CoQ10 Dramatically Improves Survival in Heart Failure Patients

Google Founders Declare War Against Degenerative Aging

Inflammation Reducing Effect of Omega-7

Topical Peptides Combat Skin Aging

SAMe: Benefits Beyond Depression

Michael Smith, MD
“The Supplement Pyramid”
To order Life Extension Two-Per-Day Tablets or Two-Per-Day Capsules, 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-hydroxy vitamin D measurement. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

* The new two-per-day provides a small amount of gamma tocopherol as part of natural mixed tocopherols which includes natural vitamin E.

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.
26 OMEGA-7 PROTECTS AGAINST METABOLIC SYNDROME
Scientists have uncovered a specific type of omega-7 that is so unique that Harvard Medical School has applied for a patent on it. Omega-7 mitigates many of the underlying factors involved in metabolic syndrome by reducing the risk of type II diabetes, increasing beneficial HDL, reducing inflammation, and helping to prevent the buildup of arterial plaque.

50 SAME: BENEFITS BEYOND DEPRESSION
Research has shown that SAMe is often just as effective as certain drugs in alleviating depression and boosting mood health. Going beyond depression, scientists have now found a wealth of anti-aging benefits of SAMe in protecting against Alzheimer’s, osteoarthritis, liver disease, and encouraging critical DNA repair.

62 GOOGLE WANTS TO EXTEND YOUR LIFE SPAN
While government and private funds are spent attempting to find cures for specific diseases, little funding has been focused on curing the disease of aging. But now behemoth Google has committed significant money to undertake visionary projects aimed at eventually reversing the aging process. Ideally, Google’s bold step will encourage more wealthy individuals to support age-reversal research.

74 NOVEL PEPTIDES TARGET WRINKLE FORMATION
Fine lines and wrinkles occur when environmental factors overwhelm the body’s ability to maintain critical biochemical processes, resulting in DNA damage and loss of skin elasticity. Scientists have discovered three peptides that work within skin cells to inhibit this aging effect. Studies show a 28% reversal in the appearance of deep wrinkles within minutes, with results continuing for months.

82 THE SUPPLEMENT PYRAMID: BUILD A PERSONALIZED NUTRITION REGIMEN
Many people pursuing a healthy lifestyle are overwhelmed by the endless variety and choices of supplements. Life Extension’s medical expert, Dr. Michael Smith has designed the three-tiered Supplement Pyramid tailored to meet specific, personalized nutritional needs.

7 AS WE SEE IT: UNSUSTAINABLE DRUG PRICES
A report authored by over 100 oncologists noted that of the twelve new cancer drugs approved in 2012, eleven were priced above $100,000 a year! These doctors conclude that the prices of many of these drugs “are too high, unsustainable, may compromise access of needy patients to highly effective therapy, and are harmful to the sustainability of our national healthcare systems.” These revelations from inside the cancer establishment will not surprise Life Extension members, who long ago learned how regulatory strangleholds over drug development inflict harsh economic pain.

19 IN THE NEWS
Multivitamins reduce risk of colorectal polyps; lower heart disease risk found with higher omega-3 intake; metformin benefits for prostate cancer; and much more.
Are You Obtaining Enough TAURINE?

Taurine is so vital that scientists have described it as “one of the most essential substances in the body.” Food sources provide relatively little taurine, and as we age, synthesis of taurine in our bodies (from cysteine) markedly declines.

Fortunately, taurine is one of the lowest-cost nutrients, making it affordable to supplement with optimal doses.

SYSTEM-WIDE HEALTH BENEFITS

Taurine is one of the most abundant amino acids. Extensive studies have demonstrated the ability of taurine to support:

- Insulin sensitivity and glucose utilization,
- Proper utilization of minerals such as calcium,
- Eye health,
- Regulation of the central nervous system,
- Cell membrane stability and balanced water content (osmoregulation),
- Immune system modulation,
- Bile salt formation,
- Neuron integrity and cognitive function,
- Liver function, and
- Cardiovascular health.

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References:

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**ASTAXANTHIN** is a fat-soluble carotenoid compound. The challenge to deriving maximum benefits is its normally limited absorption—as low as about 50%.

**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.

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

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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!

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“Unsustainable” Cancer Drug Prices

By William Faloon

Over 100 oncologists are protesting the outlandish prices charged for cancer drugs and how these inflated costs are economically “unsustainable.”

Their exposé was published in a prestigious medical journal and received headline news coverage last year.

The more than 100 oncologists who authored this report noted that of twelve cancer drugs approved in 2012, eleven were priced above $100,000 per year.

Before relating the details, I ask readers to fathom who can afford $100,000 a year for one drug? This does not include hospital costs, physician fees, or other medications cancer patients typically require.

Private insurance premiums are soaring in response to skyrocketing medical costs, along with governmental meddling. Federal healthcare programs face insolvency even without this kind of price gouging.

The oncologists protesting these high prices are experts in chronic myeloid leukemia, a bone marrow cancer that is responding unusually well to new cancer drugs. The dilemma these doctors disclose is that patients are surviving longer than expected…in some cases indefinitely…as long as they continue to receive their expensive drugs.

These doctors conclude that the prices of these drugs “are too high, unsustainable, may compromise access of needy patients to highly effective therapy, and are harmful to the sustainability of our national healthcare systems.”

These revelations from inside the cancer establishment will not surprise Life Extension’s members, who long ago learned how regulatory strangleholds over drug development inflict harsh economic pain.
The concern they raise is how individuals and/or society can ever afford the high prices, and why pharmaceutical companies need to charge so much after they earn back the costs of development.

Unlike patients with metastasized solid tumors (colon, lung, pancreatic), patients with chronic myeloid leukemia (CML) now live close to normal life spans, as long as they receive the appropriate drugs and adhere to treatment. In these patients, their CML condition has become different from cancers that sadly kill many patients within a year or two. The CML form of leukemia is now more similar to chronic disorders like diabetes and hypertension, where daily therapy is required to produce the benefit of long-term survival.

The problem is that patients stricken with CML are becoming the “financial victims” of the treatment success, having to pay outlandishly high prices forever to stay alive.

Cost Per Month Of Added Life

The more than 100 oncologists protesting the high prices are impressed with the anti-leukemic properties of these drugs. They note how some patients appear able to survive with chronic myeloid leukemia indefinitely... as long as they have access to the expensive medication(s).

Three drugs approved by the FDA in 2012 to treat leukemia are priced at the following astronomical levels:

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ponatinib</td>
<td>$138,000</td>
</tr>
<tr>
<td>Bosutinib</td>
<td>$118,000</td>
</tr>
<tr>
<td>Omacetaxine</td>
<td>Over $100,000</td>
</tr>
</tbody>
</table>

Older anti-leukemia drugs like imatinib (Gleevec®) were initially priced at nearly $30,000 a year when released in 2001. By 2012, the pharmaceutical company making Gleevec® increased the price to $92,000 a year.8

Development Costs Long Ago Paid For

Pharmaceutical companies pretend they need to charge high prices to justify their expensive development costs. The more than 100 oncologists carefully examined this argument and found it to be unjustified.

Gleevec®, for instance, quickly covered its research and development costs with its $30,000/year initial annual price. As it was approved for other indications, total revenue soared and it became a financial windfall for its maker (Novartis). Despite pleas by patients and advocates to lower the price of Gleevec®, it sells for more than three times its original price.1,8

Who can afford to pay $92,000 a year for one drug?

Collusive Behavior And High Prices

The drugs working so well against CML are in a class known as "tyrosine-kinase inhibitors."1 There are now five tyrosine-kinase inhibiting drugs approved to treat CML, yet all five have...
annual price ranges of $92,000 to $138,000 in the United States. This is twice the price compared to Europe, where government health programs bargain for lower drug prices.¹

As the more than 100 oncologists noted in their published report, the price in South Korea for these same tyrosine-kinase inhibitors ranges from $21,000 to $28,000.¹ That’s perhaps because the Koreans developed their own tyrosine-kinase inhibitor that sells for an annual price of only $21,500, thus forcing pharmaceutical companies to lower their price sharply downwards compared to the United States and even Europe.

The more than 100 oncologists who authored the published report protesting the high prices state:

“A new branch of economics, called game theory, details how collusive behavior can tacitly maintain high prices over extended periods of time, despite competitive markets, thus representing a form of collective monopoly.”⁹

We at Life Extension® have alleged for decades that drug companies function like cartels in stomping out competition while maintaining monopolistic-like pricing. They do this in many ways that are quite open, such as filing lawsuits to delay the introduction of lower costs generics, and/or filing petitions with the FDA asking the agency to disallow a competitor’s lower cost and sometimes superior product.⁹

It is interesting to note that some of the cancer-protective effects of nutrients like curcumin have been partially attributed to its tyrosine-kinase inhibiting properties. While curcumin has not yet been proven to be as specific as the drugs described in this article, a search on PubMed using the terms “curcumin and leukemia” reveals multiple mechanisms by which low-cost curcumin may prevent and treat a wide range of cancers.¹⁰

What Do Drugs Really Cost To Develop?

There is a debate as to how much it really “costs” a pharmaceutical company to bring a new cancer drug to market. The sum of $1.3-1.7 billion is often cited, though some independent experts put it as low as $60-90 million.⁸

Whatever the real number, be assured it includes costs of development of the new drug that won FDA approval, all other drugs that failed, and ancillary expenses such as the cost of conducting the clinical trials, bonuses, salaries, infrastructures, royalties, advertising, and all kinds of perks to the doctors who prescribe the drugs.

As to how much a new drug really costs to develop, once a company sells about a billion dollars of a medication, most of the rest is profit. It’s incredulous to claim that new cancer drugs are priced over $100,000 a year because they cost so much to develop.

As you’ll read later, much of the initial discovery costs are funded by non-profit entities involved in basic research. After the first two years of a successful drug launch, the “costs” of development are usually more than paid back.

How Drug Companies Fleece The Public

Before the federal government started picking up the tab for cancer drugs, there was at least an affordability factor that constrained how much pharmaceutical companies could charge.

This changed in response to intensive lobbying by pharmaceutical interests that enabled passage of laws such as the Medicare Modernization Act of 2003. This Act resulted in the federal government paying full retail price for cancer drugs and prohibited the federal government from negotiating a lower price.³⁹

Even before the Medicare Modernization Act, the federal government was paying retail prices for cancer drugs under existing
Medicare and Medicaid programs. Passage of the Affordable Care Act of 2010 will enable pharmaceutical companies to gouge virtually the entire American market with their outlandish prices.40

Consumers pay for these inflated drug prices in the form of higher private insurance premiums, higher deductibles, higher co-pays, and higher taxes.

Medicare’s date with insolvency will be hastened as it pays out tens of billions of excess dollars into pharmaceutical company coffers. Those who have employer-funded health insurance are paying a greater portion of their medical insurance premium, while healthcare inflation remains a major factor behind corporate and municipal bankruptcies.

I don’t view it as a coincidence that since the passage of the Medicare Modernization Act, cancer drugs the federal government pays for (like Gleevec®) have spiraled upwards in price. This Act was written and enacted into law under intensive pressure from pharmaceutical lobbyists.

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How Gleevec® Was Discovered

Gleevec® was approved by the FDA in 2001, but the history of its discovery dates back to 1960, when scientists from the University of Pennsylvania School of Medicine and Institute for Cancer Research identified a genetic mutation in patients with CML (chronic myeloid leukemia).49

The discovery meant that for the first time ever, scientists had discovered a genetic abnormality linked to a specific kind of cancer. This finding set off an explosion of research into the genetic causes of cancer. The next significant advance took place 13 years later through the work of researchers at the University of Chicago who found that the missing section of DNA that characterized CML had shifted to another chromosome, a phenomenon known as “translocation.”49

In the 1980s, researchers from the National Cancer Institute and Erasmus University identified the principal chromosomal cause of CML.50 Later, in 1990 researchers at UCLA found this defective chromosome produced a protein that enhances tyrosine kinase activity, which changes the cell’s normal genetic instructions and enables aberrant cell growth and division.50

With the discovery that a single enzyme could cause the development of CML, researchers were given a rare opportunity. The genetic target was clear, and the development of a drug that could inhibit the protein that enhanced tyrosine kinase could proceed rationally. Work began in the early 1990s on the discovery of tyrosine kinase inhibitors by researchers at Novartis, who collaborated with scientists from the Howard Hughes Medical Institute and other research centers.50-53

The first Phase I study began in 1998.53,54 The results of these preliminary studies showed that over 98% of CML patients who took the drug were responding.54 Most patients experienced a significant reduction in the number of white blood cells and a reduction or disappearance in the number of cells containing the cancer-triggering chromosome.

Word of the drug’s effectiveness spread rapidly in the CML community and tremendous pressure was applied for Novartis to make more Gleevec® available so more patients could participate in the clinical trials. As more Gleevec® was made available, thousands of CML patients had their death sentence lifted. The FDA approved Gleevec® in 2001, ten weeks after Novartis submitted the application.55

This brief historical description shows how drug discovery is often initiated by non-profit research centers and then much later brought to fruition by commercial pharmaceutical companies. Some of the scientists involved in the early development of Gleevec® are part of the more than 100 oncologists who authored the report that seeks to lower the price of these tyrosine kinase inhibiting cancer drugs (such as Gleevec®).

While commercial companies play a vital role in drug development, it is so often research funded by non-profit entities that identifies a breakthrough “target” for which to develop a drug for.
We at Life Extension vehemently opposed the Medicare Modernization Act that enabled pharmaceutical companies to charge full retail price for drugs paid for by federal tax/debt dollars.

The obscene profits earned by a relatively small number of pharmaceutical companies provide them with virtually unlimited resources to influence Congress, the FDA, academia, the media, medical journals, and prescribing physicians in ways that go against the welfare of the American public.

**Novartis Accused Of Paying Illegal Kickbacks To Doctors**

Two of the five overpriced anti-leukemic drugs identified by oncologists are Gleevec® (imatinib) and Tasigna® (nilotinib), both made by Swiss pharmaceutical behemoth Novartis®.41

US prosecutors have brought civil-fraud charges against Novartis® for allegedly paying kickbacks to physicians to prescribe their diabetes and anti-hypertension drugs.42 Novartis claims the money was paid to doctors to speak at education programs around the United States.

The charges against Novartis allege speaking fees, lavish dinners, and vacations illegally provided to doctors totaling nearly $65 million.42 This money of course is all included in the “cost” of drug development.

**How Much The Doctors Were Paid**

The lawsuit alleges that the doctors (speakers) were usually paid $750-$1,500 per program, with some earning as much as $3,000 to talk at fancy restaurants, or in one case, on a fishing boat in Florida.42 The government’s lawsuit further alleges that one doctor was paid $3,750 for speaking to the same four doctors about a Novartis drug five times in a nine-month period.43

In another allegation, a doctor was paid $500 to speak at an expensive Manhattan restaurant dinner attended by his friends. Many of these so-called “speaking engagements” occurred with less than three doctors attending, or in some cases, no doctor attending in which case I suppose, Novartis paid the doctor to speak to himself at a fancy dinner paid for by Novartis.

The government’s lawsuit describes dinners where the price per person attending ranged from $672 to over $1,000.42 I feel somewhat out of place here, but I have never been to a dinner where each guest ran up a tab like this for food and beverages. The lawsuit alleges that few slides were ever shown at these speaking engagements. “Instead, Novartis simply wines and dines the doctors at high-end restaurants with astronomical costs.”43

Not all the restaurants where Novartis paid doctors to speak and covered the meals were high end. Some were sports bars (such as Hooters) with so many blaring TV screens (and no private room) that it would have been impossible to make a scientific presentation.42

This is not the first time Novartis has been accused of paying doctors kickbacks to prescribe drugs that are often overpriced compared to generics, and therefore defraud government programs like Medicare and Medicaid.44,45

In 2010, the same unit of Novartis pled guilty to misdemeanor violations and paid $422.5 million to settle civil and criminal charges that it illegally marketed certain pharmaceutical products and paid doctors kickbacks to prescribe it.44

Novartis denies the charges that it illegally paid kickbacks to doctors in the current civil-fraud lawsuit.45
Pharmaceutical companies know that Medicare, Medicaid, and many insurance companies pay unlimited amounts of money for their drugs. What few consumers realize is that they are bearing the cost of these over-priced drugs in the form of higher insurance premiums, higher deductibles, higher co-pays, more exclusions, higher taxes, and higher interest costs on the national debt as government programs pay these outlandish prices. Pharmaceutical companies price gouge the public by charging the obscene prices you see below:

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Generic Name</th>
<th>Type of Cancer</th>
<th>Cost of Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avastin®</td>
<td>(bevacizumab)</td>
<td>Breast Cancer</td>
<td>$100,000$^{11}, $55,000$ (2004)$^{12} \ $85,000$ (2011)$^{13}$</td>
</tr>
<tr>
<td>Avastin®</td>
<td>(bevacizumab)</td>
<td>Colon</td>
<td></td>
</tr>
<tr>
<td>Avastin®</td>
<td>(bevacizumab)</td>
<td>Brain Cancer that recurred</td>
<td>$43,000$\textsuperscript{14}</td>
</tr>
<tr>
<td>Iclusig*</td>
<td>(ponatinib)</td>
<td>Chronic Myeloid Leukemia (CML)</td>
<td>$138,000$\textsuperscript{15}</td>
</tr>
<tr>
<td>Bosulif*</td>
<td>(bosutinib)</td>
<td>Chronic Myeloid Leukemia (CML)</td>
<td>$118,000$\textsuperscript{16}</td>
</tr>
<tr>
<td>Gleevec*</td>
<td>(imatinib)</td>
<td>Chronic Myeloid Leukemia (CML)</td>
<td>$30,000$ (2001) $92,000$ (2012)$^{15}$</td>
</tr>
<tr>
<td>Erbitux*</td>
<td>(cetuximab)</td>
<td>Colon Cancer, Lung Cancer</td>
<td>$80,000$\textsuperscript{16}</td>
</tr>
<tr>
<td>Cometriq*</td>
<td>(cabozantinib)</td>
<td>Thyroid Cancer</td>
<td>$99,000$\textsuperscript{17}</td>
</tr>
<tr>
<td>Erivedge*</td>
<td>(vismodegib*)</td>
<td>Skin Cancer</td>
<td>$75,000$\textsuperscript{18}</td>
</tr>
<tr>
<td>Herceptin*</td>
<td>(trastuzumab)</td>
<td>Breast Cancer</td>
<td>$70,000$\textsuperscript{19}</td>
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<tr>
<td>Camptosar*</td>
<td>(irinotecan)</td>
<td>Stage IV Colon Cancer</td>
<td>$44,087$\textsuperscript{20}</td>
</tr>
<tr>
<td>Eloxatin*</td>
<td>(oxaliplatin)</td>
<td>Stage IV Colon Cancer</td>
<td>$60,179$\textsuperscript{20}</td>
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<td>Synribo*</td>
<td>(omacetaxine)</td>
<td>Chronic Myeloid Leukemia (CML)</td>
<td>$28,000$ for induction and $14,000$ for a maintenance course\textsuperscript{15}</td>
</tr>
<tr>
<td>Kadcyla*</td>
<td>(ado-trastuzumab emtansine)</td>
<td>Breast Cancer</td>
<td>$94,000$\textsuperscript{21}</td>
</tr>
<tr>
<td>Nexavar*</td>
<td>(sorafenib)</td>
<td>Liver Cancer</td>
<td>$80,000$\textsuperscript{22}</td>
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<tr>
<td>Nexavar*</td>
<td>(sorafenib)</td>
<td>Kidney Cancer</td>
<td>$96,000$\textsuperscript{22}</td>
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<tr>
<td>Perjeta*</td>
<td>(pertuzumab)</td>
<td>Breast Cancer</td>
<td>$106,200$\textsuperscript{23} (based on 18-month course of treatment)</td>
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<tr>
<td>Provenge*</td>
<td>(sipuleucel-T)</td>
<td>Prostate Cancer</td>
<td>$93,000$\textsuperscript{24}</td>
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<tr>
<td>Proleukin*</td>
<td>(aldesleukin)</td>
<td>Kidney Cancer, Metastatic Melanoma</td>
<td>Up to $3,925 per dose, $109,900 per course based on 28 doses, $549,500 per year based on 5 courses\textsuperscript{25,26}</td>
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<tr>
<td>Sutent*</td>
<td>(sunitinib malate)</td>
<td>Kidney, Pancreatic and GI Cancer</td>
<td>$48,720$\textsuperscript{27}</td>
</tr>
<tr>
<td>Tarceva*</td>
<td>(erlotinib)</td>
<td>Non-Small Cell Lung Cancer</td>
<td>$31,000$\textsuperscript{28}</td>
</tr>
<tr>
<td>Xalkori*</td>
<td>(crizotinib)</td>
<td>Non-Small Cell Lung Cancer</td>
<td>$115,000$\textsuperscript{29}</td>
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<td>Xgeva*</td>
<td>(denosumab)</td>
<td>Metastasis to Bones</td>
<td>$6,600$\textsuperscript{30}</td>
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<tr>
<td>Xtandi*</td>
<td>(enzaalutamide)</td>
<td>Prostate Cancer (metastatic castration-resistant -mCRPC)</td>
<td>$59,600$\textsuperscript{31}</td>
</tr>
<tr>
<td>Votrient*</td>
<td>(pazopanib)</td>
<td>Kidney Cancer Sarcomas\textsuperscript{32} (2012)</td>
<td>$93,000$\textsuperscript{32} (based on 800 mg per day)</td>
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<tr>
<td>Yervoy*</td>
<td>(ipilimumab)</td>
<td>Melanoma</td>
<td>about $116,000$\textsuperscript{34} (about $29,000 per infusion, 4 needed)</td>
</tr>
<tr>
<td>Zelboraf*</td>
<td>(vemurafenib)</td>
<td>Metastatic Melanoma</td>
<td>$112,800$\textsuperscript{35} (2012) $60,000$\textsuperscript{29} (2011)</td>
</tr>
<tr>
<td>Zytiga*</td>
<td>(abiraterone)</td>
<td>Prostate Cancer (castration-resistant -CRPC)</td>
<td>$60,000$\textsuperscript{36}</td>
</tr>
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</table>
A Broken System!

The magnitude of pharmaceutical company malfeasance is incomprehensible to the lay public. Consumers know healthcare costs are rising, yet cures for most killer diseases remain elusive.

New cancer drugs that add only a few agonizing months of survival are laden with such severe side effects that many patients reject them altogether. Some cancer patients say no to these over-priced drugs to spare their families insolvency.

Pharmaceutical companies today seek to gain FDA approval of patented drugs that may temporarily shrink tumor volume, but don’t always meaningfully improve patient survival.

The leukemia drugs described in this article are the exception when it comes to long-term efficacy and relative safety.5,6

Richard Nixon declared war on cancer in 1971.46 Hundreds of billions of dollars of federal funds have been spent on research. Cancer patients survive longer today, but missing are the miracle cures envisioned 43 years ago.

Long-term side effects from radiation or chemotherapy cause deaths from stroke, heart failure, or immune impairment. These cancer therapy-induced deaths are not “counted” in the cancer statistics, thus enabling the cancer establishment to pretend they are making more progress than they really are.47

Our “Different” Approach To Cancer Treatment

We at Life Extension fund clinical cancer research aimed at discovering if protocols that involve dozens of drugs, nutrients, and other therapies can produce long-term complete responses, i.e. cures.

We have spent millions of dollars testing a wide array of “other” companies’ therapies in unique combinations to see if we can attain remissions or complete responses. Our clinical successes in some cases are unprecedented, yet we don’t own the intellectual property (i.e. the drugs) that enables these successes to occur.

Instead, we publish the results of our research in books like Disease Prevention and Treatment, on our website, or disseminate to our members through our health advisory staff.

We never use placebos in cancer patients as we believe this to be genocide. All cancer patients who enter our clinical trials receive therapies that are intended to cure (or mitigate) their underlying malignancy. Life Extension does not believe any human being should be treated as an experimental lab animal.

Your support of our cancer research initiatives is made possible through your membership dues, contributions, and supplement purchases.

For longer life,

William Faloona

References

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 thirty 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 $33. If a member buys four bottles, the price is reduced to $22.50 per bottle.

References

**To order Life Extension® Brain Shield™, 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.
Curcumin is an active compound derived from the Indian spice turmeric. It has been widely acclaimed for its diverse health-promoting effects on nearly every organ system in the body, including its support for the body’s natural inflammatory response system. But most curcumin is neither absorbed well nor retained well in the blood—posing a challenge to those who wish to maximize its benefits.

Life Extension® took the lead in resolving this issue several years ago by introducing Super Bio-Curcumin® containing BCM-95®, a patented, bioenhanced preparation of curcumin that has been shown to reach up to 7 times higher concentration in the blood than standard curcumin.

Now, an exciting next generation curcumin formula has become available! The new Advanced Bio-Curcumin® with Ginger & Turmerones provides additional compounds that further boost absorption of curcumin’s highly beneficial phytonutrients.

UNRIVALED POTENCY AND ABSORBABILITY

In addition to BCM-95®, this new curcumin formula contains:

1. Turmerones: After curcumin is extracted from turmeric, what remains is turmeric oil rich in compounds called turmerones. Combing BCM-95® with a high content of turmerones provides health consumers with more beneficial turmeric compounds that further multiply absorption. Scientists have shown that these potent turmerones not only support curcumin absorption, but significantly increase the amount of curcumin inside the cell as well.

2. Ginger: Curcumin and ginger are close botanical relatives. Research demonstrates that they have overlapping and complementary health benefits, and scientists are focusing on the therapeutic effects of combining these two plants.

Advanced Bio-Curcumin® with Ginger & Turmerones provides a supercritical extract of ginger standardized to the greatest concentration of ginger compounds—including beneficial gingerols and shogaols.

3. Phospholipids: This new curcumin formula also contains phospholipids, a type of emulsifying molecule known to greatly enhance absorption of poorly soluble active compounds.

The powerfully enhanced bioavailability and potency of Advanced Bio-Curcumin® with Ginger & Turmerones is superior to conventional curcumin supplements. This product represents the most powerful and cost-effective way to supplement with—and receive the full benefits of—this very critical nutrient.

The suggested daily dosage of one softgel of Advanced Bio-Curcumin® with Ginger & Turmerones provides:

- Turmeric Phospholipid Blend 630 mg
  - BCM-95® 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 CO₂ extract (root) 200 mg
    - [providing 60 mg gingerols]

Each softgel of Advanced Bio-Curcumin® with Ginger & Turmerones provides 400 mg of BCM-95® Super Bio-Curcumin plus an array of turmerones and phospholipids. A bottle of 30 softgels of Advanced Bio-Curcumin® with Ginger & Turmerones retails for $30. If a member buys four bottles, the price is reduced to $20.25 per bottle.

Contains soybeans.

Bio-Curcumin® and BCM-95® are registered trademarks of Dolcas Biotech, LLC.

To order Life Extension® Advanced Bio-Curcumin® with Ginger & Turmerones, call 1-800-544-4440 or visit www.LifeExtension.com

References

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
VITAMIN D3 SOFTGELS
FOR SUPERIOR ABSORPTION

Study after study confirms the vital importance of maintaining optimal levels of vitamin D. Research often indicates that a blood level between 50–80 ng/mL of 25-hydroxyvitamin D is ideal. Because people have individual requirements, Life Extension® has created a large selection of vitamin D supplements to ensure that you achieve your vitamin D3 goals.

Keep in mind that you may already be getting 1,000-3,000 IU of vitamin D in your multi-nutrient formulas. Vitamin D is now available in superior absorbing softgels. A recent study demonstrated that the use of one 5,000 IU vitamin D softgel daily resulted in a near 30% increase in vitamin D levels in just 60 days.

VITAMIN D3 1,000 IU
250 softgels
Retail: $12.50
Four-bottle Member Price: $8.44 ea.

Commercial companies offered only 400 IU vitamin D products when Life Extension long ago introduced a 1,000 IU version. For most people, this 1,000 IU potency is insufficient to attain optimal vitamin D blood levels. For smaller individuals who obtain 2,000-3,000 IU in their multi-nutrient formulas (and children), this potency of vitamin D may be suitable. Item # 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 many need to achieve optimal vitamin D blood levels. Item # 01713

VITAMIN D3 7,000 IU
60 softgels
Retail: $14
Four-bottle Member Price: $9.38 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 many need to achieve optimal vitamin D blood levels. Item # 01713

VITAMIN D3 LIQUID
2,000 IU (Natural mint flavor)
1 ounce
Retail: $28
Four-bottle Member Price: $18.75 ea.

For those rare individuals who have difficulty absorbing enough vitamin D3 from softgels, this liquid of vitamin D3 can be used. Item # 01732

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 do not ingest enough vitamin D and iodine, especially those seeking to reduce their salt intake. Combining 5,000 IU of vitamin D3 and 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

Some individuals (such as those weighing more than 180 pounds) may require higher potencies of vitamin D. When combined with 1,000-3,000 IU obtained from multi-nutrient formulas, this 7,000 IU vitamin D3 softgel should enable these individuals to attain 25-hydroxyvitamin D blood levels above the desired range of 50 ng/mL. Item # 01718

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.

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.
Scientists have identified specific extracts from cruciferous vegetables—such as broccoli, cauliflower, cabbage and Brussels sprouts—that help maintain healthy hormone metabolite balance. **Triple Action Cruciferous Vegetable Extract** combines some of these plant extracts into a comprehensive formula for optimal DNA protection.

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

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

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

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

To order Triple Action Cruciferous Vegetable Extract, call 1-800-544-4440 or visit www.LifeExtension.com

**REFERENCES**


These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
**Multivitamin Use Linked With Lower Colorectal Polyp Risk**

An article that appeared online in the *British Journal of Cancer* describes the findings of Harvard researchers of a lower risk of colorectal adenoma (polyps) in women who used multivitamin supplements.*

The current investigation included 43,641 women enrolled in the Nurses’ Health Study II who underwent initial colonoscopy or sigmoidoscopy examinations between 1991 and 2007. Questionnaires completed every two years by the participants beginning in 1991 provided information on the use of multivitamin supplements and whether colon or rectal polyps had been diagnosed. Over the course of follow-up, 2,277 women were diagnosed with colorectal adenomas, of which 1,090 were classified as low-risk and 696 were classified as at high risk of developing into cancer. Women who reported using multivitamins at any time over the course of follow-up had a 14% lower risk of colorectal adenoma than non-users.

*Editor’s Note:* When duration of use was examined, subjects who used vitamins for 20 to 26 years experienced the greatest protective effect, with a 20% lower risk in comparison with those who did not report using a multivitamin supplement.

—D. Dye


**Gamma Tocopherol, Tocotrienols Protect Against Cognitive Impairment**

A study described in *Experimental Gerontology* uncovered a protective effect for higher levels of the vitamin E subfractions gamma tocopherol, beta tocotrienol, and total tocotrienols against the risk of developing Alzheimer’s disease or mild cognitive impairment.*

Researchers evaluated the association between serum tocopherol and tocotrienol levels and cognitive impairment in 140 participants in the CAIDE study, which examined Finnish men and women at several time points during midlife and re-examined survivors in 1998 and 2005-2008. The current study compared 64 subjects diagnosed at the second re-examination with mild cognitive impairment or Alzheimer’s disease with 76 cognitively normal participants. Serum samples collected in 1998 were analyzed for tocopherols, tocotrienols, and cholesterol (which may influence serum vitamin E levels).

The researchers uncovered a 73% lower risk of cognitive impairment among those whose serum gamma tocopherol to cholesterol ratio was among the middle third of subjects in comparison with those whose ratio was among the lowest third.

*Editor’s Note:* Higher serum levels of gamma tocopherol, beta tocotrienol, and total tocotrienols were each associated with a significantly lower risk of being cognitively impaired.

—D. Dye

Phase 2 Clinical Trial Demonstrates Benefits Of Metformin In Prostate Cancer

Published in the journal European Urology, a team of researchers from Switzerland found that treatment with metformin in patients with castration-resistant prostate cancer increased progression-free survival and prolonged PSA doubling time.*

The one year study included 44 men diagnosed with progressive, metastatic castration-resistant prostate cancer at 10 different Swiss centers who were given 1,000 mg of metformin twice daily. After 12 weeks of treatment, 36% of patients were progression free with over 25% of these men remaining progression free at 24 weeks. Over 52% of the patients experienced a prolongation of PSA doubling time (a reflection of slower tumor growth). Additionally, insulin sensitivity markers improved by 26% in the first 12 weeks of treatment.

Editor's Note: The researchers concluded that “treatment with metformin is safe in non-diabetic patients, and it yields objective PSA responses and may induce disease stabilization. The activity of metformin in prostate cancer, along with its low cost, favorable toxicity profile, and positive effect on metabolic parameters” warrants further investigation of metformin as a treatment for prostate cancer.

—A. Pryce, ND


Reduced Vitamin D, Magnesium Associated With Increased Insulin Resistance

A recent issue of the Journal of Clinical and Diagnostic Research published the findings of a study conducted at Mahatma Gandhi Medical College and Research Institute of reduced levels of vitamin D, calcium, and magnesium in diabetic individuals, as well as associations between decreased concentrations of serum vitamin D and magnesium with increased insulin resistance.*

The study compared 30 diabetic men and women with an equal number of non-diabetic control subjects matched for gender and age. Fasting blood samples were analyzed for serum glucose, insulin, 25-hydroxyvitamin D3, and insulin levels, and insulin resistance was determined.

Serum 25-hydroxyvitamin D3 levels averaged 12.29 ng/mL among those with type II diabetes in comparison with 19.55 ng/mL in the healthy controls. Serum calcium and magnesium levels were also significantly lower in the diabetic group and fasting glucose, insulin, and insulin resistance were greater among those with diabetes.

Greater insulin levels are seen in insulin resistant individuals who often secrete more insulin to keep glucose levels from acutely rising too high. This continues until pancreatic beta cells are no longer able to produce insulin, and the type II diabetic then requires insulin injections to keep glucose under control.

Editor's Note: A significant correlation was determined between lower vitamin D levels and higher insulin levels as well as insulin resistance. Additionally, higher vitamin D levels were correlated with increased magnesium status, and low magnesium with insulin resistance.

—D. Dye


Higher Vitamin D During Pregnancy Benefits Offspring

The Journal of Clinical Endocrinology and Metabolism contained a report of the findings of researchers from England’s Medical Research Council Life Course Epidemiology Unit at the University of Southampton of a muscle strength benefit in the children of mothers who had higher vitamin D levels during pregnancy.*

The study included 678 pregnant participants in the Southampton Women’s Survey. The women’s serum 25-hydroxyvitamin D levels were measured at 34 weeks of gestation. When their children were four years old, hand grip strength, lean mass, percent lean mass, and physical activity were assessed.

A correlation was observed between higher serum 25-hydroxyvitamin D levels and an increase in hand grip strength. An additional association was found between total lean mass and increased vitamin D concentrations, which was reduced after adjustment for several factors.

Editor’s Note: Lead researcher Nicholas C. Harvey, who is a Senior Lecturer at the Medical Research Council Life Course Epidemiology Unit remarked that, “It is likely that the greater muscle strength observed at four years of age in children born to mothers with higher vitamin D levels will track into adulthood, and so potentially help to reduce the burden of illness associated with loss of muscle mass in old age.”

—D. Dye

Increased EPA/DHA, ALA Associated With Lower Risk Of Cardiovascular Mortality

The European Journal of Preventive Cardiology reports the finding of a lower risk of death from cardiovascular disease among men and women with a higher intake of the omega-3 fatty acids EPA and DHA, which are derived from marine sources, and alpha-linolenic acid (ALA), which occurs in plant foods.*

The current study evaluated data obtained from the Singapore Chinese Health Study, which recruited 63,257 Chinese men and women between the ages of 45 and 74 years from 1993 to 1998. Responses to questionnaires completed upon enrollment provided information on the intake of omega-3 fatty acids. Over the follow-up period through 2011, 4,780 deaths from cardiovascular disease occurred, which included 2,697 attributable to coronary heart disease and 1,298 from stroke.

When subjects in the top quartile of omega-3 fatty acid intake were compared with the lowest quartile, a 17% lower risk of dying from cardiovascular disease was observed.

Editor’s Note: When EPA combined with DHA intake was separately examined, a 14% lower risk for those in the top 25% compared to the lowest was found, and for ALA, the risk of dying from cardiovascular disease was 19% lower for those among the highest fourth.

—D. Dye


Curcumin Sensitizes Colon Cancer Cells To Chemotherapy

An article published in PLOS One reports the finding of a chemosensitizing benefit for curcumin, a compound occurring in turmeric, in colon cancer cells resistant to treatment with the chemotherapy drug 5-fluorouracil (5-FU).*

The current study utilized cultures of two high density colorectal cell lines that were sensitive to 5-fluorouracil and cultures of their 5-FU resistant clones. One of the two non-resistant lines and its resistant clone were deficient in their DNA mismatch repair systems, which results in genetic instability, increased susceptibility to neoplastic transformation, and greater development of chemoresistant cells. Cells were treated with varying concentrations of 5-FU or BCM-95 curcumin, or received pretreatment with curcumin followed by exposure to one of four concentrations of 5-FU.

While 5-FU dose-dependently reduced the proliferation of the non-resistant cell lines, curcumin alone decreased proliferation in all cell lines, showing the most significant effects in the lines that were not deficient in their DNA mismatch repair systems.

Editor’s Note: Pretreatment with curcumin prior to 5-FU administration revealed a benefit in 5-FU sensitive as well as resistant cells. Either treatment or their combination also decreased markers of cancer stem cells in all lines, with the greatest benefit observed in association with combination therapy.

—D. Dye


High Homocysteine Linked To Increased Colorectal Cancer Risk

A recent article in the Journal of Clinical Nutrition reports on a study in which high homocysteine levels are associated with an increased risk of colorectal cancer independently of oxidative stress and antioxidant capacities.*

The study recruited 186 subjects with colorectal cancer and 188 healthy people as controls. The purpose of this study was to determine the associations of homocysteine, cysteine, vitamin B6 (as pyridoxal 5’-phosphate), and folate with oxidative stress indicators and antioxidant capacities, and to further analyze their relationships with respect to risk for colorectal cancer.

The results showed that there were no significant associations of homocysteine, cysteine, and folate with oxidative stress indicators and antioxidant capacities, but subjects with higher plasma homocysteine concentration exhibited significantly increased risk of colorectal cancer independently of oxidative stress indicators and antioxidant capacities. However, cysteine, B6, and folate were not found to be related to oxidative stress, antioxidant capacities, and the risk of colorectal cancer.

—M. Richmond

IN THE NEWS

**Vitamin D Offers Pain Relief To Fibromyalgia Sufferers**

A report published in the journal *Pain* describes the outcome of a trial involving vitamin D supplementation by adults with fibromyalgia, which found a benefit for the vitamin in relieving the chronic pain that characterizes the syndrome.*

The trial included 30 subjects diagnosed with fibromyalgia syndrome who had low serum 25-hydroxyvitamin D levels. Half of the participants received vitamin D3, and the remaining half received a placebo for 24 weeks. The goal for the treatment group was to achieve serum calcifediol levels between 32 and 48 ng/mL for 20 weeks. Serum vitamin D levels were measured before treatment and at 5, 13, and 25 weeks. Pain, health-related quality of life, anxiety and depression, disease-related impairment, and physical sensations were evaluated at the beginning of the study and at various points over the course of the investigation. A significant reduction in pain occurred over time in those who received the vitamin, while remaining essentially unchanged in the placebo group.

Editor's Note: Physical role functioning also improved among those given vitamin D, while remaining constant in the control subjects.

—D. Dye


**Mediterranean Diet Lowers Sudden Cardiac Death Risk In Women**

An article published in the *American Journal of Clinical Nutrition* reports a protective effect for a Mediterranean diet against the risk of undergoing sudden cardiac death among postmenopausal women.*

The investigation evaluated the effects of adherence to a Mediterranean diet or the Dietary Approaches to Stop Hypertension (DASH) diet among 93,122 participants who enrolled in the Women’s Health Initiative study between 1993 and 1998. Dietary questionnaires completed twice during the 10.5-year average follow-up period were scored on adherence to both diets.

Over the follow-up period, 237 sudden cardiac deaths occurred. Among those whose Mediterranean diet scores were among the top 20% of participants, there was an adjusted 33% lower risk of undergoing sudden cardiac death in comparison with women whose scores were among the lowest 20%. Higher DASH diet scores were not correlated with a lower risk of sudden cardiac death after adjustment for numerous factors.

Editor's Note: As a possible explanation for the lack of benefit associated with the DASH diet observed in the current study, authors Monica L. Bertoia and her colleagues remark that the intake of salt, an important factor in the DASH diet, was not well characterized by the questionnaires.

—D. Dye


**Remember To Drink Your Coffee**

An article published in *Nature Neuroscience* reveals a memory-enhancing effect for caffeine, found in coffee, tea, and other beverages.*

In a double-blinded trial, participants who were not regular caffeine consumers received 200 milligrams of caffeine or a placebo five minutes after studying a series of images. Saliva samples collected prior to treatment and one, three, and 24 hours afterward tracked caffeine levels. The subjects were tested the following day on how well they remembered the images.

Participants who received caffeine were better able to identify images viewed the day before, and to recognize those that were similar but different. “If we used a standard recognition memory task without these tricky similar items, we would have found no effect of caffeine,” senior author Michael Yassa explained. “However, using these items requires the brain to make a more difficult discrimination—what we call pattern separation, which seems to be the process that is enhanced by caffeine in our case.”

Editor’s Note: “We also know that caffeine is associated with healthy longevity and may have some protective effects from cognitive decline like Alzheimer’s disease,” Dr. Yassa added.

—D. Dye

Zinc supports your body’s natural immune defenses. Research demonstrates that zinc deficiency is widespread, especially in the elderly. This deficiency may contribute to aging-related impairment of immune function—or immunosenescence.

Scientists found that zinc supplementation offers an effective way to support aging immune systems, as well as healthy inflammatory and antioxidant responses. A longstanding problem is that zinc absorption can be limited and certain molecules in plant sources and grains can further inhibit absorption.

Life Extension has developed a low-cost formulation combining the well-established, enhanced bioavailability of OptiZinc with zinc citrate to provide a potent 50 milligram dose of zinc in a single capsule.

Zinc’s Critical Importance

Beyond immune support, zinc plays other crucial roles. It is an essential component of superoxide dismutase, one of your body’s most powerful natural antioxidants. Zinc stimulates the activity of about 300 enzymes that promote biochemical reactions in your body.

This key mineral is also an integral component of vital hormones and supports protein and DNA synthesis, insulin production, as well as thyroid and bone metabolism. Zinc supports cardiovascular and neurological health, and helps maintain vision in the elderly.

Age-related immune decline is partly due to the decreasing size and function of the thymus gland. Evidence suggests that zinc may help maintain healthy function of the thymus gland in elderly people.

The Proven Superior Absorption Of OptiZinc®

OptiZinc® is a superior bioavailable form of zinc. It is assimilated more easily than ordinary zinc because it is comprised of one of the most absorbable forms of zinc—zinc methionate (methionine). Published studies show that it results in higher blood levels compared to other forms of zinc.

References
1. Immune Aging. 2009 Jun 12;6(9).
7. Available at: http://ods.od.nih.gov/factsheets/Zinc-HealthProfessional/

To order Zinc Caps, 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.
Support Endothelial Function and Healthy Blood Lipids

Safely managing the multiple elements supporting cardiovascular health can be a challenge as people grow older. Doctors are increasingly recognizing the need to promote the function of the endothelial layer of the arterial wall, a critical factor in cardiovascular health.!

**Advanced Lipid Control** provides two ingredients that help maintain key aspects of endothelial function—**Amla extract** from the Indian gooseberry and **Black Tea extract**.

### Amla Extract

**Amla** fruit contains a diverse blend of beneficial phenolic compounds. This fruit has long been used in herbal preparations by ancient medical systems.2

**Standardized Amla extract** has been clinically shown to support endothelial function.3-5

Modern research shows that this plant extract safely supports healthy levels of all three key blood lipids6 already within healthy range:

1. Low-density lipoprotein (LDL)
2. High-density lipoprotein (HDL)
3. Triglycerides

Evidence demonstrates that Amla extract also promotes healthy levels of blood glucose, insulin, and blood pressure within normal range.6,8

**Advanced Lipid Control** contains a patented standardized extract of Capros® Amla.

### Black Tea Extract

**Black Tea** is rich in polyphenols such as theaflavins that scientists have discovered provide multiple benefits for arterial health.9,10

Black tea polyphenols have been shown in human studies to help maintain LDL levels already in the normal range.11 Protective compounds found in black tea have been shown to support the body's natural defenses against LDL oxidation, thus helping to maintain healthy circulation by favorably affecting endothelial function.11,13

In addition, compounds found in black tea have been found to be helpful in regulating key inflammatory mediators in the body,14 thus further helping to preserve endothelial integrity.

Through these multiple mechanisms, Black Tea supports blood pressure levels within normal range.15

**Advanced Lipid Control** also contains theaflavin-standardized black tea extract.

### Broad Endothelial and Cardiovascular Support

The ingredients in **Advanced Lipid Control** support endothelial function. This special formula also promotes healthy cholesterol levels already within normal range and safeguards vascular and heart health.

The suggested daily dosage of two vegetarian capsules of Advanced Lipid Control provides:

**Capros® Amla water extract (fruit)**

500 mg

[std. to 60% low molecular weight hydrolyzable tannins (300 mg)]

**Black tea extract (leaf)**

350 mg

[std. to 25% theaflavins (87.5 mg)]

A bottle of 60 vegetarian capsules of **Advanced Lipid Control** retails for $30. If a member buys four bottles, the price is reduced to $20.25 per bottle.

Capros® is a registered trademark of Natreon, Inc. This product contains a black tea extract which is licensed from Applied Food Sciences, Inc. and is protected by U.S. patent Nos. 6,811,779 and 6,602,527.

To order Advanced Lipid Control, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
The 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, K2 (MK-4) and K2 (MK-7) can be found in the Life Extension® Super Booster. If you take the Super Booster, you do not need additional Super K with Advanced K2 Complex softgels.)*

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

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

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**Super K formula provides in just one daily softgel:**

<table>
<thead>
<tr>
<th>Vitamin K2 (MK-7)</th>
<th>200 mcg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin K2 (MK-4)</td>
<td>1000 mcg</td>
</tr>
<tr>
<td>Vitamin K1</td>
<td>1000 mcg</td>
</tr>
</tbody>
</table>

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.

*Warning to Coumadin® (warfarin) Drug Users*

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

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**To order**

Super K with Advanced K2 Complex or Super Booster, 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.

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**References**

Most people are aware of the wide-ranging benefits of omega-3 fatty acids, but you likely aren’t aware of a category of omega-7 fats that provide some unique health effects.

Scientists have recently uncovered a specific kind of omega-7 called palmitoleic acid. This newly discovered fat molecule is so important that Harvard Medical School has applied for a patent on it.¹

What’s so special about this particular omega-7?

It powerfully addresses many of the underlying factors involved in metabolic syndrome.²⁻⁷ This feat would require multiple prescription drugs to achieve— with potentially dangerous side effects. Omega-7 palmitoleic acid can safely do all this at a fraction of the cost.

Omega-7 can reduce risk of type II diabetes, prevent the buildup of atherosclerotic plaque, increase beneficial HDL and lower an inflammation marker called C-reactive protein, which is associated with an increased risk for heart attack and stroke.³⁻⁵,⁷⁻⁹

In these ways, omega-7 is able to powerfully—and affordably reduce risk of the negative consequences of metabolic syndrome—including heart disease, diabetes, cancer, and other life-threatening disorders. >
What Is Palmitoleic Acid?

Palmitoleic acid is a member of the class called omega-7 fatty acids. Omega-7s include several different fatty acids. For the purposes of this article, when we refer to omega-7, we’re referring to palmitoleic acid.

Unlike the better known polyunsaturated omega-3s, omega-7s are monounsaturated fats. And while omega-3 fatty acids are beneficial largely because they become incorporated into anti-inflammatory molecules, omega-7s have an entirely different mechanism of action. Omega-7 fats function as signaling molecules that facilitate communication between fat and muscle tissue in your body.

This special signaling function qualifies omega-7 to be identified as a unique lipokine—a hormone-like molecule that links distant body tissues to assure optimal energy utilization and storage.

That’s what allows omega-7 to have broad-reaching effects on various factors of metabolic syndrome.
Ingestion of just a small amount of omega-7 has a profound effect on the body’s response to energy intake, fat storage, and utilization, all of which are imbalanced in metabolic syndrome. Omega-7 suppresses the production of new fat molecules, especially those fats that damage tissue and raise cardiovascular risk.

In fact, omega-7’s beneficial effects resemble those of many drugs (such as Lipitor®, Actos®, Lopid®, and others) commonly used by people with high cholesterol and/or high blood sugar, major elements of metabolic syndrome that increase the risk of cardiovascular disease.

Omega-7 Fights The Factors Of Metabolic Syndrome

As medically defined, metabolic syndrome, a major contributor to cardiovascular disease risk and type II diabetes, consists of:15-17

1. Elevated glucose and insulin resistance.
2. Lipid disturbances (high triglycerides and low HDL cholesterol).
3. High blood pressure.
4. Central obesity (“apple shape”).
5. Chronic inflammation.

Even though chronic inflammation is not technically a criterion for metabolic syndrome, it is widely recognized as a fifth major pathological contributor to the condition.15,17,18

<table>
<thead>
<tr>
<th>Metabolic Syndrome Parameter</th>
<th>Statins (Lipitor® and others)</th>
<th>Fibrates (Lopid® and others)</th>
<th>Glitazones (Actos® and others)</th>
<th>Sulfonyleureas (Glipizide® and others)</th>
<th>Omega-7 Palmitoleic Acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDL (“bad” cholesterol)</td>
<td>Reduce</td>
<td>Reduce</td>
<td>Increase</td>
<td>No effect</td>
<td>Reduce</td>
</tr>
<tr>
<td>HDL (“good” cholesterol)</td>
<td>Little effect—may even decrease</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
</tr>
<tr>
<td>Blood sugar</td>
<td>May increase</td>
<td>No effect</td>
<td>Reduce</td>
<td>Reduce (but increase insulin)</td>
<td>Reduce</td>
</tr>
<tr>
<td>Insulin resistance</td>
<td>May worsen</td>
<td>No effect</td>
<td>Reduce</td>
<td>May improve</td>
<td>Reduce</td>
</tr>
<tr>
<td>Body weight/composition</td>
<td>Increase weight, decrease fat-free mass</td>
<td>May increase weight and fat mass</td>
<td>Decrease fat</td>
<td>Increase</td>
<td>Reduce appetite</td>
</tr>
<tr>
<td>Inflammation</td>
<td>May reduce</td>
<td>May reduce</td>
<td>Reduce</td>
<td>No effect</td>
<td>Reduce</td>
</tr>
<tr>
<td>Side effects</td>
<td>Muscle pain (myalgia), may increase risk of diabetes</td>
<td>Gallstones, muscle pain</td>
<td>May increase risk of cardiovascular death</td>
<td>Increased risk of cardiovascular death</td>
<td>None known</td>
</tr>
</tbody>
</table>
If you have metabolic syndrome, it means you are already well along the road to heart disease, diabetes, cancer, and other life-threatening disorders.\(^6\) Fortunately, omega-7 works in five distinct and complementary ways to reduce most of metabolic syndrome’s harmful effects on your health:

1. It reduces insulin resistance and lowers blood glucose.\(^3,4\)
2. It suppresses fat production and accumulation.\(^2,3\)
3. It normalizes abnormal lipid profiles (including raising beneficial HDL-cholesterol).\(^3,5-7\)
4. It fights obesity.\(^3,13\)
5. It powerfully suppresses the inflammation that drives metabolic syndrome.\(^3,7\)

We will break down each of the factors one at a time in order to see how omega-7 addresses the various contributing factors involved in metabolic syndrome, ultimately reducing risk of cardiovascular disease, diabetes, cancer, and more.

**Omega-7 Fights Inflammation**

There’s a close connection between fat tissue and the chronic, low-grade inflammation that’s associated with metabolic syndrome.\(^17-19\) The connection may be related to an enzyme known as SCD1 (stearoyl-CoA desaturase 1).

When scientists remove SCD1 activity in lab animals, their levels of fat tissue inflammation fall sharply, and their ability to respond to insulin (insulin sensitivity) rises.\(^20\) In the lab, adding omega-7 to cultures of fat cells triggers these same benefits by suppressing SCD1 activity.\(^2\)

Animal studies show significantly reduced levels of fat-related inflammatory cytokines (signaling molecules) following administration of omega-7.\(^3\) And the livers of supplemented animals show significant reductions in the number of activated inflammatory cells, an effect that may help prevent fatty liver disease.\(^21\) Many of these beneficial anti-inflammatory effects may arise from the ability of omega-7 to deactivate the master inflammatory regulation complex called NF-kappaB.\(^21\)

There’s now impressive human data on how omega-7 can lower inflammation and reduce the resulting cardiovascular risk. In a pilot trial of adults with high levels of C-reactive protein (blood marker of inflammation), supplementation with 210 mg a day of omega-7 resulted in a robust 73% decrease of C-reactive protein.\(^6\)

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**What You Need To Know**

**Guard Against Metabolic Disturbances With Omega-7**

- A new healthy fatty acid, omega-7 palmitoleic acid, has joined the ranks of omega-3 fats in protecting your body from the dreaded metabolic syndrome.
- Adding omega-7 to your supplement regimen can help your body mitigate many of the components of metabolic syndrome, including high LDL and low HDL cholesterol, high glucose and insulin resistance, obesity, and even the inflammation that drives the syndrome.
- Big Pharma has at least four categories of drugs to treat metabolic syndrome, but these carry various side effect profiles and can interact negatively with one another.
- Omega-7 may help you reduce the burden of metabolic syndrome in your own body.
- Add omega-7 palmitoleic acid to your omega-3 regimen today to optimize your cardiovascular and metabolic health.
In metabolic syndrome as well as in type II diabetes, the body’s cells become resistant to the sugar-lowering effects of insulin. This results in rising sugar levels, and also rising levels of insulin, both of which are toxic in large quantities. Omega-7 counteracts this by doubling glucose uptake by muscle cells, increasing their ability to burn sugar for energy and store it in quick-release, non-toxic glycogen.22

What happens next is that when your body’s cells become resistant to the sugar-lowering effects of insulin, blood sugar will eventually rise. Pancreatic cells that produce insulin are among the casualties of high glucose, eventually resulting in still higher sugar levels and worse tissue damage.23 Omega-7 protects the insulin-producing cells of the pancreas from glucose-induced toxicity; in fact, omega-7 enhances proliferation of pancreatic beta cells, helping your body optimize blood sugar control with its own natural insulin.24

Omega-7 levels strongly predict insulin sensitivity: One’s odds of having beneficially high insulin sensitivity rise dramatically as their blood omega-7 levels rise.4

Those results were extended in a larger, randomized clinical trial, in which all patients had abnormally high CRP levels (greater than 3 mg/dL). In this study, 30 days of supplementation with 210 mg/day of palmitoleic acid resulted in a significant drop in CRP of 1.9 mg/dL — that’s a 43% reduction in a dangerous cardiovascular risk marker. Moreover, by the end of the supplementation period, the average CRP level was reduced from greater than 4 mg/dL to 2.1 mg/dL.7 The health ramifications of this marked reduction in C-reactive protein are profound, especially in abdominally-obese individuals who often exhibit dangerously elevated levels of this inflammatory indicator (CRP).

Omega-7 Lowers Glucose And Insulin Resistance

Omega-7 has multiple beneficial effects on blood sugar and insulin. Researchers discovered that when mice with type II diabetes were supplemented with omega-7, they had lower blood glucose and triglyceride levels.3 At the same time, their insulin resistance and liver fat deposits were significantly reduced. Liver fat deposition is a key factor in metabolic syndrome, and is a leading cause of non-alcoholic fatty liver disease, or NAFLD.3 These animals also experienced decreases in diabetes-related weight gain, and reduced levels of inflammatory cytokines.

Omega-7 produces these encouraging results because it attacks multiple underlying mechanisms responsible for type II diabetes/insulin resistance.

All Omega-7 Sources Are Not The Same

While you can get omega-7 palmitoleic acid from some natural sources, such as macadamia nuts and sea buckthorn, it’s important that you be aware that these foods also contain very high levels of palmitic acid. Palmitic acid is a thick, gooey palm oil.

Palmitic acid consumption raises the risk of heart attack, stroke, and other cardiovascular catastrophes by increasing arterial stiffness, triggering abnormal platelet clumping, and raising dangerous LDL cholesterol levels.55-57

Sea buckthorn and macadamia oils typically contain around 11 to 27% omega-7 (which is good) but they also contain around 9 to 40% palmitic acid, which can largely negate the benefits of the omega-7.58-59

That’s why it’s vital that you use an omega-7 product that is purified to reduce the palmitic acid concentration to less than 1%, and also ideally concentrated to raise the omega-7 content to near 50%.
**Palmitoleic Acid Improves Arterial Health**

Omega-7’s ability to raise HDL and lower LDL—while also supporting endothelial function—make it extremely beneficial for cardiovascular health.

Studies show that omega-7 improves lipid balance by favorably regulating fat production within fat cells, while regulating fat burning.² That means less fat deposition—and lower levels of fat and triglycerides in blood and liver tissue.³,²⁵

In a lab study done at the Cleveland Clinic, omega-7 supplementation increased beneficial HDL after just 8 to 12 weeks (something statin drugs are not very good at doing).⁵,²⁶,²⁷ In the same study, the reduction in the size of atherosclerotic plaque in the aorta was 47% lower in the group receiving omega-7 supplementation.⁵

Omega-7 levels have also been shown to be powerful predictors of the all-important endothelial function, the control of blood flow and pressure by the inner lining, or endothelium, of blood vessels.²⁸

These beneficial effects on cholesterol were demonstrated by a study using macadamia nuts and sea buckthorn, two substances that are known for their high omega-7 content. Studies show that after just three weeks of eating macadamia nuts every day, healthy young women had reductions in total and LDL cholesterol, body weight, and body mass index (BMI).²⁹ And in men with high cholesterol, 1 to 3 ounces per day of these fat-containing nuts produced reductions in atherosclerosis risk factors such as markers of inflammation and oxidative stress.³⁰

These studies may have shown greater effects had the subjects used a purified omega-7 palmitoleic acid supplement instead of the high-fat macadamia nuts, which are also rich in dangerous palmitic acid.

In a study of patients with stubbornly high lipid levels, a purified omega-7 supplement (840 mg/day) produced modest lipid reductions. LDL fell by 7.6% (from 118 to 109 mg/dL) while non-HDL cholesterol was reduced by 8.2% (from 147 to 135 mg/dL).⁶ Patients with the highest levels of baseline triglycerides saw their total cholesterol and triglyceride levels drop by as much as 30%.⁵

* (Non-HDL cholesterol is gaining increasing importance as a risk marker for cardiovascular outcomes.³ It is calculated as total cholesterol minus HDL cholesterol.)

What makes that study remarkable is that most participants were already taking statin or fibrate drugs, yet still had high lipid levels.³⁵ This showed that adding omega-7 to these drugs produced additional benefits, lowering cholesterol and triglycerides where prescription drugs couldn’t.

In a subsequent controlled clinical trial, patients taking purified omega-7 palmitoleic acid at a lower dose (210 mg/day) had improvements in lipid levels after 30 days of supplementation: triglycerides dropped by 36.9 mg/dL (17%), LDL by 13.5 mg/dL (11%), and beneficial HDL rose by 4.5 mg/dL (10%).⁷

**Omega-7 Helps Manage Body Weight**

The reason central or abdominal obesity (“apple shape”) is a factor in metabolic syndrome is because it has such strong associations with cardiovascular disease risk.³¹ This is due, in large part, to the increased inflammation produced by fat tissue.¹⁷-¹⁹

Omega-7s help manage this factor of metabolic syndrome because they signal your body to stop storing fat.²,³

Animals fed diets rich in omega-7 show significant increases in stomach and intestinal hormones that promote the feeling of fullness (satiety).¹³ At the same time, such diets produce decreases in hunger-promoting hormones.³² The combined effect is a significant reduction in food intake.
Several statin drugs, while lowering cholesterol and triglycerides, also produce increases in body and liver fat deposition. ³³ Omega-7s do just the opposite. Omega-7 reduces the production of fat in the liver. ³³ Increases in liver fat can result in non-alcoholic fatty liver disease (NAFLD), which is considered a major manifestation of the metabolic syndrome—and which can eventually lead to liver failure and even cancer. ³⁴

Summary

Research has shown that omega-7 has beneficial effects on a majority of the pathological components of metabolic syndrome.

It improves insulin sensitivity, lowers LDL-cholesterol-triglycerides, and raises beneficial HDL. ³⁵, ²⁴ It helps manage body weight by promoting fullness-inducing hormones and dissipating hunger-producing hormones. ¹³, ³² Perhaps most important of all, omega-7 acts in a unique fashion to stop the inflammation that forms the link between the metabolic syndrome and its life-shortening consequences. ²¹

By beneficially influencing these deadly pathological factors, omega-7 can dramatically improve cardiovascular and metabolic health.

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

References

1. Cao H, Hotamisligil G, Inventors; President and Fellows of Harvard College, Cambridge, MA, assignee. Fatty acid C16:1N7-Palmitoleic acid; C16:1n7; Omega 7) on serum lipid and C-reactive protein (hs-CRP) profiles in humans. Tersus Pharmaceuticals; 2013.
5. Experimental Animal Laboratory. Final report for study on CCO Technologies Oil (CCO-Oil) on the development of atherosclerosis: Department of Cardiovascular Medicine, Cleveland Clinic; 2008.
6. Green JA. Effect of two levels of Provalin™ (purified Palmitoleic Acid; C16:1n7; Omega 7) on serum lipid and C-reactive protein (CRP) profiles in humans. Tersus Pharmaceuticals; LLC; 2012.
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.

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

The retail price for a box containing two 5 mL vials of *Brite Eyes III* is $34. If a member buys four boxes, the price is reduced to $24 per box.
Advanced Purified Omega-7

Conventional processing methods result in omega-7 products containing only about 25% of palmitoleic acid. But Provinal® Purified Omega-7 is concentrated to 50% beneficial palmitoleic acid. This purifying technique also enables superior palmitoleic acid availability.

Convenient One-Per-Day Dosing

The suggested daily dosage of one softgel of Provinal® Purified Omega-7 softgel provides:

- Palmitoleic Acid (Omega-7) 210 mg
  [from Provinal® highly refined anchovy and/or menhaden oil (non-GMO)]

A bottle of 30 softgels of Provinal® Purified Omega-7 retails for $27. If a member buys four bottles, the price is reduced to $18 per bottle.

Provinal® is a registered trademark of Tersus Pharmaceuticals, LLC.

References

1. Lipids Health Dis. 2011;10:120.
10. Effect of Two Dosage Levels of Provinal™ on serum lipid and C-reactive protein (CRP) profiles in humans: Tersus Pharmaceuticals, LLC; 2012.
Life Extension® Pycnogenol® French Maritime Pine Bark Extract is a natural botanical extract containing procyanidins, bioflavonoids, and other health-giving molecules that synergistically support the body’s natural defenses against 5 major processes that characterize premature aging. Its effectiveness is backed by 40 years of study.

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

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

**DNA FUNCTION:** Pycnogenol® helps support normal DNA function through antioxidant activity and possibly other mechanisms.5-8

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

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

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

Unlike other forms of pine bark extract, Pycnogenol® is a superior patented and standardized ingredient that has undergone extensive human clinical research to substantiate its numerous anti-aging properties.

A bottle of Life Extension® Pycnogenol® French Maritime Pine Bark Extract containing 60 vegetarian capsules retails for $45 per bottle. The dose for most people is one capsule daily, so each bottle lasts two months.

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

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

**References**

6. Drug Dev Ind Pharm. 1998 Feb;24(2):139-44.
19. Drug Dev Ind Pharm. 1998 Feb;24(2):139-44.

Pycnogenol® is a registered trademark of Horphag Research Ltd. Use of this product may be protected by one or more U.S. patents and other international patents. Supported by over 40 years of research.

To order Pycnogenol® French Maritime Pine Bark Extract, call 1-800-544-4440 or visit www.LifeExtension.com

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

**EYE PROTECTION FORMULA**

**Ocular Circulation Support**

Lutein is one of the major components of macular pigment and it is essential to proper vision.\(^1\) Eating large quantities of lutein- and zeaxanthin-containing vegetables can help provide the nutritional building blocks necessary to maintain the structural integrity of the macula. It’s difficult, however, to increase systemic circulation of these important nutrients through food alone.\(^2\) Now there is an easier way to bolster your eye integrity.

**MacuGuard™ Ocular Support** contains phospholipids, which are an integral part of the cell membrane. In addition to mixing well with other important fat-soluble components of the eye such as lutein, phospholipids have been shown to help support efficient absorption of dietary lutein in the blood stream as well.\(^2,7\) Phospholipids have been shown in scientific research to improve systemic circulation and accumulations of lutein in the retina of the eyes, making them a potent all-around weapon in your arsenal for eye health.\(^6,7\)

**MacuGuard™ Ocular Support offers TRIPLE EYE PROTECTION:**

- Supports concentration of lutein in the eye.
- Supports efficient absorption of lutein in the blood stream.
- Phospholipids enhance lutein in the cell membrane.
- Supports zeaxanthin concentrations in eye.
- Provides meso-zeaxanthin which is difficult to obtain from dietary sources.

**Comprehensive Ocular Protection in One Daily Softgel**

This formula provides ingredients that have been shown to promote healthy eyesight. Just one softgel of MacuGuard™ Ocular Support provides:

- **MacuGuard™ Carotenoid Phospholipid Blend** 145 mg
  - Phospholipids, marigold extract (flower) [providing 10 mg free lutein, 4 mg meso-zeaxanthin & trans-zeaxanthin]
  - C3G (Cyanidin-3-glucoside) [from European black currant extract (fruit)] 2.2 mg

The retail price for a bottle containing 60 softgels of MacuGuard™ Ocular Support is $22. If a member buys four bottles, the price is reduced to $14.85 per bottle.

Contains soybeans.

**References**


**To order MacuGuard™ Ocular Support call 1-800-544-4440 or visit www.LifeExtension.com**
The *European Journal of Heart Failure* has published data from one of the most robust studies to date on *coenzyme Q10*.

This *ten year* study conclusively showed that CoQ10 supplementation significantly improves survival for even the most severe *heart failure* patients while radically reducing incidences of hospitalization.1

This new study shows that CoQ10 supplementation can restore deficient CoQ10 levels in patients with moderate-to-severe heart failure, extend lifespan, and improve quality of life.1

The compelling results from this 10-year-long study found that patients who took 100 mg of CoQ10 three times daily were…

• Significantly less likely to die from heart failure,  
• Less than half as likely to die from any cause at all, and  
• Half as likely to have a major adverse cardiac event during the study period, compared with control subjects.1
After only three months of supplementation, the researchers detected a trend towards reduced levels of a blood marker of heart failure severity that is released from over-worked heart muscle cells.\textsuperscript{1,2} At two years, significantly more treated patients had improved measurements of heart function than did placebo recipients.\textsuperscript{1}

This impressive study demonstrates how CoQ10 offers important heart health benefits and how essential it is to cardiac patients. Ideally, the practice of cardiology will soon include CoQ10 as part of their protocol to improve the lives of those living with heart failure. >
CoQ10’s Heart-Healthy Track Record

Over the past 30 years, mounting evidence has been establishing CoQ10 as one of the most vital nutrients necessary for heart health.

CoQ10 has been known to benefit cardiac bioenergetics since the 1970s.13-15 In 1985, a small study found that patients with the most severe levels of heart failure experienced significant improvements in cardiac function and clinical state during CoQ10 treatment.6

Since then, other small studies showed similar improvement in clinical status and heart function testing, typically using doses of 100 to 200 mg/day.9,16 Roughly 75% of patients taking CoQ10 experienced improvements in cyanosis (bluish skin), liver enlargement, lung examinations, difficulty breathing, palpitations, sweating, heart arrhythmias, insomnia, vertigo, and nighttime urination.10,17

Several of the studies demonstrated an improvement in cardiac functional status, as determined by the New York Heart Association, reducing patients’ class levels of heart failure by an average of 0.5 compared with placebo.11,18,19 This means that heart failure patients could move from a strict Class II with limitations on physical activity to a class I-II with fewer or even no limitations resulting in substantial improvements in quality of life.

Other studies over the past 15 years or so showed small but significant improvements in objective measures of heart function, such as ejection fraction (the proportion of blood pumped out of the heart with each beat), stroke volume (volume of blood pumped with each beat), and cardiac output (total amount of blood pumped per minute).14,20

But it wasn’t until mid-2013 that results were published from the first comprehensive, double-blind, multi-center study demonstrating the dramatic, life-saving impact of CoQ10 supplementation in patients with chronic heart failure.

Cardiac Bioenergetics

Most people have heard of heart failure, but few understand what it really is.

Contrary to what most people might think, heart failure does not mean that the heart stops beating. Rather, heart failure occurs whenever the heart is unable to pump enough blood to sustain normal function in other organs.3

Your heart is one of the hardest-working organs in your body; it literally never takes a rest. Beat after beat, hour after hour, day after day, for your entire life, your heart contracts and relaxes a little more than once per second, providing the blood flow that every other organ in your body relies on.

That much effort requires a steady supply of energy. And to perform at optimal function—literally without missing a beat—your heart needs to be able to derive that energy from its fuel (primarily fatty acids and glucose) efficiently and with little waste.4,6

In order to support this task, your mitochondria pump out a steady supply of energy derived from food. This is called bioenergetics.7 But your mitochondria don’t work alone. Just as a clean-burning automobile engine is more fuel-efficient and lasts longer than an out-of-tune one, the mitochondria need help maintaining top-level efficiency and performance.

CoQ10 is essential for the heart to maintain sufficient energy management.1,8 But when CoQ10 levels decline, tissues burn fuel inefficiently, eventually producing oxidative damage and ultimately losing their function. When the heart muscle loses its fuel efficiency, heart failure may occur.4,9

Research has shown that CoQ10 levels are lower in patients with heart failure and the lower the levels, the more severe the failure.8,10,11 In fact, heart failure patients with lower CoQ10 levels have up to a two-fold risk of dying compared to those with higher levels.12

<table>
<thead>
<tr>
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New York Heart Association Functional Classes Of Heart Failure

Class Functional Capacity: How a patient with cardiac disease feels during physical activity

I Patients with cardiac disease but resulting in no limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, difficulty breathing, or anginal pain.

II Patients with cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, difficulty breathing, or anginal pain.

III Patients with cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary activity causes fatigue, palpitation, difficulty breathing, or anginal pain.

IV Patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of heart failure or the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort increases.
Landmark Study Shows CoQ10 Saves Lives Of Heart Failure Victims!

This new study showed that even in patients with the most severe classes of heart failure, CoQ10 supplementation can restore deficient CoQ10 levels, extending life span and improving quality of life.

The study, begun in 2003, included only the most severely affected patients (those in the New York Heart Association class III or IV). In addition to their regular medication, study subjects were randomly assigned to receive either 100 mg of CoQ10 or placebo 3 times daily. Each patient was followed up with a wide variety of outcomes measures for two years.

After only three months of supplementation, the researchers detected a trend towards reduced levels of proBNP, a marker of heart failure severity that is released from overworked heart muscle cells. At two years, significantly more treated patients had improved their heart failure class than did placebo recipients.

But the study's main endpoint measurement was the most dramatic indicator of success. Only 14% of patients in the supplemented group had a major adverse cardiac event (defined as unplanned hospitalization for worsening heart failure, death from a cardiovascular cause, urgent heart transplantation, or artificial mechanical heart support), while 25% of those in the placebo group had a major cardiac event. In statistical terms, that produced a “hazard ratio” of 2.0—meaning the untreated patients had twice the risk of a major cardiac event!

Compared with control patients, those taking CoQ10 experienced significantly fewer cardiovascular deaths and hospitalizations for worsening heart failure. The difference in death rate from all causes between the CoQ10 and placebo groups was striking. Subjects on placebo had twice the rate of death compared to those taking CoQ10. And, unlike most drug studies, there were significantly fewer adverse events in the supplemented group than in the placebo group.

This study was the first ever to show that CoQ10 supplementation in advanced heart failure improves survival, while slashing hospitalization rates.

It highlights the importance of regular supplementation with this cardiac “fuel additive” for anyone with heart failure or its risk factors, such as endothelial dysfunction, hypertension, and a history of a heart attack. Studies have shown that CoQ10 improves each of these risk factors for heart failure. Let’s look at each in turn.

CoQ10 Benefits Heart Failure Patients

- Loss of efficient energy management, or bioenergetics, is a root cause of heart failure and many other conditions associated with aging.
- Many patients with heart failure are deficient in CoQ10, a nutrient that optimizes bioenergetics in the heart muscle’s mitochondria.
- A dramatic new study shows that CoQ10 supplementation can restore deficient CoQ10 levels, extending life span and improving quality of life, even in patients with the most severe classes of heart failure.
- CoQ10 supplementation is finding a role in the management of other cardiovascular disease processes, including endothelial dysfunction, hypertension, heart attack, and the ischemia-reperfusion injury that accompanies heart attacks and strokes.
- Aging changes your basic biochemistry; you can restore optimal bioenergetics with CoQ10 supplementation.
CoQ10 Improves Endothelial Function

Chronic oxidative stress is one of the main factors reducing the functioning of the endothelium, the thin layer of cells lining arteries that controls blood flow and pressure. Endothelial dysfunction is a major precursor to hypertension, coronary heart disease, and strokes. Since CoQ10 is a unique antioxidant, it makes sense that it would have beneficial effects on endothelial function.

That has proven to be the case. In patients with known coronary artery disease, who are at high risk for heart attack, and who need every bit of functioning endothelium, supplementation with 300 mg of CoQ10 a day significantly improved their natural endothelial antioxidant levels, improved their arterial relaxation, and improved their oxygen utilization. Similar improvements were seen in patients with New York Heart Association grade II to III heart failure, who experienced a 9% improvement in oxygen utilization and a 38% improvement in endothelial function when they used the same dose of CoQ10, with no side effects.

CoQ10 has subsequently shown value in improving endothelial dysfunction caused by diabetes and by high LDL-cholesterol, two major contributors to cardiovascular disease. In addition, it reduces blood vessel stiffness, a consequence of endothelial dysfunction.

CoQ10 Lowers Blood Pressure

Oxidative stress and endothelial dysfunction are major causes of elevated blood pressure, which affects about 67 million US adults. CoQ10 supplementation is showing promise in reducing blood pressure in hypertensive patients, without producing dangerous abrupt drops in pressure.

A multitude of studies have shown that doses of CoQ10 as low as 60 mg twice daily can lower blood pressure by up to 17.8 points systolic (top number) and 7 points diastolic (bottom number). None of these studies reported significant side effects, and CoQ10 is now recommended by some researchers for use in addition to standard drug treatment for hypertension, especially in elderly patients.

CoQ10 Reduces Heart Attack Damage

CoQ10 is especially valuable in reducing the damage caused by a heart attack. Never is your heart in greater need of efficient bioenergetics than during and immediately after a heart attack. CoQ10 is sharply diminished in heart attack victims. In fact, low CoQ10 levels are associated with an increased risk of dying in post-cardiac arrest patients.

The main damage in survivors of a heart attack doesn’t come from the loss of blood flow itself (ischemia), but rather from the restoration of oxygen-rich blood to tissues that have lacked oxygen for the critical minutes before circulation is restored (reperfusion).

CoQ10 reduces the impact of ischemia-reperfusion injury by optimizing the heart muscle’s bioenergetics and providing antioxidant support during this crucial period. Supplementation reduces markers of extreme oxidative stress and poor mitochondrial function, while reducing the rates of post-reperfusion arrhythmias and improving heart muscle functioning.

Studies show that CoQ10 at doses of 100 to 120 mg/day reduced total arrhythmias and other cardiac

Are You Taking The Right CoQ10?

Most biochemical compounds exist in more than one form. CoQ10 is no exception. A common form of the substance is called ubiquinone, and, while it has demonstrated biological activity, it is much less bioavailable than ubiquinol. Ubiquinol is the so-called “reduced” form of CoQ10. In chemical terms, that means it carries an extra electron. This is important because that electron is what allows CoQ10 to help neutralize, or “reduce,” dangerous reactive oxygen and nitrogen species. Therefore, your CoQ10 supplement should ideally contain the ubiquinol form of CoQ10.
events, increased left ventricular (main pumping chamber) function, and reduced the death rate from repeat heart attacks.\textsuperscript{39,40}

CoQ10 is powerful enough that it has been given intravenously during bypass grafting procedures, where it improved left ventricular functioning 6 to 10 hours after the operation, compared with control patients, and reduced blood markers of heart muscle damage.\textsuperscript{37} Similar beneficial effects have now been shown in patients who take 150 to 180 mg of CoQ10 per day for 7 to 10 days prior to elective bypass surgery.\textsuperscript{41}

**Summary**

Your mitochondria pump out a steady supply of energy derived from the food you supply them with. Like any finely-tuned machine, however, they need help maintaining top-level efficiency and performance. CoQ10 is the main molecule your body requires to keep mitochondrial energy production, or bioenergetics, running smoothly. Declining CoQ10 levels cause tissues to burn fuel inefficiently, eventually producing oxidative damage and ultimately losing their function.

CoQ10 deficiency and the resulting bioenergetic collapse is the underlying cause of heart failure, one of the largest causes of death and disability in Americans today. Studies show that CoQ10 supplementation at 300 mg/day not only restores normal CoQ10 levels, but prevents progression of heart failure and in fact can reverse that progression and extend survival and improve quality of life.

Similar beneficial effects have now been shown in patients with endothelial dysfunction, hypertension, and coronary artery disease, the precursors of heart attacks and ultimately heart failure.

Since we all require efficient and uninterrupted energy supplies, we all need to be thinking about optimizing our bioenergetic status with CoQ10 supplementation.

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

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**What Causes Heart Failure?**

Heart failure affects around 5.7 million Americans, and causes or contributes to more than 335,000 deaths each year. Half of those with heart failure die within 5 years of their diagnosis.\textsuperscript{3}

There are many primary causes of heart failure.\textsuperscript{9,43} The most common include coronary artery disease and high blood pressure but can also include heart attacks, obesity, and diabetes, all of which place excessive demands on the heart muscle, making it work harder and harder just to produce enough blood flow to sustain life at rest. That extra demand for energy uses up CoQ10, resulting in a loss of fuel efficiency precisely when the heart needs every bit of energy it can generate.\textsuperscript{9}

Eventually, the heart muscle simply tires out, becoming enlarged and flabby, squeezing more weakly with each contraction, and pumping smaller and smaller amounts of blood out to the body.

Symptoms of heart failure reflect the diminished blood flow to all of the organs in the body, especially the lungs, kidneys, and liver. Such symptoms commonly include shortness of breath even with normal daily activities, difficulty breathing when lying down, and swelling in the lower extremities or lower back. These symptoms are usually accompanied by substantial weight gain (“water weight”), and generalized fatigue and weakness.\textsuperscript{44}

Eventually, symptoms worsen, requiring frequent hospitalization with increased risk of life-threatening heart arrhythmias and pulmonary edema.\textsuperscript{44} Even with the best conventional treatment, some people with heart failure, particularly those who in spite of conventional treatment fail to show evidence of clinical improvement, may die within two years.\textsuperscript{6}
CoQ10 Shows Promise In Cancer Prevention

Low levels of CoQ10 have been correlated with increased cancer risk in some populations. This is due in part to the fact that cancer cells are enormous users of energy, perturbing the bioenergetics of surrounding tissue and bathing host cells in free radicals and other destructive byproducts.

Though research is still in its early stages, CoQ10 supplementation is showing real promise in counteracting these effects to slow—and in some cases reverse—cancer’s progression. Here is a synopsis of scientific progress:

- CoQ10 along with vitamin B6 boosted the function of cancer-fighting immune cells.
- CoQ10 alone or in combination with B vitamins enhanced the efficacy of the anti-breast cancer drug tamoxifen in animal studies, and decreased plasma markers of metastasis and new blood vessel growth in human breast cancer patients.
- CoQ10 suppressed development of precancerous lesions in animal models of colon cancer.
- CoQ10 increased median actual survival by more than 40% in patients with a variety of end-stage cancers.

It seems all but inevitable that further studies will highlight greater benefits in humans, especially at the level of prevention rather than treatment, an area in which mainstream medicine is sadly lacking.

References

CoQ10 Protects Your Brain

Your brain receives the largest proportion of total blood flow from your heart; as a result, it has some of the most volatile fluctuations in bioenergetic demands. Because of this, CoQ10 is of tremendous importance in maintaining brain health and preventing neuronal damage.

Unfortunately, studies have clearly shown a loss of CoQ10 functioning in the aging brain—with severe deficiencies in those with neurodegenerative disorders such as Parkinson’s and Alzheimer’s diseases, and following strokes.

Fortunately, laboratory studies have shown that supplementing with CoQ10 has multiple brain-protective effects, especially in aging animals. Take a look:

- CoQ10 has been shown to decelerate the aging process in a strain of mice with abnormally accelerated aging.
- When aging, stroke-prone mice were supplemented long-term with CoQ10, they had smaller volumes of damaged brain, and larger volumes of healthy, functioning brain.
- In culture dishes, CoQ10 kept brain stem cells alive following periods of oxygen deprivation (as seen in strokes), setting the stage for possible recovery through new cell development.
- In a mouse model of Alzheimer’s disease, CoQ10 decreased the amount of destructive amyloid beta plaque in brain tissue, while improving the animals’ behaviors.
- In aging mice at risk for Parkinson’s disease, supplementation reduced the loss of dopamine-producing neurons and raised brain dopamine levels (dopamine is the neurotransmitter that is diminished in human Parkinson’s).

Preliminary human studies show good results as well—especially in patients with early and mild Parkinson’s disease. CoQ10 at 360 mg/day produced moderate reduction in symptom scores, while 1,200 mg/day appeared to slow functional decline in those with early disease. Studies have shown that up to 3,000 mg/day is well tolerated, with 2,400 mg/day being the highest dose used in studies involving Parkinson’s patients. CoQ10’s superior absorption of the ubiquinol form would allow lower doses to be used. Those with congestive heart failure or neurological conditions should ideally strive for a coenzyme Q10 blood level of over 3.5 micrograms per milliliter (mcg/mL).
COQ10 BENEFITS HEART FAILURE PATIENTS


44. Available at: http://umm.edu/programs/heart/services/conditions/CardiovascularDiseases/HeartFailure/AboutHeartFailure/Classes-of-Heart-Failure_UCM_306328_Article.jsp. Accessed June 4, 2013.

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 sesame lignans not only direct the omega-3s 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 $20 per bottle. If 10 bottles are purchased, the cost is $18.68 per bottle. (Item #01482)

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 daily dose (four regular size softgels) of Super Omega-3 supplies a similar polyphenol content to that found in 4 to 6 tablespoons of olive oil.

LIFE EXTENSION® MEMBERS LONG AGO BENEFITED

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 sesame lignans 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 anti-coagulant or anti-platelet 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.
CoQ10, Shilajit, and PQQ: Triple-Action Mitochondrial Support!

Life Extension® continues to develop increasingly potent mitochondria-boosting formulations.¹-⁴

Super Ubiquinol CoQ10 With BioPQQ® contains shilajit (which studies have shown doubles CoQ10 levels in the mitochondria), plus the breakthrough compound PQQ (shown to support the spontaneous generation of new mitochondria in aging cells). This represents a three-way strategy for enhanced mitochondrial support!

1. SUPER UBIQUINOL COQ10

CoQ10 is required to convert the energy from fats and sugars you eat into usable cellular energy. More people are supplementing with CoQ10 than ever before. A key reason is increased awareness that the body’s production of CoQ10 declines significantly with advancing age.³ “Statin” drugs also deplete CoQ10 levels in the blood and, possibly, tissues.⁶ For example, statin drugs reduce plasma CoQ10 by almost 40%—but the aging process itself reduces CoQ10 levels in the heart muscle wall by 72%!⁷

Scientific studies show that absorption of the ubiquinol form of CoQ10 is far greater than the conventional ubiquinone form. In middle-aged mice, ubiquinol was shown to be 40% more effective in slowing measurements of aging, compared to ubiquinone.⁹ Life Extension® offers this highly bioavailable ubiquinol form of patented CoQ10 in an advanced delivery system, providing an unparalleled absorption level.¹⁰

2. ENHANCED SUPPORT WITH SHILAJIT

PrimaVie® shilajit has been shown to double levels of CoQ10 in mitochondria!¹¹ Combining CoQ10 and shilajit produced a 56% increase in energy production in the brain—40% better than CoQ10 alone. And in muscle, there was a 144% increase in energy production—27% better than CoQ10 alone.¹²

Shilajit boosts CoQ10’s beneficial effects by stabilizing CoQ10 in the superior ubiquinol form.¹³,¹⁴ Additionally, shilajit facilitates more efficient delivery of CoQ10 into the mitochondria, which results in greater cellular energy production.¹⁵,¹⁶ Shilajit itself is rich in essential compounds that help the mitochondria convert fats and sugars into ATP (adenosine triphosphate), the body’s main source of energy.¹⁶

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.
PQQ is an **essential nutrient**, meaning that your body cannot make it on its own. A wealth of research demonstrates that—alone and especially in combination with CoQ10—it helps maintain your health and cognitive function. This should be no surprise, given how much energy these vital organs need.

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

**BREAKTHROUGH WEAPON IN THE BATTLE AGAINST AGING!**

Super Ubiquinol CoQ10 With BioPQQ® combines:

- **CoQ10** in a super-absorbable ubiquinol form.
- **Shilajit** to synergistically boost mitochondrial CoQ10 levels and youthful cellular energy.
- **PQQ** to support spontaneous generation of new mitochondria in aging people.

**The suggested dosage of one (1) softgel daily of Super Ubiquinol CoQ10 With BioPQQ® provides:**

- Ubiquinol (as Kaneka QH® Ubiquinol) 100 mg
- PrimaVie® Shilajit fulvic acid complex 100 mg
- BioPQQ® Pyrroloquinoline quinone disodium salt 10 mg

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.

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 PQQ.

**References**

SAMe (s-adenosylmethionine) originally gained notoriety as a safe and effective alternative to anti-depressant drugs.

Research demonstrated that SAMe was equally effective as certain drugs in alleviating depression, without the side effects often associated with these antidepressants.1,2 SAMe’s wide-ranging systemic health benefits are less well-known.

In addition to boosting brain chemicals important to mood health, SAMe promotes the synthesis of other compounds that are crucial to functions such as gene expression and DNA repair.3

As a result of these many biochemical effects, scientists have demonstrated that SAMe may play a unique role in preventing, treating, or reversing numerous disorders of aging—including Alzheimer’s, fibromyalgia, inflammatory bowel disease, insomnia, osteoarthritis, and liver disease.3

In this article, we will explore SAMe’s range of anti-aging benefits throughout the body. >
How SAMe Inhibits Diseases Of Aging

The compound SAMe, (S-adenosylmethionine) is found in virtually every tissue and fluid in the body, and it is required in a myriad of biochemical reactions. Since SAMe occurs in virtually all living cells, scientists believe that it has long assisted cells in defending against destructive influences.

One of the most important processes SAMe is involved in is methylation, in which it acts as a methyl donor to support a multitude of chemical reactions. Vital biochemical processes in the body rely on methylation. These include the synthesis of nucleic acids (DNA and RNA), proteins, phospholipids, and neurotransmitters. SAMe and the methylation reactions it promotes help regulate gene expression, lipid and mineral metabolism, membrane structure, and fluidity.
SAMe contributes to the production and recycling of our body’s signaling molecules such as hormones and neurotransmitters, including serotonin, dopamine, and noradrenaline (also known as norepinephrine). Your body’s ability to appropriately methylate may decline with age, leading to increased risk of many chronic age-related diseases including cancer, neurodegeneration, and autoimmune disease. SAMe’s critical methylation effect can block disease and slow certain aging processes.

In addition, SAMe is necessary for the synthesis of glutathione, which means it plays an important role in protecting the body from free radical-induced aging. Glutathione is crucial for liver function. The liver is the organ most responsible for purifying toxins in the body. SAMe plays an important role in enhancing the antioxidant power of superoxide dismutase (SOD). Lastly, SAMe is required for synthesizing a group of compounds known as polyamines. Polyamines are critical for the effective regulation of normal cell growth and evidence suggests they play a role in programmed cell death (apoptosis). Polyamines facilitate DNA repair, gene expression, neuron regeneration, and protein phosphorylation (the addition of a phosphate group to a protein). One particular polyamine, spermidine, has been called a “universal anti-aging drug” because of its longevity effects across a number of experimental models from single-cell organisms such as yeast to more complex mouse models.

These many biochemical reactions triggered by SAMe provide protective benefits well beyond the antidepressant effects for which it is best known—and help explain why SAMe has such a wide range of anti-aging and anti-disease activities.

SAMe Blocks Aging Diseases—From Alzheimer’s To Arthritis

SAMe is present in virtually every body cell. It promotes the synthesis of compounds that are critical to vital functions such as gene expression and DNA repair. These favorable mechanisms reveal how SAMe can exert potent defense against a spectrum of chronic diseases associated with aging. Following, is a discussion of the benefits of SAMe against seven diseases of aging.

1. Alzheimer’s Disease And Dementia

Recently, dementia was estimated to afflict 36 million people globally, a toll that is expected to more than triple by 2050, according to the group Alzheimer’s Disease International. However, in a promising development, experts have recently discovered a crucial finding that gives us a clue to an underlying cause of Alzheimer’s disease. It turns out that Alzheimer’s patients have severely low levels of SAMe, even significantly lower than those found in patients with depression.

Since SAMe beneficially promotes an important chemical reaction known as methylation, lack of SAMe could lead to disturbances in this methylation process, which could be a key driver behind Alzheimer’s disease. In fact, one theory suggests that impaired methylation occurs in several different neurological and psychiatric disorders. There is even evidence that the gradual loss of the methyl group contributes to the aging process itself.

SAMe has also been found to have a beneficial effect on two of the proteins associated with Alzheimer’s disease, beta-amyloid and tau.
In an animal study, scientists found that SAMe reduced production of amyloid plaque, increased spatial memory, and inhibited tau phosphorylation, the process behind the accumulation of intracellular proteins known as neurofibrillary tangles that are characteristic of Alzheimer's. Furthermore, SAMe treatment reduced plaque spreading. The researchers encouraged further studies to evaluate the use of SAMe “…as a potential candidate drug for the treatment of the disease.”

Another study conducted on mice showed that SAMe supplementation decreased brain deposits of beta-amyloid plaque by 80% after just one month of treatment!

As an added bonus, scientists believe that supplementation with SAMe can improve cognitive function and reduce depression—both of which are common symptoms associated with Alzheimer’s.

Supplementing with 1,200 milligrams of SAMe daily for four to six months increased the level of SAMe in cerebrospinal fluid in patients with Alzheimer's by 62.5%.

2. Parkinson’s Disease

The second most common neurodegenerative disorder after Alzheimer's is Parkinson's disease, which is estimated to affect about 7 to 10 million people worldwide and as many as 1 million Americans. As with Alzheimer's, research reveals a direct correlation between levels of SAMe and Parkinson's disease.

In aging individuals stricken with Parkinson's, increased markers of neurodegeneration have been found when methylation factors such as SAMe are low. Conversely, cognitive function is better when levels of SAMe are proportionally higher.

SAMe has a number of underlying mechanisms that help support healthy brain function. SAMe supports the brain through the key process of methylation. SAMe also supports brain levels of glutathione and enhances the antioxidant power of superoxide dismutase (SOD). These twin capabilities further help explain SAMe's potency as a neuroprotective compound.

3. Fibromyalgia

Fibromyalgia is a disorder characterized by musculoskeletal pain, fatigue, and mood changes. Although there is no known cure for this disease, SAMe has been found to be effective against some of its worst symptoms.

In a double-blind human trial, scientists gave fibromyalgia patients either 400 milligrams of SAMe twice daily or placebo. SAMe produced improvements in pain, fatigue, morning stiffness, and mood.

What You Need To Know

SAMe’s Biochemical Effects Block The Diseases of Aging

- Since Life Extension introduced SAMe to American consumers 17 years ago, it has become established as a potent, natural antidepressant.
- However, scientists now know that SAMe promotes the synthesis of chemicals throughout the body that are critical to vital functions such as gene expression and DNA repair.
- Extensive research now demonstrates that SAMe is powerfully effective at safely preventing, treating, and/or reversing numerous diseases. These include Alzheimer's, Parkinson's, fibromyalgia, inflammatory bowel disease, insomnia, osteoarthritis, liver disease—and even the root of aging itself!
- Although SAMe was a relatively expensive nutrient when first introduced to the US market, the cost of producing pharmaceutical-quality SAMe has been greatly reduced—making SAMe an essential addition to every well-rounded supplement regimen.
SAMe Boosts Neurochemical Synthesis To Block Depression

SAMe has been demonstrated to play many essential roles in the body, but these functions have been greatly overshadowed by its well-established effects against depression.

Perhaps that’s because SAMe fills the growing need for depression therapy more effectively and much more safely than available drug options.

Depression is a major public health problem that affects about 10% of American adults. However, Harvard researchers found in 2010 that “the majority of depressed patients will not experience remission when treated with a first-line antidepressant.” In other words, antidepressant drugs will not work for most people.

Even more alarming, a 2011 review of seven double-blind clinical trials—conducted by researchers affiliated with Eli Lilly, the company that makes the antidepressant duloxetine (Cymbalta)—reported that over 23% of those taking antidepressant medication failed to respond to the treatment!

But modern high-tech imaging of healthy human brains revealed that SAMe delivers potent antidepressant effects equivalent to certain antidepressant drugs. And unlike those drugs, SAMe has remarkably few side effects and is well-tolerated.

In clinical trials, doses of 200 to 1,600 milligrams of SAMe daily consistently resulted in rapid improvement in depressive symptoms and produced side effects that were mild and transient. For example, in 2004, a team of Harvard psychiatrists gave 800 to 1,600 milligrams of SAMe daily to 30 patients shown to be resistant to treatment with antidepressant drugs. The researchers found that 50% of these patients responded to treatment, with a remarkable 43% experiencing remission of symptoms.

Then, a 2010 study funded by the National Institute of Mental Health evaluated SAMe’s benefits in augmenting existing drug treatments in patients who were resistant to FDA-approved antidepressant drugs. This double-blind, placebo-controlled trial involved giving test patients 800 milligrams of SAMe twice daily along with a selective serotonin reuptake inhibiting drug (SSRI). Compared to the subjects on placebo, these previously resistant patients who received the SAMe-plus-drug therapy showed a 105% higher response rate and a 120% higher remission rate—more than double the response and remission rate within just 6-weeks of treatment!

4. Inflammatory Bowel Disease

Supplementing with SAMe could also be beneficial for patients suffering from inflammatory bowel disease. Scientists found that these individuals have low concentrations of SAMe, suggesting that insufficient SAMe levels may play a role in distinguishing influences such as sulphur toxicity as “a causative mechanism in inflammatory bowel disease.” A subsequent study revealed that SAMe supplementation in combination with other antioxidants improved inflammatory factors and intestinal symptoms and returned low blood levels of glutathione to normal values in an animal model of severe colitis.

5. Insomnia

SAMe has a beneficial effect on those suffering from insomnia. It plays an important role in the synthesis of melatonin, a hormone associated with sleep. Melatonin has been studied as a treatment for insomnia, delayed sleep-phase syndrome, and circadian rhythm sleep disorders. However, production of this hormone appears to decrease with age. Fortunately, SAMe promotes the function of the enzyme that converts N-acetylserotonin to melatonin.
Furthermore, by promoting melatonin production, SAMe may be inhibiting the process of aging itself! Melatonin is a recognized geroprotector—a therapeutic agent that targets the root cause of aging and age-related diseases, and thus prolongs life span. Melatonin has been demonstrated in animal studies to prevent premature aging and carcinogenesis and to increase average life span.

6. Osteoarthritis

SAMe is known to target osteoarthritis, which affects over one-third of those over age 65. In a comprehensive meta-analysis, scientists found that SAMe was as effective as NSAIDs (non-steroidal anti-inflammatory drugs) in alleviating pain and optimizing joint function—but without the adverse effects that come with taking NSAIDs.

When compared to ibuprofen, SAMe was found to be as effective, or more effective, in reducing painful joint manifestations—including morning stiffness, pain during rest and motion, swelling, “cracking” sounds, and limited range of motion in arthritic joints. Yet side effects were three times more common with ibuprofen.

Confirming these effects, subsequent clinical trials demonstrated that SAMe blocks pain and stiffness in aging individuals with osteoarthritis. Remarkably, in vitro and animal studies indicated that SAMe stimulates cartilage production—crucial to halting and reversing arthritis.

7. Liver Disease And Gallstones

Because the liver has over 500 critical functions, from synthesizing compounds to removing contaminants, diseases that impair the liver’s ability to carry out these functions can be life-threatening. Without SAMe, liver cells are less efficient at performing vital detoxification reactions—but scientists found that cirrhosis patients have alterations in the pathway that produces SAMe.

Insufficient SAMe levels are linked to various liver diseases, including nonalcoholic fatty liver disease and nonalcoholic steatohepatitis. In multiple studies, patients with various liver problems (including drug toxicity) responded well when administered SAMe, showing signs of improvement in liver function and in some cases restoration of normal liver function.

In a trial of patients taking 1,600 milligrams of SAMe daily, scientists found that evidence of liver damage was greatly reduced, including decreased blood bilirubin levels.

SAMe was shown to treat alcoholic liver disease by at least four mechanisms: increasing glutathione levels, repairing glutathione transport into mitochondria, reducing toxicity of inflammatory cytokines, and increasing DNA methylation. Furthermore, SAMe may help prevent liver disease by increasing gene expression within liver cells involved in alcohol metabolism, boosting alcohol elimination rate after binge drinking.

SAMe could also help prevent gallstones in women. In a controlled study of women taking oral estrogen contraceptives, 600 milligrams of SAMe daily reduced bile cholesterol, suggesting SAMe may also prevent gallstones in women with increased estrogen levels.

Summary

Since Life Extension® introduced SAMe to American consumers 17 years ago, it has become well-known for its potent antidepressant effects.

However, decades of accumulating studies indicate that this remarkable natural compound promotes the synthesis and reactions of chemicals throughout the body that are critical to key functions such as gene expression and DNA repair.
As a result, scientists have now demonstrated that SAMe is effective in safely preventing, treating, and/or reversing numerous diseases, including Alzheimer’s, Parkinson’s, fibromyalgia, inflammatory bowel disease, insomnia, osteoarthritis, liver disease—and even the root causes of aging itself!5,12,16,20,23,29-31,34,37-39,44-47

Although SAMe was a relatively expensive nutrient when first introduced to the US market, the cost of synthesizing pharmaceutical-quality SAMe has now been greatly reduced—making SAMe a more affordable addition to a well-rounded supplement regimen.

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


GREEN TEA EXTRACT

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

The good news for consumers is that they can obtain high-potency standardized green tea extract capsules at a fraction of the original price.

The Life Extension Foundation Buyers Club offers 98% green tea extracts in either a lightly caffeinated or decaffeinated form. These 98% extracts are standardized to provide high potencies of critical EGCG, the most important polyphenol found in green tea.

These highly concentrated Mega Green Tea Extract Caps 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 $21 per bottle. Most people take just one capsule daily, meaning each bottle lasts over three months.

To order Mega Green Tea Extract, call 1-800-544-4440 or visit www.LifeExtension.com
Life Extension® first introduced SAMe in 1997. Since then, researchers continue to discover impressive benefits of this versatile nutrient. Largely known for its effects on optimal mood, SAMe has also shown benefits for the liver, brain, and joints.

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

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

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

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

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

A box of 20 400 mg SAMe tablets retails for $28. When a member buys six boxes, the price is reduced to only $18 a box—a savings of 35%!

(SAME is also available in bottles containing 50 400 mg tablets. Retail price is $66. If a member buys four bottles, the price is reduced to $45 per bottle.) (Item # 01555)

References

To order your supply of premium-grade SAMe, call 1-800-544-4440 or visit www.LifeExtension.com

CAUTION: SAMe should not be taken by those diagnosed with bipolar disorder.
Every winter, human immune systems are overworked as they provide essential defense against seasonal challenges—especially the immune systems of the elderly and very young.¹⁻⁴

A crucial part of this protection comes from the immune system’s production of new antibodies when the new winter season’s pathogens are first introduced, which boosts the body’s preparedness for upcoming challenges during peak winter outbreaks.⁵

In a remarkable discovery, the amino acids in Winter Wellness™ have been shown to work together to prime the immune system to optimize immune responsiveness.⁶⁻⁸

Taken daily, they support the host immune system’s primary defenders by enhancing the function of key immune cells to generate antibodies and naturally prime readiness—especially when taken at least two weeks prior to the first pre-season exposure to the winter’s new antigen challenges.⁴,⁷

### Optimized Immune Responsiveness to New Winter Challenges

L-theanine is a distinctive amino acid typically found almost exclusively in tea leaves.⁸ L-cystine is an amino acid synthesized by the body from the cysteine molecules found in many plant and animal food sources.⁹ Scientists have found that L-theanine and L-cystine have potent, complementary effects on immune responsiveness.⁴,⁷

Now combined in the next-generation, immune-supporting product Winter Wellness™, L-theanine and L-cystine promote the natural enhancement in responsiveness that follows pre-season antigen-exposure by:

- Helping to enhance gamma delta T cells, ensuring an optimum state of readiness to respond through secretion of interleukin-2—a powerful immune regulator.⁶
- Supporting the release of immune system proteins that coordinate interactions between T cells and antibodies—further promoting immune responsiveness.¹⁰
- Contributing to the synthesis of glutathione—a potent endogenous antioxidant—that has a marked effect on immune function.⁴,¹¹

Scientific data supports that when these potent amino acids are used together, they support an enhanced post-exposure immune response.⁴,⁶⁻⁸

### Clinically Validated Antibody Support

A double-blind, placebo-controlled clinical trial on humans found that the two amino acids in Winter Wellness™ significantly promoted antigen responsiveness.⁴

A group of nursing home residents over age 65 were co-administered 280 milligrams of L-theanine and 700 milligrams of L-cystine once daily for 14 days. After controlled exposure to several new winter antigens on the 15th day, the scientists found that for certain groups, supplementation resulted in an increased rate of seroconversion—the point at which the immune system first develops antibody protection against a microorganism as a result of new antigen exposure.⁴

Winter Wellness™ powerfully primes the immune system against seasonal winter challenges.

The suggested daily dosage of two capsules of Life Extension Winter Wellness™, or as recommended by a healthcare practitioner, provides:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Dosage</th>
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</thead>
<tbody>
<tr>
<td>L-Cystine</td>
<td>700 mg</td>
</tr>
<tr>
<td>L-Theanine</td>
<td>280 mg</td>
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</tbody>
</table>

### Low-Cost Ingredients

A bottle of 60 capsules of Life Extension Winter Wellness™ retails for $15. If a member buys four bottles, the price is reduced to $9.75 per bottle.
A high percentage of men will endure some form of prostate-induced discomfort over the course of their lifetimes. A placebo-controlled, double-blind trial presented September 2013 reported that a specific blend of pomegranate, green tea, turmeric, and broccoli—formulated together in a capsule called Pomi-T—powerfully maintained healthy levels of prostate specific antigen (PSA). Life Extension now offers this same capsule for men who are serious about supporting and protecting their prostate as they age—by targeting PSA. The four foods in Pomi-T have healthful benefits for your entire body. But their constituent molecules, naturally present in food, have now been shown to concentrate within prostate tissue and provide a rich array of complementary, prostate-supporting, PSA-modulating mechanisms.

**POMEGRANATE**
- Specifically concentrates in prostate tissue
- Supports healthy apoptosis, your body’s system of removing senescent cells when needed
- Promotes healthy levels of inflammatory response, inhibits androgen receptor expression, and inhibits abnormal cell migration.

**GREEN TEA**
- EGCG, a green tea catechin, specifically concentrates in prostate tissue where it regulates PSA (prostate specific antigen) production to maintain healthy PSA levels
- Helps modulate genetic expression and activity of androgen receptors
- Supports body’s natural defenses against oxidation.

**TURMERIC**
- Promotes a healthy level of inflammatory response, chiefly due to its main component, curcumin
- Helps modulate cell signaling mechanisms, inhibiting abnormal cell adhesion and migration
- Promotes healthy cell proliferation and apoptosis.

**BROCCOLI**
- Helps regulate enzymes (phase II detoxifying enzymes) in gut and liver tissue that help render harmful dietary molecules harmless
- Helps promote healthy PSA levels
- Supports regulation of cell growth and transcription factors and normal production of apoptosis-inducing proteins.

The novel and scientifically validated blend of food in Pomi-T represents the next generation of targeted support for the aging prostate!

**To order Pomi-T®, call 1-800-544-4440 or visit www.LifeExtension.com**

**The suggested daily dosage of two vegetarian capsules of Pomi-T® provides:**
- Pomi-T® Super Foods Proprietary Blend 960 mg
  - Broccoli (florets and stalks) powder
  - Turmeric (root) powder
  - Pomegranate (whole fruit) powder
  - Green Tea (leaf) extract 5:1

A bottle of 60 vegetarian capsules of Pomi-T® retails for $33.33. Members of the Life Extension Foundation pay only $25 per bottle.

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**References**
Google has announced that it is about to devote a chunk of its vast financial, technological, and creative resources to solving a daunting problem—mortality.¹

With sufficient funding, it has been estimated that the benefits of discovering how to slow down the basic aging process could be realized within a few years.²

But tragically, while both government and private funds are generously allocated to finding cures for age-related diseases,³ funding has been lacking for research into how we may be able to cure aging itself—by intervening directly in the biological aging process.

Although the world’s 1,426 billionaires⁴ could easily fund their own rescue from the horrific consequences of aging, very few have demonstrated the clear vision and self-interest to do so.

This article looks at how Google’s bold venture—marrying long-range thinking, guts, technology, big data, and genomics—may act as a catalyst that ultimately unlocks some secrets to slowing or reversing aging. At the least, it may help indirectly by boosting, among the extremely wealthy, the popularity of private funding of longevity research. >
Google Shines New Spotlight On Anti-Aging Research

Google—the highly successful search, email, and tech giant—plans to launch Calico, a distinctly separate, and somewhat mysterious, biotech company. What will Calico do, exactly? At this point, Google is being highly secretive about their plans for Calico. All Google would reveal is that Calico will focus “in particular on the challenge of aging and associated diseases.”

Google CEO Larry Page explained: “With some longer term, moonshot thinking around healthcare and biotechnology, I believe we can improve millions of lives.” Considering Google’s deep pockets and innovation-based track record—and the fact that aging afflicts everyone—that may be an understatement.

Don’t expect other companies to follow suit just yet. Smaller firms don’t have the money. And larger firms generally don’t have the sufficiently long-range view of profitability to pursue what Page calls “moon shots”—outside-the-box research not focused on immediately obvious product potential. But Calico could produce startlingly counterintuitive breakthroughs as a result of Google’s strengths in the following areas:

- Non-commercial dedication—rather than a focus on commercial marketing of mediocre drugs as pharmaceutical companies now do.
- Vast consumer access and core data-handling skills—with unprecedented data gathering, pattern-matching, and causal-relationship detection.
- Ability to attract the brightest minds—potentially preferring to work on life-and-death problems instead of cutesy apps and games.

Most important? Calico is extremely unlikely to suffer from inadequate funding. Its parent, Google, has a cash stockpile of over $54 billion. Will Calico help defeat aging? That’s anybody’s guess. But there’s a more pressing question.

The government is in a position to massively fund anti-aging research. So are some well-capitalized corporations. And the world’s billionaires have a total net worth of $5.4 trillion. Yet extremely little funding flows into longevity research from any of these sources.

So the real question is: Why can’t they see that making the kind of pro-longevity investment that Google is making would be in their own personal self-interest?

Why Isn’t Much More Funding Available?

Much of the answer seems to be self-defeating assumptions. The government doesn’t consider aging to be a disease. And corporate executives and most billionaires consider slowing the aging process to be unfeasible. It’s important to educate the public to the fact that aging is like cancer—a deadly disease for which a cure can eventually be found.

Many institutional researchers view anti-aging as after-the-fact treatments for the disabling and cosmetic effects of aging. The goal of regenerative medicine, however, is developing a process that “replaces or regenerates human cells, tissues, or organs to restore or establish normal function.” In other words, the goal is to prevent or cure all of the effects of degeneration due to aging.

Insufficiently persistent and vocal advocacy for any goal limits its funding, so corporations and venture capitalists focus only on immediate development of products. Billionaires focus on other causes. And government money—as you’ll now learn—is limited and misallocated.

Did You Really Think The Government Was Funding Life Extension Research?

In 2010, out of its total yearly budget of $31 billion, the US National Institutes of Health (NIH) sets aside a mere 3.7% for the National Institute on Aging (NIA), which is charged with studying aging. In turn, the NIA spends 71% of that amount (or $818.6 million) specifically on research project grants.
But these research projects include single-disease focused projects such as Alzheimer’s disease and are not the same as life span-extension research.

The NIA’s aging research goal is to “discover new and effective ways to make added years as healthy and productive as possible.”10

Translation? The NIA is interested in potentially making your later years healthier—but is not interested in adding more of those years. Shouldn’t the goal be slowing down aging itself, rather than targeting age-related diseases one by one? Tragically, government bureaucrats apparently believe pathological aging and death cannot—or should not—be prevented.3

Worse, the NIA funds only “extramural research at universities, research centers, and medical centers…as well as a vibrant intramural research program at NIA laboratories.”10 Bottom line? Radical scientists pursuing paradigm-shifting, “moon shot” breakthroughs—but who are not working in straitjacketed institutional settings with conservative traditions—need not apply.

Most frustrating is that the research cost of researching ways to slow the basic process of biological aging has been estimated at a mere $3 billion in annual investment—which would be required for just a few years in order to derive benefit!1 In terms of government spending on health research, this is very little money.

This amount is 40% less than the funds spent exclusively on cancer research every year by the National Cancer Institute alone.11 Yet aging is a major risk factor for cancer, and retarding the aging process could dramatically slash cancer rates!

Another way of looking at the $3 billion needed to conquer aging is this: It’s equal to around just 1% of the recent Medicare budget.2 Yet delaying aging would more than pay for itself in reduced healthcare costs!2

So if you think your many tax dollars are going towards true anti-aging research, think again!

Hundreds Of Billions Donated By Wealthy—But Not For Anti-Aging Research

Without government funding, finding a $3 billion annual investment to defeat aging seems daunting, even if required only for a few years.2 The best remaining hope is to educate wealthy individuals about the possibilities—and mobilize them.

Meaningful life extension success will require extremely wealthy individuals who are interested in their own health and longevity and who see the charitable benefit for all humans. Until now, only a very few wealthy individuals have stepped forward...far too few.

Google’s entry into this arena may act as a desperately needed catalyst to finally encourage the government, other corporations, and more of the extremely wealthy to fund research into retarding biological aging—unlocking the secrets to reversing aging.
It seems odd that so few billionaires care enough about their own process of aging to death to do anything about it. More likely, they simply don’t believe anything can be done—being potentially ignorant of the state of life extension science and the promises of rejuvenation biotechnology.

It’s certainly not that the extremely wealthy aren’t charitable. Some donate half of their wealth to a variety of favorite causes unrelated to extending life span. Bill Gates and Warren Buffet have asked about 40 of the world’s richest individuals to sign the Giving Pledge, a commitment to donate at least 50% of their fortunes to charities. Signatories include filmmaker George Lucas, hotel mogul Barron Hilton, and oil tycoon T. Boone Pickens.

Most of these vast sums go to social, environmental, or narrowly defined disease causes. Although these philanthropies benefit some, anti-aging research would benefit everyone on the planet—including these sponsors—making it the most far-reaching of all charities.

A cancer cure would benefit only those stricken with cancer. And a complete cure for all cancers would increase overall human life expectancy by just three years!

A study published in October 2013 found that even modest, early gains in slowing aging would decrease diseases of aging so much that a 51-year-old could expect to gain over twice the number of healthy years as could be gained from even optimistic advances against individual fatal diseases, such as cancer or heart disease!

Study Finds Slowing Aging Will Produce More Healthy Years Than Disease Research!

A study published in the October 2013 issue of Health Affairs by top scientists at USC, Harvard, Columbia, the University of Illinois at Chicago, and other institutions found that investing in delaying aging would have a much greater impact on life expectancy than investing in diseases of aging directly.

On the heels of Google’s announcement that the company’s new enterprise, Calico, will research aging, this new study shows that even modestly slowing the aging process would mean an additional 5% of adults 65 and over would be healthy, rather than disabled, every year from 2030 to 2060. By contrast, research on fatal diseases would generate almost no increase in the overall number of healthy older adults.

In other words, an investment in delayed aging would increase the number of healthy adults 65 and over by 11.3 million in 2060. But investing in fatal diseases of aging would not.

In the last half-century, life span increases have been driven by finding ways to reduce mortality from fatal diseases. But now, disabled life expectancy is rising faster than total life expectancy, decreasing the number of years one can expect to live in good health.

The study shows that if we can age more slowly, we can delay the onset and progression of many fatal and disabling diseases simultaneously.

The scientists found significantly lower and declining returns for continuing the current “disease model” of research that seeks to treat fatal diseases independently—rather than tackling the shared, underlying cause of fatal and disabled diseases: aging itself.

About the same number of older adults would be alive but disabled in 2060 whether we do nothing or continue to combat cancer and heart disease individually.

The team concluded that over the next 15-20 years, major breakthroughs in cancer or heart disease would result in a 51-year-old expecting to live only about one more year. But a slight delaying of the aging process would provide 2.2 additional years, most of which would be spent in good health.

The increase in healthy years of life from an investment in slowing aging would generate an economic benefit of about $7.1 trillion over the next 50 years—without factoring in the effects of improved cognitive benefits for older adults from delayed aging. There would also be less per-person spending on medical costs. These economic benefits are too great to ignore, suggested the researchers.

“Shifting the focus of medical investment to delayed aging instead of targeting diseases individually would lead to significant gains in physical health and social engagement,” said the lead study author, Dana Goldman of USC.

“We need to begin the research now,” said S. Jay Olshansky of the University of Illinois-Chicago, another member of the research team. “We don’t know which mechanisms are going to work to actually delay aging, and there are probably a variety of ways this could be accomplished, but we need to decide now that this is worth pursuing.”

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This new model found that investing in delayed aging would increase the number of healthy adults over age 65 by over 11 million by 2060—while investing in cures for aging diseases would have an effect barely better than doing nothing at all!14

Bottom line? Donations towards specific diseases are not significantly relevant to our future life span, or even health span.

Only a few rare billionaires have funded research from which all humans stand to benefit.

A Few Billionaires ‘Get It’ And Step Forward

Larry Ellison, cofounder and CEO of software giant Oracle, said that he intends to donate at least 95% of his considerable wealth to charitable causes and has “already given hundreds of millions of dollars to medical research and education.”15

After its inception in 1998, the Ellison Medical Foundation became the largest private funder of research on aging and the second overall funder—second only to the NIA. It provided over $300 million to fund biomedical research on aging, life span, and age-related diseases and disabilities—including telomeres, longevity genes, DNA and mitochondrial damage, Alzheimer’s disease, neural development, degeneration, cognitive decline, and more.

Unfortunately, that’s all changed now.

In 2010, Ellison signed The Giving Pledge.16 Just three years later, in September 2013—after 15 years of funding basic biomedical research—the Ellison Foundation announced that it has stopped funding these programs.17 No new grant applications will be accepted and the hundreds of millions that would’ve financed anti-aging research will now go to an unspecified “new direction.”17

No reason was given. But it is a safe wager Ellison has failed to see, or believe in, the profound impact his donations could eventually have had on his own rescue from the devastating effects of aging—along with all of mankind.

Fortunately, a few other billionaires still support anti-aging study.

Peter Thiel, cofounder of PayPal, funneled several million dollars into the dynamic SENS Research Foundation.18,19 The pioneer biomedical gerontologist Aubrey de Grey serves as Chief Science Officer for SENS, which stands for Strategies for Engineered Negligible Senescence. This crucial research focuses on a collection of proposed techniques to rejuvenate the human body—with the ambitious, long-range goal of reversing biological aging!

Thiel explained his SENS pledge this way: “I believe that [de Grey’s] revolutionary approach to aging research will accelerate [greatly improved longevity], allowing many people alive today to enjoy radically longer and healthier lives.”18

David H. Murdock, chairman and sole owner of Dole Food Company Inc.—drawing on his $2.4 billion net worth20,21—finances the North Carolina Research Campus (NCRC).

NCRC focuses on the therapeutic powers of fresh plants, fruits, and vegetables in hopes of unlocking information about how these foods promote health and may one day conquer the diseases of aging.21

So unlike SENS, Murdock’s funding of NCRC does not support research specifically on biological aging.

At last, Google’s pending entry into the anti-aging field stands to transform the funding landscape.

Calico—Rare Corporate Funding For Anti-Aging Research

“Now is the right time for a commercial entity to get heavily involved,” explains de Grey, commenting on Google’s recent announcement.22

“One of the key activities of SENS Research Foundation is proof-of-concept research on key components of the anti-aging arsenal that are still too early-stage to constitute an attractive business proposition for all but the most visionary investors… [but] our ultimate goal is to kick-start a real anti-aging industry.”22

Calico’s founding suggests that goal is in sight. Calico is shorthand for California Life Company. But incoming Calico CEO Arthur Levinson, a scientist
with a PhD in biochemistry, likes the image of a calico cat—nine lives. Levinson says that when approached about this venture, “I was deeply intrigued. For example, what underlies aging? Might there be a direct link between certain diseases and the aging process? We agreed that with great people, a strong culture and vision, and a healthy disregard for the impossible, we could make progress tackling these questions.”

Google’s Page says, “...it’s still very early so there’s not much more to share yet,” but his commitment comes through. “Art [Levinson] and I are excited about tackling aging and illness. These issues affect us all... [and] ...exact a terrible physical and emotional toll on individuals and families...this is clearly a longer-term bet...”

Well, first, a “longer-term bet” is exactly what anti-aging research demands. Second, the involvement of Google should generate shorter-term effects on funding that ultimately may shorten that time-frame.

Google constitutes a high-profile player, attracting media attention at every turn. If Google does it, you know it’s big. The bigger the player, the more important its support becomes, because boosting funding for anti-aging research requires supercharging its image—which is sadly disconnected from merit and utility. So in the unlikely event that Calico turns out to be a massive failure, it will have raised awareness of the urgency of this research and attracted brilliant scientists to the field.

Inspired by the higher profile that Google brings to anti-aging, more billionaires might realize that the most charitable thing they can do—for others and themselves—is fund anti-aging research. If you can do that, it would be foolish not to. What do you have to lose?

To help, we need to use Google’s example to reach out to wealthy individuals and encourage them to support aggressive research to find a cure for aging—if not for our own benefit, for the gift we can bestow on our children.

Aubrey de Grey has long recognized that the urgent need for ramped-up financing for the war on aging is greatly dependent on winning the battle for the hearts and minds of “high-profile academics who occupy the pinnacle of opinion-formation.” We need to enlighten them about this quest’s feasibility.

He believes now that, “With Google’s decision to direct its astronomical resources to a concerted assault on aging, that battle may have been transcended: once financial limitations are removed, curmudgeons no longer matter.”

“I won’t go so far as to say that my crusading job is done, but for sure it just got a whole lot easier.”

**Summary**

Google plans to launch the firm Calico, through which it will invest some of its vast financial and creative resources to help solve the daunting problem of aging.

With an investment in biological aging research of just $3 billion annually, it is estimated that discovering a way to retard the aging process might be achieved in just a few years!

Tragically, while the government spends over $3 billion annually on “health concerns” of the elderly, it operates on the assumption that aging is not a disease. Corporations lack the longer-term view needed. And extremely few of the world’s 1,426 billionaires, with a total net worth of $5.4 trillion, have included anti-aging research in their charities.

Google’s bold venture may be the urgently needed catalyst that finally encourages the government, other companies, and more of the extremely wealthy to fund research into slowing biological aging—unlocking the secrets to reversing aging.

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**

One of the key reasons we’ve been unable to slow or reverse the process of aging to death is that too few people realize that the science clearly shows that this goal is achievable. It’s important to educate bureaucrats, corporate executives, researchers, and the public to the fact that aging is a disease that can be treated. It’s in everyone’s self-interest—and it is the best gift anyone can give to the future—to make anti-aging research a personal priority today.

Educating and motivating others is the first step in overcoming the epidemic of apathy surrounding funding for promising age-reversal research projects.

Although it does not receive government funding, the non-profit Life Extension Foundation® is the world’s largest organization dedicated to funding pioneering scientific research aimed at achieving an indefinitely extended healthy human life span.

Established 34 years ago, the Foundation has provided more than $130 million to biomedical research projects across the country. Unlike the National Institute on Aging, the foundation’s policy is to award grants to scientists who are personally committed to extending human life span and who are conducting scientific research that goes beyond the scope of academic institutions and biomedical companies.

In other words, we are careful to commit our research dollars to projects that are difficult or impossible to fund with conservative government and institutional grants. This enables our grant dollars to accomplish a lot more than most government-sponsored research, which is conservative, often wasteful, and in some cases, entirely useless.

Drug companies spend billions of dollars developing what they know they can patent, and often convince the federal government to subsidize research on their patented products. On the other hand, the Foundation is willing to fund anti-aging research involving un-patentable agents because we want to find out what works, whether it can be patented or not. Moreover, even when the research we fund leads to patents, these are usually for fundamental breakthrough discoveries with vast potential for extending healthy life span, rather than patents for “me-too” drugs that try to carve out a small niche in a large field already overpopulated with similar drugs.

Unlike commercial supplement companies that spend their profits to grow their businesses, and to line the pockets of their owners, Life Extension Foundation® uses the proceeds it receives from product sales made by the Life Extension Buyers Club to support innovative scientific research to extend human life span. Since little money is spent on advertising, the foundation depends on its members for referrals of people they know who could benefit from the integrated disease prevention and treatment protocols we have developed over the past two decades.

You can support life span-extension research by becoming a member of the Life Extension Foundation® and by telling people you know about the urgency of gaining control over aging, which would extend the number of years of healthy human life.14
Ultimate Prostate Protection
Now With Thymoquinone

At Life Extension®, we continually update our formulas to reflect the latest research findings.

Ultra Natural Prostate formula, now upgraded to include thymoquinone, provides the latest scientifically validated, standardized botanical extracts shown to promote healthy prostate function. No other prostate protection formula provides such a broad array of nutrients to support the multiple factors involved in supporting the aging prostate gland. Here are the ingredients in the new Ultra Natural Prostate formula:

- **Thymoquinone** targets prostate cells to promote healthy apoptosis (orderly removal of senescent cells). [1,9]
- **Standardized lignans** convert to enterolactone in the intestine, which is then absorbed into the bloodstream to provide support for prostate cells against excess estrogen levels. [10-12]
- **AprèsFlex®,** supports normal inhibition of 5-lipoxygenase or 5-LOX, an enzyme that is associated with undesirable cell division changes. [13,14]
- **Stinging and Dwarf nettle root extracts** help support prostate cells against excess estrogen levels. [15,16]
- **Saw Palmetto CO2 extract** helps inhibit dihydrotestosterone (DHT) activity in the prostate, helps support normal urinary flow, and helps regulate inflammatory reactions in the prostate. [17-26]
- **Pygeum** (Pygeum africanum) extract helps suppress prostaglandin production in the prostate and supports healthy urination patterns. [27,22]
- **Pumpkin seed oil,** from select pumpkins, enhances the composition of free fatty acids and augments saw palmetto’s benefits. [29,25]
- **Beta-sitosterol** enhances the protective effects of other botanical extracts and helps improve quality of life. [26-28]
- **Graminex® Flower Pollen Extract** helps support healthy glandin production in the prostate and supports healthy inflammatory reactions. [30-31]
- **Beta-Sitosterol** provides support for prostate cells against excess estrogen levels. [19,21]
- **Saw Palmetto CO2 extract** helps inhibit dihydrotestosterone (DHT) activity in the prostate, helps support normal urinary flow, and helps regulate inflammatory reactions in the prostate. [17-26]
- **Pygeum** (Pygeum africanum) extract helps suppress prostaglandin production in the prostate and supports healthy urination patterns. [27,22]
- **Pumpkin seed oil,** from select pumpkins, enhances the composition of free fatty acids and augments saw palmetto’s benefits. [29,25]
- **Beta-sitosterol** enhances the protective effects of other botanical extracts and helps improve quality of life. [26-28]
- **Graminex® Flower Pollen Extract**, has been shown to help relax the smooth muscles of the urethra and help regulate inflammatory reactions. [30-31]
- **Boron** has been shown to slow elevation of prostate-specific antigen (PSA). [32-34]
- **Lycopene**, supports efficient cellular communication, helps maintain healthy DNA, regulates hormonal metabolism, and promotes healthy prostate size and structure. [35-41]

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

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
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<tbody>
<tr>
<td>Saw Palmetto CO2 extract</td>
<td>320 mg</td>
</tr>
<tr>
<td>Graminex® Flower Pollen Extract</td>
<td>252 mg</td>
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<tr>
<td>Stinging and Dwarf nettle extracts</td>
<td>240 mg</td>
</tr>
<tr>
<td>Beta-Sitosterol (from pine)</td>
<td>180 mg</td>
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<tr>
<td>ThymoQ™ Phospholipid Complex</td>
<td>170 mg</td>
</tr>
<tr>
<td>Pygeum extract (bark)</td>
<td>100 mg</td>
</tr>
<tr>
<td>Pumpkin seed oil (providing 170 mg total fatty acids)</td>
<td>200 mg</td>
</tr>
<tr>
<td>AprèsFlex® Indian frankincense (Boswellia serrata extract (gum resin) (providing 14 mg AKB8A1)</td>
<td>70 mg</td>
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<tr>
<td>Proprietary Enterolactone Precursors Blend</td>
<td>20 mg</td>
</tr>
<tr>
<td>[HMRlignan™ Norway spruce (Picea abies) (knot wood) and Flax (seed) lignin extracts]</td>
<td></td>
</tr>
<tr>
<td>Lycopene (from natural tomato extract (fruit))</td>
<td>10 mg</td>
</tr>
<tr>
<td>Boron (as Albion® bororganic glycine)</td>
<td>3 mg</td>
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</table>

A bottle of 60 softgels of Ultra Natural Prostate retails for $38. If a member buys four bottles, the price is reduced to $26.25 per bottle. If a member buys 12 bottles, the price is $24.

Contains soybeans.

AprèsFlex® is a registered trademark of Laila Nutraceuticals exclusively licensed to PL Thomas - Laila Nutra LLC, U.S. Patent No. 8,551,496 and other patents pending. HMRlignan™ is a trademark and used with sublicense from Unana Ltd. (5) Patents 6,795,334 and 6,685,768. Albion® is a registered trademark of Albion Laboratories, Inc.

To order Ultra Natural Prostate, call 1-800-544-4400 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.
Few nutritional sources have gained as much scientific validation as pomegranate. The vast majority of research has focused on extracts from the fruit. Only recently have scientists identified the synergistic action of compounds specific to other parts of the pomegranate—most notably its seeds and flowers.

The Next-Generation Pomegranate Formula

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

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

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

This superior formula supplies the complete nutritional profile of the pomegranate plant. Just one softgel of Full-Spectrum Pomegranate™ provides polyphenols equivalent to 12.3 ounces of pomegranate juice concentrate (or 30 pomegranates) plus a proprietary blend of seed oil and flower extract.

POMELLA® extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Science, Inc.
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®.

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.

To order Skin Restoring Phytoceramides with Lipowheat® call 1-800-544-4440 or visit www.LifeExtension.com

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.
WE ARE RECRUITING FOR STUDY PARTICIPANTS!

ALZHEIMER’S DISEASE STUDY

The Life Extension Foundation® is sponsoring a study to measure the effects of weekly injections of a study medication plus nutritional supplements that may help suppress an inflammatory factor implicated in the neuronal degeneration of Alzheimer’s disease.

If you or someone you know:
• Lives in the Fort Lauderdale, Miami, or Palm Beach area of Florida.
• Has mild to moderate Alzheimer’s disease.
• Please contact us for further information and to see if you qualify.

Qualified participants receive:
• Blood tests, evaluations, blood pressure checks, study medication, and supplements at no cost to you.
• Compensation up to $500 upon completion of the study.

OVERWEIGHT AND MILDLY ELEVATED BLOOD SUGAR STUDY

Life Extension Clinical Research, Inc. is conducting a trial to measure the effects of nutritional supplementation on blood sugar and blood vessel health.

If you or someone you know:
• Lives in the Fort Lauderdale, Miami, or Palm Beach area of Florida.
• Is overweight, 25-65 years of age, and has mildly elevated blood sugar with no previous diagnosis of diabetes.
• Please contact us for further information and to see if you qualify.

Qualified participants receive:
• Blood tests and blood vessel health evaluations at no cost to you during the trial
• Compensation of $200, a Life Extension $100 gift card and up to $50 for travel expenses upon successful completion of the trial.

REGISTER OR CONTACT US FOR MORE INFORMATION
Phone: (866) 517-4536 • Website: www.lef.org/ClinicalResearch
E-mail: LEClinicalResearch@LifeExtension.com
We often think of wrinkles as an inevitable part of aging. But it doesn’t have to be that way.

Fine lines and wrinkles occur when certain processes in the body break down, leading to DNA damage and the destruction of skin firmness and elasticity.

Scientists have discovered three powerful peptides that target the underlying causes of wrinkle formation—and help restore your body’s ability to fight wrinkles from the inside out.

This leads to visible results, with human studies demonstrating a 20% decrease in fine lines and a 28% decrease in deep wrinkles within minutes—results that continued to improve over the next few months.¹

In this article, you will learn how a trio of peptides works to diminish the appearance of fine lines and unsightly wrinkles to reveal smoother, firmer, more youthful-looking facial skin. >
**Enhanced DNA Repair Capacity**

DNA damage to your skin is inevitable due to both environmental factors and internal aging. The difference between younger and older skin is that younger skin has support systems in place that help repair the damage and prevent premature skin aging.

Younger, healthy skin responds to damaged DNA by stimulating an important element called transcrip-tional factor forklhead-box protein O3a (FOXO3a). This turns on genes that support cell repair, renewal, and longevity. This process is critical for preserving DNA integrity and maintaining accurate replication of genetic material.

As you age, the decline in FOXO3a activity reduces the capacity of cells to repair themselves and contributes to the accumulation of DNA damage. The result is a domino effect that decreases gene expression favoring skin functionality and quality, while simultaneously increasing gene expression that damages the skin's key components. This gradual process degrades both the skin's collagen and elastin, which ultimately results in the creation of unwanted fine lines and wrinkles.

A newly developed compound called acetyl hexapeptide-51 has been shown to mimic the actions associated with FOXO3a activity—helping to protect the skin from the consequences of DNA damage. In the laboratory, human skin cells treated with this ingredient switched on the same beneficial genes as FOXO3a and produced a 2.7 fold increase in DNA repair pathway activity compared to a control. Positive results were seen in humans as well. When researchers topically applied acetyl hexapeptide-51 to the skin of 21 human volunteers after exposure to ultraviolet light, they observed 13.7% less DNA damage than the controls. And this effect was evident in just 6 hours!

Together, these studies suggest that acetyl hexapeptide-51 could combat wrinkle formation by enhancing DNA repair capacity and reducing the accumulation of DNA damage.

**Improved Skin Cohesion And Firmness**

Collagen and elastin are vital components of the dermal extracellular matrix that maintains skin cohesion, firmness, and elasticity. A balance exists between the breakdown and replenishment of skin structural proteins such as collagen and elastin. However, the natural decrease in the production of collagen and elastin that occurs during aging—along with chronic exposure to external factors like sunlight—creates an imbalance that promotes premature skin aging.
One of the main reasons elastin production decreases as we age is due to diminishing levels of the enzymes lysyl oxidase-like 1 (LOXL1) and glycoprotein fibulin-5 (FBLN5).\(^{10,11}\) This decrease hinders the formation of elastin, which will gradually lead to disorganization in the ultrastructure of the extracellular matrix that maintains skin's firmness and elasticity.\(^{12}\)

The peptide acetyl tetrapeptide-2 has been discovered to increase the prevalence of LOXL1 by 1.7 fold and FBLN5 by 2.3 fold when exposed to human skin fibroblasts.\(^{13}\) Additional in-vitro tests showed a significant improvement in elastin synthesis by 21.7%.\(^{13}\)

This suggests that when we combine the topical use of acetyl tetrapeptide-2—along with the effort to minimize external and environmental factors—we can help restore the normal balance between the formation and breakdown of elastin.

In a human study, scientists recruited 19 volunteers aged 50-60 with saggy facial skin to determine how effective acetyl tetrapeptide-2 would be at improving the firmness of the skin.\(^{13}\) Participants applied the ingredient to their face twice daily for 55 days. The results revealed a 9.5% reduction in indentation and a 23.2% decrease in area parameters.\(^{13}\) In other words, participants finished the study with visibly firmer and tighter facial skin than before treatment.

Scientists also discovered acetyl tetrapeptide-2’s additional benefits: It increases the formation of type I collagen by 47%, and it enhances the production of cellular adhesion molecules that coordinate the binding of cells to the dermal extracellular matrix—all of which reinforces skin cohesion and firmness.\(^{13}\)

### Potent Anti-Wrinkle Activity In Humans

Since collagen is the most abundant structural protein in the dermal extracellular matrix, the loss of collagen leads to changes in the matrix that accelerate aging and formation of wrinkles.\(^{7}\) One way to help prevent wrinkles is by preserving and renewing collagen.

The ingredient palmitoyl tripeptide-5 has been shown to stimulate collagen renewal through activation of latent tissue growth factor-\(\beta\) (TGF-\(\beta\)).\(^{1}\)

In one study 37 women between 33 and 45 years old applied a cream containing palmitoyl tripeptide-5 twice daily to their crow’s feet and to the wrinkles around their mouth for three months.\(^{1}\) Scientists measured both fine and deep wrinkles in both of these regions at baseline, within 15 minutes, month one, and month three after application.
Researchers observed that within minutes, treatment of wrinkles around the eyes with palmitoyl tripeptide-5 decreased fine lines by an average of 20% and deep wrinkles by an average of 28%.1 After three months, these parameters further improved to 38% and 50%, thereby demonstrating the immediate and long-lasting anti-wrinkle effects of palmitoyl tripeptide-5.1

Immediate results were also noted for wrinkles around the mouth, and after three months participants experienced a 31% reduction in deep wrinkles and a 53% decrease in fine wrinkles.1

Scientists concluded that a topical treatment containing palmitoyl tripeptide-5 “produced significant improvements in facial wrinkles and provides a well-tolerated, no-downtime alternative to invasive procedures.”1

Summary
Fine lines and wrinkles do not have to be an inevitable part of aging. A trio of unique peptides, including acetyl hexapeptide-51, acetyl-tetrapeptide-2, and palmitoyl tripeptide-5, serves to naturally reduce the appearance of fine lines and wrinkles by enhancing DNA repair capacity and regenerating vital dermal extracellular matrix components.1,3,13 This restores skin cohesion, elasticity, and firmness—all of which work to diminish the appearance of wrinkles and preserve the skin’s youthful appearance.●

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

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

**Bone Restore** now contains **300 mg** of **magnesium**.

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

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

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

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**Just four capsules of Bone Restore provide:**

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<tr>
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<th>Amount</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>(as DimaCal® dicalcium malate, TRAACS® calcium bisglycinate chelate, calcium fructoborate)</td>
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</tr>
<tr>
<td>Vitamin D3</td>
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</tr>
<tr>
<td>Vitamin K2 (as menaquinone-7)</td>
<td>200 mcg</td>
</tr>
<tr>
<td>Magnesium (as magnesium oxide)</td>
<td>300 mg</td>
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<tr>
<td>Boron (calcium fructoborate as patented FruiteX B® OsteoBoron®)</td>
<td>3 mg</td>
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<tr>
<td>Zinc (as zinc amino acid chelate)</td>
<td>2 mg</td>
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<tr>
<td>Manganese (as amino acid chelate)</td>
<td>1 mg</td>
</tr>
<tr>
<td>Silicon (from horsetail extract)</td>
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</tr>
</tbody>
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**Fruitex B®** and **OsteoBoron®** are registered trademarks of VDF Futureceuticals, Inc. U.S. patent #5,962,049. DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. Patent 6,706,904 and patents pending.

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**To order Bone Restore, 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.**
Occasional constipation is one of the most frequent gastrointestinal complaints in the United States, particularly among women and the elderly. To address this issue, Life Extension® offers a dose-adjustable nutritional solution—Effervescent Vitamin C-Magnesium Crystals—to provide immediate relief from occasional constipation.

**THE PROBLEM**

A series of rhythmic muscle contractions move food through the digestive tract. But highly processed foods and a lack of quality nutrition can occasionally result in normal but temporarily ineffective movement of waste through the colon.

**NUTRITIONAL SUPPORT**

**Vitamin C** is an antioxidant that scavenges free radicals in the body and protects tissues from oxidative stress. Vitamin C is a vital cofactor to the formation of collagen, the connective tissue that supports arterial walls, skin, bones, and teeth. Magnesium is a cofactor in hundreds of enzymatic processes within cells, helps maintain healthy blood pressure levels already within normal range, improves the metabolic profile, beneficially impacts insulin resistance and inflammation. Research shows many Americans do not obtain adequate magnesium in their diets.

**Effervescent Vitamin C-Magnesium Crystals has been developed to help provide relief from occasional constipation.**

**Effervescent Vitamin C-Magnesium Crystals** can be used in varying doses depending on individual need. The suggested starting dose should be one (1) level teaspoon of Effervescent Vitamin C-Magnesium Crystals, taken on an empty stomach, mixed in 8 ounces of water. Follow immediately with drinking 8 additional ounces of water.

Each level teaspoon (approx 6 grams) provides:
- 4,500 milligrams of vitamin C (as ascorbic acid)
- 4 milligrams of vitamin B6 (as pyridoxine hydrochloride) and
- 250 milligrams of magnesium (as magnesium carbonate)

Some people will need to take one teaspoon of Effervescent Vitamin C-Magnesium Crystals on an empty stomach up to three times a week. Always follow by drinking an additional 8 ounces of water.

A bottle of 180 grams of Life Extension® Effervescent Vitamin C-Magnesium Crystals retails for $20. If a member buys four bottles, the price is reduced to only $13.50 per bottle.

To order Life Extension® Effervescent Vitamin C-Magnesium Crystals, call 1-800-544-4440 or visit www.LifeExtension.com

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

References
1. Available at: http://digestive.niddk.nih.gov/diseases/pubs/constipation/.
13. Available at: http://www.ewg.org/skindeep/ingredient/704983/POLYETHYLENE_GLYCOL/.
Scientists have developed a new weapon in the fight against aging skin. A combination of three powerful peptides works at the cellular level to breathe new life into aging and damaged skin.

By mimicking the action of the body’s own natural regenerative activities, the ingredients in advanced triple peptide serum have been shown in clinical studies to defend against the visible signs of skin aging.

Peptides are the natural choice for restoring damaged, aging skin. These nontoxic, anti-aging substances:
- Trigger increased collagen production
- Enhance antioxidant defense
- Improve cellular repair

Research has now pinpointed three peptides with particularly potent effects. The result is a softer, smoother, more radiant youthful-looking skin.

**ACETYL HEXAPEPTIDE-51**
This novel peptide combats wrinkle formation by supporting the skin’s natural DNA repair capacity.

In a clinical study, topical application of acetyl hexapeptide-51 provided 13.7% more support for DNA integrity than controls, and this effect was observed within just 6 hours.

**ACETYL TETRAPEPTIDE-2**
The effective peptide known as acetyl tetrapeptide-2 has been shown to rejuvenate facial skin, improve skin tone and texture—and help defend against the visible signs of skin aging.

In a clinical study, volunteers applied acetyl tetrapeptide-2 to their faces for 55 days. In this time, it was demonstrated that the visible appearance of sagging facial skin was decreased by 9.5% and the apparent area of visible sagging was decreased by 23.2%.

**PALMITOYL TRIPEPTIDE-5**
Researchers demonstrated this peptide decreased the appearance of fine wrinkles by 20% and coarse wrinkles by 28%—and these results were observed within 15 minutes!

Daily application of this unique formulation of three nourishing anti-aging peptides has been clearly established in human studies to substantially reverse the appearance of aging and damaged skin.

A one-ounce bottle of Cosmesis Advanced Peptide Serum retails for $65. If a member buys two bottles, the price is reduced to $42.75 per bottle.

To order Cosmesis Advanced Peptide Serum, call 1-800-544-4440 or visit www.LifeExtension.com
By far the most common questions I am asked have to do with what nutritional supplements to take and, equally important, what not to take. After all, there are a staggering amount of choices out there. Anyone who has walked into the supplement section of a natural foods store or conducted a quick online search on a vitamin supersite can attest to that. Making things even more complicated, there are new products coming to market almost daily. It’s easy to get lost with all the options to consider.

So how do you know if you’re taking the right supplements? Should you add the latest Amazonian herb you just read about to your supplement regimen? What if you want to cut back a little to save money—which supplements should you keep and which ones should you pitch?

These are the exact types of questions your Supplement Pyramid can answer for you.

Excerpted with permission from The Supplement Pyramid by Michael Smith, MD. Published by Basic Health Publications, Inc., 2014.
What Is A Supplement Pyramid?

You’re familiar with the food pyramid, right? It’s an educational graphic tool that helps you design and follow a healthy diet by telling you how many servings you should eat from different food groups. The Supplement Pyramid is like the food pyramid in that it’s an educational graphic tool, but that’s where the similarities end.

Unlike its food counterpart, the Supplement Pyramid is personalized to meet your specific nutritional needs. After all, with the exception of a few foundational nutrients, there is no such thing as a one-size-fits-all supplement regimen. I think you’d agree with me that my needs are not yours and your needs are not mine.
Why a pyramid? First, because the pyramid structure is symbolic of stability. And second, because as you ascend up the levels of the pyramid, they shrink in size, representing their order of importance to your health. That means you’re going to build your Supplement Pyramid from the bottom up, like a real pyramid.

The Three Levels

Your Supplement Pyramid will have three levels. The bottom tier is the Foundation Level. It’s made up of nutrients essential to life. Because of their vital importance to human biology, we all need to take the same foundational supplements. The middle tier is the Personalization Level. This is the level that’s all yours. It’s comprised of nutrients specific to your personal medical history and health needs. The top tier is the Optimization Level. This is where all of the “extra” supplements come in that really take your health to the next or optimal level.

1. The Foundation Level

The Egyptian pyramids have lasted for over 4,000 years because of one thing—a solid foundation. Your Supplement Pyramid needs a sturdy base too. The supplements comprising this level support basic life processes, such as cellular energy production, growth, repair, and regeneration.

No matter who you are or what you’re going through, you need the same foundational supplements as everybody else. Think of them as the essential nutrients for living well as a human. They include five building blocks:

1. An ideally dosed multivitamin/mineral
2. Omega-3 fatty acids
3. Coenzyme Q10
4. Probiotics
5. Curcumin

2. The Personalization Level

The middle part of the Supplement Pyramid is all about you. It’s about finding the right supplements to help you prevent the diseases most likely to affect you personally. If you’re itching to find out which supplements will help you train for a marathon or reverse your cells’ biological clocks to prevent aging, we’ll get to that. Those types of personal health and wellness goals belong in the Optimization Level. This level is really designed to prevent disease.

You’ll complete three basic procedures in order to identify the supplements in your Personalization Level:

1. Personal and family medical inventories
2. Medical quizzes
3. Laboratory testing
Personal And Family Medical Inventories

We all face different health challenges throughout our lives. Some of these you’ll have dealt with directly. You may have a history of heart disease, for example, or perhaps just some of the warning signs, like high blood pressure, elevated triglycerides, or insulin resistance. Other health challenges may not have touched you yet, but have affected members of your family, putting you at greater risk. A father, an aunt, or a grandparent may have had cancer or Alzheimer’s disease, for example.

Creating a personal and family medical inventory will help you identify past, ongoing, and potential problem spots for you to protect against. And that’s the beauty of the Personalization Level. This is not a one-size-fits-all solution. It’s tailored to your own specific medical needs.

Accounting for your personal and family health history is the first step in developing it.

Your detailed medical inventory will be comprised of several questions pertaining to major organ systems, including:

- The cardiovascular system: heart and blood vessels.
- The nervous system: brain and nerves.
- The muscular system: muscles.
- The digestive system: stomach, liver, and intestines.
- The endocrine system: pancreas, glands, and hormones.
- The immune system: thymus, spleen, and lymph nodes.
- The skeletal system: bones and joints.
- The respiratory system: lungs, sinuses, and bronchial passages.
- The urinary system: kidneys and bladder.

I’ll also ask you questions to see how you’re doing in the following areas:

- Diabetes/metabolism
- Eyes/ears/nose/throat
- Mental health/mood

You’ll note the obvious diseases, as well as the strange symptoms that haven’t been diagnosed yet. For example, let’s say your older sister suffers from chronic tremors of her hands, but her doctors don’t know why. And your mom remembers a great aunt that had similar problems. This information would be included in your inventory as a potential nerve disorder and would require appropriate supplementation.

Once you’ve identified past problems that you don’t want to come back, current problems to address, and potential problems in the future, you can take appropriate steps to protect yourself.

Medical Quizzes

As you’ll read later in this article, I created a free website called MySupplementPyramid.com to enable consumers to identify which nutrients are most important to them as individuals. At this site, you’ll be able to enter your personal and family medical inventory, and then take a series of medical quizzes to assess how you’re doing in different areas such as heart health, cognitive function, immune strength, and more. These quizzes aren’t the kind of fluff you’d find in a mainstream health magazine. Each one is based on real clinical risk assessments that doctors use for major organ systems.

The answers you give on each quiz will be used to calculate a risk score for that particular body function. This deeper level of detail will help identify potential problems that weren’t picked up in your personal and family medical inventory. Based on your risk scores in different categories, I’ll make very specific supplement suggestions to complete your Personalization Level.
Laboratory Testing

The final step in developing your Personalization Level is to learn about the array of laboratory tests that can further help you personalize your Supplement Pyramid. I think this is the most exciting part of the Personalization Level because lab testing can tell you all kinds of things about what’s going on inside your body that would be hard to figure out otherwise.

I’ll recommend tests that will help you identify:

- Which nutrients you may be lacking.
- Whether you’re part of the 70% of Americans deficient in omega-3 fatty acids.
- The level of toxic heavy metals in your system.
- How much oxidative stress your body is under.
- If your levels of various hormone and neurotransmitters are normal.
- Whether food allergies are making you sick.

I’ll even provide a quick cognitive test that you can take right at home to determine if you’re showing any signs of age-related cognitive decline.

3. The Optimization Level

The top part of your Supplement Pyramid is the Optimization Level. Supplements in this level do exactly what the name implies. They don’t necessarily meet your medical needs—that’s what the personalization level is for. These supplements simply “optimize” your regimen.

This level is where you’ll find supplements that help you live a longer, healthier life. You could also think of them as anti-aging supplements. These might include nutrients that have been shown to induce beneficial effects on gene expression, which ultimately might be the solution to eradicating age-related disease.

Supplements at this level may not be essential to your overall health. But that’s not to say they aren’t important. They could help extend your life span or make your later years healthier. However, when it’s all said and done, you can do without them.

That’s why the Supplement Pyramid is structured the way it is—so you always meet your foundational survival needs first, your disease prevention needs second, and your anti-aging goals last.

I know that not everyone is always flush with cash. So if you need to cut back on expenses, then the supplements in the Optimization Level should be the first to go. That way, you’ll still be providing your body with the core, foundational nutrients for survival and the custom-tailored supplements that will help you prevent disease.

Specific Disease Pyramids

Most of the Supplement Pyramid book is geared toward making sure you’re meeting your nutritional needs, helping you prevent disease, and assisting you in aging as well as possible. But what if you or someone you love already has a disease?

I’ve outlined some of the most common chronic diseases and the supplements that can help slow their progression—and even improve their symptoms and outcome. The disease supplement pyramids that I have put together for you include:

- Bowel and Digestive Disorders
- Brain Diseases like Alzheimer’s and Parkinson’s Disease
- Cancers including Prostate, Breast, and Colon
- Chronic Fatigue and Chronic Pain Syndromes
- Diabetes and Metabolic Disorders
- Lung Disorders like COPD and Asthma
- Heart Diseases including Atherosclerosis and Heart Failure
- Insomnia and Mood Disorders
- Bone and Joint Disorders
- Overweight and Obesity
Choosing High Quality Products

Having a personalized supplement pyramid is empowering. But you also need high quality products to go along with it.

It’s a sad but true fact that quality among nutritional supplements varies widely. Therefore, it’s a good idea to ask yourself the following questions before making a purchase:

- How do I know that the ingredients inside my supplements match what’s advertised in the label?
- How can I be sure that my supplements contain the full amount they say they do?
- How do I know that my supplements aren’t contaminated with pesticides, heavy metals, or microbes?
- How can I tell if my supplements are providing therapeutic dosages of key ingredients versus just a sprinkling?
- How can I keep myself from being hoodwinked by supplement charlatans who care only about lining their pockets at my expense?

The dilemma is real, but the solution is simple: Stick with a company that has an established track record of selling high-quality products. Established companies use only pure, potent raw materials. The Supplement Pyramid will teach how to evaluate a supplement manufacturer and distributor, with simple easy-to-follow steps.

Building Health From The Ground Up

Hopefully you’re now well on your way to creating a personalized supplement pyramid—one that is uniquely tailored to your specific health needs and goals. First and foremost, build upon the foundational supplements, starting with a high-quality, ideally dosed multivitamin.

Working up, add omega-3 fish oils, ubiquinol CoQ10, curcumin, and probiotics. These five supplements are foundational to your health as they help every cell and tissue throughout your body.

Once the foundation is in place, continue to work up the pyramid by completing the inventories and then the quizzes. As you see fit, add the suggested products into your pyramid in order of importance, moving from the bottom up. Lastly, consider the suggested products at the optimization level for counteracting the leading theories of aging.

Remember, your pyramid is dynamic and will change as you change. I suggest retaking the quizzes a couple times a year and make the appropriate changes to your pyramid as your quiz scores change.


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

| White peony extract (root) [providing 504 mg paeoniflorin] | 1,200 mg |

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.
The Supplement Pyramid

This is the Step-By-Step Guidebook You’ve Been Waiting For.

You’ll find no other book on the market quite like it. In *The Supplement Pyramid*, Dr. Michael A. Smith, Senior Health Scientist for Life Extension®, provides you with an easy-to-understand, illustrated approach to tailoring a personalized nutritional regimen that’s just right for your needs.

Dr. Mike explains why even the healthiest diets fall short in terms of supplying the optimal amount of nutrients we need not just to survive, but also to thrive. And with such a staggering amount of nutritional supplement choices available, it’s hard to know where to start. *The Supplement Pyramid* provides you with the road map … so you can achieve the best possible results.

Learn How to Build Your Own Personalized Nutritional Regimen.

The key to the “Pyramid” is its three-tiered plan. The base features the essential nutrients everyone needs to support basic life processes at the cellular level. The next tier offers a series of detailed medical quizzes designed to help you identify your individual needs with a focus on disease prevention. And the top of the Pyramid is all about those nutritional supplements that can help you extend your life and make your later years healthier.

Written in easy-to-understand language, *The Supplement Pyramid* is an informative and enjoyable “how-to” book that answers all your questions about building a personalized nutritional regimen. Order it for your library today.

Order Today at lef.org/supplement-pyramid

or

Call toll free 1-855-867-9358

Mention Code: SPB425A

For more information, visit www.mysupplementpyramid.com
As people age, they become more susceptible to muscle deterioration and a declining immune system. Fortunately, whey protein can have a positive impact on muscle construction and immunity due to its branched-chain amino acid profile (BCAAs) and naturally occurring lactoferrin and immunoglobins.*

Unlike many commercial brands on the market, New Zealand Whey Protein Concentrate is uniquely derived from grass-fed, free range cows living healthy lives in New Zealand and not treated with Growth Hormone (rBST).

Life Extension’s New Zealand Whey Protein Concentrate offers the following:

- Non-GMO Whey Protein Concentrate!
- Naturally high levels of essential branched-chain amino acids!
- High-quality muscle building protein!
- Easily mixes into water or milk!
- Great Taste! – Available in both natural chocolate and natural vanilla flavors.

The retail price for an 18.34 ounce container of New Zealand Vanilla Flavored Whey Protein Concentrate (Item # 01770) or for a 23.28 ounce container of New Zealand Chocolate Flavored Whey Protein Concentrate (Item # 01771) is $30. If a member purchases four bottles, the price is reduced to $19.95 per bottle. Contains milk.

To order New Zealand Whey Protein Concentrate, call 1-800-544-4440 or visit www.LifeExtension.com
Restoring The Human Body
With Dr. Sergey Dzugan

Sergey A. Dzugan, MD, PhD, is co-founder and Chief Scientific Officer of the Dzugan Institute of Restorative Medicine. He is the author of 151 publications in medical journals, and these publications include surgical, oncological, academic, and anti-aging topics. He was the former President of Life Extension Scientific Information Inc., and his latest book, *The Restoration of the Human Body [In 7 Parts]*, teaches people how to restore their bodies and optimize their health. In this exclusive interview, Dr. Dzugan talks about his new book.

**LE:** In your opinion, what is the main failure of conventional medicine?

**Dr. Dzugan:** The problem with the current conventional medical model is that it does not focus on the actual root cause of many diseases and health conditions, but instead goes after the symptoms.

**LE:** And this relates directly to the current climate where doctors immediately prescribe drugs for almost every preventable disease.

**Dzugan:** Yes, the problem with such drugs, be they prescription or over the counter, is that they are not treating the base cause of the problem.
LE: What base cause of age-related illness are you referring to?

Dzugan: What is evident at the end of the day is that there is a lot of interplay between the types of disease, and many issues can bounce off of each other to create an ultimately more serious condition. In the midst of all these environmental diseases is where the bulk of our focus comes in. What we want to look at and discuss is disease that is caused by **acquired physiologic errors**. Physiologic simply refers to a normally functioning and healthy body, with physiology itself being the science of this.

LE: Such as?

Dzugan: What are diseases caused by acquired physiologic errors? This is going to come out of left field and include a good bunch. Issues such as heart disease, depression, arthritis, fibromyalgia, migraine, fatigue, atherosclerosis, and cancer can all fall under this category.

LE: How can restorative medicine, which is the focus of your book, prevent this from occurring?

Dzugan: An approach of restorative medicine focuses on addressing the breakdowns of optimal body function by optimizing the body’s hormones and nutrients to optimal levels. While the body at all times tries to keep in homeostasis (equilibrium), things are going to break and it will happen. When the balance and ratios of hormones within the body break down, along with a lack of minerals and vitamins, then things will go south real fast.

LE: When mentioning hormones, you refer to pregnenolone as the grandparent of the other steroid hormones. Where did you come up with that?

Dzugan: While pregnenolone is not well known, its functions and impact on other hormone levels cannot be underestimated. It is a precursor of many other hormones, fights the effects of fatigue and stress, relieves arthritis pain, improves heart health, boosts the immune system, protects against coronary artery disease, improves mood and memory, and is vital for full brain function and protection against degenerative brain diseases.

LE: And you talk about the importance of DHEA as well, which you say decreases by **95%** in many people by age 75 from peak levels.

Dzugan: Right. Proper DHEA levels improve heart health, slow the onset or progression of diabetes, have beneficial impact on arthritis, and reverse declining cognitive function, while low levels are associated with increased risk of breast, ovarian, and other site cancers. Optimal levels are associated with maximum immunity and metabolic efficiency.

LE: How is DHEA linked to testosterone in terms of cardiac health?

Dzugan: Well, if we are looking at testosterone we should also take a look at DHEA as far as heart health goes. DHEA converts to testosterone in women, and provides a major source of estrogen postmenopause. This sort of action increases the appropriate protective levels in both genders.

LE: You mentioned ‘maximum immunity’ earlier and that is a theme that you bring up in your book several times, even in relation to someone’s chances of recovering from the Ebola virus. You also touch upon how cortisol levels have a larger effect on people being able to maintain proper immunity because they impact so many body functions. What are some of the dangers of either high cortisol or low cortisol levels?

Dzugan: Symptoms of high cortisol include anxiety, depression, imbalances of glucose, suppressed thyroid function, and impaired mental performance. Low cortisol levels are associated with insomnia via adrenaline overload, fatigue, irritability, migraine headaches, and fibromyalgia, among others.
LE: On that note, you discuss an interesting idea about fibromyalgia in your book. Can you share it with our readers, please?

Dzugan: A hypothesis is floating about that fibromyalgia may be due to an irregular disturbance of the neural, immune, and endocrine systems. The endocrine system is responsible for hormone production, the neural system is obviously in charge of the nerves (which hormones play a large role on), and the immune system can also be impacted in large part by the hormones. Finally, we can mention the straight up neurotransmitters in their apparent roles with fibromyalgia. The disease is associated with inadequate “deep sleep” and sleep that doesn't do its proper job and leave one feeling refreshed.

LE: Once sleep is mentioned, is there any evidence that melatonin may be of some benefit to fibromyalgia sufferers?

Dzugan: Fibromyalgia sufferers have been observed to have low melatonin levels and, as you mentioned, supplementation of melatonin for individuals with fibromyalgia resulted in reduced pain, sleep issues, and depression.

LE: Like the above example, in many parts of your book, you offer simple solutions to problems mainstream medicine often uses dangerous drugs to fix. One such interesting solution involved magnesium, right?

Dzugan: According to the Agricultural Research Service, which is part of the United States Department of Agriculture (USDA), 43% of the population in the United States receives adequate magnesium through diet, meaning of course that more than half don't. Magnesium can have a calming effect on the nervous system and as such can be a great aid in helping with issues ranging from headaches and migraine to muscle spasms. And yes, constipation. Based on the symptoms and issues often presented in individuals who want to take the restorative medicine approach, magnesium is often a given recommendation.

LE: How does magnesium work its magic?

Dzugan: In order for mitochondria, the energy producing organelles within cells, to function and produce more ATP, they first need to be powered by ATP that is bound to magnesium. Knowing this vital function of magnesium leads to no surprise at the variability and potential severity of symptoms of magnesium deficiency—starting on the mild level with muscle cramps and fatigue, moving up to full on muscle spasms and nausea, all the way up to heart failure.

LE: These alternatives to side-effect laden drugs are excellent, but for many people who have been on antibiotics or drugs for a long time, stomach issues are a big problem, right?

Dzugan: One must always keep in mind that when bad bacteria set up shop in our body, we are often prescribed antibiotics. Unfortunately, while the bacteria in our intestines have friend or foe targeting, the antibiotic won't hear any of that. When the antibiotic goes to work, it gets down to business and likes to annihilate everything in its path. While that tends to kill our foreign invaders, it also causes some serious Dresden bombing action on our civilian bacteria population. Hence, the reason that antibiotics have the common side effect of diarrhea is because your native population of the Home Team is suddenly at a disadvantage.

LE: And this is where probiotics come in to aid intestinal flora? Why are they so valuable?

Dzugan: Good digestion and absorption are not the only aspects that intestinal flora help us with. They are also responsible for boosting our overall immune system by helping prevent the growth of pathogenic bacteria, the kind we certainly don’t want, in our digestive tract. This hefty “us or them” approach allows beneficial bacteria to flourish and bring in more of their type while trying to keep the bad ones out in the rain. Intestinal flora can also potentially help with allergy prevention and inflammatory bowel diseases such as Crohn's.

LE: From probiotics to melatonin, it appears that the physiologic approach can have a lot of practical uses for restoring human health.

Dzugan: There is a lot of information out there about the physiologic approach and its applications, and it’s only necessary to put the information together to make an informed decision and to utilize it. Remember, the information is out there for you to look through.

LE: Thanks, Dr. Dzugan.
Multiple Mechanisms for the Support of Healthy Blood Sugar Levels

Tri Sugar Shield™

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 unrivalled 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.5,9
- 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. Like sorghum, 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 the new Tri Sugar Shield™ provides:

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorghum bran extract</td>
<td>600 mg</td>
</tr>
<tr>
<td>White mulberry extract</td>
<td>300 mg</td>
</tr>
<tr>
<td>Phloridzin</td>
<td>100 mg</td>
</tr>
</tbody>
</table>

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

To order Life Extension® Tri Sugar Shield™, 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.
While mainstream medicine focuses its attention on poor dietary habits as a major cause of nutrient deficiency, one man is shining a light on another, potentially more nutrient-sapping culprit: prescription drugs; more specifically, oral contraceptives.¹

“Oral contraceptives deplete nutrients more than any other class of drugs,” Ross Pelton, author of the new book, *The Pill Problem*, says. “The hormones in these drugs are very strong chemicals. I don’t believe nature ever intended for women to put these hormones in their mouths or to have them introduced in their gastrointestinal tracts. Once there, they cause irritation that heavily interferes with the absorption of nutrients.”²

Pelton is a pharmacist, a health educator, a Certified Clinical Nutritionist, and the author of several books, including *The Drug-Induced Nutrient Depletion Handbook, The Natural Therapeutics Pocket Guide, How to Prevent Breast Cancer, and Mind Food and Smart Pills*. 
“When it comes down to it, all the B vitamins are depleted from oral contraceptive use,” Pelton says.1-3 “Magnesium, selenium, zinc, and CoQ10 are depleted as well.1-3 When I started to look at the incredible range of nutrients that are depleted by a pill many women take on a regular basis, I started to realize that there are a lot of potential health problems that are exacerbated by these issues.”

These issues manifest themselves in many ways. A direct lack of absorption of folate or certain B vitamins can result in a deficiency that causes a loss of appetite, weight loss, weakness, headaches, and in severe cases, heart palpitations. Advanced deficiency could even lead to anemia.5

In addition, downstream health hazards from poor nutrient absorption may be just as dangerous.

“When certain nutrients related to mood are poorly absorbed due to contraceptive use, it increases the likelihood that a woman will become depressed,” Pelton explains. “And anti-depressant drugs are brutal with their side effects. I know that the pill was one of the most important social and cultural revolutions in the entire world. My message to women is that there are some natural and relatively easy and inexpensive steps they can take to correct many of these problems related to oral contraceptives.”

### Some Surprising Studies

Two of the nutrient depletions that Pelton is most concerned about regarding women taking oral contraceptives are vitamin B6 and tyrosine.

“Vitamin B6 is required for the production of serotonin,” he says.6 “Serotonin gets converted to melatonin, which is why a B6 deficiency may lead to sleep problems.6 Sleep problems are often diagnosed and treated with drugs, when a B6 supplement may be effective. Any time I can keep a woman off prescription drugs I consider it a service.”

Pelton points out that some studies show that oral contraceptives deplete tyrosine as well.7 Tyrosine is a precursor for the production of dopamine and norepinephrine, which are involved in a vast array of brain functions, including motivation, stress, cognition, and arousal.

“One doctor in Australia compared the use of oral contraceptives over time with women who didn’t use them,” Pelton says. “The study revealed that the women taking the contraceptives were almost two times as likely to develop depression as non-users.8 It’s no wonder that there has been a greater incidence of depression recently.”

The ultimate problem with these deficiencies and all the others that exist with both oral contraceptives and prescription drugs in general is the lack of awareness on the part of the general public.

“If an individual is prescribed a drug and there is an interaction or side effect, you usually know relatively quickly if there is a problem,” Pelton says. “You get a rash or nausea or whatever the symptoms are. But nutrient depletion happens gradually over time. You may be seemingly without problems for years.”

Over the last six months, Pelton has listened to women increasingly complain about a wide range of seemingly generic problems, including a lack of energy, restless sleep, and malaise. He says that women need to understand that a deficiency in vitamin B12 or folic acid or magnesium or even selenium can cause a number of those problems.

### Taking Charge

With oral contraceptives and prescription drugs hindering the population’s ability to process nutrients, supplementation is more important than ever.

“I think that a basic one-a-day vitamin is insufficient,” Pelton says. “I think the RDA (recommended daily allowance) really stands for Really Dumb Allowance. It has virtually nothing to do with nutrient balance. When I meet with people, I try to get them started on something like the Life Extension® Two-Per-Day, which is one of the best examples of a quality, formulated supplement.”

Pelton says that a good overall nutritional supplement program can compensate for a majority of the side effects induced by drugs. He points to CoQ10 as an example.

“CoQ10 is one of the most critical nutrients for energy production at a cellular level,” he says. “Depletion can lead to fatigue and low energy levels over time. It can lead to sore and achy muscles and even headaches. A simple, quality CoQ10 supplement can eliminate these problems and prevent them...”
from occurring again if they’re the result of low levels of that enzyme.”

Pelton goes a step further and cites a study from Australia that claims that the real, primary cause of aging is free radical damage in your mitochondrial DNA. Without an extensive network of repair enzymes in the cell, this free radical damage becomes long-term and non-reversible.

“CoQ10 deficiency may accelerate the process,” he says. “Supplementation may do the reverse.”

On A Personal Level

Pelton has been subscribing to Life Extension since it was a simple eight-page newsletter, and he is a member of the Medical Advisory Board.

“I’ve been in touch with Bill Faloon over the years and I’ve always been impressed with Life Extension’s commitment to quality. I feel really comfortable recommending Life Extension products. They’re high end, very pure, with active ingredients. Not to mention the fact that the magazine itself and the staff in general provide a phenomenal service in terms of health and supplement education.”

Pelton takes a vast array of Life Extension products, including Life Extension Mix, vitamin C, vitamin D, CoQ10, Omega-3, Cognitex, chromium, curcumin, resveratrol, Ultra Natural Prostate Formula, DHEA, acetyl-L-carnitine, and tocotrienols.

“Tocotrienols were originally thought to be a minor version of tocopherols. But now we know they are very important for heart health. I get a lot of benefit from them,” he says. “I am a total convert,” he says. “I try to go three times a week. For people that can put that kind of effort into a workout, I think you really get the most bang for your buck in terms of intense physical fitness.”

Of course, there is a major health payoff as well.

“I recently read about a study from a group of Italian gerontologists who examined a large group of elderly people who were healthy,” he says. “Instead of looking at old people who were sick and trying to figure out why they were sick, they looked at hundreds of different parameters involving the healthy people, and it turns out the number one thing you can do for healthy aging is to maintain your muscle mass as you age.”

With a healthy diet, a healthy supplement regimen, and a healthy exercise program, Ross Pelton will be able to help people counteract the nutrient problems caused by prescription drugs for many, many years to come.

For information about ordering The Pill Problem, please visit: www.thepillproblem.com.

For general information on Ross Pelton, please visit: www.naturalpharmacist.net.

Ross Pelton began his career in the health sciences by graduating from the University of Wisconsin School of Pharmacy in 1966. Ross worked as a pharmacist for a number of years before joining the Peace Corps in 1972. He taught high school chemistry for 2 years in Malaysia, and also closely observed the village shamans and native healing arts in Malaysia, Thailand, and Indonesia. In addition to his extensive work as a book author, in the 1980s he spent time as a cancer researcher at the University of California San Diego and eventually became the administrator of an alternative cancer treatment hospital in Baja, Mexico. In 1994 Ross became a certified clinical nutritionist. A significant part of Ross’ career has been devoted to speaking, writing, and conducting seminars on a variety of health-related topics.

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

References

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

DHEA 25 mg - 100 Capsules
The minimum dose of DHEA for most healthy aging people is 25 mg a day, though optimal doses are often higher in men. These 25 mg capsules are a popular way to consume the precise amount of DHEA your body may need. A bottle containing 100 25 mg capsules of DHEA retails for $18; if a member orders four bottles, the price is reduced to $11.25 per bottle. Contains rice.

DHEA 15 mg - 100 Capsules
While published studies show the greatest benefit occurs when 50-75 mg of DHEA is consumed each day, some women only need a low dose of DHEA. Just one of these 15 mg capsules a day is all some women need to bring DHEA levels back to youthful levels. A bottle containing 100 15 mg capsules of DHEA retails for $14; if a member orders four bottles, the price is reduced to $9 per bottle.

DHEA 50 mg - 60 Capsules
The optimal daily dose of DHEA for most people is 50 mg. These economical 50 mg capsules enable most people to conveniently consume the optimal dose of DHEA in just one capsule. A bottle containing 60 50 mg capsules of DHEA retails for $19; if a member orders four bottles, the price is reduced to $12.75 per bottle.

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

Some people want to take DHEA in sublingual tablet form to avoid first pass through the liver, though published studies show that swallowing DHEA capsules consistently boosts blood DHEA levels already within normal range.

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

To order the DHEA supplement that’s right for you, call 1-800-544-4440 or visit www.LifeExtension.com

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Brain decline affects all aging humans. Scientific studies demonstrate more youthful cognition and memory in response to the proper nutrients. Cognitex® provides the following brain boosting ingredients in one advanced formula:

- **Gastrodin** acts as a “brain shield,” calming brain cells and helping to protect against oxidant, inflammatory, and excitatory damage. Gastrodin’s multiple modes of action work together with other nutrients to improve circulation and shield the brain from age-related insults.

- **Alpha-glyceryl phosphoryl choline** boosts levels of **acetylcholine**, a neurotransmitter that enables brain cells to communicate. Acetylcholine is intimately involved in memory and learning. Acetylcholine levels markedly decline as humans age past 30.

- **Vinpocetine** enhances circulation, oxygenation, electrical conductivity of brain cells, and helps support healthy blood flow.

- **Pregnenolone** is a hormone involved in synchronization of brain cells that declines in normal aging brains.

- **Hops** and **rosemary** have all been shown to help suppress inflammatory cytokines.

**The Ultimate Protection for your Brain—now with Gastrodin/Brain Shield™**

- **Wild blueberry extract** has been shown to inhibit oxidative and inflammatory changes in brain cells believed to be involved in memory decline.

- The ability of **phosphatidylserine (PS)** to improve cognitive skills has been extensively studied. PS exerts significant benefit for cognition, especially those functions that tend to decline with age, including memory, learning, vocabulary skills, and concentration.

- **Ashwagandha** inhibits an enzyme (acetylcholinesterase) that breaks down acetylcholine in the brain.

- **Grape seed extract** improves blood vessel tone and elasticity, thus boosting cerebral oxygen flow.

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

**Most Advanced Neurological Formula at New Lower Prices**

The ingredients in Cognitex® sell for a small fortune in Europe where they are commonly prescribed. You can obtain them all at a fraction of this cost in a human equivalent dose of:

- **Alpha-Glyceryl Phosphoryl Choline (A-GPC) 600 mg**
- **Phosphatidylserine (from Sharp-PS®) 100 mg**
- **Brain Shield™ (Gastrodin) 50 mg**
- **Vinpocetine 20 mg**
- **Grape Seed Extract 150 mg**
- **Wild Blueberry Extract (Vaccinium angustifolium) 150 mg**
- **Sensoril® Ashwagandha Extract (Withania somnifera) 125 mg**
- **Uridine-5’-Monophosphate (disodium) 50 mg**
- **Proprietary NeuroProtection Complex Blend 125 mg**
- **Pregnenolone 50 mg**

Just three softgels of Cognitex® provide the following nutrients:

- Sharp-PS® is a trademark of Enzymotec Ltd. Sensoril® is protected under US Patents Nos. 6,153,198 and 6,713,092 and is a registered trademark of Nutreon, Inc. Perluxan® is used with permission.

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Pro-Aging Europe Congress
March 20-23, 2014 — The Hotel, Brussels
The event of the year in medical therapies to reduce, slow down or even reverse aging

International 4-day medical and scientific program

Pre-Congress: 3 Days Reverse Aging Seminar
Thursday, March 20: Male and Female hormone problem-solving seminar
Friday, March 21: Hormone therapies in Psychology and psychiatry
Saturday, March 22: Hormone and nutritional therapies in obesity, followed by ‘Meet the international speakers’ session

Pro-Aging Europe Congress: on Sunday, March 23 — Preliminary Program

7.15 - 8.15 NUTRITIONNAL AND NATURAL THERAPIES
Nutritional supplements that safely increase hormone levels
Natural adjuvant treatments for thyroid disease
Dr. Thierry Hertoghe
Dr. Rudy Proesmans

8.15 - 10.15 AGING WOMEN
Essential oils to improve skin and neurological diseases
Oral supplements for prevention of premature skin aging by UV
The aging skin: The medical therapies that can boost it
The birth-control pill: Its untold dangers and natural alternatives
Ph. Dominique Baudoux
Dr. Stan Pavel
Prof. Johannes Huber
Prof. Henri Joyeux

10.45 - 12.30 AGING MEN
Grumpy old men may be testosterone deficient
Vasopressin/Desmopressin in the treatment of Nocturia
Erectile function: How to solve all the pitfalls?
Prof. Claude Schulman
Prof. Karel Everaert
Dr. Ronald Virag

14.00 - 16.20 LIVING LONGER
Low level ionizing radiation and non-ionizing radiation: mitigating their effects with melatonin
Reviving death cells: Therapy to end or delay aging?
How long can we extend lifespan?
Epigenetic and molecular mechanisms of vitality increase
Prof. Russel Reiter
Prof. Miroslav Radman
Dr. Laurent Alexandre
Prof. Vladimir Khavinson

17.00 - 18.00 AGING WOMEN
Hormones therapies of Female sexuality
Dr. Thierry Hertoghe

ENGLISH OR FRENCH WITH TRANSLATION—ACCREDITATION POINT REQUESTED SUNDAY, MARCH 23

Day address: The Hotel, Bd de Waterloo 38, B-1000 Brussels

Get more information and register by contacting Claude Mahaux by email: wosaam@wosaam.ws
or by phone: For USA and Canada: call 011 - 352 621 20 42 89
For all other countries: call 00352 - 621 20 42 89
In 2003, the Life Extension Foundation\textsuperscript* introduced a standardized resveratrol extract shown to favorably alter genes implicated in the aging process—many of the same genes that respond to calorie restriction. Since then, we have identified additional compounds that simulate calorie restriction’s ability to trigger youthful gene expression—the process by which genes transmit signals that slow certain aspects of aging.

Compelling evidence reveals that certain compounds found in berries, such as pterostilbene and fisetin, possess potent “longevity gene” activators that work in synergy with resveratrol. For example, fisetin (found in strawberries) has been shown to stabilize resveratrol in the body by shielding it from metabolic breakdown,\textsuperscript{10} thus extending its beneficial effects.

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

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

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

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

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

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

### MOST POPULAR PANELS

#### Life Extension Member Pricing

<table>
<thead>
<tr>
<th>Panel Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>THE CBC/CHEMISTRY PROFILE</strong></td>
<td>$35</td>
</tr>
<tr>
<td><strong>COMPREHENSIVE THYROID PANEL</strong></td>
<td>$199</td>
</tr>
<tr>
<td><strong>FOOD SAFETY ALLERGY TEST</strong></td>
<td>$198</td>
</tr>
<tr>
<td><strong>ADRENAL FUNCTION PANEL</strong></td>
<td>$136</td>
</tr>
<tr>
<td><strong>OMEGA SCORE</strong></td>
<td>$131.25</td>
</tr>
<tr>
<td><strong>MITOCHONDRIAL FUNCTION PANEL</strong></td>
<td>$159</td>
</tr>
<tr>
<td><strong>VAP™ TEST</strong></td>
<td>$50</td>
</tr>
</tbody>
</table>

#### BLOOD TESTING THE ULTIMATE INFORMATION

**Most Popular Panels**

**COMPREHENSIVE PANELS**

**MALE LIFE EXTENSION PANEL (LC322582)**
- 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
- TSH for thyroid function
- Estradiol
- Progesterone
- Vitamin D 25-hydroxy
- Hemoglobin A1c

**FEMALE LIFE EXTENSION PANEL (LC322535)**
- 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
- TSH for thyroid function
- Estradiol
- Progesterone
- Vitamin D 25-hydroxy
- Hemoglobin A1c

**MALE WEIGHT LOSS PANEL (LCWLM)**
- 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
- SHBG
- Free T3
- Free T4
- TSH for thyroid function

**FEMALE WEIGHT LOSS PANEL (LCWLF)**
- 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
- Insulin
- SHBG
- Free T3
- Free T4
- TSH for thyroid function

**MALE HORMONE ADD-ON PANEL (LCADDM)**
- Pregnenolone and Dihydrotestosterone (DHT)

**FEMALE HORMONE ADD-ON PANEL (LCADDF)**
- Pregnenolone and Total Estrogens

**LIFE EXTENSION THYROID PANEL (LC304131)**
- TSH, T4, Free T3, Free T4.

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

**MALE COMPREHENSIVE HORMONE PANEL**
- (LC100010) CBC/Chemistry Profile
- Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.

**COMPREHENSIVE PANELS**

<table>
<thead>
<tr>
<th>Male Life Extension Panel (LC322582)</th>
<th>$269</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEMALE Life Extension Panel (LC322535)</td>
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<tr>
<td>MALE WEIGHT LOSS PANEL (LCWLM)</td>
<td>$299</td>
</tr>
<tr>
<td>FEMALE WEIGHT LOSS PANEL (LCWLF)</td>
<td>$299</td>
</tr>
</tbody>
</table>

**THE CBC/CHEMISTRY PROFILE** (LC391822)
Note: This CBC/Chemistry Profile is included in many Life Extension panels. Please check panel descriptions.

**CARDIOVASCULAR RISK PROFILE**
- Total Cholesterol
- HDL Cholesterol
- LDL Cholesterol
- Triglycerides

**LIVER FUNCTION PANEL**
- AST (SGOT)
- ALT (SGPT)
- Alanine Transaminase
- Alkaline Phosphatase
- LDH

**BLOOD PROTEIN LEVELS**
- Total Protein
- Albumin
- Albumin/Globulin Ratio

**BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE**
- Red Blood Cell Count
- White Blood Cell Count
- Hemoglobin
- White blood cell count

**FEMALE COMPREHENSIVE HORMONE PANEL**
- Estrogen
- Progesterone
- Pregnenolone
- Total and Free Testosterone
- DHT
- PSA
- PRL
- TSH
- T4
- Free T3
- Free T4
- TPO
- ATA
- TPOAbs
- Anti-TPO
- Anti-ATA
- Homocysteine
- Iron
- Folate
- Vitamin B12
- Ferritin
- Hemoglobin
- WBC
- RBC
- Platelets
- Erythrocyte Sedimentation Rate
- Red Blood Cell
- Hemoglobin
- Hematocrit
- Mean Corpuscular Volume
- Mean Corpuscular Hemoglobin
- Mean Corpuscular Hemoglobin Concentration
- Red Blood Cell Distribution Width
- Eosinophils
- Neutrophils
- Lymphocytes
- Monocytes
- Basophils
- Platelets
- Total Leukocyte Count

**COMPREHENSIVE PANELS**

<table>
<thead>
<tr>
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<tr>
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<td>$299</td>
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<tr>
<td>FEMALE WEIGHT LOSS PANEL</td>
<td>$299</td>
</tr>
</tbody>
</table>

**FOOD SAFETY ALLERGY TEST** (LCM73001)
This test measures delayed (IgG) food allergies for 95 common foods.

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

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

**MITOCHONDRIAL FUNCTION PANEL** (LC100020)
Carnitine (Free with Total), CoQ10, Glucose

**VAP™ TEST** (LCB04500)
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.

* 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.
This test is used to check the blood level of Thyroid Peroxidase Antibody (TPO), Thyroid Antithyroglobulin Antibody (ATA), and other disorders and possible cancer.

Other Popular Tests and Panels
Life Extension Member Pricing

- ENERGY PROFILE (LC100005) $375
  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), Vitamin B12, Folate, 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 (ATA) and Thyroid Peroxidase Antibody (TPO).

- VITAMIN D 25-HYDROXY (LC081950) $91
  Measures vitamin D levels, which are critical for bone health and can help prevent osteoporosis.

- FEMALE BASIC HORMONE PANEL (LC100013) $75
  DHEA-S, Estradiol, Free and Total Testosterone, PSA, Progesterone, DHEA-Sulfate, Estradiol, Free and Total Testosterone, Prostate Specific Antigen (PSA).

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

- DIABETES PANEL* (LC100019) $159
  Glucose, Insulin, HbA1c, VAP™, Cortisol, C-Reactive Protein.

- MALE HORMONES PANEL* (LC100013) $116
  Testosterone, Estradiol, DHEA, DHEA-Sulfate, Free Testosterone, PSA.

- FEMALE HORMONES PANEL* (LC100014) $116
  Testosterone, Estradiol, DHEA, DHEA-Sulfate, Free Testosterone, PSA.

- ANEMIA PANEL (LC100006) $86
  CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.

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

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

- CARDIAC RISK $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.

- C-REA CTIVE PROTEIN (HIGH-SENSITIVITY) $42
  Measures inflammation factors in arteries. Recent studies indicate that C-reactive protein may be the most accurate risk factor for predicting heart attack and stroke.

- FIBRINOGEN* (LC081610) $31
  High levels of this blood-clotting factor increase the risk of heart attack and stroke.

- HOMOCYSTEINE (LC706994) $64
  Can indicate if you are likely to have a heart attack or stroke. Even if you take folic acid, you still may have dangerously high levels of this artery-clotting metabolic debris that can be lowered with high doses of TMG, vitamin B6, and vitamin B12.

- MALE HEALTH $31
  PSA (Prostate-Specific Antigen) (LC010322) Can provide an early warning sign for prostate disorders and possible cancer.

- FREE-PSA (INCLUDES TOTAL PSA)* (LC480780) $81
  Recommended to determine if an elevated PSA is indicative of prostate cancer.

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

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

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

Mail your order form to:
Life Extension NATIONAL DIAGNOSTICS, INC.
3600 West Commercial Boulevard
Fort Lauderdale, FL 33309
Phone your order to: 1-800-208-3444
Fax your order to: 1-866-728-1050

Signature of Life Extension Member

X
Life Extension Foundation Members only

MEMBER NO.  

X

Name

Date of Birth (required) / / 
Address

City

State Zip

Phone

Credit Card No.

Expiration Date / / 

This is NOT a complete listing of LE blood test services. Call 1-800-208-3444 for additional information.
AMINO ACIDS
Acetyl-L-Carnitine
Acetyl-L-Carnitine -Arginate
Branch Chain Amino Acids
D, L-Phenylalanine Capsules
Glycine Capsules
L-Arginine Capsules
Arginine/L-Ornithine Capsules
L-Carnitine Capsules
L-Carnitine Powder Natural Lemon Flavor
L-Glutathione, L-Cysteine & C
L-Glutamine Capsules
L-Glutamine Powder
L-Lysine Capsules
L-Tyrosine Tablets
Mega L-Glutathione Capsules
N-Acetyl-L-Cysteine Capsules
Optimized Carnitine with GlycoCarn®
PharmaGABA
Super Carnosine Capsules
Taurine Capsules

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

BRAIN HEALTH
Acetyl-L-Carnitine
Acetyl-L-Carnitine -Arginate
Brain Shield™
CDP Choline Capsules
Cognitex® with Brain Shield™
Cognitex® with Pregnenolone & Brain Shield™
Cognitex® Basics
DMEA Bitartrate
Ginkgo Biloba Certified Extract™
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin Granules
Methylcobalamin Lozenges
Migra-Mag with Brain Shield™
Neuro-Mag™ Magnesium L-Threonate
Optimized Ad Ashwagandha Extract
Phosphatidylserine Capsules
Rhodiola Extract
Super Ginkgo Extract
Super Ginkgo Extract
Vinpocetine

DIGESTIVE
Bifido GI Balance
caromoochies with PicroProtect
Digest RC™
Esophageal Guardian
Enhanced Super Digestive Enzymes
Extraordinary Enzymes
FosAssist™
Gutsy Chewy Digestive Tablets
LACTOSOLV™ Long Lasting Digestion
Pancreatin
Regimint
Theraclear Probiotics

DURK AND SANDY PRODUCTS
Blast™
Inner Power™

EYE CARE
Bilberry Extract
Bite Eyes III
Eye Pressure Support with Mirtogenol®
MacuGuard™ Ocular Support
MacuGuard™ Ocular Support with Astaxanthin
Solarshield Sunglasses

FIBER
AppleWise Polyphenol
Fiber Food
TruFiber®
WellBetX PGX® plus Mulberry

FOOD
Rich Rewards™ Black Bean Vegetable Soup
Rich Rewards™ Spicy Cruciferous Vegetable Soup
Rich Rewards™ Cruciferous Vegetable Soup
Rich Rewards™ Lentil Soup
Rich Rewards® Mung Bean Soup with Tumeric
Rich Rewards® Coffee
(Vailable in mocha, vanilla and decaffeinated)
Rich Rewards™ Dark Chocolate

HAIR CARE
Dr. Proctor’s Advanced Hair Formula
Dr. Proctor’s Shampoo
Super-Absorbable Tocotrienols

HEART HEALTH
AppleWise Polyphenol
Advanced Lipid Control
Aspirin (Enteric Coated)
Cardio Peak™ w/Standardized Hawthorn and Arjuna
Cho-Less™
D-Ribose Tablets
D-Ribose Powder
Endothelial Defense™ with Full-Spectrum Pomegranate™
Fibrinogen Resist
Forskolin
Homocysteine Resist
Natural BP Management
Olive Leaf Vascular Support
Peak ATP™ with GlycoCarn®
PhosphoOmega®
Policosanol
PROVINAL® Purified Omega-7
Pycnogenol® French Maritime Pine Bark Extract
Red Yeast Rice
Super Absorbable CoQ10™ with d-Limonene
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with BioPQQ®
Super Ubiquinol CoQ10 with Enhanced Mitochondrial™ Support
Theflavin Standardized Extract
TMG Powder
TMG Liquid Capsules

HERBAL/PHYTO PRODUCTS
Artichoke Leaf Extract
Asian Energy Boost
Astaxanthin with Phospholipids
Berry Complete
Blueberry Extract
Blueberry Extract w/Pomegranate
Butterbur Extract w/Standardized Rosmarinic Acid
Calcium D-Glucarate
Enhanced Berry Complete with Acai
Full-Spectrum Pomegranate™
Grapeseed Extract with Resveratrol & Pterostilbene
Huperzine A
Kyoic® Garlic Formula 102 + 105
Kyoic® Reserve
Mega Green Tea Extract
Mega Green Tea Extract (Decaffeinated)
(also w/CoffeeGenic® Green Coffee Extract)
Mega Lycopene Extract
Optimized Ashwagandha Extract
Optimized Garlic
Pomegranate Extract
Pomegranate Juice Concentrate
Pycnogenol
Optimized Quercetin

IMMUNE ENHANCEMENT
AHCC® (Active Hexose Correlated Compound)
Black Cumin Seed Oil
Black Cumin Seed Oil w/Bio-Curcumin®
Buffered Vitamin C Powder
Echinacea Extract
FlorAssist® Probiotic
286 Hyperimmune Egg
Immune Modulator w/Tinofend®
Immune Protect with PARACTIN®
Lactoferrin
Norwegian Shark Liver Oil
Optimized Fucoidan w/Maritech® 926
Peony Immune
ProBoost™ Thymic Protein A
Reishi Extract Mushroom Complex
Vitamin C with Dihydromyricetin
Winter Wellness™
Zinc Lozenges

INFLAMMATORY REACTIONS
Arthro-Immune Joint Support
ArthroMax® with Theaflavins
Boswellia
Bromelain (Specially-coated)
Cytokine Suppress™ with EGCG
DHA (Vegetarian Sourced)
Fast Acting Joint Formula
Ginger Force
Krill Healthy Joint Formula
5-LOX Inhibitor w/AprèsFlex®
Mega EPA/DHA
Mega GLA with Sesame Lignans
MSM
Omega-3 Whirl
Organic Golden Flax Seed
Serraflazyme
SODzyme™ with GliSODin® and Wolfberry
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Tart Cherry w/Standardized CherryPURE®
Zyflamend® Whole Body

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

Resveratrol with Synergistic Grape-Berry Actives
Rhodiola Extract
Silymarin
SODzyme™ with GliSODin®
Stevia Extract
Advanced Bio-Curcumin®
with Ginger & Turmerones
Super Bio-Curcumin®
Super Ginkgo Extract
Triple Action Cruciferous Vegetable Extract
Venotone
Whole Grape Extract

HORMONES
Advanced Natural Sex for Women® 50+
7-KETO® DHEA
DHEA
DHEA Complete
GH Pituitary Support Day Formula
GH Pituitary Support Night Formula
Liquid Melatonin
Melatonin
Melatonin Timed Release
Natural Estrogen with Pomegranate Extract
Pregnenolone
Progesterone Care for Women
Super Miraforte with Standardized Lignans

PRODUCTS
PRODUCTS

MINERALS
Biosil
Bone Restore
Bone Strength Formula w/KoAct®
Bone-Up™
Boron Capsules
Calcium Citrate with D3
Chromium Ultra
Copper
Iodoral
Iron Protein Plus
Magnesium
Magnesium Citrate
Only Trace Minerals
Optimized Chromium w/Crominex® 3+
OptiZinc
Sea-lodine™
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
Acetyl-L-Carnitine-Arsenate
Mitochondrial Basics w/BioPQQ®
Mitochondrial Energy Optimizer w/BioPQQ®
Optimized Carnitine with GlycoCarn®
Mitochondrial Energy Optimizer w/BioPQQ®
Optimized Carnitine with GlycoCarn®
Mitochondrial Basics w/BioPQQ®

SKIN CARE
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
Antioxidant Rejuvenating Foot Cream
Antioxidant Rejuvenating Hand Scrub
Anti-Redness & Blemish Lotion
Bio-Collagen w/Patented UC-II®
Bioflavonoid Cream
Broccolli Sprout
Corrective Clearing Serum
DNA Repair Cream
Dual-Action MicroDermAbrasion
Essential Plant Lipids Reparative Serum
Face Master® Platinum
Face Rejuvenating Antioxidant Cream
Enhanced Fermit Block® with Red Orange Complex
Fine Line-Less
Hair Suppression Formula
Healing Formula All-in-One Cream
Healing Mask
Hyaluronic Facial Moisturizer
Hydrating Anti-oxidant Face Mist
Hydroderm®
Lifting & Tightening Complex
Lycopene Cream
Melatonin Cream
Mild Facial Cleanser
Neck Rejuvenating Antioxidant Cream
Pigment Correcting Cream
(ultra) Rejuvenex®
Rejuvenex® Body Lotion
Rejuvenex® Factor Firming Serum
Rejuvenating Serum
Renewing Eye Cream
Resveratrol Anti-Oxidant Serum
Skin Lightening Therapy
Skin Restoring Phytoceramides w/Lipoceutix®
Skin Stem Cell Serum
Stem Cell Cream w/Alpine Rose
Ultra Rejuvenex®
Ultra RejuveNight® w/Progestosterone
Ultra Lip Plumper
Ultra Wrinkle Relaxer
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Serum
Vitamin D Lotion
Vitamin E-ssential Cream
Vitamin E-ssential Cream
Vitamin E-ssential Cream
Vitamin K2 Healing Cream
Vitamin K2 Healing Cream

MOUTH CARE
Advanced Oral Hygiene
Mouthwash w/Pomegranate
Toothpaste
Xylitwhite™ Mouthwash

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

PET CARE
Cat Mix
Dog Mix

PROSTATE & URINARY HEALTH
Optimized Cran-Max® with UTI-Rose™
5-LOX®
PalmettoGuard™ Saw Palmetto w/Beta Sitosterol
Pom-T® (Water-Soluble) Pumpkin Seed Extract
Super Saw Palmetto/Nettle Root Formula
w/Beta-Sitosterol
Ultra Natural Prostate Formula

SPECIAL PURPOSE FORMULA
Anti-Alcohol Antioxidants w/HepatoProtection Complex
Bentotiamine w/Thiamine
Breast Health Formula
Butterbur Extract w/Standardized Rosmarinic Acid
Chlorrilla
Chlorophyllin
Green Coffee Extract CoffeeGenic®
(Also w/Glucose control)
Coriolus Super Strength
CR Metic Natural Longevity Formula

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

WEIGHT MANAGEMENT
Advanced Anti-Adipocyte Formula
w/AdipoStat & Integra Lean®
Advanced Natural Appetite Suppress
Alli® Refill Pack
Calorie Control Weight Management™ Formula
w/CoffeeGenic®
Green Coffee Extract
CoffeeGenic® Weight Management™ w/ Green Coffee Extract
7-KETO DHEA®
DHEA® Complete
Fucosanthenol SlimTM
Garcinia HCA
Integra-Lean® African Mango Irvingia
LuraLean® Caps Special Propolmannan
Particle Size
Optimized Irvingia w/Phase 3™
Calorie Control Complex
Optimized Saffron w/Satiereal®
Natural Appetite Control
Natural Glucose Absorption Control
Super Citrimax®
Super CLA Blend w/Guarana and Sesame Lignans
Super CLA Blend w/Sesame Lignans
WellBetX PGX® plus Mulberry
### Buyers Club Order Form

**To order call: 1.954.766.8433 or 1.800.544.4440**

<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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<td>01206</td>
<td>BERRY COMPLETE - 30 veg. caps</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>01496</td>
<td>BERRY COMPLETE w/Acai (ENHANCED) - 60 veg. caps</td>
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<tr>
<td>00664</td>
<td>BETA-CAROTENE - 25,000 IU, 100 softgels</td>
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<td>BIFIDO GI BALANCE - 60 veg. caps</td>
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<td>01073</td>
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<td>BIDACTIVE MILK PEPTIDES - 30 caps</td>
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<td>01631</td>
<td>BIO-COLLAGEN w/PATENTED UC-II® - 60 caps</td>
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<td>01006</td>
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<tr>
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<td>01008</td>
<td>BLAST™ - 600 grams of powder</td>
<td>Buy 4 bottles, price each</td>
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<td>70000</td>
<td>BLOOD PRESSURE MONITOR - ARM CUFF (Medium)</td>
<td>Buy 4 bottles, price each</td>
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<td>BLOOD PRESSURE MONITOR - WRIST (travel size)</td>
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<td>01214</td>
<td>BLUEBERRY EXTRACT - 60 veg. caps</td>
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<td>00939</td>
<td>BRUTE EYES III - 2 vials, 5 ml each</td>
<td>Buy 4 boxes, price each</td>
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**SUB-TOTAL OF COLUMN 2**
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<td>Bromelain (Specially-Coated) - 500 mg, 60 enteric coated tablets</td>
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<td>Butcher's Broom w/Standardized Rosmarinic Acid - 60 softgels</td>
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<td>Calcium Citrate w/Vitamin D - 300 caps</td>
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<td>Calcium D-Gluconate - 200 mg, 60 veg. caps</td>
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<td>Calorie Control Weight Management Formula w/Coffeegenic Green Coffee Extract</td>
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<td>Cardio Pea w/Standardized Hawthorn &amp; Aruna - 120 veg. caps</td>
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<td>L-Carnitine - 500 mg, 30 veg. caps</td>
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<td>L-Carnitine Powder Natural Lemon Flavor - 114 grams</td>
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<td>Carnosoftie w/Picroprotect™ - 60 veg. caps</td>
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<td>Carnosine (Super) - 500 mg, 90 veg. caps</td>
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<td>Cat Mix - 100 caps powder</td>
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<td>CDP Choline Caps - 250 mg, 60 veg. caps</td>
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<td>Children’s Formula Life Extension Mix™ - 100 chewable tablets</td>
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<td>Chlorophyllin - 100 mg, 100 veg. caps</td>
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<td>Chlo-Less™ - 90 capsules</td>
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<td>Chromium Ultra - 100 veg. caps</td>
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<td>Chromium W/Crominex® 3+ (Optimized) - 500 mcg, 60 veg. caps</td>
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<td>01503</td>
<td>Cinsulin® Winse® + and Crominex® 3+ + 90 veg. caps</td>
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<td>01818</td>
<td>Citrimax® (Super) - 180 veg. caps</td>
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<td>CLA Blend W/Sesame Lignans (Super) - 1,000 mg, 120 softgels</td>
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<tr>
<td>00819</td>
<td>CLA Blend w/Guarana &amp; Sesame (Super) - 1,000 mg, 120 softgels</td>
<td>$42.00</td>
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<td>$1,313.00</td>
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<td>01707</td>
<td>Coffeegenic® Weight Management™ w/Green Coffee Extract - 90 veg. caps</td>
<td>$40.00</td>
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**Sub-total of Column 3**

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<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<td>CoQ10 w/BRAIN SHIELD™ - 90 softgels</td>
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<td>CoQ10® w/Pregnenolone &amp; Brain Shield™ - 90 softgels</td>
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<td>CoQ10® Basics - 60 softgels</td>
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<td>01795</td>
<td>Comprehensive Nutrient Packs Basic - 30 packs</td>
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<td>Comprehensive Nutrient Packs Advanced - 30 packs</td>
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<td>Copper Capsules - 2 mg, 100 caps</td>
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<td>CoQ10® w/α-Limone (Super Absorbable) - 50 mg, 60 softgels</td>
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<td>CoQ10® w/α-Limone (Super Absorbable) - 100 mg, 100 softgels</td>
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<td>CoQ10 (Super Ubiquinol) - 100 mg, 60 softgels</td>
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<td>CoQ10 w/ENH Mitochondrial Support™ (Super Ubiquinol) - 100 mg, 60 softgels</td>
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<td>CoQ10 w/ENH Mitochondrial Support™ (Super Ubiquinol) - 50 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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<td>CoQ10® w/ENH Mitochondrial Support™ (Super Ubiquinol) - 50 mg, 30 softgels</td>
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<td>Cordyceps Super Strength - 600 mg, 150 veg. caps</td>
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<td>Cosmesis Advanced Under Eye Serum w/STEM Cells - .33 oz</td>
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<td>Cosmesis Amber Self Microdermabrasion - 2 oz</td>
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<td>Cosmesis Anti-Aging Mask - 2 oz</td>
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<td>Cosmesis Anti-Aging Rejuvenating Face Cream - 2 oz jar w/Coffee Extract</td>
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<td>Cosmesis Anti-Glycation Serum - 1 oz w/Blueberry &amp; Pomegranate Extracts</td>
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<td>$792.00</td>
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</table>

**Sub-total of Column 4**

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

APRIL 2014
### Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

**C. CONTINUED**

<table>
<thead>
<tr>
<th>No.</th>
<th>Retail Each</th>
<th>Member Each</th>
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**SUB-TOTAL OF COLUMN 5**

80106  COSMESIS REJUVENATING SERUM - 1 oz  $74.50  $55.88
Buy 2 bottles, price each  65.56  49.17

80150  COSMESIS RENEWING EYE CREAM - 1/2 oz  65.00  48.75
Buy 2 jars, price each  57.00  42.75

80142  COSMESIS REVEGETATION ANTI-OXIDANT SERUM - 1 oz  46.00  34.50
Buy 2 bottles, price each  39.00  29.25

80112  COSMESIS SKIN LIGHTENING SERUM - 1/2 oz  85.00  63.75
Buy 2 bottles, price each  74.80  56.10

80130  COSMESIS SKIN STEM CELL SERUM - 1 oz  74.00  55.50
Buy 2 bottles, price each  69.00  51.75

80143  COSMESIS STEM CELL CREAM w/ALPINE ROSE - 1 oz jar  66.00  49.50
Buy 2 jars, price each  58.00  43.50

80148  COSMESIS TIGHTENING & FIRMING NECK CREAM - 2 oz jar  39.00  29.25
Buy 2 jars, price each  35.00  26.25

80116  COSMESIS ULTRA LIP PLUMPER - 1/3 oz  64.00  48.00
Buy 2 bottles, price each  56.32  42.24

80101  COSMESIS ULTRA WRINKLE RELAXER - 1 oz  89.95  67.46
Buy 2 bottles, price each  79.76  59.82

80113  COSMESIS UNDER EYE REFINING SERUM - 1 oz  74.50  55.88
Buy 2 bottles, price each  65.56  49.17

80104  COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz  74.50  55.88
Buy 2 bottles, price each  65.56  49.17

80129  COSMESIS VITAMIN C SERUM - 1 oz  85.00  63.75
Buy 2 bottles, price each  74.80  56.10

80136  COSMESIS VITAMIN D LOTION - 4 oz  36.00  27.00
Buy 2 bottles, price each  33.66  25.25

80145  COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz  28.00  21.00
Buy 2 jars, price each  26.00  19.50

80149  COSMESIS YOUTH SERUM - 1 oz  65.00  48.75
Buy 2 bottles, price each  57.00  42.75

00862  CRAN-MAX - 500 mg, 60 veg. caps  $17.50  $13.13
Buy 4 bottles, price each  $15.00  $11.25

01424  CRAN-MAX® with UTROROSE® (OPTIMIZED) - 60 veg. caps  $18.00  $13.50
Buy 4 bottles, price each  $16.00  $12.00

01529  CREATINE CAPSULES - 120 veg. caps  $10.95  $8.21
Buy 4 bottles, price each  $9.25  $6.94

01746  CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla)  $30.00  $22.50
Buy 4 jars, price each  $27.00  $20.25

01429  CR MIMETIC LONGEVITY FORMULA - 60 veg. caps  $39.00  $29.25
Buy 4 bottles, price each  $36.00  $27.00

03840  CRWAY GREAT GLUCOSE CONTROL CD  $98.00  $74.00
**CRWAY CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE  $195.00  $155.00**

00407  CURCUMIN® (SUPER BID) - 400 mg, 60 veg. caps  $38.00  $28.50
Buy 4 bottles, price each  $35.00  $26.25

01808  CURCUMIN® w/GINGER & TURMERICONES (ADVANCED BID)-30 softgels  $30.00  $22.50
Buy 4 bottles, price each  $27.00  $20.25

01804  CYTOKINE SUPPRESS™ w/EGCG - 30 veg. caps  $30.00  $22.50
Buy 4 bottles, price each  $27.00  $20.25

00658  7-KETO® DHEA METABOLITE - 25 mg, 100 caps  $28.00  $21.00
Buy 4 bottles, price each  $24.00  $18.00

01479  7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps  $40.00  $30.00
Buy 4 bottles, price each  $36.00  $27.00

**SUB-TOTAL OF COLUMN 6**

APRIL 2014

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

To order online visit: www.LifeExtension.com

### Buyers Club Order Form

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**SUB-TOTAL OF COLUMN 7**

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**SUB-TOTAL OF COLUMN 8**

*APRIL 2014*
## Buyers Club Order Form

**To order call:** 1.954.766.8433 or 1.800.544.4440

### G CONTINUED

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### SUB-TOTAL OF COLUMN 9

| SUB-TOTAL OF COLUMN 10

*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

APRIL 2014
## Buyers Club Order Form

### To order call: 1.954.766.8433 or 1.800.544.4440

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### **SUB-TOTAL OF COLUMN 13**

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APRIL 2014

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS
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THE PROBIOTIC POWER PILL.

Five clinically tested *Lactobacillus* and *Bifidobacteria* strains that adhere to intestinal surfaces and colonize.

Patented Acid-Proof protection against harsh stomach acid. (2 US Patents)

Advanced moisture and oxygen control for stability.

Patented probiotic works at mg doses to stimulate probiotics. (5 US Patents)

Proven Probiotic Strains

Alginate Gel

Totally Inert Packaging

30 Billion CFU

LactoStim®

Patented formula for digestive regularity. Third party test results for strength, activity, and purity published online.

Live delivery deep into the G.I. tract.

Great economic value! Less than $5.00 per week on the standard dose.

30 Billion Colony Forming Units guaranteed through expiration.

Theralac® has been recommended in Suzanne Somers recent book.

Call your Life Extension® advisor to learn more. Call Life Extension to place your order today. 1-800-544-4440

Theralac®
30 capsules
Item# 01038
Retail: $47.95

TruFlora®
32 capsules
Item# 01389
Retail: $42.95

TruFiber®
6.2 OZ
Item# 01386
Retail: $32.95

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master-supplements.com Master Supplements INCORPORATED
GUTSY PRODUCTS
FOR THAT QUEASY, UNEASY FEELING.

GUTSY CHEWY
chewable tablet

Gutsy Products promote oral and digestive health with a proprietary blend of nature's remedies. So the next time you have that queasy, uneasy feeling, Gutsy products can help you.

Supplement Facts
Serving size: 1 tablet
Servings per container: 8

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount/Serving</th>
<th>%DV*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>5</td>
<td>1%</td>
</tr>
<tr>
<td>Total Carbohydrates</td>
<td>1g</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Calcium</td>
<td>588mg</td>
<td>5%</td>
</tr>
<tr>
<td>Magnesium</td>
<td>156mg</td>
<td>4%</td>
</tr>
<tr>
<td>GfGs† - A proprietary blend of Apple Cider Vinegar, 87mg Licorice Extract and Papain.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Percent of Daily Value based on 2,000 calorie diet. † Percent of Daily Value not established.

INGREDIENTS: Xylitol, Calcium Carbonate, Magnesium Hydroxide, Citric Acid, Magnesium Stearate, Apple Cider Vinegar Powder, Natural Color, Licorice Extract, Natural Flavor, Papain

Invented by a Gastroenterologist & Dentist

Dr. Doug Haghighi is a Cleveland Clinic trained gastroenterologist and Harvard trained dentist with expertise in diagnosing and treating oral and digestive diseases.

All-Natural Ingredients

Gutsy Chewy contains our proprietary blend of nature's remedies (GfGs†): papaya, licorice root and apple cider vinegar. It also has xylitol to optimize oral health, plus calcium and magnesium for digestive health. Together, they enhance the body's natural defense mechanisms that maintain a normal digestive system.

Effective and Safe

GfGs with calcium was tested in a randomized, double-blind, placebo-controlled human clinical study. GfGs† has been assessed by leading U.S. toxicologists and found to be safe at the levels recommended.

A tube of all-natural Gutsy Chewy containing 8 gluten-free, lactose-free, vegan-friendly tablets retails for $11.50. Members of the Life Extension Foundation pay only $8.63 per tube.

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

*Effect of Gutsy gum, a novel gum, on subjective ratings of gastro-esophageal reflux following a refluxogenic meal. Submitted to Journal of Complementary and Integrative Medicine, Brown, Rachel, Sam, Cecilia H.Y; Green, Tim and Wood, Simon

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Absorption-Enhanced

MILK THISTLE

Now With

Advanced Phospholipid Delivery

Milk thistle extract is one of nature’s most potent weapons to support liver health. Until recently, however, the technology hasn’t been available to fully harness this plant’s full benefits.¹

The problem has been that the star component of milk thistle, called silybin, does not dissolve well in water.²,³ This makes it difficult for your body to absorb all of it.²,⁴

Scientists have developed a novel technology to overcome silybin’s poor bioavailability. The solution is to mix silybin with a nutrient called phosphatidylcholine.

Phosphatidylcholine facilitates transport across the intestinal lining into the bloodstream, making it an ideal “carrier molecule” for silybin.⁴,⁵ Scientists believe that phosphatidylcholine molecularly bonds to silybin, ushering it through the membranes of cells in the intestinal tract.⁴

This new silybin-phosphatidylcholine complex is absorbed nearly 5 times better than silymarin alone, and its concentration in the liver, its target organ, is 10-fold greater than silymarin alone.⁶-⁸

The suggested twice daily dosage of one softgel provides:

<table>
<thead>
<tr>
<th>Milk Thistle Phospholipid Proprietary Blend</th>
<th>760 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk Thistle Extract (seed)</td>
<td></td>
</tr>
<tr>
<td>[std. to 80% silymarin (480 mg), 30% Silybin (180 mg), and 8% Isosilybin A and Isosilybin B (48 mg)], Phospholipids</td>
<td></td>
</tr>
<tr>
<td>SILIPHOS® Phytosome Milk Thistle Extract (seed)</td>
<td>160 mg</td>
</tr>
<tr>
<td>[std to 29.7% silybin (47.52 mg)]</td>
<td></td>
</tr>
</tbody>
</table>

A bottle containing 60 softgels of the new absorption-enhanced Milk Thistle retails for $28. If a member buys four bottles, the cost is reduced to only $18.75 per bottle—a savings of nearly one third!

This novel Milk Thistle extract with phosphatidylcholine contains standardized concentrations of silybin and isosilybin A and B not found in other milk thistle extracts! Compare the price of Milk Thistle to commercial silymarin supplements, and members will see that this new formula is available at one of the lowest costs per milligram.

Contains soybeans.

SILIPHOS® is a registered trademark of Indena S.p.A., Italy.

To order European Milk Thistle with Advanced Phospholipid Delivery call 1-800-544-4440 or visit www.LifeExtension.com

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7 UNSUSTAINABLE DRUG PRICES
A report authored by over 100 oncologists noted that of the twelve new cancer drugs approved in 2012, eleven were priced above $100,000 a year! These revelations will not surprise Life Extension® members, who long ago learned how regulatory strangler-holds over drug development inflict harsh economic pain and threaten our national healthcare systems.

38 CoQ10 PROVEN TO SAVE LIVES OF HEART FAILURE PATIENTS
A ten-year study published in the European Journal of Heart Failure demonstrated that CoQ10 dramatically improves survival in heart failure patients, lowers mortality from any cause, and reduces risk of a major cardiac event.

74 NOVEL PEPTIDES TARGET WRINKLE FORMATION
Scientists have discovered three peptides that work within skin cells to inhibit skin aging. Studies show a 28% reversal in the appearance of deep wrinkles within minutes, with results lasting for months.

26 OMEGA-7 PROTECTS AGAINST METABOLIC SYNDROME
Scientists have uncovered a specific type of omega-7 that mitigates many of the underlying factors involved in metabolic syndrome, especially as it relates to elevated C-reactive protein. Harvard Medical School has applied for a patent on this unique and natural fatty acid.

50 SAMe: BENEFITS BEYOND DEPRESSION
SAMe is often just as effective as certain drugs in alleviating depression. New evidence reveals it may protect against Alzheimer’s, osteoarthritis, liver disease, and support critical DNA repair.

82 THE SUPPLEMENT PYRAMID: BUILD A PERSONALIZED NUTRITION REGIMEN
Dr. Michael Smith has designed the three-tiered Supplement Pyramid tailored to meet your specific, personalized nutritional needs.