IgM), Ferritin,
Total and Free Testosterone, DHEA-S, Free T3, Free T4,
Cortisol, C-Reactive Protein (high sensitivity),
Vitamin B12, Folate, Insulin.

**ANEMIA PANEL** (LC100006) $86
CBC/Chemistry Profile (see description),
Ferritin, Total Iron Binding Capacity (TIBC),
Folate, Folic Acid, Reticulocyte Count.

**INFLAMMATION PANEL** (LC100007) $135
CBC/Chemistry Profile (see description above),
C-Reactive Protein (high sensitivity),
Sedimentation Rate, Rheumatoid (RA) Factor,
Antinuclear Antibodies (ANA) Screen.

**THYROID ANTIBODY PROFILE** (LC100004) $99
Thyroid Antibody Profile (ATD and TPO).

**CARDIAC PLUS** (LC100008) $145
CBC/Chemistry profile (see description),
Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity),
Fibrinogen, Homocysteine.

**VAP™ PLUS** (LC100009) $330
VAP, C-Reactive Protein (high sensitivity),
Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2),
Vitamin D 25-hydroxy.

**CARDIAC RISK**

**COQ10** (Coenzyme Q10) (LC120251) $99
This test is used to check the blood level of CoQ10 and will enable more precise dosing for anyone seeking to achieve and maintain high levels of this critical antioxidant.

**Lp-PLA2 (PLAC® TEST)** (LC123240) $125
This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.

**GLYCOMARK** (LC500115) $99
This test measures your average maximum glucose over the past two weeks and is an effective tool in monitoring postmeal glucose control.

**NUTRIENT PANEL** (LC100024)
Vitamin B12, Folate, Vitamin D 25-hydroxy,
Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC magnesium.

**MALE HEALTH**

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

**HORMONES**

**DHEA-SULFATE** (LC004020) $61
This test shows if you are taking the proper amount of DHEA. This test normally costs $100 or more at commercial laboratories.

**MALE BASIC HORMONE PANEL** (LC100012) $75
DHEA-S, Estradiol, Free and Total Testosterone, PSA

**FEMALE BASIC HORMONE PANEL** (LC100013) $75
DHEA-S, Estradiol, Free and Total Testosterone, Progesterone

**DIHYDROTESTOSTERONE (DHT)** (LC500142) $99
Measures serum concentrations of DHT.

**ESTRADIOL** (LC004515) $33
For men and women. Determines the proper amount in the body.

**INSULIN FASTING** (LC004333) $25
Can predict those at risk of diabetes, obesity, and heart and other diseases.

**PREGNENOLONE** (LC140707) $116
Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing’s syndrome.

**PROGESTERONE** (LC004317) $55
Primarily for women. Determines the proper amount in the body.

**SEX HORMONE BINDING GLOBULIN (SHBG)** (LC082016) $33
This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.

**BONE HEALTH**

**VITAMIN D (25OH)** (LC081950) $47
This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.

**OSTEOCALCIN** (LC010249) $91
Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis.

**DPX CROSS LINK URINE TEST** (LC511105) $78
The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis.

**ORDER LIFE-SAVING BLOOD TESTS FROM VIRTUALLY ANYWHERE IN THE US!**

**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

Mail your order form to:

Life Extension Foundation Members only

MEMBER NO.

- Male  Female

Name

Date of Birth (required) / / 

Address

City

State Zip

Phone

Credit Card No.

Expiration Date / 

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

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

3600 West Commercial Boulevard
Fort Lauderdale, FL 33309

Blood tests available only in the continental United States. Not available in Maryland.

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

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

MITOCHONDRIAL SUPPORT
- Acetyl-L-Carnitine-Arginate
- Adrenal Energy Formula
- Acetyl-L-Carnitine
- Arginate
- Optimized Carnitine with GlycoCarn®
- Optimized Chromium w/Crominex® 3+
- Only Trace Minerals
- Optimized Chromium w/Crominex® 3+
- OptiZinc
- Sea-Iodine™
- Se-Methyl L-Selenocysteine
- Strontium
- Vanadyl Sulfate

MOOD RELIEF
- Adrenal Energy Formula
- Acetyl L-Carnitine-Arginate
- Mitochondrial Basics w/BioPQQ®
- Mitochondrial Energy Optimizer w/BioPQQ®
- Optimized D-Lecithin with GlycoCarn®
- Super Absorbable CoQ10™ with
- Super Absorbable CoQ10™ with
- Super Lipoic Acid
- Super Ubiquinol CoQ10 with Enhanced
- Mitochondrial Support™

MOUTH CARE
- Advanced Oral Hygiene
- Bioactive Milk Peptides
- L-Theanine
- 5-HTP
- Enhanced Natural Sleep w/ Melatonin
- Enhanced Natural Sleep w/ Melatonin
- Natural Stress Relief
- SAMe
- L-Tryptophan
- Optimized Tryptophan Plus

MOUTHWASH
- Advanced Oral Hygiene
- Mouthwash w/Pomegranate
- Toothpaste
- Xylitol White™ Mouthwash

MULTIVITAMIN
- Booster
- Children’s Formula Life Extension Mix™
- Comprehensive Nutrient Packs
- Advanced Life Extension Mix™ Capsules
- Life Extension Mix™ Powder
- Liver Protection Mix™
- Life Extension Mix™ w/o Copper Tablets
- Life Extension Mix™ w/Extra Niacin
- Life Extension Mix™ w/Extra Niacin w/o Copper
- Life Extension Mix™ w/Stevia Powder
- Life Extension Mix™ w/Stevia w/o Copper
- Life Extension One-Per-Day
- Life Extension Two-Per-Day
- Super Booster Softgels w/Advanced K2 Complex

PET CARE
- Cat Mix
- Dog Mix

PROSTATE & URINARY HEALTH
- Optimized Cran-Max™ w/UTIRose™
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- Advanced Lightening Cream
- Advanced Triple Peptide Serum
- Advanced Under Eye Serum with Stem Cells
- Amber Self MicroDermAbrasion
- Anti-Aging Mask
- Anti-Glycation Serum
- Anti-Aging Rejuvenating Face Cream with
- Coffee Extracts
- Anti-Aging Rejuvenating Scalp Serum
- Anti-Antioxidant Rejuvenating Foot Cream
- Anti-Reactive Oxygen Species
- Anti-Reactive Oxygen Species
- Anti-Reactive Oxygen Species
- Anti-Reactive Oxygen Species
- Resveratrol Anti-Oxidant Serum
- Youth Serum
- Youth Serum
- Youth Serum
- Anti-Redness & Blemish Lotion

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

VITAMINS
- Ascorbyl Palmitate Capsules
- B12
- Betaine HCl
- Biotin Capsules
- Buffered Vitamin C Powder
- Complete B Complex
- Effervescent Vitamin C
- Folic Acid + B12
- Gamma E Tocopherol w/Sesame Lignans
- Gamma E Tocopherol/Tocotrienols
- Inositol Capsules
- Methylcobalamin
- MK-7
- No-Flush Niacin
- Optimized Folate
- Super Ascorbate C Capsules
- Super Ascorbate C Powder
- Super C w/Advanced K2 Complex
- Tocotrienols w/Sesame Lignans
- Vitamin B3 (Niacin) Capsules
- Vitamin B6
- Vitamin B12
- Vitamin C
- Vitamin D3
- Vitamin D3 w/Sea-Iodine™
- Vitamins D and K w/Sea-Iodine™
- Vitamin E
- Vitamin K2

WEIGHT MANAGEMENT
- Advanced Adipocyte Formula
- w/Meratrim® & Integra Lean®
- Advanced Natural Appetite Suppress
- Calorie Control Weight Management™ Formula
- Calorie Control Weight Management™ Formula
- CalReduce Selective Fat Binder
- CoffeeGenic® Weight Management™ with
- Green Coffee Extract
- 7-KETO DHEA
- DHEA™ Complete
- Fucoxanthin Slim™
- Garcinia HCA
- Integra Lean™ African Mango Irvingia
- Optimized Irvingia w/Phase 3™ Calorie
- Control Complex
- Optimized Saffron with Satietra®
- Natural Glucose Absorption Control
- Super Citrimax®
- Super CLA Blend w/ Guarana and
- Sesame Lignans
- Super CLA Blend w/Sesame Lignans
- WellBetX PGX® plus Mulberry
<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<tr>
<td>0108</td>
<td>BERRY COMPLETE w/ACAI (ENHANCED) - 60 veg. caps</td>
<td>$29.00</td>
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<tr>
<td>0065</td>
<td>BETA-CAROTENE - 25,000 IU, 100 softgels</td>
<td>11.25</td>
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<tr>
<td>0122</td>
<td>BIFIDO GI BALANCE - 60 veg. caps</td>
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<td>0107</td>
<td>BILBERRY EXTRACT - 100 mg, 100 veg. caps</td>
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<td>0151</td>
<td>BIGENII MILK PEPTIDES - 30 caps</td>
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<td>0163</td>
<td>BIO-COLLAGEN w/PATENTED UC-III® - 40 mg, 60 small caps</td>
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<tr>
<td>0106</td>
<td>BIOSIL™ - 5 mg, 30 veg. caps</td>
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<td>0107</td>
<td>BIOSIL™ - 1 oz</td>
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<td>0012</td>
<td>BIONE II w/POMEGRANATE - 60 veg. caps</td>
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<td>0170</td>
<td>BLACK CUMIN SEED OIL - 60 softgels</td>
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<td>0171</td>
<td>BLACK CUMIN SEED OIL w/BCURCUMIN® - 60 softgels</td>
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<tr>
<td>0108</td>
<td>BLAST™ - 600 grams of powder</td>
<td>26.95</td>
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<td>0004</td>
<td>BLOOD PRESSURE MONITOR - ARM CUFF (medium)</td>
<td>99.95</td>
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<td>0005</td>
<td>BLOOD PRESSURE MONITOR - WRIST (travel size)</td>
<td>69.95</td>
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<td>0124</td>
<td>BLUEBERRY EXTRACT - 60 veg. caps</td>
<td>22.50</td>
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<tr>
<td>0148</td>
<td>BLUEBERRY EXTRACT w/POMEGRANATE - 60 veg. caps</td>
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<tr>
<td>0150</td>
<td>BONE FORMULA (DR. STRUM'S INTENSIVE) - 300 caps</td>
<td>50.00</td>
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<tr>
<td>0176</td>
<td>BONE RESTORE - 120 caps</td>
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<tr>
<td>0177</td>
<td>BONE RESTORE w/VITAMIN K2 - 120 caps</td>
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<tr>
<td>0175</td>
<td>BONE STRENGTH FORMULA w/KOACT® - 120 caps</td>
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<td>0033</td>
<td>BONE UP® - 240 caps</td>
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<tr>
<td>0139</td>
<td>BOOSTER - 60 softgels</td>
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<tr>
<td>0162</td>
<td>BOOSTER w/ADVANCED K2 COMPLEX (SUPER) - 60 softgels</td>
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<tr>
<td>0161</td>
<td>BORON - 3 mg, 100 veg. caps</td>
<td>5.95</td>
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<td>0020</td>
<td>BOSWELLA - 100 caps</td>
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<td>0180</td>
<td>BRAIN SHIELD™ - 60 veg. caps</td>
<td>33.00</td>
<td>24.75</td>
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<tr>
<td>0125</td>
<td>BRANCHED CHAIN AMINO ACIDS - 90 veg. caps</td>
<td>19.50</td>
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<tr>
<td>0169</td>
<td>BREAST HEALTH FORMULA - 60 caps</td>
<td>34.00</td>
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<tr>
<td>0083</td>
<td>BRITÉ EYES III - 2 vials, 5 ml each</td>
<td>34.00</td>
<td>25.50</td>
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<tr>
<td>0089</td>
<td>BRITÉ EYES III - 2 vials, 5 ml each</td>
<td>34.00</td>
<td>25.50</td>
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**SUB-TOTAL OF COLUMN 1**

**SUB-TOTAL OF COLUMN 2**
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<th>No.</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<tbody>
<tr>
<td>01203</td>
<td>BRONEMELIN (SPECIALTY-FOILED) - 500 mg, 60 enteric coated tablets</td>
<td>$21.00</td>
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<tr>
<td>00884</td>
<td>BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID - 60 softgels</td>
<td>$4.40</td>
<td>$3.30</td>
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<tr>
<td>01653</td>
<td>CALCIUM CITRATE w/VITAMIN D - 300 caps</td>
<td>$24.00</td>
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<tr>
<td>01651</td>
<td>CALCIUM D-GLUCARATE - 200 mg, 60 veg. caps</td>
<td>$18.00</td>
<td>$13.50</td>
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<tr>
<td>01693</td>
<td>CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC® - GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 414 grams powder</td>
<td>$60.00</td>
<td>$45.00</td>
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<tr>
<td>01823</td>
<td>CALORIC REDUCER SELECTIVE FAT BINDER - 120 mint chewable tablets</td>
<td>$45.00</td>
<td>$33.75</td>
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<tr>
<td>01700</td>
<td>CARDIO FE 55® w/STANDARDIZED HAWTHORN &amp; ARAUCANA - 120 veg. caps</td>
<td>$36.00</td>
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<tr>
<td>00916</td>
<td>CARNITINE w/GLYCOCARN® (OPTIMIZED) - 60 veg. caps</td>
<td>$36.00</td>
<td>$27.00</td>
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<tr>
<td>01532</td>
<td>L-CARNITINE - 500 mg, 30 veg. caps</td>
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<td>01258</td>
<td>CARNOSSO® w/PACHIPS® - 60 veg. caps</td>
<td>$29.95</td>
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<tr>
<td>01687</td>
<td>CARNOSINE (SUPER) - 500 mg, 90 veg. caps</td>
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<tr>
<td>01003</td>
<td>CAT MIX - 100 grams powder</td>
<td>$15.00</td>
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<tr>
<td>01391</td>
<td>CHILDREN’S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets</td>
<td>$20.00</td>
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<td>00550</td>
<td>CHOLRELLA - 500 mg, 200 tablets</td>
<td>$23.50</td>
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<td>01571</td>
<td>CHLOROPHYLLIN - 100 mg, 100 veg. caps</td>
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<tr>
<td>01359</td>
<td>CHOL-LESS™ - 90 capsules</td>
<td>$35.00</td>
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<tr>
<td>01477</td>
<td>CHROMIUM ULTRA - 1000 tablets</td>
<td>$24.00</td>
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<tr>
<td>01504</td>
<td>CHROMIUM WITH CHROMINEX® 3+ (OPTIMIZED) - 500 mcg, 60 veg. caps</td>
<td>$21.00</td>
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<td>01503</td>
<td>CINSULIN® w/INSECA® and CROMINEX® 3+ - 90 veg. caps</td>
<td>$38.00</td>
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<tr>
<td>01818</td>
<td>CITRIMAX® (SUPER) - 180 veg. caps</td>
<td>$40.00</td>
<td>$30.00</td>
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<tr>
<td>00818</td>
<td>CLA BLEND W/SESAME LIGNANS (SUPER) - 3,000 mg, 120 softgels</td>
<td>$36.00</td>
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<tr>
<td>00819</td>
<td>CLA BLEND w/GUARANA &amp; SESAME (SUPER) - 3,000 mg, 120 softgels</td>
<td>$42.00</td>
<td>$31.50</td>
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<tr>
<td>01707</td>
<td>COFFEEGENIC® - WEIGHT MANAGEMENT FORMULA w/GREEN COFFEE EXTRACT - 90 veg. caps</td>
<td>$36.00</td>
<td>$27.00</td>
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<tr>
<td>01896</td>
<td>COGNITEX® w/BRAIN SHIELD™ - 90 softgels</td>
<td>$60.00</td>
<td>$45.00</td>
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</table>

**SUB-TOTAL OF COLUMN 3**

`MEMBER EACH` = `RETAIL EACH` x 25% OFF

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<th>Qty</th>
<th>Total</th>
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<td>01897</td>
<td>COGNITEX® w/PREGNENOLONE &amp; BRAIN SHIELD™ - 90 softgels</td>
<td>$62.00</td>
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<tr>
<td>01421</td>
<td>COGNITEX® BASIS - 60 softgels</td>
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<tr>
<td>01659</td>
<td>COGNIZIN® w/COQ CHOLINE CAPS - 250 mg, 60 veg. caps</td>
<td>$36.00</td>
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<tr>
<td>01735</td>
<td>COMPLETE B-COMPLEX - 60 veg. caps</td>
<td>$10.00</td>
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<tr>
<td>01798</td>
<td>COMPREHENSIVE NUTRIENT PACKS ADVANCED - 30 packs</td>
<td>$90.00</td>
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<tr>
<td>00119</td>
<td>COPPER CAPSULES - 2 mg, 100 caps</td>
<td>$9.91</td>
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<tr>
<td>00949</td>
<td>COQ10 w/LIMONENE (SUPER-ABSORBABLE) - 50 mg, 60 softgels</td>
<td>$25.00</td>
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<tr>
<td>00950</td>
<td>COQ10 w/LIMONENE (SUPER-ABSORBABLE) - 100 mg, 100 softgels</td>
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<tr>
<td>01226</td>
<td>COQ10 (SUPER-UBIQUINOL) - 100 mg, 60 softgels</td>
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<td>01733</td>
<td>COQ10 w/BIOPQQ® (SUPER-ABSORBABLE) - 100 mg, 60 softgels</td>
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<tr>
<td>01426</td>
<td>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) - 100 mg, 60 softgels</td>
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<td>01425</td>
<td>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) - 100 mg, 100 softgels</td>
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<td>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) - 50 mg, 30 softgels</td>
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<tr>
<td>01363</td>
<td>COROLUS SUPER STRENGTH - 600 mg, 150 veg. caps</td>
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<tr>
<td>80154</td>
<td>COSMESIS LIGHTENING CREAM - 1 oz jar</td>
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<td>80152</td>
<td>COSMESIS ADVANCED TRIPLE PEPTIDE SERUM - 1 oz bottle</td>
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<tr>
<td>80140</td>
<td>COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - .33 oz</td>
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<td>80139</td>
<td>COSMESIS AMBER SELF MICRODERMAPRASIATION - 2 oz</td>
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<tr>
<td>80118</td>
<td>COSMESIS ANTI-AGING MASK - 2 oz</td>
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<tr>
<td>80151</td>
<td>COSMESIS ANTI-AGING REJUVENATING FACE CREAM - 2 oz jar w/COFFEE EXTRACT</td>
<td>$65.00</td>
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<tr>
<td>80153</td>
<td>COSMESIS ANTI-AGING REJUVENATING SCALP SERUM - 2 oz bottle w/BLUEBERRY &amp; POMEGRANATE EXTRACTS</td>
<td>$46.00</td>
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**SUB-TOTAL OF COLUMN 4**
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<td>$32.00</td>
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<td></td>
<td>Buy 2 bottles, price each</td>
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<td>Buy 2 jars, price each</td>
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<td>Buy 2 jars, price each</td>
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<td>Buy 2 jars, price each</td>
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<td>80121</td>
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<td></td>
<td>Buy 2 jars, price each</td>
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<td>Buy 2 bottles, price each</td>
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<td>Buy 2 jars, price each</td>
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<tr>
<td></td>
<td>Buy 2 jars, price each</td>
<td>$42.00</td>
<td>31.50</td>
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**SUB-TOTAL OF COLUMN 5**

**SUB-TOTAL OF COLUMN 6**
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**SUB-TOTAL OF COLUMN 8**
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### Buyers Club Order Form

**To order call: 1.954.766.8433 or 1.800.544.4440**

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<th>Member Each</th>
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**SUB-TOTAL OF COLUMN 13**

**SUB-TOTAL OF COLUMN 14**

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**SEPTMBER 2014**

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

**SEPTEMBER 2014**
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# Buyers Club Order Form

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**ORDER TOTALS**

Sub-Total A (Sub-total of Columns 1 through 18)

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

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

Shipping

Grand Total (Must be in U.S. dollars)

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**SHIP TO ADDRESS**

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Magnesium and Brain Health

Profound loss of connections between nerve cells in the brain is one of the major hallmarks associated with neurodegeneration and memory impairment. Previous research has shown that magnesium is a critical factor in controlling synaptic density.¹

To combat this, an innovative form of magnesium called Neuro-Mag™ has been developed. The magnesium-L-threonate contained in Neuro-Mag™ has been shown to specifically target multiple areas of the aging brain. In fact, pre-clinical models show that the magnesium-L-threonate contained in Neuro-Mag™ boosted levels of magnesium in spinal fluid by 15% versus no increase from conventional magnesium.²

New Cognitive Benefits Revealed!

Although research into the role of magnesium in the brain dates back 70 years, scientists continue to uncover its comprehensive benefits for cognitive function.¹  Studies using magnesium-L-threonate show this unique form of magnesium maintains the quantity of synaptic connections between brain cells and inhibits the dysregulation of signaling pathways.¹

Capsules or Powder... Value Priced

The suggested daily dose of three Neuro-Mag™ Magnesium-L-Threonate Capsules provides 2,000 mg of Magnesium-L-Threonate. While supplying a modest 144 mg of elemental magnesium, its superior absorption into the bloodstream and nervous system make it a preferred choice for maturing individuals to supplement with.

This same brain-health supporting magnesium is also available in a natural lemon flavor called Neuro-Mag™ Magnesium-L-Threonate with Calcium and Vitamin D3 Powder. In addition to its fresh lemon flavor, the one-scoop per day serving supplies the same amount of magnesium as the capsules plus 500 mg of highly soluble calcium and 1,000 IU of vitamin D3.

A bottle containing 90 vegetarian capsules of Neuro-Mag™ Magnesium-L-Threonate or a jar containing 30 scoops of Neuro-Mag™ Magnesium-L-Threonate with Calcium and Vitamin D3 Powder retails for $40. If a member buys 4 units, the price is reduced to $27 per unit.

References
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A recent long-term primate study confirms that calorie restriction reduces age-related and all-cause mortality. Find out why this University of Wisconsin study produced meaningful longevity benefits while a National Institute on Aging study failed to do so.

58 QUERCETIN FOR HEART HEALTH
Quercetin provides multimodal cardiac protection such as triggering reverse cholesterol transport, improving endothelial function, and counteracting atherosclerosis.

7 HOW TO TURN EIGHT PENNIES INTO $600
America’s antiquated regulatory system inflates medical prices beyond affordability. Read our exclusive report about a generic drug whose active ingredient costs 8 cents but sells to pharmacies for $600!

24 REDUCE ABSORPTION OF DANGEROUS DIETARY FATS
Alpha-cyclodextrin, a patented natural fiber, can absorb up to 500 calories of dangerous dietary fats before they enter the bloodstream, reducing the risk of heart disease, obesity, and diabetes.

44 TART CHERRIES PROVIDE BROAD-SPECTRUM BENEFITS
Rich in protective anthocyanins, tart cherries target a wide spectrum of degenerative diseases and have been shown to lower both uric acid and C-reactive protein.

66 LONGEVITY BENEFITS OF VITAMIN K
New research confirms that vitamin K can slash the risk of arterial calcification, coronary heart disease, cancer, type II diabetes, and metabolic syndrome.