

NEW BLOOD TEST MEASURES OXIDIZED LDL

# LifeExtension<sup>®</sup>

LifeExtension.com

The ULTIMATE Source For New Health And Medical Findings From Around The World

June 2015

## Testosterone *Improves* Quality of Life

**Mediterranean Way  
To Weight Loss**

**Guard Against  
Esophageal Reflux**

**Protect Skin From  
Glycation Damage**



**Harvard Associate Clinical Professor**  
**ABRAHAM MORGENTALER, M.D.**  
***The Truth About Testosterone and Prostate Cancer***

PHOTO © ADRIEN BISSON

# Superior-Absorbing CURCUMIN



Item # 00407  
Non-GMO

Item # 01808

**Curcumin** has turned into a nutrition **superstar** because of the enormous health-promoting effects it provides for almost every organ system.<sup>1,2</sup>

However, most curcumin extracts are neither well **absorbed** nor well retained in the body.

**Life Extension**®'s curcumin supplements utilize a patented preparation of curcumin that can reach up to **7 times higher** concentration in the blood than standard curcumin.<sup>3</sup>

As the graphs on this page illustrate, the **400 mg** of curcumin in either of our formulas supply the body with the equivalent of **2,500 mg** of most commercial curcumin products.

In recent studies comparing the effects of standard curcumin against Life Extension's turmeric extracts, researchers observed:<sup>4,5</sup>

- Nearly **twice** the support for immune health and approximately **2 times** the support for inflammatory issues.
- Almost **double** the free radical-fighting support. A separate study indicated that curcumin extract provided powerful support for heart health.

## TWO CURCUMIN FORMULAS TO CHOOSE FROM

Those who want a curcumin stand-alone can order a bottle of 60 vegetarian capsules of **Super Bio-Curcumin**® (Item # 00407) for \$38. If a member buys four bottles, the price is reduced to **\$26.25** per bottle. Each bottle lasts a typical user two months.

Those seeking additional support against cell changes that promote prolonged functional inflammatory issues may choose **Advanced Bio-Curcumin**® With Ginger & Turmerones.

While both of these formulas provide the superior **absorbing** curcumin, **Advanced Bio-Curcumin**® also contains:

- **Turmerones** to increase the amount of curcumin inside cells.<sup>6</sup>
- **Ginger**, which provides complementary health benefits.
- **Phospholipids** that further enhance absorption.<sup>7</sup>

A bottle of 30 softgels of **Advanced Bio-Curcumin**® With Ginger & Turmerones (Item # 01808) retails for \$30. If a member buys four bottles, the price is reduced to **\$20.25** per bottle. The suggested dose for either of these highly **absorbable** curcumin supplements is one softgel or capsule daily.

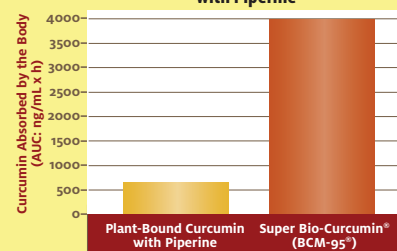
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5. *Food Nutr Res.* 2009;48(3):148-52.
6. *J Med Food.* 2012 Mar;15(3):242-52.
7. *Cancer Chemother Pharmacol.* 2007;60:171-7.
8. Bioavailability study of BCM-95® in rats. Orcas International Inc.

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

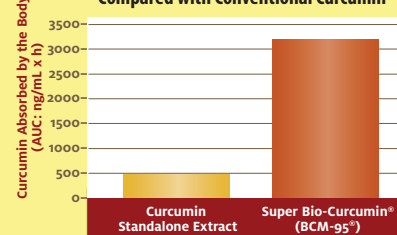
Bio-Curcumin® and BCM-95® are registered trademarks of Dolcas-Biotech, LLC. U.S. Patent Nos. 7,883,728, 7,736,679 and 7,879,373.

Compared with Plant-Bound Curcumin with Piperine<sup>3</sup>



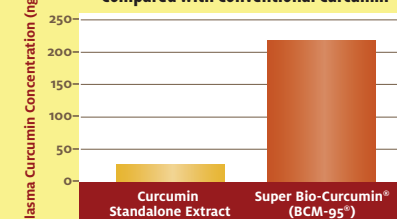
**Chart 1.** Super Bio-Curcumin® showed 6.3 times greater bioavailability (absorption and sustainability over eight hours) in humans compared with plantbound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed by the body over eight hours).

Absorption of Super Bio-Curcumin® in Humans Compared with Conventional Curcumin<sup>3</sup>



**Chart 2.** Super Bio-Curcumin® showed 6.9 times greater bioavailability (absorption and sustainability over eight hours) in humans compared with conventional curcumin (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed by the body over eight hours).

Absorption of Super Bio-Curcumin® in Rats Compared with Conventional Curcumin<sup>8</sup>



**Chart 3.** Bioavailability in rats fed with 7.8 times higher than conventional curcumin.

To order either of these products, call 1-800-544-4440  
or visit [www.LifeExtension.com](http://www.LifeExtension.com)

## REPORTS



## 26 MEDITERRANEAN TRIM

**Fat cells** in **obese** people behave **differently** from those in lean individuals because of decreased function of a **fat-removing** enzyme called **hormone-sensitive lipase**. Studies show a blend of Mediterranean citrus and South American seed extracts restores activity of this vital enzyme in overweight persons. The result is a **reduction** of **body fat** by as much as **15.6%**.



## 34 NEW BLOOD TEST FOR OXIDIZED LDL CHOLESTEROL

Standard cholesterol blood tests do not measure levels of **oxidized LDL**, which carries significant vascular risk. Blood tests for **oxidized LDL** were previously available only at specialized research labs. Now, Life Extension® members can access this lifesaving test that helps measure heart attack risk at an affordable cost.



## 54 PROTECT YOUR SKIN AGAINST GLYCATION-CAUSED AGING

**Glycation** disrupts collagen metabolism, which leads to wrinkles and sagging. Clinical and lab studies show that **five topical nutrients** work in complementary ways to block the detrimental effects of glycation and promote dermal regeneration—preserving the skin's youthful appearance.



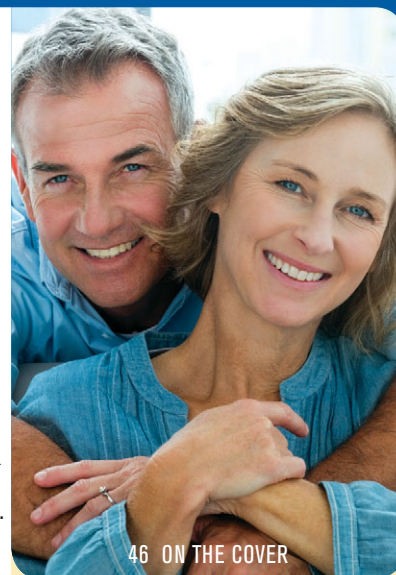
## 64 GUARD AGAINST DEADLY EFFECTS OF ACID REFLUX

Blocking stomach acid with drugs like Nexium® provides only partial protection from acid reflux and may lead to increased bone fracture risk. A safer approach is a **raft-forming alginate** that blocks the backflow of stomach acid into the esophagus helping to prevent discomfort and the risk of esophageal cancer.



## 77 MISGUIDED MEDICINE

When Massachusetts General Hospital studied the effects of testosterone in men, they inadvertently overdosed patients with an estrogen-suppressing drug. The drug overdose caused the findings to be seriously flawed. The media misinterpreted the study and insinuated that aging men should not restore youthful hormone balance.



46 ON THE COVER

## MALE MENOPAUSE

In his new book, ***The Truth About Men and Sex***, Dr. Abraham Morgentaler, associate professor at **Harvard Medical School**, writes about the invaluable benefits of **testosterone** supplementation for aging men. His research has proven that testosterone treatment **does not** cause prostate cancer.

## DEPARTMENTS



## 7 AS WE SEE IT: PROTECT AGAINST SUDDEN CARDIAC ARREST

A **2014** study reveals that **low testosterone** or **high** levels of **estrogen** can sharply **increase** the risk of sudden **cardiac arrest** in men. Failure to grasp this simple **blood testing** concept may be a contributing factor in **over 260,000** American deaths each year. Find out how the FDA misinterpreted published human data about testosterone replacement and the critical importance of testing **estrogen blood levels** in men **before** testosterone is prescribed.

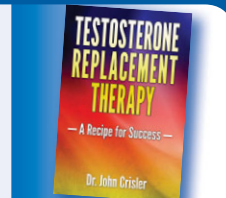


## 19 IN THE NEWS

Life Extension®-supported study finds vitamin D improves HIV-positive patients; low testosterone increases heart disease mortality; nut consumption reduces risk of death; Americans want faster FDA drug approvals; vitamin K2 inhibits arterial wall stiffness; and more.

## 62 BOOK REVIEW

In his book *Testosterone Replacement Therapy—A Recipe For Success*, Dr. John Crisler has written a practical guide for any man seeking the benefits of testosterone replacement therapy, discussing everything from appropriate blood testing to ideal methods of delivery.



## 91 WELLNESS PROFILE

Beth Daly credits activated charcoal for saving her life after what she believes was an environmental toxin-related illness that doctors could not identify.



## 97 AUTHOR INTERVIEW

In his book, *Doctored—The Disillusionment of an American Physician*, Dr. Sandeep Jauhar reveals the troubling realities of practicing medicine today.





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When it Comes to the *Health Benefits of a Mediterranean Diet*

# Can Your Omega-3 Compare?

From supporting **heart health** and **brain function** to balancing the **inflammatory** response, there is no debating the broad-spectrum benefits of **omega-3** fatty acids.<sup>1-3</sup>

There are hundreds of fish oil supplements on the market, but only one incorporates lifesaving findings to provide optimal omega-3 and olive fruit extracts, along with sesame lignans, in one molecularly distilled formula—**Super Omega-3** from **Life Extension**®!

## Fish Oil + Olive Fruit Extract

Research confirms that a combination of **fish oil** and **olive oil** may support a healthy inflammatory response better than fish oil alone.<sup>4</sup> And only one omega-3 product incorporates the benefits of both fish oil and olive fruit extract into a single novel formula called **Super Omega-3**. Each two softgel serving supplies the equivalent amount of **4 to 6 ounces** of polyphenol content found in **extra virgin olive oil**.

## + Sesame Lignans

Studies show that when added to fish oil, **sesame lignans** safeguard against oxidation and direct fatty acids toward pathways that help with inflammatory reactions.<sup>5</sup>

## = Health Benefits of a Mediterranean Diet

No other commercially available fish oil supplement contains this level of essential fatty acids, sesame lignans, and olive fruit polyphenols.

**Super Omega-3** uses a proprietary process to produce a pure, stable, and easy-to-tolerate fish oil that exceeds the standards set by international rating agencies, ensuring any pollutants are reduced to a virtually undetectable level.

## Super Omega-3

Item #01482 • 120 softgels • Non-GMO

	Retail Price	Member Price
1 bottle	\$32	<b>\$24</b>
4 bottles	\$28 each	<b>\$21 each</b>
10 bottles	\$22.73 each	<b>\$17.05 each</b>



## References

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**Note:** While the health benefits of omega-3s from fish oil are universally recognized, the critical importance of olive oil in maintaining healthy vascular function remains largely overlooked.

To order **Super Omega-3**, call **1-800-544-4440** or visit **www.LifeExtension.com**

# LifeExtension®

Magazine

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



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



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**Dipnarine Maharaj MD, MB, ChB, FRCP (Glasgow), FRCP (Edinburgh), FRCPPath., FACP**

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



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



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# Metabolically Active FOLATE

## Supports Cardiovascular Health

Folate helps maintain homocysteine levels within the normal range,<sup>1</sup> thereby promoting cardiovascular health.<sup>2</sup> Folate also supports neurotransmitter synthesis—which in turn helps maintain cognitive abilities.<sup>3</sup>

However, not everyone has sufficient activity of the **enzyme** required to convert folate to its biologically active form, **5-methyltetrahydrofolate**, or **5-MTHF**.<sup>4,5</sup>

For those whose homocysteine levels remain stubbornly high, the answer lies with the *bioactive* form of folate called **5-MTHF**, which is up to **7 times** more bioavailable than ordinary folic acid.<sup>6</sup> This unique compound requires no enzymatic conversion to become metabolically active<sup>6</sup>—providing maximum support for both cardiovascular and cognitive health.

**Optimized Folate** provides metabolically active **5-MTHF** folate in **1,000 mcg** or **5,000 mcg** strengths.

The demand for **5-MTHF** has surged as more consumers have discovered its potent **homocysteine-lowering** effects.

Non-GMO

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### Optimized Folate (1,000 mcg)

Item #01939 • 100 vegetarian tablets

	Retail Price	Member Price
1 bottle	\$19	<b>\$14.25</b>
4 bottles	\$17 each	<b>\$12.75 each</b>



### High Potency Optimized Folate (5,000 mcg)

Item #01913 • 30 vegetarian tablets

	Retail Price	Member Price
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# Surprising Factor Behind Sudden Cardiac Arrest



BY WILLIAM FALOON

Most people associate **heart attack** with **coronary artery** blockage. Yet **50%** of cardiovascular deaths originate from a condition called **sudden cardiac arrest**, which is the unexpected acute loss of **heart** function.<sup>1</sup>

**Sudden cardiac arrest** is usually caused by an **electrical disturbance** that disrupts the heart's rhythmic pumping action. When cardiac arrest happens, blood flow to the entire body stops.<sup>2</sup>

If not immediately treated, **sudden cardiac arrest** results in cessation of life. Survival rates remain low despite modern resuscitation attempts.<sup>3</sup>

In a groundbreaking **2014** study, researchers measured **testosterone** and **estrogen** levels to correlate risk of **sudden cardiac arrest**. The findings revealed that lower levels of **testosterone** or higher levels of **estrogen** in **men** were strongly associated with greater risk of **sudden cardiac arrest**.<sup>4</sup>

These revelations are significant because they provide a basis to identify men at risk for **sudden cardiac arrest** and implement preventative treatments, such as boosting deficient **testosterone** and suppressing excess **estrogen**.

**Life Extension**® members should not be surprised at these findings. They know we've been testing testosterone and estradiol **blood levels** in men for the past **19 years**.

Standing in our way of saving more lives is the **FDA**, who continues to discourage **hormone balance** in aging men despite overwhelming data showing reduction in **heart attack** risk.<sup>4,5</sup>

What the FDA and conventional medical community still do not comprehend is that when **natural testosterone** is administered to men, it is imperative that **estradiol** blood levels be tested to ensure that the **testosterone** is not converting to excess **estrogen**. Failure to grasp this simple **blood testing** concept may be causing over **100,000** needless American deaths each year.



Each year in the United States, out-of-hospital **sudden cardiac arrest** strikes more than **350,000** people, or about **1,000** per day.<sup>6</sup> Men account for **75%** of these cases. Only **5%** of those stricken survive.<sup>1,7</sup>

**Magnesium** and **potassium** are critically involved in regulating the heart's **electrical** signaling.

Deficiency of these minerals (**magnesium** or **potassium**) predisposes humans to **sudden cardiac arrest**.<sup>8-11</sup>

Each heartbeat is controlled by the opening and closing of mineral "**channels**" in cardiac cells.<sup>12</sup>

**Testosterone** plays a role in **modulating** potassium channels, which regulate the flow of potassium between the bloodstream and cardiac cells.<sup>13</sup> **Testosterone** regulates **calcium channels**, preventing too much blood calcium from entering cardiac cells.<sup>14</sup> **Magnesium** also protects against excess calcium channel infiltration.<sup>15,16</sup>

**Low testosterone** is associated with abnormal **EKG** readings that predispose people to **sudden cardiac arrest**.<sup>17-20</sup>

In a first-of-its-kind study, men with **higher testosterone** were found to be **25% less** likely to suffer

**sudden cardiac arrest**. This same study found that men with **higher estradiol** levels suffered **twice** the risk of **sudden cardiac arrest**.<sup>4</sup>

The significance of this landmark study is that it ties together a puzzle that has baffled conventional cardiology for decades. To put the data from the study in perspective, a mere **23% increase** in median testosterone level was associated with a **25% reduction** in sudden cardiac arrest. Just a **31% increase** in median level of **estradiol** **doubled** risk of **sudden cardiac arrest**.

This data corroborates a large body of previously published research linking **low** testosterone and/or **excess** estrogen<sup>21</sup> to sharply higher rates of overall cardiovascular disease.<sup>22-29</sup>

### What Happens In Cardiac Arrest?

**Coronary artery disease** is associated with the majority of sudden **cardiac arrests**.<sup>1</sup> Even temporary blockage of a coronary artery can create an **electrical disruption** that results in acute heart failure.

While the term "arrest" implies stoppage of the heart, what usu-

ally happens first in **sudden cardiac arrest** is that the heart loses its rhythmic ability to pump blood, which is medically termed **ventricular fibrillation**.<sup>30</sup> The result of ventricular fibrillation is uncoordinated rapid beating of the hearts chambers, loss of blood flow and blood pressure. Death quickly follows unless a defibrillator timely restores normal heart rhythm.

If cardiac arrest is caused by a **blocked coronary artery**, emergency surgery is required to insert a **stent** or **bypass** the occluded artery.

### American Heart Association Analysis

At the end of **2013**, a meticulous examination of studies relating to testosterone and cardiovascular disease was published in the *Journal of the American Heart Association*.

The findings from this analysis corroborate much of what you've read in *Life Extension*® magazine over the past three decades.

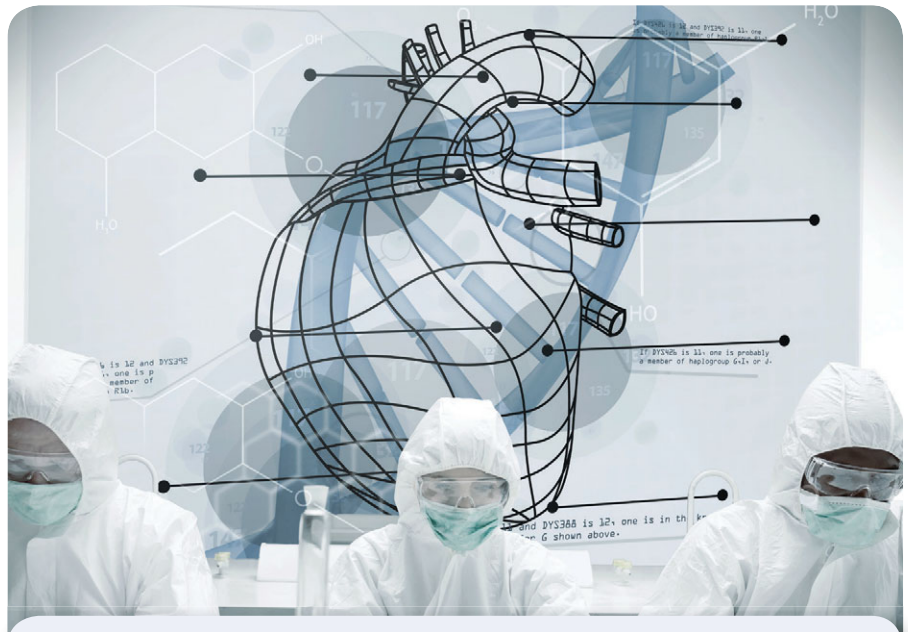
According to this review conducted on behalf of the *American Heart Association*, **low** levels of **testosterone** in **men** are associated with:<sup>31</sup>



- Greater risk of developing coronary artery disease
- More severe atherosclerosis
- Type II diabetes
- Increased visceral adiposity (belly fat)
- Metabolic syndrome
- Insulin resistance
- Carotid artery stenosis (narrowing)
- Obesity
- Abnormal EKG (electrocardiogram) tests
- Angina pectoris (chest pain caused by reduced blood flow to the heart)<sup>32</sup>
- Reduced arterial dilation (caused by impairment of calcium and potassium channels)
- Increased body mass index
- More severe congestive heart failure
- Higher rates of all-cause and cardiac mortality (death)

What impressed me about this **American Heart Association** analysis is that it also reviewed studies that failed to show a benefit to testosterone and identified flaws that rendered the findings highly questionable. **Life Extension®** has previously published many articles exposing similar flaws caused by improper testosterone prescribing practices.<sup>33-36</sup>

These findings suggest common causes of disability and death in men are related to low testosterone levels. It should be refreshing to longtime **Life Extension®** supporters that a respected mainstay of conventional medicine, i.e. the **American Heart Association**, has published this favorable data about **testosterone**.



### Conclusions From The Testosterone Review Published By The American Heart Association

The American Heart Association commissioned a review of previously published studies to evaluate the role that testosterone might play on cardiovascular disease risk. Here are excerpts from the **Concluding Summary** of the **American Heart Association's** review:<sup>31</sup>

***“Low endogenous bioavailable testosterone levels have been shown to be associated with higher rates of all cause and cardiovascular-related mortality. Patients suffering from coronary artery disease, congestive heart failure, type II diabetes, and obesity have all been shown to have lower levels of endogenous testosterone compared with those in healthy controls. In addition, the severity of coronary artery disease and congestive heart failure correlates with the degree of testosterone deficiency.*”**

***“Testosterone replacement therapy has also been shown to improve the homeostatic model of insulin resistance and hemoglobin A1c in diabetics and to lower the BMI in obese patients.*”**

***“These findings suggest that men with lower levels of endogenous testosterone may be at a higher risk of developing atherosclerosis.*”**

***“This review article has demonstrated that normal testosterone levels play an important role in maintaining cardiovascular health, and testosterone replacement therapy in men with hypogonadism improves obesity, type II diabetes, myocardial ischemia, exercise capacity, and QTc length.”***



You might think this confirmatory report would result in the widespread implementation of testosterone replacement therapy. Instead, an **FDA** advisory panel is taking steps to restrict the ability of aging men to replenish their testosterone.

### **Critical Need To Balance Estrogen**

The media, FDA, and much of mainstream medicine have misinterpreted the published scientific literature as it relates to testosterone and heart disease risk.<sup>37-41</sup> If one looks at studies where testosterone is inappropriately prescribed to men with various cardiovascular risk factors, an increased risk of death has sometimes been observed.<sup>42,43</sup>

Overlooked is the fact that men at higher risk for vascular disease also have a greater propensity to rapidly convert (aromatize) testosterone to **estrogen** in their bodies. Excess estrogen in males causes blood platelets to

aggregate, which increases the probability of an abnormal **blood clot** forming in jagged coronary arteries. Heart attacks often occur in response to blood clots that form in coronary arteries<sup>44</sup> with unstable atherosclerotic plaque.<sup>45-47</sup>

A study published in the *Journal of the American Medical Association* (JAMA) measured blood **estradiol** (a dominant estrogen) in **501** men with chronic heart failure. Compared to men in the balanced estrogen quintile, men in the lowest estradiol quintile were **317%** more likely to die during a three-year follow-up, while men in the highest estradiol quintile were **133%** more likely to die.<sup>48</sup>

The men in the balanced quintile—with the fewest deaths—had serum **estradiol** levels between **21.80** and **30.11 pg/mL**.<sup>48</sup> This is virtually the ideal range that *Life Extension*® has long recommended aging men strive for.

Any man contemplating testosterone restoration or concerned about heart attack risk should

test their testosterone and estradiol **blood** levels. If estradiol levels exceed **30 pg/mL**, simple steps can be taken to inhibit the *aromatase* enzyme that converts testosterone to estrogen. This provides the dual advantage of keeping estrogen levels in optimal ranges while increasing testosterone (since less testosterone is converted to estrogen).

### **FDA Claims Testosterone May Increase Heart Attack Risk**

In early **March 2015**, the **FDA** issued an edict regarding **testosterone** drugs. Labels of testosterone drugs must now carry a **warning** that testosterone may *increase* risk of heart attack and stroke.<sup>52</sup>

This new mandate is based on a FDA advisory panel report that admits there is only a “**weak signal of cardiovascular risk**” with testosterone use.<sup>53</sup>

The FDA’s inappropriate new warning will curtail the prescribing of testosterone, limit insurance coverage, and drive up costs to consumers. The consequences to the health and finances of aging men will be devastating (including more sudden cardiac arrests).

The problem we have with the FDA’s findings is that they are based on an egregious *misinterpretation* of the human data.

An article published in the *Journal of the American Medical Association* sheds some light on how the FDA advisory committee came to their erroneous conclusion.<sup>5</sup> There was not one mention about testing men’s **estrogen blood levels** prior to prescribing testosterone. In fact, **blood tests** were omitted so frequently that it comes as no surprise that some men

were dangerously overprescribed testosterone.

The FDA advisory panel's report reveals egregious failures of mainstream physicians to **properly** prescribe testosterone. According to the advisory panel report, **28%** of patients were prescribed testosterone without requisite **blood testing**.<sup>5,53</sup>

We suspect the number of men being prescribed testosterone without requisite **blood testing** is substantially higher than the **28%** the FDA estimates. This omission by prescribing physicians helps explain why the FDA now wants to curb the use of testosterone. But as you'll read next, there is a more efficient solution from a cost, safety and practicality standpoint.

### Let Pharmacists Prescribe Testosterone

It never ceases to astound me how backwards conventional doctors are when it comes to prescribing testosterone to their aging male patients.

They almost universally omit testing **estradiol**, which can place their patients at great risk for heart attack or ischemic stroke.<sup>73,74</sup> Many men have found that **inches** can be taken off their waistline in response to testosterone therapy.<sup>75-77</sup> This is important because abdominal (belly) fat secretes lots of *aromatase* that converts testosterone into estrogens.<sup>47,78</sup> Men with **estradiol** levels over **30 pg/mL** should consider a low-dose aromatase-inhibiting drug (like anastrozole) so they can enjoy the benefits of increased testosterone and optimized estradiol.

Instead of asking hurried doctors to figure this out, why not let pharmacists review a man's **blood test** results and provide the appro-

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### Mortality Risks Of Low Testosterone

As men age, testicular production of testosterone markedly declines. This often occurs as *aromatase* levels increase, especially in the presence of surplus **abdominal fat**.<sup>47</sup> Aromatase is the enzyme that converts testosterone to estrogen.

Low testosterone or excess estrogen in men was shown to elevate risk of **sudden cardiac arrest** in a recent study.<sup>4</sup>

The link between low testosterone and cardiovascular disease risk in males was discovered long ago. What follows are descriptions from just a few of many studies supporting this conclusion:

- A study evaluated the relationship between testosterone levels and all-cause mortality over approximately 20 years. Men with low total testosterone levels (under **241 ng/dL**) were **40% more** likely to die than those with higher levels of testosterone. This finding was consistent regardless of age, lipid levels, and other variables.<sup>49</sup>
- Another study looked at whether low testosterone levels were associated with an increased risk for mortality in male veterans. Men classified as having a low testosterone level had **88% increased** mortality after adjusting for other known mortality factors.<sup>50</sup>
- A third study examined the relationship between testosterone levels and mortality due to all causes, cardiovascular disease, and cancer. The study included over 11,000 patients aged 40 to 79 years. Low testosterone levels at baseline were significantly associated with increased mortality from cardiovascular disease, cancer, and all causes. After adjustment for variables, an increase of **173 ng/dL** of total testosterone was associated with a **19% decreased** risk for mortality.<sup>51</sup>

These studies help corroborate **Life Extension®**'s long-standing position that low testosterone in males is a significant mortality factor. The take home message is to have one's **blood tested** for testosterone and estradiol to enable adjustments to be made based on one's individual results.

appropriate dose of **testosterone cream** and an *aromatase-inhibiting* drug if needed. A pharmacist (or any enlightened individual for that matter) can easily see if red blood cells, PSA, or liver enzymes are excessively elevated and refer the consumer to a physician for additional testing.

This sweeping change would save Americans time and money, and probably spare human lives as pharmacists may wind up doing a better job than untrained physicians that prescribe **testosterone** with no **blood testing**. (No one questions the value of having access to a physician with **expertise** in the prescribing of **natural hormones**.)

### How Many Lives Are Being Lost?

Each year, **263,000** men perish from **sudden cardiac arrest** in America. It remains a leading cause of death.<sup>1</sup>

A recent finding (corroborated by previous published studies) indicates a substantial percentage of these deaths can be avoided if men just modestly restore youthful **hormone balance**, i.e. increase deficient testosterone and reduce excess estradiol.<sup>4,79-82</sup>

Standing in the way of this scientific rationality is a slew of state and federal **regulations** that drives up costs and creates bureaucratic inefficiencies.

The only way of knowing one's individual hormone status is to test for it. This is not something that can be guessed, and **95%** of those stricken with **sudden cardiac arrest** don't get a second chance to take corrective actions.

The financial impediment precluding more men from using **topical testosterone cream** is its high

cost. The most popular name brand of topical testosterone (AndroGel®) costs around **\$430** per month. Fortunately, **compounding pharmacies** make similar potency testoster-

one creams for under **\$35** a month. Both these prices (\$430 and \$35) are far too high and reflect **regulatory** costs rather than non-patented **testosterone**, which costs very little.

### Hormone Balance Requires Proper Blood Tests

Maintaining youthful balance of **testosterone**, **estrogen**, **progesterone**, and **DHEA** can help forestall the diminished quality of life humans face as they age.

Prescribing testosterone without **blood testing** exposes men to the following problems:

- Too much or too little testosterone
- Too much or too little estrogen
- Excess red blood cell formation
- Liver injury
- Clinically relevant pre-existing prostate cancer

Testosterone promotes healthy red blood cell formation, which is beneficial for the aging men suffering frank or subclinical anemia.<sup>54-57</sup> Men with a condition called **polycythemia vera**,<sup>58,59</sup> which is an overproduction of red blood cells, are advised to avoid testosterone replacement, as are men with severe liver impairment.<sup>60,61</sup> **Blood testing** can readily detect liver problems or overproduction of red blood cells.

Men with testosterone-sensitive prostate cancer should avoid testosterone until their malignancy is brought under control.<sup>62</sup> Contrary to erroneous reports the media ignorantly disseminates, higher testosterone levels do not increase prostate cancer risk.<sup>63-72</sup> **PSA** blood tests can reveal the status of one's prostate gland.

Men with high blood estradiol (estrogen) levels should take an aromatase-inhibiting drug like anastrozole (**0.5 mg** twice a week) to bring estradiol into optimal range (**20 to 30 pg/mL**). This is critically important even if a man chooses not to initiate testosterone replacement.

Here are the **optimal blood levels** of testosterone, estradiol and other relevant markers men should strive for:

<b>Total Testosterone:</b>	<b>700-900 ng/dL</b>
<b>Free Testosterone:</b>	<b>20-25 pg/mL</b>
<b>Estradiol:</b>	<b>20-30 pg/mL</b>
<b>PSA:</b>	Under <b>2.5</b> (the lower the better)
<b>Red Blood Cells:</b>	Within normal reference ranges
<b>Liver enzymes:</b>	Within normal reference ranges

All of these measurements are included in the comprehensive **Male Panel** blood test that many **Life Extension®** members have done annually. (Call **1-800-208-3444** to order.)

Instead of revolting against **regulatory** burdens that cause drugs to be extortionately overpriced, Americans languish in state of apathy while pharmaceutical companies collude to pillage our finances.

**Life Extension®** long ago broke down some of these barriers by enabling members to gain direct and convenient access to low-cost **blood test** panels.

### Annual Blood Test Super Sale

**High prices** charged by commercial labs for **comprehensive blood testing** preclude most people from having them done. The tragic result is that most aging humans needlessly suffer the ill effects of **hormone imbalances**.

**Life Extension®** circumvents these price barriers by offering **Male and Female Blood Test Panels** at the lowest prices anywhere. Once a year, we discount the popular **Male and Female Blood Test Panels** to only **\$199**—far less than what commercial labs charge.

The **Blood Test Super Sale** ends **June 1, 2015**, so please place your order before then to take advantage of these extra discounted prices. You can have your blood drawn any time after receiving your requisition kit.

The results of your blood tests are rapidly sent directly to you. If you have any questions, you are welcome to call our Health Advisor helpline.

### The Most Effective Way To Live Longer

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

For longer life,



William Faloon

P.S.—Sex hormone balance is so critical to the health of aging men that in this issue of **Life Extension®** magazine, we reprint a rebuttal we published last year to a flawed study being used by the **FDA** to warn aging men against using testosterone.<sup>83,84</sup>

We also have a chapter from a brand new book on testosterone authored by Harvard professor Abraham Morgantaler, MD, along with a review of another new book on testosterone replacement therapy authored by John Crisler, DO.

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# MALE AND FEMALE BLOOD TEST PANELS

Unlike commercial blood tests that evaluate only a few disease risk factors, Life Extension's **Male** and **Female Blood Test Panels** measure a wide range of blood

markers that predispose people to age-related diseases. Just look at the **huge** number of parameters included in the **Male** and **Female Blood Test Panels**:

## ■ MALE PANEL

### HORMONES

**Free and Total Testosterone**

**DHEA-S**

**Estradiol** (an estrogen)

**TSH** (thyroid function)

**Vitamin D (25-hydroxyvitamin D)**

### LIPID PROFILE

**Total Cholesterol**

**LDL** (low-density lipoprotein)

**HDL** (high-density lipoprotein)

**Triglycerides**

### CARDIAC MARKERS

**C-Reactive Protein** (high sensitivity)

**Homocysteine**

### METABOLIC PROFILE

**Glucose**

**Kidney function tests:** creatinine, BUN, uric acid, BUN/creatinine ratio

**Liver function tests:** AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase

**Blood minerals:** calcium, potassium, phosphorus, sodium, chloride, iron

**Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio

**Hemoglobin A1c**

### COMPLETE BLOOD COUNT (CBC)

**Red Blood Cell count including:** hemoglobin, hematocrit, MCV, MCH, MCHC, RDW

**White Blood Cell count including:**

lymphocytes, monocytes, eosinophils, neutrophils, basophils

**Platelet count**

### CANCER MARKER

**PSA (Prostate Specific Antigen)**

## ■ FEMALE PANEL

### HORMONES

**Progesterone**

**Estradiol** (an estrogen)

**Free and Total Testosterone**

**DHEA-S**

**TSH** (thyroid function)

**Vitamin D (25-hydroxyvitamin D)**

### LIPID PROFILE

**Total Cholesterol**

**LDL** (low-density lipoprotein)

**HDL** (high-density lipoprotein)

**Triglycerides**

### CARDIAC MARKERS

**C-Reactive Protein** (high sensitivity)

**Homocysteine**

### METABOLIC PROFILE

**Glucose**

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**Red Blood Cell count including:** hemoglobin, hematocrit, MCV, MCH, MCHC, RDW

**White Blood Cell count including:**

lymphocytes, monocytes, eosinophils, neutrophils, basophils

**Platelet count**

## ■ Blood Test Super Sale • March 30<sup>th</sup> through June 1, 2015. ■

**Non-member retail price: \$400**

**Member Price: \$199**

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

Then—at your convenience—you can visit one of the blood-drawing facilities provided by LabCorp in your area.

Blood testing services are available only in the continental United States and Anchorage, AK. Not available in Maryland. Restrictions apply for residents of MA, NY, NJ, RI, and PA.

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National Diagnostics, Inc.

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# ARTHROMAX<sup>®</sup> ADVANCED

## WITH UC-II<sup>®</sup> AND APRÈSFLEX<sup>®</sup>



### Dual-Action Support For Aging Joints!

As you grow older, age-related stiffness and discomfort in the joints becomes a fact of life. Activities once routine become a challenge as limited mobility hampers your every move.

You now have a more potent option to provide broad-spectrum support for aging joints.

**ArthroMax<sup>®</sup> Advanced with UC-II<sup>®</sup> and AprèsFlex<sup>®</sup>** is a multi-nutrient formula based on scientific data on natural support for joint health. The ArthroMax<sup>®</sup> formula provides more joint support than ever before, enhanced with two innovative, clinically validated ingredients: AprèsFlex<sup>®</sup> and UC-II<sup>®</sup>.

### Better Absorption For Optimum Benefit

**AprèsFlex<sup>®</sup>** represents a quantum leap forward in the delivery to aging joints of **boswellia**, long prized for its ability to help with inflammatory issues. It is a superior inhibitor of the enzyme **5-lipoxygenase** or **5-LOX**.

Excess activity of 5-LOX results in the accumulation of **leukotriene B<sub>4</sub>**, a pro-inflammatory compound that affects aging joints. **Boswellia** has been shown to bind directly to the 5-LOX enzyme in our bodies, blocking it from facilitating production of pro-inflammatory leukotrienes.<sup>1,2</sup>

**AprèsFlex<sup>®</sup>** boswellia *absorbs* into the blood **52% better** than previously available forms of boswellia, for superior effectiveness.

### ArthroMax<sup>®</sup> Advanced With UC-II<sup>®</sup> And AprèsFlex<sup>®</sup>

In addition to AprèsFlex<sup>®</sup>, ArthroMax<sup>®</sup> contains a novel form of standardized cartilage: **UC-II<sup>®</sup>**. Data show it helps with immune issues that can impact joint discomfort and ease of motion in aging individuals.

Two capsules of **ArthroMax<sup>®</sup> Advanced with UC-II<sup>®</sup> and AprèsFlex<sup>®</sup>** provide the following nutrients in one convenient, joint-protecting formula:

<b>UC-II<sup>®</sup> standardized chicken cartilage</b>	<b>40 mg</b>
<b>Total Collagen</b>	<b>10 mg</b>
<b>Glucosamine sulfate 2KCl (derived from corn)</b>	<b>1500 mg</b>
<b>AprèsFlex<sup>®</sup> Indian frankincense (<i>Boswellia serrata</i>) extract</b>	<b>100 mg</b>
<b>Boron (calcium fructoborate as patented FruiteX B<sup>®</sup> OsteoBoron<sup>®</sup>)</b>	<b>1.5 mg</b>

The retail price of a bottle of 60 capsules of **ArthroMax<sup>®</sup> Advanced with UC-II<sup>®</sup> and AprèsFlex<sup>®</sup>** is \$36. If a member buys four bottles, the price is reduced to **\$24** per bottle.

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#### Non-GMO

AprèsFlex<sup>®</sup> 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. FruiteX B<sup>®</sup> and OsteoBoron<sup>®</sup> are registered trademarks of VDF FutureCeuticals, Inc. U.S. Patent No. 5,962,049. UC-II<sup>®</sup> is a registered trademark of InterHealth N.I. U.S. patents 7,846,487; 7,083,820 and EP0 patent EP 1435906B1; Canadian patent CA 2459981C; and Japanese patent JP 4800574B2.

To order ArthroMax<sup>®</sup> Advanced with UC-II<sup>®</sup> and AprèsFlex<sup>®</sup> call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

# Standardized TART CHERRY Extract

# STRONG SUPPORT FOR SORE MUSCLES

## After Exercise and Everyday Exertion

**Tart cherries** are chockfull of compounds found to block **COX-1** and **COX-2** inflammatory enzymes.<sup>1</sup> Benefits of the fruit include:<sup>2-5</sup>

- **Rapid muscle recovery after exercise, and**
- **Fast relief from the minor aches, discomfort, and stiffness following everyday activities.**

### Clinically Validated

Numerous studies have confirmed the muscle-supporting benefits of tart cherries. One clinical trial found that consuming tart cherry juice twice daily produced a substantial decrease in muscle symptoms related to exercise. In the same study, loss of strength due to exercise over four days was reduced from **22%** to only **4%**.<sup>4</sup>

### Anthocyanins

**Anthocyanins**—the powerful flavonoids found in dark-pigmented fruit—have been studied for their many advantages, including **heart, cellular, and cognitive health**.<sup>6-8</sup> Tart cherries have a higher content of anthocyanins than many other fruits.<sup>1</sup>

Life Extension® offers **100% natural Tart Cherry Extract with Standardized CherryPURE®**, which opens the door to the positive benefits of continuous exercise—**at any age!** This formulation provides all the muscle-supporting benefits of tart cherries and matches that anthocyanin dose used in successful clinical trials by providing a standardized **40 mg** dose of anthocyanins in each vegetarian capsule.<sup>2,4</sup>

**Non-GMO**

CherryPURE® is a registered trademark of Shoreline Fruit, LLC.

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### Tart Cherry Extract with Standardized CherryPURE®

Item #01723 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$22	<b>\$16.50</b>
4 bottles	\$20 each	<b>\$15 each</b>



To order **Tart Cherry Extract with Standardized CherryPURE®**, 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.



## IN THE NEWS

### Cardiovascular Disease In Men And Women—Does Declining Testosterone Play A Role?

An article by Dr. Sanjai Sinha, MD, FACP, of Weill Cornell Medical College in New York City, asked the question: Do age-related decreases in testosterone contribute to a shortened life span in men in relation to cardiovascular disease (CVD)?\*

Along with age, blood pressure, antihypertensive treatment, diabetes, and total and HDL cholesterol, gender has long been considered a risk factor for cardiovascular disease. Males experience their first cardiovascular event up to 10 years earlier than women and overall life expectancy in men is approximately five to eight years shorter than that of females. The Framingham Heart Study found that “hard” CVD death rates for males was **18.3%** and **7.6%** in women.

Hypoandrogenemia (an abnormally low amount of androgens, such as testosterone, in the blood) has been associated with other known CVD risk factors including visceral obesity, high LDL levels, and type II diabetes. A population-based study evaluated the risk of cardiovascular morbidity, all-cause and cardiovascular disease between men and women, and the added risk of low testosterone in men. In the study, 4,152 people between 20 and 70 were tracked for an average of five years.

Compared with women, men were at higher risk of cardiovascular morbidity, including hypertension, dyslipidemia, metabolic syndrome, and type II diabetes. Men 20 to 49 had a much higher relative risk compared to women in their age group for these risk factors versus older men to older women. Compared to men with higher testosterone concentrations, men with low testosterone concentrations had a significantly higher 10-year CVD risk, all-cause mortality (**82%**), and CVD mortality risk (**125%**).

\* Available at: <http://www.medpagetoday.com>. Accessed March 2, 2015.

### Nut Consumption Linked To Lower Death Rates

Eating a handful of nuts—including peanuts, a legume—is associated with a **20%** reduced rate of all-cause mortality and specifically, death from cardiovascular disease, say researchers at Vanderbilt University and the Shanghai Cancer Institute in an article published in *JAMA Internal Medicine*.\*

The research, which came from three large prospective cohort studies involving 71,764 low-income Americans and 134,254 Chinese, examined the correlation of nut consumption with lower death rates among low-income and racially diverse populations and found that eating nuts was associated with fewer deaths, especially from heart disease.

The American participants were between 40 and 79 years, while the Chinese were between 40 and 74. For the Americans, peanuts made up about half of total nut consumption.

“Nuts are rich in nutrients, such as unsaturated fatty acids, fiber, vitamins, phenolic [compounds,] arginine, and other phytochemicals. All of them are known to be beneficial to cardiovascular health, probably through their anti-oxidative, anti-inflammatory and endothelial function maintenance properties,” said senior author Xiao-Ou Shu, MD, PhD.

**Editor’s Note:** This is not the first study to associate nut consumption with lower mortality, but previous studies focused primarily on upper income, white populations who eat more expensive nuts. This is the first study to determine that all races may potentially boost heart health by eating nuts and peanuts.

\* *JAMA Int Med*. 2015 Mar 3.



## More Americans Support Faster Drug Approval

Many US citizens believe that new drug approval should occur more rapidly and that the 114<sup>th</sup> Congress should take action on pharmaceutical development and delivery, according to the results of polls conducted by the nonprofit organization Research!America.\*

In 2015, **38%** of Americans believed the FDA should act faster to secure approval of new therapies for patients in need of them, despite potential risks—a figure that is up from **30%** in 2013. Nearly half of poll respondents believe that increased health care research is part of the solution to high medical costs.

James L. Madara, MD, of the American Medical Association said: “Like Research!America, the American Medical Association is committed to improving the health of the nation and ardently supports funding for medical research that not only generates lifesaving discoveries, but also fuels economic growth by increasing jobs and productivity, and helps control health care costs.”

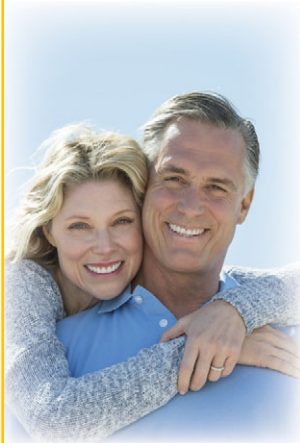
**Editor’s Note:** “Our polls show that Americans view research as an economic driver as well as being the answer to health threats that continue to outrun us,” stated Research!America President and CEO Mary Woolley. “Americans expect our elected officials to provide sufficient resources and 21<sup>st</sup> century policies to speed development of the therapies, devices, prevention, and cures necessary to save lives and maintain our global competitiveness.”

\* America Speaks Poll Data Summary Volume 15. 2015 Jan.



## Vitamin K2 Improves Arterial Function And Cardiovascular Outcome In Aging Women

A recent study published in *Thrombosis and Haemostasis* found that supplementation with vitamin K2 in the form of MK-7 (menaquinone-7) can help reduce the risk of age-related arterial wall stiffness in middle-aged women.\*



The randomized, double-blind trial included 244 healthy postmenopausal women between the ages of 55 and 65 who were given either a daily dose of **180 micrograms** of vitamin K2 for three years or a placebo. Researchers evaluated cardiovascular effects with ultrasound and pulse wave velocity. Data from the 227 women who completed the study reveals that vitamin K2 supplements led to significant reductions in vascular stiffness and improved the flexibility of the vascular wall. The effects were most noticeable in women who had a higher degree of vascular stiffness at the beginning of the study.

**Editor’s Note:** “This is the first study showing that long-term use of vitamin K2 in the form of MK-7 beneficially affects cardiovascular health,” said lead researcher Dr. Cees Vermeer of Maastricht University Holding (The Netherlands). “Our data demonstrated that a nutritional dose of vitamin K2 in fact improves cardiovascular outcomes.”

\* *Thromb Haemost.* 2015 Feb 19;113(5).

## Study Supported By Life Extension® Foundation Finds Vitamin D Improves HIV-Positive Patients

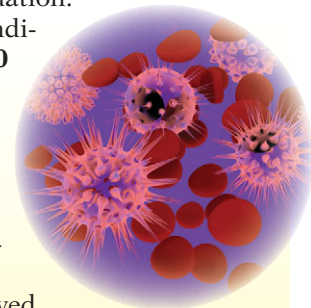
Researchers at Children’s Hospital of Philadelphia published the results of a trial in which treatment with **7,000 IU** vitamin D3 benefited HIV-positive children and young adults.\* The supplements used in the trial were provided by the Life Extension® Foundation.

Over a 12-month period, 50 HIV-positive individuals aged 5 to 24.9 years were given **7,000 IU** of vitamin D3 or placebo daily. Vitamin D3 supplementation increased average serum 25-hydroxyvitamin D3 levels from **18 ng/mL** at baseline to **32 ng/mL** at three months. After 12 months, vitamin D3 subjects maintained a **12 ng/mL** increase in vitamin D blood levels compared to placebo.

Several measures of immune function improved with vitamin D3 supplementation compared with placebo. There was an increase in the percentage of naïve T helper cells, CD4+ cells, and a reduction in RNA viral load at several time points during the study.

**Editor’s Note:** “It’s encouraging to see that high-dose vitamin D3 improved important aspects of immune function in these HIV-positive study participants without causing any major side effects,” stated Dr. Steven Hirsh, director of clinical research for Life Extension®. “This study certainly supports further research into the use of high-dose vitamin D3 supplementation for individuals with HIV.”

\* *Pediatr Infect Dis J.* 2015 Feb;34(2)32–e40.



### Green Tea Shows Promise As Oral Cancer Therapy

An article published in *Molecular Nutrition and Food Research* reports that a compound found in green tea may kill oral cancer cells by triggering a process in the mitochondria, which leads to cell death while leaving healthy cells alone.\*

“EGCG (epigallocatechin-3-gallate) is doing something to damage the mitochondria and that mitochondrial damage sets up a cycle causing more damage and it spirals out, until the cell undergoes programmed cell death,” said lead study author Dr. Joshua Lambert of Pennsylvania State. “It looks like EGCG causes the formation of reactive oxygen species in cancer cells, which damages the mitochondria, and the mitochondria responds by making more reactive oxygen species.”

The study compared the effects of EGCG in human oral squamous carcinoma cells, premalignant cells, and normal human gingival fibroblasts. The researchers found that the compound induced reactive oxygen species formation in the mitochondria of the cancerous and premalignant cells but not in normal cells.

**Editor's Note:** Dr. Lambert ensured that the study was applicable by using levels of EGCG that would be found when consuming green tea. “We designed the study to use concentrations of EGCG that are achievable in the oral cavity, and we looked at normal, oral leukoplakia (a precancerous lesion), and oral cancer cells to get an idea of what the effect of EGCG would be on different stages in the oral cancer development process.”

\* *Mol Nutr Food Res.* 2014 Apr;58(4): 665-76.

### Calorie Restriction Can Reduce Inflammation

Yale University researchers have discovered a compound produced by the body during calorie restriction that can block a part of the immune system involved in inflammatory disorders, including type II diabetes, atherosclerosis, Alzheimer's disease, and autoinflammatory disorders. The results were published in *Nature Medicine* in February 2015.\*

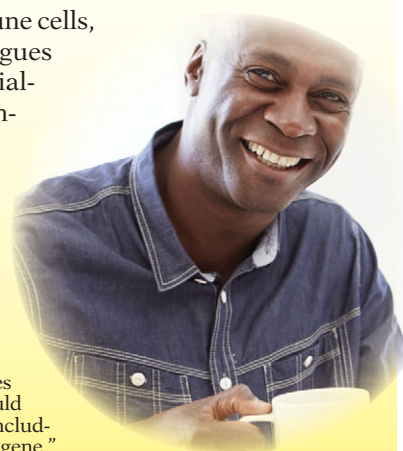
The scientists described how a compound called BHB ( $\beta$ -hydroxybutyrate) can inhibit NLRP3, which is part of a complex set of proteins called inflammasomes, which drive inflammatory responses in many disorders. BHB are elevated in the liver during calorie restriction, consumption of a low carbohydrate ketogenic diet, and high-intensity exercise.

Working with mice and human immune cells, lead author Vishwa D. Dixit and colleagues focused on how macrophages, the specialized immune cells that produce inflammation, react when exposed to ketone bodies and whether that impacts the inflammasome complex.

After introducing BHB to mouse models of inflammatory diseases caused by NLRP3, they reported reduced inflammation.

**Editor's Note:** Professor Dixit noted: “These findings are important because endogenous metabolites like BHB that block the NLRP3 inflammasome could be relevant against many inflammatory diseases, including those where there are mutations in the *NLRP3* gene.”

\* *Nature Medicine.* 2015 Feb 16.



### Metformin Shows Promise For Late-Stage Prostate Cancer

The *Journal of Biological Chemistry* published the finding of a potential benefit for a combination of metformin and the gene inhibitor B12536 in late-stage prostate cancer.\*

Late-stage prostate cancer is commonly treated with androgen deprivation therapy (ADT); however, the disease eventually becomes resistant to treatment. Androgen deprivation can disturb the body's metabolism, leading to insulin resistance that can stimulate androgen production. Metformin, a drug commonly used to treat diabetes, helps reduce insulin resistance and has been associated with protection against specific cancers.

Acting on the knowledge that the gene polo-like kinase 1 (PLK1) can become overexpressed during ADT and that its overexpression can also stimulate androgen synthesis, Xiaoqui Liu and colleagues tested the effects of administering the PLK1-inhibitor B12536 with low-dose metformin in prostate cancer cells. The team found that the drugs worked synergistically to inhibit prostate cancer cell proliferation.

**Editor's Note:** The findings were confirmed in mice that received human prostate cancer cell grafts.

\* *J Biol Chem.* 2015 Jan 23;290(4):2024-33.



## Study Suggests Less Cause For Concern Over Mercury In Fish

Findings reported in the *American Journal of Clinical Nutrition* indicate less reason to worry about mercury in fish than ever before, particularly among pregnant women.\*

Researchers at the University of Rochester and the University of Ulster, in collaboration with the Republic of Seychelles Ministry of Health, analyzed data from 1,265 mother-child pairs enrolled in the Seychelles Child Development Study Nutrition Cohort 2. (Seychelles Islanders have an average intake of fish that is higher than that of the US.)

Maternal blood samples collected at 28 weeks of gestation were analyzed for serum polyunsaturated fatty acids, and hair samples were evaluated for total mercury to assess prenatal mercury exposure. Tests administered to the children at 20 months of age evaluated motor skills, behavior, and communication.

"These findings show no overall association between prenatal exposure to mercury through fish consumption and neurodevelopmental outcomes," reported study co-author Edwin van Wijngaarden, PhD.

**Editor's Note:** "It is also becoming increasingly clear that the benefits of fish consumption may outweigh, or even mask, any potentially adverse effects of mercury," Dr. van Wijngaarden noted.

\* *Am J Clin Nutr.* 2015 Jan 21.



## Resveratrol Helps Maintain Memory, Learning In Aged Rats

In an article in *Scientific Reports*, researchers at Texas A&M University describe a benefit for resveratrol in the maintenance of cognitive function in older rats.\*

Ashok K. Shetty, PhD, and associates divided 23-month-old rats to receive resveratrol or a placebo for four weeks. Learning ability and memory were evaluated prior to treatment and at approximately 25 months of age.

While spatial learning and spatial memory formation did not differ prior to treatment, animals that received resveratrol showed improvement in these abilities at 25 months. Examination of the rats' brains revealed significantly increased neurogenesis and improved microvasculature in those that received resveratrol in comparison with the control group. There was also less inflammation in the hippocampus, an area that is vital for learning, memory, and mood.

"The study provides novel evidence that resveratrol treatment in late middle age can help improve memory and mood function in old age," Dr. Shetty concluded.

**Editor's Note:** The authors list increased expression of the longevity gene *SIRT1*, altered expression of nuclear factor kappa-beta (NF- $\kappa$ B), activation of adenosine monophosphate activated protein kinase (AMPK), improved glucose metabolism, and other factors as possible mechanisms for improvements in cognitive function observed in association with resveratrol.

\* *Sci Rep.* 2015 Jan 28;5:8075.



## SuperAger Brains Are Different

The *Journal of Neuroscience* reveals a significant difference between the brains of "normal" 80-year-olds and those of so-called "SuperAgers" of the same chronologic age.\* "SuperAgers" is a term applied to men and women who retain good episodic memory function well into their advanced years.

Subsequent to finding a region of the brain's anterior cingulate cortex that was thicker in SuperAgers in comparison with healthy 50- to 65-year-olds, the researchers utilized magnetic resonance imaging of the cingulate cortex to compare postmortem brains of SuperAgers, cognitively average older men and women, and those who had mild cognitive impairment. The researchers found that, in addition to a thicker and larger cingulate cortex, SuperAgers had **90%** fewer neurofibrillary tangles of the type observed in Alzheimer's disease and increased density of **von Economo** neurons related to social intelligence.

**Editor's Note:** "It's thought that these von Economo neurons play a critical role in the rapid transmission of behaviorally relevant information related to social interactions, which is how they may relate to better memory capacity," senior author Changiz Geula explained. "These cells are present in such species as whales, elephants, dolphins, and higher apes."

\* *J Neurosci.* 2015 Jan 28;35(4):1781-91.

# COMPREHENSIVE VITAMIN K FORMULA



Item # 01724

## To Support Arterial Health And Bone Support

There are **three** forms of **vitamin K** that are key factors to promoting arterial health and bone support.<sup>1-8</sup>

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

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

**Vitamin K2** can be found in meats, dairy, and egg yolks. If you are avoiding these foods for health reasons, it is *essential* to ingest a K2 supplement. **MK-4** is the most rapidly absorbed form of K2, while **MK-7** boasts a very long half-life in the body. This makes both forms the perfect complement to any vitamin K regimen.<sup>9</sup>

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

Just one daily softgel of **Super K with Advanced K2 Complex** provides:

Vitamin K2 (MK-7)	200 mcg
Vitamin K2 (MK-4)	1,000 mcg
Vitamin K1	1,000 mcg

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**. Each bottle lasts for three months.

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

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

# POWERFUL PROTECTION FOR A LOW PRICE

# GREEN TEA EXTRACT

## EGCG For Optimal Health

Nearly 6,000 studies have been published on the broad-spectrum health benefits of **green tea**. Research shows that green tea favorably influences cardiovascular health, lipid clearance, glucose tolerance, healthy body weight, DNA support, prostate and breast health, and healthy cell division.<sup>1-7</sup> Scientists have identified the polyphenol **EGCG** as the key compound for green tea's multimodal health benefits.<sup>8</sup>

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

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

### References

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### Non-GMO



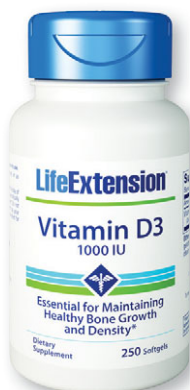
To order Mega Green Tea Extract,  
call 1-800-544-4440 or  
visit [www.LifeExtension.com](http://www.LifeExtension.com)

# D<sub>3</sub>

## VITAMIN D3 SOFTGELS

### For Superior Absorption

New research on the vital benefits of **vitamin D** emerges on a daily basis. Studies confirm that **optimal** levels of vitamin D are in the range of **50-80 ng/mL** of **25-hydroxyvitamin D**. **Life Extension®** has created a large selection of highly *absorbable* **vitamin D** supplements in softgels to help you to achieve your individual **vitamin D goals**. Keep in mind that you may already be getting **1,000-3,000 IU** of **vitamin D** in your current multi-nutrient formulas.



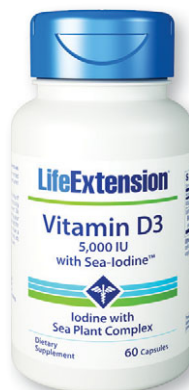
#### Vitamin D3 • 1,000 IU

250 softgels • Retail: \$12.50

Four-bottle Member Price: **\$8.44 ea.**

For most people, a **1,000 IU** potency is insufficient to attain optimal **vitamin D** blood levels. However, this potency may be suitable for smaller individuals who obtain **2,000-3,000 IU** in their multi-nutrient formulas (and children). **Item # 01751**

Non-GMO.

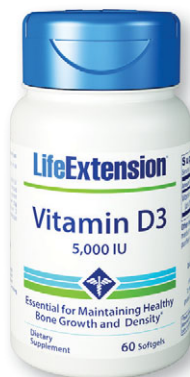


#### Vitamin D3 • 5,000 IU With Sea-Iodine™\*

60 capsules (non-softgel) • Retail: \$14

Four-bottle Member Price: **\$9.38 ea.**

Most people, especially those seeking to reduce their salt intake, do not ingest enough iodine. Combining **5,000 IU** of **vitamin D3** with **1,000 mcg** of **iodine** into one capsule makes taking these two nutrients economical and convenient. *Due to the source of kelp, this product may contain fish and shellfish.* **Item # 01758**



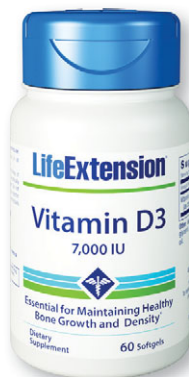
#### Vitamin D3 • 5,000 IU

60 softgels • Retail: \$11

Four-bottle Member Price: **\$7.43 ea.**

For those already obtaining **1,000-3,000 IU** of **vitamin D** in their multi-nutrient formulas, this **5,000 IU** potency is what may be needed to achieve optimal blood levels. **Item # 01713**

Non-GMO.



#### Vitamin D3 • 7,000 IU

60 softgels • Retail: \$14

Four-bottle Member Price: **\$9.45 ea.**

Some people (such as those weighing more than 180 pounds) may require even more **vitamin D**. When combined with **1,000-3,000 IU** taken in a multi-nutrient formula, this **7,000 IU** softgel should enable these individuals to attain blood levels above **50 ng/mL**. **Item # 01718**



#### Vitamin D3 Liquid • 2,000 IU (Natural Mint Flavor)

1 ounce • Retail: \$28 • Non-GMO

Four-bottle Member Price: **\$18.75 ea.**

Great for travel and for those individuals who have difficulty absorbing enough vitamin D3 from softgels, this liquid vitamin D is ideal. **Item # 01732**

Also available without mint. (Item # 00864)

**To order any of these high-potency vitamin D3 supplements, call 1-800-544-4440 or visit [www.LifeExtension.com](http://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.



# The Fat Cycle



**Fat cells** in **obese** people behave *differently* from those in lean individuals.

In the obese, fat cells have less-than-optimal functioning of an **enzyme** that is required to help break down stored fat and burn it for energy.<sup>1,2</sup>

As individuals become more **overweight**, the less effective their cells are at removing stored fat, making it harder for them to lose weight.<sup>3</sup> This is likely to feel familiar to anyone who's ever tried to permanently shed fat pounds.

A series of discoveries reveal that biologically active *flavonoids* from a blend of Mediterranean *citrus fruit* and South American *seed extracts* initiate a chain of events that help support the function of a fat-removing **enzyme** called **hormone-sensitive lipase**.<sup>4,5</sup>

In one human study, those taking the blend of this **citrus fruit/seed extract** saw body **fat reduction** of **15.6%** and **weight loss** averaging almost **12 pounds**.<sup>4</sup>

In another human study, **citrus fruit/seed extract**-supplemented subjects shed **9.73%** of their white **abdominal fat** stores, compared with baseline. This nearly **10%** loss of inflammation-generating abdominal fat led to remarkable drops in markers of **inflammation** in the blood.

Data from these human trials demonstrate healthy weight loss, especially from difficult-to-lose belly fat stores.<sup>4</sup> Proper use of these nutrients can help jump-start a weight-loss program and reduce the chronic inflammation induced by surplus fat cells.<sup>4,5</sup>



### Lethal Impact Of Surplus Body Fat

This year, **400,000** Americans are expected to die from the effects of excess **body fat**.<sup>22</sup> That's almost as much as **tobacco**-related deaths.

Excess body fat is a leading contributor to cardiovascular and liver disease, diabetes, and cancer.<sup>22</sup>

If you look at 10 average American adults today, three of them are obese.<sup>23</sup> That works out to about 100 million people whose health is threatened purely by the amount of unnecessary and dangerous body fat they carry.<sup>23,24</sup>

This problem is not limited to adults; **17%** of children and teens are obese in the US,<sup>24</sup> indicating that the problem extends well into the next generations.

### How Fat Produces Inflammation And Decreases Insulin Sensitivity

Fat cells, especially the “white adipose tissue” found in **abdominal fat**, are a massive factory for **inflammatory signaling** molecules.<sup>6-8</sup>

The steady outpouring of these molecules from belly fat cells results in low-grade body-wide **inflammation**,<sup>9,10</sup> which is a primary instigator of chronic “age-related” disorders.<sup>11,12</sup>

Pro-inflammatory molecules emitted from fat cells interfere with normal **insulin** function, which results in the state known as **insulin resistance**.<sup>6</sup> Resistance to insulin increases the amount of **glucose** in the blood, where it further damages tissues and eventually contributes to still greater problems managing weight.

It has recently been discovered that the white adipose tissue in obese people behaves differently from that in lean individuals. Obese people's fat cells have less than optimal functioning of **hormone-sensitive lipase**. This enzyme is responsible for breaking down complex fat molecules and freeing them for burning for energy.<sup>1,3,13</sup>

Without sufficient **hormone-sensitive lipase** activity, obese people may have more trouble getting access to the energy stored in their fat cells, possibly making it more difficult to lose weight.

A ray of hope has recently emerged from the endless cycle of more and more obesity. A blend from Mediterranean citrus fruit and a South American seed has been shown to increase **hormone-sensitive lipase** activity in white adipose tissue cells, restoring their ability to free up—and burn off—their stores of excess energy. (**Note:** Fat is often medically defined as “stored energy.”)

### Repairing The Broken Biology Of Obesity

Scientists familiar with the inner workings of human fat tissue have developed a novel approach, one that shifts the impaired biology of fat cells in obesity back to its normal function, as found in lean people.

Rather than relying on side effect-laden drugs, this discovery utilizes extracts derived from citrus and guarana fruit seeds to exert beneficial effects on fat metabolism.<sup>1,4</sup> The end result has been shown to be the shrinking of white adipose (fat) tissue.<sup>11,12,14,15</sup>

The impact of these beneficial biochemical changes can be seen in a number of animal and laboratory studies. When human white fat cells in culture were exposed to this citrus/guarana seed extract, their rate of fat breakdown (**lipolysis**), was **6-fold** that of untreated control cells.<sup>4</sup>

In animal models, citrus flavonoid supplements thwarted fatty liver disease, blood liver disturbances, and insulin resistance by preventing new fat production and storage in the liver, while increasing fat breakdown and fat burning.<sup>14</sup>

These extracts promote significant weight loss in obese laboratory rats and mice, accompanied by reductions in fasting blood sugar and blood lipids, which are risk indicators for cardiovascular disease, diabetes, and metabolic syndrome.<sup>16-21</sup>

### Normalizing Fat Cell Behavior

It has long been suspected that citrus fruit and guarana carry benefits in relation to excess body fat. A large-scale, epidemiological study of Brazilians who regularly consumed guarana showed that they had lower rates of obesity, hypertension, and metabolic syndrome than did those who never consumed it.<sup>25</sup> In fact, men who consumed guarana regularly had lower waist circumferences than non-consumers, while women had lower total and LDL (“bad”) cholesterol compared with controls.

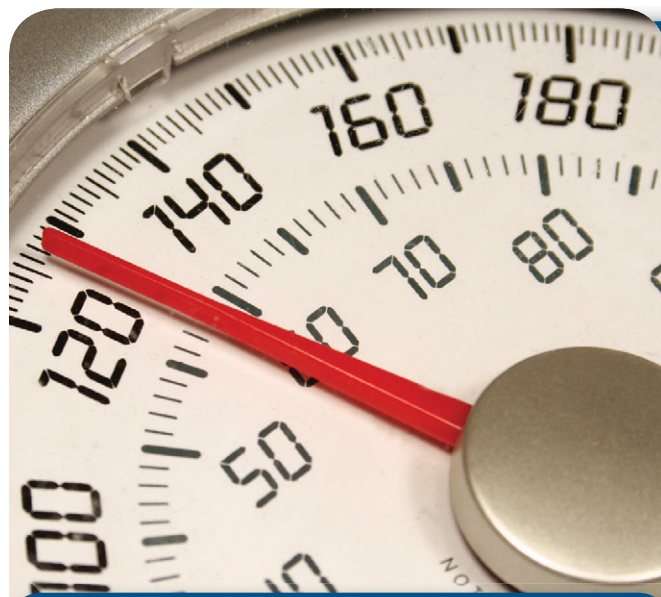
Two human studies have illustrated the **weight-loss** impact of utilizing **standardized extracts** from these plants.

In the first study of overweight volunteers, half received a placebo while the other half received the **citrus/guarana extract** blend. The supplement was standardized to contain **20%** total flavanones.<sup>4</sup> Subjects used the supplement for four and 12 weeks at a dose of **1.4 grams** per day.

After four weeks, the supplemented group’s total body fat content had fallen by **5.53%**, and average weight loss was **6.6 pounds**. By 12 weeks, there was a **15.6%** reduction in body fat and **12 pounds** of weight lost. Placebo recipients had no significant losses of either body fat content or body weight.

In a second study, 47 people received the flavanone-rich supplement, at **450 mg**, twice daily (at breakfast and lunch) for 12 weeks, while 48 control subjects received a placebo.<sup>5</sup> Placebo subjects lost no significant amount of body weight or body fat, whereas the supplemented group lost **5.8 pounds** from baseline. Supplemented people lost **6.6%** of their total body fat, a significant difference from the placebo group.

This study demonstrated improvements in other parameters associated with long-term, fat-related disease risks. Mean waist and hip circumference, which are strongly correlated with cardiovascular risk, fell about **two inches** from baseline in the supplemented group. The supplemented subjects also shed **9.73%** of their white **abdominal fat** stores, compared to when they started (baseline).



What You Need To Know

### Stopping The Fat Cycle

- If you are an adult American, you face a three-in-10 chance of being overweight or obese.
- Fat tissue, especially the white adipose tissue found in abdominal fat stores, pumps out a massive flow of inflammation-promoting substances that leads to life-shortening chronic diseases.
- Fat cells in obese people cannot process fat normally, leaving them to accumulate it much more extensively than lean people, while being unable to burn it off.
- Flavonoids derived from citrus fruit and guarana seed extracts are capable of making fat cells from obese individuals function more like those of lean people, which can shed fat and burn it for energy.
- Laboratory and clinical studies confirm that consuming these extracts as a nutritional supplement not only reduces body weight, but more importantly, shrinks body fat stores in the crucial abdominal region.
- Furthermore, as weight and fat are shed, inflammation-promoting disease markers also fall away, further improving risk factors for cardiovascular disease, diabetes, cancer, and other chronic disorders.

In response to this reduced abdominal fat mass, there were significant reductions in inflammatory blood markers. **C-reactive protein (CRP)** dropped by nearly **23%** and fibrinogen fell nearly **20%** from baseline. When compared to the placebo group, these changes amounted to **85%** reduction in CRP and **18%** reduction in fibrinogen.

It is very difficult to lower these inflammatory markers in obese individuals. Yet study subjects using this **citrus/guarana**-based supplement daily for three months lost nearly **7%** of their total body fat, nearly **10%** of abdominal white adipose tissue, and saw meaningful reductions in their inflammatory parameters.

We don't yet have long-term results on these individuals, but it is safe to assume that such dramatic changes in their fundamental biology will lead to longer, healthier, more productive, and more active lives.

## Summary

Being overweight and/or obese is now an undeniable global health problem, which scientists are calling “globesity.” These conditions are now recognized as genuine disease entities, not as failures of self-control or character flaws, because of their tremendously complicated biology and their major contributions to chronic disease and premature death.

Breakthroughs in molecular biology have revealed that the white adipose (fat) tissue cells of obese people behave differently from those in lean individuals.

Obese people's fat cells simply cannot liberate their massive fat contents to be used for energy; as a result, those cells continue to accumulate fat, with all of its inflammation-promoting properties.

Flavonoid components of citrus fruit and guarana seeds, however, act synergistically to counteract this obesity-induced defect. By restoring ailing fat cells to the healthier, more responsive functions of lean tissue, these extracts help normalize those cells and give them the ability to release and burn off excess fat, rather than continuing to accumulate it.

Laboratory and clinical studies demonstrate both the mechanisms and effects of these extracts. In clinical studies, obese subjects not only shed significant body weight of up to **one pound** per week, but also reduced total body fat content by up to nearly **16%**,<sup>4</sup> with concomitant reductions in known disease risk factors such as waist and hip circumference, as well as blood markers of inflammation.

Almost everyone past the prime of their youth carries excess white body fat, and suffers the consequences of its massive outpouring of inflammatory mediators. ●

## Defining Overweight And Obesity

Carrying too much body fat is bad for you; it produces massive outflows of inflammation,<sup>26</sup> stresses your joints,<sup>27</sup> and overworks your heart, kidneys, and other organs.<sup>28</sup> In order to study these problems, scientists have developed specific definitions, using the body mass index (BMI) as a standard measure. BMI is derived from a simple formula that includes both weight and height.<sup>29</sup>

By definition, a person is overweight if their BMI exceeds 25, and obese when BMI exceeds 30. Thus, every obese person is also overweight. In practical use, however, the term “overweight” generally indicates people with a BMI of 25 to 30.<sup>30</sup>

While “overweight” is a better place to be than obese, don't make the mistake of thinking that you are protected if you are “only” overweight. Your body still has far too much white adipose tissue, and you are being exposed to far too much chronic inflammation. Overweight or obese—if you meet either definition, it's time to get control of your body fat.



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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# ENHANCE HEART HEALTH

## SUPPORT ENDOTHELIAL FUNCTION

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

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

## POMEGRANATE POWER—THE NEXT GENERATION

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

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

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

Contains soybeans and wheat.

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



Item # 01498

A daily serving of **two softgels of Endothelial Defense™ with Full-Spectrum Pomegranate™** contains:

<b>Superoxide Dismutase/Gliadin Complex</b> (GLISODIN®) [SOD (Superoxide Dismutase) Enzyme Activity = 500 IU]	<b>500 mg</b>
<b>POMELLA® Pomegranate Extract</b> (fruit) [std. to 30% punicalagins (120 mg)]	<b>400 mg</b>
<b>Pomegranate 5:1 Extract</b> (fruit)	<b>100 mg</b>
<b>Proprietary Pomegranate Blend</b> [flower extract and seed oil std. to 22% punicic acid (30 mg)]	<b>137.5 mg</b>

**To Order Endothelial Defense™ with Full-Spectrum Pomegranate™, call 1-800-544-4440 or visit [www.LifeExtension.com](http://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.

# Mediterranean Diet For Long-Term Health And Weight Control

People today pursue diets to **lose weight**, often with unsatisfactory results. A Mediterranean diet and a lifestyle can not only make you look and feel great but help you live longer and healthier.

## Jump-Start Your Weight-Loss Program

In overweight individuals, **fat cells** have less- than-optimal function of an **enzyme** called **hormone-sensitive lipase**. This enzyme is required to help break down stored fat and burn it for energy.<sup>1,2</sup> As these individuals become more **overweight**, their cells are less effective at removing stored fat.

Studies reveal that biologically active **flavonoids** from Mediterranean **citrus fruits** and South American **seed extracts** initiate a chain of events that helps support the function of this **fat-removing cellular enzyme**.<sup>1,2</sup>

Clinical research demonstrates that taking **450 mg** twice daily at breakfast and lunch for 12 weeks resulted in a **5.8-pound** weight loss on average and a **6.6%** reduction in body fat, while placebo subjects experienced no significant weight or body fat loss. The extract group also lost on average **two inches** off their waist and hip circumference.<sup>2</sup>

In a human study, subjects supplemented with **citrus fruit/seed extract** shed **9.73%** of their white **abdominal fat** stores. This nearly **10%** loss of **abdominal fat** promoted a healthy inflammatory response.

Proper use of this **citrus fruit/seed blend** can help jump-start a weight-loss program.

### References

1. *Circulation*. 2008 Jan 15;117(2):169-75.
2. *Nutrition*. 2006 Jul;22(7-8):722-30.

### Non-GMO

Sinetrol™ is a trademark of Fytexia®.

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

## Mediterranean Trim: Low-Cost Support For Healthy Weight Management

**Mediterranean Trim** contains a synergistic blend of polyphenolic compounds specially selected from potent Mediterranean citrus fruits that have been shown to aid in the breakdown of stored body fat.<sup>1,2</sup>

**Mediterranean Trim** also contains an extract from the Brazilian **guarana seed** that has been shown to reduce localized fat deposits via similar mechanisms.

The suggested dose is **450 mg**, twice daily at breakfast and at lunch.

You can enjoy the benefits of activating your **hormone-sensitive lipase** enzyme for as low as **40 cents** a day—one of the great bargains for a nutrient blend with this level of supporting clinical research.

**Mediterranean Trim with Sinetrol™-XPur** should be used in conjunction with a healthy diet and regular exercise program. Although real-world results often vary from what is observed in placebo-controlled studies, you could experience similar benefits found in the clinical trial participants using these active ingredients.

## Mediterranean Trim with Sinetrol™-XPur


Item #01908 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$18	<b>\$13.50</b>
4 bottles	\$16 each	<b>\$12 each</b>



To order **Mediterranean Trim with Sinetrol™-XPur**, call 1-800-544-4440 or visit **www.LifeExtension.com**

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# The Value Of Testing Beyond Cholesterol And LDL For The Prevention Of Heart Disease

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Preamble By William Faloon

This article describes newly available blood tests that will likely save the lives of millions of humans if they are incorporated into widespread screenings of the general population.

Standard blood tests measure the amount of LDL in one's blood. They do not, however, reveal the degree to which the LDL is **oxidized** or other factors that increase LDL's vascular risk profile.

New tests are available to measure these atherogenic variables. These tests are suited for people with existing vascular disease, those with family histories of heart disease or other risks of heart problems, and for individuals who can afford the additional cost.

At this time, we don't know if all Life Extension® members need these new tests that measure **oxidized LDL** (and its byproducts). That's because the nutrients members already take may be sufficiently neutralizing these forms of atherogenic risk.

Once Life Extension®'s medical experts review members' results, we'll be able to determine which individuals may be at higher risk for having **oxidized LDL** and the steps needed to reverse this common cause of arterial occlusion.



Doctors today routinely measure cholesterol levels with a standard lipid profile blood test. But this test omits some diagnostic information that could leave you at significant cardiovascular risk.<sup>1,2</sup>

A much better approach is to directly measure the **oxidized** fats and their immediate consequences within arteries.<sup>3,4</sup> New studies are revealing the dangerous association among three fundamental measures of lipid oxidation and increased heart disease risk.

These three new tests measure:<sup>3-5</sup>

1. **Oxidized LDL**
2. **Myeloperoxidase**
3. **F2-isoprostanes**

These three tests assess vascular damage as well as markers of oxidized fat in the blood, which provides predictive value for cardiovascular disease that goes beyond standard **lipid panel** testing.<sup>3,4,6</sup>

For many years these cutting-edge tests were not available to the public. They were used primarily at universities for research and were far too expensive for general use. However, Life Extension® has worked long and hard to bring these innovative tests to its members to help further diagnose and reduce potential risk factors for cardiovascular disease.

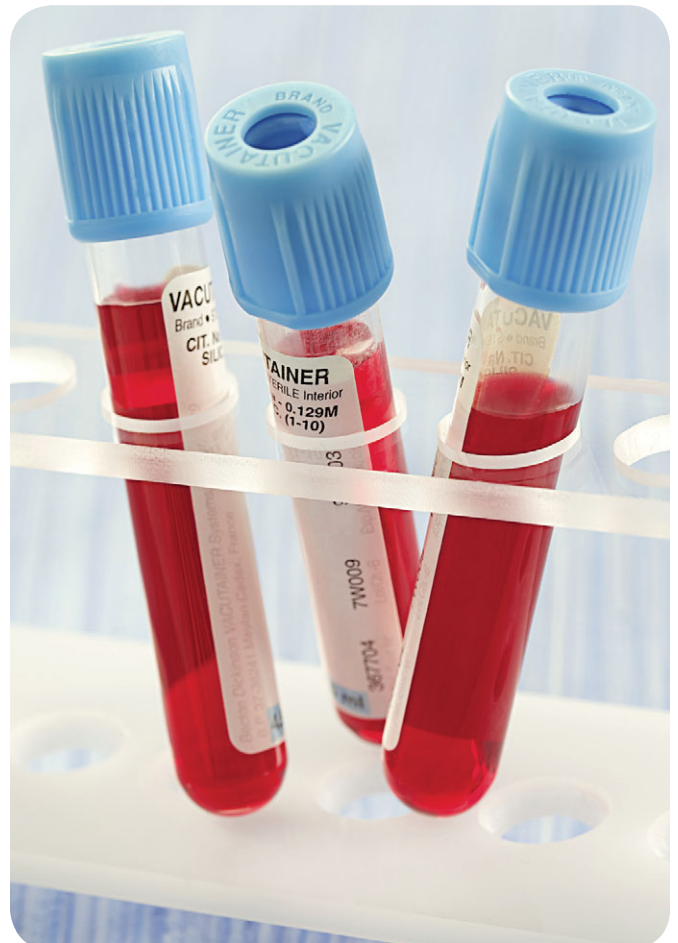
### Testing For Oxidized LDL Cholesterol

We have long known that **oxidized LDL** (OxLDL) triggers dangerous inflammatory changes that lead to atherosclerosis.<sup>7,8</sup> But most physicians were unable to test for this cardiac risk factor as the test was expensive and restricted to research labs and universities. OxLDL is now proving to be a risk predictor for metabolic syndrome, cardiovascular disease in general,<sup>9-11</sup> and acute myocardial infarction (heart attack) in particular.<sup>12</sup>

**Oxidized cholesterol** (OxLDL) levels show a strong correlation with having acute coronary syndromes (angina, or chest pain, ischemia, or evidence of low blood flow on ECG) and the risk of heart attacks.<sup>8</sup> In fact, the higher the OxLDL level, the more severe the signs and symptoms of heart disease. People with more advanced ischemic heart disease show significantly more OxLDL in the macrophages.<sup>8</sup> And the higher the OxLDL level in blood<sup>13</sup> and plaques, the greater the risk of plaque rupture, with devastating consequence.<sup>14,15</sup> Higher **OxLDL** levels should raise concern and prompt interventions to extinguish this vascular risk factor.

Measuring OxLDL is now possible with a simple blood test. Research shows that even apparently healthy men with elevated OxLDL levels have a more than **4-fold** increased risk for a future coronary heart disease event compared with those with the lowest levels.<sup>16</sup> What makes this test so important for avoiding heart disease is that plasma OxLDL is a stronger predictor of such events than a conventional cholesterol blood test.<sup>16</sup> As OxLDL levels rise, so does the presence and extent of coronary artery disease; that risk is **three times** greater for those with the highest versus the lowest OxLDL levels, and nearly **17 times** as great in those who also have high cholesterol.<sup>15</sup>

OxLDL levels also predict your risk of having metabolic syndrome, that combination of being overweight and hypertension with disturbed regulation of blood sugar and lipids that dramatically raises risk for heart disease, stroke, diabetes, and cancer.<sup>17-19</sup> One study showed that those with the highest levels were at nearly **four times** the risk for metabolic syndrome than were those with the lowest.<sup>20</sup>



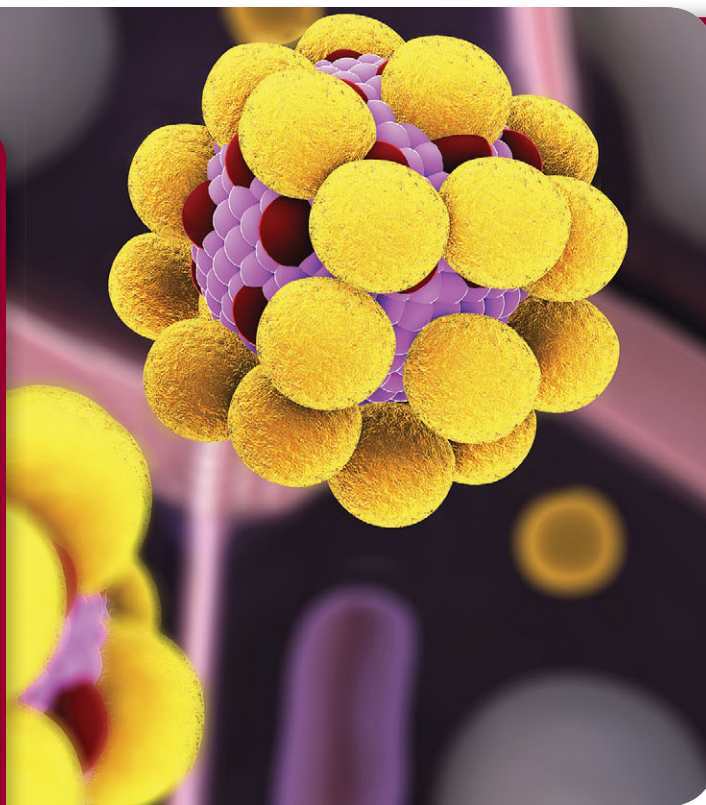
## Testing Beyond Cholesterol And LDL

- Knowing your lipid profile numbers is an important way to identify your risk for cardiovascular disease.
- But a standard lipid profile can only provide general information, based on population-level statistics.
- More personalized and individual assessment of your cardiovascular risk provides unique insights.
- Newly available advanced risk factor testing can now evaluate oxidized LDL and myeloperoxidase, and/or urinary F2-isoprostanes.
- These tests can more accurately detect hidden risks for cardiovascular disease, even in people with normal traditional lipid profiles.
- You can take steps through diet, exercise, and supplementation to lower your risk levels based on these tests.

### Myeloperoxidase: A Direct Measure Of Arterial Damage

**Myeloperoxidase** (MPO) is an enzyme produced by inflammation-generating white blood cells in your body.<sup>21</sup> The enzyme demonstrates a wide range of atherosclerosis-promoting effects, including production of OxLDL and oxidized HDL cholesterol and increased fragility of plaque lesions.<sup>1,2,22,23</sup> MPO also reduces the availability of *nitric oxide*,<sup>24</sup> a signaling molecule that tells blood vessels to relax and lower blood pressure.<sup>25,26</sup>

When arterial walls are damaged by elevated pressure,<sup>27</sup> plaque, or even inflammation<sup>28</sup> alone, white blood cells invade to repair the damage, releasing MPO.<sup>29</sup> MPO is a direct measure of *plaque-promoting* blood vessel inflammation; it also activates enzymes that degrade the protein-rich “cap” on arterial plaques,<sup>30</sup> making them increasingly vulnerable to catastrophic rupture.<sup>31,32</sup>



MPO levels are significantly higher in apparently healthy adults who go on to develop coronary artery disease. Those with the highest MPO levels have a nearly **50% increase** in risk versus those with the lowest.<sup>2,6</sup> Of extreme importance, the increased risk associated with elevated MPO levels was seen *even in people with normal LDL, HDL, and CRP measurements*.<sup>2</sup>

Similarly, in people with chest pain or ECG abnormalities, a raised MPO level predicted the risk of a heart attack even when they had normal levels of *troponin T*, a marker of heart muscle injury frequently used in emergency rooms to detect an early heart attack.<sup>22,33,34</sup> In other words, MPO elevations revealed hidden risk in people who otherwise would have thought their arteries were in good shape. Such early detection can help people make important changes to reduce their risk.

People with acute coronary syndrome (chest pain and/or ECG changes, even without a heart attack) are at vastly increased risk for developing a heart attack in the near future.<sup>35,36</sup> With that said, there is always a need to identify new and accurate independent biomarkers that predict heart attack risk.<sup>37</sup>

Measuring MPO can reveal a person's risk more accurately. By way of example, people with acute coronary syndrome with MPO levels below about **20 ng/mL** have an **88%** chance of evading a heart attack over the next 24 months, compared with a **74%** chance of such survival in those with elevated MPO levels.<sup>37</sup>

Those with the highest MPO levels have a **2.4-fold increase** in their risk for dying of cardiovascular disease over 13 years versus those with the lowest levels.<sup>4</sup>

Combining MPO, which provides direct evidence of arterial damage, with **C-reactive protein (CRP)**, a more general measure of inflammation, can further refine an individual's risk prediction for cardiovascular disease: Having both MPO and CRP elevated puts you at more than **four times** the risk of dying from heart disease.<sup>4</sup>

Taken together, these figures suggest that MPO can be used to give you a lifesaving early warning to turn your cardiovascular health around while there's still time.

### F2-isoprostanes: Detecting A Culprit In Vascular Inflammation

Your body uses signaling molecules to announce the presence of damaged tissue and to trigger the healthy inflammatory response.<sup>38,39</sup> Cytokines,<sup>40</sup> leukotrienes,<sup>41</sup> and prostaglandins<sup>42</sup> are all families of such proinflammatory signals. Under normal circumstances, these molecules are degraded and disappear, ending the inflammatory stimulus. But if inflammation-promoting molecules continue to be manufactured, the inflammation will persist, leading to long-term damage.

One of the major sources of inflammatory prostaglandins is *arachidonic acid*, a major component of cell membranes.<sup>43</sup>

In the presence of oxidizing free radicals, prostaglandin-like molecules called **F2-isoprostanes** can be produced from arachidonic acid resulting in unregulated outpourings of this proinflammatory signal.<sup>44-46</sup>

The damage done by F2-isoprostanes is not restricted to blood vessel inflammation. Like their normal prostaglandin counterparts, F2-isoprostanes promote the clumping of platelets, the tiny cell fragments in blood that participate in the clotting mechanism. Under the stimulus of F2-isoprostanes, platelets clump more aggressively, contributing to increased risk of arterial blockage, particularly at the site of an existing plaque.<sup>45,47,48</sup> Note that, because formation of F2-isoprostanes does not require the COX enzyme, the use of COX-inhibiting medications like aspirin will not counteract the platelet effects, rendering useless an important form of prevention in cardiovascular disease.<sup>47</sup>

F2-isoprostanes are easily measured in a urine specimen, making them especially attractive as a means for long-term monitoring of cardiovascular risk. People with elevated urinary F2-isoprostanes are at a more than **30-fold** risk for developing coronary heart disease compared with those with normally low levels.<sup>3</sup>

People who smoke<sup>49</sup> and those who eat red meat,<sup>50</sup> both known cardiovascular risk factors, have been shown to have significantly higher plasma or urinary F2-isoprostanes than do people with healthier lifestyle habits, while those who regularly exercise have lower levels.<sup>46,51,52</sup> Intriguingly, it is becoming evident that high urinary F2-isoprostanes also signal an increased risk of certain cancers, further attestation to the powerful interactions of oxidative damage and inflammation in the body.<sup>53,54</sup>

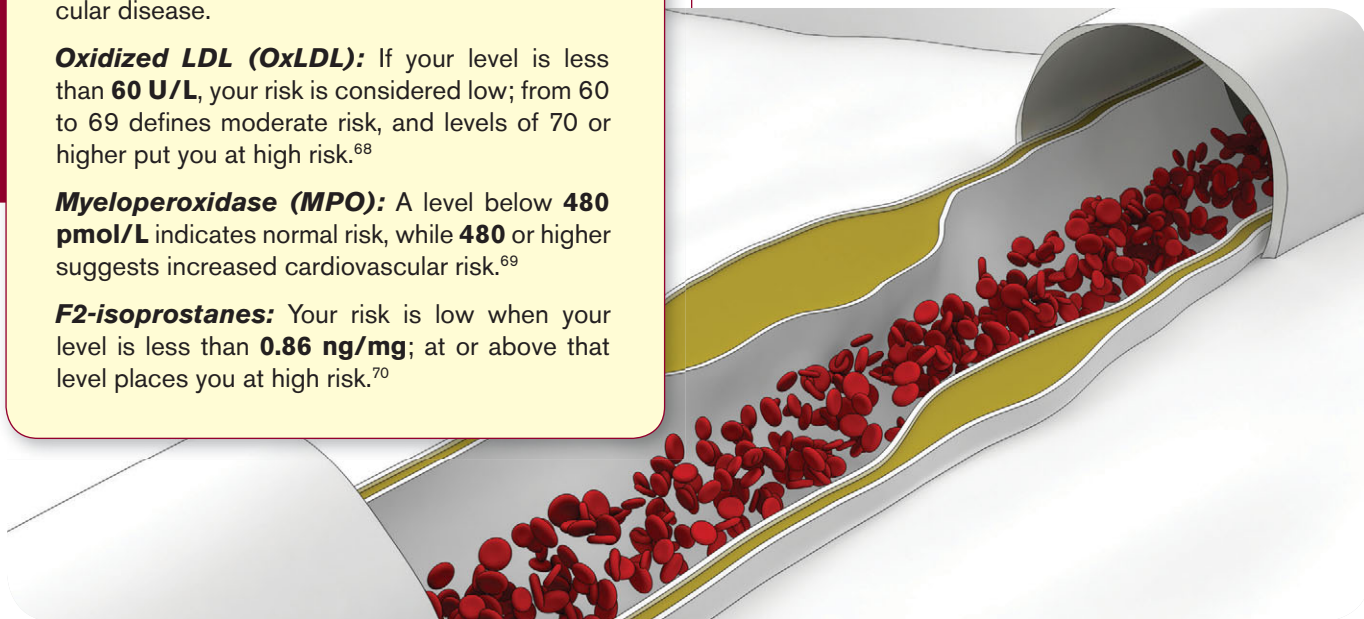
#### Interpreting Your Test Results

Here are some numbers to help you interpret the results of your advanced testing for cardiovascular disease.

**Oxidized LDL (OxLDL):** If your level is less than **60 U/L**, your risk is considered low; from 60 to 69 defines moderate risk, and levels of 70 or higher put you at high risk.<sup>68</sup>

**Myeloperoxidase (MPO):** A level below **480 pmol/L** indicates normal risk, while **480** or higher suggests increased cardiovascular risk.<sup>69</sup>

**F2-isoprostanes:** Your risk is low when your level is less than **0.86 ng/mg**; at or above that level places you at high risk.<sup>70</sup>



## What To Do If Oxidation-Inflammation Levels Are Elevated

Testing for blood levels of **oxidized LDL** (OxLDL), **myeloperoxidase** (MPO), and urinary **F2-isoprostanes** provides tremendous insight into what is going on at the molecular level in one's body.

If your levels are elevated, you'll find precious little help from mainstream medicine, despite its enormous stock of chemical drugs.

A better approach is to choose from among the growing list of supplements that are proven to reduce these markers (and mediators) of cardiovascular disease. Here is a partial listing of supplements that can reduce markers of lipid oxidation:

- Omega-3 fatty acids from fish oil<sup>55</sup>
- Vitamin E<sup>56</sup>
- Gamma tocopherol combined with sesame lignans<sup>57</sup>
- L-carnitine<sup>58</sup>
- Zinc<sup>59</sup>
- Grape seed extracts and/or resveratrol<sup>60,61</sup>
- Pomegranate<sup>62</sup>
- Superoxide dismutase (SOD)<sup>63</sup>
- CoQ10<sup>64</sup>
- Whole grape extracts<sup>65</sup>
- Indian gooseberry<sup>66</sup>

## Why Oxidized Cholesterol Is Dangerous

If you have ever smelled rancid butter, cooking oil, or grease, you have experienced first-hand the impact of oxidation on fats. Fat molecules are especially vulnerable to oxygen,<sup>71</sup> which is found in abundance in arterial blood. When the fat and oxidation come together, the resulting chemical reactions change the shape and the function of fat molecules.<sup>72</sup> Your body tries to handle oxidized fat molecules with antioxidants, but if the antioxidants become overwhelmed, then the cholesterol molecules including LDL and HDL become oxidized. This oxidized LDL will damage the walls of the artery. Once there, specialized cells called **macrophages** identify oxidized fats as "foreign" materials, and engulf them to take them out of circulation.<sup>73,74</sup> But these oxidized LDL laden macrophages can accumulate in the arterial wall, beneath the delicate **endothelial** layer, where they reside as so-called **foam cells**.<sup>75,76</sup> And foam cells, in turn, trigger inflammatory changes in the arterial wall, which eventually lead to the formation of an inflammatory **plaque**.<sup>16, 77-79</sup> Since oxidized LDL is a powerful initiator of this devastating process, it is important to keep **oxidized LDL** levels at a minimum.

Inflammatory plaque contains white blood cells and cellular debris, along with inflammatory signaling molecules.<sup>80-82</sup> Drawn by oxidized fats, macrophages from the immune system swarm into the inflamed plaque area, consume the oxidized LDL, release toxic chemicals that cause swelling and inflammation and form **foam cells**.<sup>14</sup> These foam cells then die, creating debris that fill the inflamed tissue and perpetuate even more inflammation.<sup>81,83</sup> Levels of oxidized LDL cholesterol within plaques are nearly **70 times** greater than in circulating blood.<sup>14</sup>

An inflammatory plaque bulging into an artery can significantly reduce blood flow through that artery.<sup>84,85</sup> Worse, if the plaque ruptures, it sends a shower of debris, including oxidized fats, cell fragments, and clumped platelets, downstream to where it can become trapped in the narrowing vessel. When that happens, blood flow suddenly becomes reduced or blocked and the victim experiences a heart attack (myocardial infarction) or an ischemic stroke.<sup>86-88</sup> The recent onset of inflammation affecting atherosclerotic plaques is known to be related to acute coronary syndromes (including chest pain, characteristic ECG changes, and eventually heart attack).<sup>8</sup>

Currently, doctors measure levels of inflammation in order to try to understand a person's cardiovascular risk in the face of apparently normal lipid levels.<sup>89,90</sup> Such measurements reinforce the connections between oxidation, inflammation, and cardiovascular disease. For example, among apparently healthy men, those with the highest baseline levels of inflammation, as measured by C-reactive protein (CRP), were at a nearly **3-fold** risk of heart attack and almost **double** the risk of ischemic stroke, compared with those at the lowest levels of inflammation.<sup>91</sup> Similar risk elevations of **2- to 3-fold** have been shown in other studies measuring inflammatory changes in addition to standard lipid levels.<sup>89, 90,92</sup> Mainstream medicine has finally begun to target inflammation as a drug-treatable risk factor for atherosclerosis.<sup>93</sup>

## Summary

Measurement of blood cholesterol, LDL, HDL, and triglycerides (lipid profile) as a means of identifying people at high risk for cardiovascular disease is more than four decades old.<sup>67</sup> There is no doubt that early detection and intervention has saved lives. But in today's world, simply knowing your cholesterol levels provides only partial protection.

Low **cholesterol** and **LDL** levels may not indicate safety, while elevated levels may not paint an accurate picture of the true risk situation. More precise markers of cardiovascular risk are now available at relatively affordable prices.

- Measurements of **oxidized LDL** (OxLDL) offer insights into how much damage is being done to the lipids in your bloodstream.
- Measurement of **myeloperoxidase** (MPO) can indicate the impact of inflammatory changes on your blood vessels.
- Measurements of **F2-isoprostanes** in a urine specimen can tell you to what extent your body's own fat molecules are participating in inflammatory changes that can dramatically affect your health.

You now have the following options that can be added to the recommended **Male** or **Female** Panels:

### Oxidized LDL

#### Item LC817472

Retail Price: \$100

Member Price: \$75

**Super Sale Price: \$56.25**

(valid when ordered by June 1, 2015)

### Oxidized LDL Panel (Myeloperoxidase)

#### Item LC100034

Retail Price: \$233.33

Member Price: \$175

**Super Sale Price: \$131.25**

(valid when ordered by June 1, 2015)

### Advanced Oxidized LDL Panel (F2-isoprostanes And Myeloperoxidase Panel)

#### Item LC100035

Retail Price: \$380

Member Price: \$285

**Super Sale Price: \$213.75**

(valid when ordered by June 1, 2015)

If any result comes back elevated, you are in a position to initiate a sensible program of dietary changes, regular exercise, and appropriate nutritional supplements. ●

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

Dr. Scott Fogle is the Director of Clinical Information and Laboratory Services at **Life Extension®**, where he oversees scientific and medical information as well as its laboratory division.

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### Are You Deficient in The Body's #1 Mineral?

Magnesium is the **most important** mineral in the body, yet most Americans do not obtain sufficient magnesium from their diet.

Magnesium is required for more than **300 biochemical reactions** and many of the body's critical functions are dependent upon it. Magnesium helps:<sup>1,2</sup>

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

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

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

Non-GMO

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

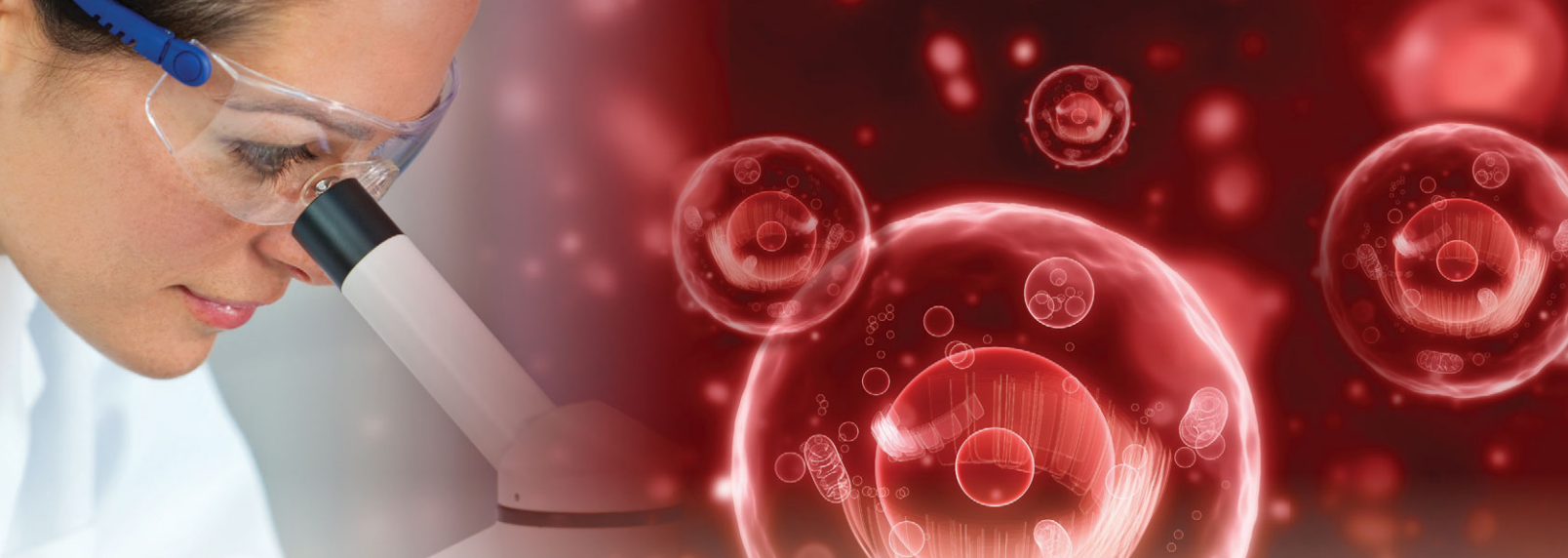


To order Magnesium Caps,  
call 1-800-544-4440 or  
visit [www.LifeExtension.com](http://www.LifeExtension.com)

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# FIGHT BACK AGAINST AGING!

## Aging is Characterized by Inflammation, Glycation, and Mitochondrial Decay

The loss of cellular vitality is caused by a number of factors, including mitochondrial problems, glycation, and free radical reactions. Life Extension® members have access to a state-of-the-art nutritional formula called MITOCHONDRIAL ENERGY OPTIMIZER WITH BioPQQ® that helps protect delicate cellular structures and enables cells to perform life-sustaining metabolic processes.

Mitochondrial Energy Optimizer with BioPQQ® is designed to counteract age-related structural and functional changes by providing the following unique ingredients:

- **CARNOSINE:** As humans age, proteins in their bodies become **irreversibly damaged** by **glycation** reactions. Glycation is the cross-linking of proteins and sugar to form **non-functioning** structures called advanced glycation end products in the body, which can lead to alterations of normal cell function. Carnosine is not only a powerful **anti-glycating** agent, but it also protects **neurons** against reactive and cytotoxic protein carbonyl species associated with normal aging.<sup>1-5</sup>
- **PQQ:** This breakthrough micronutrient has been shown to trigger **mitochondrial biogenesis**—the growth of **new** mitochondria in aging cells!<sup>6</sup> PQQ also activates genes involved in protecting the delicate structures within the mitochondria.<sup>7-10</sup>
- **LUTEOLIN:** Systemic inflammation is involved in most undesirable consequences of aging. Culprits behind **inflammatory** reactions are pro-inflammatory **cytokines**, such as **interleukin-1** and **tumor necrosis factor-alpha**. Luteolin is a flavonoid that has been shown to help suppress these inflammatory cytokines.<sup>11-16</sup>
- **BENFOTIAMINE:** Effectively modulates multiple destructive biochemical pathways that are induced by higher than desirable blood glucose levels. Human mortality studies indicate that **ideal** fasting glucose levels are between **74–85 mg/dL**. Yet many aging people have fasting glucose above **90 mg/dL**, which is less than optimal.<sup>16-19</sup> Benfotiamine protects endothelial cell integrity from the effects of high glucose levels. In addition, benfotiamine exhibits direct antioxidative capacity and supports DNA function.<sup>20</sup>
- **PYRIDOXAL 5'-PHOSPHATE:** Aging results in the formation of **advanced glycation end products** throughout the body. **Pyridoxal 5'-phosphate** is the active form of vitamin B6 that has been shown to protect against both lipid and protein **glycation** reactions.<sup>21-24</sup>

- **R-LIPOIC ACID:** Destructive free radical activity in the **mitochondria** plays a major role in the loss of cellular vitality. A **microencapsulated Bio-Enhanced® R-lipoic acid** facilitates youthful **mitochondrial energy output** while guarding against **free radicals**. Two forms of lipoic acid are sold on the supplement market, but **R-lipoic acid** is far more potent.<sup>25-28</sup>
- **ACETYL-L-CARNITINE ARGINATE:** The amino acid L-carnitine is required to transport fats into the **mitochondria** to be burned for cellular energy. **Acetyl-L-carnitine arginate** is a patented form of carnitine that also **supports neurites** in the brain.<sup>29</sup>

Taking all of the individual ingredients in the **Mitochondrial Energy Optimizer with BioPQQ®** separately would be prohibitively expensive, but Life Extension® members obtain this comprehensive formula at substantial savings.

A bottle of **Mitochondrial Energy Optimizer with BioPQQ®** containing **120 capsules** retails for \$94. If a member buys four bottles, the price is reduced to **\$58.50** per bottle.

### Just four capsules of Mitochondrial Energy Optimizer with BioPQQ® provide:

Carnosine	1000 mg
ArginoCarn® Acetyl-L-carnitine arginate DiHCl	675 mg
R-Lipoic acid (as microencapsulated Bio-Enhanced®)	150 mg
Benfotiamine	150 mg
Vitamin B6 (as pyridoxal 5'-phosphate)	100 mg
BioPQQ® Pyrroloquinoline quinone disodium salt	10 mg
Luteolin	8 mg
Calcium	230 mg



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# Dual-Action Formula Supports Healthy Cholesterol Levels

As you age, it becomes critically important to maintain an optimum balance between “good” and “bad” cholesterol, otherwise known as **HDL** and **LDL**, in order to maintain a healthy cholesterol profile.

For those who seek a safe and natural way to support healthy cholesterol levels, researchers have discovered *two compounds* that help promote healthy levels of both LDL and HDL already within normal range.<sup>1-4</sup>

**CHOL-Support™** is formulated with a triple standardized **artichoke leaf extract** and **pantethine**, the biologically active form of pantothenic acid<sup>3</sup> to maintain healthy HDL, LDL, and total cholesterol levels already within the normal range.<sup>1-4</sup>

## Artichoke Leaf Extract

Clinical studies now demonstrate that artichoke leaf extract's polyphenolic compounds<sup>2</sup> support optimal HDL/LDL ratios already within normal range.<sup>1,2</sup>

## Pantethine

Clinical trials show pantethine safely maintains LDL and total cholesterol already within the normal range, without reducing protective CoQ10 levels.<sup>3</sup>

Two daily liquid vegetarian capsules of **CHOL-Support™** offer comprehensive cardiovascular protection by providing unparalleled support for an optimal cholesterol profile.

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## CHOL-Support™

Item #01910 • 60 liquid vegetarian capsules

	Retail Price	Member Price
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4 bottles	\$46 each	<b>\$34.50 each</b>



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# Male Menopause

One of the fastest-growing areas in medicine today is the use of testosterone in men, particularly during the middle years. Most of my academic credentials within medicine come from my work with testosterone, as I was one of the first to recognize that healthy men can experience an age-related natural decline in hormones that affects their sexuality and vitality, and which can be treated successfully with testosterone therapy. Although testosterone has been used since the 1930s, it was a small backwater in medicine until the last 20 years or so. I feel as if I were there at its modern-era birth and have taken a degree of uncertain pride as I've watched the field expand. Although I've published many articles on the benefits of testosterone, my greatest contribution has been to show that the long-held belief that testosterone is risky for prostate cancer is **false**. As the fear of testosterone has declined, physicians have become more comfortable with it, leading to a crescendo of interest in its use.

## Men Are Also Hormonal

Over the last 10 years, the fastest pharmaceutical sector is testosterone, growing at more than **10%** per year. There are a huge number of men out there who have the symptoms of low levels of testosterone. As this problem gained attention from physicians about 10 to 15 years ago, there was a push to talk about **andropause**, a male version of menopause.

I started to use the term **low T** in the office and during lectures to describe the condition that has otherwise been called **hypogonadism**, or testosterone deficiency syndrome. My colleagues thought low T was too simplistic a term, but it worked for me and my patients, and I continue to use it. Nonetheless, I was surprised to hear one day that my verbal shorthand had been co-opted by the industry. Now, television and print ads ask, “Is it low T?”

## Are Men Like Lizards?

We think of testosterone as the male sex hormone, and to a great extent, this is true. However, testosterone is involved in so many biological functions for men that it is difficult to come up with a biological system that is not affected by testosterone. What is remarkable is that researchers have been studying testosterone in animals for many decades, yet with humans it is as if we are just beginning to learn about something brand new.

When I graduated from my urological residency in 1988 and came on staff as a young attending physician, I was curious about testosterone because of research I had done as an undergraduate. During my training I had been taught that testosterone was important for

sex drive but not much else, and that a man needed to have almost no testosterone left at all before his low T levels caused sexual issues. There was some grudging acknowledgment that perhaps testosterone treatment might help some men with erection issues, perhaps **5%** at most, but this number was so small that no one was spending much time looking into treatments.

In my sophomore year at college, I started on a boring, tedious project, mapping out which parts of the lizard brain took up radioactive samples of hormones that had been previously injected into the bloodstream.

The lizards I worked with were the American chameleon, *Anolis carolinensis*. When a normal male lizard is placed in a cage with a female, the two of them go through what is called a sexual behavior, much like a dance. The male will extend the bright reddish orange flap of skin under his jaw, called a dewlap. He then does what we call a “stuttering push-up,” bobbing his head up and down rapidly. In response, the female will do a stately, single push-up, indicating she is receptive. The male will approach and repeat the behavior, extending his dewlap and performing his stuttering push-up. After a few repetitions, the male will grasp the female by the nape of her neck and mount her.

However, when the males were castrated, that is, had their testicles removed, they did none of this. They behaved as if they couldn’t have cared less. If testosterone levels in the blood were restored in these animals, the males would again perform their usual sexual behavior. The sexual “dance” was a testosterone effect.

The exciting part of my research project was to see what would happen if I implanted hormones directly into the sexual centers in the brain.



I didn't quite know what to expect after I'd done my first testosterone insertions.

The experiment was a home run. Castrated males behaved sexually just like normal males if testosterone was inserted in the correct part of their brains. What this experiment proved was that testosterone is a brain hormone, and its actions on the brain are enough to organize the entire set of behavioral responses.

Involved in male sexual behavior are attraction, behavioral display, and mating. I spent nearly three years in the lab and published my first three scientific papers from that experience and related experiments.

Once I had my own practice seeing patients who had come to see me for weak erections or diminished libido, I couldn't help but wonder whether there might be a testosterone connection, given my research experience with lizards. So I started obtaining testosterone blood tests in my patients. I was immediately surprised by how many of these men had low testosterone levels.

Testosterone acts on the brains of humans, just as it does in male lizards, rats, and any number of species, to create sexual desire.

Testosterone controls the production of nitric oxide, the chemical signal in the penis that initiates erections. And it is also necessary for the maintenance of penile smooth muscle, responsible for the control of blood flow into and out of the corpora cavernosa.

### The Big Fear

For the last 20 years, the greatest impediment to the use of testosterone therapy has been the fear that raising testosterone levels is dangerous for prostate cancer. It started with a publication in 1941 by Charles Huggins, MD, and his co-author, Clarence Hodges, MD, in which they demonstrated for the first time that cancers can be sensitive to hormonal manipulation. These two researchers from the University of Chicago castrated men with metastatic prostate cancer and showed that levels of a chemical called acid phosphatase were reduced, indicating improvement in the cancer. This was the first treatment for advanced prostate cancer that had shown any efficacy. Within a few years, castration had become a standard treatment around the world, and Huggins, as the lead investigator, became famous, ultimately being awarded the Nobel Prize in Physiology or Medicine in 1966.

Huggins and Hodges also reported that "in all cases," the injection of testosterone to these same men with metastatic prostate cancer caused acid phosphatase levels to rise. They concluded that testosterone causes "activation" of prostate cancer and an "enhanced rate of growth." From that point forward,



medical students around the world have been taught that high testosterone levels cause prostate cancer, low testosterone levels protect the prostate from cancer, and providing testosterone to a man with prostate cancer is like "pouring gasoline on a fire" or "feeding a hungry tumor."

Once I started seeing the benefits of testosterone therapy in men, my greatest concern was that the treatment I was offering might be like a pact with the devil: If these men were restored to youthful vitality and sexuality, it was at the expense of developing prostate cancer. What followed for me was a 20-year exploration into the relationship of T and prostate cancer, eventually resulting in the widespread, albeit not yet universal, rejection of those long-standing concerns.

In the early 1990s, I began performing prostate biopsies in men with low T even though they had normal levels of PSA, the blood test used to diagnose prostate cancer, since I wanted to make sure these men didn't harbor a hidden cancer in their prostates, which might grow out of control if I treated them with testosterone. Although it was taught that men with low T are at extremely low risk for prostate cancer, I found an astonishingly high number of cancers in these men. In 1996, my colleagues and I published these results in the *Journal of the American Medical Association*, reporting that low T appeared to be as great a risk for prostate cancer as an elevated PSA. Low T was not protective at all.



Yet for a time I still clung to the belief that high levels of testosterone must be risky. In 2004, I published with my fellow, Ernani Rhoden, MD, from Brazil, an article for *The New England Journal of Medicine* on the risks of T therapy. After reviewing approximately 200 medical articles, we could not find a single one that showed a compelling, worrisome relationship between high levels of T and prostate cancer. This was beyond strange. It had been universally accepted for decades that high testosterone is dangerous for prostate cancer and low T is protective, yet there appeared to be **no evidence** to support either of these beliefs.

To discover the source for these universally held beliefs, I made my way to the basement of the Countway Library at Harvard Medical School, which contains centuries-old medical journals. The very oldest of these are kept locked or under glass, but in the archives in the basement are volumes from the 1800s, waiting to be read by medical “archaeologists.”

I found the volume holding the Huggins and Hodges article from the 1941 edition of *Cancer Research*, and as I pored over the text I had a “Eureka!” moment, like an electric buzz throughout my body. Although Huggins and Hodges had claimed that every one of their patients with metastatic prostate cancer who received testosterone developed an ominous increase in acid phosphatase concentrations, my close reading revealed they had administered testosterone to only three men. Of these, they only provided results for two. And one of these men had already been treated in another way, which made it impossible to determine the effect of testosterone alone. For the last seven decades, the belief that testosterone makes prostate cancer grow like wildfire was based on the results of a blood test from a single patient!

It turns out that prostate cancer does need some testosterone to grow optimally, but it can only use a little bit. Once the need for testosterone has been satisfied by the tumor, any additional testosterone is simply excess. A good analogy is a houseplant and water. The houseplant (think prostate cancer)

definitely needs water (think testosterone), but once it's been adequately watered, no matter how much additional water one gives it will not cause it to grow as tall as a sequoia tree. So it is with prostate cancer and testosterone.

Based on these findings, and despite warnings from colleagues several years ago, I started offering testosterone therapy to men with known prostate cancer. Today, men with prostate cancer fly from around the country to see me, each hoping that I will find him to be a reasonable candidate for T therapy to treat his ED. Many of them are.

In May 2011, I published with my colleagues Larry Lipshultz, MD, and Mohit Khera, MD, from Baylor Medical College, a report in the *Journal of Urology* on 13 men with untreated prostate cancer who received testosterone therapy for an average of two-and-a-half years. They had an average of two sets of follow-up prostate biopsies. None of the men showed any progression of their cancers, and in **54%** of the biopsies, we couldn't find any trace of the cancer that had been there earlier. It was a small study, so we must be careful not to overstate the conclusions; however, this was the very first time since Huggins in 1941 that anyone had bothered to look directly at what actually happens to an existing localized prostate cancer when a man receives testosterone treatment. The answer appears to be: “Not much.” I've since treated many more of these men, with similar, good results.

Testosterone affects not only men's sexual desire and performance, but also their mood, thinking, muscle, fat, and sense of vitality and well-being. When testosterone levels drop far enough, men get suddenly sweaty and can even experience hot flashes, just like menopausal women. Testosterone production declines with age, but even young men can have low levels. I've treated teenagers and men in their early twenties for low T, but most men I see with low T are in their forties and above. It's also extremely common, with some studies showing that as many as **40%** of men over the age of 45 have low levels of testosterone.

Treatment is quite safe, so it's very reasonable for a man with characteristic symptoms—low desire, weak erections, chronic tiredness—to ask his physician to have his blood checked for low T. Just be aware that many of the labs categorize a testosterone result as “low” only if it is very low, which means that if a man has symptoms and a T level that is at the low end of normal, it may still be worthwhile to consider a three-month trial of treatment. As my colleagues and I have published, men with symptoms and these below-normal testosterone levels respond just as well to treatment as men with unquestionably low testosterone.

Since testosterone levels decline with age, some have argued this means the decline should be considered a normal part of aging and therefore should not be treated. It's an argument that we hear elsewhere: Why do we have to medicalize normal aging? My response is simple. Normal aging stinks. Aging is associated with bad eyesight, bad hearing, bad teeth, bad joints, bad blood vessels, bad hearts, and cancer. We treat all of these in order to improve our lives and, in some cases, our longevity. Just because a condition becomes common as we age doesn't mean we should resign ourselves to it if treatment is helpful and safe.

I had exceptionally good eyesight until my early forties, at which point I found I had to hold books farther and farther away from my face in order to read them due to the “normal” age-related decline in near vision called presbyopia. Now I wear an artificial contraption of metal and plastic on the front of my face in order to read. Am I somehow disobeying the laws of nature by wearing glasses? I think not. Similarly, if a man with low T wants testosterone therapy in order to feel better and more sexual, I see no reason to deprive him of a trial of treatment just because many men his age are experiencing the same problem.

Here is a medication that can make men feel more energetic, improve erections and sexual desire, increase muscle strength and mass, decrease fat, strengthen bones, improve mood, and make men feel that their minds are sharper. Can anything really be that good? The answer is, simply, “Yes.” Of course, not everyone responds to T therapy, and of those who do, the response is not always so dramatic.

As I see it, low T is underrecognized, underdiagnosed, and undertreated. In my own practice I have seen far too many men with low T who had been discouraged from trying T therapy or told they didn't even have the condition. Many of those men have responded to T therapy beautifully and feel that they are healthier, happier, in addition to being better sexually. Now that the fear of prostate cancer from T therapy is finally waning, there is no good reason to deprive men of a treatment that may help them regain their mojo. ●

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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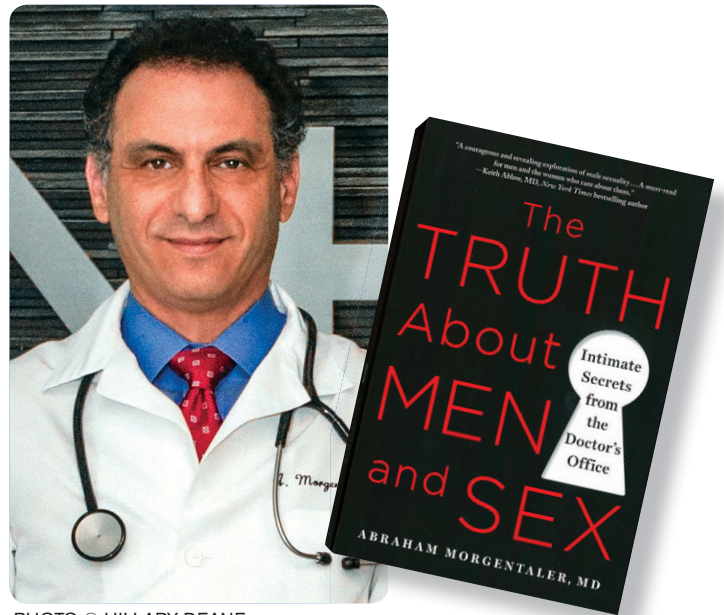
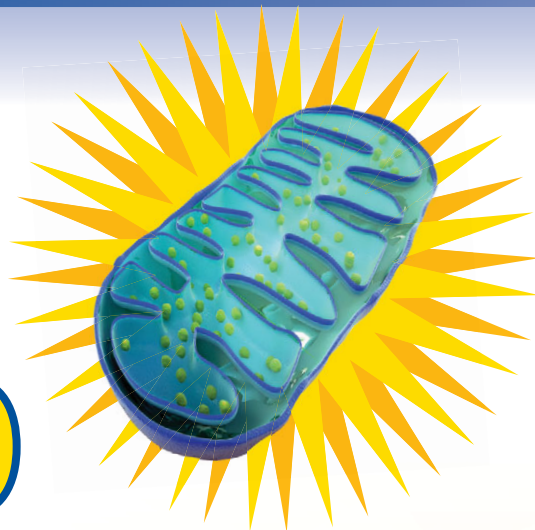


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# MAINTAIN YOUTHFUL MITOCHONDRIA FUNCTION

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# Protect Your Skin From Age-Related Glycation





At this very moment, a destructive process called *glycation* is aging your skin from the inside out.<sup>1,2</sup> In fact, researchers recently uncovered compelling evidence that stresses “**the importance and possibly central role of glycation in skin aging.**”<sup>2</sup>

Glycation occurs when sugar molecules bind to proteins like collagen in living tissues, and culminates in the formation of deadly complexes called advanced glycation end products (AGEs).<sup>1,3</sup> This in turn significantly disrupts collagen metabolism and paves the way for wrinkles, creping, and loose skin.<sup>4,5</sup>

That's why researchers have ramped up their efforts to identify safe and effective ways to target this enemy of healthy skin. In this article, we will explore how five topical compounds protect against the detrimental effects of glycation as we age and promote dermal regeneration.

As part of a comprehensive approach for skin health that includes a reduction in sugar-laden foods and refined carbohydrates, as well as limiting high-temperature cooking methods, these clinically proven compounds can reduce glycation and AGEs formation to retain the skin's youthful appearance.

## Glycation Accelerates Intrinsic Skin Aging

When excess sugar, such as fructose<sup>6,7</sup> or glucose, floats around the bloodstream, it has a propensity for binding to functional proteins through a chemical process called glycation.<sup>1,8</sup>

Once glycated, these proteins are rendered dysfunctional and undergo further structural rearrangements to form dangerous *advanced glycation end products* (AGEs) that accumulate in the brain, kidney, arteries, and skin as we get older.<sup>9-11</sup> This is evident in diabetics, whose systemic complications are tied to abnormal AGE levels.<sup>12</sup>

The dermis, which provides strength and resiliency to skin,<sup>13</sup> consists primarily of an extracellular matrix that has a high quantity of the protein collagen, particularly types I and III.<sup>14,15</sup> Due to its slow turnover rate and exposure to elevated glucose levels outside of cells,<sup>16,17</sup> collagen falls victim to glycation and AGE formation.<sup>18</sup> The result is extensive cross-linking of collagen molecules, turning them from tough and flexible to brittle and stiff.<sup>19,20</sup> This decreases skin's elasticity and sets the stage for the development of wrinkles and sagging skin.

AGE-modified collagen is highly resistant to repair mechanisms, which allows it to accumulate and impair the structural integrity of the dermis.<sup>1,3,16</sup> It has been shown to cause the collapse of specialized cells known as fibroblasts that produce and organize collagen fibers.<sup>16</sup> This strongly influences collagen homeostasis and subsequently leads to less collagen production and more breakdown in the skin.<sup>3,16</sup> To make matters worse, ultraviolet (UV) exposure<sup>21,22</sup> and AGE formation<sup>1</sup> itself generate free radicals that further exacerbate this problem by increasing activity of the collagen-degrading enzyme matrix metalloproteinase-1 (MMP-1).<sup>23,24</sup>



TERMINALIA CHEBULA

Scientists have grasped the enormity of glycation-related skin damage and therefore have searched for new ways to inhibit glycation reactions and enhance the regeneration of the skin's matrix. Let's now take a look at how a variety of topical compounds accomplish this to reveal fresher, younger-looking skin.

## Terminalia Chebula Fruit Extract

The fruit of the plant *Terminalia chebula* is highly revered in traditional Chinese and Ayurvedic medicine for treating a wide range of health conditions, from asthma to heart disease.<sup>25,26</sup> These health benefits have been largely attributed to the fruit's broad spectrum of potent phytochemicals, which include polyphenols, anthocyanins, and alkaloids.<sup>25,27,28</sup>

The substantial activity of the compounds in *Terminalia chebula* fruit extract neutralizes free radicals and reduces AGE formation that promotes toxic sugar-protein reactions.<sup>29-31</sup> Research demonstrates that this novel extract was **seven times** more effective at reducing glycation than the well-known glycation inhibitor aminoguanidine.<sup>32</sup> Other research indicates that one of its main constituents, chebulic acid, acts as a powerful hammer to break the bond existing between abnormally cross-linked proteins, setting them free and restoring their critical functions in various organs, including the skin.<sup>31</sup> By being both an inhibitor *and* breaker of glycation cross-linking, *Terminalia chebula* fruit extract offers a unique advantage for fighting or even reversing skin aging.

These impressive findings led to additional research, but this time in humans. Scientists conducted a clinical trial in which a topical formula containing *Terminalia chebula* fruit extract was applied twice daily to the face of 15 human volunteers aged between 41 and 65. At the end of the 12-week study, participants significantly reduced wrinkle depth by **22%** and skin roughness by **24%** compared to baseline. Dermatological evaluation also revealed improvements for skin brightness, tone, and dryness.<sup>33</sup>

## Blueberry Extract

Blueberries have long been known for remarkable anti-inflammatory and free-radical fighting properties, which can be credited to their wealth of phenolic compounds known as anthocyanins.<sup>34-39</sup> By combating free radicals and reducing the release of proinflammatory cytokines,<sup>39,40</sup> blueberries can safely break the self-perpetuating cycle of AGEs and oxidative stress that underlies intrinsic skin aging.<sup>41-43</sup>

When researchers tested the anti-glycation activity of various fruits, blueberries ranked as one of

## What You Need To Know



BLUEBERRY

the highest.<sup>44</sup> In addition, blueberries protect against collagen breakdown by inhibiting matrix metalloproteinases (MMPs) that occur as a response to UV exposure.<sup>45,46</sup>

In human studies, blueberry extracts have been shown to improve the undesirable skin changes that accompany aging.<sup>47,48</sup> In a study of 20 diabetic females older than 55 years with elevated skin AGEs, a topical preparation containing blueberry extract significantly improved skin tone and smoothness, fine lines, crepiness, and firmness after 12 weeks with excellent tolerability. Although no changes in skin AGEs was observed, researchers believe that a study with a longer duration might have produced a different result.<sup>47</sup>

In another clinical trial, six weeks of supplementation with an oral mixture containing blueberry extract in 62 women aged 45-73 significantly increased skin elasticity by 9% over a placebo, and after 12 weeks significantly decreased skin roughness by 6% compared to the control group.<sup>48</sup>

## Prevent Skin Glycation With Topical Nutrients

- Glycation refers to a spontaneous reaction between sugar, such as fructose and glucose, and proteins like collagen that reside in the skin's vital matrix.
- This culminates in the formation of advanced glycation end products (AGEs) that cause damage to collagen molecules, leading to wrinkles, creping, and loose skin.
- Scientists have identified topical nutrients, including *Terminalia chebula* fruit extract, pentapeptide-34 trifluoroacetate, blueberry extract, hexapeptide-3, and pomegranate extract, that work in complementary ways to protect the skin against the detrimental effects of glycation as we age and promote dermal regeneration.
- As part of a comprehensive approach that includes reducing sugary foods and refined carbohydrates, as well as proper cooking methods, these compounds, proven clinically or in the lab, reduce glycation and AGE formation to preserve the skin's youthful appearance.

### Pentapeptide-34 Trifluoroacetate

The fat-soluble compound coenzyme Q10 (CoQ10) is an essential component in mitochondrial energy production<sup>49</sup> that fuels processes that repair and regenerate skin, including collagen synthesis and DNA repair.<sup>50,51</sup> In skin cells, CoQ10 defends against UV induced damage and oxidative stress.<sup>52</sup> Since CoQ10 levels decline with age,<sup>49</sup> scientists have developed a novel peptide called **pentapeptide-34 trifluoroacetate** that enhances the skin's own capacity to produce CoQ10.<sup>53</sup> This effect was observed *in vitro* as skin cells exposed to pentapeptide-34 trifluoroacetate exhibited a **46%** rise in endogenous CoQ10.<sup>53</sup>

By replenishing depleted CoQ10 levels, pentapeptide-34 trifluoroacetate protects and energizes the skin, leading to visible anti-aging effects in humans. In a double-blind clinical study on 10 women aged 48-59, applying pentapeptide-34 trifluoroacetate twice daily around crow's feet for 28 days reduced fine lines and wrinkles compared with a placebo.<sup>53</sup>

### Hexapeptide-3

Since collagen is the most abundant structural protein in the skin,<sup>54-56</sup> it stands to bear the brunt of glycation reactions. But research shows that, with aging, other key dermal proteins like fibronectin are not immune either.<sup>57</sup> Fibronectin is a glycoprotein that attaches to matrix components and controls vital functions such as cell adhesion, differentiation, and migration.<sup>58</sup> Once glycated, fibronectin has difficulty binding to and interacting with matrix elements, compromising reparative processes that maintain the skin's youthful structure and appearance.<sup>59</sup>

**Hexapeptide-3** has been shown to mimic the beneficial effects of fibronectin to promote matrix remodeling and repair.<sup>60</sup> Results from human clinical trials show that when applied topically, hexapeptide-3 improves several parameters of skin health, with one study reporting an increase in skin hydration of **100%** and skin smoothness by **425%** in just **one hour!**<sup>60,61</sup>

### Pomegranate Extract

Research has shown that pomegranate extract can regenerate the dermis by stimulating type I collagen,<sup>62</sup> inhibiting protein-destroying **matrix metalloproteinase-1**,<sup>62</sup> and preventing fibroblast apoptosis (cell death).<sup>63</sup> It also counteracts the age-related thinning of the epidermis by increasing its thickness to protect against UV radiation,<sup>62</sup> and *in vitro* studies have demonstrated that compounds in pomegranate inhibit the formation of AGEs.<sup>64-66</sup> Together, this research shows that pomegranate extract induces favorable changes in different layers of the skin to enhance its healing capacity.

### Summary

Glycation and AGEs deteriorate the skin's vital matrix to accelerate skin aging that manifests itself as wrinkles, creping, and loose and dry skin. Scientists have identified topical nutrients, including *Terminalia chebula* fruit extract, pentapeptide-34 trifluoroacetate, blueberry extract, hexapeptide-3, and pomegranate extract that safeguard the skin against the detrimental effects of glycation as we age and promote dermal regeneration. As part of a comprehensive approach that includes a reduction in sugar-laden foods and refined carbohydrates, as well as limiting high-temperature cooking methods, these clinically proven compounds can reduce glycation and AGE formation to 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.

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# Protect Skin Against Sun Damage From Inside Your Body

Scientists have discovered that an extract of the fern *Polypodium leucotomos* helps inhibit cellular changes in the skin that can lead to premature aging due to sun exposure.<sup>1</sup>

Taken orally, **Enhanced FernBlock® with Red Orange Complex** provides an **additional** layer of support for the body's ultraviolet light defenses.

Best of all, *Polypodium leucotomos* offers this protection from the inside out. The result is an oral photoprotective agent that provides uniform, systemic, total-body surface protection (including the eyes, lips, and the scalp), without the problems associated with sunscreen.<sup>2,3</sup>

## Oral Sun Defense

**FernBlock®** has shown remarkable effectiveness in promoting skin defenses against harmful solar radiation.<sup>1,4-7</sup>

**FernBlock®** in this **oral** formulation works by promoting the body's ability to inhibit absorption of ultraviolet rays and to quench the free radicals that this type of radiation can generate.<sup>4,5</sup> In one clinical study, *Polypodium leucotomos* offered significant protection against the sun's rays, even for those taking medication that causes increased sun sensitivity.<sup>8</sup> The study subjects experienced an almost **three-fold** increase in the amount of time they spent in the sun.

## Enhanced FernBlock® Formula

This product has been upgraded to contain **Red Orange Complex**, a standardized extract that is obtained from three **red orange** varieties—*Citrus sinensis* var. Moro, Tarocco, and Sanguinello.

The main active **phenolic** compounds include **anthocyanins**, **flavanones**, and **hydroxycinnamic acids**. It also includes vitamin C,<sup>9</sup> which works together to support the body's natural photoprotection against ultraviolet radiation,<sup>10,11</sup> by helping to balance the body's normal inflammation response,<sup>12</sup> free-radical defense mechanism, and healthy apoptotic (cell death) activity.<sup>13</sup>

In a controlled human trial, 15 days of **oral** supplementation with **Red Orange Complex** was demonstrated to **measurably** support natural skin defenses against ultraviolet radiation.<sup>11</sup>

FernBlock® is a registered trademark of Industrial Farmaceutica Cantabria, S.A.

Note: This product is not a sunscreen.

## More Comprehensive Sun Protection

**Enhanced FernBlock® with Red Orange Complex** is designed to complement topical sunscreens for sun exposure. Taken orally, **FernBlock®** supplements the effectiveness of topical sunscreens by protecting the **entire skin surface** and has an obvious advantage in that it **cannot be removed by perspiring or bathing**.

If taken daily, just one capsule should provide everyday protection. Each vegetarian capsule of **Enhanced FernBlock® with Red Orange Complex** provides:

<b>FernBlock®</b> <i>Polypodium leucotomos</i> extract (leaf)	240 mg
<b>Red Orange Complex</b> (Sicilian red oranges – <i>Citrus sinensis</i> var. Moro, Sanguinello, Tarocco) extract (fruit and peel)	100 mg
<b>Vitamin C</b> (as ascorbic acid from Red Orange Complex)	5.5 mg

A bottle of 30 vegetarian capsules of **Enhanced FernBlock® with Red Orange Complex** retails for \$42. If a member buys four bottles, the price is reduced to **\$28.50** per bottle.



Item # 01728

To order **Enhanced FernBlock® with Red Orange Complex**, 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.

A key cause of visible skin aging is the binding of sugar molecules to proteins—known as **glycation**. The result is the appearance of unsightly wrinkles, creping, and loose skin.<sup>1,2</sup>

**Advanced Anti-Glycation Peptide Serum™** supports your skin's firmness and elasticity while slowing the visible signs of aging skin. The secret to this formulation is the combined activities of two peptides and three fruit extracts that together provide powerful anti-glycating effects and support collagen synthesis.

Clinical and lab studies on the ingredients in **Advanced Anti-Glycation Peptide Serum™** revealed that:

- **Pentapeptide-34 trifluoroacetate** reduced crow's feet within 28 days.<sup>3</sup>
- **Hexapeptide-3** increased skin hydration **100%** and smoothness **425%** in just one hour.<sup>4</sup>
- **Terminalia chebula** reduced wrinkle depth **22%** and improved skin tone.<sup>5</sup>
- A **blueberry extract**-containing supplement increased skin elasticity **9%** after six weeks and decreased roughness **6%** after 12 weeks.<sup>6</sup>
- **Pomegranate** stimulated collagen production and protected against UV radiation.<sup>7</sup>

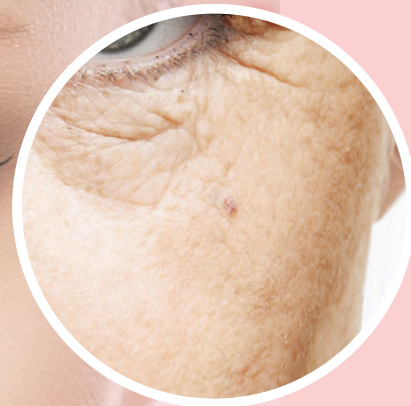
To order **Advanced Anti-Glycation Peptide Serum™**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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## Target The Glycation Behind Visible Skin Aging



**Advanced Anti-Glycation Peptide Serum™**  
Item #80157 • one-ounce bottle

	Retail Price	Member Price
1 bottle	\$53	<b>\$39.75</b>
2 bottles	\$46 each	<b>\$34.50 each</b>



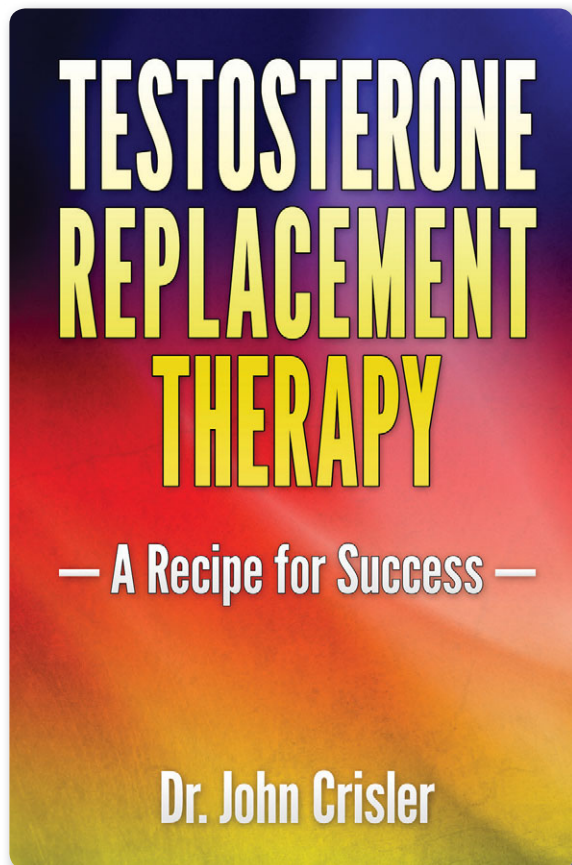
## BOOK REVIEW

BY WILL BRINK

# TESTOSTERONE REPLACEMENT THERAPY

## A Recipe For Success

By Dr. John Crisler



Until recent years, **testosterone replacement therapy** (TRT) was on the fringes of traditional medicine.

This is unfortunate because millions of men suffer from **testosterone deficiency** (low T), along with other hormones that grow out of balance with normal aging.

Some adverse outward effects associated with low testosterone are depression, low libido, abdominal weight gain, lack of energy, and “brain fog.” These common effects of testosterone deficit went untreated for decades. And that’s only the tip of the proverbial iceberg.

Testosterone deficiency imposes a substantial public health burden. Numerous studies show that **low T** is a predisposing factor for various chronic illnesses such as diabetes, cardiovascular disease, osteoporosis, and sarcopenia (muscle loss). All of these conditions—as well as others not covered here—can be improved greatly with proper hormonal management, especially in conjunction with changes in other risk factors.

A recent study determined that over a 20-year period, testosterone deficiency is projected to be involved in the development of approximately **1.1 million** new cases of diabetes, **1.3 million** new cases of cardiovascular disease, and over **600,000** osteoporosis-related fractures, with a cost of **\$190 to 525 billion** in inflation-adjusted US health care expenditures.\*

Some in the medical community overall have recently embraced the fact that low T is a serious problem and risk factor for men, and the ubiquitous “low T” commercials show that the pharmaceutical industry has finally realized a large consumer market exists. However, there’s still

resistance within the mainstream medical community in terms of the best ways to treat low T, and those who have embraced the use of testosterone tend to be well behind the learning curve on the optimal approach.

The problem is there's only a handful of medical professionals who have extensive clinical proficiency with **testosterone/estrogen** balancing therapy in men. Pioneers such as Dr. John Crisler are among the few practitioners with decades of hands-on clinical experience in this emerging field. Even those practitioners now willing to treat low T only understand the very basics of the topic. For example, the majority of medical practitioners currently willing to treat low T will simply have a man tested for total testosterone (TT) then make a decision to treat based solely on the results of that one lab test. That's poor medicine and poor hormonal management. Many doctors don't even require blood testing before prescribing testosterone to men complaining of andropausal symptoms. This failure to perform requisite **blood testing** is a recipe for disaster.

Dr. Crisler goes into depth on not just how to assess testosterone blood levels correctly, but he gives a long list of other hormone tests that should be done and how to interpret the test results. Perhaps even more importantly, Dr. Crisler clearly states that people need to pay close attention to not just lab results, but subjective symptoms as well.

Dr. Crisler has taken his extensive clinical experience and written a practical "best practices" guide for both clinicians and patients to follow. *Testosterone Replacement Therapy—A Recipe For Success* is not a *tour de force* of the published studies per se, but a reflection of

Dr. Crisler's extensive decades-long clinical experience working with men and adjusting their hormones to greatly enhance their physical and mental well-being. This book is not just a discussion on managing testosterone, but how to test and manage the total picture of what makes the male hormonal milieu function to its full potential.

Obviously testosterone is covered at length, including doses, types, and other essential information, but the use of other medications such as human chorionic gonadotropin (*hCG*), Clomid® (*clomiphene*), anastrozole, and more are discussed in regards to proper usage and dosage. Dr. Crisler also covers the important topic of the hypothalamic-pituitary-gonadal axis (HPG) and whether low T is due to primary versus secondary causes. In men, the HPG is the primary feedback loop by which the body senses and produces testosterone and other essential hormones, so a discussion of the HPG is important to an overall understanding and approach to low T.

The book also covers the known external causes of low T in men, many of which men may not be aware of, such as opioids, radiation exposure, corticosteroid drugs, spironolactone, antidepressants, ketoconazole, cimetidine, statins, and chemotherapy. Many men are exposed to one or more of these causes of low T.

One of the more useful sections in the book for both practitioners and patients is the topic of testosterone delivery systems. There are now many choices, from shots, patches, gels, creams, pellets, and more, which can lead to a great deal of confusion for both medical professionals and men seeking the best options for themselves. Dr. Crisler prefers properly applied and dosed T gels, but provides

details on the proper use of other methods, such as injections (both intramuscular and or subcutaneous). But he stresses the "right" choice of delivery should be determined by both lab results *and* subjective symptoms.

Dr. Crisler stresses strongly what virtually every medical professional tends to emphasize with decades of hands-on clinical experience treating men with low T: Successful treatment of male hormones (testosterone in particular) comes from the correct use of lab work, and a genuine respect for the subjective experiences of the men they work with. That's the balanced approach that's "a recipe for success" among all highly experienced medical professionals and Dr. Crisler is a shining example of that.

If one is looking for a book that covers recently published studies in depth, this is probably not the book for that purpose. But if one is looking for a "best practices" practical guide, written by a practitioner who has treated thousands of men over many decades for testosterone deficiency—then *Testosterone Replacement Therapy—A Recipe For Success* is an excellent choice that could save men years of searching for the right answers. ●

To order a copy of *Testosterone Replacement Therapy—A Recipe For Success* call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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\*Moskovic DJ, Araujo AB, Lipshultz LI, et al. The 20-year public health impact and direct cost of testosterone deficiency in U.S. men. *J Sex Med.* 2013;10(2):562-9.



# Block The Deadly Effects Of **ACID REFLUX**

Those who complain about symptoms of **acid reflux** (heartburn) at least once a week are not alone. A startling **10 to 30%** of Americans and Europeans may suffer symptoms of **gastroesophageal reflux disease (GERD)**.<sup>1</sup>

Although GERD is commonly treated with **proton-pump inhibiting** drugs such as **Nexium®** and **Prilosec®**,<sup>2</sup> many patients using these medications do not achieve desired relief. Patients sometimes suffer rebound gastritis, develop a *Helicobacter pylori* infection, or encounter other adverse effects.<sup>1</sup> These acid-blocking drugs are also linked to nutritional deficiencies, bone fractures, infections, and even withdrawal symptoms.<sup>3-8</sup>

While **proton-pump inhibiting** drugs do provide relief from distressing symptoms such as heartburn, regurgitation, difficulty swallowing, laryngitis, cough, and dental erosions<sup>1</sup>—acid reflux itself can have a lethal effect. Those with long-standing and

severe acid reflux symptoms have **43 times** the risk of developing **esophageal cancer**!<sup>9</sup>

The main reason that **proton-pump inhibitors** don't provide complete relief is that **GERD** is not caused by excessive stomach acid—GERD occurs when the sphincter valve between the stomach and esophagus fails to close completely. When this happens, undigested food and drink, bile, digestive enzymes, and stomach acids flow into the esophagus where they inflict considerable damage.

Once you understand that GERD involves more than just stomach **acid**, you'll understand why it takes more than an acid-blocking drug to achieve optimal relief.

In this article, you'll learn about a unique approach—known as **raft-forming alginate**<sup>10</sup>—that provides inclusive relief and protection from this chronic condition that affects so many aging individuals.<sup>11</sup>

## Novel Approach Physically Blocks Acid Reflux

A number of conditions increase the likelihood of acid reflux or GERD—a disorder in which the **sphincter valve** does not close sufficiently, thus allowing harsh stomach contents to wash back up into the delicate lining of the esophagus and throat.

Pregnancy can create temporary reflux, whereas obesity can result in chronic reflux.<sup>12</sup>

The number of people affected by acid reflux is expected to climb higher with the growing prevalence of reflux risk factors such as diabetes,<sup>13</sup> asthma,<sup>13</sup> being overweight,<sup>14</sup> and greater use of ibuprofen, certain muscle relaxers, and blood pressure drugs.<sup>14</sup>

New findings reveal how acid reflux—as well as its inherent cancer and other health risks—can be blocked in a unique way.

Chewing tablets containing **marine alginate** and **bicarbonate**—known as **raft-forming alginate**<sup>10</sup>—provides a temporary physical barrier that prevents the backwash of stomach contents, including burning acid, into the esophagus,<sup>11</sup> thereby protecting delicate esophageal tissue.

## Raft-Forming Alginate

To provide relief to those suffering from acid reflux or GERD, doctors have been interested in strategies that not only cut the acid content of the stomach, but also block acid, enzyme, bile, and food reflux.<sup>15</sup> Many patients with GERD exhibit food or acid reflux independently. A compound known as **raft-forming alginate** can decrease the number of both types of reflux events!

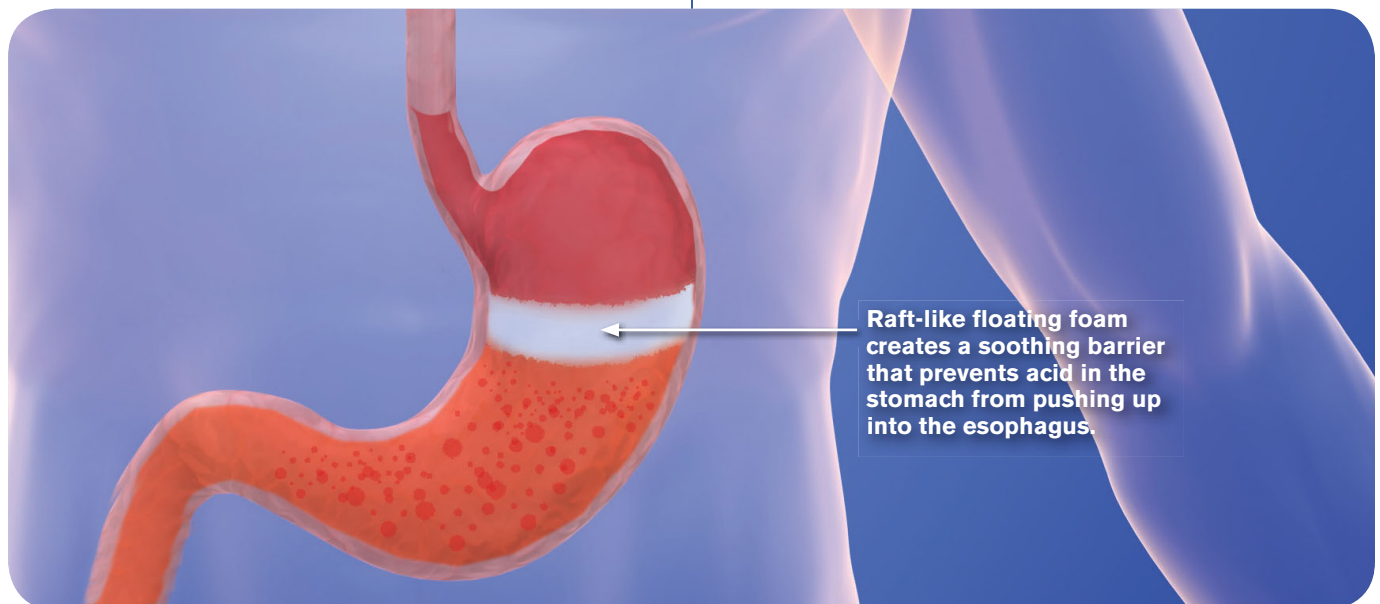
The alginate's unique mechanism has been shown to work—often within a few seconds of dosing—to form a barrier that can be retained in the stomach for hours, providing longer-lasting relief than traditional antacids.<sup>11</sup>

When chewed, the alginate-based, raft-forming formulation expands in the stomach, where it mops up excess acid that is about to do damage to your esophagus and forms a pH-neutral barrier that reduces reflux episodes. Here's how it works:

- One component of the mixture—**alginic acid**—is a dry powder derived from brown seaweed. Upon reaching the liquids and acid in the stomach, it forms a thick gel.<sup>11</sup>
- A second component of the mixture is **sodium** or **potassium bicarbonate**. On contact with gastric acids, it produces carbon dioxide bubbles that get trapped in the gel.<sup>11</sup> The expanding bubbles cause the thick gel to form a foam that literally floats on top of the stomach contents like a raft.<sup>11</sup>

Scientists have shown that in people with acid reflux, the raft then glides up into the lower esophagus<sup>16</sup> and creates a barrier that prevents acid and other stomach contents from pushing up into the esophagus.<sup>11</sup>

Meanwhile, the bicarbonate in the mixture reacts with the stomach acid and forms carbon dioxide—helping to directly neutralize stomach acidity. This provides an additional mechanism to further reduce the effects of heartburn.<sup>11</sup>



## What You Need To Know

### Blocking The Serious Risks Of GERD

- Proton-pump inhibiting GERD drugs do not always provide sufficient improvement in acid reflux. They may cause rebound gastritis, *H. pylori* or *C. difficile* infection, and can increase the risk of nutritional deficiencies, bone fractures, and other complications.
- GERD causes heartburn, regurgitation, difficulty swallowing, laryngitis, cough, asthma, and dental erosions.
- Long-standing and severe GERD cases involve **43 times** the risk of esophageal cancer.
- Proton-pump inhibitors don't provide complete relief because **GERD** is not caused by excessive stomach acid, but by failure of the sphincter valve between the stomach and esophagus to properly close. This allows undigested food/drink, bile, digestive enzymes, and stomach acids to reflux into the esophagus where they inflict considerable damage.
- GERD is a strong risk factor for adenocarcinoma of the esophagus, which is on the rise compared to the squamous type of this cancer—and which is substantially more treatment-resistant than squamous carcinoma of the esophagus.
- A unique and effective approach offers both relief and optimum anticancer protection—raft-forming alginate physically blocks the backwash of stomach contents, including burning acid, into the esophagus.

This entire raft-forming protective process occurs in less than a minute. Yet the raft can survive in the stomach for as long as four hours until it is finally broken up and passed out of the body.<sup>11</sup> This explains raft-forming alginate's remarkably rapid onset and long-duration relief when used immediately after a meal.<sup>11</sup>

In the next section, we'll learn about compelling studies that have demonstrated that alginate is effective at reducing the intensity of symptoms and the frequency of reflux attacks.<sup>11,17</sup>

### Alginates Proven Effective In Human Studies

Researchers set out to test on human patients the speed of relief provided by an alginate-based formula. They found that a single dose of a liquid form of **alginate** delivered a soothing effect in an average of just **65 to 66 seconds**! Over **82%** of patients described the effect as an "instant" cooling effect, and a full **100%** of subjects experienced heartburn relief within just **3.3 minutes** after the dose.<sup>18</sup>

In another study, addressing duration of relief, scientists employed sophisticated pressure- and acid-monitoring equipment to show that **20 mL of alginate** kept the esophagus in the nonacidic range almost **three times** longer than placebo and slashed food reflux incidence in half.<sup>15</sup>



And in **2014**, another comparison with a placebo was reported. This randomized, double-blind, clinical study on 110 GERD patients found that seven consecutive days of treatment with an **alginate**-containing formulation substantially decreased reflux and dyspeptic symptoms.<sup>19</sup>

Impressive results were also seen when alginates were experimentally compared to antacids and placebo.



Significant differences in objective scores—based on appearance and condition of the larynx—were seen between participants taking **10 mL** of **alginate** suspension four times daily, after meals and at bedtime, relative to placebo subjects.<sup>20</sup>

Other studies demonstrated marked reduction in symptom severity scores and gastroesophageal reflux with **alginates** compared to the reflux medication Propulsid® (cisapride)<sup>21</sup> and to the acid blocker Prilosec® (omeprazole).<sup>22</sup>

Since then, Propulsid® was removed from the United States market after it was shown to cause cardiac arrhythmias, with over 70 fatalities reported between 1993 and 1999.<sup>23,24</sup> Side effects are also associated with Prilosec®.<sup>25-28</sup> The good news is that a **2012** study published in *BMC Gastroenterology* showed that **alginate** treatment is equivalent to Prilosec®.<sup>29</sup>

In fact, studies regularly find that alginate treatment goes beyond superior efficacy—it delivers relief significantly **faster** than drugs.<sup>22,30</sup>

A huge benefit of alginate is that it erects a physical barrier that protects the esophagus—not only from stomach acid—but also from digestive enzymes, bile, and food/drink regurgitation. Proton-pump inhibiting drugs function only to stop acid production in the stomach.

## Prevent GERD-Induced Cancer Of The Esophagus

Many people think of the burning of GERD merely as pain and irritation—in other words, as a mere discomfort. But rates of esophageal cancer are rapidly increasing, and GERD is a major contributor.<sup>31,32</sup>

Esophageal cancers are most common in white men over 50, in smokers, in those who are obese, and especially in people with frequent symptoms of gastroesophageal reflux.<sup>33,34</sup>

Studies show that people with recurrent symptoms of reflux have a **7.7-fold** risk of esophageal cancer, while those with long-standing, severe symptoms are at an incredible **43.5-fold** risk of the disease!<sup>31</sup>

Worse, the prevalence of adenocarcinoma of the esophagus has been skyrocketing relative to squamous cell carcinoma of the esophagus<sup>35,36</sup>—which used to be the more common of the two.

The significance of this is **2-fold**.

First, esophageal **squamous cell carcinoma** is largely attributed to cigarette smoking and excess alcohol ingestion,<sup>36-38</sup> as well as infrequent consumption of raw fruits and vegetables<sup>39</sup>—while esophageal **adenocarcinoma** is known to occur more often in people with frequent symptoms of GERD.<sup>34</sup>

Second, and equally alarming, esophageal adenocarcinoma is substantially more resistant to treatment. In **2015**, a Japanese medical team published a study indicating that the **adenocarcinoma** component of esophageal cancer is more stubbornly resistant to chemoradiotherapy than the squamous component of esophageal cancer.<sup>40</sup>

## Blocking Other GERD-Related Complications

Aside from the much greater risk of a less treatable form of esophageal cancer, prolonged exposure of the esophagus to gastric reflux can cause dramatic alterations to its function. These serious complications of GERD can include peptic stricture<sup>41,42</sup> or Barrett's esophagus.<sup>43,44</sup>

In people with long-term GERD, healing of ulcerations can lead to the deposit of fibrous scar tissue as well as a stricture—narrowing—of the esophagus known as peptic stricture.<sup>41</sup> Segments of the esophagus with stricture are usually thickened, stiff, and may be shortened. The prevalence of peptic stricture among patients with GERD is about **10 to 25%**.<sup>42</sup> Treatment of severe peptic stricture involves the mechanical dilation of the narrowed region by a stent or balloon combined with acid suppression therapy.<sup>45</sup>

**Barrett's esophagus** is a change in the cellular makeup of the mucous membrane of the esophagus.

A normal esophagus is lined with a layer of flattened cells—squamous epithelial cells. In Barrett’s esophagus, these cells are replaced by a layer of thicker, taller cells—columnar epithelial cells, similar to those found on the inner surface of the stomach or intestines.<sup>46</sup> The main cause of Barrett’s esophagus is thought to be an adaptation to chronic acid exposure from reflux esophagitis.<sup>43,44</sup>

Barrett’s esophagus can increase the risk of esophageal cancer.<sup>47</sup> In fact, the risk of a patient with Barrett’s esophagus progressing to develop esophageal adenocarcinoma increases significantly with every year that Barrett’s persists.<sup>48,49</sup>

The optimum way to prevent these GERD-caused esophageal complications is to block the reflux of stomach contents into the esophagus in the first place—by relying on the physical barrier that alginate erects.

### Summary

**Proton-pump inhibiting** drugs provide relief from distressing symptoms such as heartburn, regurgitation, difficulty swallowing, laryngitis, cough, and dental erosions. Yet **gastroesophageal reflux** (GERD) can have a lethal effect. Those with long-standing and severe acid reflux symptoms have **43 times** the risk of developing **esophageal cancer**!

The reason that proton-pump inhibitors don’t provide complete relief is that **GERD** is not caused by excessive stomach acid. GERD occurs when the sphincter valve between the stomach and esophagus fails to properly close—allowing undigested food/drink,



### Dangers Of Common GERD Medications

When the sphincter valve at the bottom of your esophagus fails to close properly, stomach contents—including stomach acid and food—push up into the esophagus, causing heartburn and damaging the delicate esophageal lining. Drugs known as proton-pump inhibitors, such as Prilosec®, inhibit the release of stomach acid, providing some relief.<sup>50</sup> However, the continual inhibition of acid release with drugs hinders digestion and absorption of key nutrients.<sup>51</sup> This ultimately leads to alteration in gut pH balance and deficiencies in key nutrients, such as vitamin B12, iron, calcium, magnesium,<sup>52</sup> folic acid,<sup>53</sup> and zinc.<sup>54</sup>

The following are the most common adverse effects of proton-pump inhibitors:

- Blockage of release of a glycoprotein called “intrinsic factor,” making it impossible to absorb vitamin B12,
- Dietary iron is inhibited,<sup>55</sup> contributing, over an extended period, to anemia,
- Calcium absorption is greatly reduced due to the reduced acid levels,<sup>52</sup>
- Active transport of magnesium in the intestine is inhibited,<sup>56</sup> leading to deficiencies and potentially serious health consequences,
- Absorption of folic acid could be inhibited,<sup>53</sup> disrupting production of new cells needed for body growth and repair,
- Impaired absorption of zinc,<sup>54</sup> which is needed for a host of enzyme reactions in the body,<sup>57</sup>
- Increased risk of osteoporosis and bone fractures of any type, including wrist, spine, and hip,<sup>52</sup>
- Higher risk of infection—including pneumonia and *C. difficile*<sup>58,59</sup>—from decreased acid secretion and possibly from undigested food reaching the intestines and contributing to increased toxins and an imbalance of gut flora, and
- Withdrawal-induced rebound acid hypersecretion,<sup>60</sup> forcing a return to drug usage.

bile, digestive enzymes, and stomach acids to reflux into the esophagus and inflict considerable damage.

The fact that GERD involves more than just stomach **acid** explains why it takes more than an acid-blocking drug to achieve optimal relief.

GERD is a strong risk factor for adenocarcinoma of the esophagus, which is on the rise compared to the squamous type of this cancer—and which is substantially more treatment-resistant than squamous carcinoma of the esophagus.

**Raft-forming alginate** physically blocks the backwash of stomach contents, including burning acid, into the esophagus. ●

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



### Practical Steps To Help Prevent GERD Symptoms

There are a number of simple actions you can take to help prevent reflux symptoms before needing the natural compounds described in this article—and without having to rely on proton pump-inhibitors. These practical, preventive steps include:

- Eating more slowly,
- Having more frequent, smaller meals,
- Avoiding fried foods,
- Limiting alcohol intake,
- Replacing sodas with health-promoting drink options,
- Lowering caffeine intake,
- Taking fewer prescriptions and over-the-counter medications,
- Watching for, and limiting, foods that aggravate symptoms,
- Quitting smoking,
- Not eating within two to three hours of bedtime,
- Maintaining a healthy weight level,
- Wearing looser-fitting clothes,
- Managing stress levels,
- Supplementing with digestive enzymes such as proteases and lipases (so that food is more quickly digested and leaves your stomach sooner),

- Taking 1-2 teaspoons of apple cider vinegar with water and raw honey to reduce symptoms,
- Taking quality probiotics to support healthy gut bacteria balance,
- Helping to protect your stomach and esophagus by taking d-limonene, an extract of the peels of citrus fruit, and
- Taking zinc-carnosine, cranberries, deglycyrrhizinated licorice, and picrorhiza for gastroprotective effects.

If you are already taking proton-pump inhibiting drugs, consider:

- Blood tests (complete blood count, comprehensive metabolic panel) to detect nutrient deficiencies,
- A high-quality calcium supplement, ideally combined with vitamins K and D3, and
- A high-quality multivitamin and mineral supplement with ample zinc dosage.
- Over-the-counter antacids can be effective against stomach-acid damage, but do not provide sufficient suppression of stomach acid, especially with prolonged use. Raft-forming alginate preparations provide effective physical barrier protection against reflux symptoms.

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# Advanced Defense Against Cellular Aging

# NAD+ Cell Regenerator

If you are experiencing fatigue and lack of motivation, it may be due to the age-related decline in **NAD+** levels<sup>1</sup> and subsequent impairment of healthy cellular metabolism.<sup>2</sup>

**NAD+** (*nicotinamide adenine dinucleotide*) promotes systemic youthful functions and is found in every cell in the body.<sup>3</sup> In addition, **NAD+** plays an essential role in regulating **genes**<sup>4,5</sup> that control aging.<sup>6</sup>

## How To Boost NAD+ Levels Within Your Cells

Newly patented **nicotinamide riboside** increases cellular levels of **NAD+** in the body.<sup>7,8</sup>

For the first time, aging humans have an effective and affordable method to boost the critical **NAD+** enzyme for refreshed vitality.

**Nicotinamide riboside** represents an innovative advance to combat aging that functions via unique mechanisms not found in typical dietary supplements. It has emerged as a front-line weapon in **Life Extension**®'s ongoing war against premature aging.

The name of this new **nicotinamide riboside** formulation is **NAD+ Cell Regenerator**™.

## Multiple Benefits Of Increasing NAD+ Cellular Levels

**Nicotinamide riboside** has been documented to help replenish cellular **NAD+** and in the process:

- Promote sirtuin (SIRT1 and SIRT3) gene activation,<sup>6</sup>
- Enhance growth and efficiency of mitochondria—supporting energy levels and physical performance,<sup>6</sup>
- Favorably modulate metabolism,<sup>6</sup>
- Contribute to neuronal health—supporting cognitive function during aging,<sup>9-11</sup>
- Promote insulin activity—supporting healthy blood sugar in those within the normal range.<sup>6</sup>

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Life Extension® **NAD+ Cell Regenerator**™ contains the patented ingredient **NIAGEN**®, the first commercially available form of **nicotinamide riboside**.

The suggested daily dose of one **NAD+ Cell Regenerator**™ vegetarian capsule provides:

**NIAGEN® Nicotinamide Riboside 100 mg**

## Advanced NAD+ Technology At A Low Price

A bottle of 30 vegetarian capsules of **NAD+ Cell Regenerator**™ retails for \$34. If a Life Extension member buys four bottles, the price is reduced to **\$19.50** per bottle. The suggested dose is just one small capsule daily.

**NIAGEN**® is a registered trademark of ChromaDex, Inc. Patents see: [www.ChromaDexPatents.com](http://www.ChromaDexPatents.com).

Non-GMO.



To order  
**NAD+ Cell Regenerator**™,  
call 1-800-544-4440  
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# ULTIMATE eye HYDRATION

Maintaining eye support is essential for optimal eye health.

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

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

**Hydroxymethyl-cellulose** and **glycerin** are FDA-approved for ophthalmic use and are uniquely preserved with potent **antioxidants** and **anti-glycating** agents.

The **Brite Eyes** formula is buffered in a way to make it **soothing to the eye**. The suggested use of **Brite Eyes III** is to apply 1 to 2 drops in each eye every day.

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

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



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

# Immediate Relief For **Gastric Distress**

Nearly **60%** of adult Americans suffer some form of gastroesophageal upset<sup>1</sup>—and find little relief in commercial remedies.

Fortunately, a unique compound known as **raft-forming alginate** produces a temporary physical barrier between the stomach and the esophagus,<sup>2</sup> helping to protect the delicate esophageal tissue from harsh stomach acids.

A unique blend of ingredients in **Life Extension® Esophageal Guardian Natural Berry Flavor**, including **alginic acid** and **potassium bicarbonate**, produces both a gel and bubbles to form a safe, protective floating foam layer that sits above the contents of the stomach.<sup>2</sup>

Two other ingredients in the formulation—**calcium carbonate** and **magnesium carbonate**—react with the stomach acid to neutralize it.<sup>2</sup>

Clinical studies show this temporary foam barrier provides maximum support for delicate esophageal tissues.<sup>2,3</sup>

This barrier develops in **under a minute**, yet relief lasts up to **four hours!**

The suggested dose of two **Esophageal Guardian Natural Berry Flavor** chewable tablets provides:

<b>Alginic Acid</b>	<b>1,000 mg</b>
<b>Calcium</b> (as calcium carbonate)	<b>80 mg</b>
<b>Magnesium</b> (as magnesium carbonate)	<b>40 mg</b>
<b>Potassium</b> (as potassium bicarbonate)	<b>40 mg</b>
<b>Strawberry extract</b> (fruit)	<b>416 mg</b>
<b>Ellagic acid</b> (from pomegranate extract [hull] and strawberry extract [fruit])	<b>35 mg</b>

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#### Esophageal Guardian

Item #01737 • 60 chewable tablets

	<b>Retail Price</b>	<b>Member Price</b>
1 bottle	\$36	<b>\$27</b>
4 bottles	\$32 each	<b>\$24 each</b>

To order **Esophageal Guardian Natural Berry Flavor**, call **1-800-544-4440** or visit **[www.LifeExtension.com](http://www.LifeExtension.com)**

# ULTIMATE PROSTATE PROTECTION

**Ultra Natural Prostate** formula provides the latest scientifically-validated 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 the health of the aging prostate gland. Here are the ingredients in the **Ultra Natural Prostate** formula:

- **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.<sup>1-3</sup>
- **AprèsFlex®** supports normal inhibition of *5-lipoxygenase* or *5-LOX*, an enzyme that is associated with undesirable cell division changes.<sup>4,5</sup>
- **Stinging and Dwarf nettle root extracts** help support prostate cells against excess estrogen levels.<sup>6,7</sup>
- **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.<sup>8-11</sup>
- **Pygeum** (*Pygeum africanum*) extract helps suppress prostaglandin production in the prostate and supports healthy urination patterns.<sup>12,13</sup>
- **Pumpkin seed oil**, from select pumpkins, enhances the composition of free fatty acids and augments saw palmetto's benefits.<sup>14-16</sup>
- **Beta-sitosterol** enhances the protective effects of other botanical extracts and helps improve quality of life.<sup>17-19</sup>
- **Graminex® Flower Pollen Extract™**, has been shown to help relax the smooth muscles of the urethra and help regulate inflammatory reactions.<sup>20-22</sup>
- **Boron** has been shown to slow elevation of prostate-specific antigen (PSA).<sup>23-25</sup>
- **Lycopene** supports efficient cellular communication, helps maintain healthy DNA, regulates hormonal metabolism, and promotes healthy prostate size and structure.<sup>26-32</sup>
- **Phospholipids** enhance absorption of active compounds.

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

<b>Saw Palmetto CO<sub>2</sub> extract</b> (fruit) [providing 272 mg total fatty acids]	<b>320 mg</b>
<b>Graminex® Flower Pollen Extract™</b> (from rye)	<b>252 mg</b>
<b>Stinging and Dwarf nettle extracts</b> (root)	<b>240 mg</b>
<b>Beta-Sitosterol</b> (from pine)	<b>180 mg</b>
<b>Phospholipids</b>	<b>160 mg</b>
<b>Pygeum extract</b> (bark)	<b>100 mg</b>
<b>Pumpkin seed oil</b> [providing 170 mg total fatty acids]	<b>200 mg</b>
<b>AprèsFlex® Indian frankincense</b> ( <i>Boswellia serrata</i> ) <b>extract</b> (gum resin) [providing 14 mg AKBA <sup>1</sup> ]	<b>70 mg</b>
<b>Proprietary Enterolactone Precursors Blend</b> [HMRlignan™ Norway spruce ( <i>Picea abies</i> ) (knot wood) and Flax (seed) lignan extracts]	<b>20.15 mg</b>
<b>Lycopene</b> [from natural tomato extract (fruit)]	<b>10 mg</b>
<b>Boron</b> (as Albion® bororganic glycine)	<b>3 mg</b>

<sup>1</sup> 3-O-acetyl-11-keto-β-boswellic acid

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 used under sublicense from Linnea S.A. US Patents 6,319,524 and 6,669,968. Albion® is a registered trademark of Albion Laboratories, Inc.



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# Misguided Medicine

BY WILLIAM FALOON

**Massachusetts General Hospital** consistently ranks as one of the world's top medical facilities. It conducts the **largest** hospital-based research program in the United States. Case reports from **Massachusetts General Hospital** are routinely published in the prestigious **New England Journal of Medicine**.

Doctors at **Massachusetts General Hospital** observed that prescription sales of **testosterone** increased by **500%** in the United States between the years **1993** and **2000** and continue to surge.<sup>1</sup> This prompted these doctors to study the effects of **testosterone** and **estrogen** on body composition, strength, and sexual function in **men**.<sup>2</sup>

The results of this study published in the **New England Journal of Medicine** confirm **Life Extension**®'s long-standing position that restoring testosterone **blood levels** to youthful range reduces body **fat**,<sup>3</sup> increases lean **muscle**,<sup>4</sup> improves **strength**,<sup>5</sup> and enhances **sexual function**.<sup>6</sup>

This study also helped corroborate the **adverse impact** when **estrogen** levels are out of range in **men**.

What troubles us, however, is the **medieval** manner in which this study at **Massachusetts General Hospital** was designed, why the doctors overdosed study subjects on an **estrogen-suppressing drug**, and why the media treated certain findings as a **discovery** when they're not new.

The men in this study who were overdosed on the **estrogen-suppressing** drug had their **estrogen** drop to dangerously low levels. This led the study doctors to proclaim that **men** need **estrogen** and **testosterone**.

We fear this study will cause physicians to avoid appropriately prescribing **estrogen-suppressing** drugs, which will result in tragedies as **estrogen overload** is a serious condition in many aging men (as is estrogen deficit).

**"Authorities"** are often viewed as reliable sources of expert information. This editorial exposes **errors** committed by mainstream doctors who attempted to study the effects of aggressive **testosterone** and **estrogen** modulation in males. These medical **"authorities"** appear to have made little effort in identifying clinically validated methods of **optimizing** hormone status in aging men.



**Aging** is accompanied by an imbalance of **hormones** required to sustain life.

As a man's **testosterone declines**, his risk of dying greatly **increases**.<sup>7-9</sup>

**Heart disease**,<sup>10-13</sup> **osteoporosis**,<sup>14,15</sup> and **muscle wasting**<sup>16,17</sup> are strongly linked to **testosterone deficiency**, as are **chronic inflammatory**<sup>18-20</sup> and **neurodegenerative disorders**.<sup>21-25</sup> Doctors are often surprised to learn that men with low testosterone show an increased incidence of **prostate cancer**.<sup>26-30</sup>

Long before life prematurely ends, testosterone **deficit** can manifest in the form of psychological disturbances such as **depression**,<sup>23,31,32</sup> reduced **sexual desire**,<sup>33-35</sup> and a loss of **sense of well-being**.<sup>32,36</sup>

**Life Extension®** has long urged male members to have their **blood tested** for **testosterone** and to restore levels to **youthful ranges** if they are low.

### ***Estrogen Balance Critical To Aging Men***

When **Life Extension®** started offering comprehensive **blood test panels** back in **1996**, men did not understand why we were checking their **estrogen** levels. Back in those days, estrogen was viewed as a hormone of importance only to women.

We tested **estrogen** blood levels in **men** based on published data indicating that when estrogen levels are unbalanced, the risk of degenerative disease in aging men skyrockets.<sup>37-40</sup> Of concern to us **18 years** ago were reports showing that excess estrogen contributes to the development of **atherosclerosis**.<sup>41,42</sup> Human clinical studies conducted more than a decade later confirmed our suspicions. Men with even slightly elevated estrogen levels doubled their risk of **stroke** and had far higher incidences of **coronary artery disease**.<sup>43-45</sup>

Our early observations also revealed that men presenting with **benign prostate enlargement** or **prostate cancer** had higher blood estrogen levels (and often low testosterone).<sup>46-48</sup> Subsequent clinical and laboratory studies helped confirm our early observations.<sup>49-53</sup>

Insufficient estrogen, on the other hand, predisposes men to ailments such as **osteoporosis** and **bone fracture**.<sup>54,55</sup>

The fact that **99%** of men today have no idea what their blood **estrogen** levels are helps explain the epidemic of **age-related disease** that is bankrupting this nation's medical system.

### ***Higher Mortality In Men With Unbalanced Estrogen***

Conventional doctors tend to ignore hard science even after it appears in their own medical journals.

A study published in the **Journal of the American Medical Association (JAMA)** measured blood **estradiol** (a dominant estrogen) in **501** men with chronic heart failure. Compared to men in the balanced estrogen quintile, men in the lowest estradiol quintile were **317%** more likely to die during a three-year follow-up, while men in the highest estradiol quintile were **133%** more likely to die.<sup>56</sup>

The men in the balanced quintile—with the fewest deaths—had serum **estradiol** levels between **21.80** and **30.11 pg/mL**. This is virtually the ideal range that **Life Extension®** has long recommended aging men strive for.

The men in the highest quintile who suffered **133%** increased death rates had serum estradiol levels above **37.39 pg/mL**. The lowest estradiol group that suffered

a **317% increased** death rate had serum estradiol levels under 12.90 pg/mL.

The dramatic increase in mortality in men with unbalanced estrogen (estradiol levels either too high or too low) is nothing short of astounding. It uncovered a gaping hole in conventional medical practice that is easily correctable.

### **Massachusetts General Hospital Doctors Overlooked These Studies**

The study I just described revealing the dangers of estrogen imbalance was published in the **May 13, 2009**, issue of the *Journal of the American Medical Association*. This JAMA study corroborated previous studies validating the critical importance for aging men to maintain their **estradiol** blood levels in *optimal* ranges.

Yet doctors at **Massachusetts General Hospital** seemed oblivious to this JAMA study when they **overdosed** their study subjects on the estrogen-suppressing drug "**anastrozole**." The brand name of this drug is **Arimidex®**.

Recall that when **estradiol** levels drop below 12.90 pg/mL, death rates **increased 317%** in heart-failure patients. Also recall that optimal estradiol blood levels are between **20-30 pg/mL**.

By overdosing the study subjects on the estrogen-suppressing drug, doctors at **Massachusetts General Hospital** caused **estradiol** blood levels to plummet to a frighteningly low range of **1.0 to 2.8 pg/mL**. This is **10 times lower** than the optimal **estradiol** threshold.

When the arm of the study that was **overdosed** on the estrogen-suppressing drug developed

adverse effects, the doctors at **Massachusetts General Hospital** proclaimed that men indeed require **estrogen**, as if this were a surprising discovery.

The media picked up on this misinterpreted data and undermined the value of estrogen-suppressing drugs when *properly* prescribed to men suffering estrogen overload.

### **How Much Of An Overdose?**

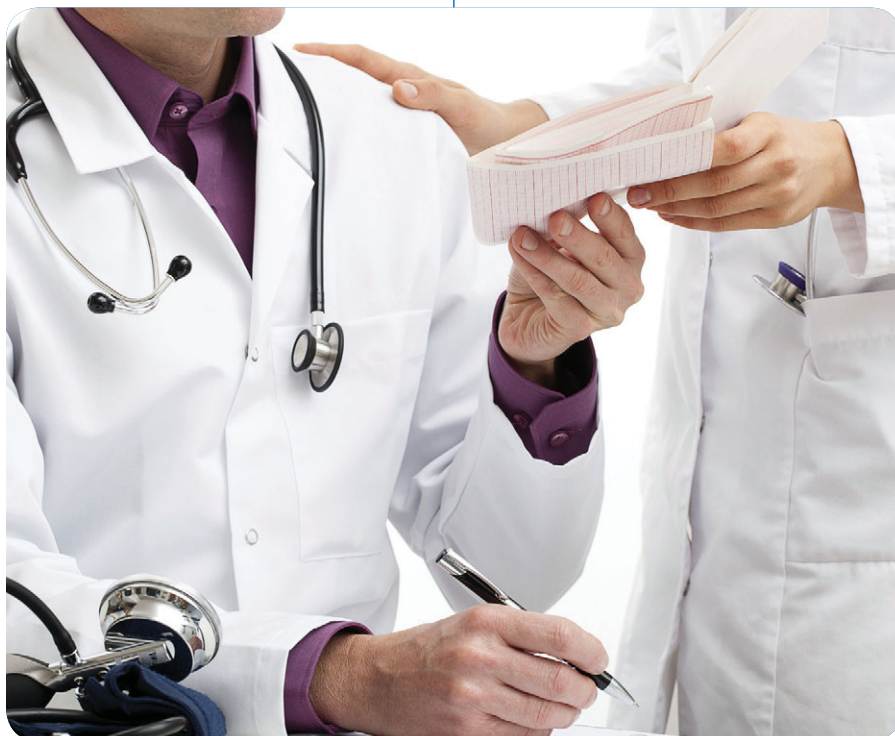
There is no question that men require a certain amount of **estrogen**, as they do **testosterone**, to sustain life. Most estrogen in men is produced through the aromatization (conversion) of testosterone to estrogen in the body. This transformation occurs in response to the enzyme **aromatase**.

When men have high levels of **aromatase**, they convert too much testosterone into estrogen, which

can cause them to be low on testosterone and high on estrogen. These men need a drug like **anastrozole** to inhibit the **aromatase enzyme**. The typical dose an aging man needs of anastrozole is **0.5 mg** twice per week. In some cases, a man may need **1.0 mg** of anastrozole twice a week.

In contrast, doctors at **Massachusetts General Hospital** gave men in the estrogen-suppressing group an outlandish dose of **7.0 mg** per week of anastrozole. This anastrozole dose is **seven times higher** than what has been shown to safely reduce elevated estradiol to optimal ranges in most aging men.

We at **Life Extension®** have no idea why such a **high dose** of anastrozole would ever be given to men. Perhaps since it's sold in **1 mg** tablets, the physicians who designed the study thought the men should take one per day. This dose of **1 mg/day** is what female breast cancer patients sometimes



take to suppress estrogen production in their bodies. It is an egregiously excessive dose for men to take, as evidenced by the suppression of estradiol in these study subjects to virtually non-existent levels (**1.0 to 2.8 pg/mL** of blood).

The estrogen-suppressing drug (anastrozole) was given to **every** man in the estrogen-suppressing arm of the study, regardless of what the man's estradiol **blood level** was. This meant many of these men were taking this potent drug when they did not even need it.

### ***Unethical Use Of Testosterone-Suppressing Drug And Excess Radiation Exposure***

The study conducted at **Massachusetts General Hospital** was performed in a way that raises medical ethical issues. The doctors took a group of healthy men aged **20-50** years with normal testosterone levels and initially gave them a powerful drug (**Zoladex®**) that drastically suppressed their testosterone.

We at **Life Extension®** have long been aware of the negative impact this kind of hormone depletion creates. Prostate cancer patients who undergo “androgen deprivation” suffer rapid bone loss,<sup>57-60</sup> muscle atrophy,<sup>61-63</sup> abdominal fat gain,<sup>64,65</sup> and a host of other adverse changes that are not always reversible.

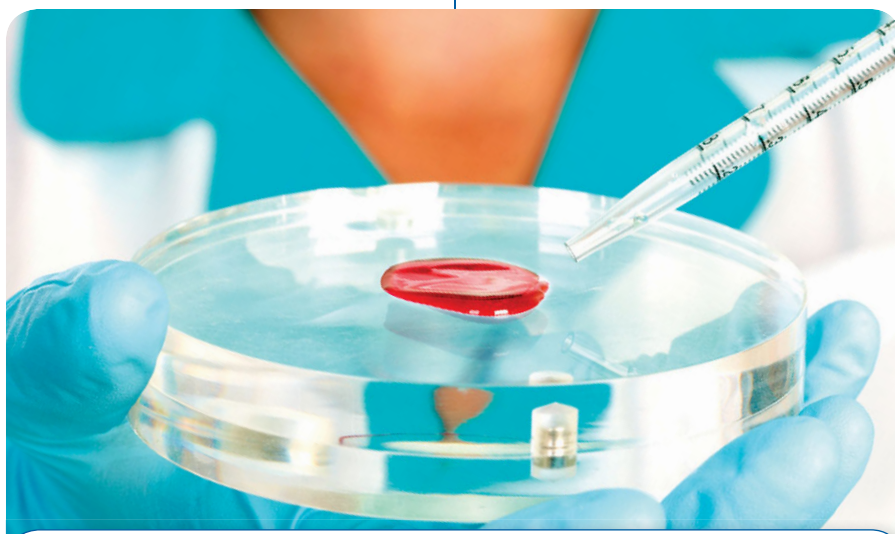
The long-term effect of testosterone deprivation was demonstrated later in this study at **Massachusetts General Hospital** when men whose testosterone was restored to the higher ranges did not fully recover **sexual function** lost by this intentional suppression of testosterone.

Instead of taking healthy men and depleting them of their life-

sustaining hormones, the doctors could have chosen to study men over age 50 whose testosterone levels had already plummeted to ultra-low ranges. By studying younger men who were not testosterone deficient, the researchers lost an opportunity to directly apply the study outcomes to aging men who are most in need of testosterone restoration.

Another issue we have with this study was the continuous repeated use of **DXA** and **CT** body composition scans. While these scans enable precise **body fat** measurements,<sup>66</sup> they emit huge amounts of **radiation** that could create **cancers** later in life.<sup>67</sup>

The men in this study who were initially deprived of testosterone (and estrogen) may have



### **How Men Naturally Make Estrogen**

Women synthesize most of their estrogen in their **ovaries** and other reproductive tissues.

Since men lack this female anatomy, they need to produce estrogen through a process involving the enzyme *aromatase* that transforms **testosterone** into **estradiol**.

More than **80%** of circulating **estradiol** in men is derived from the *aromatization* of **testosterone**.<sup>77-79</sup> As serum **testosterone** levels decline, there can be a corresponding decline in serum **estradiol** levels.<sup>80,81</sup>

Aging men sometimes have too much **aromatase** activity, which causes their testosterone to convert to excess estradiol.<sup>82,83</sup> This results in *depletion* of vital testosterone while *spiking* estradiol to unsafe ranges.

Some men lack **aromatase** and suffer an estrogen deficit.<sup>84</sup> Other men produce so little endogenous testosterone that there is not enough to convert into estrogen, which causes low levels of both **free testosterone** and **estradiol**.<sup>2</sup>

Fortunately, no matter what the underlying cause, aging men can easily achieve **optimal testosterone** and **estradiol** serum levels using inexpensive **blood tests**.



## Critical Need For Men To Assess Hormone Status

Despite the shortcomings of the study conducted at **Massachusetts General Hospital**, we are gratified that the doctors suggest a benefit in measuring **estradiol** blood levels in **men**. Here is a quote from their concluding statement:

***“Our finding that estrogens have a fundamental role in the regulation of body fat and sexual function, coupled with evidence from prior studies of the crucial role of estrogen in bone metabolism, indicates that estrogen deficiency is largely responsible for some of the key consequences of male hypogonadism and suggest that measuring estradiol might be helpful in assessing the risk of sexual dysfunction, bone loss, or fat accumulation in men with hypogonadism.”***<sup>85</sup>

While **Life Extension®** male members have had their estradiol **blood levels** checked since **1996**, it's refreshing that there is now an endorsement for more widespread use of this blood test published in the **New England Journal of Medicine**.

suffered **bone loss** and **endothelial dysfunction**.<sup>68</sup> The tragic impact would be an increased risk of fracture and vascular disease later in life.

The pathological effects of even short-term androgen deprivation are variable, unpredictable, and can result in barbaric consequences. Repeated exposure to radiation emitting CT and DXA scans is not something that young healthy men should undergo when it is not medically necessary.

This is why I allege at the beginning of this article that this study at **Massachusetts General Hospital** was designed in a “*medical*” manner.

### Low Estradiol And Testosterone Predict Mortality In Aging Men

To further substantiate the lethal impact of hormone deficiency, another study published in

**2009** evaluated **3,014** men aged **69-80** years. Serum levels of **testosterone** and **estradiol** were measured during a mean follow-up of **4.5** years.

This study showed that men with low **testosterone** had **65%** greater all-cause mortality, while men with low **estradiol** suffered **54%** more deaths.<sup>69</sup> Men low in **estradiol** and **testosterone** were almost twice as likely to die (a **96%** increase in mortality) compared to men in the optimal ranges.<sup>69</sup>

This large study of aged men corroborates prior published reports linking imbalances of **testosterone** and/or **estradiol** with greater incidences of degenerative disease and death.<sup>10,12,38-40,46,70-76</sup>

Why the authorities at **Massachusetts General Hospital** suppressed **estradiol** to dangerously low levels (**1.0** to **2.8** pg/mL) in their study subjects is beyond our comprehension. It undermined the clinical value of the data they acquired.

### Encouraging Findings From Massachusetts General Hospital Study

In the study conducted at **Massachusetts General Hospital**, groups of men were first given varying doses of the testosterone-suppressing drug (**Zoladex®**) for 12 weeks. They were then given various doses of **topical testosterone cream** for 16 weeks. One group received **testosterone cream** only, while the other group received **testosterone cream** plus the **estrogen-suppressing** drug (**anastrozole**).

The doctors used some sophisticated techniques to measure parameters such as **belly fat**, **strength**, **lean muscle**, and **sexual function**. As mentioned earlier, **DXA** and **CT scans** were performed to determine **lean mass** as well as subcutaneous **belly fat** and **visceral fat**. Validated methods were used to determine sexual function, physical function,

vitality, strength, and overall health status of the men enrolled in the study.

In men given the proper dose of **testosterone cream**, significant **anti-aging** effects were clearly evident.

In the group of men whose blood levels of **total testosterone** increased to **805 ng/dL** and whose **estradiol** levels rose nearest the optimal ranges (**20-30 pg/mL**), there were significant **reductions** in **belly fat** with improvements in **lean muscle**, **strength**, and **sexual function**. The **total testosterone** blood level (**805 ng/dL**) in men who attained these benefits falls squarely within the **optimal** range that **Life Extension®** has advocated since **1996**.

These benefits did not occur in the group of men given **testosterone** plus **7 mg/week** of **anastrozole**. These men in fact suffered a **decrease** in **lean muscle** and **increased belly fat**. Compared to the men who achieved optimal testosterone and estradiol blood levels, the study subjects who were overdosed on **anastrozole** experi-

enced decreased sexual function and strength.

Another important finding from this study was that the **only** group that achieved a significant **decrease in body fat** was men who achieved **total testosterone** blood levels averaging **805 ng/dL**. In fact, men who received a placebo or low-dose testosterone showed a substantial **increase** in subcutaneous **belly fat** compared to those who achieved **optimal** serum **total testosterone** levels.

**Life Extension®** has long recommended that aging men maintain **total testosterone** at an optimal range of **700-900 ng/mL**. This **Massachusetts General Hospital** study helps confirm that the greatest benefits occur when **total testosterone** and **estradiol** levels are in ranges that can easily be achieved and monitored utilizing comprehensive **blood tests**.

### Misinterpretation Of The Massachusetts General Hospital Study

The doctors who conducted the study at **Massachusetts General Hospital** extolled their findings about the adverse effects seen in men prescribed the absurdly high dose of **anastrozole**.

They noted the increased percentage of **abdominal fat** as well as decreased **sexual desire** and **erectile function** seen in their **estrogen-deficient** study subjects. These doctors extrapolated that since abdominal fat mass is associated with diabetes and metabolic syndrome, that the marked increase in **visceral fat** seen in men prescribed high-dose **anastrozole** could portend increases in cardiovascular disease.

The problem is that **estradiol** was artificially suppressed down

### Symptoms Of Low Testosterone

Substantial **quality-of-life improvements** occur in most men who properly restore their testosterone to youthful ranges.

Common symptoms in men with low testosterone are:

- **Sexual problems such as decreased desire, erectile dysfunction, difficulty achieving orgasm, and reduced intensity of orgasm**
- **Low energy and increased fatigue**
- **Loss of motivation**
- **Depressed mood**
- **Loss of sense of well-being and vigor**

When low testosterone is corrected, men report improvements in some or all of the above symptoms. It is interesting to note that these symptoms of low testosterone are analogous to what one would expect with **normal aging**.





## Signs Of Low Testosterone

“Symptoms” are something a person experiences, whereas “signs” are something that can be measured, like weight or blood pressure.

Common signs of low testosterone include:

- Loss of muscle mass and strength
- Accumulation of belly fat
- Low bone density
- Anemia
- Increased incidence of type II diabetes

These signs of low testosterone are common characteristics of normal aging. Most men demonstrate improvements in these pathologic signs when testosterone levels are restored.

to levels not seen in the real world. Thus it is not surprising that these men with virtually no estrogen suffered unwanted side effects.

The doctors who performed this study concluded that men need sufficient levels of **estrogen**, as well as **testosterone**, to stay healthy. The media made it appear as if a major **discovery** had occurred, i.e. a newly found role for **estrogen** in males. This is not a new finding!

Scientists long ago identified men’s biological requirements for estrogen, and published studies of aging men clearly demonstrate the **lethal impact** when **estradiol** levels are too **high** or too **low**.<sup>43,69</sup>

The implication from this study’s findings was that doctors should use caution when prescribing **estrogen-suppressing** drugs to their male patients. Nowhere do they mention that the study subjects were grossly overdosed on **anastrozole** to the point that **estradiol** levels dropped to virtually **nonexistent levels**.

In today’s sound bite environment, practicing physicians will be even less likely to prescribe the proper dose of **anastrozole** (1 mg a week) to men whose estradiol levels are over 30 pg/mL. At **Life Extension**®, we sometimes see aging men with estradiol levels over 60 pg/mL. These men are in urgent need of **aromatase-inhibition** using the proper dose of **anastrozole**, yet their doctors might

erroneously refuse to prescribe it because they will recall the misinterpretation of this study emanating from esteemed **Massachusetts General Hospital**.

On a positive note, doctors at **Massachusetts General Hospital** stated in their concluding remarks that some of the deleterious effects of aging may be related to changes in **testosterone** and **estrogen** levels that “*may be preventable with appropriate replacement.*”

At least the medical authorities are recognizing that aging men do indeed require testosterone and estrogen.

### Our Early Battles With Medical “Authorities”

When **Life Extension**® first recommended that aging men restore their testosterone to youthful levels, a firestorm of criticism erupted.

The medical establishment proclaimed that by interfering with the natural decline in testosterone secretion, men risked all kinds of terrible fates. When **Life Extension**® members asked their doctors for testosterone prescriptions, they ran into objec-

tions such as, “*I don’t prescribe steroids,*” “*testosterone causes heart attacks,*” and “*testosterone causes prostate cancer.*”

We countered these criticisms with hundreds of scientific citations showing that testosterone deficiency is an underlying cause of many age-related diseases. We also demonstrated that none of the paranoid fears about **natural testosterone** had ever been substantiated.

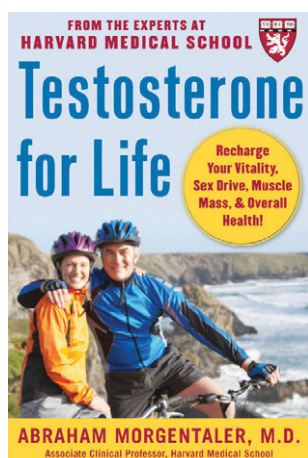
### Low Testosterone Increases Prostate Cancer Risk

Fear of **prostate cancer** was the leading reason why aging men historically shied away from restoring their **testosterone**.

To dispel this concern, **Life Extension**® analyzed every published study in the 1990s and found there was no basis for asserting that testosterone causes prostate cancer.<sup>86-91</sup>

Our observations from the thousands of blood tests we perform each year for members corroborate this. What we found is that men with low testosterone appear to be more likely to contract prostate cancer.

In the book *Testosterone for Life*, authored by Harvard researcher Abraham Morgentaler, MD, the misleading notion about testosterone causing prostate cancer was exposed in meticulous detail.



Dr. Morgentaler dropped a bombshell on the medical establishment in **2008** showing that men with low testosterone levels have an increased percentage of prostate cancer-positive biopsies.<sup>92</sup> This and other findings have led to the record number of aging men being prescribed natural **testosterone** today.

### Critical Importance Of Blood Testing

Today's conventional physicians prescribe **blood tests** to check glucose, cholesterol, and triglycerides, but rarely check their male patients' **testosterone** and **estradiol** levels.

When looking at the higher **mortality** rates associated with **imbalances** of these critical hormones, it becomes strikingly apparent that a significant number of heart attacks, strokes, bone fractures, and other degenerative diseases are easily preventable.

One reason these hormone **blood tests** are not normally prescribed is their high retail cost, and the fact that insurance companies may not routinely pay for them.

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

### Take Charge Of Your Health

An all-inclusive blood test panel that includes **total testosterone**, **free testosterone**, **estradiol**, and **PSA** can be very expensive at commercial labs. *Life Extension*® members obtain these tests at a **huge discount**.

If your blood test result reveals imbalanced **testosterone** and/or **estradiol**, you are in a position to initiate immediate corrective action. Not only can restoring youthful hormone balance save your life, but men (and women) often experience an enhancement in their *quality of life* after their hormones are adjusted to optimal ranges.

A description of the **Male and Female Blood Test Panels** can be found on the page to the right. As you'll readily see, these panels contain many important tests (such as **25-hydroxyvitamin D**, **homocysteine**, **C-reactive protein**, and **DHEA**) that mainstream doctors seldom check for.

When you order these tests, a requisition form is sent listing blood drawing stations in your local area. Appointments are usually not necessary, meaning you can have your blood drawn at your convenience. Results are mailed (or emailed) to you usually within five days.

## Annual Blood Test Super Sale

**High prices** charged by commercial labs for **comprehensive blood testing** preclude most people from having them done. The tragic result is that aging humans needlessly suffer the ill effects of hormone imbalances.

*Life Extension*® breaks down these price barriers by offering **Male and Female Blood Test Panels** at the lowest prices anywhere. Once a year, we discount the popular Male and Female Blood Test Panels to only **\$199**—far less than what commercial labs charge.

The **Blood Test Super Sale** ends **June 1, 2015**, so please order your requisition kit to take advantage of these extra discounted prices. You can have your blood drawn any time after receiving your requisition kit.

The results of your blood tests are rapidly sent directly to you. If you have any questions, you are welcome to call our health advisor helpline.

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

### References

1. Available at: <http://www.massgeneral.org/about/pressrelease.aspx?id=1617>. Accessed February 17, 2014.
2. Finkelstein JS, Lee H, Burnett-Bowie SA, et al. Gonadal steroids and body composition, strength, and sexual function in men. *N Engl J Med*. 2013 Sep 12;369(11):1011-22.
3. Katznelson L, Finkelstein JS, Schoenfeld DA, Rosenthal DI, Anderson EJ, Klubanski A. Increase in bone density and lean body mass during testosterone administration in men with acquired hypogonadism. *J Clin Endocrinol Metab*. 1996 Dec;81(12):4358-65.



# MALE AND FEMALE BLOOD TEST PANELS

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

**Non-member  
retail price: \$400**

**Member  
Price: \$199**

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

## MALE PANEL

### METABOLIC PROFILE

**Glucose**

**Hemoglobin A1c**

**Kidney function tests:** creatinine, BUN, uric acid, BUN/creatinine ratio

**Liver function tests:** AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase

**Blood minerals:** calcium, potassium, phosphorus, sodium, chloride, iron

**Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio

### LIPID PROFILE

**Total Cholesterol**

**LDL** (low-density lipoprotein)

**HDL** (high-density lipoprotein)

**Triglycerides**

### CARDIAC MARKERS

**C-Reactive Protein** (high sensitivity)

**Homocysteine**

### HORMONES

**Free and Total Testosterone**

**DHEA-S**

**Estradiol** (an estrogen)

**TSH** (thyroid function)

**Vitamin D (25-hydroxyvitamin D)**

### COMPLETE BLOOD COUNT (CBC)

**Red Blood Cell count including:** hemoglobin, hematocrit, MCV, MCH, MCHC, RDW

**White Blood Cell count including:** lymphocytes, monocytes, eosinophils, neutrophils, basophils

**Platelet count**

### CANCER MARKER

**PSA (Prostate Specific Antigen)**

Then—at your convenience—you can visit one of the blood-drawing facilities provided by LabCorp in your area.

## FEMALE PANEL

### METABOLIC PROFILE

**Glucose**

**Hemoglobin A1c**

**Kidney function tests:** creatinine, BUN, uric acid, BUN/creatinine ratio

**Liver function tests:** AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase

**Blood minerals:** calcium, potassium, phosphorus, sodium, chloride, iron

**Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio

### LIPID PROFILE

**Total Cholesterol**

**LDL** (low-density lipoprotein)

**HDL** (high-density lipoprotein)

**Triglycerides**

### CARDIAC MARKERS

**C-Reactive Protein** (high sensitivity)

**Homocysteine**

### HORMONES

**Progesterone**

**Estradiol** (an estrogen)

**Free and Total Testosterone**

**DHEA-S**

**TSH** (thyroid function)

**Vitamin D (25-hydroxyvitamin D)**

### COMPLETE BLOOD COUNT (CBC)

**Red Blood Cell count including:** hemoglobin, hematocrit, MCV, MCH, MCHC, RDW

**White Blood Cell count including:** lymphocytes, monocytes, eosinophils, neutrophils, basophils

**Platelet count**

Blood testing services are available only in the continental United States and Anchorage, AK. Not available in Maryland. Restrictions apply for residents of MA, NY, NJ, RI, and PA.

## How To Safely Restore Youthful Testosterone Balance

*Since most doctors still don't know how to properly prescribe testosterone, the following recipe makes it simple:*

1. Have your blood tested for **free testosterone**, **total testosterone**, **estradiol**, and **prostate-specific antigen (PSA)**, along with complete blood counts and blood chemistries. These blood tests are all included in the comprehensive **Male Panel Blood Test** that most members have performed annually.

2. If your blood test results reveal **free testosterone** below **20-25 pg/mL** (or **total testosterone** below **700 ng/mL**), find a doctor with experience in prescribing natural testosterone cream. **Life Extension®** maintains lists of doctors who have knowledge about male hormone restoration. To locate a doctor in your area, log on to **lef.org/doctors**

3. To obtain **natural testosterone cream** at the lowest price, ask your doctor to write a prescription for **compounded natural testosterone cream**. An example of how a doctor can write a prescription for a two-month supply of natural testosterone cream appears above. The exact dose you need is based on your blood test results, body mass, and later may be based on your rate of absorption and internal metabolism. Your doctor will determine what dose of testosterone cream is most appropriate for you.

4. If your **estradiol** level is over **30 pg/mL**, your doctor may also prescribe a very low-dose aromatase-inhibiting drug such as **0.5 mg of Arimidex®** twice per week. This will usually bring estradiol into the optimal range of **20-30 pg/mL**.

Your Doctor's Name \_\_\_\_\_ DEA# \_\_\_\_\_  
Your Doctor's Address \_\_\_\_\_  
Your Doctor's Phone Number \_\_\_\_\_

Patient's Name \_\_\_\_\_  
Address \_\_\_\_\_

**TESTOSTERONE 100 mg/mL pump**  
**Apply 1 mL (100 mg) daily or as directed**  
**FILL # 2-month supply (60 mL)**

Refill \_\_\_\_\_ times \_\_\_\_\_  
(Signature) \_\_\_\_\_

5. Within 45 days, have your blood re-tested to verify proper testosterone dosing and rule out prostate cancer. These blood tests also enable you to guard against excess red blood cell production and excess conversion of testosterone to estradiol, as well as to ensure that liver enzymes are in normal ranges.

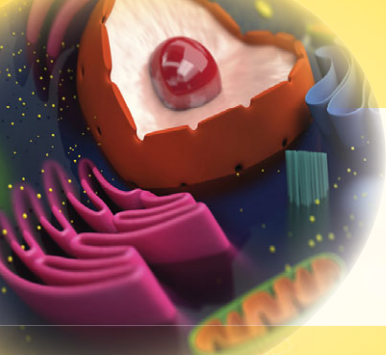
**Life Extension®** members have the advantage of requesting their blood to be drawn ahead of time so their doctor can properly prescribe them testosterone during their first visit. To order the Male Panel that includes all these blood tests and a lot more at a new lower price, call **1-800-208-3444**.

Compounded testosterone cream can be obtained for as little as \$40 for a 60-day supply. There are also non-prescription methods that restore free testosterone to youthful ranges in some men. To inquire about these, call a **Life Extension®** Health Advisor at **1-800-226-2370**.

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# AMPK Activator

## A NEW PARADIGM IN CONTROLLING AGING

**AMPK** is an *enzyme* that serves as the body's "**master regulating switch**." It inhibits multiple degenerative factors by *revitalizing* aging cells.<sup>1</sup>

Found in every cell,<sup>2,3</sup> **AMPK** promotes **longevity factors** that have been shown to extend life span in numerous organisms.<sup>1,4</sup> Increasing AMPK signaling "turns off" many damaging effects of aging, thus enabling cells to return to their youthful vitality.<sup>5</sup>

**Life Extension**® scientists have compiled years of research to create **AMPK Activator**, a specialized *dual-extract formulation* that supports **AMPK** activation for health optimization. This natural formula supports AMPK enzymatic activities required to safely support a more youthful cellular environment.

### Importance Of AMPK

Greater **AMPK** (*adenosine monophosphate-activated protein kinase*) activation has been shown to help target damaging factors of aging.<sup>5</sup> Studies show **increased** AMPK activity supports reduced fat storage,<sup>6</sup> new mitochondria production,<sup>7</sup> and the promotion of healthy blood glucose and lipids already within normal range.<sup>4</sup>

### Gynostemma Pentaphyllum

An extract of the plant *Gynostemma pentaphyllum* was traditionally used in Asian medicine to promote longevity and scientists now know why—*G. pentaphyllum* promotes **AMPK** activation!<sup>8-10</sup> In one of many studies showing a wide variety of benefits, researchers documented a 1-inch reduction in **abdominal circumference** in overweight individuals who took **450 mg** daily of *G. pentaphyllum* extract for 12 weeks.<sup>11</sup>

### Trans-Tiliroside

*Trans-tiliroside*, extracted from plants such as **rose hips**, also boosts **AMPK** activation, but triggers different downstream metabolic benefits than *G. pentaphyllum*.<sup>12-14</sup> Among its many benefits, a low equivalent dose of **56 mg** daily *trans-tiliroside* has been shown by researchers in preclinical studies to promote healthy blood glucose levels and body weight already within normal range.<sup>15</sup>

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#### Non-GMO

ActivAMP® is a registered trademark of Gencor.

The suggested daily dosage of **AMPK Activator** is to take two capsules with the first meal of the day and one capsule with the second meal. Three capsules provide:

ActivAMP® <i>Gynostemma pentaphyllum</i> extract	450 mg
Rose hip extract	1,119 mg
Standardized to <i>trans-tiliroside</i>	56 mg

### Anti-Aging Discovery That Cannot Be Overlooked

Scientists uncovered the cell-energizing effect of **AMPK** in the 1970s. Since then, an exponential volume of data (over 7,500 published studies) documents the critical role that activated **AMPK** plays in maintaining life-sustaining cellular functions.

Those seeking to meaningfully extend their healthy life span should ensure they optimally activate their cellular **AMPK**. The reason this is so important is that in response to aging, excess calorie consumption, and/or low levels of physical activity, AMPK activity markedly declines.

A targeted way of **reversing** cellular depletion of this critical enzyme is to take **AMPK Activator** formula that comprises a dual-extract, plant-based formulation.

A bottle of 90 vegetarian capsules of **AMPK Activator** retails for \$48. If a member buys four bottles, the price is reduced to **\$33** per bottle.



Item # 01907

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

## Advanced Defense Against Cellular Aging

The all-new...

# OPTIMIZED RESVERATROL with NAD+ Cell Regenerator

Over 6,000 studies have been published on **resveratrol**, a compound shown to favorably alter genes that help slow the aging process. In fact, resveratrol triggers some of the same beneficial youthful gene expression activated by **calorie restriction**.<sup>1</sup>

The all-new **Optimized Resveratrol with NAD+ Cell Regenerator** now contains **NIAGEN® nicotinamide riboside**, a novel nutrient shown to support mitochondrial health and promote longevity pathways. This new formula provides **100 mg of NIAGEN® nicotinamide riboside**—an amount equivalent to almost 667 cups of milk!<sup>2</sup>

The updated **Optimized Resveratrol with NAD+ Cell Regenerator** also contains specific compounds in berries, such as **pterostilbene** and **fisetin**, which researchers say work in synergy with resveratrol to “turn on” the body’s own longevity genes.

Item# 01930



### Just one capsule of Optimized Resveratrol with NAD+ Cell Regenerator supplies:

<i>Trans</i> -Resveratrol	250 mg
NIAGEN® Nicotinamide Riboside	100 mg
Grape-Berry Actives	40 mg
Quercetin	60 mg
<i>Trans</i> -Pterostilbene (from pTeroPure®)	0.5 mg
Fisetin	10 mg

A bottle of 30 **Optimized Resveratrol with NAD+ Cell Regenerator** vegetarian capsules retails for **\$42 (Item # 01930)**. If a member buys four bottle, the price is reduced to **\$27** per bottle. The suggested dose is **one** capsule daily of this “optimized” resveratrol formula.

Non-GMO

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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.

BY DONNA CARUSO



## Surviving Environmental Toxins



Although more than 25 years have passed since Beth Daly almost died from a sudden, mysterious, debilitating illness brought on by toxic environmental chemicals, her six months of suffering while bedridden are as vivid to her today as when they first occurred.

Failed by a medical system unable to identify either the source of her condition or any effective treatment, Beth finally began her long recovery thanks to her husband Richard's fortunate discovery of **activated charcoal** in a health food store. Beth's multiple symptoms included heart palpitations, night sweats, nausea, vomiting, low-grade fever, mental confusion, and hot and cold flashes that occurred within moments of each other. "I felt every part of me was trying to get rid of a poison," she recalls, adding that at the time, neither she nor her husband knew what that poison was or how to eliminate it.

Finally, after several months of using over-the-counter activated charcoal, a seemingly miraculous antitoxin brought home by her husband, Beth's symptoms began to disappear.

To this day, Beth continues to rely on activated charcoal whenever she feels it's needed and at 62, describes her health as "excellent." Richard, a long-time Life Extension® member, credits his scientific background and lifelong interest in holistic health for his timely discovery and is grateful that he and their four young children did not lose a wife and mother at such an early age.

## Beth Daly's Supplements

- Activated Charcoal (as needed)
- AMPK Activator
- ArthroMax® Advanced with UC-II® & Après Flex®
- Astaxanthin with Phospholipids
- Blueberry Extract with Pomegranate
- Boron
- Coconut Oil
- Complete B-Complex
- CoQ10
- Grape Seed Extract
- Immune Senescence Protection Formula™
- Lactoferrin
- Mega Green Tea Extract (decaffeinated)
- Milk Thistle
- Mitochondrial Energy Optimizer with BioPQQ®
- NAD + Cell Regenerator™
- Neuro-Mag™ Magnesium L-Threonate
- No Flush Niacin
- Optimized Saffron with Satiereal®
- Probiotics
- Pycnogenol®
- Pyridoxamine
- Skin Restoring Phytoceramides with Lipowheat®
- Super Bio-Curcumin®
- Super CLA Blend with Sesame Lignans
- Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
- Vitamins D & K with Sea-Iodine™
- Zeaxanthin

## A Healthy Beginning And Early Life

Growing up in Indiana, Beth benefitted from her mother's vegetable garden, which provided much of their food. "We had fresh vegetables in the summer," she recalls, "and canned vegetables in the winter." Beth also remembers one neighbor providing home-grown grapes and apples, while another sold them fresh eggs. "I feel like I got a very healthy start in life," she says.

Enrolling at Indiana University, Beth met Richard, a student of chemistry, physics, and computer science. They soon married and started a business manufacturing optical products, which continues to this day.

Richard's keen, early interest in nutrition soon began to influence Beth, and they both became devoted to organic food, supplements, and keeping abreast of the latest findings through state-of-the-art literature, including *Life Extension*® magazine. "Rich started taking supplements in his mid-20s," Beth says, "and I eventually started reading articles about health and vitamins and taking them, too."

## The Health Crisis

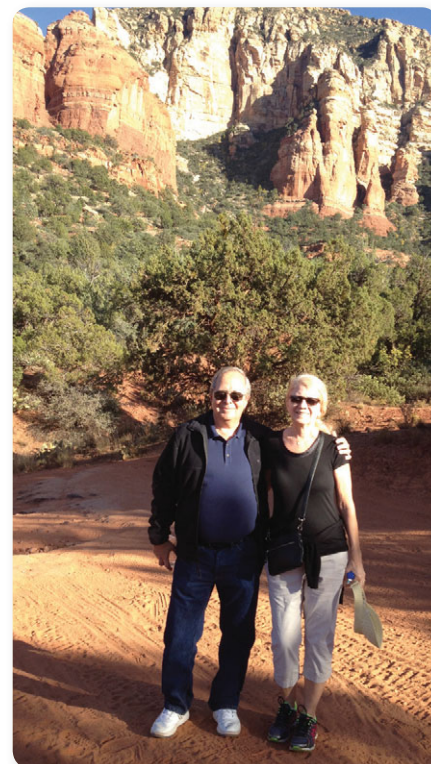
Their life-altering incident occurred around 1989 when, as residents of Florida with four young children, Beth and Richard were taking a day trip to Orlando. Several things happened that day, but it was only much later, in retrospect, that they put together the evidence to finally identify several factors they now believe caused Beth's prolonged illness.

The first was driving past a state truck on the side of the road that

was spraying chemicals, which were shooting up in the air. Not long after, the family stopped at a restaurant. Beth's daughter ordered a chicken sandwich, which she said didn't taste right. Beth thought it tasted okay, and ate it. A little later, while waiting in the car for her husband, Beth smelled something bad and began to feel sick.

"By the time Rich returned to the car, I knew I was ill," she explains. "We thought if we went to a mall and I walked around for a while, I would feel better, but I only began to feel worse and even had to lie down on a bench." By the time they returned to their car, Beth was extremely ill, so they rushed to the nearest emergency room.

Sitting in the crowded waiting room with their children, Beth and Richard soon decided to leave because they didn't want their children exposed to the seriously ill people surrounding them.



Upon returning home, Beth was bedridden for almost six months, suffering from all the symptoms previously mentioned, none of which she had experienced before. “I felt shaky inside and had brain fog,” she adds, “but the doctors couldn’t figure out what was wrong. They couldn’t come up with a diagnosis or offer any solutions.”

After months of trying to figure out what had caused Beth’s illness, the couple finally contacted the Mayo Clinic and an environmental clinic in North Carolina. They never needed to go, though, because things finally started to turn around.

### A Timely Discovery

A few months after the onset of Beth’s illness, Richard was in a health food store at lunch time and decided to walk around while waiting to be served. With his background in chemistry, when he saw a bottle of activated charcoal he thought it could draw out the toxins that he and Beth now believed were causing her symptoms. He bought the product and Beth began to take the charcoal pills—two at a time. She only took the pills every few days, since she didn’t want to deplete any essential nutrients in her body. “I slowly began to feel better,” Beth recalls, “and now I’m certain that Rich saved my life.”

“Before that, I was not able to function,” she continues. “I was in bed, my meals were brought to me, and my husband had to take over care of the children and household, and even wash my hair, since my arms were aching all the time. I was pretty much unable to do anything. I felt so ill I honestly thought I was going to die.”

Records show that activated charcoal, a form of processed carbon, was used as long ago as 1500 B.C. in ancient Egypt, in Greece during the time of Hippocrates, and from 1870 to 1920 as a medically accepted antidote for poisons. Its ability to *adsorb* (condense and bind organic and some inorganic substances) as opposed to *absorb*, meaning to assimilate or soak up and excrete them explains its long-time use to remove toxins from the body.

### What It Is

Made by heating coconut shells (the preferred source) or other organic materials such as wood, peat, or coal, then converting them to a powder, activated charcoal is then turned into tablets or capsules. It is estimated that **1 gram** of charcoal has a surface area equivalent to a football field, meaning a very small amount is able to adsorb a large amount of toxins very quickly and effectively and excrete them through the stool. By removing toxins in this way, charcoal can also be said to have important anti-aging factors.

### Charcoal’s Uses

Although there are not many scientific studies on activated charcoal, a small study titled “Effect of Activated Charcoal on Hypercholesterolemia” published in *The Lancet* in 1986 showed that charcoal effectively lowered LDL cholesterol and increased beneficial HDL cholesterol. Charcoal is more widely used to treat poisoning and drug overdoses, particularly in emergency rooms, and especially when used within one hour of toxin ingestion. It does not work with every

toxin, however, and is more effective with drugs such as acetaminophen, digoxin, tricyclic antidepressants, and barbiturates. It can also be lifesaving as an emergency treatment for accidental poisoning before medical care arrives. In such cases, you should identify the substance ingested and immediately call your local poison control center or emergency department for directions prior to use.

Activated charcoal is also useful for getting rid of intestinal gas and toxins that cause indigestion, and as a digestive system cleanse before a fast. In addition, charcoal may also accelerate wound healing, benefit those suffering from stomach upset and infections; relieve symptoms of kidney and liver disorders, and reduce unpleasant effects of chemotherapy. Again, it is important to consult your health care provider before using.

### How To Use

Do not take charcoal on a daily basis and do not take it within two hours of eating, if possible. Again, ask your health care professional about exact dosage and frequency of use for your specific problem. Drink a lot of water after taking charcoal in order to help flush out the toxins.

### Warnings

Charcoal not only removes toxins, it can also remove important nutrients. For this reason, do not take charcoal every day. Do not take it at the same time that you take supplements or any prescription medications. Sometimes charcoal can have side effects, including abdominal pain and swelling, requiring immediate medical attention.

### What The Dalys Discovered

Despite her extraordinary recovery using activated charcoal, Beth still faced other serious health issues. She mentions two miscarriages within the two years following this illness and says that for the last 10 years, she has been unable to sleep after eating meat from animals raised in America,

including organic—a problem she didn’t have after eating meat in France and Switzerland. Although neither Beth nor Richard are certain of the reason, both believe it may be related to the way the animals are raised and/or slaughtered in each country.

Twenty-five years ago, it took months before Beth’s original debilitating symptoms disappeared completely, and while Richard wasn’t **100%** sure the

activated charcoal would work, he was convinced that Beth's severe illness had been caused by environmental toxins and that the charcoal might well be able to remove these poisons from her body.

Today, Beth takes the charcoal whenever she experiences any of the symptoms she once had and says she typically feels better within a few hours. "I take charcoal when I feel symptoms coming on," she explains, "and I take it before they become more serious."

Over the years, Beth has also observed that her symptoms can resurface after encountering numerous substances, including pesticides, herbicides, glue, bleach, formaldehyde, cleaning products, ink, perfume, air freshener, exhaust fumes, smoke, and musty environments.

"After I saw the charcoal, I immediately thought it would help her," says Richard. "I believe Beth's problems occur because her liver

doesn't detoxify some chemicals and it's nice to know that I figured out what would help her."

### Life Today

Many years later, the Dalys established a website, [www.AnecdotalEvidence.com](http://www.AnecdotalEvidence.com) to tell their story and provide a forum for others who have also found natural, alternative methods to deal with various health problems, especially after traditional medicine has failed. Although Beth has never received a definitive medical diagnosis for her disorder or any scientific proof that her symptoms and prolonged illness were due to environmental toxins, the Dalys strongly believe in the importance of anecdotal evidence, which Richard calls "the precursor to scientific evidence." In this case, at least, there are very strong reasons to believe that Beth's condi-

tion came about due to exposure to such powerful toxins and was helped through the amazing properties of activated charcoal that removed them from her body and restored her health.

Beth's traumatic experience set her on the road to taking better care of her health. Today, she and her husband eat about **90%** organic food, which they obtain at an all-organic store and café close to their home. They also take many supplements, most of which come from Life Extension®. Beth walks two miles, three or four times a week and hopes to live long enough that technology will advance enough to enable her to live even longer.

The Dalys are both devoted to Life Extension® and say they're grateful for the magazine, the high quality supplements, the diagnostic tests, and the research into increasing longevity. It is their greatest hope that their story will help others.

"One thing we like to do is talk to people about health and vitamins," Beth explains, "and sometimes we run across someone who has had problems with the environment and has become ill, and we always mention activated charcoal or other supplements that we think could help."

"I feel that the real benefit for me is that vitamins can help prevent diseases that may not have symptoms until they become a major problem or are too advanced to have a good outcome." ●

For more information about anecdotal evidence regarding alternative health and healing, please visit [www.AnecdotalEvidence.com](http://www.AnecdotalEvidence.com).

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



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BY ASTRID DERFLER KESSLER

## Doctored:

### The Disillusionment Of An American Physician

An Interview With  
Sandeep Jauhar

## Doctored

The Disillusionment of an  
American Physician

  
Sandeep Jauhar

Author of *Intern*



A book by acclaimed author and physician Dr. Sandeep Jauhar reveals the realities of the modern health care system in *Doctored: The Disillusionment of an American Physician*. This memoir, a follow-up to his previous publication titled *Intern*, reveals the troubling truths about the state of today's medicine that Dr. Jauhar encountered after accepting a position at a large teaching hospital in New York. Some of the realities he was forced to face included pressure to meet bottom lines at the expense of patient care, ordering expensive tests and exams for profit purposes only, the obvious cronyism that came into play when referring patients to specialists, and how overwhelming paperwork led to too little time to spend with patients.

Filled with anecdotes about his patients and their experiences, as well as personal stories regarding his own family, career, and choices, *Doctored* tells the story of an American physician who is not afraid to challenge the status quo in his search for a better system for everyone.



**LE:** In the opening chapter of your book, you write that you are struggling with your chosen profession.

**SJ:** I have become the kind of doctor I never thought I'd be—impatient, occasionally indifferent, and at times dismissive or paternalistic.

Most of us went into medicine for intellectual stimulation or the desire to develop relationships with patients, not to maximize income. There is a palpable sense of grieving. The job for many has become just that—a job. Something fundamental is lost when physicians start thinking of medicine as a business.

**LE:** Please provide an example of how generating income superseded patient care.

**SJ:** Because insurers had been slashing reimbursement rates, my colleagues and I were told we

had to increase our relative value unit collections—or the currency of medical payment. Some physicians responded by upcoding—claiming greater complexity in patient encounters than was in fact the case—and fraud investigations at some centers were under way.

Since I wasn't going to upcode, what the department's directive meant for me on a practical level was that I had to see more patients. I reduced time in my schedule earmarked for new patients from 60 minutes to 40 and for established patients from 30 to 20. With administrative tasks, conferences, teaching, chart reviews, and letters and phone calls ... gobbling up my day, I began to rush through visits, hurrying patients along in subtle and not so subtle ways. I stopped small talk. I interrupted histories after a few seconds to get patients to the point. I even urged patients to breathe faster when I was listening to their lungs.

**LE:** Do you feel you compromised your patients and yourself?

**SJ:** You can often do a passable job, but it's impossible to appreciate the subtleties of patient care when you are rushing. Racing through patient encounters, you practice with an ever-present fear that you will miss something, hurt someone, and open yourself up to legal, not to mention moral, liability.

**LE:** What was your solution to coping with this kind of rushing and quick turnaround?

**SJ:** To cope with the anxiety, you start to call in “experts” for problems that perhaps you could have handled yourself if you had more time to think through the case. Apart from the perverse incentives of our fee-for-service system, a major driver of overconsultation is the uncertainty engendered by the hurried pace of contemporary medicine. Some doctors call consultants just to cover their [behind].

**LE:** Health care costs are at an all-time high. Doesn't this kind of care you're describing actually end up costing more in the long run?

**SJ:** The Institute of Medicine estimated that wasteful health care spending—spending that doesn't improve health outcomes—costs \$750 billion in the US every year. Excessive paperwork and administrative costs account for some of this waste, but unnecessary or inefficiently delivered services, especially in hospitals, account for the lion's share.

**LE:** You have numerous examples of this waste and how it backfires and typically costs more.

**SJ:** The more pressure put on doctors to cut costs by working harder and faster, with shorter hospital stays and quicker patient turnover, the more uncertainty doctors feel and therefore the more likely they are to utilize CT scans, MRIs, expert consultations, and so on. There is no more wasteful entity in medicine than a rushed or incompetent doctor.

**LE:** How does it affect a patient?

**SJ:** The consequences for patients are troubling. Too many consultations leads to sloppiness and disorganization. With bulky care teams, there's diffusion of responsibility. Who's in charge? Who is spearheading treatment? Nowhere is this more evident than in the hospital discharge process.

**LE:** And as you point out in the book, this leads to patients being pushed out of the hospital too quickly, only to return shortly.

**SJ:** Hasty readmission is an indicator of an inefficient, if not dysfunctional, health care system.

A study in the *New England Journal of Medicine* (2009) found that one in five Medicare patients discharged from the hospital was readmitted within a month. One in three was readmitted in three months. Readmissions are costly. In 2004, the expense to Medicare for unplanned readmission was \$17.4 billion—**17%** of its total hospital budget.

**LE:** What can be done to reduce hospital readmission rates?

**SJ:** There are many things doctors can do... They could ensure discharged patients get timely follow-up appointments. [Half of all discharged patients readmitted in 30 days had not seen a

doctor after discharge, according to a *New England Journal of Medicine* study.] They could do a better job of ensuring that patients obtained their medications and understood how to take them.

Doctors can also do a better job of educating patients about which symptoms and signs presage worsening of their disease—shortness of breath and leg swelling in congestive heart failure, for example—so they could quickly see their primary physician rather than go to the ER. We know patients with a clear understanding of discharge instructions are **30%** less likely to return to the hospital. But research shows inconsistency at best in achieving these goals.

**LE:** The government wants to get more involved in curbing health care costs and has come up with incentives and fines. How do you respond to this initiative?

**SJ:** Congress and the Obama administration are doling out penalties on hospitals with high readmission rates [which] could forfeit up to **3%** of Medicare payments in 2015. But these incentives are misdirected. Hospitals don't hospitalize patients; doctors do. And doctors currently stand to gain little from lowering readmission. In fact, they will lose revenue.

As is so often the case in our health care system, doctors' incentives don't serve a broader social goal. This virtually guarantees that proposed reforms like cutting readmissions, reducing unnecessary testing, and adopting computerized medical records will fail.

**LE:** What about rewarding hospitals that reduce patient turnaround?



**SJ:** The agency that runs Medicare is considering giving bonuses to hospitals that lower readmissions below average. Though I think it's a good idea, I believe some of this money should be shared with doctors. Current law prohibits hospitals from paying doctors for reducing hospital services even if the goal is to provide more efficient care.

In an interview with *U.S. News and World Report*, Dr. Jauhar summed up his feelings on his chosen career choice. "I'm not disillusioned with being a doctor," he said. "I'm disillusioned with our medical system and the way it's structured and how dysfunctional it is and how difficult it makes it for doctors to provide good care and do what they were trained to do.

"I would tell perspective medical students: It's a great profession still because it's a profession where you undeniably do good things for people and in most cases, you earn a healthy income, and you get to think about really cool things about science and about humanity, so it's a great profession, but it's a profession that has been adulterated by a very dysfunctional system, so go into it with your eyes open. Focus on the good things [like] conversations with patients, which really mean a lot. They don't pay the bills, necessarily—but they're very rewarding." ●

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



Dr. Sandeep Jauhar is a cardiologist and the director of the Heart Failure Program at Long Island Jewish Medical Center. Jauhar was a PhD student in physics at Berkeley when a girlfriend's incurable illness made him yearn for a profession where he could affect people's lives directly. But he soon came to realize that his new chosen profession often had little regard for patients' concerns. Dr. Jauhar's first book, titled *Intern: A Doctor's Initiation*, detailed his 80-hour workweek and the exhaustion, mental pressure, and moral conundrums he faced in his first year of medical residency. Dr. Jauhar also writes regularly for *The New York Times*.

To order a copy of *Doctored: The Disillusionment of an American Physician* by Dr. Sandeep Jauhar, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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<b>KIDNEY FUNCTION PANEL</b> BUN      BUN/Creatinine Ratio Creatinine      Uric Acid		
<b>BLOOD PROTEIN LEVELS</b> Total Protein      Globulin Albumin      Albumin/Globulin Ratio		
<b>BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE</b> Red Blood Cell Count      Monocytes White Blood Cell Count      Lymphocytes Eosinophils      Platelet Count Basophils      Hemoglobin Neutrophils (Absolute)      Hematocrit Lymphs (Absolute)      MCV Monocytes (Absolute)      MCH Eos (Absolute)      MCHC Baso (Absolute)      Neutrophils RDW		
<b>BLOOD MINERAL PANEL</b> Calcium      Sodium Potassium      Chloride Phosphorus      Iron		
<input type="radio"/> <b>WEIGHT LOSS PANEL-BASIC (LC100027)</b> CBC/Chemistry profile (see description above), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Insulin and Hemoglobin A1c.	\$173.33	\$97.50
<input type="radio"/> <b>WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028)</b> CBC/Chemistry profile (see description above), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin A1c, Vitamin D 25-hydroxy, C-reactive protein (high sensitivity), and Ferritin.	\$366.66	\$206.25
<input type="radio"/> <b>HEALTHY AGING PANEL-BASIC* (LC100025)</b> CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Ferritin, and Insulin.	\$198.66	\$111.75
<input type="radio"/> <b>HEALTHY AGING PANEL-COMPREHENSIVE* (LC100026)</b> CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Homocysteine, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Free T3, Free T4, Ferritin, Urinalysis, Fibrinogen, and Insulin.	\$332	\$186.75
<input type="radio"/> <b>STRESS MANAGEMENT PROFILE (LC100043)</b> Cortisol AM/PM, DHEA-S, Glucose, Insulin, Progesterone, Free T3.	\$166.66	\$93.75
<input type="radio"/> <b>COMPREHENSIVE THYROID PANEL (LC100018)</b> TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA.	\$265.33	\$149.25
<input type="radio"/> <b>LIFE EXTENSION THYROID PANEL (LC304131)</b> TSH, T4, Free T3, Free T4.	\$100	\$56.25

	(NON-MEMBER) RETAIL PRICE	MEMBER SUPER SALE PRICE
<input type="radio"/> <b>FEMALE COMPREHENSIVE HORMONE PANEL* (LC100011)</b> CBC/Chemistry Profile (see description at left), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3. This panel now includes Free T4 and Cortisol with no increase in price!	\$398.66	\$224.25
<input type="radio"/> <b>MALE COMPREHENSIVE HORMONE PANEL* (LC100010)</b> CBC/Chemistry Profile (see description at left), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3. This panel now includes Free T4 and Cortisol with no increase in price!	\$398.66	\$224.25
<input type="radio"/> <b>MALE BASIC HORMONE PANEL (LC100012)</b> DHEA-S, Estradiol, Total and Free Testosterone, PSA.	\$100	\$56.25
<input type="radio"/> <b>FEMALE BASIC HORMONE PANEL (LC100013)</b> DHEA-S, Estradiol, Total and Free Testosterone, Progesterone.	\$100	\$56.25
<input type="radio"/> <b>CHRONIC FATIGUE PROFILE (LC100005)</b> 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.	\$500	\$281.25
<input type="radio"/> <b>ANEMIA PANEL (LC100006)</b> CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate.	\$105.33	\$59.25
<input type="radio"/> <b>DIABETES MANAGEMENT PROFILE - COMPREHENSIVE (LC100040)</b> Hemoglobin A1C, Glucose, Insulin, Lipid Panel, Glycomark.	\$172	\$96.75
<input type="radio"/> <b>DIABETES MANAGEMENT PROFILE - BASIC (LC100039)</b> Hemoglobin A1C, Glucose, Insulin.	\$52	\$29.25
<input type="radio"/> <b>AUTOIMMUNE DISEASE SCREEN (LC100041)*</b> ANA screen, hs-CRP, TNFα, Immunoglobulins, IgA, IgG and IgM.	\$265.33	\$149.25
<input type="radio"/> <b>MALE ELITE PANEL (LC100016)</b> Chem/CBC profile, Free and total Testosterone, Total Estrogens, Estradiol, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, Free and Total PSA, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, ferritin, homocysteine.	\$766.66	\$431.25
<input type="radio"/> <b>FEMALE ELITE PANEL (LC100017)</b> Chem/CBC profile, Free and total Testosterone, Total Estrogens, Estradiol, Estrone, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, ferritin, homocysteine.	\$766.66	\$431.25

\*Certain tests need to be shipped to the lab on dry ice for customers using a blood draw kit, and some incur an additional \$35 charge. If you are going to LabCorp, this charge does not apply.

Blood Tests available only in the continental United States. Restrictions apply in NY, NJ, PA, RI, and MA. Not Available in Maryland.

This is NOT a complete listing of LE blood test services. Call 1-800-208-3444 for additional information.

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

### TERMS AND CONDITIONS

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

Signature of Life Extension Member

X

Life Extension Foundation Members only

MEMBER NO.

☐ Male

☐ Female

Name

Date of Birth  
(required)

Address

City

State

Zip

Phone

Credit Card No.

Expiration Date

Mail your order form to:

**LifeExtension**  
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

## Amino Acids

Arginine/L-Ornithine Capsules  
Arginine Ornithine Powder  
Branched Chain Amino Acids  
D,L-Phenylalanine Capsules  
L-Arginine Caps  
L-Carnitine  
L-Glutamine  
L-Glutamine Powder  
L-Lysine  
L-Taurine Powder  
L-Tyrosine Powder  
Super Carnosine  
Taurine

## Blood Pressure Support

Advanced Olive Leaf Vascular Support  
with Celery Seed Extract  
Blood Pressure Monitor Arm Cuff  
Natural BP Management

## Bone Health

Bone Restore  
Bone Restore with Vitamin K2  
Bone Strength Formula with KoAct®  
Bone-Up  
Calcium Citrate with Vitamin D  
Dr. Strum's Intensive Bone Formula  
Strontium Caps

## Books and Media

CR Way Edition Advanced Dietary Software

## Brain Health

Acetyl-L-Carnitine  
Acetyl-L-Carnitine Arginate  
Blast  
Brain Shield® Gastrodin  
Cognitex® Basics  
Cognitex® with Brain Shield®  
Cognitex® with Pregnenolone & Brain Shield®  
Cognizin® CDP-Choline Caps  
DMAE Bitartrate (dimethylaminoethanol)  
Ginkgo Biloba Certified Extract™  
Huperzine A  
Lecithin Granules  
Migra-Eeze™  
Migra-Mag with Brain Shield®  
Neuro-Mag™ Magnesium L-Threonate  
Neuro-Mag™ Magnesium L-Threonate  
with Calcium and Vitamin D3  
Optimized Ashwagandha Extract  
Prevagen  
PS (Phosphatidylserine) Caps  
Super Ginkgo Extract 28/7  
Vinpocetine

## Cholesterol Management

Advanced Lipid Control  
Cho-Less™  
CHOL-Support™  
Endothelial Defense™ with Full-Spectrum  
Pomegranate™  
Endothelial Defense™ with GliSODin®  
Full-Spectrum Pomegranate™  
Policosanol  
Pomegranate Extract Capsules  
Red Yeast Rice  
Theaflavins Standardized Extract  
Vitamin B3 Niacin Capsules

## Digestion Support

Artichoke Leaf Extract  
Bifido GI Balance  
Carnosoothe with PicroProtect™  
Digest RC®  
Effervescent Vitamin C - Magnesium Crystals  
Enhanced Super Digestive Enzymes  
Esophageal Guardian  
Extraordinary Enzymes  
Fem Dophilus  
FlorAssist®

Ginger Force  
Gutsy Chewy Digestive Tablets  
Organic Golden Flax Seed  
Pancreatin  
Regimint  
Specially-Coated Bromelain  
Theralac Probiotics  
TruFiber™  
WellBetX PGX plus Mulberry

## Energy Management

Adrenal Energy Formula  
Asian Energy Boost  
D-Ribose Powder  
D-Ribose Tablets  
Forskolin  
Mitochondrial Basics with BioPQQ®  
Mitochondrial Energy Optimizer with BioPQQ®  
NAD+ Cell Regenerator™  
Peak ATP® with GlycoCarn®  
PQQ Caps with BioPQQ®  
Rhodiola Extract  
RiboGen™ French Oak Wood Extract

## Eye Health

Astaxanthin with Phospholipids  
Brite Eyes III  
Certified European Bilberry Extract  
Eye Pressure Support with Mirtogenol®  
MacuGuard® Ocular Support  
MacuGuard® Ocular Support with Astaxanthin

## Food

Rich Rewards® Breakfast Blend  
Rich Rewards® Breakfast Blend  
Natural Mocha Flavor  
Rich Rewards® Breakfast Blend  
Natural Vanilla Flavor  
Rich Rewards® Breakfast Blend  
Whole Bean Coffee  
Rich Rewards® Cruciferous Vegetable Soup  
Rich Rewards® Decaf Roast  
Stevia Extract

## Glucose Management

CinSulin® with InSea2® and Crominex® 3+  
CoffeeGenic® Green Coffee Extract  
Mega Benfotiamine  
Natural Glucose Absorption Control  
Super Alpha-Lipoic Acid w/ Biotin  
Super R-Lipoic Acid  
Tri Sugar Shield™

## Heart Health

Aspirin (Enteric Coated)  
Cardio Peak™ with Standardized Hawthorn  
and Arjuna  
Fibrinogen Resist™ with Nattokinase  
FlorAssist® Heart Health Probiotic  
Mega EPA/DHA  
Mega GLA with Sesame Lignans  
Optimized Carnitine with Glycocarn®  
PROVINAL® Purified Omega-7  
Super Omega with Krill, Astaxanthin &  
Olive Fruit Extract  
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™  
Super-Absorbable CoQ10 Ubiquinone with  
d-Limonene  
TMG Powder  
TMG Liquid Capsules  
Vegetarian Sourced DHA

## Herbs & Botanicals

Mega Green Tea Extract (decaffeinated)  
Mega Green Tea Extract (lightly caffeinated)  
Pycnogenol® French Maritime Pine Park Extract

## Hormone Balance

DHEA (Dehydroepiandrosterone)  
DHEA Complete  
Inner Power  
Pregnenolone  
Triple Action Cruciferous Vegetable Extract  
with Resveratrol  
Triple Action Cruciferous Vegetable Extract

## Immune Support

AHCC  
Echinacea Extract  
Enhanced Zinc Lozenges  
i26 Hyperimmune Egg  
Immune Modulator with Tinofend®  
Immune Protect with PARACTIN®  
Immune Senescence Protection Formula™  
Kyolic® Garlic Formula 102  
Kyolic® Garlic Formula 105  
Kyolic® Reserve  
Lactoferrin (apolactoferrin) Caps  
NK Cell Activator™  
Optimized Garlic  
Optimized Quercetin  
Peony Immune  
ProBoost Thymic Protein A  
Reishi Extract Mushroom Complex  
Standardized Cistanche  
Zinc Lozenges

## Inflammation Management

5-LOX Inhibitor with AprèsFlex®  
Advanced Bio-Curcumin® with Ginger &  
Turmerones  
Black Cumin Seed Oil with Bio-Curcumin®  
Black Cumin Seed Oil  
Boswellia  
Cytokine Suppress™ with EGCG  
Nervia®  
Serrafazyme  
Super Bio-Curcumin®  
Zyflamend® Whole Body

## Joint Support

Arthro-Immune Joint Support  
Arthromax® Advanced with UC-II® & AprèsFlex®  
ArthroMax® with Theaflavins & AprèsFlex®  
Bio-Collagen with Patented UC-II®  
Fast-Acting Joint Formula  
Glucosamine/Chondroitin Capsules  
Krill Healthy Joint Formula  
MSM (Methylsulfonylmethane)

## Kidney & Bladder Support

Cran-max® Cranberry Whole Fruit Concentrate  
Optimized Cran-Max with Ellirose™  
Water-Soluble Pumpkin Seed Extract

## Liver Health & Detoxification

Anti-Alcohol Antioxidants with HepatoProtection  
Complex  
Calcium D-Glucarate  
Chlorella  
Chlorophyllin  
European Milk Thistle  
Glutathione, Cysteine & C  
HepatoPro  
Liver Efficiency Formula  
Mega L-Glutathione Capsules  
N-Acetyl-L-Cysteine  
PectaSol-C®  
Silymarin  
SODzyme® with GliSODin® & Wolfberry

## Longevity & Wellness

AMPK Activator  
AppleWise Polyphenol Extract  
Berry Complete  
Blueberry Extract  
Blueberry Extract with Pomegranate  
CR Mimetic Longevity Formula  
DNA Protection Formula

Enhanced Berry Complete with Acai  
Essential Daily Nutrients  
Grapeseed Extract with  
Resveratrol & Pterostilbene  
Once-Daily Health Booster  
Optimized Fucoidan with Maritech® 926  
Optimized Resveratrol with NAD+  
Cell Regenerator™  
Optimized Resveratrol with Synergistic  
Grape-Berry Actives  
pTeroPure®  
Resveratrol with Pterostilbene  
RNA (Ribonucleic Acid)  
Whole Grape Extract

### Men's Health

Mega Lycopene Extract  
PalmettoGuard® Saw Palmetto with  
Beta-Sitosterol  
PalmettoGuard® Saw Palmetto/Nettle Root  
Formula with Beta-Sitosterol  
Pomi-T®  
Prelox® Natural Sex for Men®  
Super MiraForte with Standardized Lignans  
Triple Strength ProstaPollen™  
Ultra Natural Prostate

### Minerals

Boron  
Chromium Ultra  
Copper  
Iron Protein Plus  
Magnesium (Citrate)  
Magnesium Caps  
Only Trace Minerals  
Optimized Chromium with Crominex® 3+  
Sea-Iodine™  
Se-Methyl L-Selenocysteine  
Super Selenium Complex  
Vanadyl Sulfate  
High Potency Zinc

### Miscellaneous

Advanced Iodine Complete  
Potassium Iodide  
Solarshield Sunglasses

### Mood & Stress Management

5 HTP  
L-Theanine  
Natural Stress Relief  
Pharma GABA  
SAmE (S-Adenosyl-Methionine)

### Multivitamins

Children's Formula Life Extension Mix™  
Comprehensive Nutrient Packs ADVANCED  
Life Extension Mix™ Capsules without Copper  
Life Extension Mix™ Capsules  
Life Extension Mix™ Powder without Copper  
Life Extension Mix™ Powder  
Life Extension Mix™ Tablets with Extra Niacin  
without Copper  
Life Extension Mix™ Tablets with Extra Niacin  
Life Extension Mix™ Tablets without Copper  
Life Extension Mix™ Tablets  
One-Per-Day Tablets  
Two-Per-Day Capsules  
Two-Per-Day Tablets

### Personal Care

Advanced Oral Hygiene  
Anti-Aging Rejuvenating Scalp Serum  
Biosil  
Dr. Proctor's Advanced Hair Formula  
Dr. Proctor's Shampoo  
European Leg Solution featuring Certified  
Diosmin 95  
Face Master Platinum  
Hair Suppress Formula  
Life Extension Toothpaste  
Sinus Cleanser

Venotone  
Xyliwhite Mouthwash

### Pet Care

Cat Mix  
Dog Mix

### Skin Care

Advanced Lightening Cream  
Advanced Peptide Hand Therapy  
Advanced Triple Peptide Serum  
Advanced Under Eye Serum with Stem Cells  
Amber Self MicroDermAbrasion  
Anti-Aging Mask  
Anti-Aging Rejuvenating Face Cream  
Anti-Glycation Serum with  
Blueberry & Pomegranate Extracts  
Antioxidant Facial Mist  
Anti-Oxidant Rejuvenating Foot Cream  
Anti-Oxidant Rejuvenating Foot Scrub  
Anti-Oxidant Rejuvenating Hand Cream  
Anti-Oxidant Rejuvenating Hand Scrub  
Anti-Redness & Adult Blemish Lotion  
Bioflavonoid Cream  
Broccoli Sprout Cream  
Collagen Boosting Peptide Serum  
Corrective Clearing Mask  
DNA Repair Cream  
Dual-Action MicroDermAbrasion  
Enhanced FernBlock® with  
Red Orange Complex  
Essential Plant Lipids Reparative Serum  
Face Rejuvenating Anti-Oxidant Cream  
Fine Line-Less  
Healing Formula  
Healing Mask  
Healing Vitamin K Cream  
Hyaluronic Facial Moisturizer  
Hyaluronic Oil-Free Facial Moisturizer  
Hydrating Anti-Oxidant Facial Mist  
Hydroderm  
Lifting & Tightening Complex  
Lycopene Cream  
Melatonin Cream  
Mild Facial Cleanser  
Neck Rejuvenating Anti-Oxidant Cream  
Pigment Correcting Cream  
Rejuvenating Serum  
Rejuvenex® Body Lotion  
Rejuvenex® Factor Firming Serum  
Renewing Eye Cream  
Resveratrol Anti-Oxidant Serum  
Skin Lightening Serum  
Skin Restoring Phytoceramides with Lipowheat®  
Skin Stem Cell Serum  
Stem Cell Cream with Alpine Rose  
Tightening & Firming Neck Cream  
Ultra Lip Plumper  
Ultra Rejuvenex®  
Ultra RejuveNight®  
Ultra Wrinkle Relaxer  
Under Eye Refining Serum  
Under Eye Rescue Cream  
Vitamin C Serum  
Vitamin D Lotion  
Vitamin E-ssential Cream  
Youth Serum

### Sleep

Bioactive Milk Peptides  
Enhanced Natural Sleep® with Melatonin  
Enhanced Natural Sleep® without Melatonin  
Fast-Acting Liquid Melatonin  
Glycine  
L-Tryptophan  
Melatonin  
Optimized Tryptophan Plus

### Sports Performance

Creatine Capsules  
Creatine Whey Glutamine Powder  
(Vanilla Flavor)

DMG (N, N-dimethylglycine)  
New Zealand Whey Protein Concentrate,  
(Natural Chocolate and Vanilla Flavor)  
Pure Plant Protein  
Tart Cherry Extract  
Whey Protein Isolate  
(Chocolate and Vanilla Flavor)

### Vitamins

Ascorbyl Palmitate  
Benfotiamine with Thiamine  
Beta-Carotene  
Biotin  
Buffered Vitamin C Powder  
Complete B-Complex  
Daily C+  
Fast-C® with Dihydroquercetin  
Folate & Vitamin B12  
Gamma E Tocopherol with Sesame Lignans  
Gamma E Tocopherol/Tocotrienols  
High Potency Optimized Folate  
Inositol Caps  
Liquid Emulsified Vitamin D3  
Liquid Vitamin D3  
Low-Dose Vitamin K2  
Methylcobalamin  
MK-7  
Natural Vitamin E  
No Flush Niacin  
Optimized Folate (L-Methylfolate)  
Pantothenic Acid (Vitamin B-5)  
Pyridoxal 5'-Phosphate Caps  
Super Absorbable Tocotrienols  
Super Ascorbate C Capsules  
Super Ascorbate C Powder  
Super K with Advanced K2 Complex  
Tocotrienols with Sesame Lignans  
Vitamin B12  
Vitamin B6  
Vitamin C with Dihydroquercetin  
Vitamin D3 with Sea-Iodine™  
Vitamin D3  
Vitamins D and K with Sea-Iodine™

### Weight Management

7-Keto® DHEA Metabolite  
Advanced Anti-Adipocyte Formula  
Advanced Natural Appetite Suppress  
CalReduce Selective Fat Binder  
DHEA Complete  
Fucosanthin-Slim™  
Garcinia HCA  
HCAActive  
Integra-Lean®  
Mediterranean Trim with Sinetrol™ XPur  
Optimized Irvingia with Phase 3™ Calorie  
Control Complex  
Optimized Saffron with Satiereal®  
Super Citrimax®  
Super CLA Blend with Guarana and  
Sesame Lignans  
Super CLA Blend with Sesame Lignans  
Waist-Line Control™  
Weight Management Formula

### Women's Health

Advanced Natural Sex for Women® 50+  
Breast Health Formula  
Calorie Control Weight Management Formula  
Femmenessence MacaPause  
Natural Estrogen without Soy Isoflavones  
Natural Estrogen  
Natural Female Support  
ProgestaCare® for Women  
Super-Absorbable Soy Isoflavones  
Ultra Soy Extract

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>A</b>					
01524	<b>ACETYL-L-CARNITINE</b> - 500 mg, 100 veg. caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
01525	<b>ACETYL-L-CARNITINE ARGINATE</b> - 100 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01628	<b>ADRENAL ENERGY FORMULA</b> - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01630	<b>ADRENAL ENERGY FORMULA</b> - 120 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	42.00	31.50		
01828	<b>ADVANCED LIPID CONTROL</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	<b>ADVANCED ORAL HYGIENE</b> - 60 mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	<b>AHCC</b> - 500 mg, 30 caps	59.98	44.99		
00457	<b>ALPHA-LIPOIC ACID w/BIOTIN (SUPER)</b> - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01907	<b>AMPK ACTIVATOR</b> - 90 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01440	<b>ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO</b> - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01509	<b>ANTI-ADIPOCYTE FORMULA w/MERATRIM® &amp; INTEGRA LEAN® (ADVANCED)</b> - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01625	<b>APPLEWISE POLYPHENOL EXTRACT</b> - 600 mg, 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	<b>ARGININE/ORNITHINE</b> - 500/250, 100 caps	17.99	13.49		
00038	<b>ARGININE/ORNITHINE POWDER</b> - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	<b>(L)-ARGININE CAPS</b> - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01617	<b>ARTHRONAX® w/THEAFLAVINS &amp; APRESFLEX®</b> - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01618	<b>ARTHRONAX® ADVANCED w/UC-II® &amp; APRESFLEX®</b> - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01404	<b>ARTHRO-IMMUNE JOINT SUPPORT</b> - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00919	<b>ARTICHOKE LEAF EXTRACT</b> - 500 mg, 180 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01533	<b>ASCORBYL PALMITATE</b> - 500 mg, 100 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
00888	<b>ASHWAGANDHA EXTRACT (OPTIMIZED)</b> - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
01805	<b>ASIAN ENERGY BOOST</b> - 90 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01066	<b>ASPIRIN</b> - 81 mg, 300 enteric coated tablets	6.00	4.50		
	Buy 4 bottles, price each	5.33	4.00		
01720	<b>ASTAXANTHIN WITH PHOSPHOLIPIDS</b> - 4 mg, 30 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
<b>B</b>					
00920	<b>BENFOTIAMINE w/ THIAMINE</b> - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	<b>BENFOTIAMINE (MEGA)</b> - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		

**SUB-TOTAL OF COLUMN 1**

No.		Retail Each	Member Each	Qty	Total
01206	<b>BERRY COMPLETE</b> - 30 veg. caps	\$21.00	\$15.75		
	Buy 4 bottles, price each	18.67	14.00		
01496	<b>BERRY COMPLETE w/ACAI (ENHANCED)</b> - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	<b>BETA-CAROTENE</b> - 25,000 IU, 100 softgels	11.25	8.44		
01622	<b>BIFIDO GI BALANCE</b> - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	<b>BILBERRY EXTRACT</b> - 100 mg, 100 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01512	<b>BIOACTIVE MILK PEPTIDES</b> - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	<b>BIO-COLLAGEN w/PATENTED UC-II®</b> - 40 mg, 60 small caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	<b>BIOSIL™</b> - 5 mg, 30 veg. caps	18.95	15.16		
*01007	<b>BIOSIL™</b> - 1 fl oz	31.99	25.59		
00102	<b>BIOTIN</b> - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
01709	<b>BLACK CUMIN SEED OIL</b> - 60 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01710	<b>BLACK CUMIN SEED OIL w/BIO-CURCUMIN®</b> - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01008	<b>BLAST™</b> - 600 grams of powder	26.95	20.21		
70000	<b>BLOOD PRESSURE MONITOR w/AC ADAPTOR</b> - MED CUFF	79.99	49.99		
70004	<b>BLOOD PRESSURE MONITOR</b> - Digital WRIST (cuff)	69.95	52.46		
01214	<b>BLUEBERRY EXTRACT</b> - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	<b>BLUEBERRY EXTRACT w/ POMEGRANATE</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01506	<b>BONE FORMULA (DR. STRUM'S INTENSIVE)</b> - 300 caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01726	<b>BONE RESTORE</b> - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01727	<b>BONE RESTORE w/VITAMIN K2</b> - 120 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01725	<b>BONE STRENGTH FORMULA w/KOACT®</b> - 120 caps	45.00	33.75		
	Buy 4 bottles, price each	40.00	30.00		
00313	<b>BONE-UP®</b> - 240 caps	28.95	21.71		
	Buy 4 bottles, price each	27.21	20.41		
01661	<b>BORON</b> - 3 mg, 100 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		
00202	<b>BOSWELLA</b> - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	30.00	22.50		
01802	<b>BRAIN SHIELD® GASTRODIN</b> - 60 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01253	<b>BRANCHED CHAIN AMINO ACIDS</b> - 90 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.00	12.75		
01699	<b>BREAST HEALTH FORMULA</b> - 60 caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	<b>BRITE EYES III</b> - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		
01203	<b>BROMELAIN (SPECIALLY-COATED)</b> - 500 mg, 60 enteric coated tablets	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		

**SUB-TOTAL OF COLUMN 2**

No.		Retail Each	Member Each	Qty	Total
<b>C</b>					
01653	<b>CALCIUM CITRATE w/VITAMIN D</b> - 300 caps	\$24.00	\$18.00		
	Buy 4 bottles, price each	21.25	15.94		
01651	<b>CALCIUM D-GLUCARATE</b> - 200 mg, 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	15.00	11.25		
***01823	<b>CALREDUCE SELECTIVE FAT BINDER</b> - 120 mint chewable tablets	45.00	33.75		
	Buy 4 bottles, price each	38.00	28.50		
01700	<b>CARDIO PEAK™ w/STANDARDIZED HAWTHORN &amp; ARJUNA</b> - 120 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
00916	<b>CARNITINE w/GLYCOCARN® (OPTIMIZED)</b> - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01532	<b>L-CARNITINE</b> - 500 mg, 30 veg. caps	15.00	11.25		
	Buy 4 bottles, price each	13.20	9.90		
01258	<b>CARNOOOTHE w/PICROPROTECT™</b> - 60 veg. caps	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01687	<b>CARNOSINE (SUPER)</b> - 500 mg, 90 veg. caps	66.00	49.50		
	Buy 4 bottles, price each	60.00	45.00		
01830	<b>CAT MIX</b> - 100 grams powder	14.00	10.50		
	Buy 4 jars, price each	11.00	8.25		
01891	<b>CHILDREN'S FORMULA LIFE EXTENSION MIX™</b> - 100 chewable tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00550	<b>CHLORELLA</b> - 500 mg, 200 tablets	23.50	17.63		
01571	<b>CHLOROPHYLLIN</b> - 100 mg, 100 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	20.00	15.00		
01359	<b>CHO-LESS™</b> - 90 capsules	35.00	26.25		
01910	<b>CHOL-SUPPORT™</b> - 60 liquid veg. caps	52.00	39.00		
	Buy 4 bottles, price each	46.00	34.50		
01477	<b>CHROMIUM ULTRA</b> - 100 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	21.00	15.75		
01504	<b>CHROMIUM W/CROMINEX® 3+ (OPTIMIZED)</b> - 500 mcg, 60 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
01503	<b>CINSULIN® W/INSEA® AND CROMINEX® 3+</b> - 90 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
01906	<b>CISTANCHE (STANDARDIZED)</b> - 30 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	16.00	12.00		
01818	<b>CITRIMAX® (SUPER)</b> - 180 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	38.00	28.50		
00818	<b>CLA BLEND w/SESAME LIGNANS (SUPER)</b> - 1,000 mg, 120 softgels	36.00	27.00		
	Buy 4 bottles, price each	33.00	24.75		
	Buy 10 bottles, price each	26.33	19.75		
00819	<b>CLA BLEND w/GUARANA &amp; SESAME (SUPER)</b> - 1,000 mg, 120 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.33	28.75		
01896	<b>COGNITEX® w/BRAIN SHIELD®</b> - 90 softgels	60.00	45.00		
	Buy 4 bottles, price each	52.00	39.00		
	Buy 8 bottles, price each	48.00	36.00		
01897	<b>COGNITEX® w/PREGNENOLONE &amp; BRAIN SHIELD®</b> - 90 softgels	62.00	46.50		
	Buy 4 bottles, price each	53.00	39.75		
	Buy 8 bottles, price each	50.00	37.50		
01421	<b>COGNITEX® BASICS</b> - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
	Buy 12 bottles, price each	32.00	24.00		
01659	<b>COGNIZIN® CDP CHOLINE CAPS</b> - 250 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		

SUB-TOTAL OF COLUMN 3

No.		Retail Each	Member Each	Qty	Total
01835	<b>COMPLETE B-COMPLEX</b> - 60 veg. caps	\$10.00	\$7.50		
	Buy 4 bottles, price each	9.00	6.75		
01998	<b>COMPREHENSIVE NUTRIENT PACKS ADVANCED</b> - 30 packs	90.00	67.50		
	Buy 4 boxes, price each	82.00	61.50		
00119	<b>COPPER CAPSULES</b> - 2 mg, 100 caps	9.91	7.43		
00949	<b>COQ10 w/ <math>\alpha</math>-LIMONENE (SUPER-ABSORBABLE)</b> - 50 mg, 60 softgels	25.00	18.75		
	Buy 4 bottles, price each	22.00	16.50		
	Buy 10 bottles, price each	20.00	15.00		
00950	<b>COQ10 w/ <math>\alpha</math>-LIMONENE (SUPER-ABSORBABLE)</b> - 100 mg, 100 softgels	66.00	49.50		
	Buy 4 bottles, price each	60.00	45.00		
	Buy 10 bottles, price each	56.00	42.00		
01226	<b>COQ10 (SUPER-UBIQUINOL)</b> - 100 mg, 60 softgels	56.00	42.00		
	Buy 4 bottles, price each	48.00	36.00		
	Buy 10 bottles, price each	44.00	33.00		
01733	<b>COQ10 w/BIOPOQ® (SUPER UBIQUINOL)</b> - 100 mg, 30 softgels	54.00	40.50		
	Buy 4 bottles, price each	44.00	33.00		
	Buy 10 bottles, price each	40.00	30.00		
01426	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 100 mg, 60 softgels	62.00	46.50		
	Buy 4 bottles, price each	52.00	39.00		
	Buy 10 bottles, price each	48.00	36.00		
01425	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 50 mg, 100 softgels	58.00	43.50		
	Buy 4 bottles, price each	46.00	34.50		
	Buy 10 bottles, price each	42.00	31.50		
01427	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 50 mg, 30 softgels	20.00	15.00		
	Buy 4 bottles, price each	16.00	12.00		
01431	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 200 mg, 30 softgels	62.00	46.50		
	Buy 4 bottles, price each	52.00	39.00		
	Buy 10 bottles, price each	48.00	36.00		
80154	<b>COSMESIS ADVANCED LIGHTENING CREAM</b> - 1 oz jar	65.00	48.75		
	Buy 2 bottles, price each	57.00	42.75		
80155	<b>COSMESIS ADVANCED PEPTIDE HAND THERAPY</b> - 4 oz bottle	46.00	34.50		
	Buy 2 bottles, price each	39.00	29.25		
80152	<b>COSMESIS ADVANCED TRIPLE PEPTIDE SERUM</b> - 1 oz bottle	65.00	48.75		
	Buy 2 bottles, price each	57.00	42.75		
80140	<b>COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS</b> - .33 oz	49.00	36.75		
	Buy 2 bottles, price each	42.00	31.50		
80139	<b>COSMESIS AMBER SELF MICRODERMABRASION</b> - 2 oz	49.00	36.75		
	Buy 2 jars, price each	42.00	31.50		
80118	<b>COSMESIS ANTI-AGING MASK</b> - 2 oz	72.00	54.00		
	Buy 2 bottles, price each	63.36	47.52		
80151	<b>COSMESIS ANTI-AGING REJUVENATING FACE CREAM</b> - 2 oz jar	65.00	48.75		
	Buy 2 jars, price each	57.00	42.75		
80153	<b>COSMESIS ANTI-AGING REJUVENATING SCALP SERUM</b> - 2 oz bottle	46.00	34.50		
	Buy 2 bottles, price each	39.00	29.25		
80157	<b>COSMESIS ANTI-GLYCATION PEPTIDE SERUM</b> - 1 oz	53.00	39.75		
	Buy 2 bottles, price each	46.00	34.50		
80134	<b>COSMESIS ANTI-GLYCATION SERUM</b> - 1 oz w/BLUEBERRY & POMEGRANATE EXTRACTS	33.00	24.75		
	Buy 2 bottles, price each	31.35	23.51		
80133	<b>COSMESIS ANTIOXIDANT FACIAL MIST</b> - 2 oz	32.00	24.00		
	Buy 2 bottles, price each	30.40	22.80		
80127	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM</b> - 2 oz	45.00	33.75		
	Buy 2 jars, price each	42.80	32.10		

SUB-TOTAL OF COLUMN 4

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>C CONTINUED</b>					
80128	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz</b>	\$59.00	\$44.25		
	Buy 2 jars, price each	51.92	38.94		
80117	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz</b>	64.00	48.00		
	Buy 2 jars, price each	57.49	43.12		
80121	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz</b>	58.00	43.50		
	Buy 2 jars, price each	51.04	38.28		
80105	<b>COSMESIS ANTI-REDNESS &amp; ADULT BLEMISH LOTION - 1 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80147	<b>COSMESIS BIOFLAVONOID CREAM - 1 oz jar</b>	46.00	34.50		
	Buy 2 jars, price each	39.00	29.25		
80144	<b>COSMESIS BROCCOLI SPROUT CREAM - 1 oz</b>	46.00	34.50		
	Buy 2 jars, price each	39.00	29.25		
80156	<b>COSMESIS COLLAGEN BOOSTING PEPTIDE SERUM - 1 oz</b>	59.00	44.25		
	Buy 2 jars, price each	52.00	39.00		
80120	<b>COSMESIS CORRECTIVE CLEARING MASK - 2 oz</b>	64.50	48.38		
	Buy 2 jars, price each	56.76	42.57		
80141	<b>COSMESIS DNA REPAIR CREAM - 1 oz jar</b>	49.00	36.75		
	Buy 2 jars, price each	42.00	31.50		
80108	<b>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz</b>	74.95	56.21		
	Buy 2 bottles, price each	65.95	49.46		
80123	<b>COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz</b>	69.50	52.13		
	Buy 2 jars, price each	61.16	45.87		
80107	<b>COSMESIS FINE LINE-LESS - 1 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80131	<b>COSMESIS HAIR SUPPRESS FORMULA - 4 oz</b>	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80137	<b>COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz</b>	53.00	39.75		
	Buy 2 jars, price each	45.43	34.07		
80115	<b>COSMESIS HEALING MASK - 2 oz</b>	64.50	48.38		
	Buy 2 bottles, price each	56.76	42.57		
80102	<b>COSMESIS HEALING VITAMIN K CREAM - 1 oz</b>	79.50	59.63		
	Buy 2 bottles, price each	69.96	52.47		
80109	<b>COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz</b>	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80110	<b>COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz</b>	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80138	<b>COSMESIS HYDRATING ANTIOXIDANT FACE MIST - 4 oz</b>	39.95	29.96		
	Buy 2 bottles, price each	38.00	28.50		
80103	<b>COSMESIS LIFTING &amp; TIGHTENING COMPLEX - 1 oz</b>	74.50	55.88		
	Buy 2 tubes, price each	65.56	49.17		
80146	<b>COSMESIS LYCOPENE CREAM - 1 oz jar</b>	28.00	21.00		
	Buy 2 jars, price each	25.40	19.05		
80135	<b>COSMESIS MELATONIN CREAM - 1 oz</b>	33.00	24.75		
	Buy 2 jars, price each	27.10	20.33		
80114	<b>COSMESIS MILD FACIAL CLEANSER - 8 oz</b>	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80122	<b>COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz</b>	64.00	48.00		
	Buy 2 jars, price each	56.32	42.24		
80111	<b>COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz</b>	74.00	55.50		
	Buy 2 bottles, price each	65.12	48.84		
80106	<b>COSMESIS REJUVENATING SERUM - 1 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		

**SUB-TOTAL OF COLUMN 5**

JUNE 2015

No.		Retail Each	Member Each	Qty	Total
80150	<b>COSMESIS RENEWING EYE CREAM - 1/2 oz</b>	\$65.00	\$48.75		
	Buy 2 jars, price each	57.00	42.75		
80142	<b>COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz</b>	46.00	34.50		
	Buy 2 bottles, price each	39.00	29.25		
80112	<b>COSMESIS SKIN LIGHTENING SERUM - 1/2 oz</b>	85.00	63.75		
	Buy 2 bottles, price each	74.80	56.10		
80130	<b>COSMESIS SKIN STEM CELL SERUM - 1 oz</b>	74.00	55.50		
	Buy 2 bottles, price each	69.00	51.75		
80143	<b>COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar</b>	66.00	49.50		
	Buy 2 jars, price each	58.00	43.50		
80148	<b>COSMESIS TIGHTENING &amp; FIRMING NECK CREAM - 2 oz jar</b>	39.00	29.25		
	Buy 2 jars, price each	35.00	26.25		
80116	<b>COSMESIS ULTRA LIP PLUMPER - 1/3 oz</b>	64.00	48.00		
	Buy 2 bottles, price each	56.32	42.24		
80101	<b>COSMESIS ULTRA WRINKLE RELAXER - 1 oz</b>	89.95	67.46		
	Buy 2 bottles, price each	79.76	59.82		
80113	<b>COSMESIS UNDER EYE REFINING SERUM - 1/2 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80104	<b>COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz</b>	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80129	<b>COSMESIS VITAMIN C SERUM - 1 oz</b>	85.00	63.75		
	Buy 2 bottles, price each	74.80	56.10		
80136	<b>COSMESIS VITAMIN D LOTION - 4 oz</b>	36.00	27.00		
	Buy 2 bottles, price each	33.66	25.25		
80145	<b>COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz</b>	28.00	21.00		
	Buy 2 jars, price each	26.00	19.50		
80149	<b>COSMESIS YOUTH SERUM - 1 oz</b>	65.00	48.75		
	Buy 2 bottles, price each	57.00	42.75		
00862	<b>CRAN-MAX® - 500 mg, 60 veg. caps</b>	17.50	13.13		
	Buy 4 bottles, price each	15.00	11.25		
01424	<b>CRAN-MAX® with ELLIROSE™ (OPTIMIZED) - 60 veg. caps</b>	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01529	<b>CREATINE CAPSULES - 120 veg. caps</b>	10.95	8.21		
	Buy 4 bottles, price each	9.25	6.94		
01746	<b>CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla)</b>	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01429	<b>CR MIMETIC LONGEVITY FORMULA - 60 veg. caps</b>	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
*33840	<b>CRWAY GREAT GLUCOSE CONTROL CD</b>	98.00	82.00		
**CRWAY	<b>CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE</b>	195.00	195.00		
00407	<b>CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps</b>	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
01808	<b>CURCUMIN® w/GINGER &amp; TURMERONES (ADVANCED BIO)-30 softgels</b>	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01804	<b>CYTOKINE SUPPRESS™ w/EGCG - 30 veg. caps</b>	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
<b>D</b>					
01912	<b>DAILY C+ CITRUS FLAVOR - 30 stick packs</b>	\$21.00	\$15.75		
	Buy 4 boxes, price each	19.00	14.25		
00658	<b>7-KETO® DHEA METABOLITE - 25 mg, 100 caps</b>	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01479	<b>7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps</b>	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		

**SUB-TOTAL OF COLUMN 6**

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

To order online visit: [www.LifeExtension.com](http://www.LifeExtension.com)

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01640	<b>DHA (VEGETARIAN SOURCED)</b> - 30 veg. softgels	\$20.00	\$15.00		
	Buy 4 bottles, price each	18.00	13.50		
00607	<b>DHEA</b> - 25 mg, 100 tablets (dissolve in mouth)	14.00	10.50		
	Buy 4 bottles, price each	11.75	8.81		
01478	<b>DHEA COMPLETE</b> - 60 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	43.20	32.40		
00335	<b>DHEA</b> - 25 mg, 100 caps	18.00	13.50		
	Buy 4 bottles, price each	15.00	11.25		
00454	<b>DHEA</b> - 15 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	12.00	9.00		
00882	<b>DHEA</b> - 50 mg, 60 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
01689	<b>DHEA</b> - 100 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01358	<b>DIGEST RC</b> - 30 tablets	19.95	14.96		
	Buy 4 boxes, price each	17.00	12.75		
01272	<b>DIGESTIVE ENZYMES (ENHANCED SUPER)</b> - 100 veg. caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01671	<b>D,L-PHENYLALANINE CAPSULES</b> - 500 mg, 100 veg. caps	18.75	14.06		
	Buy 4 bottles, price each	16.00	12.00		
01540	<b>DMAE BITARTRATE</b> - 150 mg, 200 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	15.00	11.25		
00059	<b>DMG</b> - 125 mg, 60 tablets	24.80	18.60		
	Buy 4 boxes, price each	22.69	17.02		
01570	<b>DNA PROTECTION FORMULA</b> - 60 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	32.00	24.00		
01831	<b>DOG MIX</b> - 100 grams powder	18.00	13.50		
	Buy 4 jars, price each	15.00	11.25		
00321	<b>DR. PROCTOR'S ADVANCED HAIR FORMULA</b> - 2 oz	39.95	29.96		
	Buy 4 bottles, price each	32.00	24.00		
00320	<b>DR. PROCTOR'S HAIR FORMULA SHAMPOO</b> - 8 oz	24.95	18.71		
	Buy 4 bottles, price each	22.00	16.50		
00899	<b>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE</b> - 2.4 oz	39.95	29.96		
	Buy 4 jars, price each	38.95	29.21		
<b>E</b>					
01528	<b>ECHINACEA EXTRACT</b> - 250 mg, 60 veg. caps	\$14.35	\$10.76		
	Buy 4 bottles, price each	12.50	9.38		
01498	<b>ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™</b> - 60 softgels	56.00	42.00		
	Buy 4 bottles, price each	52.00	39.00		
00997	<b>ENDOTHELIAL DEFENSE™ w/GLISODIN®</b> - 60 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
00625	<b>EPA/DHA (MEGA)</b> - 120 softgels	19.95	14.96		
	Buy 4 bottles, price each	18.00	13.50		
01737	<b>ESOPHAGEAL GUARDIAN</b> (Berry flavor) - 60 chewable tablets	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01042	<b>EUROPEAN LEG SOLUTION DIOSMIN 95</b> - 600 mg, 30 veg. tabs	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01706	<b>EXTRAORDINARY ENZYMES</b> - 60 caps	26.00	19.50		
	Buy 4 bottles, price each	24.00	18.00		
01514	<b>EYE PRESSURE SUPPORT w/MIRTOGENOL®</b> - 30 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		

**SUB-TOTAL OF COLUMN 7**

No.		Retail Each	Member Each	Qty	Total
<b>F</b>					
01054	<b>FACE MASTER® PLATINUM</b>	\$199.00	\$199.00		
00965	<b>FAST-ACTING JOINT FORMULA</b> - 30 caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01717	<b>FAST-C® w/DIHYDROQUERCETIN</b> - 120 veg. tabs	26.00	19.50		
	Buy 4 bottles, price each	24.00	18.00		
20053	<b>FEM DOPHILUS®</b> - 30 caps	25.95	19.46		
20055	<b>FEM DOPHILUS®</b> - 60 caps	39.95	29.96		
01064	<b>FEMMENESSENCE MACAPAUZE®</b> - 120 veg. caps	34.99	26.24		
01728	<b>FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED)</b> - 30 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00718	<b>FIBRINOGEN RESIST™</b> - 30 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	44.00	33.00		
01749	<b>FLAX SEED (ORGANIC GOLDEN GROUND)</b> - 14 oz.	11.67	8.75		
01821	<b>FLORASSIST® HEART HEALTH PROBIOTIC</b> - 60 caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
01825	<b>FLORASSIST® PROBIOTIC</b> - 30 liquid caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
01913	<b>FOLATE (OPTIMIZED HIGH-POTENCY)</b> 5,000 mcg, 30 veg. tablets	25.00	18.75		
	Buy 4 bottles, price each	22.00	16.50		
01939	<b>FOLATE (OPTIMIZED) (L-METHYLFOLATE)</b> 1,000 mcg, 100 veg. tablets	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
01841	<b>FOLATE + B12 CAPS</b> - 200 veg. caps	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01544	<b>FORSKOLIN</b> - 10 mg, 60 veg.caps	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01513	<b>FUCOIDAN w/MARITECH® 926 (OPTIMIZED)</b> - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	33.00	24.75		
00993	<b>FUCOXANTHIN-SLIM™</b> - 90 softgels	44.00	33.00		
	Buy 4 bottles, price each	39.00	29.25		
<b>G</b>					
00559	<b>GAMMA E TOCOPHEROL/TOCOTRIENOLS</b> - 60 softgels	\$42.00	\$31.50		
	Buy 4 bottles, price each	37.00	27.75		
00759	<b>GAMMA E TOCOPHEROL w/SESAME LIGNANS</b> - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01394	<b>(OPTIMIZED) GARLIC</b> - 200 veg. caps	24.95	18.71		
	Buy 4 bottles, price each	21.00	15.75		
***01228	<b>GINGER FORCE®</b> - 60 softgels	31.95	23.96		
01658	<b>GINKGO BILOBA CERTIFIED EXTRACT™</b> - 120 mg, 365 veg. caps	46.00	34.50		
	Buy 2 bottles, price each	43.50	32.63		
01648	<b>GINKGO EXTRACT 28/7 (SUPER)</b> - 120 mg, 100 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.50	19.88		
00756	<b>GLA WITH SESAME LIGNANS (MEGA)</b> - 60 softgels	19.50	14.63		
	Buy 4 bottles, price each	18.00	13.50		
00345	<b>(L) GLUTAMINE CAPSULES</b> - 500 mg, 100 caps	14.95	11.21		
	Buy 4 bottles, price each	13.50	10.13		
00141	<b>(L)-GLUTAMINE POWDER</b> - 100 grams	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00522	<b>GLUCOSAMINE/CHONDROITIN CAPSULES</b> - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	32.00	24.00		
01541	<b>GLUTATHIONE, CYSTEINE &amp; C</b> - 100 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00314	<b>L-GLUTATHIONE (MEGA)</b> - 250 mg, 60 caps	39.64	29.73		

**SUB-TOTAL OF COLUMN 8**

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

JUNE 2015

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>G CONTINUED</b>					
01669	<b>GLYCINE</b> - 1,000 mg, 100 veg. caps	\$12.00	\$9.00		
	Buy 4 bottles, price each	10.80	8.10		
01091	<b>GRAPE EXTRACT w/RESVERATROL (WHOLE)</b> - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01411	<b>GRAPE SEED EXTRACT w/RESVERATROL &amp; PTEROSTILBENE</b> - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01604	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 200 mg, 90 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01620	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 400 mg, 90 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00953	<b>GREEN TEA EXTRACT (MEGA)</b> - lightly caffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	24.00	18.00		
00954	<b>GREEN TEA EXTRACT (MEGA)</b> - decaffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	24.00	18.00		
01545	<b>GUTSY CHEWY DIGESTIVE (CITRUS FLAVOR)</b> - 8 tablets	11.50	8.63		
01546	<b>GUTSY CHEWY DIGESTIVE (WILD BERRY FLAVOR)</b> - 8 tablets	11.50	8.63		
<b>H</b>					
01074	<b>5 HTP</b> - 100 mg, 60 caps	\$27.95	\$20.96		
01738	<b>HCA (GARCINIA)</b> - 90 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
29754	<b>HCACTIVE</b> - 90 caps (Jarrow)	30.00	22.50		
01393	<b>HEPATOPRO</b> - 900 mg, 60 softgels	50.00	37.50		
	Buy 4 bottles, price each	46.00	34.50		
01527	<b>HUPERZINE A</b> - 200 mcg, 60 veg caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00661	<b>HYDRODERM®</b> - 1 oz	79.95	59.96		
	Buy 2 bottles, price each	65.33	49.00		
<b>I</b>					
*01060	<b>i26® HYPERIMMUNE EGG</b> - 140 grams powder	\$54.99	\$46.75		
01704	<b>IMMUNE MODULATOR W/TINOFEND®</b> - 60 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
00955	<b>IMMUNE PROTECT W/PARACTIN®</b> - 30 veg. caps	29.50	22.13		
	Buy 4 bottles, price each	26.55	19.91		
01905	<b>IMMUNE SENESENCE PROTECTION FORMULA™</b> - 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01049	<b>INNERPOWER™</b> - 530 grams powder	42.00	31.50		
01674	<b>INOSITOL CAPSULES</b> - 1,000 mg, 360 veg. caps	62.00	46.50		
	Buy 4 bottles, price each	58.00	43.50		
01292	<b>INTEGRA-LEAN® AFRICAN MANGO IRVINGIA</b> - 150 mg, 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01248	<b>IODINE COMPLETE (ADVANCED)</b> - 180 tablets	46.00	36.50		
01677	<b>IRON PROTEIN PLUS</b> - 300 mg, 100 caps	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
01492	<b>IRVINGIA W/PHASE 3™</b> - 120 veg. caps	56.00	42.00		
	<b>CALORIE CONTROL COMPLEX (OPTIMIZED AFRICAN MANGO)</b>				
	Buy 4 bottles, price each	48.00	36.00		
<b>J, K</b>					
00056	<b>JARRO-DOPHILUS EPS™</b> - 60 veg. caps	\$22.95	\$17.21		
01759	<b>JARRO-DOPHILUS EPS™</b> - 30 caps	39.95	29.96		
01724	<b>K w/ADVANCED K2 COMPLEX (SUPER)</b> - 90 softgels	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01600	<b>KRILL HEALTHY JOINT FORMULA</b> - 30 softgels	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		

**SUB-TOTAL OF COLUMN 9**

JUNE 2015

No.		Retail Each	Member Each	Qty	Total
01050	<b>KRILL OIL PHOSPHOMEGA™</b> - 60 softgels	\$33.95	\$25.46		
00316	<b>KYOLIC® GARLIC FORMULA 102</b> - 200 veg. caps	26.45	19.84		
00214	<b>KYOLIC® GARLIC FORMULA 105</b> - 200 caps	27.45	20.59		
00789	<b>KYOLIC® RESERVE</b> - 600 mg, 120 caps	27.95	20.96		
01681	<b>LACTOFERRIN (APOLACTOFERRIN) CAPS</b> - 60 caps	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
00020	<b>LECITHIN</b> - 16 oz. granules	15.00	11.25		
	Buy 4 jars, price each	12.50	9.38		
01955	<b>LIFE EXTENSION MIX™</b> - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01957	<b>LIFE EXTENSION MIX™ W/EXTRA NIACIN</b> - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01954	<b>LIFE EXTENSION MIX™</b> - 490 caps	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01956	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
01965	<b>LIFE EXTENSION MIX™</b> - 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01967	<b>LIFE EXTENSION MIX™ W/EXTRA NIACIN</b> 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01964	<b>LIFE EXTENSION MIX™</b> - 490 caps w/o copper	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01966	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
01608	<b>LIVER EFFICIENCY FORMULA</b> - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01639	<b>5-LOX INHIBITOR W/APRESFLEX®</b> - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01678	<b>L-LYSINE</b> - 620 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
00455	<b>LYCOPENE EXTRACT (MEGA)</b> - 15 mg, 90 softgels	35.00	26.25		
	Buy 4 bottles, price each	30.00	22.50		
<b>M</b>					
01885	<b>MACUGUARD® OCULAR SUPPORT</b> - 60 softgels	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
01886	<b>MACUGUARD® OCULAR SUPPORT w/ASTAXANTHIN</b> - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01459	<b>MAGNESIUM CAPS</b> - 500 mg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	10.00	7.50		
01682	<b>MAGNESIUM CITRATE</b> - 160 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	7.50	5.63		
01908	<b>MEDITERRANEAN TRIM WITH SINETROL™-XPUR</b> - 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01668	<b>MELATONIN</b> - 300 mcg, 100 veg. caps	5.75	4.31		
	Buy 4 bottles, price each	5.00	3.75		

**SUB-TOTAL OF COLUMN 10**

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

To order online visit: [www.LifeExtension.com](http://www.LifeExtension.com)

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01083	<b>MELATONIN</b> - 500 mcg, 200 veg. caps Buy 4 bottles, price each	\$18.00 16.00	\$13.50 12.00		
00329	<b>MELATONIN</b> - 1 mg, 60 caps Buy 4 bottles, price each	5.00 4.63	3.75 3.47		
00330	<b>MELATONIN</b> - 3 mg, 60 caps Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01786	<b>MELATONIN TIME RELEASE</b> - 3 mg, 60 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00331	<b>MELATONIN</b> - 10 mg, 60 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00332	<b>MELATONIN</b> - 3 mg, 60 veg. lozenges Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01734	<b>MELATONIN</b> (Fast Acting Liquid) - 3 mg (Natural Citrus-Van) Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01787	<b>MELATONIN TIME RELEASE</b> - 300 mcg, 100 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01788	<b>MELATONIN TIME RELEASE</b> - 750 mcg, 60 veg. tablets Buy 4 bottles, price each	8.00 7.00	6.00 5.25		
01536	<b>METHYLCOBALAMIN</b> - 1 mg, 60 veg. lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
01537	<b>METHYLCOBALAMIN</b> - 5 mg, 60 veg. lozenges (vanilla) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 25.00 23.00	24.00 18.75 17.25		
00709	<b>MIGRA-EEZE™ (BUTTERBUR)</b> - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		
01800	<b>MIGRA-MAG w/BRAIN SHIELD®</b> - 90 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01522	<b>MILK THISTLE (EUROPEAN)</b> - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
01822	<b>MILK THISTLE (EUROPEAN)</b> - 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01817	<b>MILK THISTLE (EUROPEAN)</b> - 120 softgels Buy 4 bottles, price each	44.00 40.00	33.00 30.00		
01698	<b>MIRAFORTE w/STANDARDIZED LIGNANS (SUPER)</b> - 120 caps Buy 4 bottles, price each	62.00 56.00	46.50 42.00		
01769	<b>MITOCHONDRIAL BASICS w/BIOPQQ®</b> - 30 caps Buy 4 bottles, price each	52.00 42.00	39.00 31.50		
01768	<b>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ®</b> - 120 caps Buy 4 bottles, price each	94.00 78.00	70.50 58.50		
00065	<b>MK-7</b> - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00451	<b>MSM (METHYLSULFONYLMETHANE)</b> - 1,000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		
<b>N</b>					
01534	<b>N-ACETYL-L-CYSTEINE</b> - 600 mg, 60 veg. caps Buy 4 bottles, price each	\$14.00 13.50	\$10.50 10.13		
01904	<b>NAD+ CELL REGENERATOR™</b> - 100 mg, 30 veg. caps Buy 4 bottles, price each	34.00 26.00	25.50 19.50		
00066	<b>NATTOKINASE</b> - 60 softgels	25.50	19.13		
01807	<b>NATURAL APPETITE SUPPRESS (ADVANCED)</b> - 60 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00984	<b>NATURAL BP MANAGEMENT</b> - 60 tablets Buy 4 bottles, price each	44.00 40.00	33.00 30.00		

**SUB-TOTAL OF COLUMN 11**

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

No.		Retail Each	Member Each	Qty	Total
01892	<b>NATURAL ESTROGEN</b> - 60 veg. tabs Buy 4 bottles, price each	\$38.00 34.00	\$28.50 25.50		
01893	<b>NATURAL ESTROGEN w/o SOY ISOFLAVONES</b> - 30 veg. caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01221	<b>NATURAL FEMALE SUPPORT</b> - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	<b>NATURAL GLUCOSE ABSORPTION CONTROL</b> - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01626	<b>NATURAL SEX FOR WOMEN® 50+ (ADVANCED)</b> - 90 veg. caps Buy 4 bottles, price each	59.00 45.33	44.25 34.00		
01444	<b>NATURAL SLEEP®</b> - 60 veg. caps Buy 4 bottles, price each	13.00 10.00	9.75 7.50		
01551	<b>NATURAL SLEEP® w/ MELATONIN (ENHANCED)</b> - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	<b>NATURAL SLEEP® w/o MELATONIN (ENHANCED)</b> - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01445	<b>NATURAL SLEEP® MELATONIN</b> - 5 mg, 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00987	<b>NATURAL STRESS RELIEF</b> - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01121	<b>NERVIA®</b> - 60 softgels	49.95	37.46		
01603	<b>NEURO-MAG™ MAGNESIUM L-THREONATE</b> - 90 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01602	<b>NEURO-MAG™ L-THREONATE W/CALCIUM &amp; VITAMIN D</b> 225 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01903	<b>NK CELL ACTIVATOR™</b> - 30 veg. tablets Buy 4 bottles, price each	45.00 42.00	33.75 31.50		
00373	<b>NO-FLUSH NIACIN</b> - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
<b>O</b>					
01824	<b>OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRAT(ADVANCED)</b> 500 mg, 60 veg. caps • Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
01819	<b>OMEGA WITH KRILL &amp; ASTAXANTHIN (SUPER)</b> - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	45.00 42.00 33.00	33.75 31.50 24.75		
01483	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	18.00 16.00 12.50	13.50 12.00 9.38		
01482	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 22.73	24.00 21.00 17.05		
01484	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> Buy 4 bottles, price each Buy 10 bottles, price each	34.00 31.00 24.00	25.50 23.25 18.00		
01485	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	20.00 18.00 14.00	15.00 13.50 10.50		

**SUB-TOTAL OF COLUMN 12**

JUNE 2015

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>CONTINUED</b>					
01619	<b>OMEGA 3 EPA/DHA W/SESAME LIGNANS &amp; - 240 softgels</b> <b>OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL)</b>	\$32.00	\$24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	23.00	17.25		
01981	<b>ONCE-DAILY HEALTH BOOSTER - 60 softgels</b>	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
01901	<b>ONE-PER-DAY - 60 tablets</b>	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01328	<b>ONLY TRACE MINERALS - 90 veg. caps</b>	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
<b>P</b>					
01789	<b>PALMETTOGUARD® SAW PALMETTO w/BETA SITOSTEROL - 30 softgels</b>	\$15.00	\$11.25		
	Buy 12 bottles, price each	12.00	9.00		
01790	<b>PALMETTOGUARD® SUPER SAW PALMETTO/- 60 softgels</b> <b>NETTLE ROOT W/BETA-SITOSTEROL</b>	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
	Buy 12 bottles, price each	24.00	18.00		
00073	<b>PANCREATIN - 500 mg, 50 caps</b>	13.22	9.92		
01323	<b>PEAK ATP® WITH GLYCOCARN® - 60 veg. caps</b>	54.00	40.50		
	Buy 4 bottles, price each	50.00	37.50		
00342	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder</b>	109.95	82.46		
01080	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps</b>	79.95	59.96		
01811	<b>PEONY IMMUNE - 60 veg. caps</b>	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
00673	<b>PGX™ PLUS MULBERRY (WELLBETX®) -180 veg. caps</b>	34.95	26.21		
00865	<b>PHARMA GABA® - 60 chewable tablets</b>	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01676	<b>PHOSPHATIDYLSERINE CAPS - 100 mg, 100 veg. caps</b>	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
01436	<b>POLICOSANOL - 10 mg, 60 veg. caps</b>	20.00	15.00		
	Buy 4 bottles, price each	15.00	11.25		
01423	<b>POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels</b>	24.00	18.00		
	Buy 4 bottles, price each	21.00	15.75		
00956	<b>POMEGRANATE EXTRACT - 30 veg. caps</b>	19.50	14.63		
	Buy 4 bottles, price each	17.55	13.16		
01797	<b>POMI-T® - 60 veg. caps</b>	33.33	25.00		
	Buy 4 bottles, price each	30.00	22.50		
00577	<b>POTASSIUM IODIDE - 1 box, 14 tablets</b>	6.95	5.21		
	Buy 4 boxes, price each	5.25	3.94		
01500	<b>PQQ CAPS W/BIOPQQ® - 10 mg, 30 veg. caps</b>	24.00	18.00		
	Buy 4 bottles, price each	18.00	13.50		
	Buy 10 bottles, price each	16.00	12.00		
01647	<b>PQQ CAPS W/BIOPQQ® - 20 mg, 30 veg. caps</b>	40.00	30.00		
	Buy 4 bottles, price each	32.00	24.00		
	Buy 10 bottles, price each	28.00	21.00		
00302	<b>PREGNENOLONE - 50 mg, 100 caps</b>	26.00	19.50		
	Buy 4 bottles, price each	22.00	16.50		
00700	<b>PREGNENOLONE - 100 mg, 100 caps</b>	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
***01373	<b>PRELOX® NATURAL SEX FOR MEN® - 60 tablets</b>	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		

**SUB-TOTAL OF COLUMN 13**

JUNE 2015

No.		Retail Each	Member Each	Qty	Total
01576	<b>PREVAGEN® - 10 mg, 30 caps</b>	\$60.00	\$45.00		
01577	<b>PREVAGEN® ES- 20 mg, 30 caps</b>	70.00	60.00		
00525	<b>PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets</b>	59.95	44.96		
01441	<b>PROGESTACARE® FOR WOMEN - 4 oz cream</b>	35.50	26.63		
	Buy 4 bottles, price each	32.50	24.38		
01898	<b>PROSTATE FORMULA (ULTRA NAT) - 60 softgels</b>	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
	Buy 12 bottles, price each	32.00	24.00		
01909	<b>PROSTAPOLLEN™ (TRIPLE ACTION) - 30 softgels</b>	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01742	<b>PROTEIN-ISOLATE (WHEY) VANILLA - 1 lb. powder</b>	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01743	<b>PROTEIN-ISOLATE (WHEY) CHOCOLATE - 1 lb. powder</b>	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01770	<b>PROTEIN CONCENTRATE (New Zealand Whey) Vanilla - 520 gr</b>	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		
01771	<b>PROTEIN CONCENTRATE (New Zealand Whey) Chocolate - 660 gr</b>	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		
01812	<b>PROVINAL® PURIFIED OMEGA-7 - 30 softgels</b>	27.00	20.25		
	Buy 4 bottles, price each	24.00	18.00		
01508	<b>PTEROPURE® - 50 mg Pterostilbene 60 veg. caps</b>	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01209	<b>PUMPKIN SEED EXTRACT (WATER-SOLUBLE) - 60 veg. caps</b>	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01587	<b>PURE PLANT PROTEIN - Veg. Vanilla 540 grams powder</b>	38.00	28.50		
	Buy 4 jars, price each	35.00	26.25		
01637	<b>PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT-100 mg, 60 veg. caps</b>	64.00	48.00		
	Buy 4 bottles, price each	60.00	45.00		
01217	<b>PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps</b>	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
<b>Q, R</b>					
01309	<b>QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps</b>	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01030	<b>RED YEAST RICE (Bluebonnet)- 600 mg, 60 veg. caps</b>	16.95	13.56		
00605	<b>REGIMINT - 60 enteric-coated caps</b>	19.95	14.96		
	Buy 4 bottles, price each	18.67	14.00		
01708	<b>REISHI EXTRACT MUSHROOM COMPLEX - 60 veg. caps</b>	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01448	<b>REJUVENEX® BODY LOTION - 6 oz</b>	24.00	18.00		
	Buy 4 tubes, price each	19.80	14.85		
	Buy 8 tubes, price each	17.00	12.75		
01621	<b>REJUVENEX® FACTOR FIRMING SERUM - 1.7 oz</b>	65.00	48.75		
	Buy 2 bottles, price each	50.66	38.00		
	Buy 6 bottles, price each	38.52	28.89		
01220	<b>REJUVENEX® (ULTRA) - 2 oz</b>	52.00	39.00		
	Buy 2 jars, price each	48.00	36.00		
	Buy 4 jars, price each	44.00	33.00		
	Buy 8 jars, price each	39.93	29.95		
00676	<b>REJUVENIGHT® (ULTRA) - 2 oz</b>	39.95	29.96		
	Buy 4 jars, price each	36.00	27.00		
01410	<b>RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps</b>	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		

**SUB-TOTAL OF COLUMN 14**

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

No.		Retail Each	Member Each	Qty	Total
01930	<b>RESVERATROL W/NAD+ CELL REGENERATOR™ (OPTIMIZED)</b> - 30 veg. caps	\$42.00	\$31.50		
	Buy 4 bottles, price each	36.00	27.00		
01430	<b>RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED)</b> - 250 mg, 60 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	41.33	31.00		
00889	<b>RHODIOLA EXTRACT</b> - 250 mg, 60 veg. caps	14.00	10.50		
	Buy 4 bottles, price each	10.50	9.00		
01900	<b>RIBOGEN™ FRENCH OAK WOOD EXTRACT</b> - 200 mg, 30 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	33.00	24.75		
00972	<b>(D) RIBOSE POWDER</b> - 150 grams	27.50	20.63		
	Buy 4 jars, price each	24.75	18.56		
01473	<b>(D) RIBOSE TABLETS</b> - 100 veg. tabs	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
01609	<b>RICH REWARDS® BREAKFAST GROUND COFFEE</b> - 12 oz. bag	13.00	9.75		
01730	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag	15.00	11.25		
	Natural Mocha				
01729	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag	15.00	11.25		
	Natural Vanilla				
01612	<b>RICH REWARDS® BREAKFAST BLEND WHOLE BEAN COFFEE</b> - 12 oz. bag	13.00	9.75		
01610	<b>RICH REWARDS™ DECAFFEINATED ROAST GROUND COFFEE</b> - 12 oz. bag	14.00	10.50		
01530	<b>RICH REWARDS® CRUCIFEROUS VEGETABLE SOUP</b> - 32 oz. bottle	11.95	8.96		
	Buy 6 bottles, price each	11.25	8.44		
01208	<b>R-LIPOIC ACID (SUPER)</b> - 240 mg, 60 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	45.00	33.75		
00070	<b>RNA CAPSULES</b> - 500 mg, 100 caps	17.95	13.46		
	Buy 4 bottles, price each	16.16	12.12		
<b>S</b>					
01432	<b>SAFFRON w/SATIEREAL® (OPTIMIZED)</b> - 60 veg. caps	\$36.00	\$27.00		
	Buy 4 bottles, price each	32.00	24.00		
00358	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 200 mg, 20 enteric coated tablets	16.00	12.00		
	Buy 8 boxes, price each	14.00	10.50		
00557	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 400 mg, 20 enteric coated tablets	28.00	21.00		
	Buy 6 boxes, price each	24.00	18.00		
01740	<b>SEA-IODINE™</b> - 1,000 mcg, 60 veg. caps	8.00	6.00		
	Buy 4 bottles, price each	7.20	5.40		
00046	<b>SELENIUM</b> - 2 oz dropper bottle	11.95	8.96		
01679	<b>SE-METHYL L-SELENOCYSTEINE</b> - 200 mcg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
00318	<b>SERRAFLAZYME</b> - 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01684	<b>SILYMARIN</b> - 100 mg, 50 veg. caps	9.25	6.94		
	Buy 4 bottles, price each	8.25	6.19		
01249	<b>SINUS CLEANSER</b> - 4 oz. bottle	25.00	18.75		
01596	<b>SKIN RESTORING PHYTCERAMIDES w/LIPOWHEAT®</b> - 30 veg. liquid caps	25.00	18.75		
	Buy 4 bottles, price each	23.00	17.25		
00961	<b>SODZYME® w/GLISODIN® AND WOLFBERRY</b> - 90 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
00657	<b>SOLARSHIELD SUNGLASSES</b> - 1 pair smoke color	12.99	9.74		
	Buy 2 pairs, price each	11.50	8.63		
01097	<b>SOY EXTRACT (ULTRA)</b> - 150 veg. caps	87.00	65.25		
	Buy 4 bottles, price each	78.00	58.50		
00432	<b>STEVIA™ EXTRACT (BETTER)</b> - 100 packets, 1 gram each	9.95	7.46		

SUB-TOTAL OF COLUMN 15

No.		Retail Each	Member Each	Qty	Total
00438	<b>STEVIA™ ORGANIC LIQUID EXTRACT (BETTER)</b> - 2 oz liquid	\$11.00	\$8.25		
01476	<b>STRONTIUM</b> - 750 mg, 90 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01649	<b>SUPER ABSORBABLE SOY ISOFLAVONES</b> - 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01778	<b>SUPER SELENIUM COMPLEX</b> - 200 mcg, 100 veg. caps	14.00	10.50		
	Buy 4 bottles, price each	12.00	9.00		
	Buy 12 bottles, price each	11.00	8.25		
<b>T</b>					
01723	<b>TART CHERRY EXTRACT w/STANDARDIZED CHERRYPURE®</b> - 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
00199	<b>TAURINE</b> - 1,000 mg, 50 caps	8.95	6.71		
	Buy 4 bottles, price each	8.00	6.00		
00133	<b>L-TAURINE POWDER</b> - 300 grams	20.00	15.00		
	Buy 4 bottles, price each	16.88	12.66		
01304	<b>THEAFLAVIN STANDARDIZED EXTRACT</b> - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01683	<b>(L) THEANINE</b> - 100 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	20.50	15.38		
**01038	<b>THERALAC PROBIOTICS</b> - 30 caps	47.95	35.96		
00668	<b>THYROID FORMULA™ (METABOLIC ADVANTAGE)</b> - 100 caps	21.95	16.46		
00349	<b>TMG POWDER</b> - 50 grams	14.00	10.50		
	Buy 4 bottles, price each	11.00	8.25		
01859	<b>TMG</b> - 500 mg, 60 veg. liquid caps	13.00	9.75		
	Buy 4 bottles, price each	12.00	9.00		
00781	<b>TOCOTRIENOLS WITH SESAME LIGNANS</b> - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	36.00	27.00		
01400	<b>TOCOTRIENOLS (SUPER-ABSORBABLE)</b> - 60 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01278	<b>TOOTH PASTE</b> - 4 oz (Mint)	9.50	7.13		
	Buy 4 tubes, price each	8.67	6.50		
01468	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT</b> - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01469	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL</b> - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.60	22.20		
01803	<b>TRI SUGAR SHIELD™</b> - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01386	<b>TRUFIBER®</b> - 180 grams	32.95	24.71		
01389	<b>TRUFLORA PROBIOTICS</b> - 32 veg. caps	42.95	32.21		
01722	<b>L-TRYPTOPHAN</b> - 500 mg, 90 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01721	<b>TRYPTOPHAN PLUS (OPTIMIZED)</b> - 90 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01916	<b>TWO-PER-DAY</b> - 60 tablets	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01915	<b>TWO-PER-DAY</b> - 120 tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01914	<b>TWO-PER-DAY</b> - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00326	<b>L-TYROSINE</b> - 500 mg, 100 tablets	12.98	9.74		

SUB-TOTAL OF COLUMN 16

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
<b>V</b>					
00213	<b>VANADYL SULFATE</b> - 7.5 mg, 100 veg. tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00408	<b>VENOTONE</b> - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	<b>VINPOCETINE</b> - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
00372	<b>VITAMIN B3 NIACIN</b> - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	<b>VITAMIN B5</b> - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
01535	<b>VITAMIN B6</b> - 250 mg, 100 veg. caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	<b>VITAMIN B12</b> - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 60 veg. tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 250 veg. tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	<b>VITAMIN C (BUFFERED) POWDER</b> - 454 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
01736	<b>(EFFERVESCENT) VITAMIN C-MAGNESIUM CRYSTALS</b> - 180 grams	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01732	<b>VITAMIN D3</b> - 2,000 IU, 1 fl oz, Mint flavor	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	<b>VITAMIN D3</b> - 1,000 IU, 90 softgels	7.00	5.25		
	Buy 4 bottles, price each	6.00	4.50		
01751	<b>VITAMIN D3</b> - 1,000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	<b>VITAMIN D3</b> - 5,000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	<b>VITAMIN D3</b> - 7,000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01758	<b>VITAMIN D3 w/SEA-IODINE™</b> - 5,000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
00864	<b>VITAMIN D3</b> Liquid Emulsion - 2,000 IU, 1 oz.	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01741	<b>VITAMINS D AND K w/SEA-IODINE™</b> - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01763	<b>VITAMIN E (NATURAL)</b> - 400 IU, 100 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	26.00	19.50		
01225	<b>VITAMIN K2 (LOW-DOSE)</b> - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
<b>X</b>					
00409	<b>XYLIWHITE™ MOUTHWASH</b> - 16 oz	\$10.00	\$7.50		
<b>W</b>					
01902	<b>WAIST-LINE CONTROL™</b> - 120 veg. caps	\$42.00	\$31.50		
	Buy 4 bottles, price each	38.00	28.50		
01826	<b>WEIGHT MANAGEMENT FORMULA</b> - 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		

**SUB-TOTAL OF COLUMN 17**

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>Z</b>					
01813	<b>ZINC HIGH POTENCY</b> - 50 mg, 90 veg. caps	\$7.95	\$5.96		
	Buy 4 bottles, price each	7.00	5.25		
01561	<b>ZINC GLUCONATE/OXIDE LOZENGES</b> - 18.75 mg, 60 veg. lozenges	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
01961	<b>ZINC ACETATE LOZENGES (ENHANCED)</b> - 18.75 mg, 30 veg. lozenges	12.00	9.00		
	Buy 2 bottles, price each	8.00	6.00		
***01051	<b>ZYFLAMEND® WHOLE BODY</b> - 120 softgels	64.95	48.71		

**SUB-TOTAL OF COLUMN 18**

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



**GIVE THE LIFE-ENHANCING  
BENEFITS OF LIFE EXTENSION®  
WITH A GIFT OF  
\$10, \$25, \$50 OR \$100**

**To order a  
Life Extension Gift Card  
for someone special,  
call 1-800-544-4440**

\* These products are not 25% off retail price.

\*\* Not eligible for member discount or member renewal product credit.

\*\*\* Due to license restrictions, this product is not for sale to customers outside of the USA.

† Member pricing not valid on this item.

†† Due to license restrictions, this product is not for sale to Canada.

††† Due to license restrictions, this product is not for sale to customers outside of the USA and Canada.

## ORDER SUBTOTALS

SUB-TOTAL COLUMN 1	
SUB-TOTAL COLUMN 2	
SUB-TOTAL COLUMN 3	
SUB-TOTAL COLUMN 4	
SUB-TOTAL COLUMN 5	
SUB-TOTAL COLUMN 6	
SUB-TOTAL COLUMN 7	
SUB-TOTAL COLUMN 8	
SUB-TOTAL COLUMN 9	
SUB-TOTAL COLUMN 10	
SUB-TOTAL COLUMN 11	
SUB-TOTAL COLUMN 12	
SUB-TOTAL COLUMN 13	
SUB-TOTAL COLUMN 14	
SUB-TOTAL COLUMN 15	
SUB-TOTAL COLUMN 16	
SUB-TOTAL COLUMN 17	
SUB-TOTAL COLUMN 18	

## ORDER TOTALS

Sub-Total A (Sub-total of Columns 1 through 18)	
Postage And Handling (Any size order, contiguous U.S.)	<b>\$5.50</b>
C.O.D.s (Add \$7 for C.O.D. orders)	
Shipping	
<small>UPS OVERNIGHT add \$16, UPS 2nd DAY AIR add \$7. For Puerto Rico, US Virgin Islands, Alaska &amp; Hawaii, add \$7. CANADA UPS EXPRESS Flat rate \$17.50, UK Flat rate \$25 USD. ALL OTHER INTERNATIONAL AIR WILL BE ADDED.</small>	
<b>GRAND TOTAL</b> (Must be in U.S. dollars)	

## BILL TO ADDRESS

NAME	E-MAIL
ADDRESS	
CITY/STATE/ZIP-POSTAL CODE	COUNTRY
PHONE	FAX
VISA/MASTERCARD/AMEX/DISCOVER #	
EXP. DATE	
SIGNATURE	

## Buyers Club Order Form



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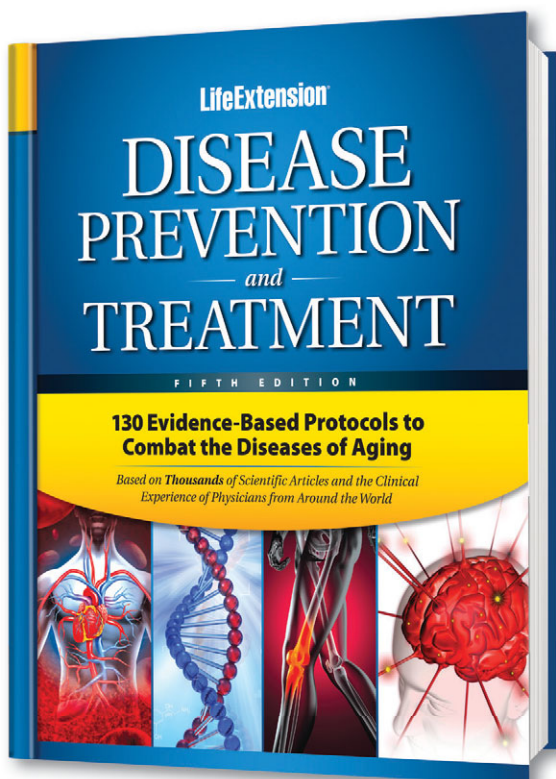
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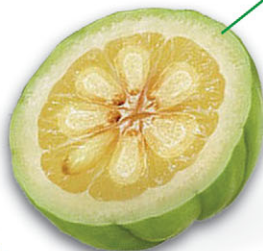
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**Vitamin C** is essential for life<sup>1</sup> because the human body cannot synthesize it.<sup>2</sup>

During stressful events,<sup>2</sup> plasma and white blood cell vitamin C levels decrease.

Numerous studies have demonstrated that vitamin C supplementation supports healthy immune function, including cell mediated immunity and neutrophil function.<sup>2-5</sup> Vitamin C promotes the body's natural protection against oxidative damage to lipids, proteins, and DNA.<sup>2,6</sup>

Life Extension® introduces **daily C +**, a citrus-flavored, effervescent drink mix that provides a blend of **1,000 mg** of vitamin C and other essential vitamins and minerals in individualized packets—ideal to take “on the go” to support your immune system and general health.

With each delicious sip, you obtain 18 different nutrients—including vitamin C, B vitamins, and electrolytes:

- **1,000 mg** of **vitamin C** combined with **vitamin D3**, **zinc**, **quercetin**, and other nutrients to support your immune system.
- Seven B vitamins, including **B1**, **B2**, **B3**, **B6**, and **B12**, that boost energy naturally—no caffeine, no crash.
- Bioactive forms of **riboflavin**, **vitamin B6**, and **vitamin B12**.
- **Electrolytes** to replenish those lost through perspiration, especially during workouts.

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### daily C + 1,000 mg Vitamin C

Item #01912 • One box of 30 packets • **Non-GMO**

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1 box	\$21	<b>\$15.75</b>
4 boxes	\$19 each	<b>\$14.25 each</b>

#### References

1. *J Altern Complement Med*. 2008 Dec;14(10):1291-8.
2. *Nutrition Journal*. 2003; 2:7.
3. *Br J Nutr*. 2007 Jan;97(1):19-26.
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5. *Adv Wound Care (New Rochelle)*. 2014 Jan 1;3(1):46-53.
6. *Postepy Hig Med Dosw (Online)*. 2004;58:343-8.

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# PQQ Promotes Formation of New Mitochondria

## Critical Importance of Mitochondria

**Mitochondria** provide the power your body requires for a healthy life span. As mitochondria levels decline, cells lose their ability to sustain function and support life processes.<sup>1-7</sup>

**PQQ** is a natural compound that uniquely supports **mitochondrial biogenesis**—the generation of **new mitochondria** in aging cells.<sup>8</sup> **PQQ** stands for *pyrroloquinoline quinone* and is available as a standalone dietary supplement as well as in combination with ubiquinol **CoQ10** and **Mitochondrial Energy Optimizer**.

**PQQ** protects and augments delicate mitochondrial structures to promote *youthful* cellular function.

## Vital Protection for the Aging Heart and Brain

A growing body of research indicates that PQQ's unique nutritional profile supports **heart** health and **cognitive** function—alone and in combination with CoQ10.<sup>9,10</sup> This comes as no surprise, given how much energy these vital organs need.

When taken in combination with **CoQ10**, just **20 mg per day** of **PQQ** has been shown to promote **memory**, **attention**, and **cognition** in maturing individuals.<sup>11</sup>

To order PQQ Caps with BioPQQ® standalone or any other PQQ-containing formulas call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)

## A Potent Weapon in the Battle Against Aging

A bottle containing 30 **20 mg** vegetarian capsules of **PQQ Caps** retails for \$40. If a member buys four bottles, the price is reduced to **\$24** per bottle. (Item #01647)

The recommended daily dose for **PQQ** is **20 mg**.

Those taking **Mitochondrial Energy Optimizer**, **Mitochondrial Basics**, or **Super Ubiquinol with PQQ** may only require an additional **10 mg** of **PQQ** since these formulas already provide **10 mg** of **PQQ**. The retail price for 30 **10 mg PQQ** caps is \$24. If a member buys four bottles, the price is reduced to only **\$13.50** per bottle. (Item #01500)

### Non-GMO

BioPQQ® is a registered trademark of MGC (Japan).

### References

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2. *Lancet*. 1989 Mar 25;1(8639):642-5.
3. *Curr Opin Clin Nutr Metab Care*. 2010 Jul 7.
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11. *FOOD Style*. 2009;21:13(7)50-3. [Tokyo].



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There is a version of **Super Ubiquinol CoQ10** that contains **10 mg** of PQQ in each **100 mg** ubiquinol capsule. This formula also contains **shilajit**, which has been shown to double levels of coenzyme Q10 in mitochondria.

The retail price for 30 softgel caps is \$54. If a member buys four, then price is reduced to **\$33** each. When 10 bottles are bought, the price goes down to **\$30** per bottle.

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## WHAT'S INSIDE

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# LifeExtension®

Magazine



### 7 PROTECT AGAINST SUDDEN CARDIAC ARREST

A **2014** study reveals that low **testosterone** or high levels of **estrogen** sharply increases risk of **cardiac arrest** in men. Find out the dangers of failing to test testosterone and estrogen **blood levels** in aging men.



### 34 NEW BLOOD TEST FOR OXIDIZED LDL CHOLESTEROL

Blood tests for **oxidized LDL**, a known vascular risk, were previously available only at sophisticated research labs. Life Extension® members can now access these lifesaving tests at an affordable cost.



### 54 PROTECT SKIN AGAINST GLYCATION DAMAGE

**Glycation** is a major cause of accelerated skin aging, disrupting collagen metabolism and leading to wrinkles and sagging. **Five topical nutrients** block the detrimental effects of glycation and promote dermal regeneration.



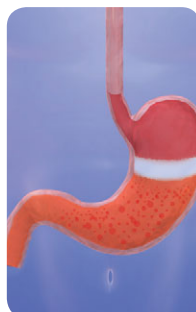
### 26 MEDITERRANEAN TRIM

Fat cells in obese individuals have a decreased function of a **fat-removing** enzyme called **hormone-sensitive lipase**. Clinical studies show that a blend of Mediterranean citrus fruits and South American seed extracts restores this vital enzyme and can produce reductions of **body fat** as much as **15.6%**.



### 46 MALE MENOPAUSE

Dr. Abraham Morgentaler, associate clinical professor at **Harvard Medical School**, discusses the quality-of-life benefits of **testosterone** supplementation for maturing men and how testosterone treatment does not cause prostate cancer.



### 64 GUARD AGAINST DEADLY EFFECTS OF ACID REFLUX

Blocking stomach acid with drugs like Nexium® provides only partial protection from acid reflux. A safer approach is the use of a **raft-forming alginate** that blocks the backflow of stomach contents, preventing discomfort and potentially reducing risk of esophageal cancer.